



DOWNTOWN BOISE

Parking Strategic Plan

APPENDIX L1

*Washington State University
Comprehensive Transportation Plan
TDM Strategies*

Kimley»Horn

Expect More. Experience Better.





Washington State University

COMPREHENSIVE

TRANSPORTATION PLAN

TDM Strategies

INTRODUCTION/OVERVIEW

Transportation Demand Management (TDM) strategies are methods aimed at influencing the frequency, mode, time, route and length of travel of everyday people with the goal of increasing efficiency and sustainability of transportation facilities. TDM strategies typically include providing information on travel choices, financial incentive and disincentives, safe alternative travel facilities, regulating parking, marketing, flexing working schedules and any other program that makes the use of driving single occupied vehicle less attractive.

Our goals in the development and organization of this document were to provide a comprehensive categorization of TDM strategies, effectiveness and policy areas to make finding specific best practices easier for college campuses around the country. As is often the case when trying to categorize a wide range of items there are instances where one item might legitimately be placed in multiple categories. This document contains many strategies to reduce congestion and single occupancy vehicle challenges faced around campuses by providing alternatives and countermeasures.

The goal of any TDM plan is to reduce the dependency on personal vehicles to make daily trips to and from work. The key to the success of these strategies is to have a sufficient number of alternatives and infrastructure that will replace the need of having a personal vehicle. Education and exposure also play a key role in making the commuters aware of the alternate travel options available.

A Comprehensive Approach to Program Development

In this report, TDM strategies are separated into categories based on functionality and type. Below are the categories in which each TDM strategy is classified:

- Employee Support Actions
- Financial Incentives or Disincentives
- Alternative Work Arrangements
- Infrastructure and Transportation Improvements
- Transportation Services

EMPLOYER OR UNIVERSITY ACTIONS

VEHICLE RESTRICTIONS

Some employers and college campuses regulate the number of vehicles by putting restrictions on students who can have vehicles on campus. An example is a college not providing parking passes to freshman who live on campus.

Example of schools that don't allow freshmen to have vehicles on campus:

- Stanford University
- Old Dominion University
- Grambling State University
- University of Albany SUNY
- Valparaiso University

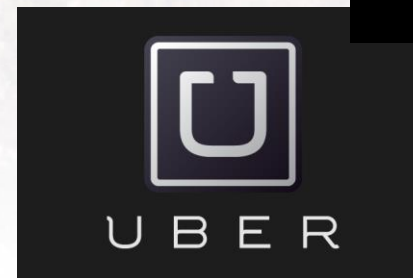
EMPLOYER OR UNIVERSITY ACTIONS

RIDE-MATCHING

Ride-matching is a system that matches drivers and riders within their region. Ride-matching services connect prospective ridesharers that may otherwise have no way of connecting with one another. These services are growing increasingly popular on college campuses and can be used as an on-demand service or as a long term service. Lyft is an on demand ride matching service that allows you to reserve, track and rate your driver through a mobile app. Zimride is a ride matching service that connects users to drivers traveling the same route. Zimride is geared toward commuters and long term ride matching customers whereas Lyft, and similar services to Lyft, are geared toward short term ride matching.

Services

- Zimride
- Sidecar
- Uber
- Lyft
- Jitney



EMPLOYER OR UNIVERSITY ACTIONS

VARIABLE MARKET RATE FOR ON-STREET PARKING

Setting variable parking rates that fluctuate with demand.



Concept

- Helps optimize parking availability
- Frees up spaces for short-term users
- Eliminate search traffic
- Adjusted parking rates based on demand and location.
- Increases price in high demand locations

EMPLOYER or DEVELOPER ACTIONS

UNBUNDLING PARKING

Unbundling parking includes separating the cost of parking from the rental purchase cost resulting in tenants having to pay for a parking space separate from residential costs. This encourages using other forms of transportation and reduces vehicular ownership.

- property managers can sell parking spaces at market value
- Reduces travel by 10-20%
- Encourages increased transit usage



EMPLOYER ACTIONS

CARSHARE

Carshare is a car sharing service that is an alternative to vehicle ownership. Carshare services are intended to make vehicles accessible to lower income students and students who only make occasional trips. Vehicles are reserved on a phone or personal computer, checked out for a designated amount of time and then the vehicle is returned to a dedicated spot where the car was picked up for the next person.



GOVERNMENT ACTIONS

PARKING TAX

Parking taxes and fees can affect travel behavior by decreasing the amount of available parking, increasing the cost of parking, or encouraging employers and developers to pass the cost of parking onto drivers.

- One time tax – One time tax paid by students for parking.
- Stall tax – Annual tax per parking stall/space for students with vehicles.
- Percentage of cost – Tax charge based on the cost to park.

- Parking taxes designed to target specific types of parking behavior

- ◆ Peak-hour
- ◆ Commuter



0 - 30 Minutes	\$12.00
30 - 1 Hour	15.00
1 - 2 Hours	20.00
2 - 3 hours	25.00
3 - 4 hours	27.00
4 - 12 Hours	29.00
12 - 24 Hours	33.00
Early Bird In between 5am-9:30am / Out between 3pm-7pm / M-F	14.00
Evening Special In after 3pm / Out by 8:30am	13.00
Weekend Special Up to 12 Hours	14.00
All City And County Taxes Included Lost Ticket Pays Maximum Rate	
Standard Parking	

- Discounts

- ◆ Early bird arrivals
- ◆ Night owl departures



GOVERNMENT ACTIONS

HIGH PARKING COST FOR SINGLE OCCUPANT VEHICLES (SOV)

Free parking is an incentive for driving alone. In order to penalize SOV's in some form, charging high parking rates will have an impact on the frequency of SOV's. Higher parking cost will increase the use of non-SOV's but motorists need alternative transportation options as well.

Increase the use of non-SOV modes.



EMPLOYER ACTIONS

PREFERENTIAL PARKING FOR RIDESHARE/CARPOOL/VANPOOL

“Preferential parking” means parking spaces designated or assigned for carpool and vanpool vehicles carrying commute passengers/students on a regular basis. These parking spaces are located in more convenient locations than parking spaces provided for single occupant vehicles.

Examples

- Marking spaces
- Installing signs



EMPLOYER ACTIONS

PREFERENTIAL PARKING FOR RIDESHARE/CARPOOL/VANPOOL CONTINUED

The City of Portland (OR) requires that office, industrial, and institutional uses with minimum parking requirements over 20 spaces must reserve 5% of the spaces or 5 spaces, whichever is less, for carpools. The spaces must be the closest to the building entrance or elevator other than handicap spaces.



EMPLOYER ACTIONS

PAY FOR PARKING

Permits govern parking privileges by user, location, time and price incentives.

The implementation of parking permits can help to better regulate parking demands. Parking permits also help to create a structured environment for regular motorist.

- Balances parking demands by user, time and location
- Promotes better utilization of parking facilities
- Faculty and staff required to pay for parking.



EMPLOYER ACTIONS

GUARANTEED RIDE HOME

Guaranteed Ride Home (GRH) programs provide a ride home for persons who use alternate modes of travel. This program serves as a backup plan for those who do not have a personal vehicle at work in the event they need to return home expectantly. These program are typically subsidized or sustained through vouchers and reimbursement.

Example

- Parent needs to leave work to tend to a sick child at school.
- Working/studying late
- Emergency



EMPLOYER ACTIONS

INFORMATION CENTER

An information center or centralized is a great way to centralize the information available about current TDM strategies on campus.

Information examples

- Current maps, routes, stops and schedules for public transit routes serving campus.
- Telephone numbers and web sites for additional information.
- Transportation information, ridesharing agencies and local transit companies.

EMPLOYER ACTIONS

EMPLOYEE TRANSPORTATION/TDM COORDINATOR

A TDM coordinator is a single person hired by the University responsible for organizing, coordinating, developing, managing and evaluating TDM efforts on the campus. It is important for the TDM coordinator to educate and market to the students making them aware of the ongoing TDM efforts around campus.



EMPLOYER ACTIONS

ESTABLISH A TDM FUND

A TDM fund will help to fund the campus TDM program. TDM funds are a donation based campaigns in which faculty, staff, students and local businesses can join in to help support the efforts of reducing single occupancy vehicles.



Employer Programs

PUBLIC TRANSIT PROGRAM

Provides local public transportation the chance to partner with University students, faculty and staff in providing low-cost annual passes.



Implementation

- Bought at discounted rate in bulk, then sold individually.
- Built in cost included in tuition providing access to the whole student body.

Employer Programs

SAFEWALK PROGRAM

Safewalk program help to address safety issues from students on campus. Safewalk programs help to facilitate safe travels for students who do not feel comfortable walking alone late at night, between buildings, in dark places and to and from vehicles.



Employer Programs

PARKING PERMIT BUYBACK

The parking permit buyback program is set up to get students to find alternative routes to commute. Current permit holders can trade in their parking passes for cash to bike, walk or rideshare to campus.



Employer Programs

INCREASE PARKING PERMIT PRICES

Increasing the price of parking permits is a method to encourage alternatives to driving. An initial push to increase all prices would reduce the number of single occupant vehicle commutes to campus but providing a supply and demand based system that increases the prices of the most desirable parking permits would also help to reduce driving.



**PARKING
PERMIT**

Employer Programs

ENCOURAGING BICYCLING AND WALKING

Encouraging bicycle and walking can be an effective and inexpensive way to reduce vehicle miles traveled on campus. With the help of community groups, advocacy organizations and municipal bicycling/pedestrian directors, programs can be organized to educate the campus on the benefits of bicycling and walking.

- Activities
- Discounts on bicycles
- Maps
- Campaigns
- Education



Employer Programs

MARKETING

Marketing involves interacting and engaging with the student body to determine their needs and preferences. Marketing is a continuous process. The amount of knowledge the public has on the TDM strategies available plays a major role in their effectiveness.



Employer Programs

WORKSITE SERVICES

Worksite services reduce the need for traveling off campus.

Increasing restaurant and shopping options, medical treatment and on-site childcare are all options to reduce these trips.



FINANCIAL INCENTIVES OR DISINCENTIVES

PARKING CASH OUT PROGRAM

A University based strategy which allows the University to charge students for parking while giving students a bonus or pay increase to offset the cost of parking. Students may use this increase to pay for parking or may choose an alternative mode and “pocket” the difference.

Parking Cash Out Benefits

- Gives commuters a new choice
- Rewards the alternatives to solo driving
- Reduces vehicle trips
- Costs employers very little

FINANCIAL INCENTIVES OR DISINCENTIVES

TRANSIT SUBSIDIES

Transit subsidies can help reduce the cost of taking transit by offering prepaid or discounted transit passes to students who agree to commute by transit.



FINANCIAL INCENTIVES OR DISINCENTIVES

TRANSPORTATION ALLOWANCES

These allowances are given to students who chose to use alternate forms of transportation to work. These commuters are allowed to use the allowances at their own discretions or offset the cost of commuting.



FINANCIAL INCENTIVES OR DISINCENTIVES

IN-KIND INCENTIVES

In-kind Incentives can be provided instead of cash. Free or discounted products can be provided to those who choose to use alternative methods of travel in the place of cash gifts.

Examples

- Gas
- Transit pass
- Oil Changes
- Other vehicle services



FINANCIAL INCENTIVES OR DISINCENTIVES

Business Travel Reimbursement

This program reimburses miles traveled for business trips for transportation modes other than vehicle miles. For any business trip needed, trips can also be reimbursed if alternate modes of travel are used. These modes need to be comparable in travel time and trip duration.

Alternate travel forms
eligible for
reimbursement

- Bicycle
- Bus
- Transit



ALTERNATIVE WORK ARRANGEMENTS

FLEXTIME/FLEXIBLE SCHEDULE

When provided, flextime allows workers to adjust their commuting time away from peak periods. This provides the workers with a less stressful commute, allows flexibility for family activities and lowers the number of vehicles using the transportation system during peak times.

For example, rather than all employees/students working 8:00 to 4:30, some might work 7:30 to 4:00 and others 9:00 to 5:30.



ALTERNATIVE WORK ARRANGEMENTS

ALTERNATIVE WORK SCHEDULE

This strategy involves using alternate work hours for all students. Alternative work schedules are similar to flextime but alternative work schedules are structured for the whole campus.

- Avoid peak commute times.
- Students have less control over their schedule as flextime.



ALTERNATIVE WORK ARRANGEMENTS

COMPRESSED WORK WEEK

Enabling employees to compress regularly scheduled work into fewer days per week.

- Employees given opportunity to work four (4) days a week or some other schedule arrangement.
- Reduces commute travel.
- Cons
 - ◆ Reduction in productivity
 - ◆ Reduction in total hours worked

ALTERNATIVE WORK ARRANGEMENTS

TELECOMMUTING

Allowing employees to work from home or a non-office location one or more days a week.



INFRASTRUCTURE AND TRANSPORTATION IMPROVEMENTS

BIKE-SHARE

Bike-share programs provide a fleet of bicycles to the public for general use. Bicycles are used on a first-come, first-serve basis and are typically available through a subscriber membership.

Bike-share programs have become increasingly popular on college campuses and in urban areas to reduce the number of vehicles used for midday trips.



INFRASTRUCTURE AND TRANSPORTATION IMPROVEMENTS

BIKE INFRASTRUCTURE

Bicycle infrastructure improvements are similar to pedestrian improvements, although with a more limited range of users. Such enhancements benefit existing and new users, can increase cycling activity, and reduce driving.



Providing adequate bicycle facilities, including parking, showers, and other infrastructure, will encourage bicycle use as a daily form of transportation.

INFRASTRUCTURE AND TRANSPORTATION IMPROVEMENTS

BIKE LANES

Identify innovative interim solutions for improving design deficiencies and/or maintenance of important bicycle travel routes to assure a safer, more efficient bicycling environment.



Applications

- Including bicycle lanes in new construction
- Road diets (restriping roadway facilities to include bike lanes.)
- Proper bicycle infrastructure enforcement.
- Lanes need to be clearly separated from car traffic and violation by car drivers needs to be strictly enforced.

INFRASTRUCTURE AND TRANSPORTATION IMPROVEMENTS

BIKE LANES



- Shared lanes
- Buffered lanes
- Cycle tracks
- Greenways
- Cyclist actuated signals



INFRASTRUCTURE AND TRANSPORTATION IMPROVEMENTS

BIKE BOXES

The bike box is an intersection safety design to prevent bicycle/car collisions, especially those between drivers turning right and bicyclists going straight. It is a green box on the road with a white bicycle symbol inside. It includes green bicycle lanes approaching and leading from the box.

Details

- Increase safety when drivers are making right turns by allowing cyclists to move in front.
- Increase safety by coloring the bike lane through the intersection.
- Increase safety by reminding motorists to be alert for cyclists.



INFRASTRUCTURE AND TRANSPORTATION IMPROVEMENTS

BICYCLE FACILITY IMPROVEMENTS

Details

- Increase quality of existing bicycle racks, address lack of weather protection
- Increase supply of secure bicycle parking for long-term use
- Secure campus parking for bikes, as well as shower and locker facilities that can also be made available for those who bike to



INFRASTRUCTURE AND TRANSPORTATION IMPROVEMENTS

PEDESTRIAN FACILITY IMPROVEMENTS

Providing enhanced pedestrian infrastructure and an improved environment increases safety and improves perception and participation in pedestrian commutes.

Cost are similar to that of bicycling and are generally associated with program expenses and facility improvements.

Details

- Wide sidewalks
- Shade
- Benches
- Beautification efforts
- Neighborhood connections
- Mixed land use patterns

INFRASTRUCTURE AND TRANSPORTATION IMPROVEMENTS

Universal Design

Universal Design means the design of products that can be used by as many people as possible. Designing for the individual with the most limitations often produces helpful improvements for inefficiencies that exist with current design, benefitting more than the individual with limitations.

Transit Oriented Development (TOD) Policy

Transit Oriented Development (TOD) Policy Guidelines or a Transit Supportive Design Guide is necessary to provide infrastructure that makes transit an attractive and viable option. For example, transit stops that provide some shelter from the elements make access to transit more comfortable and less onerous.

INFRASTRUCTURE AND TRANSPORTATION IMPROVEMENTS

Intelligent Transportation Systems (ITS)

The use of ITS methods to alert motorists of disruptions to the transportation system can be helpful to the users of the system, and are highly effective tools for managing demand.

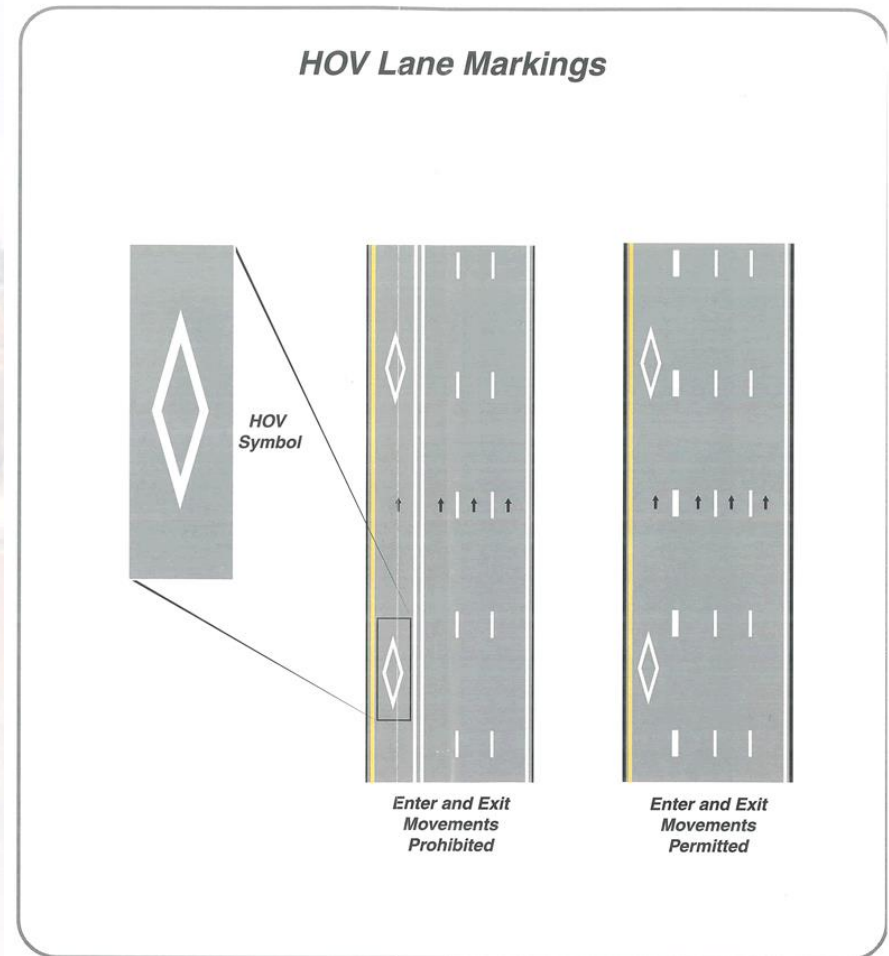
- Telephone-based internet access
- Variable message signs
- Interconnected signals
- Emergency vehicle preemption



INFRASTRUCTURE AND TRANSPORTATION IMPROVEMENTS

High Occupancy Vehicle (HOV) Lanes

HOV lanes are restrictive lanes that provide access carpools, vanpools, and transit. These lanes allow for optimize flow on the facility and are the most effective when the HOV lanes are separated, by a physical barrier, from lanes used by the general public.



INFRASTRUCTURE AND TRANSPORTATION IMPROVEMENTS

Fixed-Guideway /Limited-Access Transit Service

These facilities provide access to only the designated modes of travel. Transit services are successful because they do not have to compete with the congestion of the public roadways. This method gives an alternative to driving a personal car.



INFRASTRUCTURE AND TRANSPORTATION IMPROVEMENTS

SMART GROWTH/LAND USE POLICY

Managing the demand of travel often aligns well with managing development and growth to support sustainable development or livable communities and healthy environments where pedestrian are the most important design user. Designing for compact growth that is accessible by multiple modes or could be connected to existing services can be beneficial for managing transportation demand. Creating convenient access is key to having successful smart growth.

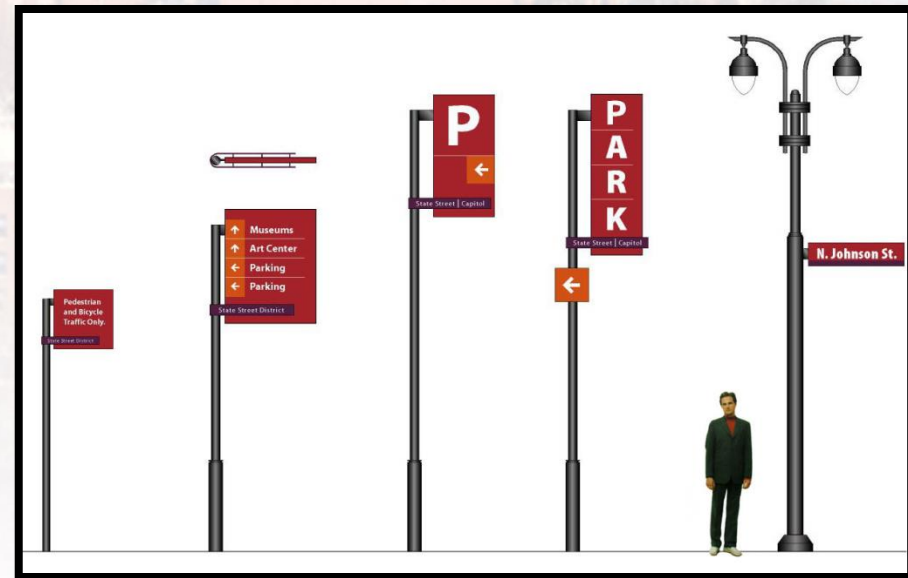
Smart growth practices

- Eyes on the street – designing buildings with clear views to streets and sidewalks.
- Traffic calming – create walkable/pedestrian friendly environments
- Mixed use centers – to encourage pedestrian and bicycle travel.
- Effective lighting – for shopping and pedestrian areas.

INFRASTRUCTURE AND TRANSPORTATION IMPROVEMENTS

WAYFINDING SIGNAGE

Tools used, including signs, books and maps, that give travelers multiple transportation options. Way finding signage encourages alternate modes of travel, creates an interactive experience and can improve the overall environment of a campus.



TRANSPORTATION SERVICES

VANPOOLING

Vanpooling is a strategy that encourages the use of large vehicles to transport large numbers of students. Vanpools can often be accomplished and successful by providing priority parking spaces for common destinations. Vanpools can allow off campus students to have a cheap and efficient way to get to campus.



Vanpools can be an effective employer based strategy.
Source: NelsonWygaard

Details

- Vans typically provided by the employer or operating costs are divided among members. Vans can be leased by the university.
- Cost of vanpooling programs are very similar to rideshare.
- Some vanpools are equipped with bicycle racks to support on-campus mobility for participants.
- Vanpooling typically transports ten or more persons.
- Most successful when transit services are limited

TRANSPORTATION SERVICES

CARPOOLING

Carpooling is one of the most widely used and well know TDM strategies. The idea behind carpooling is to reduce the number of single occupancy vehicles (SOV's) into fewer vehicles. This consolidation will reduce congestion on commutes to and from campus. It allows simple commuters the opportunity to link up with a person of similar schedules and locations.

Details

- Uses participants' own automobiles.
- Limited to persons with rigid and similar schedules.

TRANSPORTATION SERVICES

SHUTTLE BUS

Shuttle Bus Services can be helpful to provide easy connections with nearby transit services or other important facilities. They can also provide an alternative mode for short midday trips, and can help alleviate on-campus congestion by providing access to an off-site parking facility.



TRANSPORTATION SERVICES

FLEET VEHICLES

Providing a pool of fleet vehicles is an additional way to encourage employees/students to use alternative modes of travel to work. These vehicles can be used during the day for business travel since trips could be difficult without access to a personal vehicle. These vehicles can also be used for person trips and emergency on occasion.



POLICY

COMMUTE TRIP REDUCTION (CTR) ACT

Law that aims at reducing traffic congestion, air pollution and petroleum fuel consumption.



Participation in Washington's CTR Law

- **1,000 worksites participating**
- **530,000 commuters participation**
- **154 million statewide vehicle miles reduced**
- **69,000 metric tons of greenhouse gas**

POLICY

Congestion Mitigation and Air Quality (CMAQ) Program

“The CMAQ program was implemented to support surface transportation projects and other related efforts that contribute air quality improvements and provide congestion relief.” Since some TDM strategies are provisions to reduce vehicle emissions, that are appropriate use of CMAQ funds. To obtain these funds it is important for each applying entity to identify eligible projects, prepare the required backup documentation, demonstrate the potential air quality benefits.



POLICY

OTHER FUNDING SOURCES

There are a number of state and local level funds available which are specific to a region to help fund TDM projects. It is up to the campus to seek out energy conservation, non-motorized facilities, emissions reduction, pedestrian safety and other smart growth programs to partner with to obtain these funds. Funding is typically distributed based on competitive applications so it is vital to partner with an effective team that understands the scope of each program.



TDM EVALUATION

LEVELS OF EVALUATION

Finke and Schreffler, in the 2004 publication *“Using Multiple Assessment Levels For Evaluating Transportation Demand Management Projects: Monitoring And Evaluation Toolkit,”* outline six ways to evaluate the success of TDM strategies implemented.

- **Awareness**
- **Attitudes**
- **Participation**
- **Satisfaction**
- **Utilization**
- **Impacts**

TDM EVALUATION

PERFORMANCE METRICS

The University of Indiana-Bloomington came up with performance metrics to evaluate the goal of reducing the drive alone vehicles by 10 percent.



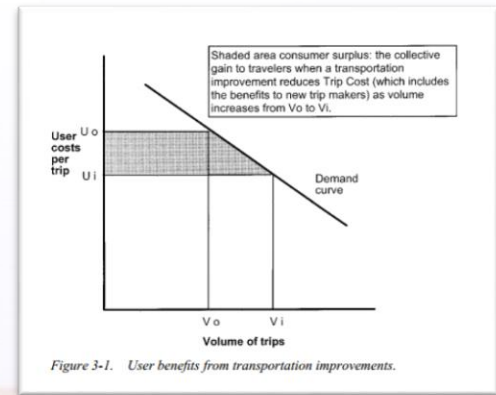
- **Mode-Share** - determine use by survey
- **TDM/alternative transportation program use participation** – registered carpools, membership in commuter club, etc.
- **Greenhouse gas emissions** – measure the reduction in greenhouse gases coming from the University
- **Vehicle miles traveled**
- **Program awareness** – finding how aware the public is on the new and existing TDM programs.

TDM EVALUATION

ECONOMIC EVALUATION

EcoNorthwest and PBQD developed a seven (7) step evaluation process for economic sustainability. The evaluation “includes lifecycle cost analysis of impacts that are suitable for monetization, plus a rating system for impacts that are unsuited to monetization.”

- 1) Describe each option
- 2) Define the analysis framework
- 3) Model and monetize impacts. (changes in congestion, crashes, road and parking facility costs, pollution emissions, etc.)
- 4) Calculate the total monetized benefits and costs for each year that is being considered and apply a discount value to future impacts.
- 5) Describe impacts that are unsuited for monetization.
- 6) Conduct sensitivity analysis to determine how changes in key assumptions affect outcomes.
- 7) Report result. Develop various ways to illustrate important differences between the options and describe their implications.



TDM EVALUATION

EVALUATION OVERVIEW

The evaluation methods/models in this report are only a few methods used to measure the success of TDM strategies but it is up to the community to determine the definitions of success in each situation. Each community is different and success is dependent on local needs and overall participation.



