♲EPA

TRAQ Technical Overview

Transportation Air Quality Center

Transportation Control Measures: Telecommuting

EPA's main strategy for addressing the contributions of motor vehicles to our air quality problems has been to cut the tailpipe emissions for every mile a vehicle travels. Air quality can also be improved by changing the way motor vehicles are used—reducing total vehicle miles traveled at the critical times and places, and reducing the use of highly polluting operating modes. These alternative approaches, usually termed Transportation Control Measures (TCMs), have an important role as both mandatory and optional elements of state plans for attaining the air quality goals specified in the Clean Air Act. TCMs encompass a wide variety of goals and methods, from incentives for increasing vehicle occupancy to shifts in the timing of commuting trips. This document is one of a series that provides overviews of individual TCM types, discussing their advantages, disadvantages, and the issues involved in their implementation.

Getting There with Clean Air

Telecommuting

Contents

Telecommuting is a way of reducing vehicle miles traveled (VMT) by employees to and from work. It is defined as working at home or at an alternate location and communicating with the usual place of work using electronic or other means, instead of physically traveling to a more distant work site. VMT reduction leads to a drop in vehicle pollution emissions, and a drop in traffic congestion (which may result in further reductions in emissions). The term "telecommuting" is often used interchangeably with "working from home." Running a business from a home office is not considered telecommuting. In addition, working for an employer from home is only one form of telecommuting. Another variation of telecommuting involves working at remote satellite centers that may be run by one company, or by several companies. A common misunderstanding is that telecommuting must involve a direct link between an employee's home computer and their company's computer at the office. In fact, telecommuting employees may work on a computer linked to their company, but may also work on a stand-alone computer, or perform work tasks which do not require a computer (e.g., reading or paper work). [1]

1. Costs and Benefits

The environment benefits from telecommuting because of reduced pollution associated with reduced employee driving. Combustion of fuel (primarily gasoline) accounts for emissions of 70 percent of smog precursors, and 90 percent of carbon monoxide in urban areas. [2] One study estimated that $23 billion could be saved in transportation, environmental, and energy costs if there were a 10 to 20 percent increase in telecommuting. [1] Although work-related trips decrease, non-work-related trips (e.g., shopping) may increase, due to increased free time and flexibility. [1]

The direct costs and benefits of telecommuting can be quantified. Costs include the following:

➡ Equipment

➡ Training

➡ Telecommunication links

➡ Possible furniture purchases

➡ Insurance

➡ The cost of administering the program.

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If the telecommuter works at home, his or her utility costs will also increase. The indirect costs are harder to quantify. Employees may not be readily available for face-to-face meetings on short notice, and new managerial styles have to be developed to continue viable business activities. Most of the costs associated with telecommuting may be shouldered by the company, although some programs require that employees provide their own home equipment, such as computers. Studies performed by the Department of Transportation estimate the yearly costs of telecommuting to be $350 per employee. [1]

Companies benefit from the following:

➡ Decreased employee use of sick leave

➡ Decreased turnover

➡ Savings on office space

➡ Generally increased productivity and employee morale

Employees benefit by not incurring operation and maintenance costs associated with operating a motor vehicle, or reduced costs if they work at a satellite office. Telecommuting to a satellite office may change an employee's mode of transportation (e.g., riding a bicycle, or walking), potentially benefiting employee health. Reducing vehicle miles traveled by employees lessens their risks to traffic related fatalities. Approximately 43,500 people died during highway accidents in 1991. [2] Employees benefit by not spending time commuting to the office. Studies indicate that people tend to value their time spent in traffic congestion at $7 per hour. [2] With fewer people on the road, those not telecommuting may also benefit from reduced congestion.

Telecommuting may reduce congestion by removing traffic from congested arterial roadways during peak periods several days per week. However, telecommuting may also remove traffic from roads that were not congested and may do so only on days such as Monday and Friday when traffic is lightest. [1] The actual program experience can be expected to lie somewhere between these two extreme cases. It should be noted that from an air quality perspective, a trip eliminated is more beneficial than a shorter trip taken to a satellite office because the latter still produces a cold start and a hot soak. However, shortening the trip does produce benefits because overall VMT is reduced.

2.   Implementation

Some unions have objected to the implementation of telecommuting programs based on fears that employees working at home would not be eligible for all company benefits. Telecommuters need to be assured by their company that all necessary benefits will be available, whether they work in the office, at home, or most likely a combination of these arrangements.

The type of work performed at a company is critical to implementation. Many of the jobs performed in information industries such as accounting, data processing, and programming could be performed at home or a telecommuting center. People working in such industries as construction, however, would not have that option. In any workplace, there will be jobs (e.g., clerical and management) where telecommuting is not feasible. Telecommuting to a remote center may alleviate potential problems associated with home-based telecommuting. The employee may not have enough space at home to conduct work-related activities effectively. The home provides many potential distractions, such as television, which are not available to workers in an office environment. Many managers are concerned that productivity may decrease if workers are telecommuting. Working at a remote center provides many of the benefits of telecommuting, notably a shorter drive to the office, while also providing professional and social interactions common at a traditional office. [3]

3.   Keys to Success

Because telecommuting is a relatively new concept, it is often developed first as a pilot program. Once a pilot program involving a small number of employees proves successful, it may be expanded to a greater part of the work force. To implement a telecommuting program, the employer must

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develop new policies and procedures for people working out of the office. Management must invest time and resources to evaluate the effectiveness of employees working out of the office to ensure that productivity is maintained (or increases). Key elements of establishing a program may include the following:

➡   The telecommuting arrangement should be voluntary between the company and worker. Workers should not be forced to work away from the main office. The employee and employer should have the option of terminating the arrangement at any time.

➡   Job performance needs to be carefully monitored and tasks very clearly defined.

➡   Proprietary information needs to be secured at the employee's home.

➡   Equipment needed (usually a computer) must be available to the employee. The employee may use either his or her own equipment or have equipment provided by the company.

➡   Utility and phone charges should be shared by the company. The employee will experience increased utility and phone bills associated with conducting business at home.

➡ Tax implications need to be carefully examined by the employee. There may be advantages to establishing a home office, which are detailed by the IRS.

➡ Arrangements that are associated with employees telecommuting should be clearly spelled out in a Telecommuting Agreement that addresses consequences of violating the agreement. [1]

4. Equity Issues

Telecommuting benefits those in the information and service industries or those able to function independently once work has been assigned. By 1980, it was estimated that over half of the employment positions in the United States met these criteria. [1] The scope of the work assigned must also be significant enough to occupy an employee for an entire work day. Telecommuting potentially affects employers, employees, and employees' household members. There is the potential that because some employees are eligible for telecommuting and others are not, issues of equity could surface.

5. Participation Rates

A study by Washington state found that levels of telecommuting in the United States are highest in California. The breakdown of penetration (i.e., the percentage of workers who telecommute at least some of the time) is as follows:

Penetration of Telecommuting: California vs. United States

Region	Penetration (% of all workers)
National	0.8 - 1.9%
Los Angeles Area	7.6%
San Francisco Area	8.1%

Source: Travel Characteristics and Impacts of Telecommuting, Washington State Energy Office

If telecommuting is going to benefit the nation, regulatory agencies and governments will have to more actively promote the concept. Given the economic, environmental, and lifestyle benefits of telecommuting, it should continue to grow in the years to come.

6. Sources

[1] Telecommuting Internet Homepage, U.S. Department of Transportation (December 1996).

[2] Report to Congress, Transportation Implications of Telecommuting, U.S. Department of Transportation (January 1993).

[3] Impacts of Center-Based Telecommuting on Travel and Emissions: Analysis of the Puget Sound Demonstration Project, Institute of Transportation Studies, University of California, Davis (April 1996).

7.   An On-line Resource

The Environmental Protection Agency's Office of Mobile Sources has established the TCM Program Information Directory to provide commuters, the transportation industry, state and local governments, and the public with information about TCM programs that are now operating across the country. This document and additional information on other TCMs and TCM programs implemented nationwide can be found at:

http://www.epa.gov/omswww/transp/traqtcms.htm