

# *Chapter Eight*

## **Transportation and Circulation**

### **Introduction**

The transportation and circulation system is a key component in the development of a community, whether in residential developments, central business districts, industrial developments, or commercial centers. A viable transportation and circulation system can contribute to the character of a community and promote safety, orderly growth, economic growth, and environmental sensitivity. Steps need to be taken to ensure that an adequate transportation and circulation system will be available for the future. Alternative modes of transportation and circulation are needed to increase the effectiveness of the current system.

The vision of the future transportation system for Provo is influenced by the goals and objectives derived by the Provo Task Force 2000. The Transportation and Circulation Element of the General Plan will concentrate on both the current status and future proposals for improvements in the transportation system. Those areas include the headings found in Table 8.1.

<b>TABLE 8.1 TRANSPORTATION AND CIRCULATION HEADINGS</b>	
Regional Planning	Railroads
Land Use	Transportation Demand Management
Street System	Parking
Bike Paths	Funding
Pedestrian Paths	Education
Public Transportation	Future
Air Transportation	

### **Regional Planning**

Much of the transportation demand in Provo City is created by citizens, students, workers, business customers, and those living outside of the city. These people play an important role in maintaining the economic viability of the city. They also create some of the greatest challenges to the transportation and circulation system. Further, land use and transportation decisions made by other jurisdictions in Utah County have a significant impact on Provo City.

In addition to Provo City, five other entities - the Utah Department of Transportation, Utah Transit Authority, Utah County, City of Orem, and Springville City—influence transportation within Provo

City. Also, Mountainland Association of Governments has a responsibility to ensure that each of these entities considers area-wide transportation planning in Utah County. As the metropolitan area continues to grow, there are increased transportation impacts on Juab, Salt Lake, and Wasatch counties. If Provo City is to be successful in controlling its transportation future, cooperation and coordination with other jurisdictions and agencies is essential.

Economic issues may create major impediments to regional land use planning. Every jurisdiction should develop its own commercial and industrial developments to maintain a stable economic base. There is competition among these jurisdictions to lure tax revenue-generating businesses. Without cooperation in the planning of land uses, regional transportation plans fail to adequately address the impacts of land use decisions across jurisdictional boundaries.

Economic development desires can impact decisions relating to the control of transportation. Many of the incentives and disincentives used to influence the transportation choices are ineffective or economically unacceptable if implemented inconsistently or by only one jurisdiction. The vision and direction expressed in the General Plan must be shared with and accepted by other jurisdictions and transportation agencies for these visions to be fully successful. Provo City looks to these agencies and jurisdictions for a cooperative partnership in helping Provo City to achieve the objectives contained in the Task Force 2000 value statements.

## **Land Use**

There can be no doubt of the link between land use and transportation. The types of land uses and their locations influence the travel patterns of an area. In the past, the primary solution for congestion was to build newer roads and additional travel lanes. This approach, which is very costly, does little to discourage more sprawl in growth patterns, resulting in further increased levels of congestion.

As the transportation and circulation system in Provo City is modified to be more transit-oriented and allow greater options for other modes of travel, we need to recognize the benefits of matching land use patterns with the total transportation and circulation system. Transportation and circulation systems benefit from higher densities along major transit corridors, provided that all other public infrastructure systems are meeting the demands placed upon them. Encouraging higher density housing and concentrating business and commercial uses at transit corridors allows transit to provide better service and greater opportunities for ride-sharing. Major transit corridors where significant bus service is provided include State Street, Center Street, University Avenue, University Parkway, and 900 East.

Transit Oriented Development - discussed in Chapter 6: Land Use - should be located near the Intermodal Station for FrontRunner Commuter Rail. The proposed Bus-Rapid Transit will provide many additional opportunities for transit-oriented development along a proposed corridor connecting the Novell campus, Provo Towne Centre, the Intermodal Hub, downtown, south BYU campus, the plum-tree shopping area and into Orem City and terminating past Utah Valley University at the

Orem Intermodal Station. Additional, well-planned, density around these major transit stops will increase transit ridership and decrease vehicular demand on the overall street network.

Allowing neighborhood commercial uses in residential neighborhoods provides economically viable services within walking distances of the users. New commercial developments can be designed to better interact with non-motorized modes of transportation. For example, bicycle racks can be provided and shower/locker room facilities can be installed by employers to encourage bicycling, walking, and jogging.

## **Street System**

The street system is the circulatory system of the city, providing routes for the movement of goods, services, and people. The street system provides both access and mobility. The majority of Provo City's street system is laid out in a grid pattern, especially in the central area. The grid pattern allows for the greatest accessibility and spreads local traffic over a number of streets. This street pattern generally minimizes travel lengths to get from one point to another. However, many new developments have built streets that contain curves and cul-de-sacs. Cul-de-sacs often discourage walking in a neighborhood, and make it difficult to travel from one street to another. There are advantages and disadvantages of the grid patterns and other street patterns. (See Map #8.1 Major and Local Streets Plan Map)

### **Right-of-way Designations**

Within the city, streets serve different purposes; each is classified by its function and purpose. There are several types of rights-of-way, with various purposes and design standards. The location of the right-of-way, its daily traffic load, and the types of streets that it connects are factors that contribute to the classification assigned to each right-of-way. The four major types of rights-of-way found in Provo City are defined, below, and the four technical classifications assigned to rights-of-ways are described in the subsequent section. An explanation of capacities and levels of service, and how those are defined, is provided for additional understanding.

#### *Interstate*

An interstate highway (commonly referenced as the "interstate") connects two or more states. The interstate highway system is the collective network of interstate highways, which interconnect at various locations throughout the nation. As part of the urban network of vehicular rights-of-way, the interstate system is a controlled-access system, with a limited number of access points from the street network and no direct access to individual properties. It services high traffic volumes through urban areas such as Provo and other Wasatch Front communities and connects major metropolitan areas. Interstate 15 passes through Provo City's boundaries as it connects many of the communities along the Wasatch Front and, in the larger sense, several states including California, Nevada, Arizona, Utah, Idaho, and Montana. Through I-15 connections to other interstate highways, such as I-80 and I-84, Provo is connected with additional states.

Provo has two interchanges on I-15, one at University Avenue on the south side of the city, and one at Center Street in the central part of the city. The north part of Provo can be accessed by surface

streets, either from the Provo Center Street interchange or from the Orem City interchange on University Avenue. These connections allow the interstate to function as part of the street system within Provo and as part of the intercity street system for access to other nearby Utah County communities. This use provides convenience, but also adds to the congestion during peak commuter hours between Wasatch Front communities in Salt Lake County and Utah County.

#### *Highway*

A highway is a main public right-of-way that connects cities and towns with other communities. A highway can be a U.S. Route or a State Route. Highway 89, a U.S. Route, passes through Provo connecting Orem to the north and Springville to the south.

#### *Street*

A street is a public right-of-way in a city or town, usually including the sidewalks lining one or both sides of the street. Timpview Drive connects several neighborhoods within the city and would meet the definition of a street.

#### *Alley*

An alley is a narrow public right-of-way within a block, generally used for vehicular traffic between or behind properties fronting onto another public right-of-way. An example of an alley is located between 700 and 780 South between University Avenue and 100 East just south of the railroad tracks.

### **Technical Classifications**

#### *Freeway*

A freeway is a divided, major right-of-way, with full control of access, and with zero at-grade crossings. It can also be a divided, arterial right-of-way for through traffic with full or partial control of access, capable of safely carrying traffic at speeds greater than 50 mph. Although non-interstate rights-of-way may be developed to freeway standards, at present I-15 is the only freeway that passes through Provo City.

#### *Arterial*

An arterial right-of-way is part of the transportation and circulation system serving as the principal network for through traffic. Arterial rights-of-way connect areas of principal traffic generation and important rural highways entering into a community. They also provide for through-traffic movement between and around areas and across a city with minimum direct access to abutting property. Arterial rights-of-way are generally wider than collector and local rights-of-way and are given preference in signing and signalization.

Ideally, arterial rights-of-way should not have lots fronted on them or have direct access from individual properties. An example is University Avenue, where the main function of the arterial is to provide a safe, rapid, and convenient means of vehicular transportation between various areas of the city. Although University Avenue in Provo accommodates direct access, the access points are often shared by multiple properties, and the frequency of new driveways is closely controlled.

### *Collector*

A collector moves traffic between arterial rights-of-way and local rights-of-way. Collectors provide limited access to abutting properties and should serve traffic movements within residential, commercial, and industrial areas. Timpview Drive is an example of a collector, designed to primarily accommodate traffic between the immediately surrounding neighborhoods, rather than through-traffic for access between distant parts of the city.

### *Local*

A local street is used primarily for direct access to adjoining residential, commercial, industrial, or other abutting property. Moving traffic is a secondary function. A local street generally does not carry through-traffic. An example is Sheffield Drive, which serves a residential neighborhood.

### *Physical Capacity*

The physical capacity of a transportation facility is defined as the maximum number of vehicles (or pedestrians) that can reasonably be expected to use the facility in a given time period under prevailing right-of-way, traffic, and control conditions. The physical capacity of a right-of-way and an intersection is dependent on several objective factors, including street width, adjacent development, added turn lanes, parking conditions, traffic signal timing and regulation, types of vehicles using the intersection, and the nature of traffic movement.

### *Perceived or Environmental Capacity*

A perceived capacity, also called “environmental” capacity, is the perception of a level of service for operating conditions, as perceived by users of streets. In other words, is the local street considered acceptable by the adjacent residential, commercial, or industrial occupants? Unlike the objective physical capacity, the perceived or environmental capacity is highly subjective. (See the Provo City Transportation Master Plan for additional information.)

### *Level of Service*

The concept of level of service was originally defined as a qualitative measure of operational conditions. Such a measure would ideally cover factors such as speed and travel time, delays, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. Level of service should comprise a set of defined operating conditions for each facility type. Provo City has completed a city-wide traffic study and has adopted levels of service that are acceptable to users of the City street system. (See the Provo City Transportation Master Plan for additional information.)

### *Service Volume*

The service volume is the maximum amount of traffic that can be accommodated while maintaining the defined operating conditions for a specific level of service.

## **Challenges**

Although land use relates directly to travel demand, street classifications – particularly major streets – do not necessarily relate directly to the land use adjoining a street. For example, many arterial streets pass through residential neighborhoods and commercial developments. These streets need

to function as designated in order to meet the legitimate travel needs for which they were planned and designed, while being sensitive to the safety and quality of life needs of the adjacent land use.

The street system doesn't always function the way it is intended to function. Increased residential and economic growth inside and outside of Provo City and increased enrollment at Brigham Young University and Utah Valley State College have put additional pressures on the City's street system to accommodate travel demand. Currently, travel demand is primarily composed of automobile trips, which have steadily increased in number. As traffic volumes and congestion increase along the arterial streets, drivers look for less-congested alternatives. Hence, traffic spills over onto adjacent collector and local streets. This is the primary cause of many of the speeding and traffic volume concerns expressed by residents living along collector and local streets.

### **Traffic Calming Measures**

Physical traffic management techniques the City could use as 'traffic-calming' devices range from mildly restrictive to very restrictive. Some of these measures include those listed below.

#### *Roundabout*

A roundabout is a traffic circle constructed in the middle of an intersection. All traffic entering the intersection circles the roundabout in a counterclockwise direction until the desired street is reached. A roundabout slows traffic as it enters the intersection, discouraging high-speed, through-traffic.

The roundabout is the most recent effort of Provo City to reduce the negative impacts of traffic. Roundabouts are effective methods for regulating traffic flow at busy intersections. Traffic lights often cause vehicle speeds to increase as drivers tend toward trying to "hit the green or yellow light;" roundabouts, however, cause drivers to slow down to a safe entry speed of fifteen miles per hour. Roundabouts ensure efficient traffic flow, as they do not cause drivers to come to a full stop and wait long periods of time for a green light. Also, the lack of an incentive to increase speeds to make a green light will keep traffic flow at moderate speeds, thus preserving neighborhood integrity. Provo City has constructed several roundabouts throughout the city.

#### *Gateway*

A gateway is a designed entrance to a local street which resembles that of a private entrance. Gateways have textured, colored surfaces and reduced surface width at the entrance. Landscaping with a center island and posts with ornamental gates are installed in a permanently open position to resemble the look of a private street, although the right-of-way is a public local street.

#### *Choker*

A choker, also called a curb extension, is a narrowing of a street, either at an intersection or mid-block, in order to reduce the width of the road. The term is usually applied to a design which widens a sidewalk for safe pedestrian crossing and reduces the width of the traffic corridor that a pedestrian must cross. It also includes the use of islands which force traffic toward the curb while reducing the street width.

### *Diagonal Diverters*

Diagonal diverters are barriers which extend diagonally across residential intersections. They are effective at reducing 'cut through' traffic where drivers slice through neighborhoods to circumvent congested intersections. However, in some cases, they cause substantial inconveniences for neighborhood residents' vehicle circulation. Full diverters are placed diagonally across the entire intersection, forcing vehicles to turn one direction at the intersection. Semi-diverters extend halfway across the intersection, preventing vehicles from entering a street in one direction.

### *Neck Downs*

Neck downs are landscaped islands that extend from the curb onto the street. They divide the road into smaller visual units, intruding into the road to form a narrowed look and feel. They can reduce the pavement width that must be crossed by pedestrians and may provide protected wells for parallel, on-street parking.

### *Raised Medians*

Raised medians are elevated strips which are often landscaped that run parallel to traffic in the middle of the street. They narrow the street space devoted to vehicles, providing pedestrians a refuge when crossing larger streets such as arterial streets and collectors.

## **Enforcement**

Traffic control enforcement is a key component of a traffic calming program. In particular, police enforcement of speed limits and other traffic regulations is important to ensure compliance with these regulations. Two programs that serve as non-physical traffic calming techniques are Speed Maintenance and Radar Trailers (SMART) and reduced school crossing speeds. SMART is used to inform automobile drivers the speeds they are traveling. When motorists drive through an area where SMART is in use, SMART flashes each vehicle's traveling speed on the SMART screen. Citations or fines are not levied with the SMART program. Reduced speed school crossings, usually used in conjunction with street-crossing guards, provide safer crossings for pedestrians walking to and from school; these reduced speeds are in effect on school days during specified times of the day. School crossing guards provide the Provo City Police Department with information on motorists not obeying traffic regulations within school zones. Police officers monitor the school zones in response to complaints or when reports of speeding are received.

A number of programs implemented in other communities may be beneficial for implementation in Provo. Salt Lake City, for example, offers a Neighborhood Speed Watch Program for residents who want to be actively involved in monitoring traffic speeds on their streets. Residents use radar equipment on loan to them from the Salt Lake City Transportation Division to record speeds of vehicles driving on local streets. Drivers found to be driving well over the speed limit are mailed an education pamphlet explaining safety concerns associated with speeding. This is an educational and awareness program; no citations or fines are levied.

## **Traffic Signal Coordination**

Traffic signal coordination is effective in meeting some street system challenges. In general, traffic signal coordination results in fewer stops for traffic traveling at the speed limit along a major

corridor. Decreasing traffic delays by reducing stops decreases vehicle emissions, resulting in better air quality.

### **Street Conditions**

Street conditions vary greatly throughout the city depending, in part, on the type or classification of road. The Provo City Engineering Department inspects city streets on an ongoing basis and assigns each street a condition category. The five categories assigned by the Engineering Department are 0-2, 2-4, 4-6, 6-8, and 8-10, with 0-2 being a dirt or gravel road and 8-10 for a newly paved road in excellent and/or best possible condition. Active programs to upgrade and maintain streets continue to make improvements in the overall condition of Provo's street network.

### **Major and Local Streets Plan**

Provo City has adopted and maintains a major and local streets plan as a part of the General Plan (see Map # 8.1 Major and Local Streets Plan Map), which should be updated in conjunction with each General Plan update. The major streets designations identify the current and proposed location of all arterial and collector streets. The local street plan, which provides long-range planning for local neighborhoods, specifies locations of local streets that should be constructed to ensure that property within a given area can be adequately developed and serviced. To amend the major streets, a General Plan amendment is required. However, to amend the local streets, a General Plan amendment is not necessary.

## **Bike Paths**

The Provo River Parkway recreational path, that follows the Provo River from the mouth of Provo Canyon to Utah Lake, is about 13.2 miles in length. This, with the College Connector Trail, which connects Brigham Young University and Utah Valley State College, forms the backbone and core of the City's most recent effort in providing bikeways for recreation and commuting purposes. Bike paths within the city are still progressing, and conscious efforts should be maintained to continue construction of safer on-street bikeways and separated path and trail systems. Future bicycle and trail planning should be oriented towards making viable connections into the Intermodal Transit Station at 600 S 100 W and other bus-rapid transit stations planned for Provo. Provo will work towards becoming a gold-level bicycle friendly city as designated by the League of American Bicyclists. (See Map #8.2 Pedestrian Paths, Trails, and On-street Bikeways Map.)

The last ten years of trail and bikeway planning have helped to spark a wide interest in recreational bicycling. This interest has spilled over into commuting by bicycle, as can be observed by the overflowing bicycle parking racks on campus at Brigham Young University. While college students might be expected to more routinely embrace bicycle commuting, the Utah Transit Authority's Bikes on Buses program has also seen great success with commuters combining bicycle and transit modes of travel.

It is believed many more people would commute to work and school by bicycle if safe and efficient bikeways were available. Bicycle commuting should be encouraged through an increased number

of bike paths and on-street bike lanes, as it would cut down on both automobile traffic and air pollution within the city. Provo City plans to significantly increase bike facilities within the city. Employers can promote greater use of bicycles for commuting by providing showers, lockers, and secure and convenient bicycle parking for employees and customers. Additional bike facilities would contribute to a network of safe and efficient transportation routes between residential areas, employment areas, recreational areas, and shopping areas.

At times, the need for bicycle facilities is determined more from use than from a capability to provide ideal facilities. The increasing need for bike lanes or paths along 900 East, for example, became obvious through observation and bicycle counts.

Because of the five-lane section which exists on 900 East and the asphalt width being 55 feet wide, it was impossible to add bike lanes to the street profile. The City was able to narrow the travel lanes and paint an 8-inch line 30 inches off the curb face, which is not a bike lane, *per se* (it is not designed in accordance with guidelines for bike lanes as established by AASHTO - American Association of State Highway and Transportation Officials), but does provide space for reducing “friction” between automobiles and bicycles and for those bicyclists who may feel more secure in operating outside of the travel lane of automobiles. An alternative would be use of wide curb lanes (no painted line between the travel lane and shoulder) as recommended by AASHTO; this may not provide the same comfort level for some cyclists and is not always used well by motorists.

Where a painted shoulder is not adequate to meet AASHTO guidelines for a bike lane (particularly adjacent to a curb), it should be understood that bicyclists may prefer to share the vehicular travel lane or even find it necessary to do so, in order to avoid hazards in the narrow shoulder. Due to State laws governing use of designated bicycle facilities, it is preferable to not designate sub-standard facilities as bike lanes, even though providing the added space may better facilitate bicycle travel along a challenging corridor. On bicycle route maps, it is more realistic to show these connections as shared-lane facilities so that bicyclists with lower skills will not be caught unaware by the need to sometimes maneuver within the traffic lanes or in closer proximity to automobile traffic than would be expected in the standard curb bike lane.

As land and easement acquisitions and road construction projects occur, bike paths and bikeways will be continue to be implemented and improved in Provo.

## **Pedestrian Paths**

Walking has changed in popularity from the first, and often only, choice of transportation for nearly all people a century ago, to an activity now enjoyed by only a small percentage of our population. As urban growth spreads farther out into the suburbs, walking is increasing for recreational purposes, but is declining for all other trip purposes.

While the growing travel distances between work and home can account for some of the decline, many who could walk for commuting, school or shopping purposes simply choose not to. Reasons

include the convenience of the automobile, time constraints, weather conditions, and pedestrian barriers to access. Provo, with its long blocks and wide streets can be especially frustrating for pedestrians who must walk significant distances to cross at an intersection. In some areas, lack of contiguous sidewalk connections between neighborhoods and destinations force pedestrians to walk in streets or shoulders, making walking somewhat hazardous. This is especially true of connections between home and school for children. These conditions also affect pedestrian access to public transit (bus stops) and may affect people's willingness to use public transportation when they have the option to choose between modes of transportation.

Much of the attractiveness for walking as an alternative mode of transportation depends on the sense of safety, convenience, and comfort in the pedestrian environment. Most people will choose not to walk in environments they see as hazardous or even merely uncomfortable. Well-designed sidewalks and pathways create the sense of comfort and safety necessary to encourage walking. Additionally, many of the traffic calming techniques discussed earlier in this chapter promote a pedestrian friendly environment by reducing conflicts between automobiles and pedestrians, and by giving pedestrians a greater sense of place. Lighting adequately designed for pedestrians can improve the sense of security for walking and transit access during early morning or evening commuter hours; standard street lighting designed for motorists is often inadequate to provide a heightened sense of personal security along sidewalks. Pedestrian paths near within Downtown and adjacent to major transit stations should be enhanced to increase access and the quality of the pedestrian's experience.

For pedestrian paths, please see Map # 8.2 Pedestrian Paths, Trails, and On-street Bikeways Map. Other than the obvious sidewalks and signaled crosswalks, pedestrian paths are, due to right-of-way limitations and cost constraints, the same as those used by bicyclists.

## **Public Transportation**

The use of public transportation reduces the number of vehicles on the road and reduces the demand for parking. Transit increases the people-carrying capacity of our transportation system by increasing the number of people per vehicle.

Transit use is impacted by land use. Higher densities of residential and commercial developments encourage more efficient use of transit. Higher density developments can be encouraged at or near major transit nodes and transit-oriented (TOD) zoning should be developed around future heavy rail, bus-rapid transit stops and other areas anticipated to accommodate multimodal transit options. Transit centers should be considered to improve transit service anywhere with a concentration of shopping and employment. Large employers should be encouraged to locate in areas already served by transit or in areas easily served by an extension of the transit system. Transit stops should be conveniently located and comfortable. Information needs to be provided to inform people how the system works with routes, times, and dates of transit service.

### **Utah Transit Authority Bus Routes**

The Utah Transit Authority (UTA) implemented new bus routes in Provo City and Utah County in August, 2000. These routes connect schools and universities, major shopping centers, and major areas of employment. As the development and expansion of residential and commercial areas continues, UTA will adjust its current routes accordingly in order to provide efficient and convenient service to its customers. The feasibility and routing for a Bus Rapid Transit (BRT) system is being evaluated on a regional level and is anticipated to connect the Novell Campus and Provo Towne Centre Mall, the (proposed) Provo Intermodal Station, Historic Downtown Provo, Brigham Young University (BYU), the University Mall in Orem, and Utah Valley University (UVU) in Orem as well as other intermittent stops. A continuation of the UTA Eco-Pass may encourage greater use of transit by BYU and UVSC students and employees that can access their jobs along this route. Bicycle and pedestrian connections for transit are important to the success of bus transit, as noted under the discussions of Bike Paths and Pedestrian Paths in this chapter.

### **Rideshare**

Rideshare is a program of UTA which includes coordinating companies and individuals forming van pools and car pools through employer-based programs and individual car pool match-ups. Van pooling offers a lowcost lease program for employers to form van pools and a zero percent interest purchase option for workers who then own their van and share rides with others. Car pooling is an arrangement among private individuals to share the expenses for commuting. Rideshare commuting allows efficient and economical transportation within the Wasatch Front, and also reduces automobile pollution in relation to the reduced number of automobiles using the roads. As travel corridors continue to be upgraded and expanded (for example, addition of restricted-use car pool lanes to I-15, expansion of Interstate 15 through UDOT's CORE rebuild, , rideshare commuting will become an even better alternative to individual driving and help to reduce commuter traffic within Provo and between Provo and other Wasatch Front communities, such as Salt Lake City. Employers are encouraged to provide incentives for ride sharing, such as preferred parking for car pool teams.

### **FrontRunner Commuter Rail**

The Utah Transit Authority (UTA) has purchased rights-of-way through Weber, Davis, Salt Lake, and Utah Counties from the Union Pacific Railroad. The right-of-way will be used for heavy rail transit. The heavy rail service, known as FrontRunner, has been completed between Salt Lake City and Ogden, with an additional extension under planning for Brigham City. A commuter rail service between Provo City and Salt Lake City is planned, under construction and is anticipated to be operational by 2012.

### **Intermodal Station Planning: Bus Rapid Transit, Express Bus, Commuter Rail, Private Carriers, and Other Transportation Connections**

The Provo Intermodal Station site has been selected to be generally located at 650 South Freedom Blvd and will encompass an area on approximately 17 acres between Freedom Blvd, University venue, the south rail right-of-way and 750 South with a portion extending southward to 920 South.

Initially, the station will be designed to accommodate FrontRunner Commuter Rail, bus-rapid transit and local bus service. Other transit options, such as bicycle, taxi, rental car and greyhound bus service may be incorporated at a future date.

An Interim Transit-Oriented Development zone has been adopted for the site and the immediate area. The purpose of the interim zone is to prohibit incompatible uses for TOD and to establish acceptable develop minimums should a development be proposed prior to the adoption of a comprehensive plan and zoning strategy.

### **Provo Amtrak Train Station**

A new train station was completed and dedicated on May 15, 2002. The facility is located at 300 West 600 South. Amtrak passengers now have an enclosed waiting area, and the facility offers heat, lights, pay telephone service, paved parking, and a new platform. With the completion of this support facility, it is expected that Amtrak ridership will increase to and from Provo.

## **Air Transportation**

Provo City's Municipal Airport has been in operation at its present location since 1943. It provides complete General Aviation (GA) service for the Utah Valley area and the southern portion of the Wasatch Front. The airport supports approximately 150,000 operations per year and can handle the largest corporate aircraft and 737 design aircraft. Basing capacity (number of aircraft that can be based from this airport) exceeds 330, and the number of aircraft currently based at the Provo Airport is approximately 140. With some facility improvements, basing capacity is adequate for the planning horizon. The City is soliciting airlines to provide regional air service from the Provo airport.

There is no question that the Salt Lake City International Airport will remain the predominant airport in Utah. However, as growth continues in Utah Valley, the institution of commercial service is very likely to occur in the future. Charter service connected with nearby metropolitan areas could prove economically viable. Further, the establishment of commercial service to larger hubs would financially benefit Provo City. High-tech and manufacturing facilities, tourist industries, and Brigham Young University and the Missionary Training Center would all benefit as a result of bringing commercial service to Provo City. Commuter air service could supplement access to Provo, which is currently limited to primarily vehicular access by way of I-15. With the exception of recent security requirements, the airport is capable of commercial commuter service now. As the airport continues to grow, FAA regulations will require that the City provide for greater airport related emergency/rescue services.

## **Railroads**

Freight rail service in Provo City is provided by the Union Pacific Railroad, the Utah Railway, and the Burlington Northern Santa Fe Railroad. The Union Pacific Railroad acquired the former tracks of the Southern Pacific Railroad, which are former tracks of the Denver and Rio Grand Western Railroad. The Utah Railway is a coal hauling railway that mainly operates from Provo to Helper, near Price, but has track rights from Salt Lake City, Utah, to Grand Junction, Colorado. The Burlington Northern Santa Fe Railroad has track rights from Denver, Colorado, through Provo, to Salt Lake City on the tracks recently acquired by the Union Pacific Railroad.

Provo is a scheduled daily stop for trains number five and six for Amtrak, the National Rail Passenger Service. The California Zephyr originates in Chicago, Illinois, and terminates in Oakland, California, passing through the great cities of the West including Denver, Salt Lake City, and Sacramento, California, before heading back to Chicago from Oakland. The location of the train stop is Provo's new train station at 300 West 600 South.

The mainline tracks pass through Provo, paralleling South State Street, 600 South, and I-15. Approximately 25 trains pass through Provo on a daily basis. Many of these trains are interstate trains that do not stop or switch in Provo. Some trains cause minor delays and inconvenience for motorists and pedestrians at designated crossings. The railroad tracks also create the need for long viaducts, the need for which is evident on the southern part of University Avenue and West Center Street. In addition to impedances to traffic as a result of the viaducts, individual access points along the railway corridor (railroad street crossings for automobiles and public buses and separate or associated bicycle/pedestrian crossings) are often limited along the tracks for safety purposes. Established crossings have become increasingly important in facilitating these modes of transportation along the urbanized sections of the railway corridor as their associated travel demands have increased throughout the community.

## **Transportation Demand Management**

Transportation Demand Management (TDM) is a system of actions intended to alleviate traffic problems through improved management of vehicle trip demand. The purpose of TDM is to maximize the movement of people, not vehicles, within the transportation system. Provo City recognizes TDM as a powerful tool in reducing congestion, improving air quality and community livability. TDM must play an increasingly important role in transportation decisions and addressing transportation related problems. Three examples of current TDM actions include:

1. mandatory trip reduction programming for government employers;
2. voluntary trip reduction programming for private employers;
3. public education efforts toward reducing trips by individuals.

Initial use of TDM strategies by the population, especially major employment centers, should be voluntary with incentives that are attractive enough to actually achieve significant use. These include, but are not limited to: providing subsidies to transit users; preferred or free parking for

rideshare vehicles; creating on-site services such as cafeterias, bank or automatic teller machine access, and day care; and other incentives that decrease the need for someone to drive alone to work.

The possibility exists that voluntary use of all available TDM strategies will not achieve the desired shift to alternative transportation modes. In this case, serious consideration should be given to gradually implementing mandatory TDM strategies. Large employers may need to develop a TDM program and/or create disincentive-based options such as eliminating employee parking allowances and requiring payment for one-occupant vehicle parking. TDM strategies are discussed throughout the transportation and circulation element and should be included in periodic reviews of the City's Transportation Master Plan.

## **Parking**

The supply and price of parking are important considerations when someone is deciding which mode of transportation to use. The thinking in the past has been to always provide an adequate supply of parking for each individual land use. This encourages automobile use and consumes valuable land for parking – land that could be used for better purposes. As methods to encourage the use of alternatives to the one-occupant automobile are considered, controlling the supply and cost of parking is an effective method for encouraging change. New parking lots including more than 600 parking stalls, and expanded parking lots over 350 parking stalls, require a permit from the Utah Division of Air Quality. The project must show that new and expanded parking lots are including the best available alternatives to automobile travel including, but not limited to, public transit access, bicycle access and pedestrian access, and on-site transit stops if warranted, as well as means of limiting and improving the efficiency of motorized vehicle use, such as limited parking availability, access control, and use of roundabouts within the traffic circulation plan.

Recognizing that parking is a complex issue that impacts residents, businesses, and redevelopment opportunities, it may be useful for the City to commission a comprehensive parking plan. A city-wide parking study and management plan should be conducted.

### **Employee Parking**

Currently, many employers provide free parking for their employees. This free parking is essentially an employer-provided, tax-free benefit, which serves as an inducement to drive to work. There are several TDM techniques which are available to control commuter parking. They include four suggestions: (1) peak-hour pricing for long-term parking, (2) parking tax on private parking, (3) requirement to charge employees for parking, and (4) employee transportation allowance.

Peak-hour pricing for long-term parking increases rates during morning peak commuter arrival periods. This impacts the commuter while missing most shoppers and deliveries. In areas with available transit capacity, transit use increases. In areas without adequate transit service, ridesharing and alternative work hours see the greatest increase. A parking tax on private parking increases the City's tax base, which is then used in needed transportation projects. Requirements to charge employees for parking will result in reduced parking needs because of increased use in public transit,

ridesharing, and other alternative modes of transportation. Use of an employee transportation allowance encourages the employer to provide a cash allowance equivalent to the value of the employer-provided parking. The employee has the option of using the allowance for on-site parking or for lower-cost options, such as purchasing a transit pass, ridesharing, bicycling, or walking, and pocketing the unused balance.

Studies in other cities have reported that parking management measures by employers resulted in a 4% to 48% reduction in vehicle trips. Employees shifted their travel to ridesharing and increased transit use. Parking spaces not utilized by employees are then available for retail use or other site improvements; in new projects, land and money not invested in these additional parking spaces can be invested in improved use of these resources. This type of planning will require changes in current Provo City ordinances and practices.

### **Customer Parking**

The convenient availability of short-term parking is vital for the success of businesses. Provo City provides free parking downtown, with time restrictions and parking enforcement to encourage the turnover of on-street parking for customer use and to discourage long-term parking by employees or other non-customers. Business owners are provided with waivers for customers who require more than two hours of parking to patronize downtown businesses during a single trip to assist personal service businesses, such as hair salons, and to encourage customers to visit multiple businesses for shopping, dining, and other services that can be obtained in the downtown district. Increased public information to improve awareness of parking locations and familiarity with waivers for longer-term shopping use can help to dispel customer's perceptions that patronizing downtown businesses is inconvenient – a common complaint associated with the perceived lack of parking facilities and time limits. Increased long-term parking restrictions and continued enforcement of restrictions may be necessary to further encourage alternatives to parking by employees and one-occupant vehicle commuters to make these limited parking spaces available to customers. Provo City will continue to work with the Downtown Alliance to identify opportunities for additional and more efficient parking designs and locations.

### **Residential Parking**

Neighborhood preservation and enhancement efforts need to consider parking. Controls placed on the availability of business and institutional parking may force commuters to park in adjacent residential neighborhoods. A residential parking permit program has been enabled by City ordinance and may be requested by neighborhoods affected by overflow business and university parking in residential areas. A City-sponsored study of parking needs should be coordinated with BYU to determine appropriate parking ratios for high-density residential redevelopment south of campus. The feasibility of the City continuing to subsidize unrestricted, free parking on streets should be evaluated. Care should be taken to protect surrounding one-family residential neighborhoods from overflow parking associated with school commuters and residents of nearby campus-oriented housing. Parking ratios for new housing should be evaluated in the context of the development and its relationship to the surrounding neighborhood.

## **Transit-Oriented Development**

Parking in future Transit-Oriented Development (TOD) districts should be evaluated for appropriate reductions in order to further enhance the need to use alternative transit options for person living and/or working and shopping within them. Personal vehicle use is likely to decrease in these districts when parking is scarce yet transit options are high. Reductions in parking for TOD districts may need to be implemented in conjunction with parking permit programs for adjacent low-density neighborhoods if parking is anticipated to spill over into these areas.

## **Funding**

Funding for transportation is divided into two categories: capital budget for the construction of new facilities and an operating budget to fund the day-to-day staffing and maintenance work of the City. A capital improvements program is developed as part of the City's budget each year. Current funding sources for capital improvements in the City include: (1) General funds, (2) Community Development Block Grants, (3) Class "B" and "C" State of Utah gas tax, and (4) Utah Department of Transportation funds.

## **Education**

During the development of this General Plan, many comments were received from the public about the need for more and better education of the public regarding transportation and traffic issues. The public also stressed the need for information to be made available on transportation issues so that they could better understand why decisions are made by City officials. In addition, public education has been demonstrated to have a measurable impact on commuter choices and travel behavior. The Provo City Engineering Division and Community Development Department participate each year with the Utah Department of Transportation (UDOT), MAG/UVMPO, and other Utah County municipalities in an "open house" dedicated to local and regional transportation issues. These annual open houses provide an opportunity for Provo City residents to learn about transportation plans and construction projects and to provide input to the various public agencies.

## **Future**

Provo City should:

1. Continue to work with neighborhoods desiring to implement options provided by City ordinance for parking permit programs.
2. Conduct a parking study, in coordination with Brigham Young University, to determine appropriate parking ratios for high-density residential redevelopment south of campus. The feasibility of the City continuing to subsidize unrestricted, free parking on streets should be evaluated.

3. Consider a study to examine the future use of old Nevada Avenue, from Slate Canyon Drive to 900 South.
4. Consider a study of one-way streets in the area of 700 East to 800 East, from Center Street to 300 South.

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