

Merge Lanes Ahead

/////// *Conserving energy through land use and transportation planning.* ///////

Traffic Congestion: Is highway construction really the answer?



Everyone has a favorite example of bumper-to-bumper congestion. Brows sweat. Teeth grind. Tempers flare. Nerves snap. Bumpers meet. Congestion is the main source of pain associated with travel. It not only increases the time spent traveling, but also adds unpredictability and irritation which can make

each trip seem longer than it really is. In this sense, congestion often determines our consumption of travel. It has a big influence on whether we make a trip, what time we leave, and what route we take.

What happens when congestion becomes a source of frustration? People generally find alternate ways of dealing with the problem. They may take alternate routes around the congested area, reschedule their trips, or use mass

transit. But when the public outcry about congested roads gets loud enough, engineers and elected officials hold a meeting to offer us the solutions that we expect – widen the road, or build a new one.

Will more highway construction really solve the congestion problem? Economists say that it won't. They point out that we consume highway capacity like any other good – in accordance with the law of supply and demand. In a competitive market economy, the price of a good is based on the cost of producing it. The amount we buy is generally based on its price. The higher the price, the less we buy. The price is the main constraint on

Highway construction and energy consumption.

The energy impacts of our auto transportation system include construction and maintenance of highways, manufacture of automobiles, and the maintenance and operation of automobiles. Highways are built from petroleum products, and construction activity burns more fuel. For each 15 gallons of fuel bought to operate your car, another five gallons must be used for highway construction and maintenance and vehicle manufacturing. (Thompson 1994)

This fact sheet is one of a series examining the relationships between transportation, land use and energy.

Other topics include:

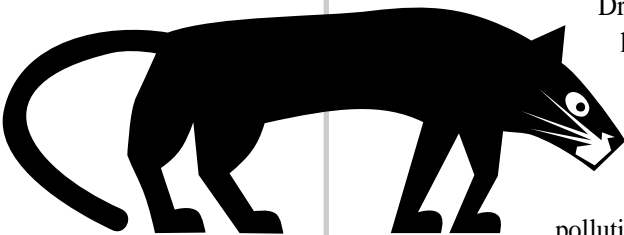
- Fact Sheet 1..... Introduction*
- Fact Sheet 2..... Transportation and energy consumption*
- Fact Sheet 4..... Street design*
- Fact Sheet 5..... Land use and transportation*
- Fact Sheet 6..... Economics of driving your car*
- Fact Sheet 7..... Reducing automobile travel*
- Fact Sheet 8..... Community case studies*
- Fact Sheet 9..... Road blocks to change*

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consumption.

But except for a few pennies for gas, and an occasional parking fee, making another trip in our private car seems almost free. The average driver doesn't think about what a trip costs before leaving the garage. Since additional trips appear to be "free," the main factor we consider before driving is not price, but

The hidden costs of driving.



Driving has many hidden costs.

These include costs to the environment from air

pollution, noise pollution, loss of natural

habitat, and water pollution from road construction, road surface runoff, and petroleum spills, as well as the health costs of accidents. Opportunity costs include the lost use of billions of dollars of scarce public funds, the loss of productive land, and the consumption of non-renewable energy (petroleum) which could be used for pressing community needs. Social costs include disruption from construction, and the potential increase in urban sprawl related to highway construction.

congestion – our perception of the time and inconvenience of the trip.

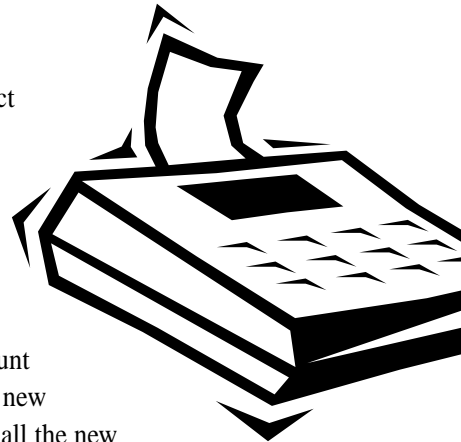
Soaking up capacity

Let's consider what happens when we add capacity along a highway in order to reduce congestion. Every time a new highway lane is constructed, three human responses will soak up the capacity and re-saturate the highway:

1. Some drivers will learn of the new capacity and shift away from their prior routes to try out the new one. Travel on the new road seems so effortless at first that these drivers begin changing routes regularly to take the new highway;
2. Drivers who had been leaving for work earlier to avoid the peak hour discover that after the new lanes are built, traffic is moving a little better. They start leaving a little later each day; and
3. Other drivers, who had become fed up with the congested highway and switched to public transportation or joined carpools, hear about the new highway capacity and start driving alone once again.

Often the combined impact of these "induced" demands actually increases traffic on the road by an amount greater than the new

capacity. When all the new capacity is absorbed, motorists are still converging on the new road and congestion becomes worse than before. Too often, we allow transportation planners and engineers to go on forecasting the need for future highways based on our virtually unconstrained demand for trip-making. It's as if a concert promoter




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What is congestion?

The technical measure of congestion is the reduction of average speed relative to that possible under free-flow conditions (*Alan Altshuler 1979.*) But often the true measure of congestion is measured not in miles per hour, but in frustration per mile.

Congestion = time + inconvenience

A publication produced by the American Association of State Highway Officials in the 1960s to give guidance to traffic engineers summed up Americans' attitude about highway congestion: "... little more can be offered as guidance except the principle that stop-and-go traffic, even for brief periods during rush hours, should be viewed as intolerable." (*American Association of State Highway Officials 1973*)



decided how large to build a stadium based on the number of people who would attend a Rolling Stones concert if the tickets were free. Transportation planners forecast the need for highway capacity by projecting the future traffic on our highways based on the maximum number of trips using an unpriced facility, and then try to build enough lanes to satisfy that number of travelers without delay.

The solution to congestion?

Why do highway officials keep prescribing highway widening as the solution to congestion?

Highway departments were created to build roads. Because constructing roads is their primary focus, that is what they are most

comfortable with. And road construction tends to be their first (and too often only) answer to congestion problems. Fortunately, this governmental emphasis on road-building is changing. Passage of the 1991 federal Intermodal Surface Transportation Efficiency Act (ISTEA) encouraged, and in some instances mandated, different ways of looking at transportation challenges.

The second reason highway construction is often looked at as the first answer to congestion is that congestion does cost money. In America, the value lost in motorist delay, decreased economic productivity, increased traffic accidents, increased fuel consumption, and increased pollution comes to about 15 cents per vehicle mile (*Thompson 1994.*)

While we should be deeply concerned about these economic and social costs, how many of us really want the massive amount of highway construction it would take to eradicate congestion? Where do we learn about the true costs of highways and include this in our decisions? How often are we offered genuine alternatives?

Another reason local officials favor road construction over alternatives is that it seems like such a bargain! From the local government's standpoint, highway construction appears to pay for itself. State and federal governments pay 75 to 90 percent of



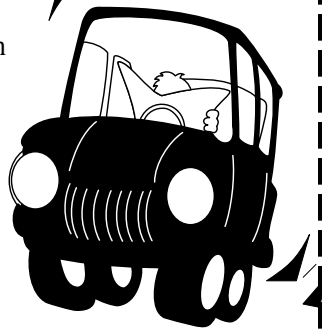
ISTEA

ISTEA stands for Intermodal Surface Transportation Efficiency Act of 1991. This federal law provides funding for highways, transit systems, roads, bicycle facilities, and other types of surface transportation. ISTEA made the most sweeping changes to these programs in over 30 years.

ISTEA called for the states to:

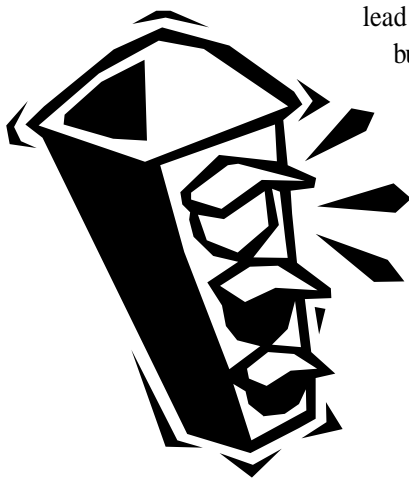
- Open up the decision-making process
- Look at more choices
- Invite local governments to participate in decisions
- Do a better job of looking at the big picture
- Find ways to make transportation more efficient
- Pay more attention to non-automobile transportation; and
- Invest in enhancing our quality of life.

the direct construction costs of highways and motorists pay operating costs through gas taxes. Unfortunately, this method of considering the costs and benefits of highways is biased. Important social and environmental costs are unaccounted for while initial capital costs and the time savings to potential users are over-emphasized. In truth, direct capital costs account for only 20 percent of the total cost of our highway system.



A fourth commonly heard defense of road building is that it promotes economic development. Highway construction stimulates the local economy directly with construction jobs and purchase of materials, and indirectly through increased retail sales and real estate development. Many feel that this returns dividends to local tax coffers which offset the cost of highway construction to taxpayers. But building roads really should be thought of as a way to move traffic, not to foster economic development. Most new roads don't

lead to the creation of new businesses. Instead, they encourage the relocation of existing businesses, a result that often simply relocates traffic congestion as well.



What you can do.

The next time your community considers building highways or adding lanes to existing roads as a solution to congestion, ask local leaders these questions:

- Is the congestion problem really as bad as the anecdotal evidence suggests? Has it been measured?

- What is the true cost of the road improvement? Initial construction costs account for only 20 percent of the cost of roads. Have they considered maintenance? The cost of purchasing right-of-way? Additional policing? Traffic lights?
- If the improvement is built, how much time will you save on your commute when it is done? How about in two or three years?
- What alternatives have you looked at? Are there other answers to the congestion problem that should be considered?
- How will we ensure that congestion on the new road doesn't become just as bad as it is now? Will access be managed? Will land use regulations control strip development? Are we just moving the congestion problem from one place to another?

References/Resources

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