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

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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

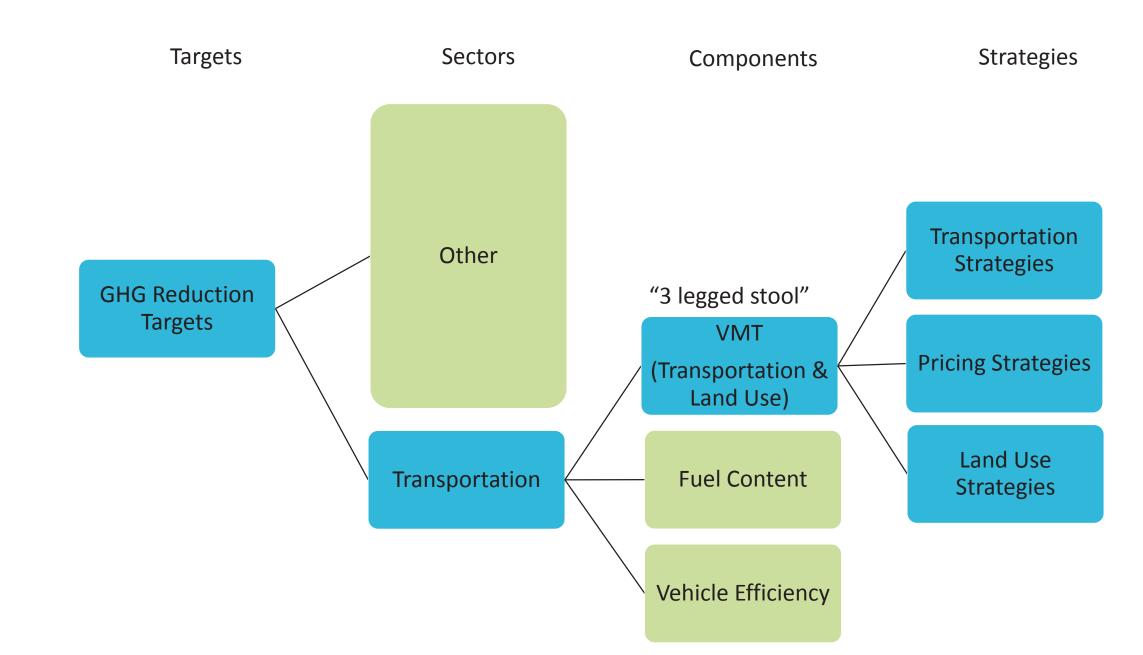


Figure 1: Conceptual Framework

- 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)

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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

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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



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(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).









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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.