Reducing Greenhouse Gas Emissions from Transportation: Lessons from West Coast States

Rebecca Lewis, PhD, Robert Zako, PhD, Alexis Biddle, Rory Isbell

rlewis9@uoregon.edu

rzako@uoregon.edu

biddle@uoregon.edu

RESEARCH QUESTION

What are best practices for reducing greenhouse gas emissions (GHGs) from transportation in West Coast States (California, Oregon and Washington), especially by reducing vehicle miles traveled (VMT) from light-duty vehicles?

CONTEXT

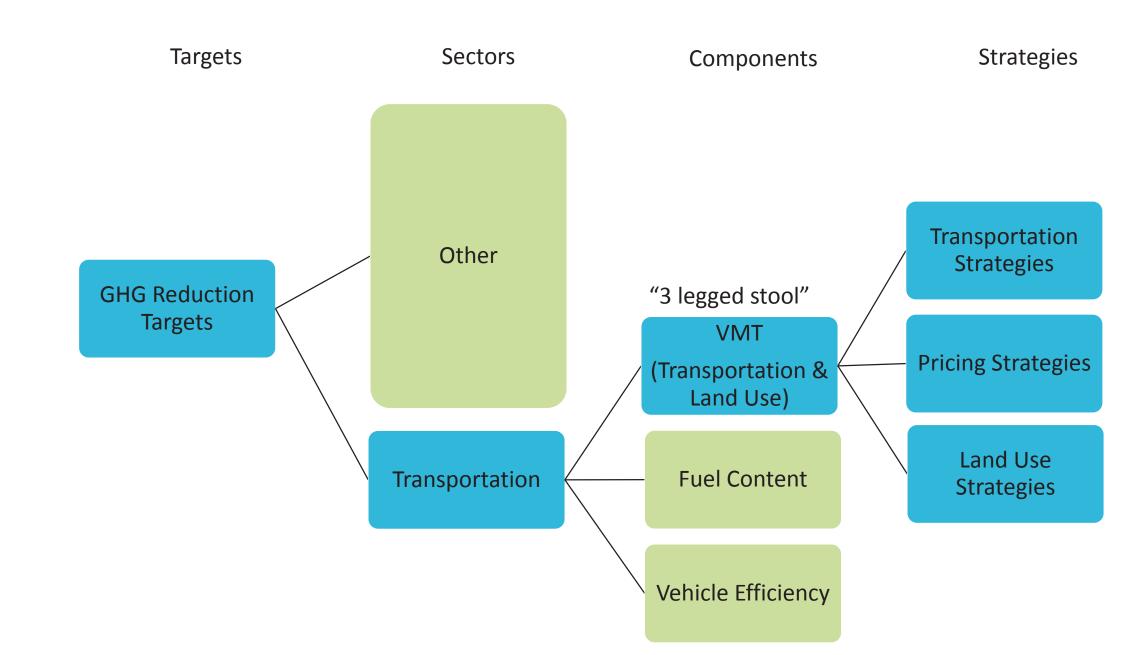


Figure 1: Conceptual Framework

- Nationally, roughly one-third of all GHGs come from the transportation sector. GHGs from motor vehicles are determined by the "three-legged stool" of vehicle efficiency, fuel content and VMT. See Figure 1.
- Approximately 32 states have created state climate action plans and 29 states have adopted GHG reduction goals (1,2).
- Scholars have examined climate action plans (3), climate change in state transportation plans (4) and the implementation of SB375 in California (5).
- Prior research on statutory mandates for reducing GHG from transportation is limited.
- Methods in this study include document analysis of state-level transportation, land use and climate plans; regulations; other plans and programs; and over 30 stakeholder interviews.

	Option	Description	
	Legislated	Legislate targets without modeling how these relate to statewide GHG goal	
Process	Top-Down	Use modeling to set targets to be consistent with statewide GHG goals	
	Bottom-Up	Set targets based on what is technically / economically / politically feasible	
	Statewide	Set a single target for entire state	
Geography	Ву МРО	Set different targets for each MPO	
	GHG	Measure reductions in GHG as a result of local actions	
Quantity	VMT	Measure reductions in VMT	
Depresentation	Absolute	Target an absolute level to achieve	
Representation	Relative	Target a percentage reduction from some reference	
	Total	Measure total levels (sensitive to population changes)	
Metric	Per Household	Measure levels per household (insensitive to population changes)	
	Per Capita	Measure levels per capita (insensitive to population changes)	
	Baseline	Measure changes compared to a past baseline year	
Reference	Trend	Measure changes compared to the business-as-usual trend in some future year	
Obligation	Mandatory	Each MPO is required to adopt a plan to meet its target	
Obligation	Voluntary	Each MPO may choose to pursue its target	

Table 1: Policy Options in Setting GHG Reduction Targets for Vehicles (6)

risbell@uoregon.edu

STATE REDUCTION TARGETS

Each state has adopted reduction targets for vehicles but the choices vary across states. See Tables 1 & 2.

		Year	Statewide GHGs Goals (relative to 1990)	Light-Duty Vehicle Targets	Target Policy Choices	Key Legislation
	California	2020	0% below	1% above to 8% below	bottom-up by MPO GHG relative per capita baseline (2005) mandatory	2005: EO S-3-05 2006: AB 32 2008: SB 375 2011: EO G-11-024
		2035		1% above to 16% below		
		2050	80% below			
	Oregon	2020	10% below		top-down	2007: HB 3543 2009: HB 2001 2010: SB1 059 2011: OAR 660-044
		2035		17% to 21% below	by MPO GHG relative	
		2050	75% below		per capita baseline (2005) voluntary (except Portland)	
		2020	0% below	18% below	_ VMT relative	2007: EO 07-02 2007: SB 6001 2008: HB 2815 2009: EO 09-05
		2035	25% below	30% below		
	Washington	2050	50% below	50% below		

 Table 2: Statewide GHG Reduction Goals and Light Duty Vehicle Reduction Targets

STATE APPROACHES

California

- Creates MPO specific targets for passenger vehicle use; 18 MPOs create Sustainable Communities Strategies, which are updated every 4 years
- Caltrans includes scenarios to reach GHG target in 2040 California Transportation Plan
- Cap-and-Trade program provides funding to implement Sustainable Communities Strategies
- Uses VMT threshold for California Environmental Quality Act Review (CEQA) under SB 743 and exempts infill projects from CEQA review (SB 226)

Oregon

- Creates Statewide Transportation Strategy including 18 strategies
- Creates MPO specific targets for light-duty vehicles. Portland MPO (Metro) adopted scenario to meet GHG reduction target (Climate Smart Strategy) but other MPOs haven't
- Lack of funding to support investments to implement Climate Smart Strategy and failed 2015 legislation

Washington

- Statutory targets for reducing VMT for light-duty vehicles
- No MPO specific targets; Seattle MPO (Puget Sound Regional Council) transportation plan makes progress in reducing GHGs, but does not meet proportional share of state's goal
- Study of how Washington's Growth Management Act could be used to address climate change
- Washington Transportation Plan 2035 describes meeting statewide GHG reduction goals through vehicle and fuel technology, system management and operations, land use, transportation options, and pricing strategies

Planning, Public Policy & Management | University of Oregon

SYNTHESIS

Policy Framework

- All states have goals to reduce GHG in statute
- Collaboration among west coast states important (OR and WA)
- Gubernatorial leadership important (CA & WA); advocacy groups (OR)
- Using performance metric with flexibility to reach targets (CA)

State Level

- Recent LRTP updates (CA & WA); only CA requires LRTP to reach GHG target
- Statewide Transportation Strategy & modal plans (OR)
- All states transportation agency culture slow to change
- State growth management key strength in reaching goals (OR and WA); key weakness in CA

Metropolitan Level

- Delegate responsibility to MPOs (CA & OR); WA does not
- CA requires all agencies to plan to reduce GHG through SCSs; in OR only Portland and Eugene plan and only Portland adopts scenario
- MPO level effective in CA and Portland because MPOs have more authority than most MPOs; but capacity varies across MPOs
- In WA, only Seattle has voluntarily embedded GHGs into plans

Implementation Mechanisms

- Only CA adopted new legislation and policies to implement SCSs
- Preexisting plans and programs help achieve targets (OR and WA)
- Cap and trade funds for transit (CA) and investing in mass transit (WA)
- Not enough funding to implement plans, funding sources constrained and must balance maintenance and expansion

Monitoring

- All states track levels of GHG and VMT to monitor progress toward goals
- CA and OR update GHG targets every few years
- CA requires updates of MPO plans
- GHG tracking disconnected from transportation agencies
- Little monitoring of plan implementation; show that plans reach targets but not responsible for actually reaching targets
- Reports but no oversight or authority (WA and OR)

Lessons Learned

- Public support and political will in these states
- Sustained leadership and momentum on policies key to success
- Plans will not be successful without adequate funding and reorientation of transportation funding
- Selling co-benefits important for gaining citizen support



Publication EPA 430-R-14-004, April 15, 2015. (2) U.S. Department of State. United States Climate Action Report 2014, Chap. 5: Projected Greenhouse Gas Emissions (3) Wheeler, Stephen. State and Municipal Climate Change Plans: The First Generation. Journal of the American Planning Association. Vol. 74, No. 4, 2008, pp. 481–496. (4) Gallivan, Frank, Jeff Ang-Olson, & Diane Turchetta. Toward a Better State Climate Action Plan: Review and Assessment of Proposed Transportation Strategies. ITransportation Research Record: Journal of the Transportation Research Board, No. 2244, Transportation Research Board of the National Academies, Washington, D.C., 2011, pp. 1–8.

(5) Barbour, Elisa, & Elizabeth A. Deakin. Smart Growth Planning for Climate Protection: Evaluating California's Senate Bill 375. Journal of the American Planning Association, Vol. 78, No. 1, 2012, pp. 70–86 (6) Michele, Lauren. Target and Goal Setting. Policy In Motion (website).









UNIVERSITY OF OREGON

DISCUSSION

Policy research and interviews in California, Oregon and Washington provide important lessons for West Coast states as well as other states. Findings and recommendations are summarized in Table 3.

	Finding	Recommendation	
	MPOs vary in capacity	Provide technical support for planning.	
Planning Authority	Integrating RTPs with plans to reduce GHG can be effective	Require MPOs to show how RTPs reduce GHG and give MPOs oversight over project selection.	
Performance-Based Funding and Approval	State authority over land use provides opportunity to encourage compact development	Make provision of transportation funding contingent on approval of land use plans focused on compact development. In states with strong land use, make boundary expansion contingent on scenario planning	
	Lacking flexible funding sources to implement plans	Remove constitutional limitation on gas tax.	
Implementation Mechanisms	Cap and trade funding provide flexible funding source to implement plans	Encourage competitive cap and trade programs to implement plans and projects.	
	Regulations prevent compact development	Relax regulations to incentivize compact development, bicycle/pedestrian and transit infrastructure.	
Oversight	States lack institutional structure to provide oversight of implementation of plans	Provide monitoring and enforcement responsibility to a state agency with staff, funding and authority.	
Regional and Local Support	Citizen buy-in important to sustained efforts.	Build public support by emphasizing co-benefits of reducing GHGs.	

Table 3: Findings & Recommendations

REFERENCES

(1) U.S. Environmental Protection Agency. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2013.