

Box 4 Energy and land use / transportation planning

Land use and transportation planners rely heavily on economic forecasts and models to inform decisions about future transportation and development needs. Public investments in transportation infrastructure, public-private partnerships for large real estate development projects, and comprehensive Town Plans (zoning laws and general community development goals) are all based on the ability of planners to reasonably predict where people and businesses will locate in a region and how they will move about that region five, fifteen, even thirty years in the future.

These forecasts generally assume relative stability in macroeconomic factors like labor supply, national monetary policy, income distribution, consumption patterns, and of course energy prices. Planners extend long-term trends into the future, with the assumption that in twenty years the fundamentals will not be radically different than they are today.

But what happens if a long-term trend like stable fuel prices changes? Planners' assumptions about fuel prices directly affect their assumptions about transportation mode split (the split of all trips in a geographic area across different modes of transportation, such as private automobile, public transportation, bicycle and walking): mode split is largely determined by income²⁶ and by trip price, which itself is largely a function of fuel price. If we expect that fuel prices won't change radically in the future, we will assume that mode splits won't change radically either.

Such assumptions about stable future mode splits have been reasonable and accurate for decades. With the exception of the oil crises in the 1970s, the cost of motor fuel in the U.S. and Canada has rarely exhibited serious volatility since World War II, and never for a long period of time. These assumptions could create serious problems, however, should the price of fuel radically change in the future.

At a high enough sustained fuel price, we can expect households and firms to change their travel behaviors for economic reasons. If extended oil price volatility starts to fundamentally shift mode split, transportation planners may no longer be able to reasonably predict transportation patterns beyond a relatively short time frame. Were this the case, it could be significantly more difficult to make well-informed decisions in the present about investing hundreds of millions of dollars for future transportation projects. The difficulties also extend to land use planning, because land use patterns are closely related to transportation patterns, as well as to local, regional and national economic trends.

It's not at all clear how planning forecasts and models might address this problem of assuming the inevitability of long-term energy trends. A recent survey²⁷ of widely-used transportation engineering texts and state-of-the-art transportation modeling techniques found that they generally do not consider energy constraints at all.

So what do we know about how land use and transportation patterns might change as oil prices rise and become volatile? Not surprisingly, some land use studies²⁸ of the 1970s oil crises suggest that consistently high oil prices would cause centrally-located land to increase in value as households and firms try to reduce travel costs. This could very well mean that the high and volatile oil prices which are expected to accompany peak oil will encourage more people and businesses to move into downtowns and other more central, dense urban areas.

However, these studies also note that the forces driving metropolitan decentralization are very strong and not easily counteracted. Much depends on how governments and businesses respond to these long-term changes with planning, policy and actual investments.

