

State Funding and Planning Mechanisms to Reduce Greenhouse Gas Emissions from the Transportation Sector

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MCRP Professional Project

JD Writing Requirement

Submitted December 8, 2016

Acknowledgments

This paper benefited from the guidance of my excellent committee, whose insight and critique were invaluable:

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Much of the research presented in the paper was conducted concurrently with research for a grant-funded project for the National Institute for Transportation and Communities (NITC) entitled “Effectiveness of Transportation Funding Mechanisms for Achieving National, State, and Metropolitan Economic, Health, and Other Livability Goals.” That project, currently in press and due for publishing in early 2017, is authored by the following research team:

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Introduction

Many states are working to mitigate their contributions to global climate change by controlling greenhouse gas (GHG) emissions. These efforts often begin with a establishment of a statewide GHG reduction goal, followed by targeted policies to reduce GHG emission from specific classes of sources or economic sectors. For the transportation sector, many policy, legal, and cultural barriers stand in the way of achieving goals to reduce GHG emissions. Our immense transportation and transportation fuels infrastructure – including roads, highways, parking lots, pipelines, refineries, abundant and affordable gasoline, and low density land development patterns – supports continued reliance on cars and light-duty trucks. Transportation project programming processes, through which transportation capital projects are chosen for receipt of funding, often support the selection of projects that reinforce the existing carbon intensive infrastructure. Funding is limited, and many funding sources are constrained in how they may legally be spent. Other transportation goals and policy efforts compete with climate goals for funding priority. Political forces can skew transportation agencies' programming processes. These barriers notwithstanding, the 20th century's trend towards single occupancy vehicle trips is not permanently fixed. Many academics, engineers, planners, and policymakers have worked to map out the path to a carbon-minimal transportation future. With this roadmap in place, the greatest obstacle facing states attempting to reduce greenhouse gases from their transportation sector is inadequate implementation. With a desired outcome in mind – reduce greenhouse gas emissions to at least 80percent below 1990 levels by 2050¹ – states must work backward from this goal: measure current emissions, plan for reduced emissions, select projects that will reduce greenhouse gas emissions by minimizing vehicle miles traveled, and fund and build those projects. Projects that lead to transportation sector GHG reductions are projects that usually reduce per capita vehicle miles traveled, such as public transit, bicycle and pedestrian infrastructure, and congestion mitigation projects². Although less likely to be achieved through funding and planning mechanisms, other projects will reduce transportation sector GHG reductions by increasing vehicle efficiency or decreasing the carbon content of fuels, such as electric vehicle charging stations. In due course, reduced greenhouse gas emissions resulting from planning efforts, combined with improved vehicle efficiency technology and reduced carbon content of fuels from the automobile and energy industries, will yield drastically decreased transportation sector GHG emissions. Many states today are doing some of this work by measuring transportation emissions and setting goals to reduce those emissions. This report shows that these actions are meaningless unless states are also funding, planning, and programming transportation projects that will reduce GHG emissions.

¹ As discussed below, all three case study states described here (California, Massachusetts, and Washington) have a statewide GHG reduction goal similar to this figure.

² See Greene & Plotkin. 2011. Reducing Greenhouse Gas Emissions from U.S. Transportation. Pew Center of Global Climate Change. <http://www.c2es.org/docUploads/reducing-transportation-ghg.pdf>

The efforts of three states – California, Washington, and Massachusetts – to reduce GHG emissions from the transportation sector are investigated here. Through investigation of these three states, this report addresses the following questions:

- Are states with greenhouse gas reduction goals in both state statute and in long range transportation plans implementing processes to ensure their transportation investments achieve the goals?
- What legal and other policy barriers exist to spending on GHG-reducing projects in transportation?

All three states have similar statewide GHG reduction goals set in statute. California is the largest state and has the most far-reaching policies and programs to mitigate GHG emissions. California's approach delegates authority to regional metropolitan planning organizations (MPOs) to achieve regional GHG reduction goals set by the state. Pursuant to its statutory authority, Massachusetts' state environment agency promulgated rules requiring the state transportation agency to demonstrate how it will meet GHG reduction targets through prioritization of GHG-reducing projects. Washington has statutory goals to reduce per capita vehicle miles traveled (VMT) in addition to a statewide GHG reduction goal. This report describes the policy and processes used in these three states to reduce greenhouse gases from the transportation sector through state and metropolitan transportation funding, planning, and programming and then discusses legal barriers to implementing processes to achieve GHG reduction goals. This paper does not measure actual GHG emissions reductions that the three states have accomplished since enacting goals. Rather, this report critiques the efficacy of states' policy and processes to achieve transportation sector GHG reduction goals. Finally, this report makes recommendations for building greater efficiency and transparency into funding and programming processes in order to implement transportation programming frameworks that better achieve transportation sector GHG reduction goals.

After assessing current policy, federal funding and planning frameworks, and legal barriers to implementation, a set of recommendations for implementing transportation sector GHG reductions emerges. States' GHG reduction goals must be legally enforceable through strong statutory language. Constraints on funding sources should be removed. States should implement greenhouse gas performance measures that ensure transportation dollars are spent on transportation projects that actually reduce greenhouse gases. A performance-driven approach is consistent with the existing federal framework for funding, planning, and programming transportation. By implementing a feedback loop where the GHG outcomes of transportation projects influence how future projects are selected, states can ensure that transportation funding actively works to achieve greenhouse gas reduction goals. To do this, states must go much further than establishing GHG reductions as a goal in long term transportation plans. They should integrate GHG considerations in every state of the transportation programming process: funding, planning, programming, and performance measurement.

Transportation and Climate Change

Under a scenario where global greenhouse gas emissions peak by 2080 and then decline, warming of the global climate is still likely to exceed 3.6 degrees Fahrenheit by the end of the 21st century.³ That level of warming will cause difficult changes to life on earth. To stave off the direst effects of global warming, all levels of government must act to reduce emissions from all economic sectors.

The transportation sector comprises 26percent of total U.S. greenhouse gas (GHG) emissions.⁴ Rapid urbanization beginning in the mid 20th century contributes significantly to transportation sector GHG emissions. For example, in the fifteen years between 1982 and 1997, the amount of urbanized land in the U.S. increased by 47percent, while the population grew by only 17percent.⁵ Thus, we are developing land at a startling pace, and in travelling across our vast urbanized areas, we are emitting massive amounts of carbon from our automobiles. Emissions from the fossil fuel economy, including the transportation sector, continue to accrue in our atmosphere, intensifying the greenhouse effect, and every day more and more people bear the impacts of climate change. In their influential 2007 report *Growing Cooler: Evidence on Urban Development and Climate Change*, Ewing et al. describe greenhouse gas emissions from the transportation sector as a three-legged stool composed of vehicles, fuel, and vehicle miles traveled (VMT).⁶ While technological advances in vehicles and fuels are decreasing automobiles' carbon output, a continued rise in overall VMT is stifling significant progress in reducing GHG emissions from the transportation sector.⁷ As progress is made in reducing GHG emissions from the energy sector and residential/commercial building sectors – two of the other largest sources of GHG emissions in the United States – reducing GHG emissions from the transportation sector remains a crucial component in curbing overall domestic GHG emissions. The impacts of a fossil fuel based transportation infrastructure on GHG emissions are the elephant in the room of climate change policy.

³ IPCC. 2014. Summary for Policymakers. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1-32

⁴ United States Environmental Protection Agency. 2016. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2014. <https://www.epa.gov/sites/production/files/2016-04/documents/us-ghg-inventory-2016-main-text.pdf>

⁵ Fulton, Pendall, Nquyen, and Harrison. 2001. Who Sprawls Most? How Growth Patterns Differ Across the U.S. The Brookings Institution Center on Urban & Metropolitan Policy. July 2001 Survey Series.

⁶ Ewing, R., Bartholomew, K., Winkelmann, S., Walters, J., & Chen, D. 2007. *Growing Cooler: The Evidence on Urban Development and Climate Change*. Washington DC: Urban Land Institute.

⁷ *Ibid.*

Meanwhile, the likelihood of the federal government of the United States – the world’s largest greenhouse gas emitting country – to comprehensively address climate change appears to be shrinking.⁸ Existing federal action to reduce GHG emissions is primarily limited to executive orders and EPA regulatory programs pursuant to Clean Air Act authority. The Supreme Court has held that carbon dioxide is a pollutant under the Clean Air Act, and the EPA found that carbon dioxide endangers public health, which allows the EPA to regulate carbon dioxide under the Clean Air Act.⁹ Under its regulatory programs, the EPA regulates car and light truck tailpipe emissions¹⁰, and has extended its regulatory authority over carbon dioxide to stationary sources.¹¹ Notwithstanding these executive branch regulatory programs, which are vulnerable to repeal by subsequent executive administrations, transportation sector GHG emissions continue to rise.

In the absence of legislative progress to reduce GHG emissions at the federal level, especially GHG emissions resulting from vehicle miles traveled, several states have enacted their own GHG reduction goals and programs. The three states that have enacted GHG reduction goals and programs discussed here have included efforts to reduce transportation sector GHG emissions in their state long range transportation plans. While the federal government is largely gridlocked (the federal gas tax has not been raised since 1993), it is critical that through states’ experimentation with different policy approaches, overall GHG from the transportation sector significantly decrease.

Methods

The initial methods for this project were to identify state GHG reduction goals, federal funding and planning frameworks, and a review of existing literature in transportation research databases for climate and performance-based planning resources. Case study states were selected based on the presence of GHG reduction goals in both statute and state long range transportation plan. Once case study states were selected, state policy documents were reviewed to investigate how the three case study states integrate GHG goals into transportation funding, planning, and programming. State and agency budgets, state long range transportation plans (LRTPs), and statewide transportation improvement programs (STIPs) were reviewed for presence of GHG goals. Informal interviews with stakeholders at state transportation agencies were also conducted to clarify state policy approaches. Legal research was undertaken to inform the legal effect of state GHG reduction goals and illuminate barriers. Finally, strengths and weaknesses of the three states’ frameworks were identified and synthesized into recommendations. Throughout the research process, this project was

⁸ Trump, Donald J. 2016. Donald Trump’s Contract with the American Voter. https://assets.donaldjtrump.com/_landings/contract/O-TRU-102316-Contractv02.pdf

⁹ *Massachusetts v. EPA*, 549 U.S. 497 (2007).

¹⁰ 40 CFR 86.1818-12

¹¹ 80 FR 64966

informed by a concurrent project for the National Institute for Transportation and Communities (NITC) investigating state and MPO processes for implementing transportation goals broadly.¹²

Transportation funding and planning framework

In 2014, federal, state, and local governments spent a combined \$319.8 billion on transportation.¹³ About two-thirds of this spending went to highways, followed by transit (17.2 percent), with air, water, and other modes accounting for the remainder.¹⁴ Between 2007 and 2011, 40percent of total transportation spending came from states, 35percent from local governments, and 25percent from the federal government.¹⁵ Transportation funding at both the federal and state levels primarily comes from user fees, with concurrent state and federal per-gallon taxes on gasoline as the largest source.¹⁶ The federal government appropriates transportation revenues to states and MPOs through periodic legislation, beginning with Federal Highway Act of 1956. The most recent appropriation is 2015's Fixing America's Surface Transportation Act (FAST Act). Under the FAST Act, states receive a highway aid apportionment in the form of the National Highway Performance Program, the Surface Transportation Block Grant Program, Highway Safety Improvement Program, Congestion Mitigation and Air Quality Improvement Program, according to formula.¹⁷ State apportionments are based on population and road miles. Funds are also apportioned directly to MPOs, federally designated agencies in metropolitan areas with a population of 200,000 or more. Each funding program has unique purposes and constraints, and all spending of federal dollars by states and MPOs must be pursuant to approved long term transportation plans (LRTPs).¹⁸ Plans must address a list of ten national factors, and must use a performance-based approach to support the national performance goals found in 23 USC 150(b).¹⁹ All projects that receive federal funds must be

¹² Lewis and Zako. (in press). "Effectiveness of Transportation Funding Mechanisms for Achieving National, State, and Metropolitan Economic, Health, and Other Livability Goals." National Institute for Transportation and Communities.

http://nitc.trec.pdx.edu/research/project/875/Effectiveness_of_Transportation_Funding_Mechanisms_for_Achieving_National_State_and_Metropolitan_Economic_Health_and_Other_Livability_Goals

¹³ BTS (Bureau of Transportation Statistics). 2016. *Transportation Statistics Annual Report 2015*. http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/transportation_statistics_annual_report/2015/index.html.

¹⁴ *Ibid.*

¹⁵ Pew Charitable Trusts. 2014. *Intergovernmental Challenges in Surface Transportation Funding: First Report in the Fiscal Federalism in Action Series*.

<http://www.pewtrusts.org/~media/assets/2014/09/surfacetransportationintergovernmentalhallengesfunding.pdf>.

¹⁶ Sundeen, Matt, and James B. Reed. 2006. *Surface Transportation Funding: Options for States*. Denver: National Center for State Legislatures.

<http://www.ncsl.org/documents/transportation/surfacetransfundrept.pdf>.

¹⁷ 23 USC § 104

¹⁸ 23 USCS §§ 134-135

¹⁹ 23 CFR § 450.206

listed in a Statewide Transportation Improvement Program (STIP), which lists all projects expected to receive funding over a four-year period. State funding sources complement federal allocations to states. Because of the federal planning requirements and restrictions on the use of federal funding programs, state funding sources are generally programmed alongside federal funding sources, consistent with the federally required state and MPO long term transportation plans. In this manner, while the federal government provides only 25percent of all national transportation funding, the federal framework is influential in guiding most state and MPO transportation programming.

Performance measurement

The Moving Ahead for Progress in the 21st Century Act (MAP-21), the predecessor to the FAST Act passed by Congress in 2012, is a comprehensive transportation funding bill that changed the way federal transportation dollars are spent. The changes created by MAP-21 were continued with 2015's FAST Act. MAP-21 includes seven national performance goal areas: safety, infrastructure condition, congestion reduction, system reliability, freight movement and economic vitality, environmental sustainability, and reduced project delivery delays.²⁰ Final U.S. Department of Transportation (USDOT) rulemaking to create national performance measures is currently underway and some final performance measures have already been published and implemented through the Code of Federal Regulations. For instance, final safety performance management measures were effective beginning April 14, 2016.²¹ States have one year following the effective date of final USDOT rules on performance measures to set performance targets and begin tracking progress.²² While rules pertaining to performance measures from this law have not been fully implemented, many states and MPOs are either already operating, or beginning to operate under a performance-based framework. These governments are measuring climate impacts in their transportation plans and spending programs, and are pursuing planning outcomes to meet such goals. Since the passage of MAP 21, little has been written about how climate outcomes are actually measured in state and MPO transportation plans or how performance-based planning and programming results in greater greenhouse gas reductions.

Review of existing literature

The majority of existing literature focuses on design of performance measures for achieving goals, but does not assess the funding, planning, and programming frameworks in which performance measures would be implemented. Jeon et al. (2013) evaluate possible performance measures for sustainability in transportation planning.²³ The American

²⁰ Federal Highway Administration (n.d.) Moving Ahead for Progress in the 21st Century. www.fhwa.dot.gov/map21

²¹ See <http://safety.fhwa.dot.gov/hsip/rulemaking/>

²² 23 CFR § 450.206(c)(2)

²³ Jeon, C.M., Amekudzi, A.A. & Guensler, R.L. (2013). Sustainability assessment at the transportation planning level: Performance measures and indexes. *Transport Policy* 25, pp. 10–21. www.sciencedirect.com/science/article/pii/S0967070X12001618

Association of State Highway and Transportation Officials (2010) also discuss specific performance measures and promote thirteen specific state strategies for improving community livability.²⁴ Similarly, Heller (2014) examines different types of performance measures being utilized by transportation agencies nationwide and identifies best practices.²⁵ Hales, et al. (2012) employed an expert panel in their study to develop a single framework for transportation performance based on a unification of various U.S. transportation agency and stakeholder models.²⁶ Hales, et al. (2012) use Rhode Island as a model state for implementation of five performance measures: safety, congestion, infrastructure preservation, environment, and systems operation.

The Government Accountability Office (GAO) (2010) endorses the adoption of federal performance measures for state transportation plans.²⁷ The GAO (2012) also recommends performance measures as criteria for state proposals in the Transportation Infrastructure Finance and Innovation Act funding application process.²⁸ The Federal Highway Administration (2012) offers a short report and how-to guide that outlines operations performance measures for use by transportation planning agencies, including examples from states, MPOs, cities, and businesses.²⁹ Operations performance measures seek to increase road system efficiency without building new roads. The Pew Center on the States and The Rockefeller Foundation (2011) conclude that states generally have data and resources to help them measure progress on safety and infrastructure preservation, but that in several other important areas including jobs and commerce, mobility, access, and environmental stewardship, policy makers and the

²⁴ American Association of State Highway and Transportation Officials. (2010.) *The Road to Livability: How State Departments of Transportation Are Using Road Investments to Improve Community Livability.*

www.recpro.org/assets/Library/Livability/the_road_to_liveability_2010.pdf

²⁵ Heller, D. (2014.) *Performance Measurement for Transportation Infrastructure: The Paradigm for Transportation Planning in the 21st Century.* *T&DI Congress 2014.* pp. 669–681.

dx.doi.org/10.1061/9780784413586.064

²⁶ Hales, D., Rosen, D., Schwarzback, H., Wheeler, A., & Xenophontos, C. (2012.) *Performance Based Transportation Management: The Case of U.S. State DOTs.* *Procedia: Social and Behavioral Sciences*, 48, pp. 535–543. dx.doi.org/10.1016/j.sbspro.2012.06.1032

²⁷ Government Accountability Office. (2010.) *Statewide Transportation Planning: Opportunities Exist to Transition to Performance-Based Planning and Federal Oversight.*

www.gao.gov/new.items/d1177.pdf

²⁸ Government Accountability Office. (2012.) *Surface Transportation: Financing Program Could Benefit from Increased Performance Focus and Better Communication.* *Report to Congressional Committees.* gao.gov/assets/600/591782.pdf

²⁹ Federal Highway Administration. (2012.) *Operations Performance Measures: The Foundation for Performance-Based Management of Transportation Operations Programs.*

www.ops.fhwa.dot.gov/publications/fhwahop12018/fhwahop12018.pdf

public in many states need better and more information to effectively measure results.³⁰ Transportation for America (2015) outlines the benefits that measuring outcomes brings to the allocation of resources towards meeting goals, and proposes specific goal areas and measures.³¹ Davies and Grant (2015) go one step further by evaluating four specific transportation sector GHG performance measures, but fall short of measuring those measures' success in achieving goals.³²

The Federal Highway Administration (FHWA) (2013) makes the case for reducing greenhouse gas emissions through performance-based transportation planning.³³ The FHWA report is a comprehensive guide for creating and implementing GHG performance measures, as well as integrating them into funding decisions and project selection. Examples of transportation GHG emissions metrics are offered, along with analyses of their strengths and weaknesses. The report mentions the efforts of a handful of states and MPOs, but the report offers no thorough assessment of those efforts. Coupled with the FHWA's ongoing performance measure rulemaking which may include climate performance measures, this report is a clear indication of the federal government's efforts to reduce GHG emissions from the transportation sector through funding decisions, planning, and programming.

In April of 2016, the Federal Highway Administration published a Notice of Proposed Rulemaking (NPRM) in the Federal Register to propose national performance management measures, as required by both MAP-21 and 2015's FAST Act.³⁴ The NPRM includes broad language about global warming and greenhouse gases, but offers no proposed performance measures for emissions reductions. Instead, the NPRM seeks input from the public on how FHWA might address greenhouse gas emissions from the transportation sector in future

³⁰ Pew Center on the States & The Rockefeller Foundation. (2011). Measuring Transportation Investments: The Road to Results. www.pewtrusts.org/~media/Assets/2011/05/11/Measuring_Transportation_Investments.pdf

³¹ Transportation for America. 2015. Measuring What We Value: Setting Priorities and Evaluating Success in Transportation. <http://faculty.washington.edu/jbs/itrans/Performance-Measures-Reportpercent20t4America.pdf>

³² Davies, J., Grant, M. 2015. Applying Greenhouse Gas Performance Measures to Inform Transportation Planning and Decision Making. Transportation Research Board TR News. November-December 2015, 15-19. <http://onlinepubs.trb.org/onlinepubs/trnews/trnews300.pdf>

³³ Federal Highway Administration. (2013). A Performance-Based Approach to Addressing Greenhouse Gas Emissions through Transportation Planning. Accessed on 7/1/16 at http://www.fhwa.dot.gov/environment/climate_change/mitigation/publications/ghg_planning/ghg_planning.pdf.

³⁴ Federal Highway Administration. (2016). Notice of Proposed Rulemaking. National Performance Management Measures; Assessing Performance of the National Highway System, Freight Movement on the Interstate System, and Congestion Mitigation and Air Quality Improvement Program. http://www.fhwa.dot.gov/tpm/rule/pm3_nprm.pdf

rulemaking. This call for public input is the greatest opportunity thus far to require states and MPOs to implement GHG performance measures into the transportation programming process.

While many governments aspire for multimodal and livable transportation networks, results in these areas are rarely measured and accounted for. None of the published studies to date assess government funding structures and project selection decision-making in relation to how transportation investments produce outcomes that advance national, state and metropolitan goals, including economic development, health improvements, and livability. Although MAP-21 sets national transportation goals and performance measures, actual “refocusing on national transportation goals, increasing the accountability and transparency of the Federal-aid highway program, and improving project decision-making through performance-based planning and programming” has not been assessed.³⁵ This research seeks to fill this gap by looking for evidence that the adoption of climate goals and targets leads to transportation funding and programming decisions that advance climate goals. In short, governments state they are serious about reducing greenhouse gas emissions from the transportation sector, and they are saying that transportation funding will be significantly refocused in order to reduce greenhouse gas emissions from the transportation sector, but little critical accounting of governments’ progress toward that goal has been undertaken.

Frameworks for reducing transportation sector greenhouse gas emissions in three case study states

California³⁶

California climate goals

The State of California has set statewide GHG reduction goals both in statute and in executive order. Governor Schwarzenegger issued Executive Order S-3-05 in 2005, setting the goal to reduce statewide GHG emissions by 2050 to 80 percent below 1990 levels. The legislature passed Assembly Bill 32 in 2006, the California Global Warming Solutions Act, setting the goal to reduce statewide GHG emissions to 1990 levels by 2020.³⁷ In 2016, the legislature passed SB 32, which sets in statute the interim goal of reducing statewide GHG emissions to 40 percent below 1990 levels by 2030.

California passed another statute in 2008 that specifically addresses the reduction of GHG emissions from the transportation sector. Senate Bill 375, the Sustainable Communities and

³⁵ Federal Highway Administration (n.d.) Moving Ahead for Progress in the 21st Century. www.fhwa.dot.gov/map21

³⁶ The California and Washington sections are drawn largely from previous research on state-level transportation GHG reduction goals and efforts. See Lewis and Zako. 2016. “Assessing State Efforts to Integrate Transportation, Land Use and Climate Change.” National Institute for Transportation and Communities.

³⁷ Cal. Health & Safety Code § 38550

Climate Protection Act, directs the California Air Resources Board (CARB) to develop targets for each MPO to reduce GHG from light-duty vehicles as a result of local actions. In 2011, after CARB coordinated a bottom-up effort, the Governor issued Executive Order G-11-024, which set transportation sector GHG reduction targets for each of California's 18 MPOs.

As California is the most populous state with nearly 40 million residents, its goal to reduce GHG via transportation and land use planning is ambitious in its scale. California's legislature delegated the responsibility for reducing GHG from the transportation sector to its MPOs under the direction of the California Air Resources Board (CARB). California has 18 MPOs, but four MPOs in the largest metropolitan areas (Los Angeles, San Francisco, San Diego, and Sacramento) account for 80 percent of the state's population, or over 30 million people. Each MPO is responsible for developing and adopting a coordinated transportation and land use plan (Sustainable Communities Strategy, or SCS) that will reduce VMT per capita, and thereby meet each MPO's individual GHG reduction goal.

CARB anticipates that 29 percent of the total GHG reductions needed to meet California's 2020 goal will come from the transportation sector.³⁸ While CARB sets the GHG reduction target for each MPO, the implementation strategy to achieve the target is within the discretion of the MPO. SB 375 is explicit in maintaining the delegation of land-use authority to local governments, and thus whether an MPO will meet its GHG goal depends, in part, on its ability to coordinate with local governments to implement the SCSs.

Further, California passed Senate Bill 391 in 2009, which directs the California Department of Transportation (Caltrans) to update the California Transportation Plan (CTP) every five years to address how the state will achieve maximum feasible emissions reductions in order to meet the GHG reduction goals, and specifically how the agency will meet the transportation sector GHG reduction goal of 80 percent below 1990 levels by 2050. Caltrans' CTP 2040 includes six goals:

1. Improve Multimodal Mobility and Accessibility for All People
2. Preserve the Multimodal Transportation System
3. Support a Vibrant Economy
4. Improve Public Safety and Security
5. Foster Livable and Healthy Communities and Promote Social Equity
6. Practice Environmental Stewardship³⁹

Additionally, the plan includes several supporting policies for each goal. Many of these policies relate to increasing the share of alternative transportation modes, and one of the policies for the sixth goal is to "reduce greenhouse gas emissions and other air pollutants."⁴⁰ The plan also

³⁸ California Air Resources Board. 2014. "First Update to the Climate Change Scoping Plan." http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf

³⁹ Caltrans. 2016. *California Transportation Plan*. <http://www.dot.ca.gov/hq/tpp/californiatransportationplan2040/2040.html>.

⁴⁰ *Ibid.* at 23.

includes a chapter on scenario modeling, with the specific goal of meeting SB 391's requirement that the plan show how Caltrans will meet the state's climate goals.

California also passed legislation, 2013's Senate Bill 743, to change the way transportation impacts are analyzed under the California Environmental Quality Act (CEQA). Pursuant to the law, the Office of Planning and Research's (OPR) has developed guidelines that recommend using a VMT threshold to determine whether a development project requires CEQA review. If the project is near existing transit infrastructure and resulting VMT is expected to be low, the development can forego CEQA review, effectively streamlining and promoting infill development and decreasing statewide VMT. New CEQA criteria for transportation projects are meant to "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses."⁴¹

Finally, the legislature passed Senate Bill 226 in 2011, which exempts certain infill development projects from CEQA review. The development project must be surrounded by 75 percent existing urban development, comply with an existing SCS, and meet density guidelines for residential development. When outside of an MPO boundary, developments must meet the rule's definition of a "small walkable community project" to be exempt from CEQA review.

While the effectiveness of these many executive and legislative goals and efforts is yet to be seen, California's ambitious goals to reduce GHG emissions from the transportation sector puts the state at the forefront of progressive state climate policy.

California transportation funding and decision-making *State-controlled transportation revenue and constraints*

Without any legal restrictions on gas tax revenue, California's funding for transportation is minimally constrained, and a portion of transportation revenues are earmarked specifically for projects that will reduce GHG emissions. California's total transportation funding in the 2015-16 budget is \$29.6bil.⁴² This includes the balances from all transportation accounts and funds, before distribution to local and regional governments. Two of these funds, the Transportation Tax Fund and the State Transportation Fund, are the state's primary transportation funds and comprise 85percent of the year's entire transportation budget. Within both of these funds are several accounts which are dedicated to specific expenditures. California's biggest revenue source for transportation is the state gas tax, followed by federal contributions.⁴³ Many local jurisdictions in California employ local option taxes to increase their transportation budgets.

⁴¹ California Public Resources Code §21099

⁴² California State Transportation Agency (CalSTA). 2015. *California Transportation Financing Summary Fiscal Year 2015-16*.

http://www.dot.ca.gov/docs/CA_Transportation_Financing_Package_2015-16.pdf.

⁴³ *Ibid.*

One of California's dedicated funds (separate from the Transportation Tax Fund and the State Transportation Fund) is the Greenhouse Gas Reduction Fund, which receives proceeds from the state's cap and trade program on large industrial polluters. The fund balance in FY 2015-2016 was \$1.44 billion, about \$1.29 billion of which was appropriated for transportation related spending.^{44 45} The Greenhouse Gas Reduction Fund comprises 4.4 percent of the state's total \$29.6 billion transportation budget.

California's Constitution limits the legal uses of gas tax proceeds in Article XIX. Under that provision, all motor vehicle fuel taxes are to be deposited into the Highway Users Tax Account (HUTA). The HUTA is limited to research, planning, construction, improvement, maintenance, and operation of public streets and highways, and their related public facilities for non-motorized traffic; and the research, planning, construction, and improvement of exclusive public mass transit guideways.⁴⁶ The fund is allocated monthly to counties and cities under a formula outlined in Article XIX, Section 4.⁴⁷ This constitutional language imposes minimal restriction on the type of transportation infrastructure the state may pursue with gas tax proceeds. The California State Transportation Agency (CalSTA) has broad discretion to choose how to spend funds from the HUTA. Roadways, non-motorized facilities, and transit guideways are all legal uses of gas tax proceeds.

Climate goals in transportation programming

The California Transportation 2040, released in 2016, follows the directive of 2009's Senate Bill 391 by showing how Caltrans will meet statutory statewide GHG reduction goals on the state highway system.⁴⁸ The plan uses a GHG performance measure to analyze three scenarios for the year 2050. The first scenario analyzes the projected GHG emissions that would result from current state and MPO modal plans. The second and third scenarios include transportation efficiency strategies and fuel and vehicle technology improvements that, together, show how the state can reduce GHG emissions to 80 percent below 1990 levels by 2050. The scenarios included several strategies to reduce VMT, grouped into four categories: demand management, mode shift, travel cost, and operational efficiency.⁴⁹ Though not required, the CTP 2040 GHG scenario planning analysis "assumes an equivalent or proportional share reduction from the

⁴⁴ California Air Resources Board. 2015. Greenhouse Gas Reduction Fund Programs – Appropriations as of September 2016.

<https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/summaryproceedsappropriations.pdf>

⁴⁵ This fund includes housing subsidy expenditures for transit-oriented development projects planned in regional Sustainable Communities Strategies.

⁴⁶ California Constitution, Article XIX, Section 2.

⁴⁷ California Constitution, Article XIX, Section 4.

⁴⁸ Caltrans. 2016. *California Transportation Plan 2040*.

<http://www.dot.ca.gov/hq/tpp/californiatransportationplan2040/2040.html>.

⁴⁹ *Ibid.* at 73.

transportation sector; thus, transportation emissions in Scenario 3 are 80 percent below 2020 by 2050.”⁵⁰

Federal law requires that STIPs may only include projects included in a long range transportation plan. Thus, including GHG-reducing projects in accordance with the plan’s GHG scenario planning is the first step toward the state’s 2050 GHG reduction goal from the transportation sector. In its discussion of Goal 6: Practice Environmental Stewardship, the CTP 2040 discusses how several recommended policies and strategies of the previous five plan goals support California’s GHG reduction goals. Goal 6 adds to those policies by including as one of its four recommended policies “reduce GHG emissions and other air pollutants.” Recommended strategies under this policy are to use support MPO Sustainable Community Strategies (SCSs) in managing transportation and land use to meet regional GHG targets, implement CEQA review streamlining, collaborate with private entities to deploy mobile source control technologies, and to support other state efforts to reduce transportation sector GHG emissions (cap and trade program, high speed rail, alternative fuels vehicles, pricing strategies, expanding public transit, biking, and walking).⁵¹ Notably, these recommendations make no reference to the plan’s detailed GHG scenario planning. While SB 391 directed Caltrans to show how statewide GHG reduction goals can be met on the state’s transportation infrastructure, the plan is unclear about whether it aims to implement those scenarios.

Agencies that submit projects for inclusion in California’s STIP must submit a form to Caltrans describing the project. These project submission forms have a checkbox that the submitting agency can check for “greenhouse gas reductions.” While the CTP 2040 includes strong policy language aimed at achieving the state’s GHG reduction goals, actual implementation through project selection and performance measurement is lagging. When asked about their efforts to integrate GHG performance management into their project selection process, staff at Caltrans responded that it is something they would like to improve, but are not currently doing.

California delegates much of its transportation decision-making authority directly to MPOs. This happens in several ways. First, SB 45 in 1997 created a mandatory funding split between the state and MPOs. Under the law, the state retains statutorily mandated funding amounts for administration, maintenance, operations, and expenditure of the state highway system, and local assistance programs required by state and federal law. The remaining 75percent of “all transportation funds that are available to the state, including the State Highway Account, the Public Transportation Account, and federal funds”⁵² are allocated to MPOs, with the state retaining 25percent for state control of interregional projects. State law also delegates authority to reduce GHG emissions from the transportation sector to MPOs through SB 375. Accordingly, much of the work to realize reductions in transportation GHG emissions falls on MPOs through planning and implementation of Sustainable Communities Strategies required under SB 375.

⁵⁰ *Ibid.* at 80.

⁵¹ *Ibid.* at 124.

⁵² Cal. Sts. & High. Code § 163.

Washington

Washington climate goals

Washington Governor Christine Gregoire issued Executive Order 07-02 in 2007, establishing a goal for the state to reduce GHG emissions by 2050 to 50 percent below 1990 levels. The legislature set this goal in statute by passing Senate Bill 6001, also in 2007.⁵³ In 2008, Washington became the first state to adopt statutory targets for reducing VMT for light-duty vehicles when the legislature passed House Bill 2815. To achieve these targets, HB2815 directed three state agencies – the departments of Transportation, Ecology, and Commerce – to convene a collaborative process to develop tools and best practices to assist MPOs in achieving the statewide targets. In contrast with California, HB 2815 does not establish MPO-specific targets for either GHG reductions or VMT reductions, and MPOs are not specifically required to meet HB 2815’s statewide targets. In 2009, Governor Gregoire issued Executive Order 09-05, which directs the Dept. of Transportation to work with the four largest MPOs (Seattle, Olympia, Vancouver, and Spokane) to “cooperatively develop and adopt” regional transportation plans to achieve the VMT targets. Subsequent litigation over this directive, however, has shown that these efforts to reduce transportation sector GHG emissions at the regional level are not tied to the state’s economy-wide GHG goals set in EO 07-02.⁵⁴

Washington’s current state-level transportation plan, the Washington Transportation Plan 2035, was adopted by Washington State Transportation Commission in 2015. The plan is organized around six transportation goals which were written and set in statute by the legislature:

- Economic Vitality. To promote and develop transportation systems that stimulate, support, and enhance the movement of people and goods to ensure a prosperous economy
- Preservation. To maintain, preserve, and extend the life and utility of prior investments in transportation systems and services
- Safety. To provide for and improve the safety and security of transportation customers and the transportation system
- Mobility. To improve the predictable movement of goods and people throughout Washington State
- Environment. To enhance Washington’s quality of life through transportation investments that promote energy conservation, enhance healthy communities, and protect the environment
- Stewardship. To continuously improve the quality, effectiveness, and efficiency of the transportation system⁵⁵

⁵³ RCW 70.235.020

⁵⁴ See *Cascade Bicycle Club v. Puget Sound Reg'l Council*, 175 Wn. App. 494, (Wash. Ct. App. 2013) (*infra*)

⁵⁵ Washington State Transportation Commission. 2015. Washington Transportation Plan 2035. https://wtp2035.files.wordpress.com/2015/01/wtp2035_final_21-jan-2015.pdf

One recommended action under the “Environment” goal is to “Make significant progress toward meeting statewide greenhouse gas reduction goals through vehicle and fuel technology, system management and operations, land use, transportation options, and pricing strategies. Identify both near- and long-term actions appropriate for implementation at both state and regional levels.”⁵⁶ Thus, while none of the six goals is specifically directed at GHG reductions, at least one of the goals is tied to the state’s GHG reduction goals.

Washington transportation funding and decision-making

State-controlled transportation revenue and constraints

Washington’s total transportation funding in the 2016 budget is \$5.7bil.⁵⁷ Two main funds comprise the majority of transportation funding in Washington: the Motor Vehicle Fund, and the Multimodal Fund. Gas taxes are constrained by a constitutional amendment in Washington that requires that revenues from the gas tax may only be spent on highway purposes.⁵⁸ Gas tax revenues are deposited into various sub-accounts within the Motor Vehicle Fund by statutory formula. For instance, after administrative dedications, 44 percent of gas tax revenues must be expended for highway purposes, 2.3 percent are deposited in the Puget Sound Ferry Operations Account (which is specifically defined in the state constitution as part of the public highway system and eligible for gas tax funding), 10.7 percent are distributed to cities, and 19.2 percent are distributed to counties.⁵⁹ The Multimodal Transportation Fund is funded through a dedication of a portion of a motor vehicle excise tax, and is not constrained by Washington’s constitutional amendment § 18.

Climate goals in transportation programming

The state’s current LRTP, the Washington Transportation Plan 2035, describes reducing GHG emissions from transportation in order to meet the state’s larger GHG and VMT reduction goals. But the plan falls short of prescribing performance measures to actually ensure that transportation funding is spent to reduce GHG emissions. While the plan, by law, is the roadmap for all transportation programming undertaken by the state, the plan’s goals are written so broadly as to not require that programming results meet any specific goals or targets. Project selection for large projects in Washington happens in the state legislature’s biennial transportation appropriation bill. With individual legislators competing for funding for specific projects, meaningful statewide concern for GHG reductions is often reduced to an afterthought. These biennial transportation appropriations list projects that will receive funding are listed by program (interstate, preservation, operations, ferries, rail, etc.) and

⁵⁶ *Ibid.* at 37.

⁵⁷ State of Washington. 2016. 2016 Supplemental Transportation Budget: Operating and Capital. <http://leap.leg.wa.gov/leap/budget/lbns/2016LBNTran.pdf>

⁵⁸ Wash. Const. § 18

⁵⁹ RCW 46.68.090

funding source, but do not include accounting for compliance with goals or performance measures.⁶⁰

Massachusetts

Massachusetts climate goals

With the Global Warming Solutions Act of 2008, the State of Massachusetts set state level goals to reduce GHG emissions by 25 percent below 1990 levels by 2020 and 80 percent below 1990 levels by 2050. Further, the state's Executive Office of Energy and Environmental Affairs developed a Massachusetts Clean Energy and Climate Plan (CECP), which calls on a 7.6 percent reduction of transportation sector GHG emissions. The Massachusetts Department of Transportation's (MassDOT) role in the state's GHG reduction goals are established in administrative rule, which places three requirements on MDOT:

- Requires MassDOT to demonstrate that its GHG reduction commitments and targets are being achieved;
- Requires each MPO to evaluate and track the GHG emissions and impacts of its RTP and TIP;
- Requires each MPO to develop and utilize procedures to prioritize and select projects in its RTP and TIP based on factors that include GHG emissions and impacts.⁶¹

Unlike California and similar to Washington, Massachusetts' GHG reduction goal is statewide, with no requirement for MPOs to meet the goal. Similar to Caltrans in California, the state transportation agency in Massachusetts, MassDOT, is required to show through planning that its GHG reduction commitments are achieved.

Massachusetts' state level long range transportation plan is called weMove Massachusetts, and contains three high-level policy priorities:

- Infrastructure Maintenance and Preservation
- Access to Jobs and Opportunity
- Sustainability⁶²

The "Sustainability" priority area in the weMove plan describes MassDOT's GreenDOT initiative: "GreenDOT is MassDOT's comprehensive initiative that will make the agency a national leader in 'greening' the state transportation system by reducing greenhouse gas (GHG) emissions; promoting the healthy transportation options of walking, bicycling, and public transit; and supporting smart growth development."⁶³ The goals of the GreenDOT initiative are threefold:

⁶⁰ State of Washington. 2016. 2016 Supplemental Transportation Budget: Operating and Capital. <http://leap.leg.wa.gov/leap/budget/lbns/2016LBNTran.pdf>

⁶¹ 310 CMR 60.05

⁶² Massachusetts Dept. of Transportation (MassDOT). 2014. *weMove Massachusetts: Planning for Performance (WMM)*.

www.massdot.state.ma.us/Portals/22/Docs/WMM_Planning_for_Performance.pdf

⁶³ *Ibid.* at 16.

- Designing a multimodal transportation system, including increases in bicycle facilities and improved transit performance;
- Developing healthy transportation options and livable communities; and
- Tripling the mode share of walk, bike, and transit.⁶⁴

Massachusetts transportation funding and decision-making

State-controlled transportation revenue and constraints

Transportation funding in Massachusetts is consolidated into two funds, the Commonwealth Transportation Fund (CTF) and the Transportation Trust Fund (TTF). The CTF is funded mainly by gas tax and registration fee revenues, as well as a dedicated 0.385percent of the state sales tax, and is used to pay debt service for capital projects.⁶⁵ The TTF is funded by tolls and other revenues, and is used to pay for MassDOT operations and additional special obligation debts. The CTF FY 2015 balance is \$2bil, while the TTF FY 2015 balance is \$962mil.⁶⁶ Although the CTF is partially funded by the gas tax, vehicle registrations, and sales tax, the state does not solely rely on these pay-as-you-go revenues. Instead, Massachusetts usually passes a state transportation bond, approved by the legislature roughly every three years.⁶⁷

The Massachusetts Constitution requires that taxes on the operation of motor vehicles and fuels be used for roads, bridges and mass transportation lines.⁶⁸

State statute establishes the CTF, and further guides its use. The CTF is the primary state-level transportation fund in Massachusetts, and it receives all revenues from federal disbursements, the state gas tax, vehicle sales taxes, vehicle registration fees, and general fund transfers. The legislature passes a transportation bond funding bill on a biennial basis, which is backed by the CTF.⁶⁹ Every year and pursuant to state statute, at least \$160 million of the CTF is transferred to the Massachusetts Bay Transportation Authority, and \$140 million to regional transit

⁶⁴ *Ibid.*

⁶⁵ MassDOT Fiscal Office, 2016. Revenue and Expense Report Budget Fiscal Year Ended June 30, 2015 (BFY2015).

https://www.massdot.state.ma.us/Portals/0/docs/infoCenter/financials/FY_2015.pdf

⁶⁶ MassDOT Fiscal Office, 2016. Revenue and Expense Report Budget Fiscal Year Ended June 30, 2015 (BFY2015).

https://www.massdot.state.ma.us/Portals/0/docs/infoCenter/financials/FY_2015.pdf

⁶⁷ NCSL (National Center for State Legislatures) and AASHTO (American Association of State Highway and Transportation Officials). 2011. *Transportation Governance & Finance: A 50-State Review of State Legislatures and Departments of Transportation*.

<http://www.ncsl.org/documents/transportation/FULL-REPORT.pdf>.

⁶⁸ Massachusetts Constitution Article LXXVIII

⁶⁹ MassDOT. 2016. State Transportation Improvement Program, 2016-2019.

<https://www.massdot.state.ma.us/Portals/17/docs/STIPpercent202016-2019/Finalpercent202016-2019percent20STIPWeb.pdf>

authorities.⁷⁰ Otherwise, MassDOT has considerable discretion to decide the annual allocation of the balance of the CTF.

A portion of federal funding received by Massachusetts is immediately transferred to the state's Accelerated Bridge Program, established by the legislature in 2008 to fund bridge repair. The remaining balance of federal funds are deposited in the CTF, and MassDOT then retains a discretionary amount of the combined federal and state funds from the CTF for projects of statewide significance, such as interstate highway maintenance, planning, and transportation demand management. An additional set-aside portion of the CTF is known as "Chapter 90 funds." Chapter 90 funds, established by Chapter 90 of the Massachusetts General Laws, provide state reimbursement for municipal transportation projects. These funds are allocated to every municipality in the state through a formula based on the city's road miles, employment, and population. The remainder of the CTF is distributed to MPOs by a similar formula based on each MPO's road miles, employment, and population, and each MPO's allocation is called its "regional target fund" for use in the TIP. These formulas were developed by the Massachusetts Association of Regional Planning Agencies (MARPA).⁷¹

Climate goals in transportation programming

Massachusetts has established goals to reduce transportation sector GHG emissions in state statute, administrative rule, and in its state long range transportation plan. State regulation requires MassDOT to demonstrate its GHG reduction commitments and targets for 2020 are met; to evaluate and track GHG emissions of RTPs, TIPs, and the STIP; to develop and utilize procedures to prioritize and select projects based on factors that include GHG emissions.⁷²

When asked how they are implementing this regulation, MassDOT staff replied that they are struggling with this regulation, and remarked that "spending our way out of this – to reduce GHG emissions – isn't something that works."⁷³ Rather, staff recognize that implementation of project selection reform is needed to effect GHG reductions.

In 2013 the Legislature of Massachusetts made an effort to develop reformed project selection criteria by creating the Project Selection Advisory Council (PSAC) to develop a "uniform project selection criteria to be used in the development a comprehensive state transportation plan."⁷⁴

The recommendations for project selection criteria made by this council, which include an "environmental and health effects" criterion, are yet to be adopted by MassDOT. Results from MassDOT's GreenDOT initiative are similarly unfulfilled; the goals of the initiative are not translated into project selection criteria or performance measures that influence decision-

⁷⁰ Part I, Title III, Chapter 29, Section 2ZZZ of the General Laws of Massachusetts

⁷¹ MassDOT, 2016. State Transportation Improvement Program, 2016-2019.

<https://www.massdot.state.ma.us/Portals/17/docs/STIPpercent202016-2019/Finalpercent202016-2019percent20STIPWeb.pdf>

⁷² 310 CMR 60.05

⁷³ Interview with MassDOT staff. June 15, 2016.

⁷⁴ Project Selection Advisory Council (PSAC), 2015. Recommendations for MassDOT Project Selection Criteria. https://www.massdot.state.ma.us/Portals/0/docs/PSAC/Report_Recom.pdf

making. In short, aside from broad policy goals, no evidence of GHG reductions is evident in Massachusetts' transportation project selection process.

Legal Barriers

While all three states have statewide GHG reduction goals, and goals in their LRTPs to reduce GHG emissions, little progress in reducing VMT and GHG emissions from transportation is being accounted. Where is the disconnect? What legal barriers exist that prevent states from implementing these goals? Each state's transportation funding and planning frameworks can theoretically accommodate reforms that would prioritize GHG reductions by shifting funding priorities to project to reduce VMT and GHG emissions. Plaintiffs in each of the three states have pursued court orders requiring state agencies or MPOs to take actions to achieve statutory GHG reduction goals. These legal actions seek to enforce statewide GHG reduction goals on MPO planning efforts, and to require transportation plans to show how GHG goals will be met. In one case, plaintiffs sought to enjoin a MPO from showing how a GHG reduction goal would be met in its LRTP.⁷⁵ The resulting judicial opinions from these cases shed light on the strengths and weaknesses of state mechanisms to reduce GHG emissions from transportation in the three case study states.

Enforceability of state greenhouse gas reduction goals

Passing state goals to reduce GHG emissions is the initial step in a process of actually reducing transportation sector GHG emissions. Goals in statute or executive order can have great symbolic effect, but they require implementing regulations and legal enforceability in order to be realized. Further, the relationship between state goals and implementation is often unclear in terms of legal enforceability. What is the legal effect of state-level greenhouse gas reduction goals on MPOs? What is the legal responsibility of transportation plans for implementing state goals? State courts in California, Massachusetts, and Washington have wrestled with these questions.

At the outset, it is important to note that the role of courts these cases is to interpret how the law applies to the parties. Courts will not tell a government agency how to meet a statutory goal, or what type of policy choices are appropriate. Instead, courts will rule on whether the specific agency actions challenged in a case are within the agency's legal authority. Moreover, federal courts' jurisdiction is limited to cases and controversies by the U.S. Constitution⁷⁶, and state courts follow the same rule. The judicial doctrine of justiciability, which flows from the cases and controversies clause, limits judicial opinions to adjudication of cases and controversies, and prevents courts from engaging in legislative policy-making. In the discussion of case law that follows, courts rule on whether agencies acted within their discretion, or failed to follow a legislative directive. The authority of the courts limits their ability to enforce GHG reduction goals that are not called for in law. In the context of GHG reduction goals, courts will

⁷⁵ *Bay Area Citizens v. Ass'n of Bay Area Gov'ts*, 248 Cal. App. 4th 966, 204 Cal. Rptr. 3d 224 (2016).

⁷⁶ USCS Const. Art. III, § 2, Cl 1

only find transportation agencies responsible for meeting those goals if that duty is placed in an agency by a state legislature. The case law shows that only when an agency abrogates a legal duty will an actual case or controversy be present for a court to enforce.

Statutory authority and rulemaking

Because state regulators can only regulate to the extent the legislature enables them, strong statutory authority to regulate must be given to transportation and other state agencies. Thus, to effectively require actual GHG emission reductions, a statewide statute must go further than simply declaring a goal. It must provide statutory rulemaking authority to state agencies to regulate planning and programming efforts. It should also provide enough specificity to provide clarity about what entities are responsible for achieving goals, and interim targets for achieving long-term goals. Strong, specific statutory language will hold up in court, whereas vague and aspirational goals are not legally enforceable.

A Massachusetts court recently held the language in Massachusetts' Global Warming Solutions Act of 2008, codified as the Climate Protection and Green Economy Act in state statute, is specific enough to require agency action. The Act requires that the Massachusetts Department of Environmental Protection (MassDEP) "shall promulgate regulations establishing a desired level of declining annual aggregate emission limits for sources or categories of sources that emit greenhouse gas emissions."⁷⁷ When a group of citizens petitioned MassDEP for rulemaking pursuant to the Act, the MassDEP responded that they had met their statutory obligation with existing programs limiting sulfur hexafluoride leaks, participation in the northeast Regional Greenhouse Gas Initiative (RGGI) emissions trading market, and an incentive program for low emission vehicles.⁷⁸ MassDEP further argued that the statute required the agency to set enforceable targets for GHG reductions, and not aspirational goals.⁷⁹ The court found no ambiguity in the statute's mandate on MassDEP to set actual and enforceable limits for declining annual GHG emissions from categories of sources of emissions.⁸⁰ The language "desired level" indicates the legislature's intention that MassDEP "establish emission limits by sources or categories of sources," and left it to the department "to determine what those limits would need to be to achieve the compulsory reductions set by the secretary in accord with [the Act]."⁸¹ The court also found that statute shows that the legislature's clear intent requires MassDEP to promulgate regulations that "address multiple sources or categories of sources of emissions, impose a limit on emissions that may be released, limit the aggregate emissions released from each group of regulated sources or categories of sources, set emissions limits for each year, and set limits that decline on an annual basis."⁸²

⁷⁷ Mass. Ann. Laws ch. 21N, § 3

⁷⁸ *Kain v. Massachusetts Department of Environmental Protection*, 474 Mass. 278 (2016)

⁷⁹ *Id.* at 287.

⁸⁰ *Id.*

⁸¹ *Id.* at 289.

⁸² *Id.* at 292.

The Massachusetts Supreme Court’s detailed statutory construction analysis reveals the importance of enabling legislation for creating enforceable GHG reduction policy. The MassDEP sought to rely on existing programs to show progress towards aspirational annual GHG reduction goals. In requiring MassDEP to do more, the court heavily relied on specific terms in the statutory framework. MassDEP is now undergoing rulemaking to implement the statutory goals, and how the rulemaking will apply to transportation sector GHG emissions is yet to be seen. As noted above, MassDOT is already working to implement regulations requiring to evaluate and track GHG emissions of its planning and programming efforts, and demonstrate how GHG reduction targets for 2020 will be met.⁸³ MassDEP rulemaking following the *Kain* decision may require MassDOT to also achieve “declining aggregate annual emissions.”

Role of regional plans in implementing state climate goals

While well-written legislation can require state agencies to set enforceable annual reduction limits on multiple categories of emissions sources through regulations, overall state GHG reduction goals may not require MPO or state agencies to engage in planning efforts that address those state emissions reduction limits. Experience in Washington also illustrates the importance of strong statutory language that requires agencies to act. Whereas the Massachusetts court in *Kain* found a state statute requires specific action by a state agency, a Washington court held that Washington’s GHG reduction goal statute does not require an MPO to demonstrate how its LRTP would meet the goal.

Specifically, statutory GHG reduction goals in Washington were found to be unenforceable on MPO long range transportation planning efforts. In *Cascade Bicycle Club v. Puget Sound Reg'l Council*, the court ruled that Puget Sound Regional Council (PSRC), the federally designated MPO and state designated regional transportation planning organization, did not violate the state law framework in failing to show how it would meet state greenhouse gas reduction goals in its regional comprehensive plan.⁸⁴ Washington’s “current statutory framework does not require that the PSRC adopt a transportation plan for the Puget Sound region that achieves its proportional share of the state's goals for reducing greenhouse gas emissions.”⁸⁵ The state Court of Appeals found that Washington’s statewide GHG reduction limit applies broadly to the entire state, and that nothing in the statute requires the MPO to plan for how the region would meet a pro rata share of the statute’s mandated GHG reductions, even though PSRC’s four-county jurisdiction comprises more than half of the state’s population. The plaintiffs in the case argued that the statute required PSRC to plan for overall GHG reductions of 80percent below 1990 levels over the plan’s 20-year period in the PSRC four-county area. The court found no support for this interpretation of the statute. Rather, the court said, the statute left the question open of how the state would meet the GHG reduction limits, citing subsequent legislative and executive actions that directed specific state agencies to achieve GHG reductions. The court further attacked the plaintiffs’ argument on the grounds that PSRC can only effect on-road vehicle travel through its regional planning efforts. PSRC cannot effect

⁸³ 310 CMR 60.05

⁸⁴ *Cascade Bicycle Club v. Puget Sound Reg'l Council*, 175 Wn. App. 494, (Wash. Ct. App. 2013).

⁸⁵ *Id.* at 499.

through its planning efforts “freight rail, commercial or military aircraft, truck movements at industrial facilities, cargo-handling equipment, or oceangoing vessels.”⁸⁶ PSRC’s planning efforts could also not address clean fuels or cleaner vehicle technologies, the two other sources of transportation GHG reduction potential. Thus, the court reasoned, requiring the MPO comprehensive plan to show GHG reductions at the statutory levels would unfairly ignore contributions from sources out of PSRC’s ability to plan for.

Washington’s statutory scheme for reducing GHG emission lacked specific language on which economic sectors are targeted, which agencies are responsible, and what authority is delegated to agencies to regulate. Without such language, the court concluded, the state’s GHG reduction goals are unenforceable.

Washington is not the only state to wrestle with whether planning efforts are the proper mechanism for implementing statutory GHG reduction goals. The court in *Cascade Bicycle Club* specifically found that because “the legislature has not enacted region- or sector-specific measures or standards,” the court could not “hold PSRC to standards that do not exist.”⁸⁷ In contrast, in California, where the legislature has authorized a state agency to create regional GHG reduction standards through SB 375, a California appellate court found that the San Diego Association of Governments (SANDAG) LRTP must show how it will meet a GHG reduction goal established by executive order.⁸⁸ The state supreme court will review the decision’s central issue of whether a regional transportation plan must include analysis for consistency with a 2005 executive order’s GHG reduction goals.⁸⁹

The plaintiffs in *Cleveland Nat’l Forest Found. v. San Diego Assn. of Gov’ts* challenged SANDAG’s LRTP for noncompliance with the California Environmental Quality Act (CEQA), claiming the plan’s Environmental Impact Report (EIR) was inadequate.⁹⁰ The court agreed that “SANDAG’s decision to omit an analysis of the transportation plan’s consistency with the Executive Order did not reflect a reasonable, good faith effort at full disclosure and is not supported by substantial evidence because SANDAG’s decision ignored the Executive Order’s role in shaping state climate policy.”⁹¹ The structure of SB 375 was crucial to the court’s decision on the reasonableness of SANDAG’s omission of an analysis of the plan’s consistency with 2005’s Executive Order S-3-05 which requires an 80percent reduction below 1990 GHG levels by 2050. SB 375 requires the California Air Resources Board to update regional transportation sector GHG reduction targets every eight years through 2050. Thus, it was clear to the court that the timeline of SB 375 and Executive Order S-3-05 are to be considered in unison. SANDAG contended that without corresponding statute or regulation to translate the Executive Order

⁸⁶ *Id.* at 506.

⁸⁷ *Cascade Bicycle Club v. Puget Sound Reg’l Council* at 515.

⁸⁸ *Cleveland Nat’l Forest Found. v. San Diego Assn. of Gov’ts*, 231 Cal. App. 4th 1056 (2014)

⁸⁹ *Cleveland Nat’l Forest Found. v. San Diego Assn. of Gov’ts*, 184 Cal. Rptr. 3d 725, 343 P.3d 903 (2015) (order granting petition of review)

⁹⁰ *Cleveland Nat’l Forest Found.*, 231 Cal. App. 4th at 1065.

⁹¹ *Ibid.* at 1072.

into “comparable, scientifically based emissions reduction targets,” its EIR could not analyze the LRTP’s consistency with the Executive Order.⁹² The court firmly responded that SANDAG knew that state law requires a continual decrease in transportation sector GHG emissions, and could not abdicate responsibility under CEQA to analyze the effects of its LRTP in light of state law. Further, the legislature “specifically found reducing greenhouse gas emissions cannot be accomplished without improved land use and transportation policy.”⁹³ The court even makes a nod to the responsibility that authority over transportation funding imbues on transportation agencies: “[omitting 2050 GHG analysis] is particularly troubling where, as here, the project under review involves long-term, planned expenditures of billions of taxpayer dollars.”⁹⁴

Another type of challenge to a California MPO’s implementation of GHG reductions via a long range transportation plan came in *Bay Area Citizens v. Ass’n of Bay Area Gov’ts*.⁹⁵ In that case, a citizens group argued that the San Francisco Bay Area MPO “should have relied on emissions reductions already expected from preexisting statewide mandates to fulfill their statutory obligation, rather than adopting regional strategies to reduce emissions beyond those already expected from the statewide mandates.”⁹⁶ This challenge was somewhat opposite to the challenge against SANDAG’s LRTP in *Cleveland Nat’l Forest Found.* In *Cleveland Nat’l Forest Found.*, the plaintiffs argued that the MPO had done too little to show how 2050 GHG reduction goals would be met, whereas in *Bay Area Citizens*, the plaintiffs argued that the MPO had done too much. The citizens group characterized the MPO’s strategies to achieve reduced GHG emissions through land use and transportation strategies to reduce vehicle miles traveled as “draconian.”⁹⁷ In finding the MPO’s LRTP valid, the California Court of Appeals stressed the legislature’s regional emphasis for reducing GHG emissions in SB 375 and its delegation of regional targets to the California Air Resources Board.⁹⁸ The citizens group also challenged the final LRTP under CEQA for inadequately considering alternatives and not responding to comments. The court rejected these challenges, concluded that the MPO had complied with CEQA’s procedural requirements, and deferred to the substantive policy choices the MPO made, holding that the MPO’s decision to adopt “a plan that did more than the minimum necessary to meet their Senate Bill 375 targets” was a valid “substantive choice a lead agency

⁹² *Ibid.*

⁹³ *Ibid.* at 1073.

⁹⁴ *Ibid.* at 1075.

⁹⁵ *Bay Area Citizens v. Ass’n of Bay Area Gov’ts*, 248 Cal. App. 4th 966, 204 Cal. Rptr. 3d 224 (2016).

⁹⁶ *Ibid.* at 975.

⁹⁷ *Ibid.* at 976.

⁹⁸ *Ibid.* at 1003. (“We also conclude the Legislature intended by Senate Bill 375 that the Agencies would develop regional strategies resulting in emissions reductions that would be in addition to those expected from the statewide mandates based on our review of the key documents of the Board, the agency responsible for implementing Senate Bill 375. Specifically, the Board’s Scoping Plan, and its endorsement of its staff’s proposed targets report and technical evaluation of Plan Bay Area, indicate the Board interpreted Senate Bill 375 as calling for the development of such regional strategies to achieve additional reductions.”)

makes in approving a project.”⁹⁹ The *Bay Area Citizens* decision reveals the authority that transportation agencies can legally exercise in planning for GHG reductions. Courts’ acceptance of agency discretion gives transportation agencies the freedom to implement significantly reformed planning and programming efforts that intend to achieve GHG reduction goals. With SB 375, the California legislature paved the way for the MPO’s GHG reduction strategies, and the court in *Bay Area Citizens* upheld the MPO’s implementation.

Synthesis and Discussion

The role of climate goals in transportation funding and decision-making

While some progress in reducing transportation sector GHG emissions is being made, overall VMT and transportation sector GHG emissions continue to rise. Review of each state’s funding, planning, and programming processes yields the conclusion that consideration of GHG emissions is at most vague in each of those processes. Each of the three states has both economy-wide GHG reduction goals at the state level, as well as goals in their state transportation plans to reduce GHG emissions on the state highway system intended to contribute to the state level economy-wide goals. Funding of specific projects, however, is not following suit. While goals have been passed, frameworks for altering existing transportation programming processes have not changed, and funding is still flowing to highway repair and expansion, and net VMT continues to rise, even if modest declines in per-capita VMT continue. In order to make progress toward their GHG reduction goals, these states must pursue new mechanisms for funding, planning, and programming (or implementing) transportation investments that result in GHG emission reductions.

A need for performance-based planning and programming

Plan goals are often written very broadly; agencies have discretion to squeeze any type of project into the planning framework. Indeed, despite a result of overall increases in GHG remissions, a highway expansion project can be claimed to fit within an environmental stewardship plan goal if the project includes, for example, green infrastructure for stormwater runoff, or electric vehicle charging stations. As discussed in more detail below in the context of state law in the three case study states, existing legal mechanisms at the federal level are insufficient to prevent these types of results. For example, a highway project in Alabama recently withstood legal challenge that sought to require an analysis of environmental impacts under the National Environmental Policy Act.¹⁰⁰ A United States District Court upheld that state DOT’s finding that the highway expansion project would have no significant impact on the human environment.¹⁰¹ The brand of subjective, opaque transportation programming that leads to such counterintuitive results prevents transparency and undermines planning processes that seek to achieve specific goals.

⁹⁹ *Ibid.* at 1021.

¹⁰⁰ *Austin v. Ala. DOT*, No. 2:15-cv-01777-JEO, 2016 U.S. Dist. LEXIS 159113 (N.D. Ala. Nov. 16, 2016)

¹⁰¹ *Ibid.*

The clearest way for states to ensure their programming efforts result in reduced GHG emissions from the transportation sector would be to design, implement, and enforce a GHG performance measure for all new transportation spending, with clear mechanisms for performance data to feed back into project selection processes. The Federal Highway Administration provides a framework for performance-based planning and programming, which can easily be used as a model for GHG reduction performance. See Figure 1.



Figure 1. Performance-based planning and programming.¹⁰²

FHWA’s process for performance-based planning and programming illustrates how system performance should inform the development of performance measures, investment prioritization, and project programming to achieve desired goals and targets. States with GHG reduction goals should create desired transportation sector GHG reductions, and integrate performance outcomes into investment prioritization and programming. Without GHG data integrated into performance-based transportation planning and programming, broad goals to reduce GHG emissions from transportation are rendered meaningless. In California, projects are submitted to the state transportation agency for inclusion in the STIP using a one-page form. This form includes two checkboxes, one for “Supports sustainable communities strategy

¹⁰² FHWA. 2015. The Transportation Planning Process Briefing Book: Key Issues for Transportation Decisionmakers, Officials, and Staff. A Publication of the Transportation Planning Capacity Building Program, Federal Highway Administration, Federal Transit Administration. Available at http://www.fhwa.dot.gov/planning/publications/briefing_book/fhwahep15048.pdf.

goals” and one for “Reduces GHG emissions.”¹⁰³ While the project may have gone through more rigorous screening through a regional MPO before submission to the state for funding, the state currently imposes no assurances or GHG reductions. If the project is an interregional project of statewide significance, subject solely to the state’s planning and programming jurisdiction, no further analysis of GHG reductions is required. For a conceptual diagram of how a process to integrate GHG impacts in planning and programming decisions should work, see Figure 2. In this framework, GHG performance measures are implemented into all stages of transportation programming. They are also implemented into the funding framework to ensure that funding constraints are not opposed to the results of a performance-based programming framework. If a programming framework is successfully modified to support a performance-based approach, the funding framework must also be modified such that available funding is unconstrained and can fulfill the results of the programming process.

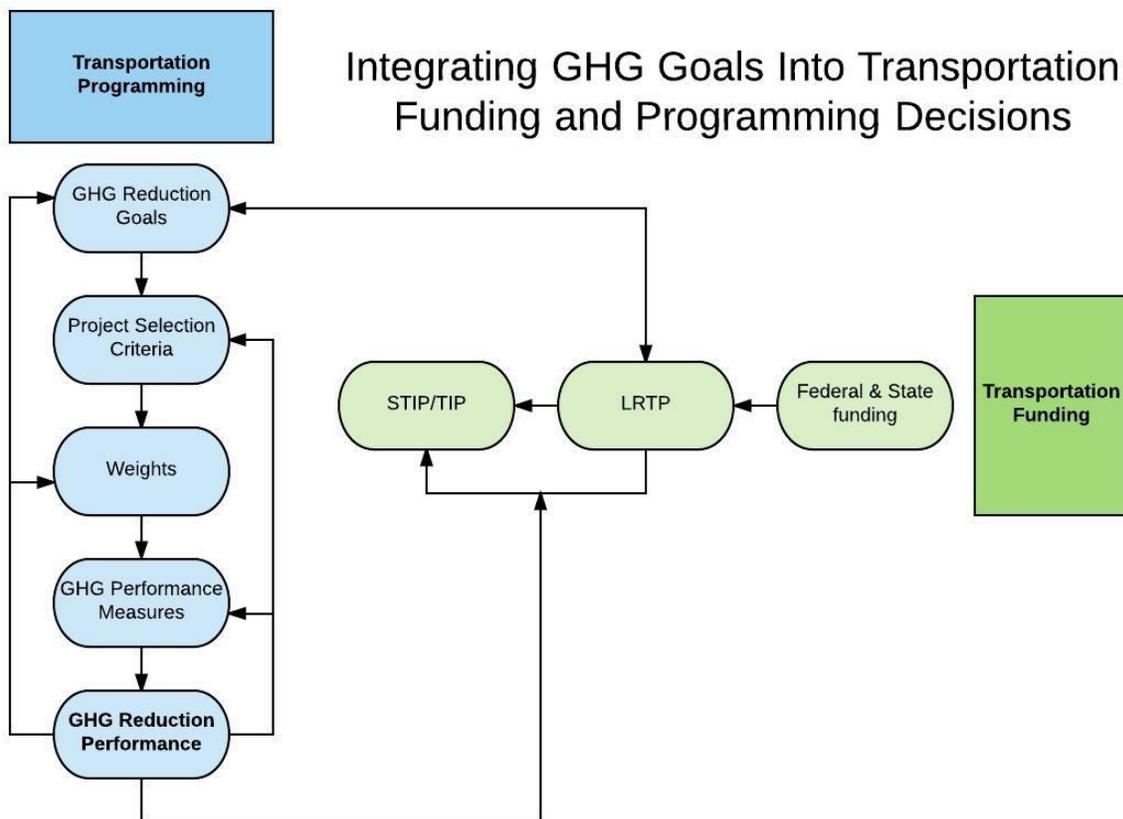


Figure 2. Ideal process for integrating GHG goals into transportation funding and programming decisions.

Performance-based planning also provides greater accountability. During the great recession of 2008, per capita VMT dropped throughout the country, and in some states overall transportation section GHG emissions declined. This decrease in GHG emissions was not the

¹⁰³ See Appendix 1.

result of any changes in transportation funding, planning, or programming, but was the result of external economic forces. A transportation process that monitors and evaluates GHG performance, and integrates performance data into funding, planning, and programming processes, can isolate the GHG emission reductions attributable to government expenditures.

Barriers to legal enforceability

Existing statutes to reduce GHG emissions from the transportation sector are insufficient as they do not provide adequate means of enforcement. Effective statutory language requires specific actions by state agencies to achieve state GHG reduction goals. Court decisions in *Kain*, *Cascade Bicycle Club*, and *Cleveland National Forest* illustrate this point. All three states' statutory schemes fall short of requiring GHG considerations to be fully implemented in transportation agency funding, planning, and programming processes. Without clear statutory direction, existing legal mechanisms are insufficient in enforcing a consideration of GHG emissions at the transportation programming phase, and thus progress towards reducing GHG emissions from the transportation sector is stifled.

All three states discussed here have state environmental review statutes, similar to the federal National Environmental Policy Act (NEPA), that apply to state actions. The laws generally require analysis of the environmental effects of a proposed state project, and that those environmental effects be considered in the project decision-making process.¹⁰⁴ In both the California and Washington court decisions discussed here, plaintiffs brought their claims challenging regional plans' lack of conformity with state climate goals alongside claims alleging State Environmental Policy Act (in Washington) and California Environmental Quality Act (in California) violations. It is difficult to separate the state goal-regional plan compliance issue from the SEPA/CEQA-based legal claims. This is likely because transportation plans themselves provide no specific cause of action for plaintiffs, but instead can only be appealed under an environmental review statute (SEPA/CEQA) or a state administrative procedure act. Administrative procedure acts often leave plaintiffs to struggle with the "arbitrary and capricious" standard of review, which requires plaintiffs to prove that agency actions were taken without supporting analysis or good faith. Environmental review statutes, including SEPA and CEQA, provide "a basis for challenging whether governmental action is in compliance with the substantive and procedural provisions" of the laws.¹⁰⁵ The burden of proof under environmental review statutes is generally lower than in administrative procedure acts, and provide a great possibility of success for plaintiffs. But environmental review statutes also provide a great deal of discretion to agencies. Generally, so long as alternative proposals are considered, a court will not replace an agency's preferred alternative decision with its own.

Inherent jurisdiction of the courts provides a third lever for challenging agency action or inaction. In Washington, plaintiffs in *Cascade Bicycle Club* sought and received a writ of review of the MPO's plan under the state constitution granting the courts inherent constitutional

¹⁰⁴ See California Public Resources Code 21000–21177, RCW Chapter 43.21C, and Mass. Ann. Laws ch. 30, § 61.

¹⁰⁵ See Wash. Rev. Code Ann. § 43.21C.075(1)

power to review agency decisions.¹⁰⁶ Environmental review statutes provide one useful channel for the public to appeal an agency decision, but they are not the only channel. State administrative procedure acts and constitutional jurisdiction of the courts have proved to be feasible levers for enforcement actions against transportation planning and programming agencies. However, all three of these levers to compel enforcement are subject to agency discretion. Statutory direction is the only way to ensure that agencies are responsible for accomplishing specific actions or meeting certain goals. Plaintiffs in California and Massachusetts have succeeded in enforcing agency action because they showed that state agencies were not fulfilling clear statutory duties assigned by state legislatures to reduce transportation sector GHG emissions.

Inadequacy of plans for reducing transportation sector GHG emissions

The very nature of planning documents makes their language difficult to enforce. While federal law requires that programming decisions must generally be consistent with plans, the implementation of specific targets, actions, or recommendations within plans is unenforceable. Plans are meant to guide development trends, but not be a blueprint for every agency decision. The effect of the unenforceability of plan language is twofold: (1) transportation agencies are incentivized to write LRTPs with broad, aspirational language that is not susceptible to specific legal challenge, and (2) without specific project selection criteria set out in the LRTP, a wide range of projects can be argued to fit within the broad, aspirational plan goals. The takeaway lesson from these observations is that because of their general unenforceability, plans should not be relied on as the primary means of accomplishing statutory GHG reduction goals. Greater mechanisms of accountability are needed. Without clearer, enforceable language in statute that directs planning agencies to accomplish specific goals and meet specific targets, plans are hamstrung. Performance-based planning and programming provides a solution, but to ensure it is used, legislative intervention is required.

Other solutions moving forward

While specialized GHG reduction funding pots at the state level might seem like an easy, transparent way to assure that transportation dollars are spent on GHG reduction, they skew the efficiency of the overall transportation funding and programming system. Rather, agencies should work to simplify funding categories by eliminating any apportionment of funds. If plan goals, project selection criteria, and performance measures are all informed by project performance data, constraints on funding sources become less necessary. States with a fewer number of state-level funds have greater flexibility to rely on a performance-based project selection system to program a majority of available state funds. However, sometimes specialized or constrained state funds can help ensure a particular goal is met. For example, the Greenhouse Gas Reduction Fund in California, which is funded by revenues from the state's carbon cap and trade program, is earmarked for transportation and land use projects that will reduce GHG emissions. While constrained state funds such as these can help secure funding for a particular goal in the interim, if a truly performance-driven system for project selection that

¹⁰⁶ *Saldin Sec., Inc. v. Snohomish County*, 80 Wn. App. 522, 910 P.2d 513 (1996)

prioritizes project selection based on GHG effects is implemented, the need for constraints on funds disappears.

The federal government's taxing and spending power is a powerful tool for achieving federal policy objectives through state implementation. While this report focuses on ongoing state efforts to reduce GHG emissions from the transportation sector, the federal government has the power and authority to expedite these efforts nationwide. Conditioning the receipt of federal funds on certain state actions is a strategy often used by Congress. *South Dakota v. Dole* is the most appropriate application of the use of federal purse strings to achieve transportation goals.¹⁰⁷ Congress passed the National Minimum Drinking Age Amendment of 1984, which directed the Secretary of Transportation to withhold a percentage of otherwise allocable federal highway funds from states that did not raise their drinking age to 21 years of age.¹⁰⁸ The court upheld this effort as within the purview of Congress's taxing and spending power.¹⁰⁹ A similar enforcement mechanism of a national GHG performance measure could employ the same purse strings. The FHWA's current NPRM for the environmental sustainability national performance goal, *supra*, contemplates such a national GHG performance measure. Precedent for enforcing national goals through control of federal transportation dollars exists, and could be used again for enforcing transportation GHG reductions. Although this project's focus is state policy, the federal government has huge potential to drastically shift transportation programming in the pursuit of reduced GHG emissions. Political shifts and restructuring of the federal executive and Congress mean that states will likely remain the primary actors in transportation sector GHG reduction efforts.

Recommendations for states

States desiring to meaningfully reduce transportation sector GHG emissions can learn from the lessons of the three states discussed here. The following are concrete, legal, and feasible actions states can take to make meaningful progress towards transportation sector GHG reduction goals.

1. **Enact legally enforceable GHG reduction goals in statute, including agency direction to develop mandatory interim targets applicable to specific economic sectors.** The courts in Washington found the state's statewide GHG reduction goals not applicable to the state's largest MPO. Washington's statewide GHG reduction goal imposes that
The state shall limit emissions of greenhouse gases to achieve the following emission reductions for Washington state:
 - (i) By 2020, reduce overall emissions of greenhouse gases in the state to 1990 levels;
 - (ii) By 2035, reduce overall emissions of greenhouse gases in the state to twenty-five percent below 1990 levels;

¹⁰⁷ *S.D. v. Dole*, 483 U.S. 203, 107 S. Ct. 2793 (1987)

¹⁰⁸ *Ibid.* at 205.

¹⁰⁹ *Ibid.*

(iii) By 2050, the state will do its part to reach global climate stabilization levels by reducing overall emissions to fifty percent below 1990 levels, or seventy percent below the state's expected emissions that year.¹¹⁰

As discussed above, a Washington appellate court found this GHG reduction goal did not require Washington's largest MPO to show in its LRTP how the MPO would meet its proportionate share of GHG reductions.¹¹¹ Thus Washington's statute did not require enforceable GHG reductions. In Massachusetts, however, a court found statutory language that set GHG targets and directed a state agency to develop set emission limits from categories of sources was enforceable: the Massachusetts Department of Environmental Protection (MassDEP) "shall promulgate regulations establishing a desired level of declining annual aggregate emission limits for sources or categories of sources that emit greenhouse gas emissions."¹¹² California's statutory scheme is similarly enforceable because of the specificity of the language used by the legislature in directing that MPOs shall

set forth a forecasted development pattern for the region, which, when integrated with the transportation network, and other transportation measures and policies, will reduce the greenhouse gas emissions from automobiles and light trucks to achieve, if there is a feasible way to do so, the greenhouse gas emission reduction targets approved by the state board.¹¹³

Because the Washington statutory GHG reduction goals did not direct specific action by either a state agency or a regional MPO, no enforcement mechanism exists to ensure the goal will be met. Therefore, states must go beyond declaring goals in statute, and must direct specific actions by implementing agencies to ensure the goals are met.

2. **Develop a transportation GHG performance target and implement a corresponding GHG performance measure into project programming processes.** No state currently integrates such a GHG performance target throughout its transportation funding, planning and programming framework, although the process is called for by FHWA.¹¹⁴ California's GHG scenario planning in the state's LRTP is the most robust effort to fully integrate GHG considerations in all stages of transportation decision-making. This plan, though, falls short in implementing the GHG scenario plans into funding and programming processes. States and MPOs should develop GHG performance targets and integrate GHG performance measures into project selection criteria. After project implementation, GHG monitoring data should be considered in project selection criteria and weights in a data-driven, performance-based programming feedback process.

¹¹⁰ Wash. Rev. Code Ann. § 70.235.020

¹¹¹ *Cascade Bicycle Club v. Puget Sound Reg'l Council*, 175 Wn. App. 494, (Wash. Ct. App. 2013).

¹¹² Mass. Ann. Laws ch. 21N, § 3

¹¹³ Cal. Gov't Code § 65080(b)(2)(B)(vii)

¹¹⁴ FHWA. 2015. *The Transportation Planning Process Briefing Book: Key Issues for Transportation Decisionmakers, Officials, and Staff*. A Publication of the Transportation Planning Capacity Building Program, Federal Highway Administration, Federal Transit Administration. Available at

http://www.fhwa.dot.gov/planning/publications/briefing_book/fhwahep15048.pdf.

3. **Remove constraints on funding.** Once a performance-based project programming process is implemented, constraints on funding that might inhibit selection of projects with GHG reduction effects should be eliminated. The broad range of constraints – limitations on the use of gas taxes, formula splits for operations and capital expenditure, funding programs earmarked for modes or corridors, debt repayment, etc – can prevent the availability of adequate funding to program GHG-reducing projects. While some formulas make sense for maintaining statewide equity, eg. rural-urban splits, an overall neutrality of available funds helps ensure that project selection decision-making will reflect GHG reduction goals. States with fewer state-level funds have greater flexibility to rely on a performance-based project selection system to program most available state funds. However, sometimes specialized or constrained state funds can help ensure a GHG reduction goal is met. For example, the Greenhouse Gas Reduction Fund in California, which is funded by revenues from the state’s carbon cap and trade program, is earmarked for transportation and land use projects that will reduce GHG emissions. When a truly performance-driven system for project selection is implemented, the need for constraints on funds disappears.
4. **Create custom GHG reduction goals for metropolitan regions.** California’s experience is instructive. By placing both authority and accountability in MPOs, California’s legislative framework to reduce GHG emissions from transportation has thus far withstood legal challenges. Custom goals for regions can help offset the inequities that may result from imposing a statewide GHG reduction goal. Urban regions are more likely to achieve transportation sector GHG reductions because of a higher potential to reduce GHG emissions in densely populated areas where more people live, work, and commute. Since MPOs receive federal transportation funding directly from the federal government, MPOs, rather than state governments, often control the majority of both federal and state transportation dollars in metropolitan areas.
5. **Incentivize coordination of land use planning and transportation investments.** Again, California is leading the way through its embedding of GHG reduction goals in multiple policy areas. The California legislature’s streamlining of its state environmental review statute, CEQA, for infill development projects included in MPO sustainable communities strategies that lead to reduce GHG emissions promotes rapid implementation of these projects. Additional CEQA reform legislation alters the way transportation impacts are measured, switching to a VMT threshold, where only projects that result in VMT above a certain threshold require full CEQA review. These policy changes incentivize compact land development patterns that complement transportation projects that will reduce GHG emissions.

Conclusion

The transportation infrastructure responsible for GHG emissions is the result of deeply rooted national policy. Car culture in the United States is the byproduct incredibly expensive built infrastructure. These double barrels of transportation GHG emissions – transportation built infrastructure and transportation behaviors – are huge barriers to reducing transportation sector GHG emissions. State goals to reduce GHG emissions are noble first-steps, but they

alone cannot overcome these barriers. The recommendations presented here, including strong statutory GHG reduction policies and performance-based planning and programming, are crucial steps for states to take a significant step towards reducing transportation sector GHG emissions through funding and planning mechanisms.

Implementing these steps will not be easy. All states and their transportation agencies face several competing goals and priorities. Reforming funding, planning, and programming around the singular goal of reducing GHG emissions may seem impracticable to many states. However, the co-benefits of reforming transportation funding, planning, and programming to reduce GHG emissions will likely entail significant progress towards other transportation goals, including safety, mobility, and economic development. States serious about reducing transportation sector GHG emissions must prioritize the reforms recommended here and absorb any negative effects that arise as GHG emission reductions are achieved.

Indeed, the latency of those results is another hardship states face. Once projects that will reduce GHG emissions are funded, planned, and programmed – a process that itself will likely take decades – resulting reductions in GHG emissions will likely take several more years. While this latency can be a hard pill to swallow for policy makers, the benefits of a stable global climate and livable transportation system are well worth the wait. Latency of results also highlights the need for transportation agencies to monitor results, and use a performance-based planning and programming system to modify the programming process based on those results. Many transportation agencies will be concerned about risks to their agencies when they set GHG reduction targets that will be difficult to meet, especially given nearly universal funding shortfalls among state transportation agencies.¹¹⁵ These risks can at least partly be mitigated by strong state legislative action that mandates agency action, and ideally is accompanied by extra funding to achieve transportation sector GHG reductions.

Aside from the financial and legal difficulties faced by transportation agencies, several other barriers complicate agencies' willingness and ability to reduce transportation sector GHG emissions. Performance-based planning and programming requires a dedication of increased financial, human, and technical resources to transportation agencies' planning and programming offices. If state governments are unwilling to commit these resources, it may well be that public funding is better allocated towards other means of reducing transportation sector GHG emissions, such as electric vehicles and alternative fuels. As these alternative fuel technologies and vehicle efficiency technologies (the other two legs of the three-legged stool of

¹¹⁵ FHWA. 2015. The Transportation Planning Process Briefing Book: Key Issues for Transportation Decisionmakers, Officials, and Staff. A Publication of the Transportation Planning Capacity Building Program, Federal Highway Administration, Federal Transit Administration. Available at http://www.fhwa.dot.gov/planning/publications/briefing_book/fhwahep15048.pdf.

transportation sector GHG reductions¹¹⁶) continue to improve, transportation agencies might place less importance on the reductions in vehicle miles traveled that primarily come from the reforms to planning and programming efforts recommended here. In that case, transportation agencies should plan for GHG reductions from vehicle technologies and fuel content alongside GHG reductions resulting from funding, planning, and programming of transportation infrastructure. Prioritizing the recommendations to reduce GHG emissions through funding, planning, and programming can make progress towards transportation agencies' other transportation system goals in their LRTPs. The performance-based planning and programming approach to GHG reductions can also be applied safety, economic development, system preservation, mobility, or other goals by encouraging agencies to set multiple targets and implementing project selection criteria in the programming process to achieve those targets and goals. When GHG reduction goals are integrated into funding, planning, and programming process, specific strategies to reduce transportation sector GHG emissions will be prioritized in the project selection process. Strategies such as transit-oriented development, bicycle and pedestrian projects, and expanded transit infrastructure and service will receive more funding following the implementation of this report's recommendations. These strategies will likely make progress towards multiple transportation goals.

The case study states addressed here do have clear have GHG reduction goals, but do not have clear project selection criteria and weighting structures to ensure selection of GHG-reducing projects. Further research in this area could unveil how these states select project selection criteria and weights. The research for this report found that information on how project selection criteria are developed and applied is often not readily available to the public. States may face specific barriers to reforming how they develop and implement project selection criteria. This report recommends consideration of GHG emissions in the project selection state of planning and programming, but transportation agencies likely need more direction on specific measures to implement as project selection criteria. Further research should recommend specific project selection criteria to reduce GHG emissions, and how to implement them.

Funding, planning, and programming of transportation infrastructure are complicated, interrelated processes that implicate many areas of public policy concern. Transportation infrastructure touches nearly every aspect of the American economy. With the rate of global climate change accelerating by the day, the externalized harms of our fossil fuel based transportation system can no longer be absorbed by individuals while ignored by policy makers. Drastic shifts to the ways that we spend transportation dollars are required. While many states are making this realization, much greater action is required to implement coordinated transportation funding, planning, and programming processes that actively transform our transportation infrastructure. Through strong leadership from state governments, unconstrained and increased transportation funding, and performance-based planning and

¹¹⁶ Ewing, R., Bartholomew, K., Winkelman, S., Walters, J., & Chen, D. (2007). *Growing Cooler: The Evidence on Urban Development and Climate Change*. Washington DC: Urban Land Institute.

programming, state transportation agencies can do the difficult work required to meet their GHG emission reduction goals.

Appendix 1. Caltrans Project Programming Request (PPR) Form

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
PROJECT PROGRAMMING REQUEST
 DTP-0001 (Revised April 2015)

General Instructions

<input checked="" type="checkbox"/> New Project					Date:	11/15/16
District	EA	Project ID	PPNO	MPO ID	TCRP No.	
County	Route/Corridor	PM Bk	PM Ahd	Project Sponsor/Lead Agency		
				MPO	Element	
Project Manager/Contact		Phone		E-mail Address		
Project Title						
Location, Project Limits, Description, Scope of Work						<input type="checkbox"/> See page 2
<input type="checkbox"/> Includes ADA Improvements			<input type="checkbox"/> Includes Bike/Ped Improvements			
Component	Implementing Agency					
PA&ED						
PS&E						
Right of Way						
Construction						
Purpose and Need						<input type="checkbox"/> See page 2
Project Benefits						<input type="checkbox"/> See page 2
<input type="checkbox"/> Supports Sustainable Communities Strategy (SCS) Goals			<input type="checkbox"/> Reduces Greenhouse Gas Emissions			
Project Milestone						Proposed
Project Study Report Approved						
Begin Environmental (PA&ED) Phase						
Circulate Draft Environmental Document				Document Type		
Draft Project Report						
End Environmental Phase (PA&ED Milestone)						
Begin Design (PS&E) Phase						
End Design Phase (Ready to List for Advertisement Milestone)						
Begin Right of Way Phase						
End Right of Way Phase (Right of Way Certification Milestone)						
Begin Construction Phase (Contract Award Milestone)						
End Construction Phase (Construction Contract Acceptance Milestone)						
Begin Closeout Phase						
End Closeout Phase (Closeout Report)						

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¹¹⁷ Caltrans. 2015. Office of capital Improvement Programming (OCIP). Project Programming Request Template. Available at <http://www.dot.ca.gov/hq/transprog/ocip.htm>.