

Transportation and Land Use Patterns

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ISSUE

How can transportation and land use be managed jointly to improve access to opportunity and quality of life in Michigan?

RECOMMENDATIONS

Improving the quality of passenger and freight transportation in Michigan goes hand in hand with reinvestment in Michigan cities and businesses. Transportation services should provide access to opportunity for all Michigan citizens and insure economic stability and growth.

Any statewide effort toward better land use policies is best accomplished by development of a “tool kit” of strategies that can be implemented by local units of government. Transportation policy can be made congruent with land use policy through effective collaborations and partnerships.

Michigan’s transportation and land use structures should complement one another to maximize competitive opportunity for Michigan businesses and quality of life for Michigan residents.

BACKGROUND

Michigan citizens and businesses value mobility. In 2001, Michigan road users traveled 96.6 billion miles over Michigan roads, including 5 billion truck miles. Michigan citizens made 854,000 intercity bus trips and 452,000 passenger-train trips. There were 4.4 million operations at Michigan airports by planes of all types.

From 1990 until 2000, annual vehicle miles traveled on all Michigan roads rose by 17 percent, and truck traffic rose by 95 percent. It is no coincidence that Michigan’s gross state product also showed a healthy increase during that time—62 percent for the period from 1990 to 2000.

A 1988 study by the Federal Highway Administration demonstrated that a one-dollar increase in highway investment generates about 30 cents of production cost savings per year over the lifetime of the road improvement (Nadiri and Mamuneas 1996). Those savings contribute to industry profitability and enhance Michigan’s competitive position.

Problems arise when land use decisions outstrip the ability of transportation agencies to provide sufficient capacity, or when additional transportation capacity makes an area more desirable and the market responds by converting open land to intense use. It is important to remember, however, that one person’s “sprawl” is another person’s opportunity. Defining *sprawl* is key to managing it.

Businesses and households must locate somewhere, and transportation is only one factor in location choices, along with land and labor markets, local government, state law, taxation, culture and fashion, and other factors that cannot be predicted or controlled.

Prospects for Change in Transportation Networks

Accessibility is often portrayed as the key that unlocks land for development. This was true for the first railroads, paved roads, and intercity freeways, but now that Michigan's transportation system is largely complete, other factors govern the rate of land development. Now, transportation improvement typically lags land development, sometimes by decades.

Few major new highways remain to be built in Michigan. Less than 80 miles of new state highways are under consideration for possible addition to Michigan's 120,000-mile road system. Typically, these are freeways and bypasses to supplant 1940's roads that provide inadequate service by modern standards.

There is no immediate prospect of new construction of railroads. The rail system has continued to shrink from 4,648 miles of track in 1996 to 3,950 miles in 2000. Improved junctions and sidings, however, may provide for better sharing of track by freight and passenger traffic. Intermodal connections may be ripe for expansion, as many freight movements now combine truck, rail, and ocean shipping. In the future, high-speed rail corridors may be the next entirely new network to be constructed.

Michigan's aviation infrastructure is well distributed, with 235 public-use airports. New airports are rare, and small general-aviation airports are severely threatened by development pressure for conversion to other uses. Land development and incompatible neighboring uses constrain expansion at Michigan's major airports.

Marine transportation could expand in Michigan, but it serves only specific markets. Stone, sand, iron, and coal accounted for 87 percent of the 96 million tons of waterborne commerce in 2000. Because ports must be located on the waterfront, they are not free to adapt to changes in land use. Ports compete with other uses for river and lake frontage.

One mode with great ability to adapt to new land use patterns is bus service. Buses typically use the same roads as other vehicles and can add capacity and change routes without capital construction. Transit service areas will need to expand as population and employment distribution changes, but much suburban territory will never be dense enough to support traditional line-transit service. New approaches to transit service will be required if large areas of Michigan are not to remain accessible only to auto users.

Easier transfer between modes will improve mobility, but bus stations, airports, and truck terminals are not viewed as desirable land uses. Even nonmotorized paths are not always welcomed by adjacent property owners. Greater reliance on nonhighway modes may increase acceptance of intermodal facilities as beneficial neighbors.

A Continuing Contribution to Quality of Life

The quality of life in Michigan is influenced by our transportation system. As Michigan's road, transit, air, rail, and water systems matured in the years before the 1980s, the *sphere of influence* of transportation grew, and rearranged Michigan's economic geography in the process. With the maturation of the system, further improvement will come from improving transportation's *sphere of operations*, to make a mature system keep contributing to quality of life.

In the 1980s and 1990s, the job of Michigan transportation agencies became one of *preservation*—protecting the investment in the network and preserving efficiency of movement. Preserving the physical assets of the network requires sophisticated condition monitoring combined with hard-nosed accounting. Protecting the efficiency, as measured by travel speed, safety, predictability, and quality of service, will require judicious improvement of the network to match increases in travel and shipping.

These increases have already taken place, but the necessary capacity increases have not. Increased travel and shipping has absorbed much of the reserve capacity in existing roads, runways, or railroads. Key links and chokepoints have become congested. A study estimated that the total cost of congestion in the nation's 68 metropolitan areas in 1999 was \$78 *billion* measured in costs of delay and wasted fuel (NCHRP 2001). Delay and unpredictability increase the costs of shipping goods and subtract directly from individuals' activities and choices.

Michigan's interstate freeway system has become the focus of most large-scale land-development decisions. Accessibility to Michigan's freeways is a key location factor in manufacturing, retail, office, service, and other land uses. Freeway interchanges have become nodes of new investment, and this pattern is unlikely to change. Residential land use is influenced by the transportation system, too, but to a lesser extent. All this development imposes demands on the transportation system.

In practice, not all the factors relevant to transportation demand can be predicted or planned for. Automobile traffic volumes are somewhat predictable but can be influenced by the location of a single employer, shopping center, or other real-estate venture. Such ventures often turn on the decisions of single individuals and on financial trends that cannot be foreseen.

Freight volumes are even more unpredictable, being affected by factory and warehouse locations and innumerable shipper decisions on mode choice, material and supplier substitutions, technological change, and worldwide markets. In manufacturing, retailing, and logistics, long-range forecasting is impossible.

Land use is an unimaginably complex equilibrium, in which the transportation network is a major factor. As Michigan seeks to manage land use, the challenge will be to simultaneously improve livability and mobility, without inducing unintended consequences.

Basic Sectors, Basic Demands

The transportation system connects Michigan households, employers, and institutions—all human interactions. The better the system works, the more opportunity is created for

everyone. When Michigan citizens describe the impacts of “sprawl,” it is almost always expressed in terms of road congestion. Travel delay is a direct subtraction from our choice of activities and quality of life. The transportation system itself can be a feature of our lifestyles, particularly where investments have been made in streetscapes, bike and pedestrian facilities, and context-sensitive design.

Michigan’s three basic industrial sectors—manufacturing, agriculture, and tourism—are entirely within the sphere of influence of transportation. The relationships among labor, materials, land cost, taxes and regulations, customers, and transportation cost collectively shape location decisions. Quick access to reliable transportation keeps the delivered cost of Michigan products low and fuels demand for commercial and industrial land along primary transportation corridors.

The markets for Michigan produce and the commodity prices commanded by Michigan farmers are influenced directly by transportation cost. Rail and truck accessibility to Midwestern markets is crucial to keeping Michigan farms profitable.

The market reach of Michigan tourism destinations—resorts, cottages, golf courses, trails, museums, and dozens of others—is measured by travel time and convenience. Preserving the quality of vacation trips over Michigan roads and expanding availability of public transportation, is essential to the tourism economy of all parts of Michigan.

Traditional city centers benefit from reliable transportation. Cities will always retain their unique advantage of centrality. While outlying interchanges may be the “new frontier” of investment activity, transportation and other infrastructure networks will always be focused on Michigan’s city centers. When cities attract new developments or re-developments, the transportation network will be in place to serve them, provided it is maintained.

UNDERUTILIZED TOOLS

Transportation improvements and land use planning need to advance together, so that unimpeded access to opportunity is provided for all existing homes and new growth does not badly outpace transportation investment. The following paragraphs describe some of the tools that are, or could be, part of that effort.

Impact Fees

In developing areas, impact fees can let land development contribute to the cost of remedying road congestion. Fees are assessed on new development proportionate to the burden placed on the system. The concept is not unlike sewer tap-in fees for new sewer connections. Fees would end what is, in effect, a subsidy of land conversion by road users, who presently endure years of congestion and pay for all road improvements.

Impact fee legislation has been introduced in Michigan but never enacted. Exactions on developers are often negotiated, however. Developers anxious to respond to strong markets may voluntarily provide turn lanes, bike and pedestrian facilities, transit stops, or intersection improvements.

Access Management

Congestion created by strips of roadside commercial land uses is one of the most objectionable impacts of development. Businesses naturally locate on the most accessible land, but the many driveways they require, and the congested intersections they create, impede travel to all locations. Road users, landowners, and businesses then suffer from reduced accessibility.

Access management consolidates driveways, provides better vehicle and pedestrian circulation, and otherwise reduces the impact of roadside land use on the efficiency of the road system. It requires a good relationship among road agencies, local government, and property owners to develop an access plan and possibly adopt an overlay zoning district. This approach has yielded successes for some communities, but more tools are needed both to insulate the road system from development of the adjacent land and to let the road system work to its potential for Michigan businesses.

Coordination and Notice

Recent amendments to planning law require improved notice to be given to adjacent jurisdictions of plan adoption. To be successful, this approach requires a commitment by the parties involved to go beyond the legislative mandate of notification and make a commitment to coordinated planning. To be effective, coordination should also involve transportation agencies. This is also true for individual projects. Often, road and transit agencies are not informed of land-development plans until late in the process, although sometimes transportation agencies are the first to see land use proposals because of access needs. A commitment to reciprocal early notification and on-going coordination will make for better land use and transportation decisions.

Noise-sensitive Zoning

The Michigan Department of Transportation (MDOT) has contracted for development of a model ordinance that local governments might use to protect future property owners from highway noise impacts. The inevitable growth of vehicle traffic will make some roadside locations noisier, and these places should be kept free of homes and institutional uses that are sensitive to increased noise.

EXISTING POLICIES

The Michigan Transportation Commission has adopted several policies that guide the MDOT on land use issues:

Growth Management

- Encourage state, regional, and local cooperation in the development and application of land-use and capital-improvement plans.
- Give reduced priority to new transportation capacity in places without land use or capital-improvement plans.
- Discourage local governments from permitting new land development in advance of necessary public infrastructure

Economic Development

- Accord a high priority to investments that cut costs; improve the productivity of Michigan industry, agriculture, and forestry; add accessibility to tourist attractions; and reduce the delivered cost of Michigan goods.
- Ensure that transportation deficiencies are not impediments to investment in Michigan; avoid investment in new transportation facilities designed to serve speculative development.

Roadside Environment

- Invest in the roadside environment sufficiently to guarantee a quality travel experience for road users.
- Stop the proliferation and restrict the size and placement of billboards. Accord the highest priority to control of nontravel-related, nonconforming, and illegal billboards.

Furthermore, the Federal Highway Administration requires that the MDOT adopt a State Long-Range Plan for transportation. Projects implemented with federal funds must be consistent with that plan. The MDOT developed its first State Long-Range Plan in 1994, and recently updated it. Both the 1994 and 2002 plans make it the state's transportation goal to

- coordinate local land use planning, transportation planning, and development;
- maximize the use of the existing infrastructure;
- increase the effectiveness of investment; and
- retain or enhance the vitality of the local community.

REFERENCES

Nadiri, Ishaq, and Theofanis P. Mamuneas. September 1996. *Contribution of Highway Capital to Industry and National Productivity Growth*. Washington, D.C.: Federal Highway Administration, Office of Policy Development.

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