An Assessment of How State and Regional Transportation Agencies Advance Equity in Transportation Plans, Processes, and Implementation

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16. Abstract
To provide California with recommendations for how to advance transportation equity, this study examines how state DOTs and metropolitan planning organizations (MPOs) are implementing equity-based planning. The research team conducted a content analysis on the long-range transportation plans (LRTPs) and active transportation plans of six state DOTs, and the LRTPs and federal transportation improvement documents of six California MPOs to identify equity practices and performance measures in those plans. They also interviewed representatives from five state DOTs to identify methods the organizations are using to advance equity. Every organization acknowledged the importance of considering equity, but the nature and degree with which equity practices were implemented varied considerably. Outreach and engagement were the most common equity practices. Many DOTs had developed or were developing performance metrics for equity, but several lacked appropriate disaggregate data to identify effects on people of color or other marginalized population groups. Few organizations explicitly identified how equity was guiding decision-making in their plans. Innovative practices included establishing listening sessions to define transportation equity, centering public health in decision-making, developing creative ways to direct funding to the neediest communities, and institutionalizing equity through leadership positions or bottom-up decision-making within functional areas.

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An Assessment of how State and Regional Transportation Agencies Advance Equity in Transportation Plans, Processes, and Implementation

i

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An Assessment of how State and Regional Transportation Agencies Advance Equity
in Transportation Plans, Processes, and Implementation

ii

An Assessment of How State and Regional Transportation Agencies Advance Equity in Transportation Plans, Processes, and Implementation

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February 2022

Table
of
Contents

Table of Contents

An Assessment of how State and Regional Transportation Agencies Advance Equity
in Transportation Plans, Processes, and Implementation

v

List of Tables

List of Figures

An Assessment of how State and Regional Transportation Agencies Advance Equity
in Transportation Plans, Processes, and Implementation

vi

Executive

Summary

Executive Summary

Over the last year-and-a-half, there has been concentrated activity among departments of transportation (DOTs) at all levels to reckon with the role that systemic racism in the transportation system has had and continues to have on Black and Brown communities. Approaches to equity-based practices vary significantly across the United States and across agencies responsible for state, regional, and local transportation planning and programming; federal guidance has not yet been established for directing agencies how to adopt transportation equity as a planning framework. Thus, peer learning is currently the best means to understand the most promising methods for advancing transportation equity.

This report examines how state DOTs and metropolitan planning organizations (MPOs) in California evaluate and advance equity in transportation plans, processes, and implementation. The report also concludes with recommendations for the California State Transportation Agency (CalSTA) and the California Department of Transportation (Caltrans) on promising practices Caltrans, MPOs, and other transportation agencies in California can adopt to advance transportation equity across the state. We draw on the Caltrans Equity Statement to define transportation equity as a condition where everyone has access to what they need to live a meaningful life.[1] We selected six state DOTs to review in depth: Delaware, Illinois, Minnesota, Oregon, Pennsylvania, and Washington State. We used a content analysis to examine state DOT plans and strategy documents to identify how they are incorporating equity practices and performance measures in their work, focusing primarily on long-range transportation plans (LRTPs) and active transportation[2] plans. We interviewed key staff at five of the six DOTs to identify additional innovations in equity-based methods and gaps in knowledge and practice. Finally, we reviewed the LRTPs and federal transportation improvement program (FTIP) documents from six California MPOs (Sacramento Council of Governments, San Joaquin Council of Government, Santa Barbara County Association of Governments, Fresno Council of Governments, Kern Council of Governments, and the Tahoe Regional Planning Agency) to describe how regional agencies in the state are using equity principles to prioritize projects.

Findings

All the state DOT plans we reviewed, both LRTPs and active transportation plans, acknowledged the importance of considering equity and environmental justice in some way. The nature and degree of this acknowledgment varied considerably across states and plan types. Outreach and engagement activities were the most common way that DOTs sought to incorporate equity into their planning efforts, such as convening stakeholder groups, conducting representative surveys, and implementing new methods of online engagement. Some DOTs reported even more innovative practices, such as listening sessions to learn from communities and

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[1] https://dot.ca.gov/about-caltrans/equity-statement
[2] Active transportation involves self-powered means of transport, including walking, rolling, and cycling, intended to improve health and physical fitness.

An Assessment of how State and Regional Transportation Agencies Advance Equity in Transportation Plans, Processes, and Implementation

1

prioritize their needs, and exploring ways to provide stipends to community-based organizations or individuals from underrepresented communities for their participation in outreach efforts.

Equity practices and performance measures varied considerably across the agencies. Active transportation plans were more advanced than the LTRPs in terms of adopting goals, strategies, and metrics meant to advance and measure equity. Some of the active transportation plans had performance measures to evaluate progress toward planning goals, and several of the plans that did not had indicated performance measures were in development, though, some expressed challenges in adopting equity as a performance measure because of federal requirements that were seen as conflicting.

In LRTPs, when equity performance measures did appear, they were primarily focused on tracking accessibility for people with disabilities or they were relevant for, but did not explicitly measure, equity. Nevertheless, equity was often an overarching goal or otherwise mentioned as a strategy in most of the plans. Some plans were explicit in identifying racial equity as a guiding principle, while others included equity among the several goals that the plan established. And where equity was not yet included as a plan goal, strategy, or implementation step, discussions were underway to center equity more explicitly in the next plan update.

Two constraints in advancing equity in DOTs were prominent. The first was a lack of available data. Internal processes to obtain data relevant for assessing equity were onerous for some DOTs, while some did not have fine-grained or racially disaggregate data outside what was publicly available in the U.S. Census. The second prominent constraint was funding. Besides an overall sense that agencies did not have the ability to fund all the programs they wished to, some identified constraints in where funds could be used; for example, bureaucratic hurdles to paying participants for their engagement were high at some DOTs.

Based on previous research, we had expected equity prioritization criteria to be more prominent in MPO plans and programs. Only one RTP or FTIP identified quantitative criteria for project ranking, for example, and equity was not one of the criteria listed. Nevertheless, equity is a primary goal in most of the plans reviewed, and most plans evaluated alternative plan scenarios on a wide range of equity measures.

Recommendations

Five key recommendations for transportation agencies emerged from the plan review and interviews.

1. ***Develop a definition of transportation equity***. Multiple definitions of transportation equity exist in the literature and practice. While any one of these definitions can provide a baseline, adapting one to the context in which the agency works by incorporating the knowledge of policy experts, practitioners, and community members makes it easier to adopt policies that advance equity based in local, regional, and statewide conditions. As several DOTs pointed out, they are still in the process of developing these definitions, which may shift according to real-world community priorities. A definition of transportation equity should also include recognition that transportation interacts with other issues

An Assessment of how State and Regional Transportation Agencies Advance Equity in Transportation Plans, Processes, and Implementation

2

that affect mobility and access, including land use and housing, public health, and environmental justice.

2. **Adopt performance measures to track and advance equity.** A range of measures that are already in use could be adapted to evaluate how transportation is benefiting historically underserved groups, such as the distribution of funding, safety, infrastructure conditions, and vehicle miles traveled or vehicle trips. Establishing performance measures requires collecting and analyzing data at the appropriate scales and levels of disaggregation, limitations that many agencies will have to work to overcome.

3. **Make prioritization decisions transparent.** Clearly identifying how decision-makers rank alternatives and develop priorities is crucial for understanding what barriers exist to ensuring those decisions are made with equity in mind. Even if quantitative criteria for prioritization are developed, equity must be valued highly enough among those criteria so that it can have an influence on the ultimate decisions that are made.

4. **Innovate and create.** Some of the most promising practices for advancing equity were novel approaches to the ways that DOTs traditionally do business, like crowdsourcing mapping exercises and creating spaces for experimentation through innovative pilot programs.

5. **Institutionalize equity.** For example, to demonstrate commitment to equity at the highest levels, DOTs should consider hiring leaders and creating positions that oversee the efforts to advance racial and social equity. Institutionalizing equity may require significant staff training in frameworks of equity and application methods.

An Assessment of how State and Regional Transportation Agencies Advance Equity
in Transportation Plans, Processes, and Implementation

3

Abbreviations

ADA	Americans with Disabilities Act
Caltrans	California Department of Transportation
CalSTA	California State Transportation Agency
DBE	Disadvantaged Business Enterprise
DelDOT	Delaware Department of Transportation
EJ	Environmental Justice
FAST Act	Fixing America's Surface Transportation Act
Fresno COG	Fresno Council of Governments
FTIP	Federal Transportation Improvement Plan
IDOT	Illinois Department of Transportation
Kern COG	Kern Council of Governments
LRTP	Long Range Transportation Plan
MAP-21	Moving Ahead for Progress in the 21st Century Act
MPO	Metropolitan Planning Organization
MTIP	Metropolitan Transportation Improvement Program
MTP/SCS	Metropolitan Transportation Plan/Sustainable Communities Strategy
MnDOT	Minnesota Department of Transportation
PAWS	Minnesota Department of Transportation Priority Areas for Walking Study
PennDOT	Pennsylvania Department of Transportation
RPO	Regional Planning Organization
RTP	Regional Transportation Plan
SACOG	Sacramento Council of Governments

An Assessment of how State and Regional Transportation Agencies Advance Equity
in Transportation Plans, Processes, and Implementation

4

SBCAG	Santa Barbara County Association of Governments
SJCOG	San Joaquin Council of Governments
TIP	Transportation Improvement Plan
TRPA	Tahoe Regional Planning Agency
WSDOT	Washington State Department of Transportation

Contents

Introduction

Over the last year-and-a-half, there has been concentrated activity among departments of transportation (DOTs) at all levels to reckon with the role that systemic racism in the transportation system has had and continues to have on Black and Brown communities. This activity has led to statements of acknowledging the racist legacy of transportation agencies and intent to transform decision-making processes to better incorporate principles of equity. In California, the Secretary of the California State Transportation Agency (CalSTA), David S. Kim, issued a statement in June 2020 promising that the agency "will promote policies and programs that reflect principles of diversity, equity, and inclusion, and will work with stakeholders to identify areas of improvement."[3] Likewise, in December 2020, the California Department of Transportation (Caltrans) released an equity statement committing to "implement concrete actions as outlined" in the Department's Race & Equity Action Plan released a year earlier. This statement followed the establishment of the Caltrans Office of Race and Equity in August 2020, which guides both internal and external efforts to advance racial equity.

Approaches to advancing equity vary significantly across the United States and across agencies responsible for state, regional, and local transportation planning and programming. Many Metropolitan Planning Organizations (MPOs) have been at the forefront of advancing equity, particularly in terms of project prioritization and performance measures. A recent review of 40 MPOs from across the U.S. found that about half had adopted at least one equity metric to prioritize projects, half of which had more sophisticated criteria that considered impacts to individuals rather than just the locations of projects (*1*). Another report found that MPOs often include a broad definition of underserved populations for their equity analysis process (not just people of color, low-income, and limited English speakers), and many use travel demand modeling in addition to geographic tools to identify the equity-related effects of transportation investments. However, most fall short of linking needs identified in these populations with disparate impact analysis or mitigation strategies (*2*).

State DOTs have historically been less likely than MPOs to incorporate equity or environmental justice analysis in decision-making (*3*). Many state DOTs have significant and robust public engagement programs but few have assessed transportation benefits with respect to equity or used equity or environmental justice analyses to prioritize funding or implementation (*3*, *4*). At the state level, equity assessment more often occurs during project scoping, when community or socioeconomic impacts are determined under the National Environmental Policy Act (NEPA) review process. While this sort of analysis is critical to ensure that projects already selected do not have adverse effects on vulnerable communities, it comes too late in the transportation project pipeline to determine whether the project meets community needs in an equitable manner. This demonstrates a need

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[3] https://calsta.ca.gov/press-releases/2020-06-12-statement-on-racial-equity

An Assessment of how State and Regional Transportation Agencies Advance Equity in Transportation Plans, Processes, and Implementation

7

to review what practices state DOTs are using to advance equity in their planning and programming and how they might close gaps and plan for a more equitable future.

The necessity for DOTs to address equity is even more urgent given how federal guidance is evolving. Executive Order 13985, the first executive order issued by President Biden, directs the federal government, including the U.S. Department of Transportation (USDOT), to advance equity for historically marginalized population groups by identifying equity analysis methods, conducting equity assessments in agencies, allocating resources for advancing equity, and engaging with underserved populations. The Department is expected to release a strategic plan in February 2022 on how to implement the executive order. The Justice40 initiative requires the federal government to spend at least 40 percent of its resources on clean energy investments in disadvantaged communities, which has implications for transportation investment. These actions are expected to filter down to requirements for state DOTs and other recipients of federal money in much the way that the Environmental Justice executive order (EO 12898) did in 1994.

This report examines how state DOTs and MPOs in California evaluate and advance equity in transportation plans, processes, and implementation. We draw on the Caltrans Equity Statement to define transportation equity as a condition where everyone has access to what they need to live a meaningful life.[4] We used a content analysis to examine state DOT plans and strategy documents, interviewed key staff at state DOTs, and summarized select MPO long-range transportation plans (LRTPs) and transportation improvement program (TIP) documents to gather information on agency practices. We describe innovative methods that agencies are using to advance equity and identify gaps in practice. We conclude with recommendations for CalSTA and Caltrans on promising practices to advance transportation equity in the state, and we hope other agencies within California and across the U.S. can draw on these findings to implement changes in their own agencies.

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[4] https://dot.ca.gov/about-caltrans/equity-statement

An Assessment of how State and Regional Transportation Agencies Advance Equity
in Transportation Plans, Processes, and Implementation

8

Methods

Transportation Plan Review

To select state practices for further review, we began with an initial scan of plans from 49 state departments of transportation (all states except California) to identify those with extensive information about equity in planning and programming in their documentation. The initial scan reviewed whether statewide or long-range transportation plans prominently featured topics of equity, whether public participation plans and guidance had advanced methods for engaging diverse members of the public, whether equity metrics were used to prioritize projects, and whether the DOT had an office of equity to advance equity initiatives in the agency. We also prioritized any DOTs where we had personal contacts to facilitate searches and interviews. We selected six DOTs for further review, representing several regions across the U.S.: Washington, Oregon, Minnesota, Illinois, Pennsylvania, and Delaware.

We selected several plans and documents to review from each of the six states. For consistency, we reviewed each state's LRTP and active transportation plan (or the equivalent bicycle and pedestrian plans). We also reviewed each DOT's most recent statewide transportation improvement program (STIP) documents, but none provided sufficient detail on project selection methods to allow us to analyze equity-based prioritization practices. We deliberately did not review documents related to personnel or procurement, such as equal employment opportunity (EEO) strategies or disadvantaged business enterprise (DBE) requirements. To limit the scope of the scan, we excluded project implementation guidance for impact assessment; that is, documents that describe socioeconomic impact analysis during NEPA review. And while public outreach and community engagement are key components of equity-based practices and helped in the selection process of the state DOTs, we did not review public participation plans or policies and we did not extensively analyze community engagement within the plans we did review. The full list of state DOT documents included in the review is shown in Table 1.

An Assessment of how State and Regional Transportation Agencies Advance Equity in Transportation Plans, Processes, and Implementation

9

Table 1. State DOT plans reviewed

State	Abbreviation	Publication year	Document
Statewide Transportation Plans			
DE	DelDOT	2019	Long Range Transportation Plan
IL	IDOT	2019	Long Range Transportation Plan
MN	MnDOT	2017	Statewide Multimodal Transportation Plan
OR	ODOT	2006	Oregon Transportation Plan
OR	ODOT	2021	Strategic Action Plan
PA	PennDOT	2016	Long Range Transportation Plan
WA	WSDOT	2019	Washington Transportation Plan: 2040 and Beyond
WA	WSDOT	2018	Washington Transportation Plan, Phase 2 - Implementation
Active Transportation Plans			
DE	DelDOT	2007	Pedestrian Action Plan
DE	DelDOT	2018	Blueprint for a Bicycle-Friendly Delaware
IL	IDOT	2014	Illinois Bike Transportation Plan
MN	MnDOT	2016	Statewide Bicycle System Plan
MN	MnDOT	2020	Draft Statewide Pedestrian System Plan
OR	ODOT	2016	Bicycle and Pedestrian Plan
PA	PennDOT	2019	Active Transportation Plan
WA	WSDOT	2021	Active Transportation Plan Part 1

We conducted a content analysis of each of the selected documents to identify major themes associated with equity. Search terms included those related to demographic characteristics (race, income, gender, age, etc.), disadvantaged status, public engagement, disparate outcomes, and federal policies (FAST Act, MAP-21, Environmental Justice, etc.).[5] We used keyword-in-context coding methods to ensure each occurrence of the selected terms were appropriately related to the research topic. We then generated more precise codes to identify each relevant section of text, and grouped those codes into related themes, which organize the findings of this report within each plan type.

During the analysis process, we developed a hierarchy that identified the degree to which each concept advanced equity in practice. The highest level identified those equity-related concepts that could be operationalized and repeated, like performance or procedural measures. The next level identified document

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[5] MAP-21, the Moving Ahead for Progress in the 21st Century Act of 2012 (P.L. 112-141) authorized over $105 billion in federal funds for surface transportation programs for fiscal years 2013 and 2014. The Fixing America's Surface Transportation (FAST) Act of 2015 (Pub. L. No. 114-94) authorized $305 billion in federal surface transportation spending over fiscal years 2016 through 2020.

An Assessment of how State and Regional Transportation Agencies Advance Equity in Transportation Plans, Processes, and Implementation

10

locations where equity was integrated into visions and goals, reflecting the intent of the agency in implementing equity practices. The lowest level identified concepts where equity was acknowledged but did not rise to the level of goals or implemented metrics. This report focuses on the highest level of the hierarchy; that is, those performance measures and procedures that could be readily applied in other contexts. For the report, we summarize the main themes and equity measurements and briefly describe engagement practices.

To supplement the state DOT plan analysis, we conducted a scan of the LRTPs and Federal TIP (FTIP) documents of six California MPOs to identify the methods they use to prioritize projects based on equity. We selected MPOs that covered a wide geographic range without replicating previous research. We followed similar methods to previous research conducted on a nationwide scan of MPOs (*1*) and attempted to use the same classification system to define the potential that each prioritization method would have for advancing equity. The review of these plans was less systematic than the review of state DOTs—we did not code the documents—though we did scan each of the documents thoroughly. The MPOs and documents reviewed are found in Table 2.

Table 2. California MPO documents reviewed

Metropolitan Planning Organization	Document
Sacramento Council of Governments (SACOG)	2020 MTP/SCS
Sacramento Council of Governments (SACOG)	2021–2024 MTIP
San Joaquin Council of Governments (SJCOG)	2018 RTP/SCS
San Joaquin Council of Governments (SJCOG)	2021 FTIP
Santa Barbara County Association of Governments (SBCAG)	2050 Connected (2021 RTP/SCS)
Santa Barbara County Association of Governments (SBCAG)	2021 FTIP
Fresno Council of Governments (Fresno COG)	Fresno County Regional LRTP 2019–2050
Fresno Council of Governments (Fresno COG)	2021 FTIP
Kern Council of Governments (Kern COG)	2018 RTP/SCS
Kern Council of Governments (Kern COG)	2021 FTIP
Tahoe Regional Planning Agency (TRPA)	2020 RTP
Tahoe Regional Planning Agency (TRPA)	2021–2024 FTIP

Interviews

Following the plan review, we conducted interviews with representatives from five of the six DOTs (excluding Delaware, whose key personnel were unable to participate). Interview participants included directors, bureau chiefs, and staff from planning and policy divisions, Title VI[6] program coordinators, community engagement managers, strategic partnership directors, and others who were knowledgeable about equity in planning and

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[6] Title VI of the Civil Rights Act of 1964, 42 U.S.C. 2000d et seq., prohibits discrimination on the basis of race, color, or national origin in any program or activity that receives Federal funds or other Federal financial assistance.

An Assessment of how State and Regional Transportation Agencies Advance Equity
in Transportation Plans, Processes, and Implementation

11

programming. Interviews generally consisted of at least three agency staff. In some cases, we conducted multiple interviews with the same agency to speak with a larger number of people who had the relevant expertise or to accommodate scheduling needs.

We conducted structured group interviews lasting about an hour, deviating from the script only when questions had been covered elsewhere in the conversation or when time constraints prohibited us from asking every question. The interviews covered topics including the agency's approach to incorporating equity into planning and programming, how performances measures are used in equity prioritization or processes, the barriers agencies face in adopting equity-based practices, engagement methods, and promising practices in the way the agency approaches equity. We conducted interviews over Zoom; we recorded each interview, obtained the live transcription, and took notes on the conversations. We then summarized the interviews and identified responses and gaps according to the themes put forward in the interview guide.

The interview participants also identified additional documents for us to review that we had not already analyzed in the plan review. Due to time constraints, we did not systematically code that set of documents. Rather, we used the themes generated from the earlier plan review to locate new information about other equity approaches.

An Assessment of how State and Regional Transportation Agencies Advance Equity
in Transportation Plans, Processes, and Implementation

12

Findings

State DOT Long Range Transportation Plans (LRTPs)

Outreach and Community Engagement

Many of the LRTPs highlighted outreach and engagement efforts with underrepresented population groups as ways to ensure a diverse set of voices was captured in the plan-making process.

The Minnesota Department of Transportation (MnDOT) Statewide Multimodal Transportation Plan (SMTP) conducted in-person outreach at community events, workplaces, and stakeholder meetings as well as online outreach using an interactive website, online surveys, and social media posts and advertisements. The agency highlighted its work with underserved communities through meetings with community leaders, outreach materials translated into Spanish, Hmong, and Somali, and targeted events and online ads. Their work with partners and stakeholders included representatives from several tribal governments and advocacy groups. The plan analyzed survey responses collected by key demographic groups (race, age, gender, and geography) to better understand the public's priorities.

The Illinois Department of Transportation (IDOT) worked with a university research center to conduct outreach on public responses to the LRTP's priorities. This outreach work prioritized reaching a sample of high-quality respondents that was statistically representative of the state's population. The agency employed a combination of resources to collect public input, such as the LRTP website, multiple surveys, MPO outreach, and Conversation Cafes (described more in the Interviews section).

Washington State's Plan consists of two parts. The first, a policy document from the Washington State Transportation Commission that defines the state's transportation vision, was not specific in identifying the outreach methods used or who participated in the development of the plan, except to say that input was received from a variety of stakeholders, including "mobility advocates" who provided "land use, economic, social, and environmental perspectives" (p. viii). The second, the implementation plan, which is the formal LRTP, is consistent with Washington State Department of Transportation (WSDOT) Community Engagement Plan. The agency conducted outreach to a long list of community-based organizations who serve people of color and immigrant groups, tribal governments, and disability advocacy organizations, in addition to collecting feedback from a web-based survey.

Outreach by the Pennsylvania Department of Transportation (PennDOT) included both engagement with peer or local agency stakeholders and the public. Their public outreach was centered on the use of an interactive mapping tool called MetroQuest, which enabled the public to geolocate comments to specific projects in addition to general comments on the plan's priorities. The Oregon Transportation Plan also included outreach to professional stakeholders and the public through public meetings and a telephone and web-based survey.

An Assessment of how State and Regional Transportation Agencies Advance Equity in Transportation Plans, Processes, and Implementation

13

The Delaware Department of Transportation (DelDOT) did not mention how it engaged the public for the LRTP development, though the agency explains that it is "employing new and more proactive public engagement tools online and through mobile apps" (p. II-10) to expand its outreach efforts.

While equity-based outreach methods seemed relatively robust in long range transportation planning—at least from the agency perspective—equity practice appeared to be more nascent across the plans we reviewed. Not every state plan had examples of how they were advancing equity through analytical methods or performance measure tracking, though most identified some approach to equity to varying degrees. For example, some discussed it in their goals and objectives, some offered definitions of equity, and others had performance measures that tracked equity.

Goals and Objectives

The MnDOT SMTP identifies five objectives: open decision-making, transportation safety, critical connections, system stewardship, and healthy communities. Open decision-making is concerned with transportation planning and delivery process; several of the performance measures in this objective track equity, primarily focused on demographic characteristics. Under this objective, the agency tracks how many people are confident in MnDOT's operations across key demographics, in addition to the share of "minorities and women" employed. Equity considerations were also explicitly considered under the critical connections objective, which addresses multimodal access, by measuring Americans with Disabilities Act (ADA) accessibility in the state-owned pedestrian network. Some of the other performance measures across the objectives are related to equity concerns, such as access to jobs, but are not explicitly equity measures. However, the plan identifies next steps that will lead to additional equity-based objectives and performance measures by initiating an "advancing transportation equity" report and piloting tools and strategies to improve the inclusion of equity into project-level decisions.

DelDOT's LRTP follows data-driven decision-making processes, one component of which is a technical scoring system to prioritize capital projects. The evaluation criteria consist of seven categories, two of which address equity in some way. The first, *multimodal mobility, flexibility, and access*, is weighted 15.6 percent for the "ability to provide efficient movement of people and goods by motor vehicle, pedestrian, bicycle, and transit modes" (p. II-17). This criterion takes ADA accessibility into consideration, but does not specifically weight projects based on whether they improve accessibility. Rather, the scoring within this category is somewhat subjective by offering points for "moderate" or "significant" improvements. The second, *impact on the public/social disruption/economic justice*, is weighted 7.2 percent for the "ability of a project to support and enhance existing communities" (p. II-17). Here again, the scoring system awards points in a subjective manner by awarding points for no community impact or a positive community impact, and not awarding points for a negative community impact.

Several strategies and action items within modal specific components of the DelDOT LRTP prioritize improvements with an equity focus. These include investment strategies and policies related to public transit, cycling, and walking. (Cycling and walking in Delaware's plans are discussed in more detail below.) Ongoing

An Assessment of how State and Regional Transportation Agencies Advance Equity
in Transportation Plans, Processes, and Implementation

14

strategies to advance equity in public transit include serving low-income and blue-collar communities to support access to jobs, streamlining the eligibility process for paratransit, and improving pedestrian access—including ADA access—to transit.

The IDOT LRTP is structured around five performance goals: economy, livability, mobility, resiliency, and stewardship. Equity-related measures and objectives are primarily found under the livability goal; a specific objective under livability includes enhancing existing policies and practices related to underserved populations, going beyond the minimum federal environmental justice (EJ) and Title VI requirements. Several performance measures address equity considerations under the livability goal. They include the number of transportation agencies within the state using performance-based project selection processes; the number of multimodal connections in the state, emphasizing underserved populations; the number of policies, practices, and outreach opportunities that better accommodate underserved populations; and the number and availability of non-auto modes for underserved populations.

The IDOT plan also sets forth a number of recommendations for future work related to incorporating equity into planning processes. The department currently uses a performance-based project selection tool for highway projects. A critical recommendation is to expand the use of this tool, or develop a similar tool, to incorporate the use of performance measures when selecting non-highway projects. The recommended strategy suggests that the agency consider environmental justice and equity as central components of the prioritization process. Some of the strategies that address the objective to enhance policies and practices related to underserved populations are to review EJ policies, improve outreach to underserved communities, find better ways to mitigate project impacts, explore pricing options for additional funding, and develop a public involvement manual for effective public engagement. Another potential equity strategy is the development of Complete Streets projects, which de-prioritize automobile movement and emphasize multimodal movement through travel corridors. The plan has several strategies related to Complete Streets planning and implementations, in part a response to the 2007 state law that requires a Complete Streets approach to transportation plans and programs.

The Oregon Transportation Plan (OTP) is an older document, adopted in 2006, but is currently being updated and is expected to be published in 2023. (The OTP has several more recent subordinate modal plans.) The plan conducted a policy analysis on seven scenarios, including changes to prices, land use, operational management, and capacity. The plan used eight performance measures to evaluate the scenarios, including one focused on equity, defined as "distributing benefits and burdens fairly; consideration of the benefits afforded to and costs borne by all social, economic and geographic groups of people" (p. 77). The analysis showed that none of the scenarios were expected to adversely impact equity. The Statewide Strategic Action Plan is a newer document that updates the priorities that underlie the OTP. The plan adopts three priorities: equity, a modern transportation system, and sufficient and reliable funding. The equity priority updates the language used in the OTP, calling for ODOT to "prioritize diversity, equity, and inclusion by identifying and addressing systemic barriers to ensure all Oregonians benefit from transportation services and investments" (p. 2). The equity priority adopts goals to build equity in the department workforce, promote investments to historically

An Assessment of how State and Regional Transportation Agencies Advance Equity
in Transportation Plans, Processes, and Implementation

15

marginalized groups, meaningfully engage communities, and address climate equity in marginalized communities.

The Washington Transportation Plan (WTP) comes in two parts: a policy plan (part 1) published by the Washington Transportation Commission that identifies a vision for addressing strategic issues in the state, and an implementation plan (part 2) that identifies action items to achieve the vision laid out in part 1. Part 1 explains several strategies meant to advance transportation equity, particularly through stewardship of the transportation system, defined as "continuously improv[ing] the quality, effectiveness, and efficiency of the transportation system" (p. 64). The primary equity-focused strategy in this category is to develop a transportation equity analysis toolkit to identify current disparities in transportation access and investment, and impacts of future investments. The plan acknowledges that the agency has significant work to do with respect to defining and operationalizing equity.

Part 2 of the WTP, which focuses on implementation, identifies future actions that WSDOT will take to use equity-based performance measures. One of the focus areas is to "enhance multimodal connections and choices" (p. 15). The action items within this focus area include acknowledging the need to address diverse users of the transportation system, including a need to provide facilities and services to underserved communities. The related action item is to adopt metrics that will measure performance toward these goals. Equity-priority populations include traditionally underserved population groups, those with specialized needs, and rural populations. Steps toward advancing or ensuring equity also appear in the focus area on financing the transportation system. One action item includes a recommendation to find ways to improve funding flexibility for multimodal implementation while ensuring equity, including seeking legislative changes and developing public–private partnerships.

The PennDOT LRTP does not identify specific strategies or actions that address transportation equity other than those discussed in connection with outreach and community engagement above.

State DOT Active Transportation Plans

The active transportation plans reviewed reflected more advanced applications of tools, performance measures, and objectives to advance equity compared to the set of LRTPs. The MnDOT Statewide Pedestrian Plan offers an illustrative example. Planners conducted the Priority Areas for Walking Study (PAWS) to identify the factors that indicate demand for walking and have the most need for investment. They divided the state into half-mile wide hexagons, and developed an index for each based on five characteristics: infrastructure supply, population health, land use characteristics, safety, and equity (Figure 1). The factors were tabulated into priority tiers according to whether they met certain thresholds and then normalized both across the entire state and within DOT districts (Figure 2). As of the publication of the plan, there was an action item to determine how different stakeholders could use the PAWS scores in the project selection process and during development review to advocate for improvements in high-need areas.

An Assessment of how State and Regional Transportation Agencies Advance Equity in Transportation Plans, Processes, and Implementation

16

EXHIBIT 4-2: Prioritized Areas for Walking (PAWS) Scoring Factors

CATEGORY	FACTOR	SCORING APPROACH
Infrastructure supply	Within a five-minute walk of a transit stop (400m or ¼ mi)	Hexagons overlapping with ¼ mi buffer around transit stops receive a point
Infrastructure supply	Calculated ADT, trunk highways	Hexagons containing a TH segment over 2,000 ADT receive a point
Infrastructure supply	ADA sidewalk inventory	Hexagons with ratio of total sidewalk mileage to TH road mileage less than 1, and located in urban areas, receive a point
Infrastructure supply	Permeability exercise scoring	Hexagons with a permeability score greater than 2 receive a point. A score of two or more indicates long distances between intersections or other crossings.
Health	Life expectancy	Hexagons with life expectancy lower than MN average receive a point
Land-use context	Pedestrian generating jobs	Hexagons receive a point based on two criteria that represent destinations that could show demand for walking. This is used instead of pedestrian modeling or count data: 1) One or more of the following sectors are represented in the hexagon: Retail Trade, Educational Services, Health Care, Arts, Entertainment, Recreation, Accommodation and Food Service, Other Services (NAICS codes 44, 45, 61, 62, 71, 72 and 81); and 2) The hexagon has 108 or more jobs in the sectors shown above (greater than the average for these combined sectors)
Land-use context	Within 1 mile of a K-12 school	Hexagons overlapping with 1 mi buffer around school locations receive a point
Safety	Buffered cluster analysis of crashes	Hexagons with a cluster of 2 or more pedestrian crashes receive a point
Safety	Maximum (TH) intersection safety risk score for non-motorists	Hexagons containing an intersection with score greater than or equal to 3 receive a point
Equity	Percent population age 5-17	Hexagons greater than or equal to MN average receive a point
Equity	Percent population age 65+	Hexagons greater than or equal to MN average receive a point
Equity	Percent population with disability	Hexagons greater than or equal to MN average receive a point
Equity	Percent population people of color	Hexagons greater than or equal to MN average receive a point
Equity	Percent of population below 200% poverty level	Hexagons greater than or equal to MN average receive a point
Equity	Percent of people without access to a vehicle	Hexagons greater than or equal to MN average receive a point
Equity	Percent of population that does not speak English well or at all	Hexagons greater than or equal to MN average receive a point
Equity	Percent of population with no high school diploma	Hexagons greater than or equal to MN average receive a point
Equity	Percent of population non-citizen, foreign born	Hexagons greater than or equal to MN average receive a point
Equity	Tribal government areas	Hexagons overlapping with tribal government areas receive a point

Figure 1. PAWS scoring criteria

Source: MnDOT Statewide Pedestrian Plan

An Assessment of how State and Regional Transportation Agencies Advance Equity
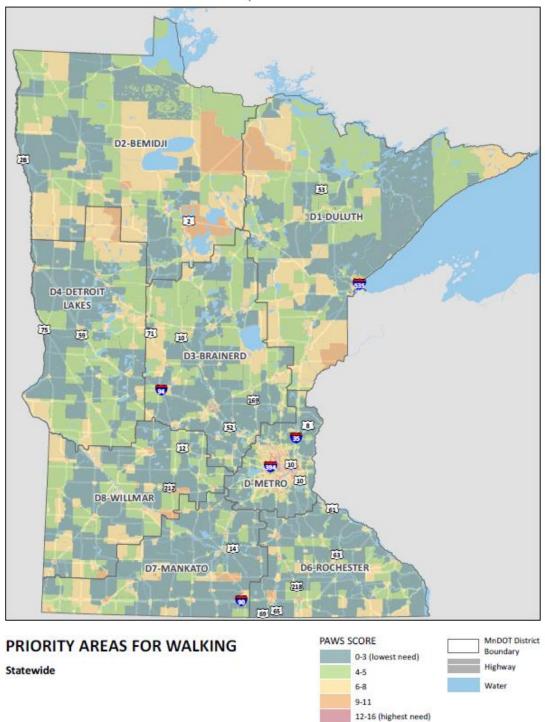in Transportation Plans, Processes, and Implementation

17

EXHIBIT 4-3: Pedestrian Improvement Prioritization - Statewide

Figure 2. PAWS statewide ranking

Source: MnDOT Statewide Pedestrian Plan

An Assessment of how State and Regional Transportation Agencies Advance Equity
in Transportation Plans, Processes, and Implementation

18

No other plans identified specific tools used to develop their plans or to derive performance measures, but the ODOT Bicycle and Pedestrian Plan refers to a pedestrian safety score as an example of a performance measure considered but not ultimately adopted. The score takes into account crashes, traffic volume, speed limits, street widths, crossing characteristics, signals, and transit stops. The score was not adopted as a performance measure because of data limitations and uncertainty in how to aggregate scores statewide, but this type of index could be combined with demographic data or other characteristics identifying vulnerability and disadvantage to produce an equity-forward metric.

Several of the active transportation plans have performance metrics related to equity. States used a variety of criteria to track their progress. The MnDOT pedestrian plan explicitly recognizes that racial equity needs to be a guiding component of the plan; guiding principles include rectifying inequity, planning multimodal systems, prioritizing safety over speed, and mitigating climate impacts. One of the plan's several goals explicitly addresses equity ("create healthy and equitable communities") and several performance measures that track that goal. Those measures include the percentage of programmed projects that benefit high-need communities as identified by PAWS, the miles and percentage of sidewalks that are ADA compliant, total walking trips for short destinations, and the percentage of sidewalk gaps filled. The MnDOT bicycle plan has fewer performance metrics related to equity, but one measure aims to track the percentage of women who bicycle in non-winter months. Consistent with research on bicycling preferences among women, the plan describes how the number of women who cycle is "linked to higher perceptions of safety" and serves as an "important indicator in whether a broad spectrum of bicyclists perceives [bicycle] facilities as comfortable and safe" (p. 52).

At the time of our initial analysis, WSDOT had not released specific performance metrics for their Active Transportation Plan; a draft of these became available in mid-September 2021. However, the concepts underlying the performance metrics were available. WSDOT is measuring goals toward connectivity, safety, opportunity, participation, and partnership in the bicycle and pedestrian networks (Table 3). Each of these goals has conventional types of performance measures, like network completeness, number of people killed or seriously injured, mode share, and jurisdictions with active transportation plans. However, each of the goals also includes a number of equity checks; that is, questions that ask whether certain populations have disproportionately less access to the active transportation network with regard to the five goals. The equity checks address questions of distribution of access and risk that are common to environmental justice analyses, in addition to more targeted questions about how investments are applied to address existing disparities, why certain populations may be using active transportation less, and how the department is building capacity for partners—governmental, tribal, private, and non-profit—to participate in the planning process. The equity checks are also notable for their focus on health, asking whether there are disparities in transportation pollution and emissions among certain populations. This particular performance measure responds to Washington State's Healthy Environment for All (HEAL) Act, which requires state agencies to advance environmental justice in their planning and programming.

An Assessment of how State and Regional Transportation Agencies Advance Equity in Transportation Plans, Processes, and Implementation

19

GOAL	PERFORMANCE MEASURES	EQUITY CHECKS
Connectivity: Complete comfortable and efficient walking and rolling networks so people can reach their destinations and other forms of transportation and have everyday access to physical activity.	Network completeness: Facility length, reductions in gaps (along and across the system) where facilities are recommended, access to jobs, goods and services, and modal connections Network quality: Level of traffic stress	Do certain populations have access to fewer places or fewer miles reachable by high-comfort, low-stress facilities accessible to all abilities?
Safety: Eliminate deaths and serious injuries of people walking and rolling.	Total number of people killed or seriously injured in driver crashes with pedestrians or bicyclists Lane miles with speed limits based on principles of injury minimization.	Are certain populations at a higher risk for deaths and serious injuries while walking or rolling?
Opportunity: Eliminate disparities in access to safe, health active transportation connections for people and communities most dependent on walking, bicycling and transit.	Network performance measures in communities of concern Intermodal access Greenhouse gas emissions avoided by walking/bicycling miles	Are we working with historically disadvantaged communities in ways that enable and empower them to identify their priorities in addressing active transportation disparities? Are we applying investments to address disparities? Are certain populations more subject to health disparities associated with transportation pollutants/emissions?
Participation: Increase the percentage of everyday short trips made by walking or bicycling.	Percentage of trips by walking/bicycling Percentage of adults meeting physical activity recommendations Percentage of children walking/biking to school Ferry walk-on/bike trips Transit access by mode	Do certain populations make a smaller percentage of everyday short trips using active transportation? Do we understand why, and whether this is due to issues we can seek to address together?
Partnership: Collaborate and coordinate with local, regional, state, tribal, federal, private, and nonprofit partners to complete and improve the network access across boundaries.	Percentage of jurisdictions with an active transportation plan that includes measurable goals and prioritization or evaluation methodology Percentage of population covered by such plans Percentage of total lane miles covered by such plans National rankings: America's Health, Bicycle-Friendly State, Safe Routes to School Report Card, Dangerous by Design	Are we building the capacity for partners to participate effectively? Are we providing information and guidance for places from very rural to very urban?

Table 3. Equity checks and performance measures for WSDOT ATP Goals.

Source: Adapted from WSDOT Active Transportation Plan

The IDOT Bike Transportation Plan did not have immediately implementable performance metrics. Several of the objectives in planning and policy action items related to ensuring complete streets were tracked and implemented and that bicycle–transit connections were improved. One objective directs the agency to "incorporate environmental justice considerations in project planning and development" (p. 33). Action items under this objective include updating planning guidelines to prioritize transportation options for vulnerable populations, establishing an EJ working group, and enhancing access for people with disabilities by working with partner agencies to address ADA considerations. There was no separate IDOT pedestrian plan to review.

In the process of developing the ODOT Bicycle and Pedestrian Plan, the agency reviewed state and local plans, policies, and programs, and participated in conversations with stakeholder groups, to identify the needs and opportunities their plan should address. It identified equity as a concern across these documents and conversations but acknowledged that plans and policies lacked specificity as to how to achieve equity—detailed equity analyses were not conducted, for example. The data to identify how disadvantaged populations traveled and the barriers to walking and cycling they faced was not available. Thus, one of the goals of the plan included addressing equity through several policies and strategies. One policy focused on using mapping and data tools to identify geographic areas where disadvantaged communities lacked transportation options, identifying gaps in pedestrian and bicycle systems in disadvantaged communities, and developing relationships with Title 1 schools (schools with high poverty rates). Other policies included surveying residents to understand barriers to walking and cycling, integrating equity criteria into decision making about pedestrian and bicycle investments, improving outreach to disadvantaged populations, and building relationships with local jurisdictions to ensure pedestrian and bicycle connections in underserved areas. A related goal is promoting health through daily walking and cycling; an equity-related strategy is to identify locations and populations with high rates of chronic health conditions, and "prioritize actions to address disparities through transportation policies, plans, and project selection" (p. 41).

The ODOT plan has six performance metrics: safety, utilization, system performance, facility implementation, state and local recognition, and data. Equity is not a separate performance measure, but demographic indicators were included in several of the metrics as optional reporting levels. For example, under facility implementation, which measures the percentage of streets near transit that have sidewalks or a low-stress bicycle facility, the plan notes that "provision of bicycling and walking facilities in relation to transit may vary in different regions or cities, or by demographic factors," and that "tracking and reporting facility implementation for these different areas or groups may shed light on important equity or other policy considerations" (p. D-7). The plan also identifies performance measures considered or not adopted. One with potential equity implications, as described earlier, is the pedestrian score used in the ODOT Pedestrian and Bicycle Safety Implementation Plan.

The DelDOT bicycle plan includes a strategic implementation plan with three goals—develop a complete, comfortable, connected bicycle network; improve bicyclist safety and confidence; foster a culture of bicycling—and several recommendations within each goal. Few of these recommendations specifically address equity, though some have the potential to do so, such as adopting a Complete Streets implementation strategy, developing awareness-building campaigns, and establishing and adopting performance metrics. One

An Assessment of how State and Regional Transportation Agencies Advance Equity in
Transportation Plans, Processes, and Implementation

21

recommendation does explicitly acknowledge vulnerability in cycling by recommending the agency reduce risk and perceived risk associated with cycling and review enforcement practices to protect vulnerable users. This primarily concerns vulnerability with respect to road usage rather than social position, but a specific recommendation is to train "law enforcement officials to deal with issues of equity (e.g., when to ticket sidewalk riding)" (p. 67). However, this is a low priority among the list of recommendations to implement. Another key equity-related objective is to collect demographic, socioeconomic, health indicator, and essential service location data as an overlay for a GIS map of statewide planned bicycle projects. The plan identifies equity as a "key principle of bicycle planning in Delaware" (p. 98) but leaves it to local and regional agencies to incorporate equity principles into their own prioritization processes rather than establishing directives from the state.

The DelDOT Pedestrian Action Plan is significantly older and, as such, has fewer elements with respect to tools, performance measures, and objectives that relate to equity. The primary equity-related objectives in the plan relate to universal access: establishing a statewide ADA coordinator, meeting ADA compliance, and ensuring that all agencies within the state use ADA-compliant design standards and guidelines.

Equity is a key goal in the PennDOT Active Transportation Plan. In laying out the context of pedestrian and cyclist safety in the state, the plan includes an equity analysis that identifies the intersection of areas with vulnerable populations and areas with high numbers of crashes or fatalities. The plan includes an explicit goal of providing transportation equity, defined as providing "opportunities for people of all ages, abilities, races, ethnicities, and incomes throughout urban, suburban, and rural areas across Pennsylvania to bicycle or walk" (p. 56). There are four implementation strategies to accomplish this goal, including a plan to develop equity-based prioritization criteria for cycling and walking investments, improving connections to transit, and improving engagement and outreach with underserved populations. The prioritization strategy includes implementation steps to map projects to evaluate whether previous funding has been equitably distributed to underserved communities, to develop a method to address any funding disparities, and to develop a working group to provide technical assistance for planners in underserved communities submitting grant applications. To track performance, the plan suggests that PennDOT track the share of pedestrian and bicycle grants awarded to vulnerable communities.

State DOT Interviews

MnDOT

The Minnesota DOT's approach to equity begins with the Advancing Transportation Equity Initiative, the goal of which is to "to better understand how the transportation system, services and decision-making processes help or hinder the lives of people in underserved and underrepresented communities" (5). The initiative was initially laid out in the Statewide Multimodal Transportation Plan and later incorporated into the agency's Strategic Operating Plan. The initiative is part listening tour, in which the agency seeks to learn more about transportation experiences of historically marginalized communities in the state, and part an effort to develop

An Assessment of how State and Regional Transportation Agencies Advance Equity in Transportation Plans, Processes, and Implementation

22

solutions in partnership with these communities to advance equity. The listening sessions, known as Community Conversations, began in 2018 and ran through 2021. They link planners and engineers from MnDOT with other local government and transportation partners, tribal governments, and community-based organizations that represent underserved populations to document the needs that exist for vulnerable communities and use that information in their decision-making processes. The goal is to emphasize people over rigid processes and systems as they work to acknowledge the painful historic harms that transportation has caused and the disparaging effects on specific communities while identifying improved outcomes.

A second purpose of the Community Conversations is to develop a definition of transportation equity. MnDOT has a clear need for consistency in how the term is used both internally and externally. The agency is conducting workshops with external stakeholders, including the public at large, to formulate a working definition and anticipate finalizing their definition by 2022. It is important to note that the agency is not seeking feedback on a definition that is already decided upon; instead, it distributed information and a draft definition[7] for the public to respond to. The interviewees emphasized that this process is not the typical DOT process, rather it reflects an evolving approach to more equitable decision-making processes, describing it as a "momentous" change for the agency.

The internal processes to advance equity at MnDOT are still maturing. The agency relies on a collaborative effort across multiple offices and teams to advance equity. This approach emphasizes looking internally and identifying the infrastructure, resources, and leadership that is in place to advance equity. An example of embedding equity into internal processes is an update of the Plan Development Guidelines. The document is a "checklist" of sorts that helps the planning leads in the agency determine what belongs in each of their modal and system plans. The agency is currently revising the document to ensure equity is present in the guidelines, despite the fact that there are no federal or state requirements to do so. MnDOT is working to adopt an equity lens framework that provides the foundation for the work in every office, from highways to airports, rail, even plant materials. For example, the team working on connected and autonomous vehicles (CAVs) takes equity as central to their strategies. They understand that advocates see CAVs as a potential liberation for people with disabilities and others with constrained mobility. The agency's approach to equity is less clear when moving beyond planning to the rest of the project delivery pipeline, though it is working to make sure equity permeates the process. A significant challenge to the evolution of processes is the siloed nature of transportation professionals at the agency. While there is space for equity to propel their work, it is easy to encounter entrenched perspectives, for example, about the need to prioritize highways in a multimodal system.

The interviewees described equity-based metrics as a work in progress. The primary barrier to advancing equity that MnDOT identified is a lack of data, which limits the way equity can be folded into performance metrics. A limiting factor is that data are not reported at a fine-grained level; data are often reported at the statewide

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[7] The working definition of equitable transportation is: "*Transportation systems* that support multi-modal options that are affordable, sustainable, reliable, efficient, safe, and easy to use; *Quality transportation services* that are accessible to all populations for reaching destinations independently if needed; and *Transportation decision-making processes* that incorporate inclusive public engagement to reduce the longstanding socioeconomic disparities experienced by underserved and underrepresented communities" *(5)*.

An Assessment of how State and Regional Transportation Agencies Advance Equity in Transportation Plans, Processes, and Implementation

23

level, causing the analysis to prioritize the interests of the majority because the numbers average out differences at smaller levels of geography. Likewise, data are often not reported in a racially disaggregate manner, making it difficult to isolate transportation needs for Black people and other racial groups in the state. These limitations create challenges for tracking performance; the latest bicycle and pedestrian plan, for example, does not include performance measures that focus on equity because the data are not available. The interviewees described the performance measures that do exist across modes as transportation metrics, like pavement quality, bridge status, and vehicle miles traveled, but not people metrics, like access to employment or quality of life measures. Nevertheless, the staff is hopeful that equity will inform project selection in future STIPs and ensure a people-centered approach informed by data.

One program where equity is an important component of decision making is the Safe Routes to School (STRS) program. Incorporating equity in approving SRTS projects previously was a subjective process, and the agency struggled with objectively ensuring the schools in highest need were prioritized. After working with a steering committee, MnDOT developed an equity tool known as the Student Transportation Equity for Priority Populations Tool that provides a score to rank applications, consisting of a weighted sum of seven equity indicators based on demographics, vehicle access, and safety concerns near the school (*6*). Applications serving schools in higher need get higher scores, all else equal.

This tool came out of MnDOT's innovative Transportation Equity Labs (*7*), an office that helps other staff experiment with ways to improve considerations of equity in planning and programming. The office's goals are to operationalize the consideration of equity in transportation approaches that the agency takes and to build capacity among other staff members to meet equity needs. The nature of the labs is to "emphasize the space of curiosity," as an interviewee articulated, and to allow those with transportation expertise the leeway to admit that some previous decisions were mistaken and detrimental to equity. In the initial iteration, the transportation equity lab did not actually put equity front and center; instead, its activities were identified as programs and process reviews. The idea to prioritize equity and allow space for exploration of equity came out of a prospective review of the SRTS strategic plan in which stakeholders identified equity as a top priority. This then ensured that later, when implementing the strategic plan, every strategy was reviewed to ensure that it reflected the agency's commitment to equity.

Promising practices at the agency moving forward include infusing equity into the department culture in multiple ways. One is a commitment to valuing communities, which has several components. The interviewees emphasized the need to meet community members "where they are at"; in other words, recognizing that transportation needs are only one set of a community's many priorities. Many of the problems they face, such as affordable housing and economic precariousness, do not strictly involve transportation issues, but are related. While MnDOT is a department of transportation, it acknowledges that it must work outside its disciplinary boundaries to achieve equitable solutions, which is difficult for an agency with a long-time focus on building highway infrastructure. It also means adopting an awareness that communities are in crisis on multiple fronts, particularly during the Covid-19 pandemic. Slowing down the planning process by shifting priorities to solving immediate needs is an appropriate response. Yet at the same time, the agency must be nimble to work effectively with communities, not defaulting to long timelines because of historic bureaucratic processes.

An Assessment of how State and Regional Transportation Agencies Advance Equity in
Transportation Plans, Processes, and Implementation

24

Another form of valuing communities is compensating people for their time. Internal policies make this difficult to do consistently, but there is growing recognition that people bring particular expertise and should be paid to share that insight. Interviewees also discussed the value of qualitative data and the importance of storytelling. Equity issues are not easily reduced to quantitative metrics, and the agency wants to find ways to consistently incorporate findings from community experiences.

Another set of promising practices concerns professionalization around topics of transportation equity. The agency would like to see additional positions that focus on transportation equity. For example, the new Title VI coordinator has been active in ensuring inclusive language practices for populations with limited English proficiency, but much more can be done with additional staff. In addition to diversity and inclusion training, transportation equity training will soon be required for MnDOT staff to increase capacity among project managers and leaders to understand their role in advancing equity in the work they do daily. MnDOT staff will also have access to government-to-government training in tribal–state relations. This training, heavily influenced by tribes, will teach staff how to work with tribal governments in Minnesota, to improve outcomes in tribal communities. In a related manner, MnDOT is currently working with FHWA to establish a peer exchange among other state DOTs on advancing transportation equity.

A particularly innovative practice at MnDOT is the development of a new process for managing the use of rights-of-way. An interviewee provided the example of a large homeless encampment in the DOT right-of-way, a site of political attention and reoccupation, which has a high number of Native unhoused people. The situation prompted the DOT to shift its focus from needing to clear the area to first asking how state agencies can lead the way in addressing homelessness and addiction with cultural respect. The result led the DOT to working with a Native American organization, trying to find money to turn the section of right-of-way into an American Indian cultural corridor. An art project will be installed at the site soon, and the agency is looking for other partners and money for long-term restoration of the area. Because of this project, and because of MnDOT's leadership in embracing interdisciplinary solutions, planners now feel empowered to engage artists in their work and to take more risks, and there is hope that other departments within the agency will do the same.

ODOT

Of the five agencies interviewed, the Oregon Department of Transportation is ahead of its peers in how it approaches equity as an institution. The agency recently added an assistant director for social equity. Placing social equity at the assistant director level begins to institutionalize equity practices across the agency; the director's office is responsible for embedding equity in all of the agency's programs, policies, and priorities and for placing an equity lens on decision making and funding. ODOT has also established a policy advisory committee, which has spots reserved for people from communities who are not typically represented on such committees. A major task of the advisory committee is to inform the work on the statewide transportation plan update. ODOT is following best practices with the committee by offering members an ongoing stipend for participation. All of this work coincides with the recent adoption of a strategic action plan by the Oregon Transportation Commission (OTC), which oversees department activities; the plan identifies equity as one of

three transportation priorities for the state. (The other two priorities are a "modern transportation system" and "sufficient and reliable funding.") Much of the early work of the agency with respect to equity has been directed at transactional measures, such as strengthening the Disadvantaged Business Enterprise program, ensuring equal opportunity on procurement and contracts, contracting for non-traditional involvement in planning and programming, and engagement through advisory groups and task forces. Planning and programmatic changes with respect to equity are less mature.

There has been some work to initiate equity metrics into prioritization and decision making. Some of these metrics are mandated and guide decisions, such as the performance metrics adopted in the ADA plan. Most, however, are not mandated and do not yet guide decisions. The agency uses an equity index for capital investments decision making; for example, various revenue options for transportation funding in OTC's investment strategy plan are scored for adequacy of revenue, responsiveness to inflation, predictability, alignment with the user-pays principle, administrative costs, and equity across income groups. The interviewees expected that additional equity metrics could derive from this equity index. However, many of the agency discussions currently with respect to performance measures have focused on incorporating them into the next statewide transportation plan update, due in 2022 or 2023. The agency is exploring metrics such as VMT per capita and accessibility for non-single-occupancy vehicle (SOV) modes, which would quantify some equity-related changes to mobility policies already in place. A challenge with adopting equity metrics more quickly is the limits to understanding and using data—both quantitative and qualitative—for measurement. Travel demand modelers, for example, are still unfamiliar with how to incorporate an equity lens into modeling and projections. They are working with a consulting team to help find a bridge between qualitative lived experiences and the application of strategic models and scenarios.

There are several structural barriers with respect to incorporating equity in any stage of the planning and programming processes. Funding is a major barrier, as it is for most agencies; interviewees reported "there is only so much we can do with the resources we have." But priorities other than equity also have to drive decision-making, creating tensions when trying to update the statewide transportation plan. For example, the agency is still required to meet emissions goals and other state benchmarks. Legacies exist from previous project determinations and investment prioritization that precede their focus on equity. At times, equity gets relegated to a trade-off rather than incorporated as a lens that drives all decision making, and the interviewees were hopeful that they could make the shift away from that kind of thinking.

ODOT has also been engaged in work to establish foundational knowledge on transportation equity and on the current state of equity within Oregon. The agency wrote a white paper on best practices across other state agencies and Departments of Transportation. (As of this writing, the white paper is not yet published.) The white paper will serve as a key reference for their advisory committees. The agency has also expressed a desire to have a state transportation website that serves as a peer-exchange hub for DOTs to learn what other states are doing. The vision is to create a suite of documents, tools, and resources that others can reference or rely on when conducting their own research and outreach on transportation equity.

WSDOT

This set of interviews was illustrative in identifying the flurry of recent activity in terms of plans, reports, and strategies to advancing equity in transportation planning and programming. The Washington State DOT has a robust approach to equity in more traditional spaces, such as equal opportunity employment, Title VI compliance, and environmental justice analysis. The interviewees highlighted the agency's Office of Equal Opportunity, the Pre-Apprenticeship Supportive Services Program, which provides support to training programs that serve underrepresented people in the trades, and the 2017 Disparity Study, which identifies opportunities and challenges with the department's DBE program. The department's Strategic Plan Dashboard is a public-facing assessment of how well the agency is meeting its strategic goals (*8*). A key equity-related indicator is one that focuses on inclusion, defined as a need to "strengthen commitment to diversity and engagement in all of WSDOT's business processes, functions, and services to ensure every voice is heard."

The WSDOT approach to equity in planning and programming is less established but has momentum resulting from the state legislature's creation of the Environmental Justice Task Force (EJTF) in 2019. The act directed the group to recommend measurable goals, model policies, mapping tools, and community engagement methods to advance equity within the Washington state government, including the Department of Transportation (*9*). In 2021, the state legislature passed the Healthy Environment for All (HEAL) Act, which provided funding for state agencies to implement the recommendations of the EJTF report. In essence, this bill elevates the priority that equity planning receives in transportation decision-making. An early outcome of this prioritization was the development of a short paper titled "The Highway System Plan's Approach to Equity" in June 2021 (*10*). The report followed recommendations from the EJTF report and discussions with several stakeholder and advisory groups. The approach draws on the Government Alliance on Race & Equity Racial Equity Toolkit (*11*) and articulates six steps in equity analysis: (1) identifying desired outcomes, (2) reviewing data, (3) engaging the community, (4) identifying who benefits and is burdened from investments, (5) identifying mitigation strategies, and (6) defining accountability mechanisms. The approach emphasizes investing in transportation programs in a way that protects and improves health for communities of color, low-income communities, populations with limited English proficiency, and persons with disabilities, and tackles issues of homelessness and human trafficking, while also grappling with the political realities of the need to address geographic equity with respect to rural and tribal communities. The report identifies some currently available data tools that can be used to answer questions of equity, including a map of gaps in multimodal accessibility and a map of environmental health disparities (similar to CalEnviroScreen).

The Active Transportation Plan (see earlier for analysis of part 1 of the plan) also emphasizes equity as a priority of the bicycle and pedestrian network; the second part of the plan has just been released for public comment and develops performance measures for active transportation—connectivity, safety, opportunity, participation, and partnership—and proposes conducting equity checks on each of the measures. WSDOT was also tasked with analyzing the feasibility of adopting performance metrics for decision making more broadly. The agency released an initial report in December 2020 and identified equity as a key consideration in adopting any recommendations (*12*).

An Assessment of how State and Regional Transportation Agencies Advance Equity in Transportation Plans, Processes, and Implementation

27

The agency also has a set of robust practices toward public engagement. The development of a strategic plan in 2014 identified community engagement as a goal of the department, aiming to "strengthen partnerships to increase credibility, drive priorities, and inform decision making." The strategic plan led to the development of a specific community engagement plan, which provides high-level guidance for community engagement efforts and is designed to enhance accountability and transparency. The plan is not merely aspirational or process-driven but provides usable guidance for engaging the public and follows models from other states. A significant goal of this plan is to require the agency to broaden its outreach activities to ensure they reach underrepresented and underserved communities. One specific way this is being done is through partnering with community organizations to plan community workshops during the revision of the highway system plan. This includes a "go to the people" approach to meet community members at the places they already visit—grocery stores, transit hubs, community events, and the like—rather than having them come to a central office.

Like other agencies, WSDOT identified funding priorities and data as two major barriers or challenges to incorporating equity into transportation planning and programming processes. From the interviewees' perspectives, the primary issue is that the transportation system responds strongly to existing demand, so funding still flows largely to infrastructure improvements for motorists. The agency is trying to move away from this for their active transportation projects, but these represent only a small fraction of the roadway mileage and budget. In general, resourcing is difficult for any new project or program. The interviewees believed that WSDOT would not catch up from an equity perspective unless the agency shifted their priorities away from investing in the highest demand projects. The agency would instead have to use their funding to improve disadvantaged communities; the investment paradigm shift to equity would be beneficial but currently comes across as altruistic in a way that draws criticism from outside the agency.

Many of the equity innovations WSDOT is pursuing are not well defined, unlike traditional processes related to equity and EJ that are driven by federal requirements. In some senses this is an opportunity for the agency to be a leader in this space, but it also may make it uncomfortable for some in the agency to follow unstructured processes. The agency also lacks data on specific elements of the transportation system, including sidewalks and types of bike lanes. The absence of data creates a barrier to addressing important equity issues related to these elements.

PennDOT

The Pennsylvania DOT is in the early stages of the pursuit of equity in its planning and programming. However, EJ has become a substantial consideration of the agency's work in recent years. The former practice for planning organizations was to copy-and-paste the text of Executive Order 12898 into their plans as an afterthought. However, the agency has moved past this perfunctory acknowledgment, as in a recent process in which several regional and metropolitan planning organizations (RPOs and MPOs) collaborated on developing an enhanced EJ analysis of transportation benefits and burdens. The goal of this process was to identify EJ populations in Pennsylvania, provide guidance on how to assess conditions and identify needs within those populations, and to enhance that process for planning partners across the state. This led to the publication of the "South Central Pennsylvania Environmental Justice Unified Process and Methodology Guide," which is now

An Assessment of how State and Regional Transportation Agencies Advance Equity in
Transportation Plans, Processes, and Implementation

28

the recommended process for the state's RPOs and MPOs to incorporate EJ in their TIP and LRTP processes (*13*). There is now an expectation to front-load the EJ review process with draft plans, which started with the 2020 TIP, and RPOs and MPOs are encouraged to consult EJ groups and communities.

The agency has also convened a staff working group called the Dismantling Systemic Racism and Inequities Working Group. This group represents staff from across PennDOT and is charged with assessing the agency's diversity and inclusion efforts, better understanding structural racism in transportation generally, and evaluating programs and initiatives that could help with these issues. Their initial report, published in July 2021, identifies several internal and external methods for improving equity, including staff training, contracting, public involvement, community investment, and board and commission representation (*14*).

The agency does not currently have equity-based metrics or performance measures but has expressed a desire to move in that direction. One goal of its current work is to standardize the process used to evaluate minority and low-income populations, which could lead to the application of equity-based metrics. The interviewees pointed to their planning partners, such as the Delaware Valley Regional Planning Commission (the MPO for Philadelphia) and the Southwestern Pennsylvania Commission (the MPO for Pittsburgh), as state leaders in methods and knowledge about transportation equity. However, they acknowledged that with federally mandated performance measures in place that do not specifically address equity, any new measures must resolve conflicts with the mandates.

The interviewees also expressed a need to conduct training to inform staff about equity and how to advance equity, and a need for better research about what supports a more equitable and sustainable transportation network. The work done over the last two years, outlined in the 2021 Public Participation Plan, is moving the agency toward an improved community engagement approach (*15*). From a statewide perspective, the agency is able reach a wider variety of populations through its recent outreach efforts. The PennDOT Connects process requires the agency and agency consultants to complete a checklist during the planning and design phase of all projects to identify how they have engaged with the public (*16*). This approach requires substantial project outreach events and forums (e.g., town halls) which offer platforms for the public to hear from the state agency. However, PennDOT has struggled somewhat in engaging a diverse public in other areas of its work. For example, the agency has faced difficulty in finding disadvantaged business enterprises to contract with, and many planning boards across the state lack any significant representation from people of color.

IDOT

Like other departments of transportation, the Illinois Department of Transportation is early in its commitment to equity in planning and programming. The policy conversation in Illinois recently has been focused on performance-based planning from an equity perspective; the American Planning Association published a memo on the topic in 2020 (*17*), authored by a prominent transportation policy advocacy organization in Chicago, that spurred discussions and action at IDOT. The agency responded by incorporating equity measures in some of its programming prioritization processes, for example, by adding points to projects in environmental justice communities or opportunity zones. This change in methods is not yet widespread at the agency; it is only

An Assessment of how State and Regional Transportation Agencies Advance Equity in
Transportation Plans, Processes, and Implementation

29

considering these measures in certain program funds like the Transportation Alternatives Program (TAP) and other modal-specific programs. The agency is, however, starting to move toward providing state funding assistance for projects that meet equity criteria—again, those projects located in economically distressed or environmental justice areas. Historically, there has been an 80/20 match for federal projects, with the federal government providing 80 percent of the funding and the local jurisdiction providing the remainder, but in some instances IDOT will provide state funds to assist communities.[8] This helps ensure communities do not miss out on opportunities when they do not have the matching funds. (One example where this was applied recently was for a port capital investment project.)

Plans and programs at IDOT are moving toward adopting equity as a guiding principle. The last LRTP, published in 2019, had five key performance goals: economy, livability, mobility, resiliency, and stewardship. The interviewees expected that the next update, due to begin soon and to be published by 2024, will incorporate equity and accessibility as core focus areas. The agency is also updating its Community Impact Assessment manual, which will adopt an equity framework with which to evaluate potential impacts during the transportation project development and implementation process.

IDOT considers equity within several of its programs. The Safe Routes to School program awards points to projects that serve a high number of low-income students and students with disabilities. The Needy Township program provides state assistance from motor fuel tax funds to townships, road districts, and counties that do not generate enough tax revenue to meet a minimum level of funding per mile of roadway, generally benefiting low-income communities. Likewise, IDOT permits transit agencies to use Transportation Development Credits (toll credits) to offset their costs of doing projects, which allows them to secure 100 percent federal funds and primarily helps low-income communities of color. Finally, the Statewide Planning and Research Program can direct funds to research that incorporates equity analyses and equity frameworks to guide studies, and the interviewees thought this was one of the interventions that could lead to the biggest changes.

One important source of innovation in the state's adoption of equity-based practices are the agency's planning partners. IDOT recognized the Chicago Metropolitan Agency for Planning (CMAP), the MPO for the Chicago region, as innovative in their equity-based planning practices. CMAP has grouped the region's communities into cohorts of need, defined by population numbers, median household income, tax base, and share of population located in economically disconnected or disinvested areas, and provides additional planning support for those in the highest quartile of need. IDOT's involvement in this process is to allow the neediest communities as measured by this metric to use toll credits to implement certain plans and to provide the local match for certain project implementation. CMAP also evaluates revenue, fees, and taxes with respect to equity, while IDOT has yet to do this work. Another partner-based program is a national pooled-fund study evaluating

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[8] Although not specifically an IDOT equity initiative, the state legislature removed the requirement for municipalities to provide a 20 percent cost share for pedestrian or bicycle projects on state roads in 2021. IDOT will now provide all the funding for active transportation improvements.

An Assessment of how State and Regional Transportation Agencies Advance Equity in
Transportation Plans, Processes, and Implementation

30

accessibility led by the Minnesota Department of Transportation. The study will develop accessibility metrics with implications for equity that the state will be able to use for planning and evaluation.

IDOT is working on projects that can improve data used to make equity-based decisions. The best quantifiable measures available at the moment are those that define environmental justice and economically distressed communities using census data. However, the agency lacks other data that could define and advance equity metrics like accessibility, particularly for pedestrians and bicyclists as there are no statewide sidewalk or bike lane inventories. The granularity of data available to them is a limiting factor. IDOT is working with Replica, a private data provider that aggregates cellphone and transaction data to show mobility patterns tied to demographic information, which is developing a tool for the department's planning and programming use. There will be a learning curve in how to harness these data, but the interviewees saw potential equity applications with this new tool. They described their current methods for acquiring and accessing data as "outdated and archaic," sometimes requiring weeks to compile the needed information, so any tool that could reduce the data access time was seen as welcome.

IDOT is working on improving its public engagement processes. The department currently has a public outreach plan for projects, but no public participation plan for overarching plans and programs. IDOT uses Context Sensitive Solutions in their project development process, which emphasizes early stakeholder involvement and flexibility in design standards based on community input and makes project information available online to the extent possible. An important innovation in public engagement for IDOT is writing language into their current contract bids to ensure that firms being recruited have documented and successful experience with outreach and community engagement.

MPO Analysis

Findings from the MPO, RTP and FTIP documents underscore that equity is an important component in regional transportation planning, but agencies have not always explicitly specified how equity is incorporated into decision making with respect to project selection. Transportation agencies are required to report progress toward three broad sets of federal performance measure targets defined in the Moving Ahead for Progress in the 21st Century Act (MAP-21): safety (fatalities and injuries), pavement and bridge condition, and system (freight movement, congestion, and reliability). This means that projects that advance these goals must be prioritized for inclusion in the FTIPs each region creates, but does not exclude other performance measures from being used. In California, each plan must undergo an environmental justice analysis to document effects of the planned transportation improvements on low-income communities and communities of color and must ensure that those groups are not disproportionately burdened and that they receive their fair share of benefits. However, MPOs are not required to eliminate disparities, although many have begun planning efforts to determine how to advance equity in a more comprehensive manner than they have in the past.

An Assessment of how State and Regional Transportation Agencies Advance Equity in
Transportation Plans, Processes, and Implementation

31

SACOG

The Sacramento Council of Governments (SACOG) plans do not identify specific prioritization metrics for how projects get selected for inclusion on the Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) or the Metropolitan Transportation Improvement Program (MTIP). Qualitatively, the MTIP requires that projects be consistent with the MTP/SCS, and Title VI and EJ requirements for the MTP/SCS must be considered in the decision process, including following best practices for outreach to underrepresented communities. For sponsors to get a project selected for the MTP/SCS or the FTIP, they must describe how each project accounts for EJ, including community stakeholder outreach methods and an evaluation of project benefits and burdens. SACOG has developed a quantitative Project Performance Assessment tool that allows project sponsors to determine how well a project performs on a set of performance measures relative to several indicators. Socioeconomic equity is a cross-cutting indicator in the tool; it measures the EJ population, percent of the population in an EJ community, and access to key destinations for EJ populations in a project area. The score is used as one measure of support for a project during an agency funding round, but does not by itself drive decision making. SACOG has a Race, Equity, and Inclusion working group that was initiated in 2020. One of its charges is to explore how to use data for creating indicators that will help monitor racial equity outcomes. SACOG has also recently established a technical advisory panel to explore what performance indicators can be used to advance equity in planning and programming.

In the environmental justice analysis for the MTP/SCS, SACOG defined EJ communities by the concentration of people of color (race/ethnicity other than white), low-income status, other vulnerabilities associated with transportation disadvantage (age, linguistically isolated households, single-parent households, low educational attainment, severely housing cost-burdened households, and concentrations of households with a disability), and pollution exposure determined from CalEnviroScreen. The analysis assessed differences across EJ and non-EJ communities by access to key destinations, air quality, and physical activity.

The MTIP refers back to the MTP/SCS in explaining how environmental justice informed development of the project list. SACOG conducted several public workshops, conducted targeted engagement to underrepresented communities, and established working groups with stakeholders to identify priorities and methods for EJ analysis and outreach.

SJCOG

The San Joaquin Council of Governments (SJCOG) Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) measures outcomes of each planning scenario in the plan using eight performance measures: enhancing the environment for existing and future generations, maximizing mobility and accessibility, preserving transportation system efficiency, supporting economic vitality, increasing safety and security, improving public health, building on active transportation, and ensuring social equity. The specific indicators within the ensuring social equity performance measure consist of tracking the housing mix to increase the diversity of housing options in the region, and transit accessibility, particularly within communities of concern.

An Assessment of how State and Regional Transportation Agencies Advance Equity in Transportation Plans, Processes, and Implementation

32

SJCOG piloted the use of the National Public Health Assessment Model (N-PHAM) to assess the outcomes of three draft scenarios in the plan. N-PHAM is a set of statistical models that predicts eight health outcomes, including five chronic health conditions and three mental health outcomes, as a function of travel by mode, built environment, and sociodemographic indicators. Outcome measures consisted of the amount of walking per week (both for transportation and for leisure), daily total recreational physical activity, average body mass index, and the share of the population reporting poor health. They conducted an equity analysis of the health outcomes predicted by the model. To do this, they compared baseline conditions in three categories: between CalEnviroScreen communities of concerns with the rest of the region, between communities where three-quarters of the population were people of color and the rest of the region, and between areas of concentrated poverty and the rest of the region. They also compared forecast health outcomes to the baseline in each of the same focus geographies. SJCOG also conducted a traditional EJ/Title VI analysis on the RTP/SCS. This analysis included comparisons between communities of concern and the rest of the region for forecast scenarios using the following additional indicators: access to high-quality transit, households within 500 feet of a major transportation facility, housing type mix, roadway expenditure benefits, and health outcomes.

The SJCOG Federal TIP (FTIP) does not indicate specific metrics or weights used to develop the list of projects other than those already explained in the RTP/SCS. However, the FTIP does indicate that public participation is a key component of its development, and that the project priorities were derived after outreach to stakeholders, including public agency partners and the public.

SBCAG

The Santa Barbara County Association of Governments (SBCAG) RTP/SCS, *Connected 2050*, was recently approved in August 2021. The plan includes five goals: environment, mobility and system reliability, equity, health and safety, and a prosperous economy. Equity objectives include access across modes, demographics groups, and abilities; affordable housing; and environmental justice. The equity objectives are measured by three performance indicators: new affordable and workforce housing within denser areas, the average trip time for low-income communities, and the percentage of the low-income population within a high-quality transit corridor.

The EJ analysis for the plan compares four primary variables between areas defined as EJ communities, non-EJ communities, and the county averages. Comparison measures include the average travel time by mode, mode share for non-auto modes, transit access within a quarter or half mile, and percentage of the population with amenities like educational institutions, health care, and parks. The EJ analysis also includes an analysis of change in particulate matter ($PM_{2.5}$ and PM_{10}) across the entire region and an analysis of the forecast population within a buffer zone of a major highway in the region as a proxy for potential PM exposure.

The FTIP does not indicate a quantitative prioritization method for choosing projects for inclusion on the list. The document does indicate that there are criteria associated with project evaluation for the MPO's call for projects, though the program document does not specify them.

An Assessment of how State and Regional Transportation Agencies Advance Equity in
Transportation Plans, Processes, and Implementation

33

Fresno COG

The Fresno COG RTP/SCS conducts an EJ analysis based on four sets of performance measures: transportation, financial, land use and housing, and air quality. Communities analyzed are a combination of environmental justice communities consistent with federal definitions, and vulnerable communities, defined as census tracts that have high concentrations of high housing cost-burdened households, single-parent households, older adults, low educational attainment, linguistically isolated households, and people with disabilities. Specific performance measures considered in the EJ analysis include peak travel time by mode, total VMT and VMT in congested conditions, transit passenger miles traveled, transportation investments, and housing mix. The analysis also evaluates change in air contaminant exposure near roadways. Similar to other plans, the FTIP does not indicate quantitative measures for prioritizing projects.

Kern COG

The Kern COG RTP/SCS sets out seven goals, including one goal toward meeting equity, described as "ensur[ing] an equitable distribution of the benefits among various demographic and user groups" (p. 2-2). The plan uses a set of performance measures to analyze its performance toward meeting these goals. The analysis of the plan combines a general look at performance with its EJ/Title VI analysis. The plan describes an Integrated Performance Measures Framework that nests several layers of analysis to understand overall impacts on the county, urban place types, rural place types, and EJ or Title VI areas within the county and across the place types. There are 12 performance measures, several of which address health equity in support of the Health in All Policies initiative of the Strategic Growth Council. These performance measures are primarily auto-oriented, measuring changes in average vehicle travel time, investment in highways, trip delay, congestion, and highway maintenance, though some are specific to transit travel and investment and crash rates for cyclists and pedestrians. Most performance measures were calculated across place types and EJ/Title VI communities, though some were not because of data limitations—including those related to changes in air quality, highway maintenance, greenfield development, health costs, and crash rates.

The Kern COG FTIP is one of the only documents reviewed that identifies quantitative screening and ranking criteria for inclusion in the project list. These criteria are primarily intended to help develop the regional TIP for inclusion in the statewide TIP, but they do result in a list that forms part of a broader plan to be included in the FTIP. Projects are first screened to determine whether they will improve safety, travel time and on-time performances, and the predictability of travel times. They are given points for how much they reduce congestion (30%), improve safety (30%), meet a benefit–cost analysis (15%), and reduce emissions (15%). Social equity is not explicitly considered in the project ranking methods, though regional equity in funding is addressed in the *Project Delivery Policies and Procedures* manual.

TRPA

The TRPA RTP/SCS selected performance measures to achieve six regional goals: environment, connectivity, safety, economic vitality and quality of life, operations and congestion management, and system preservation. General performance measures for these goals include daily per capita VMT, non-auto mode share, rates of

An Assessment of how State and Regional Transportation Agencies Advance Equity in
Transportation Plans, Processes, and Implementation

34

serious injuries, and pavement condition. One performance indicator directly concerns equity, measuring access to transit stops, bike paths, and pedestrian facilities within priority communities, defined as those that meet particular thresholds of EJ, disability, zero-vehicle household, and older adult populations. The EJ analysis also identifies how much funding is allocated by mode in EJ communities. The project list in the RTP/SCS is developed upon recommendations from the Tahoe Transportation Implementation Committee; however, there is not a quantitative list of criteria that helps them prioritize projects. The FTIP does not indicate how projects are selected from the RTP/SCS except to describe the role of the Bi-State Consultation on Transportation in developing the priorities.

An Assessment of how State and Regional Transportation Agencies Advance Equity in
Transportation Plans, Processes, and Implementation

35

Summary and Recommendations

All the state DOT plans we reviewed, both LRTPs and active transportation plans, acknowledged the importance of considering equity and environmental justice in some way. The nature and degree of this acknowledgment varied considerably across states and plan types. Outreach and engagement were the most common ways that DOTs sought to incorporate equity into their planning efforts. Most DOT plans provided a list of external stakeholders from historically marginalized population groups with whom they conducted outreach, and some explicitly described their multilingual outreach. Some DOTs supplemented these efforts with surveys that were representative of the population and some analyzed differences in responses across demographic categories so they could develop strategies tailored to people experiencing transportation disadvantage. Several of the DOTs took advantage of online engagement, even prior to the Covid-19 pandemic, with web-based surveys, comment forms, and interactive mapping applications.

The interviews revealed even more creative ways that state DOTs were engaging the public. MnDOT, for example, is conducting a set of listening sessions with people from historically marginalized population groups to learn about transportation needs in their communities. WSDOT is getting out of the office, taking their outreach to the public in non-traditional settings and community events as a way of conducting authentic engagement, attempting to reduce barriers to participation. DOTs are exploring ways to provide stipends to community-based organizations who participate in outreach sessions or advisory groups, which is considered a best practice for equitable engagement. Some DOTs are contracting with firms that have documented experience with community engagement to ensure more equitable outreach efforts. Several DOTs have or are updating public participation plans that outline equitable practices for engagement and try to ensure processes like those just described are followed for every planning update. Challenges remain in meaningful engagement, however, and despite requirements meant to ensure broad outreach, some DOTs still struggle in attracting a diverse audience.

Equity practices and performance measures varied much more considerably across the agencies. Active transportation plans were more advanced than the LRTPs in adopting goals, strategies, and metrics meant to advance and measure equity. Two DOTs had developed planning tools with the potential to help prioritize investments on the basis of equity, though only MnDOT had yet used the tool. Some of the active transportation plans also had performance measures to evaluate progress toward planning goals. In some cases, like the MnDOT plan, equity was itself a performance measure or coupled with a related measure like health. In others, like the ODOT plan, equity was a cross-cutting measure considered among each of the performance metrics. Where performance measures had not yet been implemented in the active transportation plans, interviewees generally indicated that they were in development, though, some expressed challenges in adopting equity as a performance measure because of federal requirements that were seen as conflicting. Performance measures tend to prioritize infrastructure metrics over people metrics, and funding constraints further push equity consideration as a trade-off rather than being incorporated as a central framework. In

An Assessment of how State and Regional Transportation Agencies Advance Equity in
Transportation Plans, Processes, and Implementation

36

LRTPs, when equity performance measures did appear, they were primarily focused on tracking accessibility for people with disabilities or they were relevant for, but did not explicitly measure, equity.

Yet equity was often an overarching goal or otherwise mentioned as a strategy in most of the plans. Some plans were explicit in identifying racial equity as a guiding principle, while others included equity among the several goals that the plan established. And where equity was not yet included as a plan goal, strategy, or implementation step, such as in Illinois, interviewees shared that discussions were underway to center equity more explicitly in the next update. The DelDOT bicycle plan was unique in calling out the potentially inequitable effects of traffic law enforcement for cyclists.

Interviews with DOT representatives were insightful in pointing to promising equity practices or gaps that were not evident in the plans we reviewed. Definition setting was among the practices that each of the DOTs reported undertaking. For some, like MnDOT, this involves extensive outreach with stakeholders to develop a definition the agency will adopt in its planning and programming. For others, like PennDOT, it involves an internal process to determine how to go beyond that which is mandated under federal environmental justice and Title VI guidance. When equity appeared in assessments of need or performance measures, there were inconsistencies across the agencies in how to measure equity, a sign that the definition was not settled. Another promising practice involves staffing. Several DOTs had an office or staff who had oversight for implementing equity-based practices in the organization. The benefit of having an office director responsible for equity is for leadership visibility and the opportunity to institutionalize equity efforts across traditional operational silos in the DOT. Others hired staff with non-traditional transportation expertise, like public health, community development, and the arts, to expand the boundaries of the DOT's equity work. Representatives from one DOT also expressed the desire to have a state transportation website that serves as a peer-exchange hub for DOTs to learn what other states are doing.

Two constraints in advancing equity in DOTs were prominent. The first was a lack of available data. Internal processes to obtain data relevant for assessing equity were onerous for some DOTs, while some did not have fine-grained data outside what was publicly available in the U.S. Census. MnDOT, for example, reported not having racially disaggregated data for some key indicators, leaving them unable to identify how certain interventions would affect people of color or to develop performance measures based on those metrics. Or if the agency did have the data, sometimes staff responsible for modeling or measuring outcomes were not versed in how to use them for equity. Multiple DOTs also described wanting to incorporate more qualitative data into their equity assessments. The second prominent constraint was funding. Besides an overall sense that agencies did not have the ability to fund all the programs they wished to, some identified constraints on where funds could be used; for example, bureaucratic hurdles to paying participants for their engagement were high at some DOTs. Yet at least one DOT reported creative ways they redirected funding to the neediest locations for planning support and project implementation.

Based on previous research, we had expected equity prioritization criteria to be more prominent in MPO plans and programs than they turned out to be. Only one RTP or FTIP identified quantitative criteria for project

An Assessment of how State and Regional Transportation Agencies Advance Equity in
Transportation Plans, Processes, and Implementation

37

ranking, for example, and equity was not one of the criteria listed. Nevertheless, equity is a primary goal in most of the plans reviewed, and most plans evaluate equity for plan scenarios across a wide range of measures.

Recommendations

We offer several recommendations for state DOT planning practice based on our review of plans, program documents, and interviews with key staff members at the six agencies in the study. These recommendations come without reference to current practices at Caltrans or CalSTA, which were excluded from the detailed review we conducted for this study, but we expect that these recommendations will also be useful for other agencies seeking guidance on improving inclusion of equity.

Develop a definition of transportation equity. Multiple definitions of transportation equity exist in the literature and practice (*18*). Most of the DOTs interviewed had established or working definitions of equity. Commonly cited definitions include those concerned with horizontal equity, in which resources and impacts should be distributed fairly to people similarly situated, and vertical equity, in which resources and impacts should be distributed to those most in need (*19*); those which define accessibility, or the ease of reaching destinations, as the key object of concern for assessing distributional fairness (*20, 21*); and those concerned with mobility justice, which requires a deeper analysis over how identity influences the way people move about because of the legacies of racist policies (*22, 23*). But even with these concepts and principles forming the backbone of a definition of equity, it is important to incorporate the knowledge of policy experts, practitioners, and community members into an actionable definition for DOTs because they may have specific insights into how inequities are perpetuated. For example, one working definition from MnDOT includes quality of transportation services as a key pillar of equity after consultation with participants at a community event (*24*). While establishing a cross-cutting definition of equity is important to set the direction of the agency at a high level, the specific application of this definition is likely to vary from community to community and across transportation modes and programs.

A definition of transportation equity should also include recognition that transportation interacts with other issues that affect mobility and access, including land use and housing, public health, and environmental justice. Transportation is governed by and embedded in a broad system of policies and regulations past and present that have led to racially disparate outcomes (*25*). While transportation agencies may have difficulty addressing items that fall outside its traditional purview of infrastructure and planning, an expansive definition may offer a pathway to collaborate with stakeholders from other domains or consider how to work within those domains themselves.

Adopt performance measures to track and advance equity. MAP-21 and the FAST Act require state and regional plans to track progress of the highway system in several goal areas under three categories of performance measures: safety, infrastructure, and system performance. Equity is becoming more important as a means to prioritize projects at the regional level (*1*), but it is not yet common at the state level (*3*). The Federal Highway Administration (FHWA) has not issued guidance on using equity in performance evaluation,

An Assessment of how State and Regional Transportation Agencies Advance Equity in
Transportation Plans, Processes, and Implementation

38

which may create barriers to adoption for some agencies. Nevertheless, a range of measures that are already in use could be adapted to evaluate how transportation is benefiting historically underserved groups, such as the distribution of funding, safety, infrastructure conditions, and vehicle miles traveled or vehicle trips. More advanced measures, like accessibility and health metrics, may take more development and discussion to determine how to implement them, particularly if the DOT does not have the expertise in house. The degree to which performance metrics advance equity is important to consider as well. Simple place-based measures can identify which locations are benefiting or facing disproportionate burdens from transportation. User-based measures can be used to evaluate impacts to individuals, though these types of metrics are more sophisticated and often require the use of travel demand models to generate estimates.

Establishing performance measures requires collecting and analyzing data at the appropriate scales, a limitation that many agencies will have to work to overcome. To address inequities based on any demographic characteristic, it is critical to report data disaggregated by that characteristic. When disaggregate data are available, data users and modelers should be trained to understand how the information can be used to evaluate equity. Agencies should also be willing to collect and use qualitative data in equity assessments; some critical factors, like quality of life, are hard to quantify in discrete values. Interviews, focus groups, and listening sessions may reveal how individuals and communities perceive their relationship to transportation and what shortfalls the DOT should be prepared to address.

Make prioritization decisions transparent. Few of the plans we reviewed described in detail the methods by which projects were evaluated for inclusion in LRTP and STIP project lists. That is not to say equity was not considered in their development, only that it is difficult to determine the weight given to equity among other prioritization criteria. Clearly identifying how decision-makers rank alternatives and develop priorities is crucial for understanding what barriers exist to ensuring those decisions are made with equity in mind. Even if quantitative prioritization criteria are developed, equity must be valued highly enough among those criteria so that it can have an influence on the ultimate decisions that are made.

Innovate and create. Some of the most promising practices for advancing equity that the interview respondents identified were novel approaches to the ways that DOTs traditionally do business. Some were small innovations, such as using mapping interfaces to engage the public in planning efforts and spatially analyzing responses, but some were bigger, like MnDOT's transportation equity labs as a space to pilot programs and their artist-in-residence program to promote meaningful community engagement in a creative way. Even within established programs, there may be ways to address inequities through establishing or adjusting eligibility criteria based on need and capacity. Some of the biggest gains in equity are likely to be realized through new forms of engagement and inclusion and new ways of thinking about the role that transportation functions, beyond measures of mobility or even the access it provides. There is no particular template for the right kinds of innovation, though the DOTs in this study provide a few examples to consider. Establishing a peer-exchange hub for DOTs is a creative approach to learn what are other states are doing that will benefit those states that are in the early stages of committing to equity in their planning and programming.

An Assessment of how State and Regional Transportation Agencies Advance Equity in
Transportation Plans, Processes, and Implementation

39

Institutionalize equity. DOTs will have difficulty advancing transportation equity if the principles of equity are not embedded everywhere in the organization. Several DOTs hired leaders and created positions that oversee efforts to advance racial and social equity, which shows the agencies are committed to change at the highest levels. In some DOTs, elevating equity across program areas has come organically from interested staff. But for many, there is still a steep learning curve for how equity applies to their program areas and why it is meaningful for practice at all. Institutionalizing equity may require significant economic investment in an operating environment where funding is always constrained, and in human resources for staff training in frameworks of equity and application methods. It may also require outreach to stakeholders, like elected officials, board members, and the public, to explain new directions and why equity must be part of the agency's work moving forward.

An Assessment of how State and Regional Transportation Agencies Advance Equity in
Transportation Plans, Processes, and Implementation

40

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An Assessment of how State and Regional Transportation Agencies Advance Equity in Transportation Plans, Processes, and Implementation

41

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An Assessment of how State and Regional Transportation Agencies Advance Equity in Transportation Plans, Processes, and Implementation

42