

This is an outline summary of comments made by Jim Charlier at the September 26 FMPO Fall Retreat.

Major Headings:

- 1. Climate Change – State and Federal Policy Direction**
- 2. Smart Growth and Location Efficiency**
- 3. Federal Surface Transportation Reauthorization**

1. Climate Change – State and Federal Policy Direction

Since the issuance of the IPCC (Intergovernmental Panel on Climate Change) Fourth Assessment Working Group 1 Report ("The Physical Science Basis") early in 2007, it has become clear that human caused changes to the Earth's climate have in fact occurred. The Working Group 1 report documented that the primary problem is greenhouse gas emissions from human activities, including especially in the U.S. motor vehicles.

Subsequent reports this year (Working Group II Report – "Impacts, Adaptation and Vulnerability"; and, Working Group III Report – "Mitigation of Climate Change") have shown that climate changes are occurring much more rapidly than previously estimated and have shown that aggressive policies will be required to achieve significant intervention in these trends.

As a result, there has been a major shift in policy at both the state and federal levels. This policy shift is ongoing and will result in new laws and regulations that will affect metropolitan transportation plans across the U.S.

Information about the IPCC as well as copies of the assessment reports may be found at: <http://www.ipcc.ch/index.htm>

Arizona Governor Executive Orders on Climate Change

EO 2005-02

This order established the Climate Change Advisory Group and charged the group with the development of recommendations to the Governor to reduce greenhouse gas emissions in Arizona, recognizing Arizona's interests in continued growth, economic development and energy security. The group was organized and coordinated by the Arizona Department of Environmental Quality. The CCAG final recommendations were issued in August 2006.



EO 2006-13

This order on Climate Change Action was a response to the Climate Change Advisory Group (CCAG) recommendations (established per Executive Order 2005 – 02, Climate Change Advisory Group). A goal of reducing greenhouse gas emissions to the 2000 level by 2020 in the state of Arizona is adopted and the state is further charged with working to achieve this goal by 2012. The Climate Change Executive Committee (CCEC) is established with members to be appointed by and serve at the pleasure of the Governor. The CCEC is charged with development of strategies to implement the Climate Change Advisory Group Recommendations and meet the newly adopted GHG goal. In addition, it charges state agencies with the development of a state GHG registry, development of standards for low-emissions fuels and conducting a pilot program to permit certain hybrid cars into the High Occupancy Vehicle Lanes. The Executive Order further charges the state with moving to a low-emissions fleet.

Comparison of Arizona Climate Change Action Plan Goals – Western States

Arizona:

2000 levels by 2020; 50 percent below 2000 levels by 2040

California:

2000 levels by 2010; 1990 levels by 2020; 80 percent below 1990 levels by 2050

Colorado:

20% below 2005 levels by 2020; 80 percent below 2005 levels by 2050

Connecticut:

1990 levels by 2010; 10 percent below by 2020; 75 percent below by 2100

Massachusetts:

1990 levels by 2010; 10 percent below by 2020; 75 percent below by 2100

Maine:

1990 levels by 2010; 10 percent below by 2020; 75 percent below by 2100

New Jersey:

3.5 percent below 1990 levels by 2005

New Mexico:

2000 levels by 2012; 10 percent below by 2020; 75 percent below 2050

New York:

5 percent below 1990 by 2010; 10 percent below 1990 levels by 2020

Oregon:

1990 levels by 2010; 10 percent below by 2020; 75 percent by 2050

Rhode Island:

1990 levels by 2010; 10 percent below by 2020; 75 percent by 2100

Washington:

1990 levels by 2020; 70-80 percent below 1990 levels by 2050



Arizona Sources of Greenhouse Gases

1. Transportation (39%) – fastest growing category
2. Electrical Generation (38%)

U.S. Sources of Greenhouse Gases

1. Electrical Generation (32%)
2. Transportation (26%) – fastest growing category

Arizona Growth in VMT – 2000 to 2020

- Passenger Vehicles – 2.4% annually, 61% by 2020
- Freight Vehicles – 3.7% annually; >100% by 2020 (double)

Gross Greenhouse Gas Emissions - Arizona

Source/Year	Million Metric Tons/ Year			
	1990	2000	2020 (forecast)	% Δ 2000 - 2020 (forecast)
All Sources	66	89	160	+ 80%
Transportation	25	35	59	+ 67%

Federal Policy Direction on Greenhouse Gases

The current Congress has indicated it intends to legislate on the subject of greenhouse gases and climate change. Most observers believe this will be a primary focus of Congress during 2008 and 2009. However, actual enactment of new laws and regulations may not occur until sometime in 2009 after a new president takes office with potential for the same party to be in power both in Congress and in the White House. Specific actions under consideration include:

Carbon Dioxide Emissions—Air Quality Regulations

CO₂ may become a “criteria pollutant” within the regulatory framework of the air pollution program administered by EPA. CO₂ is unique in that it is unlikely that ambient concentration standards at the metropolitan level would be meaningful, so any regulations would necessarily address emissions, including emissions from motor vehicles, which can be estimated but not readily measured. The only practical way to do this is to establish a local fleet database (as is currently done through the EPA Mobile 5 Model) to characterize the Flagstaff area fleet and then to apply VMT estimates by roadway type (speed category) to arrive at an emissions estimate and forecast. While the FMPO has been somewhat shielded from extensive regulatory air quality requirements in the past, that probably would not be the case with for CO₂.



Transportation Conformity

The U.S. House Transportation Committee is considering legislation that would establish and impose an air quality conformity requirement for CO₂ on metropolitan transportation programs. This would have the effect of requiring MPOs to demonstrate that the projects in their TIP would not increase local and regional CO₂ emissions from motor vehicles.

CAFE Standards

Corporate Average Fuel Economy (CAFE) regulations, first enacted by Congress in 1975, are federal regulations intended to improve the average fuel economy of cars and light trucks (trucks, vans and sport utility vehicles) sold in the U.S. Historically, these have been the sales-weighted average fuel economy, expressed in miles per gallon (mpg), of a manufacturer's fleet of current model year passenger cars or light trucks with a gross vehicle weight rating (GVWR) of 8,500 pounds (3,856 kg) or less, manufactured for sale in the United States.

In June 2007 the U.S. Senate passed a new standard requiring 35 mpg for cars, SUVs, and light trucks by 2020. Before this standard becomes law it must be passed in the House of Representatives. However, the House has failed to reach a consensus on CAFE standards. The House energy bill is not likely to contain any fuel economy provision. The final result will be determined largely by negotiations when the House and Senate bills are reconciled in conference.

GHG Cap and Trade System

In 2008 Congress is expected to consider legislation establishing a “cap and trade” system for greenhouse gases (primarily CO₂ and methane). Cap and trade programs (emissions trading) are an administrative approach used to control pollution by providing economic incentives for achieving reductions in the emissions of pollutants.

Under such a system, the U.S. would set a limit or cap on the amount of carbon that could be emitted. Companies or other groups would be issued emission permits and would be required to hold an equivalent number of allowances (or credits) which represent the right to emit a specific amount. The total amount of allowances and credits could not exceed the cap, limiting total emissions to that level. Companies that need to increase their emissions would have to buy credits from those who pollute less. The transfer of allowances is referred to as a trade. In effect, the buyer is paying a charge for polluting, while the seller is being rewarded for having reduced emissions by more than was needed.

There are active trading programs in several pollutants around the world and in the U.S. For greenhouse gases the largest is the European Union Emission Trading Scheme. In the United States there is a national market to reduce acid rain (by limiting SO₂ emissions) and several regional markets in nitrous oxide.



There are major methodological barriers to applying a cap and trade approach to mobile and non-point sources including motor vehicles. Presumably, this would have to take the form of some kind of vehicle tax, either imposed on motor vehicle manufacturers or on vehicle owners. The State of Oregon's VMT tax is also often cited as a possible prototype for such a system. Because of the administrative complexity surrounding mobile and other non-point sources of greenhouse gases, there is significant advocacy in Congress for a simpler carbon tax.

Federal Carbon Tax

The purpose of a carbon tax is to reduce emissions of carbon dioxide by taxing the burning of fossil fuels — coal, petroleum products such as gasoline and aviation fuel, and natural gas — in proportion to their carbon content. Unlike market-based approaches such as carbon cap and trade systems, it has the benefit of being easily understood and more easily applied to mobile and small point sources. Because of the link with global warming, a carbon tax is sometimes assumed to require an internationally administered scheme; that is not intrinsic to the principle, however. The European Union has discussed a carbon tax covering its member states to supplement the carbon emissions trading scheme begun in January 2005.

In the U.S. a carbon tax rate of about \$100 per ton of carbon emissions has been widely discussed. This would translate to about \$1.00 per gallon of gasoline if an equivalent tax rate were to be imposed on motor fuels.

2. *Smart Growth and Location Efficiency*

Overview and Background: What is "Smart Growth?"

Development decisions affect many of the things that touch people's everyday lives - their homes, their health, the schools their children attend, the taxes they pay, their daily commute, the natural environment around them, economic growth in their community, and opportunities to achieve their dreams and goals. What, where, and how communities build will affect their residents' lives for generations to come.

Communities across the country are using creative strategies to develop in ways that preserve natural lands and critical environmental areas, protect water and air quality, and reuse already-developed land. They conserve resources by reinvesting in existing infrastructure and reclaiming historic buildings.

By designing neighborhoods that have shops, offices, schools, churches, parks, and other amenities near homes, communities are giving their residents and visitors the option of walking, bicycling, taking public transportation, or driving as they go about their business. A range of different types of homes makes it possible for senior citizens to stay in their homes as they age, young people to afford their first home, and families at all stages in between to find a safe, attractive home they can afford.



Through smart growth approaches that enhance neighborhoods and involve local residents in development decisions, communities are creating vibrant places to live, work, and play. The high quality of life makes these communities economically competitive, creates business opportunities, and improves the local tax base.

Smart Growth Principles

Based on the experience of communities around the nation that have used smart growth approaches to create and maintain great neighborhoods, the Smart Growth Network developed a set of ten basic principles:

1. Mix land uses
2. Take advantage of compact building design
3. Create a range of housing opportunities and choices
4. Create walkable neighborhoods
5. Foster distinctive, attractive communities with a strong sense of place
6. Preserve open space, farmland, natural beauty, and critical environmental areas
7. Strengthen and direct development towards existing communities
8. Provide a variety of transportation choices
9. Make development decisions predictable, fair, and cost effective
10. Encourage community and stakeholder collaboration in development decisions

Overview and Background: What is "Location Efficiency?"

At the urban and regional level, spatial distribution of residences, offices, schools, and other land uses, along with the associated distribution of trip generators and attractors are the underlying factors which drive virtually all transportation activity. The concept of location efficiency focuses as well on local level factors, under the belief that land use and urban form can influence travel behavior by influencing what some researchers call "neighborhood accessibility."

The concept of neighborhood accessibility rests on the principle that neighborhood-scale factors – such as the local mix of land uses, the street design and layout, and the density of different activities – can influence travel behavior, such as people's propensity to take pedestrian trips. From a transportation perspective, the basic premise is that local-level urban form characteristics can influence individual travel behavior in three basic ways:

1. reducing the number of motorized trips;
2. increasing the share of non-motorized trips; and,
3. reducing travel distances of and increasing occupancy rates of motorized trips.

These local-level urban form characteristics can be categorized along three general lines – density, diversity, and design, or the so-called 3Ds of the built environment:

- Density – i.e., lot size, residential density
- Diversity – i.e., mix of land uses and their proximity;
- Design – i.e., street widths and layout, block size, sidewalks, building set backs, amenities (parks, shade), parking provision.



Smart Growth and Transportation Investment

With the national interest in smart growth has come a renewed focus on transportation investments as one of the most important factors influencing growth and development patterns. This is likely to translate into policy at the federal level and and at the state level in Arizona over the next couple of years.

State, regional and local plans sometimes apply what are being referred to as “smart mobility” strategies to bring transportation investments into line with smart growth objectives for community form and character.

Smart growth transportation programs prioritize:

- Maintenance, rehabilitation and repair (also called “fix it first”)
- City center and downtown redevelopment
- Multimodal investment portfolios (as opposed to “roads only”)
- Transit oriented development as a key location efficiency strategy
- Connected networks as the lowest cost means of improving mobility

Smart growth transportation programs discourage:

- Roadway capacity expansion driven by LOS standards or congestion measures
- Exurban development-inducing projects
- Over-widening of transportation corridors that negatively impact land values

Smart growth transportation programs also work with other urban planning systems (neighborhood planning, special area plans, etc.) to emphasize community character. In this regard progressive transportation planning and design seeks to support community character through “context sensitive planning and design,” a major policy initiative of the federal government.

Several states have implemented smart growth programs, including most notably Massachusetts, Florida, Maryland, Washington, Delaware and California. Arizona has been moving in this direction over the past decade with several key pieces of legislation and gubernatorial initiatives. Now the current Governor has taken this a step further as described below.

Arizona Governor Executive Order on Smart Growth

EO 2007-05

This order directs the Governor’s Growth Cabinet (established late in 2006) to develop – within 120 days – an implementation plan for a smart growth and development process. Future state discretionary funds will be made available only to local governments that agree to participate in this process. This condition applies to the additional \$400 million for highway construction that was announced by the Governor in her “state of the state” address in January 2007.



The Arizona Governor's Growth Cabinet is made up of the following agencies:

- Department of Transportation
- Game and Fish Department
- Department of Housing
- Department of Environmental Quality
- Department of Economic Security
- Department of Health Services
- Department of Water Resources
- Department of Commerce
- Department of Real Estate
- State Land Department
- State Parks Department
- School Facilities Board
- Office of Tourism
- Department of Agriculture

The Growth Cabinet held a series of "listening sessions" early in 2007 taking testimony and advice from a variety of governmental entities, interest groups and others. An initial set of draft recommendations was provided to the Governor in April. These have been refined through the months since, in part with technical assistance from the EPA Office of Smart Growth.

The Governor has indicated through the smart growth initiative and through her Executive Order 2007-02 ("Expanding Arizona's Transportation Options") that rail transit projects, especially commuter rail lines in what has been called the "Sun Corridor" from Tucson to Prescott, will be a priority of the State as the smart growth effort moves forward.

3. Federal Surface Transportation Program Reauthorization

The federal transportation program is operated under provisions of the "Surface Transportation Authorization" that sets planning and design requirements for state, regional and local transportation programs, defines priorities and policies for use of federal funds and sets general funding levels for each of the many federal transportation programs (subject to later appropriation in annual spending bills).

The current program is governed by the SAFETEA-LU legislation approved in 2005. The "Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users" authorizes Federal surface transportation programs for highways, highway safety, and transit for the 5-year period 2005-2009. A new authorization is due in 2009 or 2010. Early committee work has been underway in recent months and there are indications of the direction this legislation is likely to take.



Among policies being discussed in Congress, the following elements appear to have significant support (although it is early in the process):

Reduction of Greenhouse Gases (see also Climate Change section above)

Transportation represents more than a quarter of all greenhouse gas emissions nationally and is the fastest growing category. The IPCC reports and the various state Climate Change Action Plans (including Arizona's) make it clear that climate change objectives cannot be met without significant progress in the transportation sector.

A "transportation conformity" regulation or policy requirement is one of the options being considered. However, this would likely be highly controversial with many of the nation's cities and regions. Within the short term, the only practicable means of reducing GHG emissions from motor vehicles would be to reduce daily VMT. There is no precedent for such policy direction in the federal surface transportation history or in any significant state transportation program. Throughout the administration of the federal clean air program since its inception in 1980 the federal government has stopped short of requiring reductions in miles of motor vehicle travel, opting instead for cleaning up vehicle emission rates and increasing transit mode share in major urban areas, and through non-mobile source measures such as bans on open burning, improvements in smokestack emissions, etc.

Since Congress is likely to be considering both a "Cap and Trade" system and a Carbon Tax during the timeframe that the surface transportation bill is being drafted, there may be some movement in this direction within the transportation program as well. However, any Cap and Trade systems aimed at large stationary sources (primarily power plants) would not adapt easily to mobile sources (hundreds of millions of motor vehicles owned by hundreds of millions of individuals and companies).

This, coupled with financial shortcomings in the transportation fund (see below), suggests that a Carbon Tax might garner more support since it could be incorporated directly into fuel pricing, much like a simple gas tax. However, a proposal increasing fuel prices at the same time that global energy demand is driving up fuel costs could be extremely difficult politically, especially during a major election year (2008).

Other versions of a GHG management system for mobile sources are being considered, including a simple requirement for accountability on mobile source GHG emissions, prioritization of projects that would reduce GHG emissions, and so forth.

Addressing Transportation Fund Shortfalls

Perhaps the largest challenge facing MPO transportation programs today is the status of the federal transportation funding program. The federal surface transportation program is being significantly affected by rising energy costs, which threaten simultaneously to reduce revenues into federal (and state) coffers, and to reduce spending power of the revenues that do come in.



The largest single source of funding for the federal *surface* transportation program (excludes aviation, which is funded separately) comes from the 18.4 cents a gallon in federal excise taxes, about 15.44 cents of which goes to the highway trust fund, 2.86 cents to mass transit programs and 0.10 cent to a leaking underground storage tank fund. About two-thirds of the trust fund's \$40 billion in receipts last year came from the gasoline tax. (Other sources include the federal tire tax, truck sales tax and heavy vehicle use tax.)

Gasoline was 30 cents a gallon and the excise tax on it was 3 cents in 1956 when Congress created the highway trust fund. As gasoline prices rose, so did the tax. But Congress has kept it at 18.4 cents a gallon since 1993, when gasoline prices were about \$1.10 a gallon. Two years ago, federal lawmakers proposed a 4-cent-per gallon boost in the fuel tax to finance a \$375 billion highway bill. They backed off when the President pledged to veto any road legislation with a tax increase. In the end, the spending plan (in SAFETEA-LU) came to \$286 billion.

At the end of 2000, the highway trust fund had a balance of almost \$23 billion. By the end of 2006, that balance had fallen to \$9 billion. Now the Congressional Budget Office predicts the fund will run a deficit of \$4 billion at the end of 2009 and \$8 to \$16 billion annually by the end of 2010, when the current highway program expires.

In addition to the shortfall in revenues relative to program authorization levels, the buying power of the federal trust fund has been significantly eroded by unit price increases. Commodity prices for steel, concrete, petroleum, asphalt, and construction machinery increased dramatically from 2004 to 2007. As a result it is estimated that between 1993, the year in which federal fuel taxes were last adjusted, and 2015, construction costs will have increased by at least 70 percent.

To restore the purchasing power of the program, federal highway funding would have to be increased from \$43 billion in 2009 to \$73 billion by 2015. To restore the purchasing power of the transit program, federal funding would have to be increased from \$10.3 billion in 2009 to \$17.3 billion in 2015.

Generating the revenues to support this increase, between 2010 and 2015, through the federal fuel taxes would require increased tax rates of 10 cents or its equivalent per gallon. The rate would have to be increased by 3 cents or its equivalent in 2009 to sustain the program at the level authorized in SAFETEA-LU. It would have to be increased by another 7 cents or its equivalent in 2010 to restore the program's purchasing power.

Given the magnitude of the funding shortfall, a number of proposals are being discussed, including some radical changes in the structure of transportation program funding in this country.



These include

- simply raising the fuel tax rate;
- replacing the per-gallon rate with a sales tax based on the price of fuel;
- raising the fuel tax and indexing it to the CPI,;
- creating authority for federal tax credit bonds;
- developing a federal VMT tax (similar to Oregon’s demonstration); and,
- de-authorizing the federal trust fund and rebating the funds from federal transportation taxes directly back to the states.

The last item in this list is currently being championed by Mary Peters, the new U.S. Secretary of Transportation (from Arizona).

Prioritizing Maintenance, Rehabilitation and Repair

One upshot of the I-35W bridge collapse in Minneapolis has been a renewed interest in Congress in funding for maintenance, rehabilitation and repair of existing transportation infrastructure. Congressman James Oberstar, a Minneapolis Democrat and Chairman of the House Transportation and Infrastructure Committee, has announced he intends to try to create a “National Bridge Initiative” that would create a special fund for bridge repair and replacement on National Highway System routes.

Congress in general appears to be interested in addressing the perceived lack of attention to taking care of existing infrastructure, potentially by reducing emphasis on new systems and new facilities. The “fix it first” programs now in place in several states (New Jersey, Michigan, and Massachusetts, among others) are being seen as possible prototypes for a federal approach to this issue.

Summary

Because several of these initiatives would represent a fundamental restructuring of the way the federal government funds and prioritizes transportation projects, the next update to the surface transportation authorization could potentially be as sweeping in impact as the ISTEA authorization in 1991.

The Intermodal Surface Transportation Efficiency Act of 1991 posed a major change to transportation planning and policy, as the first U.S. federal legislation on the subject in the post-Interstate Highway System era. It introduced an intermodal approach to highway and transit funding with collaborative planning requirements, and gave significant additional powers to metropolitan planning organizations.

Because of the twin challenges of increasing energy prices and climate change, the next reauthorization could usher in a new era of transportation planning and policy, with changes that would directly affect how funding comes to FMPO and how it is spent. One of the operating titles for the new surface transportation act is “GreenTea.”

