CHAPTER 7

MANAGING CONGESTION

Background

As the region grows and develops we are increasingly pressured to maximize the potential of our transportation infrastructure – both existing and planned facilities. Demands are placed not only on the capacity of the systems, but desires for better interrelationships with neighborhoods and adjacent development, goals to reduce transportation-related pollution, and fiscal responsibility to use resources wisely while encouraging growth in the economy.

So what needs to be done? To improve the performance of our transportation systems we must have a collaborative, informed approach outlined in a regional process to manage congestion.

Congestion Defined

Congestion is defined as travel time delay in excess of what normally occurs under light traffic or free flow travel conditions. There are two types of congestion: recurring and non-recurring. Recurring congestion is the predictable congestion experienced regularly due to excessive demand over capacity (rush hour congestion). Non-recurring congestion is the congestion caused randomly by accidents, vehicle breakdown, construction work, inclement weather, and special events.

The ratio of peak travel time to free-flow travel time is used to produce an index, which classifies congestion. This ratio is referred to as the Sanderson Index (SI). A SI of 2.0, for example, means that it takes twice as long to travel a given roadway during the peak or congested period as during free flow or ideal conditions. Analysis of the current and historic travel time of a given roadway yields information about trends in congestion on specific routes within cities, districts, or specific locations.

Based on the SI and general location of a roadway, the Treasure Valley Congestion Management System (CMS) defines low, medium, and high levels of congestion. Table 7-1 displays the Treasure Valley Congestion Management System definitions of congestion, which were subjectively established by local transportation experts and endorsed by the COMPASS Regional Technical Advisory Committee. The local experts used the 2003 travel time data and local knowledge to help establish the congestion thresholds for each of three roadway classifications: freeway/interstate, suburban, and urban. Urban roadways are differentiated from suburban roadways as those located in downtown Boise (the central business district of the region).[1]

Table 7-1: Congestion Thresholds (Based on SI[2] Values)

Roadway Class	Low	Medium	High
Freeway	< 1.25	1.25 – 1.50	> 1.50
Suburban	< 1.75	1.75 – 2.25	> 2.25
Urban	< 2.00	2.00 – 2.50	> 2.50

Congestion Management Process

Just what is a Congestion Management Process (CMP)? It is a system for the region to a) identify congestion and the cause of the congestion, b) propose strategies (management and operations) to relieve the congestion, and c) follow-up by monitoring the performance of steps taken. The projects, strategies, and other actions identified in the process become part of the regional transportation plan.

A CMP includes collecting data and identifying congested transportation facilities with the intent of developing appropriate mitigation measures. This system will not eliminate congestion, but will instead slow the rate at which it increases. Federal regulations provide general requirements for a CMP.

Generally, a CMP is designed to:

- Define and measure congestion
- Identify and evaluate congestion and its causes
- Identify and evaluate mitigation strategies
- Define implementation responsibilities
- Define an evaluation process
- Include all aspects of transportation planning.

[1] Because of time and cost constraints the annual travel time measurements are focused on arterial roadways.
[2] Sanderson Index (SI) is a ratio of peak travel time to ideal travel time.

An effective CMP is a systematic approach for managing congestion that provides information on transportation system performance and on alternative strategies for alleviating congestion and enhancing the mobility of persons and goods to levels that meet state and local needs. The CMP results in serious consideration of implementation of strategies (management and operation) that provide the most efficient and effective use of existing and future transportation facilities. In both metropolitan and non-metropolitan areas, consideration needs to be given to strategies that reduce single-occupant vehicle travel and improve efficiency of the existing transportation system. Where the addition of general purpose lanes is determined to be an appropriate strategy, explicit consideration is to be given to the incorporation of appropriate features into the single-occupant vehicle project to facilitate future demand management and operational improvement strategies that will maintain the functional integrity of those lanes (23CFR 450.320(b)).

Benefits of this Approach:

- *Results in more efficient use of the transportation system*
- *Coordinates priorities and investments in the region for a greater impact.*
- *Enables decision makers to make smarter investments and project selections based on performance monitoring and objectives.*
- *Demonstrates accomplishments through implemented performance measures.*

To learn more about the Congestion Management System Plan, please visit the following website:

http://www.compassidaho.org/documents/prodserv/reports/TreasureValleyCMSFinal.pdf

Federal Requirements

With the designation of the Boise Urbanized Area as a Transportation Management Area (TMA), a CMP[3] is required. Under 23CFR 450.320, TMAs in non-attainment areas are required to develop a CMP. Some of the requirements and conditions in these and other regulations include:

- Providing for effective management of transportation facilities with travel demand and operational management strategies.
- Enhancing investment decisions and improving the overall efficiency of the area's transportation systems and facilities.
- Identifying the causes of congestion and identifying and evaluating alternative actions.
- Defining levels of acceptable system performance among differing local communities.
- Establishing a program for data collection and system performance monitoring to define the extent and duration of congestion, to help determine the causes of congestion, and to evaluate the efficiency and effectiveness of implemented actions.
- Identifying an implementation schedule, responsibilities, and possible funding sources for each proposed strategy (or combination of strategies).
- Implementing a process for periodic assessment of the implemented strategies, in terms of the areas established performance measures.

Findings

In 2003, the Treasure Valley CMS was developed by a subcommittee of the COMPASS Regional Technical Advisory Committee – known as the Congestion Management Team. This subcommittee was charged with developing, reviewing, and maintaining the Treasure Valley CMS and its elements. The subcommittee was made up of staff from Federal Highway Administration (FHWA) (local office); Idaho Transportation Department (ITD); Ada County Highway District (ACHD); Association of Canyon County Highway Districts; Valley Regional Transit; Department of Environmental Quality; Idaho Smart Growth; planners from the cities of Boise, Caldwell, and Nampa and from Ada and Canyon Counties; as well as other transportation experts. The Treasure Valley CMS was designed to identify recurrent congestion as it applies to principal arterials and interstates in the urban areas.

Fundamentally, a management system is a framework used to develop a plan, implement the plan, monitor the results of the plan, and take corrective action to improve the performance of the plan.

[3] "Congestion Management System Plan," COMPASS, URL: http://www.compassidaho.org/documents/prodserv/reports/TreasureValleyCMSFinal.pdf

The Treasure Valley CMS was adopted by the COMPASS Board per Resolution 10-2005 on March 21, 2005, and outlines congestion management elements, travel time data collection process, use of the data, specific definitions for congestion, and a "toolbox" of mitigation strategies. The various tools for managing congestion are also known as management and operations (M&O) strategies.

Management and Operations Strategies

Background

Federal statutes require the metropolitan planning process to include the consideration of:

> *Operational and management strategies to improve the performance of existing transportation facilities to relieve vehicular congestion and maximize the safety and mobility of people and goods;*[4]

Findings

COMPASS' planning and programming process has focused on regional needs and projects, and evaluation and programming of M&O level projects has been reduced at the direction of the COMPASS Board. In part, this direction was made to focus limited resources available to COMPASS on those areas deemed most relevant to a regional planning agency. However, the new policy direction under SAFETEA-LU to expand consideration of M&O calls for additional effort in this area.

Operation of the Transit Network

Two efforts are underway to evaluate transit networks that incorporate multimodal approaches and/or signal pre-emption. Both are included as projects in the regional long-range transportation plan. One project is the State Street bus rapid transit, which involves Valley Regional Transit; the cities of Boise, Garden City and Eagle; the Ada County Highway District; Idaho Transportation Department; and COMPASS. The second project focuses on the I-84 corridor and will consider signal treatments and bus rapid transit as part of the options.

What is Congestion M&O?

An integrated program of strategies designed to get the most efficient and safest use out of existing and planned infrastructure. Examples of M&O strategies for congestion include:

- *Traffic incident management*
- *Traveler information services*
- *Traffic signal coordination*
- *Transit priority/integration*
- *Freight management*
- *Work zone management*
- *Special event management*
- *Road weather management*

[4] 23 U.S.C. 134 (h)(1)(G) and 134 (i)(2)(D)

Steps Taken to Ensure Transit Operations are Discussed

COMPASS has partnered with Valley Regional Transit to engage in "mobility management" planning that addresses transit, paratransit, walking, biking, and other non-single-occupancy vehicle modes. Two full-time staff members are committed to these tasks.

Congestion M&O Toolbox

As funds become harder to obtain and traffic needs continue to mount, alternative traffic management solutions can be helpful. Over the past 50 years, building new and wider roads was the preferred method for alleviating congestion, improving travel time and increasing safety. It was based on a time when construction, including right-of-way, was cheaper and technology was cruder. As cheaper and less impactful alternatives, operational and management techniques have become more popular over time. They have resulted in projects with strong benefits that include improved safety and reduced congestion. Both transportation planners and engineers now consider some of these treatments as a part of their solution tool box when determining the future of a roadway or intersection.

Developing applicable congestion mitigation measures to address specific areas of congestion is delegated to each transportation agency in the valley. However, the Treasure Valley CMS does provide some guidance on mitigation measures to local transportation agencies in the form of a "Toolbox." The "Toolbox" is presented in Table 7-2. With only seven years worth of travel time data collected and only a handful of projects identified, an evaluation of the "Toolbox" is not yet feasible. As more data are collected, quantitative and/or qualitative evaluations of the "Toolbox" may be possible.

The categories of congestion mitigation measures listed in the "Toolbox" are described below. Additional categories have been identified and others will be defined and included in the future. Specific mitigation measures given in the descriptions are as examples only. The Treasure Valley CMS provides flexibility to implementing agencies regarding mitigation measure identification, selection, and implementation.

Table 7-2: M&O Strategies "Toolbox"

Strategy Categories for the Treasure Valley		
Timeframe	Area Wide	Corridor / Project Specific
Short Term (Within 5 Years)	❖ Access Management policies for all congested roadways ❑ Zoning Ordinance Standards ❑ Employer Based Strategies ❑ Access Management policies for all developments along congested roadways	❖ Intelligent Transportation Systems ➢ Intelligent Transportation Systems ❖ Additional Roadway Capacity ❖ Non-Motorized Mode Improvements ❖ Intersection Improvements ❖ Preferential Based Strategies* ❖❑ Access Management strategies specific to a corridor or project ➢ New or increased access to transit ❑ Non-Motorized Mode Improvements
Long Term (Greater than 5 Years)	❑ Comprehensive Plan land use strategies ➢ Intermodal Project integration/design ➢ New or increased access to transit ➢ Additional transit services	❖ Additional Roadway Capacity listed in regional long-range plan ❖➢ Addition of dedicated right-of-way for transit ❖ Implement innovative intersection and corridor designs

Implementing Agency Legend (note: the current draft only applies to roadway congestion):

❖ Roadway Agencies (Ada County Highway District (ACHD), Idaho Transportation Department (ITD), all cities and highway districts in Canyon County, and some cities in Ada County)

➢ Transit Providers (Valley Regional Transit and ACHD Commuteride)

❑ City and County Level Governments

* *See p. 7-10 for definition of Preferential Based Strategies*

Source: Based on Treasure Valley CMS, 2005

Three of these tools, Access Management, Innovative Intersections and Intelligent Transportation Systems are discussed in greater detail at the end of this section, along with discussion of new tools to the Treasure Valley – Incident Response Programs and Modern Traffic Signal Operations.

<u>Access Management Policies</u>: Policies that require both roadway agencies and city/county governments to collectively control access to specific types of land use and development. The local governments have authority under the Local Land Use Planning Act to adopt standards for access on public streets. The Idaho Transportation Department adopts access standards for state highways. Recent efforts have been undertaken to improve Access Management on several regional corridors; see discussion at the end of this section. (see Figure 7-1).

<u>Addition of Dedicated Right-of Way for Transit</u>: Fixed right-of-way transit services depend less on the roadway network. Thus making travel times attractive when compared to a congested roadway network. As ridership on dedicated right-of-way services increase, it is probable that roadway congestion will decrease, especially along those corridors served by both modes. One example of a fixed or dedicated right-of-way transit facility in the Treasure Valley would be a commuter rail service that uses existing rail lines parallel to Interstate 84.

Additional Vehicle Capacity: Increasing roadway capacity by constructing new roads or widening existing facilities allows for more vehicles to use a roadway during a given time period, improving travel times.

Comprehensive Plans: Under the State of Idaho's State Government and State Affairs Statute (Title 67), Chapter 65 (Local Land Use Planning), local governments are required to develop a comprehensive land use plan for their jurisdiction. Comprehensive plans can designate transit supportive housing densities and establish transportation policies on access to public streets along transportation corridors identified as congested within their jurisdiction.

Employer Based Strategies: These are strategies implemented by employers, which allow employees to alter their work schedules or where they work. These programs include telecommuting; staggered work hours, compressed work weeks, or flex time. By reducing travel demand during peak travel periods, the roadway network may realize travel time improvements.

Intelligent Transportation Systems (ITS): The term "Intelligent Transportation Systems," or ITS, refers to various methods used to manage traffic through electronics and communications. ITS strategies apply information technologies to the transportation system and vary from changeable message signs to traffic signal interconnections. These types of measures impact roadway congestion because traffic control managers and vehicle operators are provided with better information faster. In October 1997, Treasure Valley transportation agencies began investigating the potential for ITS. In September of 1999, the Ada Planning Association (now COMPASS) published the Treasure Valley Intelligent Transportation Systems (ITS) Plan, Phase II. This document defined existing ITS conditions, defined needs and requirements, established a regional system architecture, and prepared an ITS project implementation plan. See discussion at the end of this section.

Intermodal Transportation Project Integration/Design: Designing and eventually constructing roadway projects to accommodate both motor vehicle travel and travel via alternative modes can reduce demand and thus roadway congestion. For example, planning for the construction of transit stations or pullouts and shelters as part of a roadway expansion project may enable transit service and encourage ridership along a corridor.

Intersection Improvements: In most cases roadway congestion is due to capacity constraints at roadway intersections. When capacity improvements are made to an intersection, travel times decreases. Intersection improvement projects that may increase capacity include changes in signal timing, the addition of turn lanes, and safety improvements (such as better markings, lighting, lane channelization, etc.). In 2007-2008, COMPASS conducted a High Volume Intersection Study in cooperation with the Idaho Transportation Department and several local jurisdictions. See Innovative Intersection discussion at the end of this section for more information.

New or Increased Access to Transit/Additional Transit Services: Changes in transit services that can influence travel time include adding a new route, changing an existing route, or adding buses to an existing route to decrease wait times. Modification to a transit system could encourage more people to use transit versus driving. Valley Regional Transit, the regional transit authority for the Treasure Valley, is primarily responsible for the establishment transit routes and access.

Non-motorized Mode Improvements: These measures include additions or improvements to non-motorized transportation facilities such as sidewalks, pathways, and bike lanes. Improvements to these non-motorized facilities encourage non-motorized travel, possibly reducing the demand for roadway capacity and improving travel time. Non-motorized facility improvements can also result in improved or increased access to transit. Local governments can play an instrumental role in improving non-motorized travel by requiring new developments to include or improve pedestrian access between residential and commercial developments.

Figure 7-1: Access Management Treatments

Preferential Based Strategies: These strategies give special treatment to non-single occupancy vehicles or non-motorized transportation modes. They promote behaviors that increase auto occupancy rates and/or alternative transportation modes. High occupancy vehicle lanes and traffic signalization prioritization for transit vehicles are examples of these types of mitigation measures.

Zoning Ordinance Strategies: Under the State of Idaho's State Government and State Affairs Statute (Title 67), Chapter 65 (Local Land Use Planning), local governments have the authority to set zoning ordinance standards to help promote alternative transportation. By establishing minimum standards for housing unit densities and pedestrian/bike facilities in new developments, the cities and counties in the Treasure Valley can promote the use of less congested modes of transportation.

Access Management

Roads have two primary purposes: to get people *from* a place and to get people *to* a place. A balance must be reached between the number of driveways and streets intersecting or accessing a major roadway. Too many access points, chaotic turning movements, and speed changes will cause unsafe and inefficient conditions. If there are too few access points, businesses and property owners may object to a lack of accessibility to their property from a public road. As more cars use a road, all the actions involved with getting onto or off a roadway can cause problems. Statistics show that poor access control can increase the chance of side and rear impact accidents. Poor driveway design can lead to back-ups out onto streets, which increases crash possibilities and can cause congestion. Overall, a corridor with poor access management will see a diminished performance over time due to slower travel speeds, unpredictable braking and accelerating, delays associated with accidents, and uncontrolled turning movements. The science regarding the safe and efficient accessing of property and streets is known as access management.

So what are some of the tools evaluated and used to organize the access to property or streets? Several solutions exist and vary greatly in their effectiveness:

- A median can be placed in the middle of a road to prevent turns
- An extra lane can be provided solely for turning movements
- Acceleration or deceleration lanes can be provided (where justified) to assist drivers coming off or entering a roadway
- Properties can share a driveway thereby reducing the number linking to a street
- Construction of a frontage or service/backage road with large developments can limit access to an arterial or highway
- Spacing of streets can be equally distributed to help organize access points

When implemented, access management techniques can reduce the potential for accidents and improve traffic flow. Once conflict points are condensed and simplified, drivers have to carefully plan their route with a little more scrutiny, disruptions to streams of vehicles is minimized, and overall performance should be improved. The improvements all equate into tangible results leading to faster commute speeds, reduction of delay, improvement of air quality, and improvement of safety conditions.

Access Management Benefits

Cost effective investments from access management are numerous and can be demonstrated in a benefit versus cost ratio. With the recent slump in the economy, funding for major projects such as roadway or intersection widening is not as readily available. Furthermore, such projects are now heavily scrutinized due to the impact capacity projects can have of adjacent land uses and the people accessing it. As a means to improve capacity without adding lanes, access management tools are now being instituted along with maintenance projects. So, for example, when an agency resurfaces an existing road, they may add a median as part of the project where it would reduce turning movements and improve traffic flow (Figure 7-2).

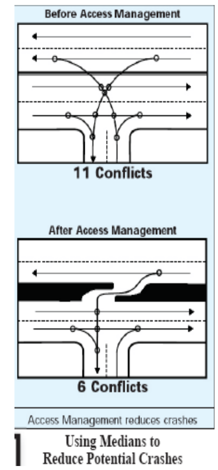

Figure 7-2: Benefits of Access Management

Accidents

A major benefit from access management is found in the reduction of accidents. As per the Federal Highway Administration, "according to an analysis of crash data in seven states, raised medians reduce crashes by over 40 percent in urban areas and over 60 percent in rural areas. Poor driveway spacing can also contribute to increased accident rates. As more driveways are permitted to access a major road, more accidents will likely occur. Therefore combining or reducing driveways helps immensely." (Figure 7-3)

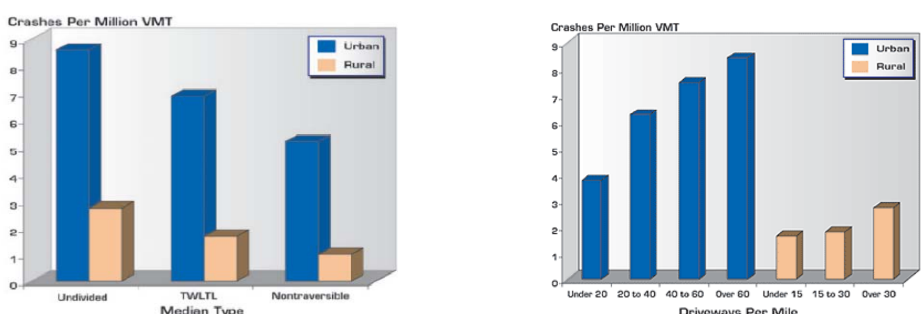

Figure 7-3: Crashes per Million Vehicle Miles Travelled
Source: Federal Highway Administration

Pedestrian conflicts can also be reduced by the placement of raised medians as they can provide a place of refuge for people when crossing a street. In the state of Georgia, pedestrian involved crashes were reduced by 45 percent and fatal accidents trimmed by 78 percent over streets which used two-way left turn lanes.

Traffic Conditions

The absence of an effective access management plan or policies can have a significant impact on travel times and congestion. An unstable driving environment translates into a roadway operating much less efficiently. Several studies have been conducted to analyze the impacts of using access management tools. For example, intersections in Cincinnati found that by adding just one signal on a roadway actually increased travel times by 20 percent (see Table 7- 3). Furthermore, research has demonstrated that for every 10 access points per mile, average travel speeds decrease 2.5 miles per hour. If 40 points were allowed, the street traffic would slow by up to 10 miles per hour. A local example of a street with a high number of access points is Fairview Avenue, which has 95 access points between Curtis and Cole Roads. With fewer access/conflict points, traffic would flow smoother.

Signals Per Mile	Increase in Travel Time (%)
2	-
3	9
4	16
5	23
6	29
7	34
8	39

Table 7-3: Signals and Travel Time
Source: FHWA

Comparatively, research has shown that simply placing left turn lanes in appropriate locations can actually increase roadway vehicle capacity by 25 percent. In Colorado, a study showed a reduction of total hours of delay by 59 percent on a five-lane road that had half-mile signal spacing and raised medians implemented when compared with quarter-mile spacing of signals. Lastly, strong access management can have an environmental benefit as well. According to the Federal Highway Administration "an ongoing study in Texas found that a ten-mile four-lane arterial with one-half mile signal spacing reduced fuel consumption by 240,000 gallons from increased speed and 335,000 gallons from reduced delay, compared to quarter mile signal spacing."

Treasure Valley Planning

Examples of various forms of access management programs can be seen throughout the valley. In some cases large medians full of landscaping features, lighting, and other amenities have been built, while in other cases, more subtle projects such as a restricted driveway access may be in place. One example of continual access adjustments is found in the form of intersection projects. In several cases when local agencies design an intersection, left-turn lanes are added. If a driveway access is too close to the intersection, drivers trying to turn from that driveway will have an additional lane to cross making for a higher risk condition. When situations like these arise, an extruded curb or narrow lane median can be placed and changes to property access may be negotiated. Other access policies can be found in agency policy manuals, planning documents, and development agreements. See Figure 7-4 for examples of how access management can be phased.

Area streets with examples of access management:

- Parkcenter Boulevard
- Capitol Boulevard
- Eagle Road, I-84 to Franklin Road
- Broadway Avenue, Rossi Street to I-84
- Curtis Road, Fairview Avenue to Chinden Boulevard
- Veterans Memorial Parkway
- State Street and Mercer Street Intersection
- Garrity Boulevard near Lakeview Park
- Nampa Boulevard, 6th Street North to 3rd Street South
- Glenwood Street and Chinden Boulevard Intersection

Area transportation plans with access management components:

- U.S. Highway 20/26 Corridor Preservation Study
- State Highway 44 Corridor Preservation Study
- State Street Corridor
- Fairview Avenue Corridor (Linder-Orchard)
- Karcher Road
- U.S. Highway 95
- State Highway 55
- Kuna Mora Road Phase I
- South Meridian
- Southeast Boise
- City of Nampa Transportation Plan

Future projects with access management elements:

- Ten Mile, I-84 to Franklin Road Intersection
- Records Drive extension, north of Fairview
- Wainwright extension west of Eagle Road
- North Idaho Center Dr. to Gate Boulevard
- Meridian Road/Main Street couplet
- 30th Street, Fairview Avenue to State Street

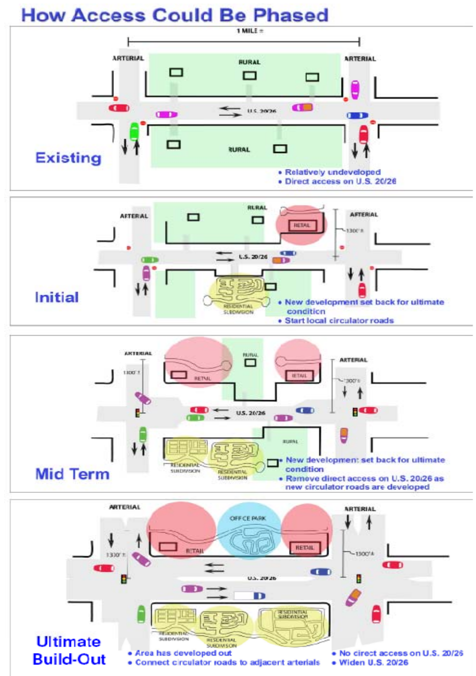

Figure 7-4: Phasing Access Management

Source: ITD, Highway 20/26 Plan

Access Management Quick Facts

- An increase of 10 – 20 access points per mile on major arterials increases crash rate by 30 percent.
- Idaho data indicates that 37 percent of all crashes occur at intersections, driveways, and alleys.
- Arterials with well managed access have 40 -50 percent fewer crashes.

Intersection Innovation

On local street networks, intersections are where congestion is most likely to take place. When roads span miles without having to stop for a traffic signal or stop sign, traffic is usually smooth and efficient. The more traffic flowing through an intersection the more complicated the traffic signal or intersection configuration needs to be. If an intersection is too big it can become dangerous for pedestrians, require lots of property, and become overly stressful for drivers. However, if the design is insufficient, heavy congestion, dangerous traffic conditions, and poor air quality may be problematic. In the Treasure Valley, the busiest intersection is found at Eagle Road and Fairview Avenue. The intersection sees nearly 7,000 cars during a peak traffic hour. As business and homes continue to sprout nearby, more demand and more cars will likely follow. In order to accommodate the demand at this and other busy intersections, engineers and planners are continuing to find new innovative ways to balance demand, cost, and impacts.

Roundabouts

In recent years, roundabouts have gained popularity in the U.S. and the Treasure Valley. Roundabouts are fairly common in other countries but in the U.S. were not viewed as favorable solutions for the past few decades. However, as positive traffic accident data and performance statistics have accrued, the use of roundabout has steadily increased. Roundabouts have a larger footprint than conventional intersections, but when used with proper geometric conditions and need to handle fewer than 25,000 cars per day, they can accommodate significant traffic and reduce overall delay. The improvements are due to their minimal stop time, promotion of constant motion, and accommodation of left turns without dedicated signal time (Figure 7-4).

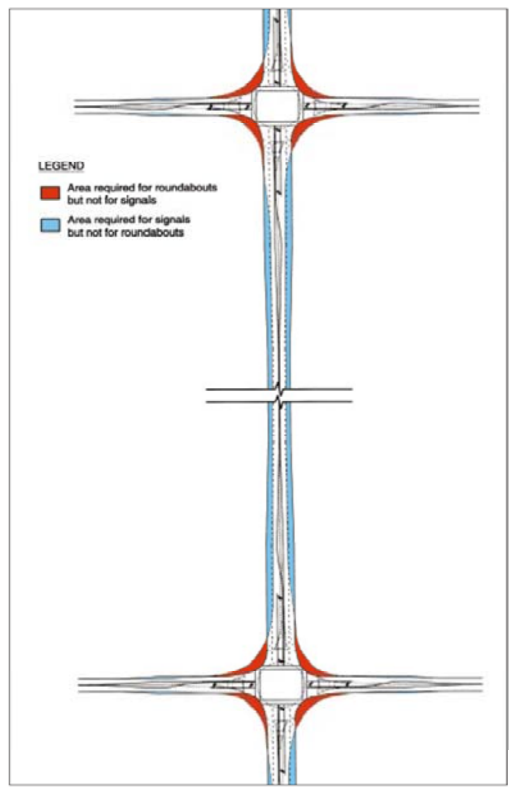

Figure 7-5: Use of Roundabouts

Additional facts about roundabouts include:

- A 2001 study of 23 intersections in the U.S. reported that converting intersections from traffic signals or stop signs to roundabouts reduced injury crashes by 80 percent and all crashes by 40 percent.[5]
- As of 2009, over 1,000 roundabouts have been built in the U.S.

[5] *Safety Effect of Roundabout Conversions in the United States.* Transportation Research Board, 2001.

- Fourteen congested intersections were studied in Detroit comparing roundabouts against traffic signals. Findings demonstrated roundabouts reduced annual delay by 50 percent more than conventional traffic signals. Since the study, several of the planned roundabouts have been built.
- In projects in both Colorado and Alaska, roundabouts were used and prevented roads from being widened.
- A recent study in six communities where roundabouts replaced traditional intersections found that about two-thirds of drivers 65 and older supported the roundabouts.

Roundabouts may require more right-of-way at intersections, but may also allow fewer lanes (and less right-of-way) between intersections.

Figure 7-6: Happy Valley / Amity

In 2006, Nampa Highway District and the city of Nampa jointly built a roundabout at the intersection of Amity and Happy Valley Roads (Figure 7-5). A second roundabout was recently built at the intersection of Happy Valley and Greenhurst Road due in part to the popularity and efficiency found from the original effort. Several other locations in the Nampa area are in discussion for future possible locations including: Midland Boulevard and Lake Lowell, Middleton Road and Orchard Avenue, and the Star and Franklin Road intersection.

Figure 7-7: 36th Street / Hill / Catalpa Preliminary Design

Roundabouts have also been recently built in Ada County. The most used was built in 2008 at the intersection of Pine Street and Webb Avenue in Meridian as part of a development agreement. In addition to several smaller roundabouts found on private or residential streets, other locations include two roundabouts on Touchmark Way in Boise and a significant project planned at Amity and Ten Mile Road. In addition, the Harris Ranch planned community in east Boise will include several roundabouts once completed. One future project which will be a first of its kind in the state of Idaho is a "dogbone" type roundabout to be located at the intersection of 36th Street, Hill Road, and Catalpa Drive (Figure 7-6).

High Volume Intersections

In some cases, intersections can become so congested that conventional intersection configurations don't suffice. When conditions like that exist, all kinds of elaborate, creative, and sometimes costly solutions are warranted. In 2007, COMPASS initiated a High Volume Intersection Study. The study looked at ten of the busiest intersections in Ada County[6]. The intersections were analyzed for the possible treatment of several high volume designs currently being used elsewhere throughout the nation. The intersections attempt to reduce conflict points and delays seen at busy intersections by dramatically altering where drivers turn or how they proceed through the intersection. Using a similar approach to roundabouts, the idea is to try and keep people moving and reduce the time drivers spend at red lights waiting for their turn. Even if drivers have to perform a U-turn or a series of left turns, keeping people moving is ultimately an improvement for safety, efficiency, and air quality. The study was not intended to prescribe a final solution, but meant to give local officials a chance to see some of the innovative designs that could be used in the future when traffic demands warrant such a unique solution (Figure 7-7).

Figure 7-8: Examples of High Volume Intersections: Bowtie, Jug Handle, Parallel Flow Intersections

The study team identified several of the high volume intersections in the valley then applied the most logical high volume intersection design type. Once the intersections were matched up with local candidates, a traffic demand model was used to demonstrate the results. The software exercise demonstrated very encouraging results in terms of handling high volume, reducing delay, improving air quality, and ultimately proving beneficial to the drivers of the Treasure Valley (Table 7-4). The overall benefit to cost ratio's ranged from 6:1 to over 45:1.

[6] *High Volume Intersection Study*, COMPASS, 2008 http://www.compassidaho.org/planning/studydescriptions4.htm#HighVol .

Table 7-4: Intersection 2010-2030 Return on Investment*

ID	Intersection	Concept	User benefits	Concept cost	Baseline cost	Incremental cost	User benefits over incremental cost
1	Beacon Light & SH55	CFI	$122.9	$4.3	$1.6	$2.7	**45.6**
2	State & Linder	CFI	$120.0	$11.7	$4.9	$6.7	**17.8**
3	State & SH55	CFI	$93.9	$15.5	$8.1	$7.4	**12.6**
4	State & Glenwood	MUT	$15.5	$8.8	$7.8	$1.0	**14.9**
5	Chinden & Glenwood	QR	$37.3	$6.2	$0.0	$6.2	**6.0**
6	Ustick & Cole	Bowtie	$17.8	$2.2	$0.0	$2.2	**8.0**
8	Fairview & Curtis	QR	$26.5	$9.9	$5.6	$4.3	**6.1**
9a	Fairview & Eagle	QR	$61.5	$12.8	$5.3	$7.5	**8.2**
9b	Fairview & Eagle	CFI	$95.5	$13.6	$5.3	$8.3	**11.5**
10a	Franklin & Eagle	QR	$42.6	$9.8	$5.9	$3.9	**10.9**
10b	Franklin & Eagle	CFI	$93.4	$15.4	$5.9	$9.5	**9.8**

* Benefits and costs shown in millions of dollars

Source: COMPASS, High Volume Intersection Study, 2007. CFI = Continuous Flow Intersection/Parallel Flow Intersection, MUT = Median U-Turn, QR = Quadrant Roadway.

Though the intersections included in the study are due for reconstruction, none are currently programmed using any of the high volume designs used for evaluation in the 2007 study. However, as the economy returns from its 2009-2010 downturn and both growth and demand increase once more, the need for innovative solutions similar to those studied by COMPASS could end up being implemented.

Intelligent Transportation Systems (ITS)

The FHWA *Final Rule on ITS Architecture and Standards* and Federal Transit Administration's *Policy on Intelligent Transportation Systems (ITS) Architecture and Standards* were issued on January 8, 2001, to implement *Section 5206(e)* of the Transportation Equity Act for the 21st Century (TEA-21). This Final Rule/Policy requires that all ITS projects funded by the Highway Trust Fund and the Mass Transit Account conform to the National ITS Architecture, as well as to US Department of Transportation adopted ITS standards. The *Final Rule on ITS Architecture and Standards* is published in *23 CFR Part 940.*

23 CFR Part 940 states that:

- Regions implementing ITS projects at the time the Final Rule/Policy was issued must have a regional ITS architecture in place by April 8, 2005. Regions not implementing ITS projects at the time the Final Rule/Policy was issued must develop a regional ITS architecture within four years from the date their first ITS project advances to final design.
- All ITS projects funded by the Highway Trust Fund (including the Mass Transit Account), whether they are stand-alone projects or combined with non-ITS projects, must be consistent with the Final Rule/Policy.

- Major ITS projects should move forward based on a project level architecture that clearly reflects consistency with the national ITS architecture.
- All projects shall be developed using a systems engineering process.
- Projects must use US Department of Transportation adopted ITS standards as appropriate.

Compliance with the regional ITS architecture will be in accordance with US Department of Transportation oversight and federal-aid procedures, similar to non-ITS projects.

Advanced Traveler Information Systems

Due to an emergence of technology in the transportation and engineering fields, most roadway agencies are embracing "smart" technologies. As highlighted in previous sections, traffic detection cameras, dynamic message signs, remote weather information systems, and transportation related fiber optic communications all fall under the umbrella of ITS. Soon, Treasure Valley residents will know how long their expected commute will take via the dynamic message signs at the Locust Grove Bridge provided by radar-based sensors and other devices placed along the interstate. Drivers will know travel times to downtown Boise, the Boise airport, and downtown Nampa. If drivers see an extended commute time, choosing an alternate route could help them reach their destination quicker and ultimately save time and money.

Another example of ITS at work is an email alert system soon to be launched to the public by ITD. Currently, alerts regarding congestion are sent to government agencies, news outlets, and ITD staff. However, the system will soon be made public and officials are looking to include both transit and bicycle route information.

When used as a complete system, ITS applications can provide advanced traveler information. By using advanced traveler information, industry professionals can provide the public with information helpful for route choice, departure time, and even trip planning. Information distributed by cell phone, internet sites, and television and radio outlets are all included elements. Nationally, 511 has been designated as the travel information telephone number. Idaho has implemented a 511 system which includes an Internet web page. This system is available statewide including the Treasure Valley. ACHD maintains a very similar independent web site accessed through the statewide web site or the ACHD homepage. In the near future, Canyon County will also be unveiling its version of a 511 web site.

An ITS implementation plan (*Treasure Valley Intelligent Transportation Systems [ITS] Strategic Plan)* was developed in September 2006[7]. This plan identifies short, medium, and long-range ITS projects in both Ada and Canyon Counties. ACHD and COMPASS staff have researched the ITS Deployment Analysis System (IDAS) software[8] for use in alternative's analysis of ITS projects. Decisions regarding IDAS are pending further research, funding availably, staff time, training, and data needs.

COMPASS' involvement in ITS has been fairly seamless due to the unique nature of the single-county highway district, ACHD. ACHD has also been coordinating ITS on the state systems; therefore, providing a single-source for information (Figure 7-10). Staff from all relevant agencies will continue to work together and outline roles in the near future.

Figure 7-10: ACHD Web Site

ITS Responsibilities at COMPASS

This responsibility is typically assigned to one of the principal planners. Duties include working with ACHD and transportation agencies in Canyon County to keep apprised of ITS projects, being involved in project prioritization, and updating the ITS architecture plan for COMPASS.

ITS Implementation Plan and Regional ITS Architecture

ITS Implementation Plan (*Treasure Valley Intelligent Transportation Systems [ITS] Strategic Plan*, September 2006): COMPASS provided data to the consultant team developing the plan, reviewed draft versions, and consults the plan for the prioritization of projects (projects in the plan get higher priority).

Regional Architecture Plan: COMPASS is actively working with a local consultant to update the regional ITS architecture plan, integrate a newly developed regional transit ITS architecture plan, and train staff on how to maintain regional architecture using Turbo Architecture.

Maintaining Regional ITS Architecture: Once complete, COMPASS staff and ACHD staff will continue to work together to ensure consistency.

[7] See http://www.compassidaho.org/planning/studydescriptions8.htm#ITSplan to download the plan.
[8] For more information on IDAS software see http://www.fhwa.dot.gov/crt/lifecycle/idas.cfm.

Modern Traffic Signal Operations

Traffic jams on local roadways usually occur at intersections with other streets. Intersections evolve from initially having no traffic control measures, to perhaps a two or four-way stop, then typically a traffic signal is installed as more vehicles and turning movements warrant. Traffic signals have changed tremendously over the past few decades. Signals used to operate with a simple timer, then graduated to an in-pavement magnetic loop, which when in the presence of a vehicle would prompt the signal to turn. Because loops are placed in the pavement and can deteriorate over time, less costly means for signal operations are now being utilized. Using upgrade software and traffic cameras, traffic managers can now remotely change signal timing while other signals can adapt to traffic automatically. If connected to other signals, entire corridors can even be synchronized so drivers can traverse a corridor or a particular part of town with greater ease. The change in technology means a much smarter, potentially cheaper, more reliable, and flexible network of signals to meet ever increasing demand.

Signal Timing

The easiest way to make positive impacts at intersections is to change the timing of traffic signals to match the changing patterns of drivers. As new homes, businesses, or schools are built driving patterns may shift. Several areas within the Treasure Valley have had timing adjustments resulting in time and financial savings to local citizens. In 2005 downtown Boise had over 100 signals adjusted resulting in an estimated 31 times more benefits than costs. Other areas include the Towne Square Mall (2007), downtown Meridian (2007) Caldwell Boulevard (2004, another update soon), Eagle Road (2007), Karcher Road (2007) Ustick Road (2009) Northside Boulevard (2009) and both State Street and Federal Way (2010). In some cases, timing changes were conducted after an expansion project, while others such as the State Street, Ustick Road, and Karcher Road adjustments were done where expansion projects are still in the future. With the timing adjustments and improved traffic conditions, expansion projects are still important but may not be as crucial in the near term which could help fund other needed projects. An operational improvement can delay, if not eliminate, the need to physically widen the street.

Signal Synchronization

Have you ever been late for an appointment and rushed to get through every traffic light only to stop at seemingly every one? Or have you ever made several green lights in a row and been so happy you told people about your experience? In both cases signal synchronization may have been at work. Engineers have expanded their abilities to time traffic signals based on desirable travel speeds so that traffic signals turn green for drivers maintaining the speed limit. Signal synchronization allows drivers to travel the corridor at the posted speed while ushering them through the busier parts of town. This technology uses very specific timing plans, interconnected signal software, and is usually conducted in areas where backed up traffic can possibly lead to severe safety issues.

In the Treasure Valley, signal synchronization has been used along several corridors. Portions of Ustick Road, Front and Myrtle Streets in downtown Boise, sections of 10th Street in Caldwell, 14 signals along Federal Way, Caldwell Boulevard, and 10 signals on Parkcenter are or in the process of being synchronized. In addition to these locations, in the coming year, the city of Nampa will have 13 of its signals retimed and coordinated to improve traffic flows into and out of downtown.

In the coming months, ACHD will post a video link demonstrating how the signal synchronization efforts work in the area. The site will show recorded video feeds from local streets along with a real time mapping feature demonstrating the location of the video feed along the corridor (Table 7-5).

Table 7-5: Traffic Study Benefits

Benefits	Boise Towne Square Mall	Eagle Road	Downtown Boise
Signals	22	14	100
Delay Reduction	Up to 15%	Up to 16%	Up to 16%
Benefit to Cost Ratio	30:1	29:1	31:1
Gallons of Gas Saved Annually	280,000	247,000	250,000
Reduction of Stops	Up to 10%	Up to 30%	Up to 14%
Annual Dollars Saved	Not Available	$2.8 Million	$3.5 Million

Remote Signal Abilities

As communications technology has improved so too have traffic signals. Signals have historically been controlled on site through a computer based in a cabinet mounted near the intersection. Information regarding congestion or delay was kept at the intersection therefore causing managers to drive out to the cabinets to make any necessary changes. Today, through the use of fiber optic cable and wireless communications, traffic signal timing plans can be changed in less than a minute. Thanks to another technology, traffic cameras, managers can "see" what is happening at particular intersections or general areas, and make timing adjustments as warranted in real time. By tying fiber optic or wireless communications together with traffic detection cameras, signals can now be adjusted to meet demand in mere seconds.

Boise State football games, concerts at Taco Bell Arena, the Idaho State Fair, and some special events are aided by the remote signal abilities in the valley. In regard to Boise State football, on game day, a traffic management operator adjusts signals in the area of Bronco Stadium to allow more green time into and out of the local area. Results of the system are very encouraging for attendees. In 1997, the stadium crowds could expect to take nearly two hours to disburse. While the system today can get fans out of the stadium area within one hour. When the program first started, managers only adjusted 12 signals, but due to traffic demand the stadium area now includes 25 signals. In the coming years, five more signals currently without remote capabilities will be added to the communications system likely resulting in further improvements to disbursement time. It is also important to remember that since 1997 the stadium seating capacity has grown from 22,600 to a current day 32,000.

Adaptive Traffic Signal Controls

A cutting edge technology gaining traction within the transportation field is a strategy called Adaptive Traffic Signal Control or ATSC. The newest generation of traffic signals is a system that "adapts" to real time traffic conditions. I, for example, an intersection is suddenly very heavy with volume, detectors can tell the signal to provide more green light time for some movements through the intersection allowing the built up traffic to disburse. If on the other hand, a signal that usually sees a greater number of cars than on a particular day, can maintain a longer red light allowing the opposing leg of the intersection to pass through the intersection. Since being implemented throughout the country, ATSC technologies have been found to be very helpful when traffic conditions are unpredictable.

Currently, the adaptive systems can be found in two locations in the valley: near the Idaho Center and the Garrity Interchange ramps with I-84. Drivers may never notice the difference between one signal to the next, however one trip along Can-Ada or Franklin Road during the day, then another after a crowded event at the Idaho Center, and they may quickly realize the benefits of an adaptive system and see how much faster they can get onto I-84 or across the freeway to Garrity.

Important to note is that the newest technology is not always the best solution. An adaptive system's use was discussed for the Eagle Road corridor from the Interstate north. However, between the predictable nature of the corridor and likely minimal effect, the system was not utilized.

Signal Adjustment Results

Adjustments to the many signals, installation of cameras, remote fiber connections, new timing plans and coordination efforts have resulted in time and financial savings to Valley residents. Though not every signal timing project has had a follow up benefits study, several such studies have been conducted and illustrate several aspects of systemic improvements.

Traffic Signal Operations Quick Facts:

- The Treasure Valley has nearly 350 remotely controlled traffic signals
- Remote signal adjustments were implemented with the visits of two U.S. Vice Presidents
- Valley wide, over 400 traffic detection cameras are in place
- Local agencies regularly receive positive emails especially from police authorities praising the assistance provided for disbursing traffic

Incident Response

One crucial strategy for traffic management is found in incident response. Unforeseen incidents usually lead to congestion, secondary accidents, and even increased air pollution for idling cars especially during peak traffic periods. Incidents that may cause backup are seen in the form of traffic accidents, flat tires, engine problems, or even running out of gas.

The principal goals of the program are to improve safety and traffic flow by responding to distressed motorists and roadway debris, to reduce emissions from idling vehicles caught in traffic jams, and to reduce secondary accidents caused by backed-up traffic. With traffic on the interstate increasing from 60,000 cars per day in 1997 to now more than 87,000 daily trips, the number of incidents continue to increase each year. Since its inception, the program has responded to over 100,000 calls, with over 11,000 in 2009 alone. In addition to the Treasure Valley operations, the teams also work State Highway 55 from Horseshoe Bend to the Cougar Mountain Lodge during the Memorial Day, 4th of July, and Labor Day weekends. Crews often help keep traffic from backing up along the stretch of Highway 55 and provide assistance to motorists when cars overheat.

Once a call comes in to local dispatchers, incident management teams are sent to the scene, assess the situation, and then relay necessary information to the state communications center. Once the communications center receives information, they warn motorists using the local dynamic message signs, update the Idaho 511 website, and provide information to local media outlets as appropriate to pass on information to the public.

Though ITD has not conducted any formal study to determine the congestion relief, financial impacts, or air quality improvements brought about with the incident management teams, other states have conducted such research. In the state of Utah, analysis demonstrated a reduction of congestion wait time by approximately 20 minutes since the program began. Even more impressive, when accidents take up two lanes of traffic, the Utah teams managed to decrease congestion wait time by 36% translating into an average estimated savings of 37 minutes per vehicle delayed.

Similar to Utah results, the state of Georgia has also reported impressive financial and congestion savings. The Georgia NaviGAtor program resulted in an average 46-minute reduction in incident duration time and reduced incident delay by 7.25 million vehicle-hours. The program reduced the average incident duration time from 67 minutes to 21 minutes or by 69 percent. There were an estimated 13,544,000 vehicle-hours of delay before the program was implemented and only 6,290,000 vehicle-hours of delay after, resulting in a 54 percent reduction in delay. In 2003, the incident delay reduction alone equaled an estimated $152 million dollar saving to the economy of Georgia.

Incident Response Quick Facts:

- ITD incident response program started in 1997.
- Patrols 21 miles of freeway in Treasure Valley.
- Program currently uses 3 response trucks.
- Operates Monday-Friday, 6 am - 8 pm.

Performance Monitoring

> To read annual travel time reports, please visit the following website:
>
> http://www.compassidaho.org/prodserv/cms-intro.htm

Selecting appropriate performance monitoring techniques is among the most important steps in developing a CMP. Many types of performance monitoring techniques are used across the country, each characterized by certain strengths and weaknesses. The Treasure Valley CMS provides more information on the techniques used to measure congestion. The key technique chosen for the Treasure Valley CMS is travel time.

Since 2003, annual travel time data collection within the urban area on the Treasure Valley's interstate and principal arterials. These corridors are driven four times or more in each direction during the morning peak (6:30 to 8:30 AM), then again during the afternoon peak (4:00 to 6:30 PM). The period with the highest average travel time is compared to the free flow, or ideal travel period (2:00 to 5:00 AM).

Tables 7-6 and 7-7 below summarize the total miles driven each year and the percent of the system in each congestion category. Between 2003 and 2009 the total centerline miles monitored have increased by over 75%.

Corridor ratings of high, medium, and low determine the points given during the Transportation Improvement Program (TIP) project prioritization process. Only two segments of roadway are identified as highly congested since 2003 – 9th Street from Main Street to Myrtle Street and Idaho Street between Avenue B to 1st Street.

Table 7-6: Ascending (East or Northbound) Travel

Year	High		Medium		Low		No Data		Total Miles
	Miles	Percent	Miles	Percent	Miles	Percent	Miles	Percent	
2003	7.8	5.1%	10.1	6.6%	129.6	85.0%	5.0	3.3%	152.5
2004	8.6	4.6%	11.9	6.4%	164.5	88.9%	0.0	0.0%	185.0
2005	14.3	7.8%	18.2	9.9%	151.4	82.3%	0.0	0.0%	183.9
2006	15.3	6.0%	17.0	6.7%	194.4	76.1%	28.7	11.2%	255.4
2007	14.9	5.5%	11.6	4.3%	202.1	75.2%	40.2	15.0%	268.8
2008	8.5	3.2%	19.6	7.4%	234.6	88.6%	2.0	0.8%	264.6
2009	6.3	2.3%	24.5	9.1%	235.0	86.8%	4.8	1.8%	270.6

Table 7.7: Descending (West or Southbound) Travel

Year	High		Medium		Low		No Data		Total Miles
	Miles	Percent	Miles	Percent	Miles	Percent	Miles	Percent	
2003	7.2	4.8%	27.3	18.1%	111.7	73.9%	5.0	3.3%	151.2
2004	1.0	0.5%	8.5	4.6%	175.8	94.8%	0.1	0.1%	185.4
2005	9.8	5.3%	16.3	8.8%	159.7	86.0%	0.0	0.0%	185.8
2006	23.4	9.1%	16.4	6.4%	187.7	72.9%	29.8	11.6%	257.3
2007	18.9	6.9%	25.7	9.4%	185.0	67.9%	42.7	15.7%	272.3
2008	11.4	4.3%	38.6	14.5%	214.6	80.8%	1.1	0.4%	265.7
2009	13.9	5.1%	26.4	9.7%	227.0	83.6%	4.4	1.6%	271.7

Linking Congestion to Prioritization

To learn more about the TIP Project Prioritization Process, please visit the following website:

http://www.compassidaho.org/prodserv/transimprovement.htm

As part of the TIP development process, projects are ranked according to various criteria. A new TIP prioritization process, approved in September 2009, assigns points to project in the criteria area of congestion mitigation. Project scores in this criterion are based on the threshold in which it has been placed in the CMS for the last three years. Non-roadway construction projects are given additional consideration depending on the type of improvement proposed. Table 7-8 below displays the scoring criteria for roadway projects as an example for how the CMS process is integrated.

Table 7-8: TIP Project Prioritization, Potential Points

	Assessment Criteria	Score
Congestion Mitigation	Project will mitigate congestion and includes segment in the high congestion category for the last three years.	10
Congestion as related to the Congestion Management Process (CMP) Applicant must demonstrate congestion mitigation.	Project will mitigate congestion and includes segment in the high congestion category for the current year.	7
	Project will mitigate congestion and includes segment in the medium congestion category for the current year.	4
	Project will mitigate congestion and includes segment in the low congestion category for the current year.	2
	Not classified as congested in the CMP consistently over the last three years.	0

Future Policy and Planning to Reduce Congestion

In addition to the various projects and plans recently completed, future efforts will continue to be directed by additional high level guidelines. The guidelines for how transportation plans or project designs are to take place are found in policy and governing documents that have either been adopted or are in the process of being adopted by regional entities.

Idaho Transportation Department

A good step in the future could be more formal recognition of local transportation access plans (TAP) between ITD and city or county governments. In some cases a state highway is the main route through town. The access standards may either be made more stringent or relaxed depending on the situation and the needs of the community. Currently, access to state roads is very much dependant on the Idaho Administrative Procedures Act, which doesn't give any flexibility to a roadway from segment to segment. Access standards are determined by the existing physical conditions of the roadway, without regards to function or planned improvements. The arrangement also limits opportunities for a community or the state to change access needs based on anticipated demand. TAP legislation could help in situations where rapid growth is occurring and outpacing the infrastructure improvements necessary to keep up.

Additionally, ITD is now developing transportation plans that are to be financially constrained. Due to various funding issues at the state and federal level, plans will not include every needed project, but rather display only the most critical and affordable under present budget circumstances. This approach is a significant one in that it puts congestion relief, major bridge repair, and other safety projects at the forefront of importance and may translate into a reduced level of service.

City of Nampa Transportation Plan

The City of Nampa is in the final stages of conducting a major city wide transportation plan. The plan takes careful steps to analyze current and future conditions to help determine the roadway and intersection needs forecasted to the year 2035. The plan will be used as the basis for guiding tax dollars as efficiently and effectively as possible. A unique attribute of the plan is the consideration of roundabouts for intersection treatments. The plan contains an analysis of all intersections to determine eligibility of roundabout use using specific technical criteria. All told, the plan determined 29 intersections throughout the city meet conditions for roundabout implementation.

Another major component to the Nampa Transportation Plan is an attempt to help move congestion in the downtown area without having to make extraordinary capacity additions. The city will be finalizing a downtown alternative analysis which will use both innovative designs and existing streets to help make downtown Nampa a bicycle and pedestrian friendly location.

By limiting capacity solutions and focusing on innovative approaches, the hope is to eliminate the need for unnecessarily wide corridors or intersections which can be barriers to a vibrant city core. Other features of the plan include major additions to bike and pedestrian facilities, as well as a completely updated access management plan. Lastly, as mentioned in a previous section, the city will be conducting a significant signal coordination timing effort in the summer of 2010 which may impact project needs for some time.

ACHD Transportation and Land-use Integration Plan

In 2009, the ACHD Commission approved the final draft of the Transportation and Land-use Integration Plan (TLIP). The plan is an exhaustive look at the best fitting roadway designs for surrounding land uses. The goal is the design lane widths, on-street parking options, bike facilities, sidewalks, and buffer areas in a way that allow the street and land uses to operate in a harmonious fashion. In a downtown for example, a five-foot sidewalk is not appropriate due to the higher volume of pedestrians likely to use them. On the contrary, in a rural setting lane widths should be wider than urban areas due to the nature of the vehicles using them, such as tractor trailers. The TLIP plan analyzed residential, commercial, industrial, downtown, and rural settings to best determine how the streets serving those areas should look. The plan also tries to design roads for all users for a truly multimodal function. Designed in concert with the comprehensive plans of all six cities and the county, TLIP will impact all future intersection and roadway segment construction and be used as the starting point for all planning efforts undertaken by ACHD in the years to come.

From an operation and management perspective, the plan has paved the way for a major update to ACHD's access management policy, gave specific consideration to transit facilities, contains traffic calming elements, and led to the adoption of a complete streets policy. A master street map and street list were also adopted to clarify which streets belong in each category. [9]

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[9] For more information and the Master Street Map, Street List, etc., see the TLIP project page http://www.achdidaho.org/departments/PP/TLIP.aspx.

COMPASS Congestion Management Process

The COMPASS CMP process is intended to promote multiple modes of transportation including cars, buses, bikes, and walking. The idea is to determine where the most congested locations are located within the regional transportation network and look to develop goals, strategies, and projects to help reduce the effects of congestion. Congestion can be relieved in many of the ways mentioned previously such as access management, traffic signal coordination, and roundabout implementation. Additional forms of congestion relief can prove successful like increased transit services, time of day signal adjustments, constructing of biking and walking facilities, or perhaps enhancing the connectivity of additional streets in the local area. Management techniques have also been used in both the public and private sector such as allowing alternative work hours, consolidating work weeks, and telecommuting.

Lastly, the CMP will now begin impacting funding for roadway segments to be constructed in the future. As part of the annual TIP cycle, projects are ranked by using various technical criteria. In 2009, the process was revamped to include information from the CMP annual update (Table 7-9). In addition to other categories, points will now be given to projects based on the level of congestion measured on a corridor over the last three years. For example, if a roadway segment has been in the "high" category for three years, it will receive the maximum number of points under "congestion relief." By including this into the scoring method, intersections and roadway projects having the most impact may rise to the top faster than previous scoring efforts.

Table 7-9: Prioritization for Congestion Mitigation

Scoring Guidelines for Roadways		
Criterion	Assessment	Score
Congestion Mitigation Congestion as related to the Congestion Management Process (CMP) Applicant must demonstrate congestion mitigation.	Project will mitigate congestion and includes segment in the high congestion category for the last three years.	10
	Project will mitigate congestion and includes segment in the high congestion category for the current year.	7
	Project will mitigate congestion and includes segment in the medium congestion category for the current year.	4
	Project will mitigate congestion and includes segment in the low congestion category for the current year.	2
	Not classified as congested in the CMP consistently over the last three years.	0

Source: COMPASS CMS Annual Update 2009

Several parallel efforts of the CMP are on-going and likely to grow as well. The programs adding a benefit to the valley include ACHD's Commuteride program, the construction of several park and ride lots, and promotional events such as May in Motion, which continue to demonstrate the benefits of biking, walking, and transit.

Future Policy Quick Facts:

- ACHD's Commuteride program included 85 vanpools in 2009, averaging 10 riders per van.
- The vans totaled 1.44 million miles driven, saving nearly 14.7 million miles driven otherwise.
- The Nampa Transportation Plan indicates 29 intersections suitable for roundabout construction.
- TLIP contains 18 street typologies for residential, commercial, and other land use contexts.

Conclusion

As part of the Treasure Valley CMS, 2009 travel time data were collected and analyzed to classify congestion on interstate and principal arterial roadways in the Treasure Valley. A fraction of these roadways were identified as highly congested for 2009. The number of roadway segments identified as "high" congestion increased slightly from 30 to 33 during the period between 2008 and 2009. The 33 "high" congestion segments are still far below the 46 segments classified as "high" in 2007. Comparisons between current and historic data sets show some change in congestion classifications.

Although more travel time data need to be collected before trends in congestion and congestion mitigation can be assessed, it appears that signalization improvements, changes in land use, and completion of roadway construction projects contributed to improved travel times. Another additional potential source for the decrease from 2007 numbers in "high" level congestion could be associated with the economic downturn and the reduction in construction related travel. Further analysis will be needed to see how well this trend correlated with the downturn. Travel time forecasts produced by COMPASS' travel demand model indicate travel times are likely to increase on Treasure Valley interstates and principal arterials over the next 21 years.

The 2009 congestion levels were compared to those encountered in 2003 through and 2008. The amount of congestion data available does not allow for a reliable quantitative evaluation of congestion mitigation measures included in the CMS "Toolbox." However, a qualitative analysis using forecasted travel times indicates that, as the valley continues to grow, travel times and congestion are likely to increase, despite planned roadway capacity expansions.

Recommendations for M&O and the CMP have been incorporated in COMPASS' *FY2011 Unified Planning Work Program and Budget*. The Treasure Valley CMS will also be updated in FY2011 to include these connections and conclusions.

Connection to the Long-Range Transportation Plan

COMPASS' long-range transportation plan identifies future transportation system needs and sets transportation policies for the Treasure Valley. The Treasure Valley CMS adds value to the long-range transportation planning process by providing better information on current conditions and by offering a process by which future congestion issues can be analyzed on a regular basis.

As part of the long-range transportation planning process, modeling tools are used to qualitatively assess congestion and travel time associated with projected population growth. The travel times produced by COMPASS' modeling tools cannot be quantitatively compared to the travel times collected as part of the Treasure Valley CMS. This is because COMPASS' regional travel demand model does not capture the critical role intersection design and signalization has on travel time. However, modeled travel times can provide a qualitative comparison between the travel times collected as part of the Treasure Valley CMS. This qualitative analysis may be used to identify and implement congestion mitigation strategies (or projects) to improve travel time in the future, particularly in locations defined by the Treasure Valley CMS as congested.