Do. Measure. Learn.
(Repeat)

Steve Winkelman
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12th Asilomar Transportation & Energy Conference
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What’s at Stake?
Help govts craft & implement climate policy
- Dialogues: Int’l, US, VMT, State Executives
- Urban Leaders Adaptation Initiative
  “Ask the Climate Question”
- Research: Economic Benefits of Smart Growth
  » Cost-Effectiveness of Travel Efficiency (June 2009)
  » “Growing Wealthier” (Fall 2009)
- International Climate Policy and Transportation
  » Developing country transport GHG policies, NAMAs
  » International Transport Emissions Guidebook
- Unprecedented interest in the last year
  » Congressional committees, state DOT directors, AASHTO, FHWA, EPA, CARB, Ford, WSJ, NYT, Huffington Post, even Al Gore
Transportation

$\text{CO}_2$

Vehicles

Fuels

VMT

The 3-Legged Stool
VMT and Gasoline Prices: 1981 - 2008

S. Winkelman, CCAP, 2009: based on FHWA, US Census, EIA, BLS
VMT +15% / capita (+1.4%/yr) (55 mpg CAFE & -15% GHG)

S. Winkelman, CCAP. 2030: 55 mpg CAFE & -15% Fuel GHG.
VMT -10% /capita (+0.4%/yr)
GHG 33% < 1990 in 2030

S. Winkelman, CCAP. 2030: 55 mpg CAFE & -15% Fuel GHG.
Best Practices can cut VMT per capita by 10%

- Portland region: -9% VMT/capita (1990-2007)
  » Pop +14%, grew as economic center. US: +8%/capita
  » 60% lower VMT than regional avg – household $ savings
- Atlantic Station: -59% VMT/capita
- Sacramento: -8% VMT/capita (through 2035)
- NYC: -1% traffic pop +2%, jobs +6% (2002-7)
  » transit +8%, bike +70%
- Sexy sidewalks work
  » Efficient communities can absorb growth
VMT & Climate Policy Dialogue

- Transport GHG Reduction Incentive Program
- Data & Modeling Recommendations
- Implementation & Performance Measures
- Comparing Travel Efficiency Policy Proposals
  » CCAP, Waxman-Markey, Oberstar, CLEAN-TEA
  » Goals, Implementation Plans, Funding, Accountability
Proposal: Transportation GHG Reduction Incentive Program

- 10% of cap-and-trade $ to fund travel efficiency
- State & MPO bottom-up goal-setting
- A Funded Responsibility
- Provide tools and funding for states & MPOs to Plan, Do, Measure & Learn
- Competitive grants -- “Do More, Get More”
- Travel Data and Modeling Recommendations
GHG Performance Measurement: Linking Policies & Outcomes

- Multiple reasons to measure
  » Baselines, progress, diagnosis, accountability, forecasts
  » Levels of detail and confidence depends on use

- Desired qualities of performance measures
  » Effectiveness at tracking progress on policy goal
  » Efficiency: ability to inform multiple goals
    - E.g., VMT ~ accessibility, wear-and-tear, safety, energy, GHG, household travel costs
  » Practicality: availability and cost of collecting data
GHG Performance Measurement

- Workgroup considered GHG, VMT: total & per cap
  » Measure from historic not forecast levels (e.g., 2005)
  » Accessibility metrics: transp cost/HH (HUD/DOT)
- GHG/capita deemed a good metric (RTAC & BPC too)
- Need VMT and/or fuel data to measure
  » Identify problems & opportunities, calibrate models
- “Flying blind” on data, so workgroup dove into improvement needs
- No need to wait for perfect data
  » Develop GHG baselines from current VMT and fuel data
  » Improve over time
Data Recommendations to Support Performance-Based Transportation Policy

1. Increase **Funding** for Travel Data, Modeling
   Need $1 billion/yr \( \approx \) 1% of $500 billion, or
   1 latté per capita for:
   - state, MPO and local data & planning
   - Federal data, research analysis, model improvement, technical assistance
   (details: March testimony to House Science Cmttee)
Data Recommendations to Support Performance-Based Transportation Policy

2. Improve Quality and Utility of Travel Data
   - NHTS, MPO surveys, VIUS, rotating panel, CFS
   - TRB should study highest priority improvements
   - Assess electronic sources
     (GPS, cell, EZPass, pvt fleets)
   - Short-term:
     - Σ **odometer** (annual, zip code level)
     - Σ **retail fuel sales** (quarterly, zip code level)
     - Σ VMT tax pilot
VMT per Household

$2,000 fuel savings/yr in efficient locations

Source: Mass GIS
CCAP Travel Data Recommendations

3. Enhance Travel **Models and Capacity**
   - CO2 v. speed, transit, land use, TDM, NMT, freight, fuel prices, induced demand, system effic
   - Enhance state, MPO & local planning capacity
CCAP Travel Data Recommendations

4. Improve **Fuel Economy** Measurement
   - Expand testing of real-world fuel economy
   - Improve driving cycle tests, individual FE prediction
   - Important for CO2 vs. speed & traffic flow
CCAP Travel Data Recommendations

5. **Coordinate across Government Agencies**
   (DOT, EPA, DOE, IRS, HUD, Census)
   - Share, compare, corroborate and integrate data sets
     (travel, fuel sales, fuel economy, demographics, land use)
   - Analyze relationships among policy variables
   - Provide guidance, technical support, tools, info on:
     - data collection, model improvement, scenario analyses,
       best practices, policy design, implementation, evaluation
It’s about the economy... (shmendrik)

- Travel efficiency can reduce CO2 at net costs savings (CCAP 2009)
  - Sacramento: save $9 billion, savings of $200/ton
  - Atlanta: Tax revenues $300 million > upfront costs
  - Portland: bikes to save $1,000/ton CO2
  - Georgia: -7% VMT, $400 billion savings
  - Tampa: $60 million streetcar attracted $1 billion pvt
  - PAYD: could cut CO2 8% and save $50 billion/yr
  - Short-tem: cut oil use 14% at < $3/ton CO2
  - Arlington households spend 60% less on gasoline
Climate Models don’t pick it up: “It’s not a real $20 bill”

- Price signal $50/ton ◊ cut 4% VMT
  » Need complementary policies on all 3 legs
  » Models predict 5% of US GHG savings from transportation

- Modelers assume high cost per ton for travel efficiency
  » Portland, Arlington, NYC, Atlanta experience is ignored

- Models miss major GHG benefits
  » E.g., shorter drive trips, walk, bike ◊ 2-4X transit benefits

- Models miss major economic benefits
  » Infrastructure, local taxes, leveraged private investment

- Need Federal assistance – help states, MPOs, locals discover and pursue their own self interest
Federal Opportunities

- **Climate bill**
  - Waxman-Markey: 0 - 1% for travel efficiency
  - CLEAN-TEA: 10% of climate allowance value
  - Prime the pump – start to Do. Measure. Learn.

- **Transportation bill extension**
  - Fund data and planning improvements to transition to performance-based policy.
  - Odometer. Fuel Sales.

- **How Green is your TEA?**
  - Ask the Climate Question: $500 billion cut GHGs?
  - 1% for measurement, evaluation, research, planning
Closing Thoughts

- High VMT growth a policy choice, not pre-ordained
- Travel efficiency can reduce GHGs and save $
- Planning and incentives as important as regulation & technology for climate resiliency
- Smart growth planning is the applied R&D to invent walkable, efficient communities
- You can’t manage what you don’t measure.
- You don’t get what you don’t ask for
The Global Warming Gamble

Policy Levers to Reduce Transportation - Related CO2 emissions

Source: Larry Frank
Transportation & Climate Policy Resources

www.ccap.org

- Travel Data and Modeling Recommendations to Support Climate Policy and Performance-Based Transportation Policy (January 2009)

- Winkelman testimony to House Subcommittee on Technology and Innovation “The Role of Research in Addressing Climate Change in Transportation Infrastructure” (March 2009)

- Cost-Effective GHG Reductions through Smart Growth & Improved Transportation Choices: An economic case for investment of cap-and-trade revenues (June 2009)

- Winkelman testimony to Senate Committee on Environment and Public Works: “Transportation’s Role in Climate Change and Reducing Greenhouse Gases” (July 2009)

- Growing Wealthier: The Economic Benefits of Smart Growth (forthcoming)
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Research Needs
Transportation and Climate

- Winkelman testimony to House Subcommittee on Technology and Innovation “The Role of Research in Addressing Climate Change in Transportation Infrastructure” (March 2009)
- Level, timing and cost of transp GHG reductions (all legs of the stool)
- Economic benefits and co-benefits
- Interactions among measures (induced demand, price response)
- Measuring accessibility (regional, local)
- Impact of fuel price in places with different accessibility levels
- Operationalizing performance metrics
- Real world pilots – measure while doing
- Climate impacts on transportation and adaptation opportunities