

# **Chapter 7**

## **Strategies for Managing Travel Demand**



## CHAPTER 7

### STRATEGIES FOR MANAGING TRAVEL DEMAND

Transportation Demand Management (TDM) focuses on changing travel behavior to mitigate traffic congestion in lieu of building infrastructure to accommodate travel needs. More specifically, TDM strategies encourage using alternatives to single-occupant vehicle (SOV) travel and shifting trips out of peak travel periods, or even eliminating some trips all together.

As an alternative to expanding the transportation system, TDM seeks to balance travel demand with infrastructure supply. Under this approach, transportation is a commodity, travelers are consumers, and TDM is a tool for manipulating consumer choice. TDM strategies provide incentives or disincentives for consumers to reduce peak hour travel.

Generally, TDM strategies offer either cost or convenience incentives for using SOV alternatives or shifting travel to off-peak periods, or they provide disincentives by increasing the cost and inconvenience of driving alone or driving during peak hours. Incentives and disincentives may be represented by new facilities, pricing mechanisms, public policies, or initiatives that the private sector has been induced to offer.

In addition to their immediate effects on travel behavior, those TDM strategies that signal the true cost of SOV driving also strengthen the long-term outlook for using SOV alternatives. The full cost of SOV travel includes costs borne by the general public related to air pollution, congestion, traffic deaths and injuries, traffic-related police services and courts, employer-provided parking, and other factors.

One of TDM's attributes is that it requires relatively low levels of public funds and reduces infrastructure expansion needs. Even TDM strategies that involve infrastructure improvements are low-cost compared to adding lanes and building rail lines. Some TDM strategies call for private resources, but these costs may be at least partly offset by the private sector's benefiting from TDM's contributions to reducing congestion costs, optimizing infrastructure capacity, and improving air quality.

Whether TDM is applied on an areawide basis or at an individual employment site, its success calls for combinations of actions and strategies. On a regional basis, participation is needed from employers, employees, and public agencies, and it must be supported by available SOV alternatives.

For the OKI region, the strategies that appear reasonable for managing congestion and that are reviewed in this chapter for area wide applicability are the following:

- Congestion pricing
- Telecommuting
- Expansion of RideShare
- Growth management
- High Occupancy Vehicle (HOV) Lanes
- Parking management
- Alternative work schedules
- Trip reduction program

The expansion of intermodal strategies, such as the expansion of bicycle and pedestrian travel, is important in alleviating travel demand on our roadways. A review of bicycle and pedestrian strategies is contained in Chapter 10 and discussion of transit strategies can be found in Chapter 11. This chapter's review does not include some potentially effective strategies — such as an increased gasoline tax or increased license or vehicle registration fees — that would call for extensive multi-jurisdictional political support from both within and outside the region. Also, this review does not preclude further assessment of these strategies in studies of the region's most heavily traveled corridors (see Chapter 13).

### **CONGESTION PRICING**

Under congestion pricing, motorists pay for the use of certain roads and bridges. Motorists may face usage fee schedules ranging from peak-only fees to fees that vary by time of day, facility or level of use. Congestion pricing provides incentives for travelers to take congestion costs into account when making trip decisions, thus leading to more efficient use of facilities and avoiding construction of expensive new capacity. Typically, pricing mechanisms involve a toll for using a specific road or bridge or a fee for entering a congested area. Electronic toll collection systems can make use of pre-paid accounts or periodic billing.

By inducing even small reductions in a facility's peak traffic volumes, congestion pricing can reduce delays, increase travel speeds, and contribute to the other benefits associated with reduced congestion, such as lowered vehicle emissions and fuel consumption. In addition, congestion pricing enhances the appeal of using SOV alternatives, can be used to generate revenues, and can help maintain traffic flows over time and thus sustain the benefits of capacity improvements.

Peak-period pricing has long been used in other industries such as air travel and long distance telephone service to reduce the need for capacity expansion. On an international front, congestion pricing has operated successfully in Singapore and Norway for many years. In recent years, several demonstrations of congestion pricing in the form of high-occupancy toll (HOT) lane projects have occurred in the United States:<sup>1</sup>

- A project in San Diego, California allows drivers of SOVs to use the existing eight-mile HOV facility of Interstate 15. A fee is paid through electronic toll technology and revenues are used to support transit and rideshare. HOVs continue to pay no toll.
- In Orange County, California, the “FastTrac” HOT facility is a ten-mile private toll road — four express lanes constructed in the median of SR 91 — used for travel by vehicles with transponders for use in automatically deducting fees from pre-paid debit accounts. There is a special bypass in either direction to allow eligible vehicles with three or more occupants to pay 50 percent of full toll. After a year of operation, 110,000 transponders were distributed. On typical weekdays over 30,000 transponders are used. Express lane users report one-way time savings in excess of 30 minutes.
- Since August 1998, The “Lee-Way” congestion pricing project in Lee County, Florida varies tolls on two bridges. The program provides a 50 percent discount for off-peak travel by patrons with pre-paid accounts. During the first five months of operation, travel increased by up to 20 percent during certain off-peak time periods compared to the five months before variable pricing began.

The study results from these and the other Federal Highway Administration (FHWA) projects are expected to be useful for determining the future of congestion pricing projects in metropolitan areas. Congestion pricing’s potential for reducing vehicle trips will be established, particularly for peak periods. International experiences have shown its effectiveness for large area or network applications. Peak traffic reductions of 30 percent or more are possible, but there are obstacles that must be overcome if road pricing is to be more widely used to mitigate congestion.<sup>2</sup> Some obstacles to implementing congestion pricing are fading with technology advancements, such as automated vehicle identification. Public acceptability and multi-jurisdictional issues, however, remain as major issues to be addressed. For individual projects, key factors affecting congestion pricing’s success include the availability of SOV alternatives, the rate structure, public education, and the use of fee-generated revenues. By using revenues for SOV alternatives or other benefits for those affected by pricing, some congestion pricing projects have gained public support.

Another major issue affecting congestion pricing’s success is the degree of congestion. This strategy’s prospects improve as congestion worsens, and the areas where congestion levels approach the intolerable are the areas where pricing is most promising.

For the OKI region, congestion pricing has the potential for alleviating congestion

in the most congested corridors or perhaps for maintaining capacity on newly constructed facilities. Pricing deserves consideration as congestion intensifies.

It is recommended that congestion pricing be considered on a corridor basis as part of future corridor studies undertaken by OKI.

## **TELECOMMUTING**

Telecommuting reduces congestion by reducing commuter travel. Under a telecommute arrangement, employees perform their work at home, typically one to three days a week, thereby eliminating work trips on those days. Telecommuters use computers, modems and fax machines to link to clients and other employees at the work place. Telecommuting may occur at home or at telecenters. Telecenters are satellite work facilities for multiple workers from one or more workplaces and have been popular with federal employees in Washington D.C.

Telecommuting produces benefits for the region, the employer, and the employee. The region benefits from reductions in congestion, fuel consumption, and vehicle emissions. For businesses, telecommuting is often reported as improving productivity and helping to recruit and retain valuable employees. It may also reduce office space needs. The telecommuter's benefits include travel cost and time savings, greater flexibility in managing their work and personal lives, and less stress. A 2000 telecommuting study found that the telecommuter's productivity is the same or higher when working at home, and that being able to work at home is an employment incentive.

Telecommuting is a growing phenomenon. In 2000, 16.5 million telecommuters, nine percent of U.S. adults, worked at least one day per month at home during normal business hours, according to a survey conducted by The International Telework Association & Council.<sup>3</sup> As many as 9.3 million U.S. adults telecommute one day per week. In 1991, only 1.9 percent of wage and salary workers were doing work at home for pay.<sup>4</sup> Telecommuters typically work remotely about 20 hours per week. According to the survey, 39 percent of the workers who do not currently work remotely are interested in telecommuting, and 13 percent of those workers would consider the ability to telecommute as an important influence when making a decision to accept another job.

The 2000 survey found that telecommuters live an average of 19.7 miles one-way from their worksite. Annually, telecommuting decreases round trip commuting by roughly 1,800 miles per year per telecommuter. If the region's rates of telecommuting are similar to the nation's, then the number of telecommuting workers in the OKI region would be about 90,000 in 2000. Based on those telecommuting one day per week, telecommuting benefits the region with a reduction of 385,000 vehicle miles traveled (VMT) each weekday.

Telecommuting's growth is a response to market, technological, and social forces. On the economic front, the shift from goods production to information and services supports the growth of telecommuting, and so does telecommuting's use of relatively low cost equipment. Advancements in computer and telecommunications technologies further boost telecommuting, especially advancements in data transmission via TV cables (promotes interactive TV's potential applications in teleshopping and entertainment), modem speeds (lowers costs for using associated technologies), and simultaneous voice and data transmissions. Telecommuting is increasingly being recognized as a way of helping employees to better balance work and home life. Employers are realizing that the availability of telecommuting is a recruiting and retention tool. It is evident that at least a portion of the demand for transportation infrastructure can be met by the increased capacity of the telecommunications infrastructure.

While telecommuting seems likely to grow, its rate of growth depends largely on its acceptance and popularity with employers and employees. The future of telecommuting will be affected by individual responses to managerial, supervision, communication, and social issues. It is estimated that 70 percent of the nation's large employers already offer telecommuting as an option.

It is recommended that OKI promote telecommuting, both through public education programs and by targeting public agencies and private employers who have shown interest in OKI's RideShare program.

## **RIDESHARE**

Rideshare refers to carpools and vanpools, both of which reduce SOV travel. A carpool generally involves from two to five people sharing a ride in their personal cars or one leased through Van Pool Services, Inc. A vanpool is group of nine to fifteen commuters who share a van for commuting.

OKI has a regional RideShare program that helps establish and sustain both carpools and vanpools through marketing, technical, and support programs. This program was instituted in 1979 in response to the region's status as an air quality non-attainment area. Marketing efforts involve meeting with both public and private employers, and developing and distributing a wide variety of promotional materials. Technical services offer computerized carpool matching for interested individuals and a mapping program to display locations of potential rideshare participants for interested employers. OKI's support efforts include a guaranteed ride home program and helping to establish park-and-ride lots. The RideShare program is described in more detail in Chapter 4.

In addition to OKI's efforts, ridesharing can also be encouraged through employer and public policy. Employer policy, for example, can provide designated parking spaces for rideshare vehicles, alternative work schedules, or subsidies to vanpools

and transit. Under TEA-21, employers may provide up to \$65 per month in vanpooling or transit fares as a tax-free benefit. Public policy can influence rideshare through fees that increase SOV travel costs, such as increased parking prices or gasoline taxes, or through preferential treatment for rideshare vehicles, such as HOV lanes or reduced parking cost.

Ridesharing benefits both the participants and the general public. Personal benefits are related to pick-up and drop-off convenience, reduced stress from driving or parking, and financial savings from reduced operating costs and extended vehicle life. Financial savings may be substantial, exceeding \$3,000 a year for an individual in a four-person car pool. The public benefits from fewer vehicles on the road, which reduces congestion and related problems. During the summer ozone season, increased ridesharing can contribute to critical emission reductions.

For rideshare to expand, incentives are needed to offset the flexibility, independence, and overall appeal of SOV travel. As reported by the census, carpools accounted for about 11 percent of regional work trips in 1990. To change travel behavior, the public sector must take the initiative to promote rideshare to the general public and employers. For the public sector, the cost of promotional efforts should be surpassed by the widespread benefits of reduced SOV travel.

It is recommended that OKI's RideShare program promote increased number of carpools and vanpools, as well as the application of other TDM strategies.

## **GROWTH MANAGEMENT**

As a strategy for managing travel demand, growth management involves the public and private sectors in shaping new development patterns to help reduce SOV travel. Traditionally, development patterns have been allowed to determine the distribution of travel demand, which government has then accommodated by expanding infrastructure. In contrast, growth management involves governments in influencing the timing, location, pattern, intensity, and budgeting of development so as to reduce the need for transportation facilities as well as address environmental, social, and fiscal issues.

In recent decades, the region's development patterns have intensified congestion problems, highway expansion needs, and reliance on private vehicles. The lower-density auto-dependent suburban and rural areas have seen substantial growth, while the urbanized suburbs and core areas served by limited public transportation have lost residents, and job growth in those areas has been stagnant. Regionwide, trends toward lower densities and greater separation of residential, employment, and commercial uses have increased trip frequency and travel distances.

Management of growth can influence new development's impact on transportation needs, especially where state law provides for growth management tools. Typically,

growth management promotes development patterns that are compact, take advantage of existing public facilities and services, progress in an orderly fashion from existing communities, tie planning and zoning to capital budgeting, and place employment and commercial activities closer to, or mix them with, residential areas. Such development patterns accommodate the automobile and provide for travel by transit, bicycle, and pedestrian modes.

For managing growth, the classic first-level tool is the local comprehensive plan, which should address all aspects of land development, including traffic circulation, bicycle and pedestrian access, environmental protection, housing, intergovernmental coordination, water and sewer infrastructure, and capital budgeting. In the OKI region, however, only Kentucky provides for local comprehensive plans. Comprehensive plans are permissible under Indiana law, and are not mentioned in Ohio law.

In the OKI region, local governments commonly accommodate growth through zoning and subdivision regulations, which are more narrowly focused than comprehensive plans, and do not address the timing of development. Even where local governments have adopted effective planning and capital budgeting principles and had the political will to follow through, however, growth management efforts are so fragmented that they do not effectively implement this plan's long range transportation recommendations.

The challenge is to develop, apply, and coordinate effective growth management that maintains economic vitality, preserves local authorities, and recognizes private property rights. Since growth and transportation impacts do not respect jurisdictional borders, a multi-jurisdictional approach is needed to help manage travel demand through growth management, especially in developing areas.

Aside from the more traditional tools employed by the public and private sectors, innovative growth management tools are emerging. One such tool is the location-efficient mortgage. In 2000, the Fannie Mae home mortgage corporation began the "Downtown Walk to Work" pilot initiative program in Cincinnati. This low down payment mortgage accounts for savings in transportation and parking expenses as a result of living within walking distance of downtown employment. The calculated savings is added to a borrower's income thereby allowing that borrower to qualify for a larger mortgage. The mortgage is available to home buyers who purchase a home within walking distance of Cincinnati's Central Business District.<sup>5</sup>

To advance land use and transportation options for the region, OKI's Regional Land Use Commission began its scope of work in July 1998. The Commission's charge is to address consistency or inconsistency between long range transportation planning and local land use policies. The Commission is working on ways to support land use patterns that promote multimodal travel alternatives and reduced trips. The

Commission's recommendations are expected to lead to the adoption of local standards and criteria which recognize the relationship between land use, transportation, and other infrastructure. Growth management tools and techniques can strengthen development patterns consistent with plan recommendations for meeting transportation needs.

It is recommended that local governments participate in OKI's Regional Land Use Commission, and adopt and implement comprehensive land use and transportation policies which support SOV alternatives.

As the Land Use Commission and the OKI Board continue to consider the issues of regional development patterns and ways to enhance existing communities, change may need to be made to ensure that transportation investments support those objectives.

### **HIGH OCCUPANCY VEHICLE (HOV) LANES**

High occupancy vehicle (HOV) lanes are intended to encourage the use of buses, carpools, and vanpools. On facilities dedicated to their exclusive use, transit and rideshare vehicles can travel at faster speeds than they would in mixed traffic. In order to attract any SOV drivers to HOV use, the driver should anticipate at least a ten-minute time savings as represented by the difference in traffic speeds between the HOV and the mixed-traffic lanes. HOV facilities will principally induce commuters with long work trips, of 15 to 30 miles or more, to switch from SOV to HOV modes.

An HOV lane may be constructed as a separate roadway or it may be added to or "taken away from" an existing roadway. On an existing facility, the HOV lane may be physically separated from adjacent lanes by barriers, or it may be designated by signs, pavement markers, or other means. In some cases, the same HOV lane accommodates both inbound and outbound traffic by having its direction reversed for morning and afternoon peak hours. HOV lanes require investments for enforcement and, in the case of reversible HOV, significant investments in operations and safety. In addition to lanes, other facilities that support HOV use include metered ramps or bypass lanes that give buses and rideshare vehicles priority access onto interstate highways.

HOV lanes can be effective in encouraging a shift to HOV modes. In a Minneapolis travel corridor, peak period SOV drivers dropped from 62 percent to 49 percent, prompting a shift in rideshare from 20 percent to 33 percent. HOV lanes in Houston and Dallas have proven to be successful with 72 percent to 180 percent more people per lane moving on HOV lanes than general purpose lanes. Also, the average number of people per vehicle in Dallas and Houston has increased by more than 15 percent.<sup>6</sup> As motorists shift to HOV modes, traffic is reduced with accompanying reductions in vehicle miles traveled, fuel consumption, and vehicle emissions. Case studies show that, typically, trip reduction on a corridor basis is about 10 percent.<sup>7</sup>

Over a longer period of time, the net decreases in VMT and fuel consumption may diminish as HOV facilities induce suburban sprawl at the farthest edges of metropolitan regions. The HOV facility could support increased automobile dependent development, rather than development patterns conducive to reduced numbers of automobile trips, reduced VMT and lower overall energy use.

For individuals, the HOV lane provides shorter and more predictable travel times than those experienced under congested conditions. The time savings, which averages from five to ten minutes per trip for most facilities<sup>8</sup> helps offset extra time that may be needed for connecting with bus, van, or carpool. In addition to actual time savings, the perception of time savings is also important, both for HOV-users — who often overstate their time savings — and for SOV users, some of whom will be pressured to shift modes.

HOV lanes work best in corridors where congestion creates significant delays. These conditions, which result from high population and employment densities and high traffic volumes, enable HOV lanes to offer the greatest visible time savings. More specifically, the highways most feasible for HOV lanes have intense and recurring congestion, average daily traffic of 15,000-20,000 vehicles per lane, peak average speeds of 30 miles per hour or less, and serve development patterns that support transit use.<sup>9</sup>

In addition to appropriate traffic conditions, HOV lanes require support from SOV alternatives and from incentives that encourage their use. Support is needed in terms of viable bus service, express buses, transfer stations, park-and-ride lots, TDM strategies that support the formation and use of rideshare arrangements, and public education that encourages the acceptance and use of HOV facilities. Enforcement is also needed, to ensure that HOV lanes are used only by those who meet requirements.

In the OKI region, there are few highway segments for which HOV lanes may have potential based on current traffic levels, congestion problems, employment distribution, and bus service.

It is recommended that HOV lanes be considered as alternatives to highway expansion in those corridors for which corridor studies are conducted.

## **PARKING MANAGEMENT**

Parking price and availability help determine people's choice of travel mode. To manage travel demand, the public and private sectors can design their parking policies to discourage SOV use or encourage the use of SOV alternatives. In central business districts, parking can be managed to discourage long-term parking for commuting purposes at the same time that short-term parking is feasible for shopping and other errands. Parking management is most effective if it is applied

in combination with other TDM strategies.

Responsibility for managing parking supply and pricing is divided among different entities. Private developers and employers can:

- Remove, reduce or cash out employer provided parking subsidies
- Reverse “early bird” or monthly discounts favoring long term commuter parking
- Impose parking pricing and discount parking for carpoolers

In the public sector, local governments may implement many pricing approaches. Governments may:

- Impose or increase fees and surcharges for solo drivers or long term parkers in public parking facilities
- Give preference to car and vanpoolers
- Tax the parking providers
- Revise zoning rules to reduce minimum parking supply requirements

The federal government also influences parking through IRS policy. TEA-21 amended the nation’s tax code empowering companies to offer tax-free incentives to promote change in the way their employees commute to work. Employers can provide \$175 per month tax free to employees for qualified parking plus an additional \$65 a month tax free for a vanpool/transit subsidy. This tax law change should encourage more employers to develop a parking “cash-out” program where employers provide this subsidy in lieu of a company provided parking space.

Based on numerous studies, it has been suggested that parking supply and pricing may be among the most potent demand management strategies. In a review of the effectiveness of 22 parking management programs, more than half of the programs reduced vehicle trips by more than 30 percent.<sup>10</sup> Montgomery County, Maryland allows reduction in the required number of parking spaces for office developments that actively participate in the county ridesharing program and/or provide private incentives for ridesharing. The county, depending on the office development’s level of ridesharing effort, may approve a 25 to 40 percent reduction in the required number of parking spaces. The office development must be located in a “Share-a-Ride District.”<sup>1</sup>

Studies indicate that the benefits of implementing parking strategies far outweigh the costs of implementation. In addition to the benefits of fewer vehicle trips, pricing strategies may produce substantial financial returns, as exemplified by San Francisco’s parking tax that grossed \$5.5 million per year.<sup>11</sup> The cost of pricing strategies are generally minimal; the cost of supply management programs may be offset if fewer parking spaces are needed. In Louisville, the Louisville and Jefferson

County Metropolitan Sewer District offered parking cash-out to its employees. When 21 percent of employees switched to non-SOV transportation alternatives, the District was able to eliminate parking it had been leasing.<sup>12</sup>

The effectiveness of parking management in achieving TDM objectives depends on several factors. For parking policies to reduce SOV trips, transit and other SOV alternatives must be available, and the supply of uncontrolled parking must be limited to avoid a shift to different parking locations. Also, parking price changes must be substantial.

On a regional basis, there is little information on how to apply parking management to effectively manage travel demand. Information is lacking on such factors as expectations for employer participation rates, the effectiveness of specific strategies, the strategies best suited to different businesses, and processes for implementing strategies. Parking management should be promoted, however, because of its critical role in determining SOV use.

It is recommended that public and private employers and local governments apply parking management strategies to reduce SOV trips where transit or other SOV alternatives are available.

To maximize their effectiveness, these strategies should be applied in combination with other TDM strategies, particularly those that promote rideshare and transit use. In the region's heavily traveled corridors, parking management strategies would be most effective if they were implemented through multi-jurisdictional efforts. OKI will promote parking management as part of its expanded RideShare program as recommended in this chapter.

## **ALTERNATIVE WORK SCHEDULES**

Work schedules influence commuter travel patterns. In designing work schedules, employers influence peak period travel volumes and employee inclination to use transit, carpools, and other SOV alternatives. Because of their impacts, work schedules provide a means of managing travel demand.

There are three types of work schedules with potential applicability for managing travel demand.

- A **flex-time** program allows employees to set their own arrival and departure times within a band of time. This allows commuters to avoid travel during the most congested times. Flextime helps spread peak traffic and facilitates carpool participation and transit ridership.
- A **staggered work hours** program allows groups of workers to arrive and leave at set intervals. This type of work schedule disperses congestion.

- A **compressed workweek** allows employees to work more hours in fewer days than they would in a conventional schedule of eight hours per day. A common option is to work four ten-hour days, followed by a day off. This arrangement can divert work trips from peak periods and also reduce work trips.

In addition to those benefits related to transportation, studies show that these work schedules provide other benefits to participating employers and employees. Employers may benefit from reductions in tardiness, sick time, and absenteeism and from increased employee productivity. Participating employees enjoy greater flexibility for conducting their non-work responsibilities. Benefits are relatively inexpensive, with costs primarily related to program set-up and perhaps for extended office hours.

Evaluations of alternative work schedules are generally limited to case studies<sup>13</sup> that substantiate the programs' effectiveness among participating employee groups.

- In a flextime program in San Francisco, time savings averaged nine minutes per trip for employees arriving before the main peak period.
- For a staggered work hours application involving about 18 percent of the downtown Honolulu work force, commute time was reduced as much as 18 percent on some routes.
- For the compressed workweek, an experiment among federal employees in Denver reduced work and non-work VMT by 15 percent for participating employees.
- The scale of travel impacts from alternative work schedules depends on the number and proportion of participating employees and initial driving distances and times.

It is recommended that public and private employers in the OKI region adopt alternative work schedules if feasible.

OKI will promote alternative work schedules as part of its expanded RideShare program as recommended in this chapter.

### **TRIP REDUCTION PROGRAM**

In a trip reduction program (TRP), employers offer a variety of strategies to encourage their employees to reduce travel to and from the work site. Research conducted throughout the country has shown that a TRP program can be very

effective, as indicated by vehicle trip reductions as high as 30 or 40 percent.<sup>15</sup>

In a TRP, the employer offers a variety of TDM strategies. Generally, the employer designates a coordinator to initiate and administer the program, which may involve quantifying program results and documenting successful strategies.

In general, the most effective TRPs offer time or financial incentives to encourage employees to shift from driving alone to using an alternative travel mode. As the SOV alternative, carpooling is the backbone of most employer-based TDM programs, but vanpooling, bicycling or transit can also be important. Strategies that are commonly used to encourage a mode shift include parking management, which is probably the single most influential strategy, and alternative work schedules, which provide the flexibility that makes it easier to use SOV alternatives.

Compared to applying TDM strategies to a region, corridor, or activity-center, employer-based TDM programs are often the most effective in reducing trips. Commuters are more responsive to TDM strategies presented at the worksite than presented through other types of programs. In addition, the strategies selected for a TRP can address specific worksite and commuter characteristics, as opposed to the diversity of factors that influence commuter choice on a regional basis, and information can be targeted to those employees most likely to use alternative modes.

A TRP's success is influenced by employer location, work force composition, and employee commute patterns. Employers with effective TRPs are often located in high-density employment areas with transit service, HOV facilities, and restricted parking and have a high proportion of service and skilled labor positions and a significant number of employees with long commutes (greater than 15 miles).

TRPs help reduce congestion and vehicle emissions, but for employers to implement them voluntarily generally requires a strong interest in solving an on-site transportation problem (such as a parking shortage or employee tardiness from congestion), expanding employee benefits, or reducing company expenses related to parking or tardiness.

Congestion is a problem for which both the cause and solution are influenced by the cumulative effect of individual choices. By taking initiatives to encourage their employees to commute more frequently by rideshare or transit, employers in both the public and private sectors can help reduce congestion.

It is recommended that OKI's RideShare program promote the development of TRP's in congested areas and heavily traveled corridors with proliferations of employers and commercial, office, or other employers.

Resources for expanding OKI's RideShare program, which is estimated at \$100,000,

would cover the cost of this promotion effort.

## **ENERGY CONSERVATION**

As stated at the beginning of this chapter, increased gasoline taxes have been omitted from inclusion as a demand management strategy because of potential political controversy and the logistical problems of implementation in a tri-state, eight-county region.

Twice during the 1970s, oil shortages and the resulting gasoline price increases were externally imposed on the United States by the Organization of the Petroleum Exporting Countries (OPEC) production cutbacks. The realization of the nation's dependency on foreign oil resources, over which we have little control, led to energy contingency planning to maintain the mobility of the population with reduced fuel supplies. Both the goals and strategies recommended for addressing the energy shortages of the seventies were much the same as those presented in this chapter for managing travel demand.

The United States remains dependent on foreign oil for transportation and other domestic needs. Furthermore, activities to address this issue have been more directed toward maintaining the supply of inexpensive fuel rather than moderating the demand. Recent consumer preferences for sport utility vehicles, vans and light trucks for personal transportation indicate little public concern for energy conservation.

Studies<sup>14</sup> prepared by OKI and the area transit agencies in the early 1980s to plan measures for coping with future energy cutbacks classified potential fuel source reductions as follows: A decrease or shortage of one percent to seven percent is "light", eight percent to 12 percent is "moderate" and 13 percent or more is "severe." The shortages of 1973-1974 ranged from four percent to nine percent. These energy contingency plans recommended most of the same measures presented in the preceding sections of this chapter, including coordinated traffic signal timing, removal of traffic signals where practical, ridesharing, alternative work schedules, public transit expansion, priority bus lanes and signal pre-emption, and including transit operators for priority fuel allocation. As the metropolitan planning organization, OKI would have a specific role in coordinating emergency transportation contingency plans, coordinating conservation measures between the public transit authorities and private transportation providers, operating an emergency carpool matching center, and establishing emergency park-and-ride lots.

Many of these recommendations have been included in past regional transportation plans and are being implemented by OKI through its Overall Work Program and by local governments and transit agencies through projects implemented through the OKI Transportation Improvement Program.

Energy conservation also remains a priority in the federal TEA-21 transportation planning guidelines. One of the seven required planning factors to be addressed in this plan is to "Protect and enhance the environment, promote energy conservation, and improve the quality of life." In addition to the travel demand strategies presented in this chapter, energy conservation (and the related benefit of improved air quality) will also be a direct or indirect result of the recommendations in this plan contained in Chapter 6: Congestion Management; Chapter 8: Traffic Operations Improvement; Chapter 9: Intelligent Transportation Systems; Chapter 10: Bicycle and Pedestrian Systems; and Chapter 11: Transit Improvement.

These energy conservation recommendations are ongoing components of the plan. Activity on these strategies can be intensified in the event of future fuel shortages. A further step has also been programmed in the OKI FY-2002 Overall Work Program which will update much of the energy demand and use data and energy policy issues developed in the 1980s. The Regional Energy Conservation Policy program will then develop goals and objectives for transportation energy conservation and assess the energy impacts of the region's transportation system. The study will further identify the potential implications of emerging technologies, transit alternatives, increased use of alternative fuels, and transportation demand management strategies. The resulting policy statements on energy conservation will provide guidance to the OKI Board of Directors, constituent local governments, and future agency work programs for developing a more energy-efficient transportation system, coping with emergency shortages, and also addressing the maintenance of the clean air standards.

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- <sup>11</sup> Ibid. Part II, section B, page 4-16.
- <sup>12</sup> Ibid. Part II, section C, pp. 1-4-5.
- <sup>13</sup> U.S. Environmental Protection Agency Office of Transportation and Air Quality, "Commuter Choice; Employer Provided Benefits," May 2, 2000.

<sup>14</sup> OKI Regional Council of Governments. *Transportation Energy Consumption in the OKI Region*, May, 1982. Transit Authority of Northern Kentucky. *Energy Contingency Plan*, March, 1981. Queen City Metro, Research and Planning Department. *SORTA Energy Shortage Contingency Plan*, April, 1980. OKI Regional Council of Governments. *An Energy Contingency plan for the Middletown Transit System*, May, 1981.