Climate Change and Mobility:

Legal Strategies Connecting Greenhouse Gas Emissions, Land Use Planning, and Transportation in California

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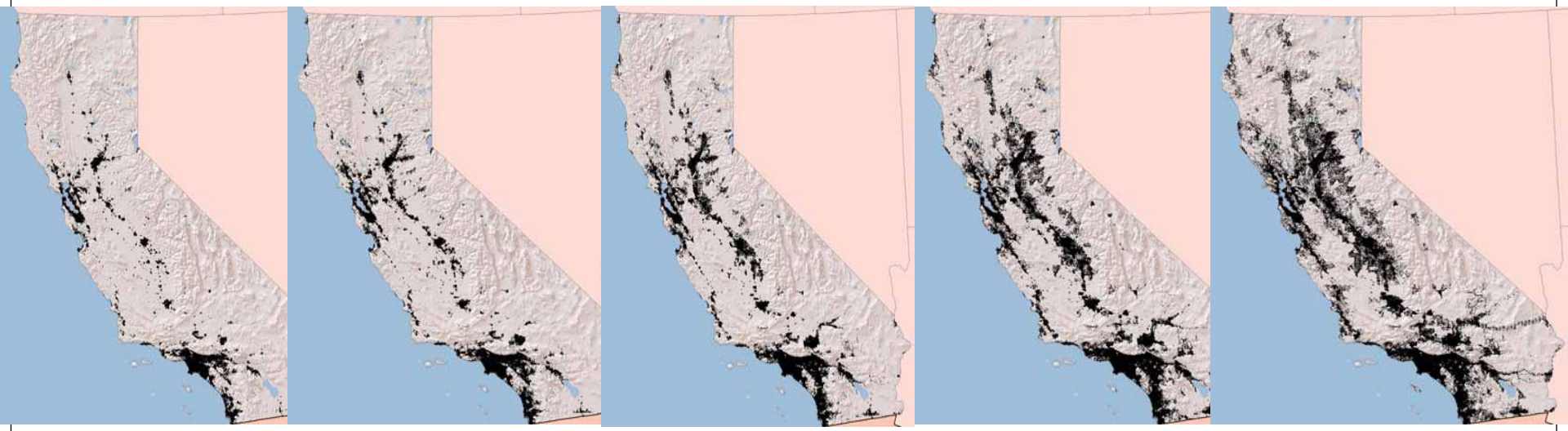
I - Some Facts about California

- Current Population: 38 M (adding ~ 500K/year)
- economy: ~ 1.6B in 2008, about the size of Italy's (but not even close to the richest state)
- Land Area – about the size of Japan
- Climate: Mediterranean, hotter in Central Valley

Projected Urbanization, 2000-2100 (25 year increments)



- Population growth: 50 M by ~2030, 60+ M by 2050, approaching 100 M by end of century
- Urbanized land: 20,000 square kilometers (km2) of urban extent to more than 65,000 km2
- Because large parts of the state are mountain or desert reserves population concentrates along coast and in Central Valley

Source:
http://www.energy.ca.gov/2009publications/CEC-500-2009-013/CEC-500-2009-013-F.PDF

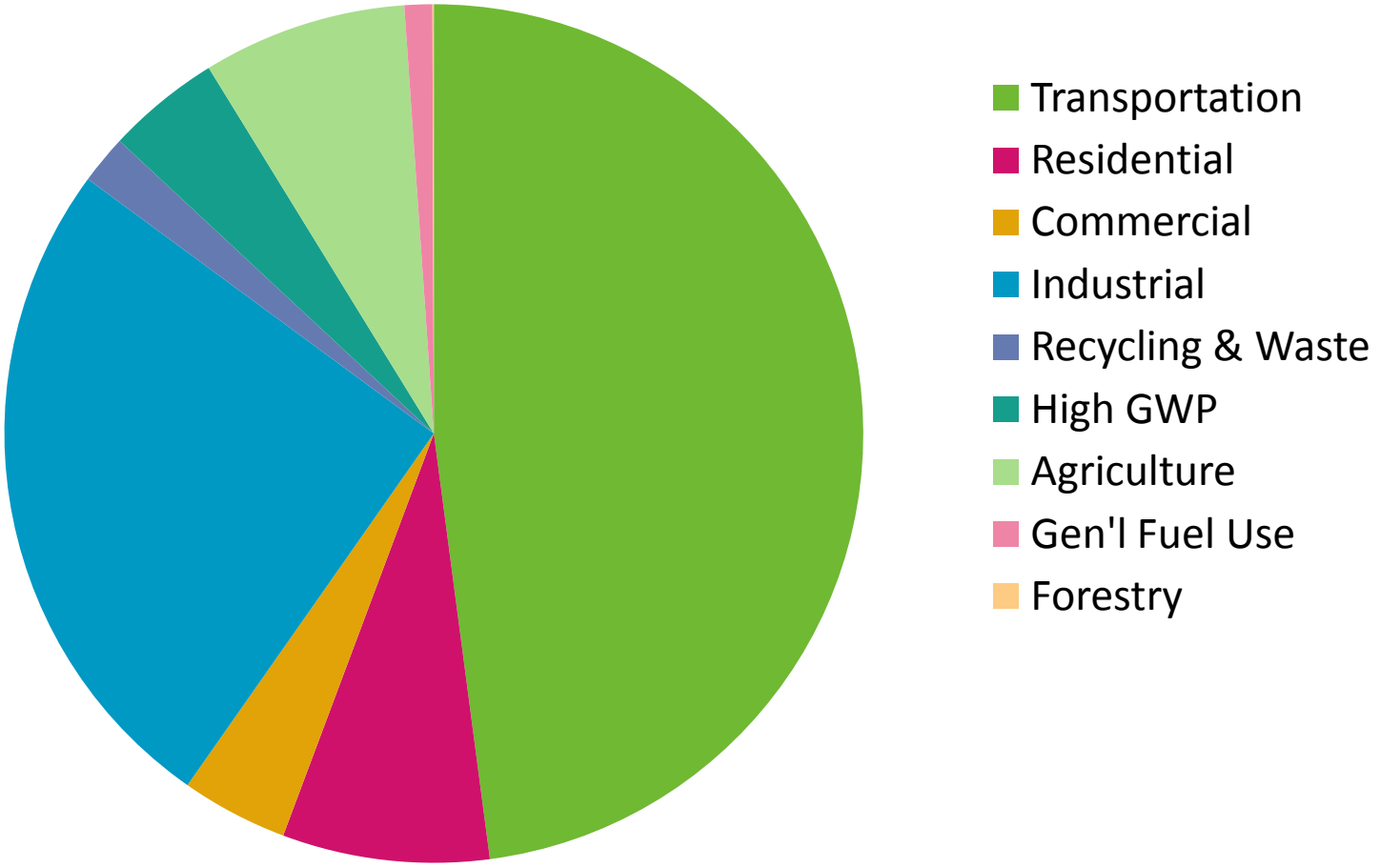
Greenhouse Gases in CA

- World's 10th -12th largest emitter of greenhouse gases (6.2% US emissions, 13% pop.; but 1.4% world emissions, 0.6% world pop.)
- Relatively clean power
- Mild climate in coastal areas – moderate heating and cooling needs
- Transportation: ~40% of the GHG inventory; surface transport over 90% of that (intra-state)
- High auto ownership, relatively high incomes, low fuel prices combine with sprawling development and free parking to make auto use the norm (with a few exceptions)

GHG Risks to CA

- Loss of 30 - 90% of snowpack – major source of drinking & irrigation water
- Flooding increases & related infrastructure costs
- Increases in wildfires
- Sea level rises and damage to coastlines & infrastructure including airports
- Heat waves with adverse health effects, especially for low income residents
- Increase in energy demand
- Increase in smoggy days
- Lower productivity / higher costs in agriculture due to changes in climate, water availability

CA Emissions Inventory 2008



CA Transportation Emissions – 2007-8

- 62% gasoline (almost all private vehicles)
- 19% distillates (mostly trucking)
- Most of rest - jet fuels (regulated by international law)
- Business as usual forecasts: VKT will increase faster than population or economic activity
- **BUT 2008 actually saw a decline** – recession & fuel price spike=uncertain future?

Change in CA Transport Emissions, 2000-2008

Emissions Source	2000	2008	Percent of Transport Total
Transportation Total	171	175	(2008: ~ 40% of state total)
-Total On-Road	159	163	93%
--Passenger Vehicles	127	129	73%
--HD Trucks	32.5	34.8	20%
-Ships	3.77	4.32	2%
-Aviation (intrastate)	2.68	2.42	1%
-Rail	1.86	2.52	1%
-Other	3.41	2.44	1%

The only items that declined were intrastate aviation and "other"

The trouble with growth…

- **Emissions per capita went down (**13.4 metric tonnes of CO2e per person to 12.5 metric tonnes/capita*)*
- **Emissions per state $ of GDP is way down (**355.8 metric tonnes CO2e per million $ of GDP to 258.7 per million $ of GDP)

BUT

- **Population grew 11.8% 2000-2008; aggregate total emissions went up 4.3%!**
- **Need to get emissions down to ~ 10 MTCO2e/capita to accommodate growth**

II- Strategies to Reduce Global Warming

Under Federal Law:

- **Energy efficiency standards for appliances**
- **Vehicle fuel efficiency (CAFÉ) standards**
- **Cooperation between HUD, DOT, and EPA on Livable Communities**
- **Tax credits and investments for renewable energy**
- **Tax credits for insulation, energy efficient furnaces, windows, etc.**
- **Battery R&D funding**
- **Plug-in hybrid tax credits**
- **High speed rail? (down payment)**
- **Smart grid? (down payment)**

California Law Adds:

- **Energy Efficiency Standards for Buildings & Appliances**
- **Electric Utility Portfolio Standard (Percent Renewable)**
- **Vehicle CO2 Emissions Standards***
- **Low Carbon Fuel Standards**
- **State Agency Targets and Report Cards audited by 3rd parties**
- **Regional Transportation Targets and Sustainable Communities Strategies**

* Federal OK or state will use fee-bates

AB 1493 (2002) – greenhouse gas emissions standards for automobiles – start of the fight!

- **CA and other states** petitioned US EPA to regulate greenhouse gas emissions from automobiles; EPA dragged feet
- **2002 –CA took action with AB 1493, regulating emissions from light-duty truck; asked for waiver from federal govt. to have its own standards**
- EPA requested public comment 15 months later, received overwhelmingly favorable comment; but denied the petition in 2003.
- MA sued, joined by 12 states, three cities (including SF), Conference of Mayors, Nat'l. Assn. of Counties, American Planning Assn., others. District Court ruled against petitioners, who appealed to US Supreme Court
- EPA argued CO2 not a pollutant, reducing emissions from new cars couldn't fix problem, action would interfere with Bush Admin. international efforts
- Mass. vs. EPA - US Supreme Ct (2007) : US EPA does have authority to regulate GHG under Clean Air Act, "silver bullet" not needed; EPA has no authority to consider foreign policy matters in deciding whether to act
- EPA can avoid setting standards only if it finds that GHG do not contribute to climate change– must follow Admin. Procedure Act requirements for fact-based reasonableness - and under Clean Air Act , EPA failure to act can be cause of citizen suits compelling action
- Obama Admin. has reversed course, is proceeding with standards

AB 32 - CA Global Warming Solutions Act of 2006 & Executive Order S-3-05

- Enforceable reduction in greenhouse gases: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons s (PFCs), and sulfur hexafluoride (SF6) -- same as in Kyoto Protocol
- **State-wide enforceable reductions of GHG to:**
  - **2000 levels by 2010**
  - **1990 levels by 2020 (~30% below business as usual, or 15% down from 2008 levels)**
  - **80% below 1990 levels by 2050 (EO S-3-05**)
- CA Air Resources Board is lead agency for implementation

Scoping Plan: AB32 Implementation

- **2006** credits for “grandfathered in” voluntary GHG reporting and verification accomplishments
- **2007** ARB issued list of discrete early action GHG reduction measures that can be implemented until 2011.
- **2008** mandatory GHG reporting and verification program; set statewide 1990 baseline and 2020 GHG emissions limit.
- **2009** Scoping plan draft– outline for achieving 2020 statewide GHG emissions limit
- **2010** Implementation of early action emission reduction measures begins
- **2011** ARB will adopt GHG emissions limits and additional emission reduction measures (e.g., a market-based cap & trade system .)
- **2020** Deadline for state to achieve 1990 levels of GHG emissions

Existing Laws, Regulations, & Programs

- Light-Duty Vehicle Greenhouse Gas Standards (Pavley I)
- Renewables Portfolio Standard (to 20%)
- Solar Hot Water Heaters
- Million Solar Roofs
- High Speed Rail

Except for LDV emissions standards,
GHG is a co-benefit, not the driving motivation

Discrete Early Actions – Nine Items

- **Low Carbon Fuel Standard**
- **Smartways – truck & trailer retrofits to reduce aerodynamic drag**
- **Green Ports: Electric Power for Ships in Port**
- **Mobile Air Conditioner Repair Cans**
- **Tire Pressure Program**
- Reduce emissions from consumer products (aerosols, tire inflators, dust removal products, e.g.)
- Landfill Methane Capture
- Reduce High GWP in Semiconductor Manufacturing
- Ban Sulfur Hexafluoride from non-essential applications

 other than low carbon fuel standard, built on existing programs or programs under development for other purposes

Low-Carbon Fuel Standard

- Fuel providers -- refiners, blenders and importers -- required to track **life-cycle Global Warming Intensity (GWI)** of products and reduce GWI through changes in production, transport, storage or use
- Fuel providers to reduce carbon and other greenhouse gas emissions of transportation fuels **by at least 10 percent by 2020, tightening thereafter**
- Applies to **gasoline & diesel** (can't regulate jet fuel - exempt under international law (but could produce emissions credits)

providers will choose how they reduce the carbon intensity of their products:

- blending low-carbon biofuels into conventional gasoline
- selling low-carbon fuels such as hydrogen
- buying credits from providers of other low-carbon fuels (such as low-carbon electricity or natural gas)
- Encouraging plug-in hybrids

Strengthened Existing Programs

- Electricity Efficiency
- Natural Gas Efficiency
- Renewables Portfolio Standard (from 20% to 33%)
- Sustainable Forests
- Light-Duty Vehicle Greenhouse Gas Standards (Pavley II)

Other New Measures (Current List)

- Cap-and-Trade Program Linked to WCI Partner Jurisdictions
- Increase Combined Heat and Power
- High GWP Reductions from Stationary Sources
- Mitigation Fee on High GWP Gases
- Oil and Gas Extraction
- Oil and Gas Transmission
- Refinery Flares
- Removal of Methane Exemption from Existing Refinery Regulations
- **Regional Transportation-Related GHG Targets**
- **Goods Movement Systemwide Efficiency**
- **Vehicle Efficiency Measures**
- **Medium/Heavy Duty Vehicle Hybridization**
- **High GWP Reductions from Mobile Sources**

Scoping Plan Strategies – Top 6 (Initial Estimates)

Measure*	MMT CO2e*	% of total
Cap-and-trade program (still being developed)	35.2	**19.9%**
GHG emissions standards for vehicles	31.7	**18.0%**
Energy efficiency standards - new appliances , buildings	26.4	**15.0%**
Electric utilities portfolio standards: to 33% renewable	21.6	**12.2%**
Low carbon fuels	16.5	**9.3%**
Reduced emissions of non-CO2 greenhouse gases (refrigerants, manufacturing processes)	16.2	**9.2%**

* Emissions reductions by 2020. Further analysis, review and comment will lead to adjustments of these estimates

Additional Strategies (Initial Estimates)

Measure	MMT CO2e	% of total
Forest management/forest fire prevention	5	2.8%
Water-related energy efficiency	4.8	2.7%
Energy efficiency for existing vehicles, e.g. tire inflation	4.8	2.7%
Energy-efficient freight strategies (ships, trucks, etc.)	3.7	2.1%
Stronger vehicle fuel efficiency standards	2.5	1.4%
California solar program	2.1	1.2%
Incentives for sustainable communities	2	1.1%
Voluntary dairy methane capture	1	0.6%
Landfill methane capture standards	1	0.6%
High speed rail	1	0.6%
Reduction in state government carbon footprint	1	0.6%
Energy audits for large industrial emitters	No est. yet	

Changes in Final Plan –Based on Further Analysis and Public Comment

- Margin of error built in
- Long term analysis added
- Work force training – retraining and green jobs
- Carbon Sequestration Partnership (public-private)
- Cap & trade details - auction, offsets, etc
- Refinery controls (1.5 MMT CO2e)
- Mitigation fee for High Global Warming Potential (GWP) chemicals
- Other fees – funds to support program

Revised Estimates

INCREASED:

- Regional transportation GHG targets (to5 MMTCO2E)
- Local Govt. targets - to 15% below current levels by 2020
- Estimate of recycling, solid waste reduction from 1 to 10 MMTCO2E – but counted it in the margin of error calc

REDUCED:

- Heavy- Duty Vehicle Greenhouse Gas Emission Reduction (Aerodynamic efficiency) and tTre Inflation measures (together, now 1.3 down to 0.4 MMTCO2E
- low carbon fuel benefit - reduced~10% to account for more efficient vehicles

Meanwhile, More Litigation – Enforcement Actions

San Bernardino County Lawsuit

- Attorney General Jerry Brown sued County under AB32 & CA Env. Quality Act - argued County had failed to analyze and mitigate GHG from its general plan amendments allowing continued sprawl - County settled
- All plans will have to address issue

Suburban sprawl – requires GHG mitigation!

SB 375 – VMT Reduction Strategies

- Requires ARB to set **regional GHG emissions reduction targets** update every 4- 8 yrs through 2050 – with consultation among stakeholders in setting and implementing targets
- Requires metropolitan planning organizations (MPOs) to develop **sustainable communities strategies (SCS)** to reduce GHG, align housing & transportation, create implementation incentives - achieve AB 32 target (**can be inconsistent with local plans**)
- Requires MPOs to **align their programs to the SCS plan** (major incentive for locals = access to funds?)
- **Streamlined environmental reviews & some exemptions** for compliant projects
- **"Builders remedy"** for jurisdictions that don't provide for fair share of affordable housing
- Requires analyses of plan's success (monitoring and feedback) and revision of targets if needed, BUT no ability of ARB to mandate strategies

SB 375 Cont.

- Makes SCS part of Regional Transportation Plan (RTP) and therefore ties federal planning regs. to it - can only include “feasible” planning elements (budget constraints?) and must use “reasonable planning assumptions” (federal law requires this to avoid plans that are largely imaginary)
- If cannot meet targets with above, must develop an alternative plan that is not as tightly tied to the RTP
- Provides environmental streamlining to housing, mixed use, and transit-oriented development projects

SB375 Positions (Before the Bill Passed)

Supported

- Environmentalists
- Building trade unions
- Good government groups
- Urban cities, counties, mayors
- Silicon Valley types
- Toyota, Ford

Opposed

- Auto club
- Contractors, realtors
- Suburban transportation agencies
- Edge growth MPOs

Next Steps – Getting the Reductions & Finding More

- Continued improvements in vehicle technology, fuels ~ 25% of needed 2020 reduction
- About 30% from power production and appliance efficiency
- Cap & trade will need to produce 20% reduction
- Not expecting much by 2020 from other transport improvements

BUT

- Past experience suggests that counting on everything to go as planned is not wise

AND

- Need to find reductions for 2050 – much more to be done

Possible transport emphases:

- Radically different motor vehicles and fuels
- Better traffic operations and controls
- Congestion pricing , parking pricing, pay per mile, emissions fees
- Transit-oriented development
- Pedestrian and bike friendly development
- Ridesharing – planned, casual, dynamic


MADE IN
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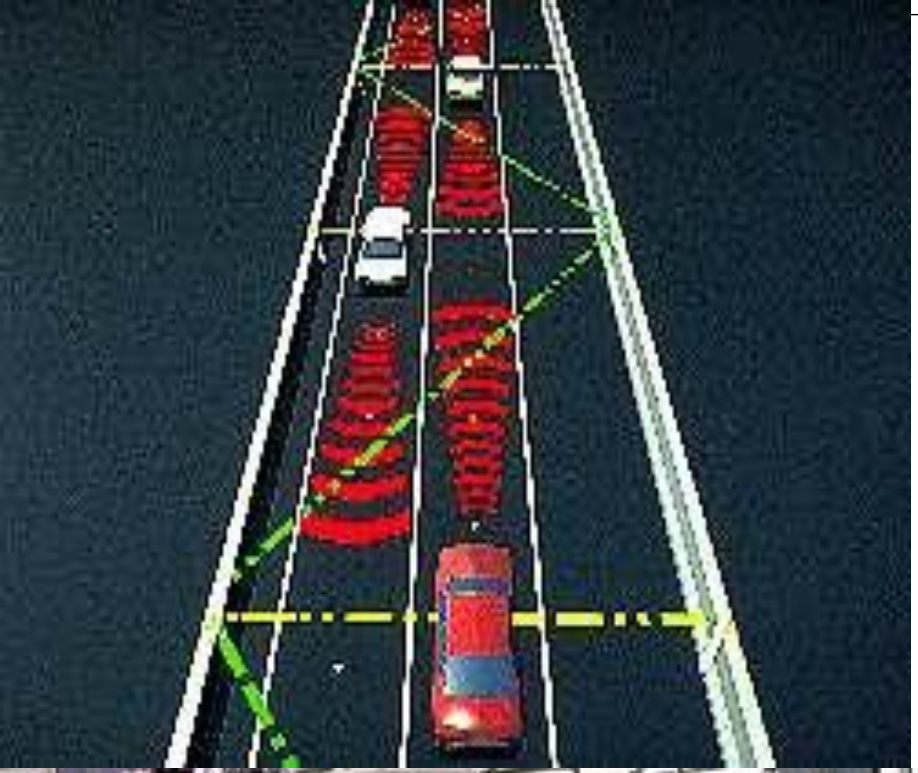
3M
HORTON

HOT Lanes and Other Road Pricing Approaches



Advanced technologies for highways, transit, parking

Strategies for Transit-Oriented Development, Rail, BRT

Pedestrian- and Bike-Friendly Cities

Three Scenarios

1- Benign Mobility – 100+ mpg cars, safety and congestion relief through intelligent systems

- Benefits: not too much change for consumers
- Drawbacks: requires major technology advances, system-wide changes

2 - Accessibility over Mobility – walk, bike, and transit-oriented mixed use communities, telecommunications replaces many business ,some commute trips

- Benefits: technologies are mostly in hand, will improve
- Drawbacks: market for this land use pattern and lifestyle may be limited, impact may be modest

3- Best of Everything – a mix of both, context-specific

All 3 scenarios require technology improvements!

Federal Legislation?

- Over a dozen bills introduced on GHG reduction
- Most likely provisions:
  - Biofuels and cellulosic technology investments
  - Cap-and-trade: each emitter gets an annual cap, can meet it or buy credits from someone who can more than meet their allowance; caps are reduced each year.
- Biggest questions: Will caps apply to all industries, or just some? Will there be exemptions to the caps for “hardship”?
- Biggest fight- federal preemption of state authority?
  - Dingell, MI and Boucher, W VA – forced to back down for now but say they will bring it back up (industry support)
  - States will want authority to go beyond federal requirements
- Time for action:???????

Commentary –
The Promise & Limits of Current Legal Approaches

- **Externalities** – require intervention or are usually not dealt with well

BUT

- **Federal, state, or local lead?** Feds have traditionally taken lead when consistent policy, uniform standards are useful, but feds have not been reliable partners; states may be too diverse for single policy; even some states may be too big. BUT
- **Legitimacy, accountability ? --** issues when MPOs, NGOs, agency boards, consultants and academics, ad hoc committees develop, enforce policies
- **Omitted options?** Pricing has been touchy issue in US; feds have been in the way here (e.g., tolls in interstate highways only by exception)
- **Consumer acceptance, market uncertainties?**- for some mandated actions: alt fuels, electric vehicles, TOD
- **Maintaining support?** Both in CA and at the national level, opponents remain unconvinced
- **Funding?** Not clear there is enough; e.g. transit funds in crisis due to recession

Conclusions

- California (and other US states) have taken actions to reduce GHG and are now starting to enforce their policies
- CA get ~ 75% of the way to 2020 goal (1990 levels) with modest changes
- Getting to 80% below 1990 levels will take a lot more effort – we need help from our partners to find best strategies
- For transportation, will probably take some combination of new technologies, pricing, land use-transportation changes
- THANK YOU FOR YOUR ATTENTION – QUESTIONS?