First Resort

Resort Community Transportation Demand Management
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Abstract

Transportation demand management (TDM) includes a variety of strategies to encourage more efficient use of existing transportation facilities. This paper describes how TDM strategies are being used to address transportation problems in resort communities. Such communities tend to be particularly appropriate for TDM because they have predictable travel patterns, significantly increased demand during peak periods (which are frequently a few hours a week, or a few weeks of the year, and so increasing capacity to satisfy peak demand is unjustified), and high environmental amenity values that can be degraded by expanding road and parking capacity. If carefully planned and implemented, TDM strategies can provide Win-Win solutions to resort community transportation problems, by providing visitors more travel choices and an improved experience, while avoiding road and parking construction projects that are financially expensive and degrade local environmental quality. This paper describes TDM strategies suitable for application in resort communities, and discusses TDM planning and implementation.

Introduction

Many resorts are too successful for their own good. They attract so many people – visitors, residents and employees – that their unique amenities and environments are threatened. Usually, it is motor vehicle traffic, not people themselves, that imposes environmental risks.

Resort communities must make difficult tradeoffs in their transportation planning decisions. On one hand, most depend on motor vehicles to bring visitors, staff and essential products. On the other hand, motor vehicle traffic can degrade the very aesthetic amenities that attracts visitors.

Constraints on motor vehicle traffic are often critical in retaining what makes a resort community special. For example, Venice, Italy is famous for its canals. Although the millions of tourists who visit that city could get around more quickly if the canals were filled, paved, and turned into modern roadways, doing so would destroy the very features that attract them in the first place. Most other resort communities, whether they be large, internationally famous destinations, or smaller, less well known resorts, must control motor vehicle traffic if they are to retain their unique ambiance.

This tension between traffic and the environment exists in most communities, but is particularly intense in resort communities where environmental amenities often have tremendous value. As a result, resort communities are often justified in taking greater measures to limit traffic and encourage alternative travel options than otherwise comparable communities.

Although resort communities vary tremendously, they often have common traits that must be taken into account when planning transportation. These include:

- High environmental and experiential values

- Geographic isolation.

- A large volume of visitors and staff.

- Distinct and predictable types of trips.

- Concentrated activities.

- Visitors accustomed to paying for transport services, such as parking, trams, shuttle buses, bicycle rentals, etc.

 This paper describes how the concepts of transportation demand management (or TDM) can be applied in resort communities, taking into account these unique traits. It describes the process that can be used to identify a range of possible strategies and measures for a community to choose from.

TDM Principles

Transportation Demand Management involves a wide range of strategies and measures that encourage more efficient travel behavior.[1] Although individual TDM measures have been widely used for decades (such as transit promotion and parking restrictions), it is only recently that the overall concept has been widely accepted by transportation professionals.

Although transportation demand management is often implemented as a "last resort" to address urban traffic congestion, it provides a wide range of benefits, some of which are often overlooked.[2] These include economic savings (such as reduced roadway and parking costs), safety, environmental protection, and increased travel choices for non-drivers. These benefits are often significant in resort communities where environmental amenities are highly valued and travel choice is important. Although TDM has usually been targeted at commute trips, it has much broader applications.

There are three principles that form the foundation for effective transportation demand management planning:

1. *Choice*
A community should provide a range of travel choices that individuals can choose from. For example, this may include private automobile, taxi and transit services.

2. *Incentives*
There should be incentives that encourage individuals to choose the "best" travel choice for each particular trip. For example, because transit services impose the least traffic impacts per passenger trip (since transit vehicles can typically carry 5 to 50 passengers), transit should be comfortable, efficient, fast and inexpensive.

3. *Equity*
There are often a number of equity issues implicit in resort transportation decisions. In particular, visitors and clients tend to have more wealth than staff or residents. Yet, resort communities often provide premium transportation services to visitors in order to help attract them and satisfy their wants. Equity issues should be considered explicitly in transportation planning.

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[1] Todd Litman, *Potential Travel Demand Management Options*, VTPI (www.vtpi.org) 1998; Reid Ewing, *Transportation and Land Use Innovations; When You Can't Build Your Way Out of Congestion*, Planners Press (Chicago; www.planning.com), 1997.

[2] Todd Litman, *Guide to Calculating TDM Benefits*, VTPI (Victoria; www.vtpi.org), 1998.

Travel Choices

Some examples of efficient travel choices are described in this section.

1. Transit
Many people assume that North Americans will not willingly ride public transit, particularly buses, if they can drive. But wait. What happens when visitors arrive at a Disneyland? They park their car, and hop on a cute little *bus*. Tourists at theme parks are happy to ride a bus. They just need assurance that it is part of the fun.

There are a number of factors that can help make transit attractive at resorts. It must be convenient, comfortable and attractive. Schedules and fares must be easy to understand. If possible, it should be free or payments should be convenient. For example, it could be funded as part of an accommodation tax, or some type of unlimited-rides-for-one-fee that visitors pay when they arrive.

New Legislation Could Bring Transit Service to National Parks
Legislation introduced by Senator Paul Sarbanes (D-Md.) on 3/23 would bring transit to an unprecedented number of national parks. In an effort to curb congestion and pollution in parks and nearby gateway communities, the Transit in Parks Act would provide the Department of the Interior's land management agencies with $50 million annually over the next five years to develop clean bus and rail networks, pedestrian and bike paths, and watercraft access within national park lands.

The possibility of improving transit services in national parks is strongly supported by Americans, according to a survey by Colorado State University. Conducted for the National Parks and Conservation Association, the 1998 survey found that 92 % of respondents were willing to use shuttle buses to reduce traffic congestion and help protect park resources. With 270 million people visiting America's national parks each year, the introduction of transit services in popular national parks may help visitors become more familiar with the benefits of transportation choices.

There are many types of public transit. Which is most appropriate in a particular situation depends on ridership needs and travel conditions. A rail system may be justified along corridors with heavy use. Rail is often more comfortable, easier to understand, and tends to attract more ridership than buses. If rail is impractical, large buses may be justified on busy routes. Smaller buses or vans are often preferred because the are less intrusive.

Parks agencies can establish transit services, bicycle rentals and guided tours, or help private companies provide suitable services.[3] If possible, transit vehicles should be particularly comfortable, with padded seats and other amenities. This is especially important for longer rides. Coffee (or rather, *espresso*, we're talking upscale here) and snacks sold at stations or served on transit vehicles may be appropriate. Some

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[3] Cambridge Systematics, *Federal Lands Alternative Transportation Systems Study*, Federal Highway Administration and Federal Transit Administration (www.fhwa.dot.gov), 2001.

communities use theme vehicles, such as historic style trolleys mounted on a conventional bus chassis, or double-decker buses.

It is important that transit vehicles accommodate baggage, including skies, bicycles, surfboards and big dirty backpacks, or whatever else visitors are likely to carry. This can be accomplished with special racks, or by replacing one or more seats with a luggage bin.

Demand response transit, in which vehicles are routed to specific destinations, may be appropriate, either in addition to or instead of fixed route transit. Demand response is often the only way to provide transit services in lower density, suburban or rural areas.

Conventional taxi service is an important form of mobility in many resorts. It is important that taxi services be included in transportation planning and information. Although taxis do not directly reduce automobile travel, they provide a mobility option for people who do not have an automobile. Inadequate or overly expensive taxi services will encourage visitors to arrive by, or rent, an automobile.

Many hotels already provide shuttle bus or van services to pick up their guests from airports or other terminals, and for trips to common destinations. It may be possible to expand and coordinate such services so they carry an increasing portion of total trips.

Buses, particularly large buses, impose a number of environmental impacts, including air pollution, noise and parking space requirements. Newer buses tend to have lower emissions than older diesel vehicles. Alternative fuels, such as CNG may be appropriate in some cases, although diesel engines themselves are getting much cleaner. Noise pollution can be reduced through design improvements and driving practices. In some cases, smaller buses may be justified to minimize this impact.

2. Ridesharing
Ridesharing is particularly appropriate for resort community employees. Ridesharing can be encouraged by offering ridematching services, by promoting it at businesses, and by providing incentives to reduce automobile use, as described below.

3. Bicycling
Bicycling is an important travel alternative in many communities, but it could be used much more if given appropriate support.[4] Bicycling minimizes environmental impacts compared with other travel modes,[5] and is a fun and healthy activity.[6] It may be the best way for visitors to experience a resort that has moderately dispersed attractions (1 to 10 miles in area).

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[4] National Bicycling and Walking Study reports #1, 3 and 4, USDOT, FHWA (Washington DC), 1992.

[5] Charles Komanoff and Cora Roelofs, *The Environmental Benefits of Bicycling and Walking*, National Bicycling and Walking Study Case Study No. 15, USDOT, January 1993, FHWA-PD-93-015.

[6] Ian Roberts, Harry Owen, Peter Lumb, Colin MacDougall, *Pedalling Health—Health Benefits of a Modal Transport Shift*, Bicycle Institute of South Australia (Sydney; www.science.adelaide.edu.au), 1996.

Bicycling requires adequate facilities.[7] Many riders prefer paths that are completely separated from the roadway, although on-road riding is acceptable if there is a wide bikelane or where traffic is light or slow (such as in a downtown area). It is not usually enough to establish just one or two paths. It is often important to develop a comprehensive bicycle plan that identifies routes, parking requirements, and any bottlenecks to riding. Because of new standards in bicycle facility design it is important to obtain up to date information in bicycle plan development.

It is also important that visitors be able to easily rent bicycles. Some hotels offer bicycles to their guests, and many communities have businesses that rent bicycles. These options should be expanded and promoted as much as possible.

4. Walking
Walking is an important transportation option, and supports travel options (since transit riders rely on walking once they arrive at their destinations). It is also an enjoyable activity in most resort communities. An attractive pedestrian environment is an important attraction to many resort communities, and is a critical component of successful transportation demand management programs.

There are many design details that can enhance the pedestrian environment. Pedestrian facilities include sidewalks, paths, crosswalks, and pedestrian bridges. It is important to identify barriers and inadequacies that limit pedestrian travel. A pedestrian-friendly streetscape includes appropriate scale lighting and street furniture, and storefronts that are welcoming to pedestrians. A well-connected street system minimizes travel distances, which is particularly important for pedestrian travel.[8] Traffic calming (described later) can greatly improve the pedestrian environment by reducing motor vehicle traffic speeds.

5. Land Use Coordination
Land use patterns have a significant impact on local transportation needs.[9] In general, if most attractions are in a central, walkable area there is less need for driving than if attractions are dispersed. Attractions sprawled for miles along a highway typically require the greatest amount of driving.

What do we mean by attractions? Any destinations that either visitors or residents may need. Hotels, restaurants, recreation and entertainment centers, stores or any other place that attracts people. The attractions that are most popular are the ones that deserve the most careful land use coordination.

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[7] American Association of State Highway and Transportation Officials, *Guide to the Development of Bicycle Facilities*, 1991; John Forester, *Effective Cycling,* MIT Press, Cambridge, 1984.

[8] Michael Aaron Berman, "The Transportation Effects of Neo-Traditional Development," *Journal of Planning Literature*, Vol. 10, No. 4, May 1996, pp. 347-363.

[9] Terry Moore and Paul Throsnes, *The Transportation/Land Use Connection*, American Planning Asso., Planning Advisory Service, Report 448/449 (Chicago; www.planning.org), 1994; Eric Damian Kelly, "The Transportation Land-Use Link," *Journal of Planning Literature*, Vol. 9, No. 2, Nov. 1994, pp. 128-145.

6. Establish Transportation Management Associations (TMAs) and coordinators.
TMAs coordinate transport activities at worksite, neighborhood or municipal levels, which is more effective than smaller, individual programs managed by individual employers.[10] Such programs distribute information, organize transportation fairs, perform ride matching, manage parking, sponsor guaranteed ride home services, and help plan transit, bicycle and pedestrian improvements, site amenities, etc.[11] One TMA will typically serve a small resort community, or a particular section if the community is large and dispersed.

7. Transportation Management for Special Events and Activities
TDM can be especially appropriate for special events, such as fairs, sports competitions, etc. that attract large crowds.[12] This can include special transit services, road use restrictions and parking provisions that encourage alternatives to automobile travel. Event organizers can be required to provide a TDM plan, and to include information on travel alternatives in their publicity. For example, the state of Maine promotes "Car(e)-Free" vacations, providing support to the travel industry to develop vacation packages that reduce automobile use.

8. Freight Delivery Coordination
Specific measures may be used to coordinate and consolidate deliveries to minimize the number of freight vehicles needed, particularly during peak periods.[13]

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[10] Erik Ferguson, Catherine Ross and Michael Meyer, "Transportation Management Associations: Organization, Implementation, and Evaluation," *Transportation Research Record 1346*, 1992, pp. 36-43; Lori Diggins and Eric Schreffler, "Status Report on Transportation Management Association Development in California," *Transportation Research Record 1346*, 1992, pp. 53-61.
[11] For resources contact the Association for Commuter Transportation (http://tmi.cob.fsu.edu/act/act.htm).
[12] Nada D. Trout and Gerald L. Ullman, "A Special Event Park-and-Ride Shuttle Bus Success Story," *ITE Journal*, December 1997, pp. 38-43.
[13] Hitoshi Ieda, "Potential of Regional Goods Transport Collaboration Toward Sustainable Urban Development," *IATSS Research*, Vol. 19, No. 2, Sept. 1995, pp. 79-87.

Incentives

1. Information
One of the most important components of any TDM program is the distribution of information about travel options. Resort visitors, employees and residents need information on automobile use (such as the availability and cost of parking, road conditions, etc.) and the availability of travel alternatives. Public relations campaigns can also encourage the use of alternative travel modes. This information must be timely, widely available, and easy to understand. Special brochures, newsletters, signs and hotlines are all appropriate, as well as information integrated into general visitor information.

2. Parking Management
Experience indicates that parking management is often one of the most effective ways to manage transportation.[14] There are many specific parking management strategies.[15] The following strategies are appropriate for application in resort communities:

- Reduced parking requirements. Current North American zoning law parking requirements often result in oversupply.[16] A number of strategies can be used to encourage more efficient use of parking, allowing requirements to be reduced.[17]

- Limited, relatively expensive parking facilities in central areas, with more abundant, cheaper parking at the community edge.

- Cashing out free employee parking.[18] This means that employees who receive free parking are also offered its cash equivalent if they use alternative travel modes.

- Providing transit subsidies in place of parking subsidies. It is common for communities to offer subsidized parking as an enticement to visitors. At a minimum, transit subsidies should be offered *in addition to* free or underpriced parking. Even better is to offer transit service *instead of* parking subsidies.

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[14] Todd Litman, *Pavement Busters Guide*, VTPI (www.vtpi.org) 1998; Donald Shoup, "The High Cost of Tree Parking," *Access*, No. 10 UCTC (http://socrates.berkeley.edu/~uctc), Spring 1997.
[15] K.T. Analytics, *Parking Management Strategies: A Handbook For Implementation*, Regional Transportation Authority (Chicago), May 1995.
[16] Richard Willson, "Suburban Parking Requirements: A Tacit Policy for Automobile Use and Sprawl," *Journal of the American Planning Association*, Vol. 61, No. 1, Winter 1995.
[17] Donald Shoup, "An Opportunity to Reduce Minimum Parking Requirements," *Journal of the American Planning Association*, Vol. 61, No. 1, Winter 1995, pp. 14-28; Patrick Hare, *Planning, Transportation, and the Home Economics of Reduced Car Ownership*, Hare Planning (Washington DC), 1995.
[18] Donald Shoup, "Cashing Out Employer-Paid Parking: An Opportunity to Reduce Minimum Parking Requirements," *Journal of the American Planning Association*, Vol. 61, No. 1, Jan. 1995, pp. 14-28.

A number of new technologies make it much easier to charge users for parking.[19] For example, conventional parking meters require drivers to predict how long they will park and carry the right type of change. New charging systems allow drivers to pay by debit or credit card, and to pay only for the amount of time their vehicle is actually parked.

3. Automobile Restrictions
There are many different types of restrictions on automobile use that may be appropriate at resort communities. These include:

- Total or partial prohibitions on driving in certain areas. Automobile use is severely limited in some resorts due to their isolation or extreme environments. In others, driving is restricted to protect their environment or maintain special amenities.

- Restrictions on when certain types of vehicle may use certain roads. For example, private automobile travel is allowed during certain hours into the center of some cities, but is prohibited during busier times. In other areas, freight delivery may be restricted to off-peak time periods.

- Limiting certain lanes or roads to high occupancy vehicles. This allows buses and car pools to bypass congested areas. This is a more efficient use of congested road space and provides an incentive to use these modes.

- Limitations on the number of vehicles allowed (either by metering or simply by letting congestion become self-limiting). In many resort communities this occurs naturally because it is not financially possible or environmentally acceptable to build enough road capacity to accommodate the maximum automobile travel demand during peak periods. Although this is often considered a problem initially, it is actually a blessing if congestion becomes a constraint on automobile traffic and a catalyst for developing a more balanced transportation system.

- Road pricing.[20] A charge may be levied for driving on certain roads or into an area. This can be used to discourage automobile travel.

- Traffic calming strategies, which limit traffic speeds and volumes, particularly around pedestrian area.[21] This provides a number of benefits to visitors and communities.

Many people wonder if visitors, accustomed to unrestricted driving in their own communities, will be willing to accept such limitations when they visit a resort. The

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[19] James Luk, *Technologies for On-Street Paid Parking*, Australian Road Research Board, 1995.
[20] Committee for Study on Urban Transportation Congestion Pricing, *Curbing Gridlock*, Transportation Research Board, National Academy Press (Washington DC), 1994.
[21] Ian Lockwood, "ITE Traffic Calming Definition, *ITE Journal*, Vol. 67, No. 7, July 1997, pp. 22-25. Carmen Hass-Klau, Inge Nold, Geert Bocker, Graham Crampton, *Civilized Streets; A Guide to Traffic Calming*, Environmental & Transport Planning (Brighton, UK), 1992.

answer is yes. Many of the world's most popular resorts have severe restrictions on private automobile use. However, such restrictions must be predictable, understandable, and people must have attractive alternatives to driving.

Visitor information can include statements such as, "During the summer [winter] season, local roads tend to be congested. Visitors are encouraged to use our community's high quality transit service, which bypasses major roadway bottlenecks. An unlimited daily pass costs $5.00 for adults and $2.50 for children under 12."

4. Commute Trip Management
A number of TDM programs are specifically targeted at employees.[22] These tend to be particularly effective because commute trips are predictable and frequent. This typically involves coordinated policies between employers, transit agencies, and local governments to increase travel choices, remove barriers to their use, and provide incentives to employees to use commute alternatives. To be effective, such programs require consideration of social issues, including equity, status and comfort.[23] Special measures may be appropriate to address the travel needs of working parents who have children in daycare or school.[24]

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[22] Cambridge Systematics, *The Effects of Land Use and Travel Demand Management Strategies on Commuting Behavior*, USDOT, DOT-T-95-06, November 1996; Deborah Dagang, "Transportation Demand Management Cost-Effectiveness Model for Suburban Employers," *Transportation Research Record #1404*, July 1993, pp. 64-72

[23] Craig Jesus Poulenez-Donovan and Cy Ulberg, Seeing the Trees and Missing the Forest: Qualitative Versus Quantitative Research Findings in a Model Transportation Demand Management Program Evaluation, *Transportation Research Record #1459*, 1995, pp. 1-6.

[24] Sandra Rosenbloom and Elizabeth Burns, "Why Working Women Drive Alone: Implications for Travel Reduction Programs," *Transportation Research Record #1459*, 1995, pp. 39-45.

Addressing Equity Concerns

Transportation demand management often raises equity issues since it affects the distribution of costs and benefits. For example, increasing parking prices is often considered unfair to lower income people. This may be particularly noticeable in resort communities where staff and residents are often less wealthy than visitors. However, TDM can also provide equity benefits by increasing travel choices for non-drivers and reducing subsidies to automobile users. Concerns about inequity can be addressed through good planning that results in policies that benefit all groups.

Equity concerns can be addressed in pricing structures. For example, transit agencies can offer deeply discounted long-term passes that make transit service affordable to staff and residents. Employees can be encouraged or required to cash out free parking or to subsidize travel alternatives such as transit.

Coordinating TDM

It is important that TDM measures be coordinated to create a system. To be effective, there must be both alternatives to automobile travel and appropriate incentives to use those alternatives.

It is not enough that these travel options and incentives exist. It is equally important that they be publicized so the appropriate people know about them. Since resort communities constantly have new visitors it is essential that information about travel options (including prices and other incentives) be widely available. Distributing information is often one of the major responsibilities of the TDM agency.

An objective of the TDM program may be to assure potential visitors that they don't need an automobile because there are adequate mobility options. If visitors are to arrive by public transit they must know that their mobility needs within the resort community will be fully met. Shuttle buses, taxis, bike rentals and pedestrian paths can all help reduce the number of automobile trips *to* the community as well as *within* it.

Many TDM measures require local coordination. Some municipal governments incorporate TDM management into their existing transportation planning activities. Others create a TDM management position or office. In other communities, independent TDM agencies are established, either fully tax funded, a public/private partnership with local businesses, or sometimes fully supported by a chamber of commerce or a group of businesses.[25] TDM programs have also been successfully managed by university campus administrations.[26]

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[25] Erik Ferguson, Catherine Ross and Michael Meyer, "Transportation Management Associations," *Transportation Quarterly*, Vol. 47, No. 2, April 1993, pp. 207-219.
[26] Michael Williams and Kathleen Petrait, "U-PASS: A Model Transportation Management Program that Works," *Transportation Research Record 1404*, 1993, pp. 73-81.

Planning Exercise

Here is an exercise that can help develop an appropriate TDM program.

First, identify various types of trips, including those made by residents, visitors, employees, and service vehicles. For each type of trip identify:

- Number of such trips (per day, week, year, etc.), or the portion of total trips they constitute.

- Who makes this trip.

- What are the baggage requirements.

- What is the "conventional" mode (such as automobile).

- What are alternative (non-automobile) options for that trip.

- What supports and incentives are needed to accommodate and encourage the alternative mode for that trip.

Develop a table that summarizes this information, such as the one below:

Table 1 **Transportation Demand Management Analysis Example**

Trip Type	Number/ Portion	Who	Baggage	Conven- tional	Alterna- tives	Support/Incentives
Arrival at hotels	10,000/yr 2% of total	Visitors	Large	Private or rented automobile	Intercity bus, rail, airporter	Improved bus/rail services. Discounts to bus tours. Promote bus travel options.
Hotels to ski slopes	100,000/yr 20% of total	Visitors	Medium	Private or rented automobile	Shuttle buses and vans	Parking charges at ski slopes. Improved bus and van services. Discounts to bus users. Promotion of bus use.
Hotels to shops and restaurants	100,000/yr 20% of total	Visitors	Medium	Private or rented automobile	Shuttle buses and vans	Parking charges. Improved bus and van services. Discounts to bus users. Promotion of bus and van use.
Hotels to hiking trails	10,000/yr 2% of total	Visitors	Medium to large	Private or rented automobile	Shuttle buses, vans, bicycles	Special bus and van services Bicycle rentals. Promotion of bus, van and bike use.
Resort Staff commuting	100,000/yr 20% of total	Resort Staff	Small	Private automobile	Pub. Transit, shuttle buses or vans, car pooling, bicycling.	Employee parking charges. Special bus and van services. Bicycle parking and showers. Promote bus, van and bike use.
Deliveries	5,000/yr 1% of total	Delivery Vehicles	Very Large	Individual delivery trucks	Coordinate d delivery trucks	Coordinate shippers. Provide local delivery services. Require or provide financial incentives to consolidate shipping.
Local errands	50,000/yr 10% of total	Resi- dents'	Small to large	Private automobile	Transit, car sharing, bicycling	Parking charges. Improved transit. Ridesharing information. Bicycle and walking encouragement.
Others	-	-	-	-	-	-

Now you can identify which support resources and incentives can provide the most benefit to the community in terms of reduced traffic impacts at the least cost. This does not mean that only strategies that affect a large portion of total trips should be considered, since some strategies that have relatively small direct impacts may have minimal cost, and therefore a high benefit/cost ratio. In most cases a TDM program will include a package of several measures. It may be appropriate to develop a phased plan, particularly since some measures are most appropriate after a certain foundation is developed. For example, it is often important to establish a TDM program and have increased travel choices before raising prices for automobile use. In other cases, certain measures may be held in reserve to be implemented if others fail, or after a certain threshold is reached.

Case Studies

1. The Austrian Model Project "Sustainable Mobility – Car free Tourism"

The project was initiated by the Ministry for the Environment and is carried out together with two other Ministries, the Ministry for Transport and Science and the Ministry for Economic Affairs, as well as two model communities and the Province of Salzburg. Two communities were selected for the project: Bad Hofgastein and Werfenweng, both situated in the Province of Salzburg.

The project was initiated in recognition that a sound and clean environment is essential to attract visitors to a tourist resort. But tourism, particularly motorized transport, has negative impacts on the environment, including air pollution, noise and land use. Tourism is inherently linked to transport. Visitors travel to their holiday destinations and back home, and make local trips during their stay at a resort. The impacts of motorized transport affects the region's ecosystems and diminishes its recreational value.

The five year project started in 1998. It has an advisory board consisting of all project partners, which has the task of coordination and financing. Local coordinators supervise the implementation of the measures in the communities. Public-private-partnerships are established in the field of transport services, electric vehicle manufacturers, logistic and telematic enterprises, energy industry as well as tourism organisations and travel agencies. The implementation of all measures of the model project will afford financing funds of about 110 million ATS (more than 8 million ECU).

Bad Hofgastein

Bad Hofgastein has 6,000 inhabitants and is situated 850 m above sea level in the spacious Gastein valley, which is surrounded by mountains up to 3,000 m high. The settlement was founded in the end of the 9th century, but only became famous in the beginning of the 19th century when its thermal springs became popular. Today, with about 8,000 beds and 1 million overnight stays per year Bad Hofgastein is among the ten most tourism-intensive communities in Austria. Two thirds of overnight stays go to the winter season. About 90% of the visitors are German and Austrian.

Car-free travel to Bad Hofgastein is easy because the community is situated on the Tauern railway, the main connection between Munich and the South. The only problem is that the railway station lies 2 km off the city center. This affords a change to bus or taxi. A private bus service therefore connects the railway station with the city centre.
The city centre has been redesigned during the last years. A pedestrian zone was implemented and only few vehicles like the city bus are allowed to enter it. Delivery of goods is allowed between 7:30 and 10:30 a.m.

Traffic management has been implemented in the residential and hotel area around the pedestrian zone. This helps to avoid through-traffic in those areas. Each point in Bad Hofgastein now can be reached only from one of the three entrances to the city. The number of parking spaces in the streets is very low, since parking is provided at the edge of the city and in an underground car park. Two free bus lines serve the city center. In winter, ski-buses connect the city with the stations of the ski lifts.

Werfenweng

Werfenweng is situated about 45 km south of the city of Salzburg on a plateau above the Salzach valley. It lies 1,000 m above sea level and has 650 inhabitants. The settlement consists of scattered groups of houses. 1,800 beds are offered and about half of the 190,000 overnight stays per year are counted during the winter season. 70% of the visitors are German, 15% Austrian, 8% from the Benelux-countries.

As Werfenweng has not got a railway station of its own, the community is implementing several measures to improve its connection to the railway stop in Bischofshofen, which is in 14 km distance from Werfenweng. A dial-a-taxi-service has been realised, called Werfenweng-Shuttle, and a concept for luggage logistics will be realised soon. In 1997 two electric vehicles were bought and now are offered in a local public car-sharing project. The cars can also be rented by visitors who arrived without their own car.

Project components

The following measures will be implemented as part of the project:

- The establishment of a mobility management centre is a cornerstone of the project. It will promote integration between various means of transport, and travel information, and provide transport services including demand-oriented dial-a-bus-systems, booking and coordination for the car-sharing programme, and rental of bicycles and sports equipment.

- Streets will be redesigned to be more pedestrian- and cycle-friendly. This will allow visitors and inhabitants to walk unimpededly everywhere in the communities. Pedestrians are given priority to cyclists and motorized vehicles. The speed of motorized traffic will be adjusted to that of pedestrians. Cycling will be an important means of travel for visitors and inhabitants. It will be possible to rent bicycles e.g. from hotels or at public service points like the tourist information or the railway station. Public transport services will also transport bicycles. A network of cycling routes is prepared and information material on it will be provided.

- Information packages on car-free travel, and attractive car-free travel services will be provided. To relieve the visitors from their heavy load, a concept of door-to-door luggage logistics is implemented. Sports equipment will be offered for rent.

- Regional public transport is being improved, including railway, buses, taxis, lifts and the electric-car-rental. Information about regional carfree mobility will be provided, including an information map and suggestions for excursions using public transport.

- To allow environmentally sound freight delivery, a freight logistic concept is elaborated and a freight delivery center will be built on the edge of Bad Hofgastein.

- Conventional cars will be replaced by zero-emission-vehicles as far as possible. The aim is to finance the additional costs (compared to the costs of conventional vehicles) of 100 zero-emission-vehicles. It is also planned to replace the two now diesel-powered city buses in Bad Hofgastein by electric buses.

- An integrated travel information and booking system will be created. Upon entering a home address and an address for the desired destination, a user of the travel information system will be able to retrieve information about all options for carfree travel to the desired holiday destination. The travel information system may also serve as a regional information system, and can be used to inform visitors about the best transport for excursions or about the availability of car-sharing. This travel information system will be simple and easy to use.

- The number of parking spaces in the streets will be reduced.

- Legal changes will be made as required.

- A new quality product "carfree tourism", including "all-inclusive-packages" with transfer to and from train stations and door-to-door luggage services will be developed.

- The effects of the project will be evaluated in economic and social terms as well as in terms of air pollution and noise.

For more information on this project contact:
Austrian Federal Ministry for Environment, Youth and Family
Dept. I/5
Stubenbastei 5, A-1010 Wien, Austria
Tel. ++43-1-51522-1208, Fax ++43-1-51522-7208

2. *Ski Resort Mobility and Parking Management*

Most destination ski resorts provide various travel services and incentives to reduce vehicle traffic and address parking problems. Examples are described below.

Aspen/Snowmass, Colorado (www.snowmass.com)

- The Town of Snowmass Village provides free shuttle service to most locations in the Village.

- Twice-hourly bus service from the airport. Free to Aspen (always) and to Snowmass during ski season, and $3 to Snowmass at other times.

- Parking Plaza offers convenient 24 hours a day covered parking. Rates are US$0.75 per hour or US$7.50 per day.

- Residential parking in neighborhoods is restricted to a maximum of two hours from 8:00 am to 6:00 pm Monday through Friday.

- Parking in the commercial core of downtown Aspen is priced at $0.50 per half hour, maximum of two hours.

Banff/Lake Louise (www.banfflakelouise.com)

- Daily bus service between the Fairmont Banff Springs Hotel, town centre, Tunnel Mountain hotels (to the campground in summer) and along Banff Avenue, hours vary seasonally, cost $1.

- Free parking on ski hill, and free parking in downtown with 3-hour and 12-hour time limits, depending on location.

Jackson Hole (www.jacksonhole.net)

- Free shuttle bus operates every half-hour.

- Parking is $5 per day at the edge of the village and $10 per day in the village.

Mount Hood, Oregon (www.skihood.com)

- State Sno-Park Permits costing US$4 per day or US$17 per season are required November 15 - April 30 to park in Oregon Department of Transportation maintained parking areas, including the Mt. Hood Meadows parking lots.

- Park & ride transportation packages are promoted for day skiers. A $50 ticket includes bus service from downtown Portland and a lift ticket, compared with $44 for a standard adult lift ticket.

- A rideshare promotion provides ride matching for skiers.

Mount Washington

- One bus per day from Courtney.

- Free day parking, $10 per day for parking overnight.

Park City, Utah (www.parkcitytownhome.com)

- Free shuttle bus with service as frequently as every 10-minutes during the winter season.

- Some on-street parking within the town is free but has a one- to three-hour limit, some is priced at US$1.00 per hour, some off-street parking is free, and there are private, off-street parkades.

Stevens Pass (www.stevenspass.com)

- Stevens Pass has more than 2,700 parking spaces in eight lots at the base of the mountain, plus parking facilities at Yodelin and the Stevens Pass Nordic Center. Parking is free except at the two summit lots, where $10 daily fees are charged on weekends and holidays. Carpools with 4 or more people pay only $5. VIP reserved parking at the most convenient lots is available for $40 per day during season weekends and holidays.

- An electronic sign is set up on the summit during peak times to indicate where parking is currently available. If the summit lots fill, there are two satellite parking facilities, with free shuttle services. The shuttle runs on continuous basis from when the satellite parking lots are open until 10:30 PM.

- Shuttle bus services are provided every 20 minutes from the nearby town of Sultan, and daily from Leavenworth, on weekdays and weekends during the peak season. A roundtrip is $5, or $25 for ten rides.

Steamboat Springs (www.steamboat.com)

- Steamboat Springs offers a comprehensive system of free transportation between the ski area, downtown and most hotel, condominium, restaurant, grocery and entertainment locations. The ski area is located 3 miles southeast of downtown Steamboat Springs. Buses continuously from 7:00am til 1:45am daily, stopping at each location every 20 minutes.

- Most parking is free. More convenient, underground parking is US$10 per day.

Sun Valley, Idaho

- Free city bus service.

- $8.00 per day parking at base of mountain.

Vail, Colorado (http://vvctb.ecomshare.com)

- 2,500 parking spaces are free during the off-season and priced at US$13 per day from mid-November through mid-April. When the parking structures fill, additional free

parking is available at various lots nearby. All outlying parking spaces are free and within close proximity to existing bus stops.

- The Town of Vail offers the largest free transportation service in the nation. Summer bus service is increased during the ski season.

- Beaver Creek offers year-round free parking just 10 minutes from the ski mountain. A free shuttle bus takes passengers from the free lots to the base of the mountain from 6:30 a.m. until 2:00 a.m., seven days a week. In addition, Village Transportation, a complimentary shuttle service, transports guests to any location within the resort.

Winter Park, Colorado (winterparkguide.com)

- Free shuttle buses operate every hour on weekdays and every half-hour on Fridays, weekends and holidays.

- Free parking is available outside of town. Parking in close lots is $10 per weekday and $15 per weekend day.

3. *Greater Sedona Transportation*[27]

Sedona/Red Rock region in northern Arizona is a popular destination for tourists who are attracted by its spectacular Red Rock cliffs, expanses of forest and grasslands, rushing rivers and striking canyons. The area has approximately 14,000 residents and 4-5 million annual visitors driving 2.5 million cars through Oak Creek Canyon each year, with a doubling of visitors projected in the next two decades. Currently, the only viable way for most people to get to or around Sedona is by car.

The conventional response to growing traffic is build a new road or widen streets. This is not an option within the narrow confines of Oak Creek Canyon. The community is challenging conventional practices and assumptions, such as:

- Additional road and highway investments are the only way to assure mobility for a growing population.

- Transit incentives, land use and other public policies cannot significantly reduce the number or length of trips made by automobile.

- Public transportation requires massive and continuing public subsidies.

The City of Sedona, Yavapai and Coconino Counties, the Coconino National Forest, the Northern Arizona Council of Governments (NACOG) and the Arizona Department of Transportation (ADOT), with technical assistance from the Community Transportation Association of America, are exploring innovative and cost effective ways to manage transportation to enhance the region's livability and preserve its cultural and

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[27] David Raphael and Charles Rutkowski, *Enhancing Public and Visitor Transportation in the Greater Sedona Area: A Strategic Partnership Between the City of Sedona, Arizona and the Coconino National Forest*, Community Transportation Association of America (www.ctaa.org), presented at the Transportation Research Board Annual Meeting, #1024, January 2000.

environmental assets. These efforts will control automobile access to scenic sights and areas within the Coconino National Forest, promoting a balanced choice of transportation options for residents and visitors, including limited highway and parking facilities, establishing a convenient public shuttle system, and pedestrian improvements.

The transportation plan is designed to increase travel choices and enhance visitors' experience. Most in town restaurants and businesses will be accessible by shuttle. Hotels and resorts would serve as staging areas for trips to scenic sights or up the Canyon. A network of gateway centers coupled with a downtown transit hub will serve as collection points for people heading for recreation spots, state parks, trailheads, shopping excursions and other outings. Visitors who arrive by air or shuttle bus would be able to get around without the need of rental cars. Many visitors to Red Rock country pass through Sedona on chartered tours. While these "package" visitors currently depend upon tour operators or jeep companies to get around locally, the availability of a low-cost public shuttle, with proper marketing and promotion, is expected to entice many independent travelers to remain a day or two in the area. The scenic shuttle system will provide the transportation link between many major visitor destinations in the area

The following actions are being planned or implemented to support this plan:

- *Public Shuttle System*: The City will take the lead role in jointly developing a community shuttle system—the centerpiece of the strategy for increasing mobility and access to the region's most important attractions while reducing reliance on the automobile. The shuttle system will be designed to provide frequent, convenient and accessible service within Sedona, between the Village of Oak Creek and the Uptown area, including key attractions within the Red Rock area, and throughout Oak Creek Canyon.

- *Shuttle Stops*: In-town shuttle stops will be designated adjacent to core commercial areas, major motels and resorts, municipal offices, medical offices and parks. Passenger shelters, benches and other "street furniture" would be constructed, adding to the transit system's convenience and attractiveness to both passengers and non-passengers.

- *Street Configuration*: The City will enhance auto, bicycle and pedestrian access to the shuttle system. The street system needs to be interconnected and provide alternate routes between core business areas and surrounding neighborhoods without requiring use of major highways.

- *Bicycle/Pedestrian Connections*: Travel by foot or bicycle will need to be facilitated for shuttle passengers at either end of their trip. A key element of a successful transit system will be a convenient network of sidewalks, jogging paths and bike pathways serving shuttle stops.

- *Transit-Oriented Development*: Transit-oriented development and transit-friendly land use would be promoted through a mix of housing densities and higher intensity development in locations easily served by transit.

- *Parking*: City officials will need to manage parking to reduce congestion and promote transit ridership, including limiting right-of-way parking, create a central parking district, and encourage visitors' to leave their cars at park-and-ride lots and resorts. Forest officials are prepared to limit parking in a number of scenic areas within the national forest. Limits would be placed on roadside parking along two highways that run through Oak Creek Canyon and the Red Rocks scenic area. These limits will serve as an incentive for the shuttle system and will help address safety, water quality and other resource issues. A coordinated plan for

shuttle and controlled parking will be developed to ensure sufficient access to trailheads, residences, businesses, and developed recreation areas, with the intent of providing strong incentives for forest visitors to leave their private vehicles behind and use a shuttle service.

- *Permit System*: The Forest Service is considering implementing a "parking pass" or "passport" for drivers accessing the public lands. Studies indicate that this system could provide significant revenue to support the infrastructure of a shuttle system. At the same time, these methods can be used to encourage visitors to use a shuttle system rather than paying for parking. Subsidized seasonal or annual passes would be available for Sedona area residents.

- *Enhancements*: Shuttle stops will be designated at one mile or less intervals within the Canyon and at vista points elsewhere. Appropriate vehicle turnouts, parking and loading areas, passenger shelters and information kiosks at each stop will also have to be constructed.

- *Pathways*: It is also contemplated that shuttle stops would be connected by pathways, allowing people the convenience of taking the shuttle, bicycling or walking to various destinations along the way within the recreation areas.

- *Gateways*: The partnership between jurisdictions will also allow the development of a network of "gateway" centers and "orientation" sites to serve visitors entering the area. At least four gateways are contemplated. Each would serve as possible "orientation sites", and serve as visitor information centers, day and long-term parking facilities, and transfer points to access the shuttle.

Various funding strategies are being considered for this program. Daily charges could be applied for parking on road right-of-ways. Visitors would be encouraged to leave their cars in motel and Inn parking lots, while free or reduced priced parking also would be available at Gateway Centers and other designed areas. Shuttle passes would be available for sale on a daily, seasonal or annual basis. The following rate schedule has been proposed for shuttle bus service:
- $2.50 Daily Visitor Pass
- $10 Monthly Resident Pass
- $1 Trip Ticket

An alternative is to fund the shuttle system with a national forest entrance fee. Visitors could either purchase a lower-price pass that would allow travel through the area, or visitor "Passport" that would allow entry to the forest, scenic attractions, and recreational facilities, and unlimited use of the shuttle system. Local residents could obtain free or subsidized passes to ride the shuttle.

4. South Beach, Florida

South Beach comprises the southern third of the city of Miami Beach, located on an Atlantic barrier island separated from the mainland by Biscayne Bay. It has a population of about 100,000 in an urban region with a total population of about 4 million residents. In addition to being a bedroom community it is a national tourist destination, with a core business and entertainment district that is on the National Register of Historic Places.

In order to deal with growing traffic congestion and parking problems the community established the SoBe TMA to coordinate transportation management activities. Specific projects include:

- Establish a shuttle bus system with 5-10 minute headways to link fringe parking with the Historic District.

- Implement parking management, such as park-and-ride lots, improved signage, and pricing.

- Develop a marketing and promotion program, including a Miami Beach Mobility Map that will show municipal parking areas, bikeways, water taxis, and transit routes between common destinations in the region.

- Pedestrian and bicycle facility improvements.

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