Transit Oriented Development Wasatch Front Guidelines

Envision Utah

MAY 31, 2002

Appendix A: Specific Station Area Plans

1. 2100 South- Central Pointe Station

2. 4500 South- Murray North Station

3. Layton Downtown- Proposed Commuter Rail Station

4. West Jordan- Proposed Light Rail Station

Appendix A: Specific Station Area Plans

Introduction to Case Studies

The case studies that follow introduce each of the study sites, the prominent issues that arose from the workshop, the process by which each site became a set of solid ideas and goals regarding TOD, and the development prospects at each location. The plans and maps presented here represent the results of a workshop process, and not are not actual development plans. Rather, they are examples of how these areas might be developed over time in a transit-oriented manner. Details of the site plans such as roadway alignments, proposed land uses or development intensities at these sites will inevitably change to account for unknowns such as economic cycles, discoveries of contamination, or property ownership issues, and in what order properties come up for development.

2100 South- Central Pointe Station, South Salt Lake City

2100 South station, at 2100 South and 300 West, involves two jurisdictions, Salt Lake City and South Salt Lake City. The site is a developed urban area containing commercial and light industrial uses, established residential neighborhoods and very few undeveloped properties. The area contains auto-oriented commercial and industrial development located south of 2100 South and along 300 West. North of 2100 South there is a greater residential presence. Two major north-south corridors bind the study area - I-15 to the west and State Street to the east, with freeway on and off ramps at 2100 South.

Economic Opportunities and Constraints

South Salt Lake City is a mature part of the Wasatch Front region with much slower projected overall population and employment growth rates than the region as a whole over the next 25 years. In order for the area to become a vibrant place to live and do business, new growth will have to take the form of infill development and strategic revitalization projects. The area around the TRAX station is currently a commercial district, with a residential concentration north of 2100 South and industrial activities to the south. New residential product types into the area immediately adjacent to the TRAX station and an appropriate mix of activities along 2100 South will maximize the opportunity for transit oriented development. An overview of real estate market conditions and economic trends suggests the following options for station area development:

- There is strong demand for new housing in the area but land supply is perceived as constrained.

- TOD guidelines for the area will signal the development community that new housing can be produced by redeveloping existing underutilized sites, addressing land supply concerns. New residential neighborhoods should connect to existing residential neighborhoods. This existing neighborhood is in Salt Lake City and commands higher real estate values than comparable units in South Salt Lake. Creating an image for the TRAX station area that is associated with the cache of Salt Lake City establishes higher value for new units and creates incentive for developers to build infill projects.

- Most retail uses in the area around the TRAX station are auto-oriented and serve a regional market. There is currently less demand for smaller-scale local serving retail amenities. While these uses can be viable, TOD guidelines for this area should concentrate pedestrian-oriented retail to key sites along 2100

South and limit the amount of ground floor retail so as not to over-saturate the limited market.

- There is virtually no demand for significant new office space in this area. The 2100 South area likely will never become a significant office node. Therefore, while office uses should be allowed in the TOD guidelines, they should not be considered a primary or catalyst use.

- The existing concentration of light industrial uses in the 2100 S. area appears stable and should be incorporated into future plans for the area, but should be appropriately buffered from residential uses.

Proposed Land Use and Urban Design Guidelines

Implementing TOD at the 2100 South study site involves addressing zoning issues, land consolidation, dual city involvement, and settling on an appropriate development scale. The 2100 South workshops focused on the reuse of underutilized industrial and commercial properties and the enhancement of established residential neighborhoods. Workshop participants felt that the area needs new residential opportunities, and improved pedestrian routes between residential areas and the station. Future area opportunities include a proposed TRAX extension to West Valley City to the west and rails to trails eastward toward Sugar House, with a long-term potential for a TRAX extension, both of which would bring more people through the study area that new development could capture.

Workshop participants recommended higher-density development along 300 West, which currently houses big box commercial buildings that sit far from the street behind large surface parking areas. New development would locate mixed-use buildings near the street and increase parking lot walkability by adding shade trees and designated sidewalks.

A new street within existing blocks just west of the rail corridor would provide links from the north and south to 2100 South, and allow for smaller scale, mixed-use development within walking distance of the station along a pedestrian-friendly street. Mixed-use development, primarily commercial with office above, is seen as critical to bolster the viability of a pedestrian-oriented zone along 2100 South from 300 West to State Street. With the draw of local employment centers and the existing and proposed residential neighborhoods, increasing the walkability of 2100 South would help support businesses that provide daily services for those who live or work in the area.

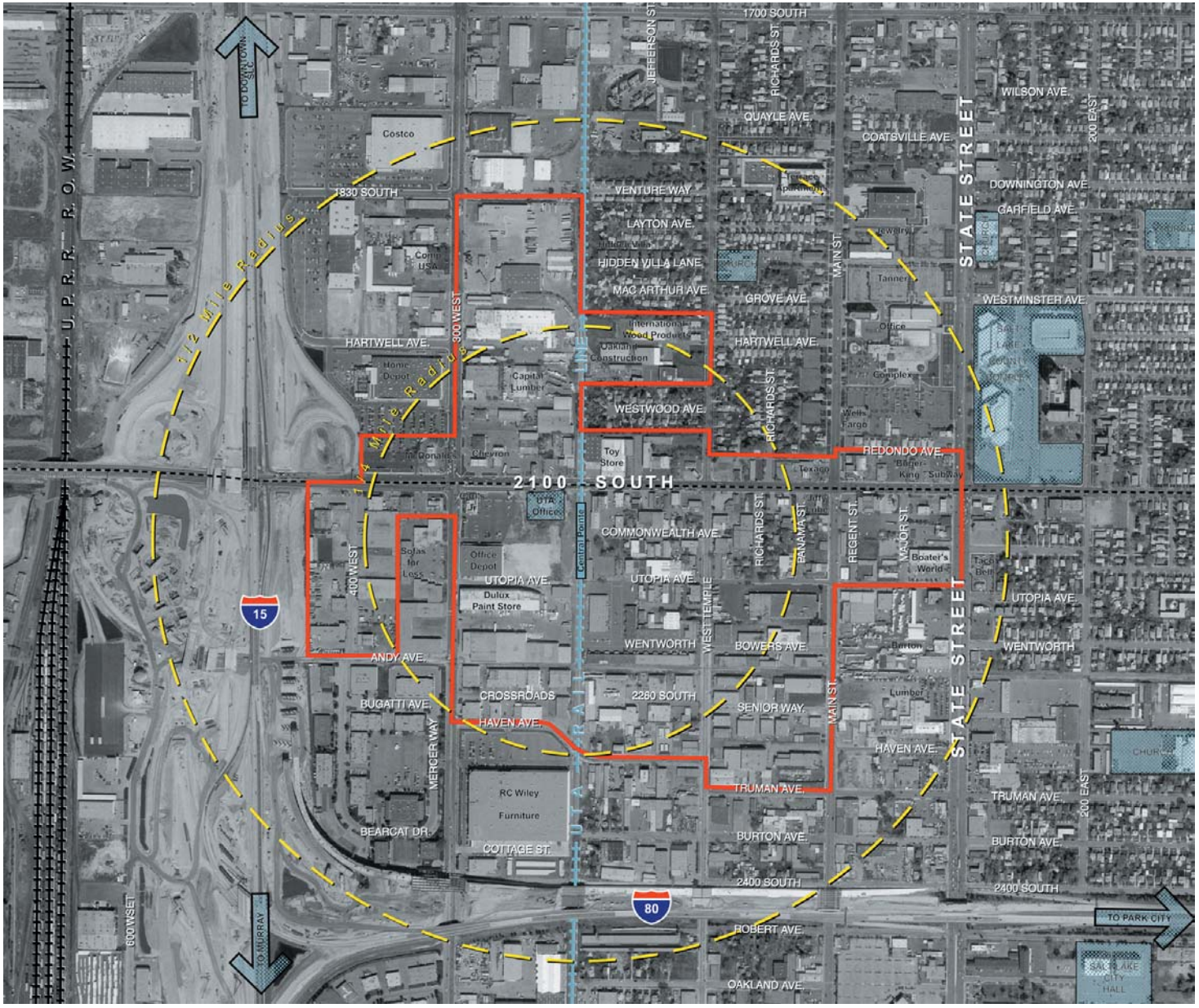
East of the station and south of 2100 South would contain a new higher-density residential neighborhood, accommodating a variety of income levels and local amenities within walking distance of the station. This area currently comprises many small properties. New residential development in this area would feather out into surrounding light industrial and commercial area using live/work units as a transitional building type. Currently, South Salt Lake increases to three times its population during the day due to the influx of workers, and would benefit from increased home ownership opportunities.

Future development near 2100 South Station relies on the consolidation of commercial and industrial properties within the study site. Currently, large-scale development of catalyst projects is limited due to the large number of small property owners and small average parcel size. To achieve redevelopment-scale properties through site consolidation, property owners and South Salt Lake City prefer the voluntary joining of properties and similar options over the use of eminent domain. However, the use of the RDA may still be a consideration.

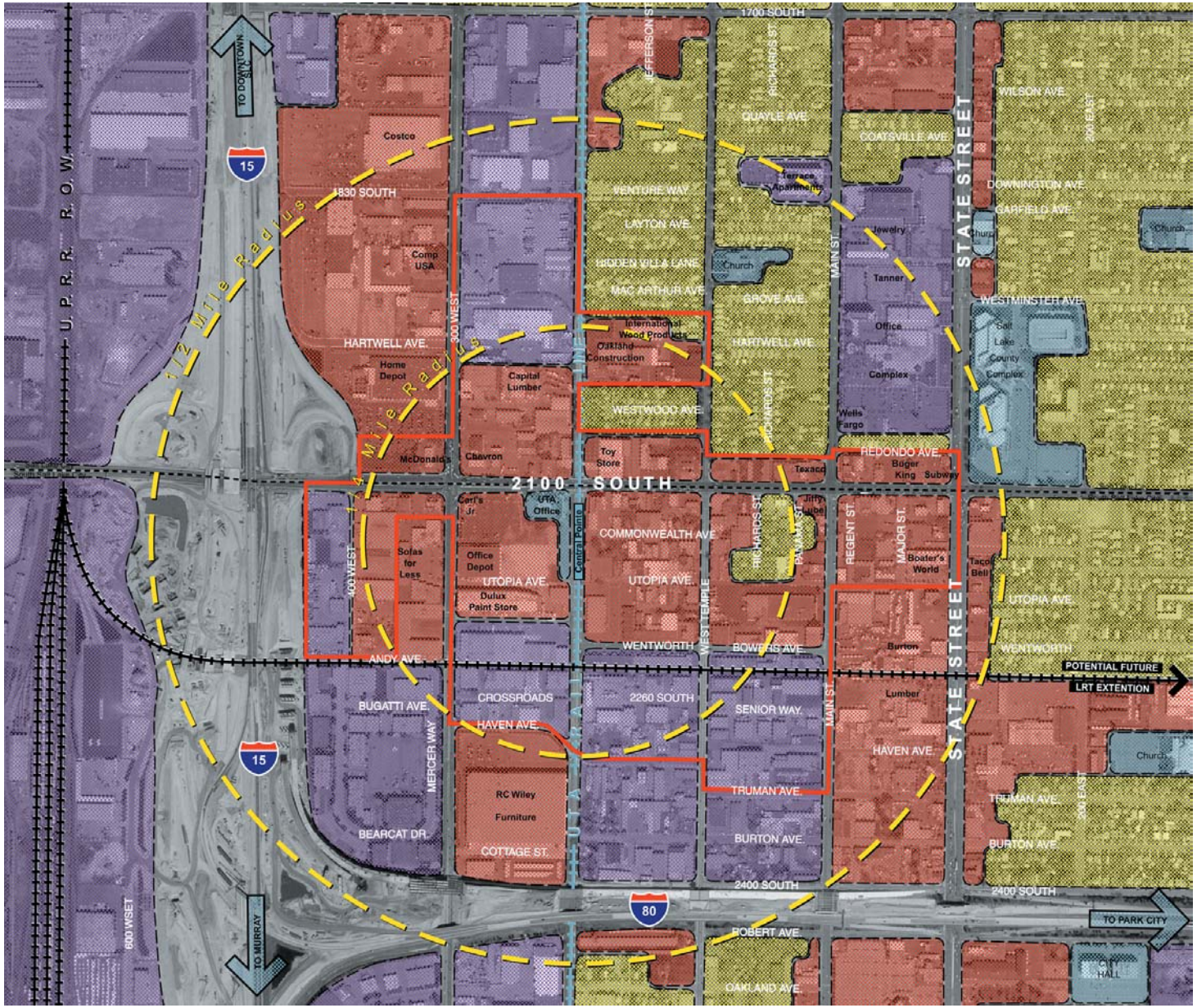
Existing Conditions

Study Boundary

1/4 and 1/2 Mile Radius



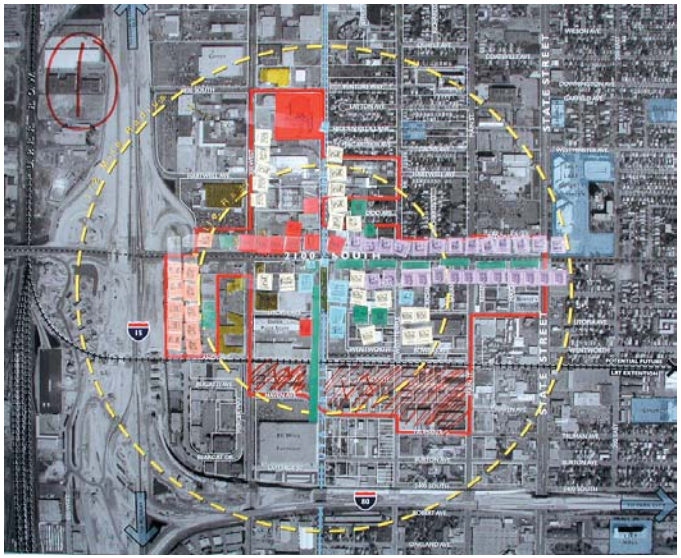
2100 South- Central Pointe Station

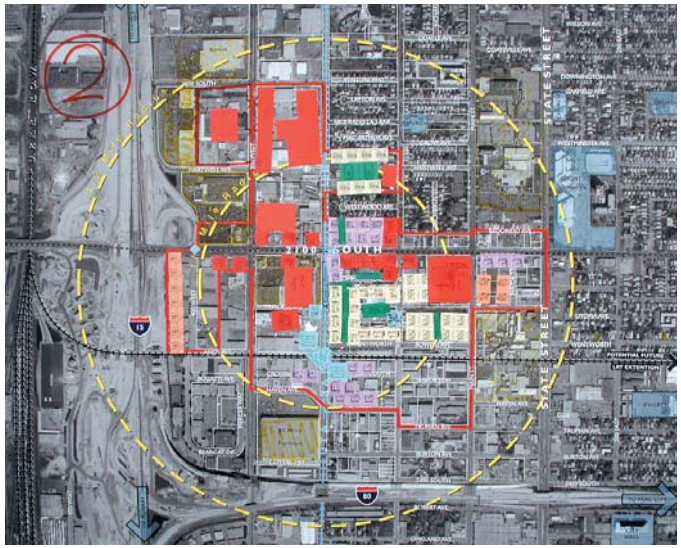


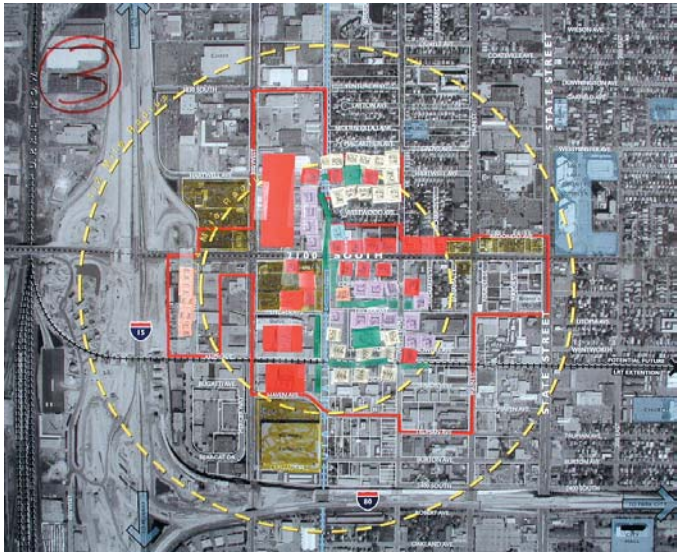
Approximate Land Uses

- Retail / Commercial
- Office / Industrial
- Housing
- Civic Uses
- Site Boundary
- City Limit
- Light Rail
- Heavy Rail

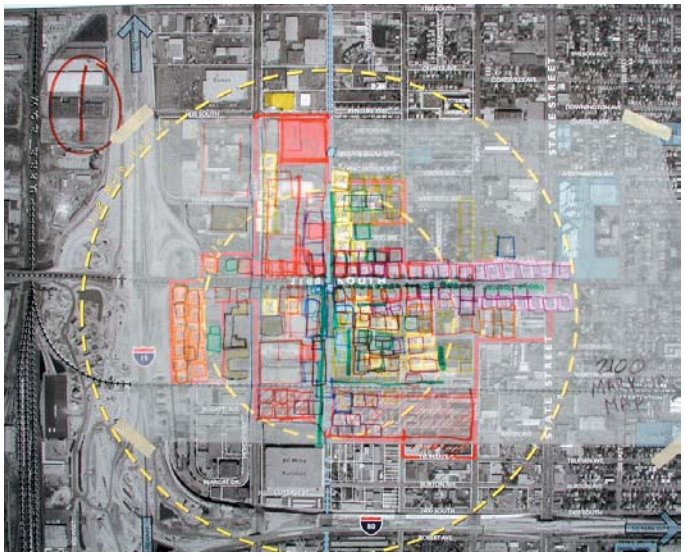
Workshop Maps



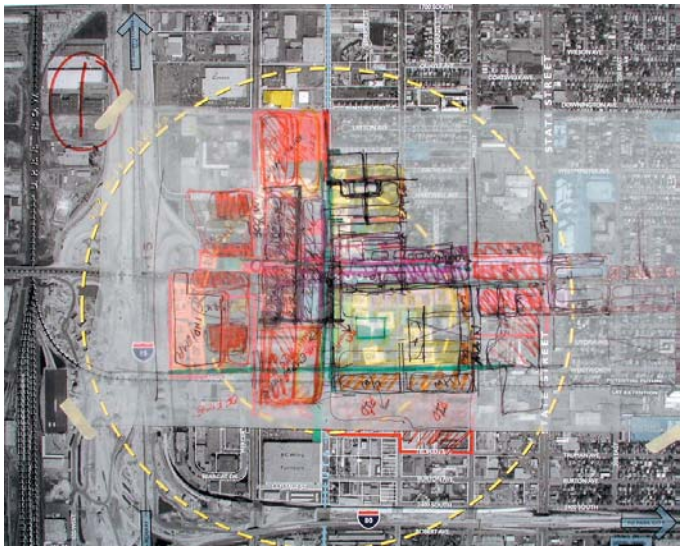




2100 South- Central Pointe Station



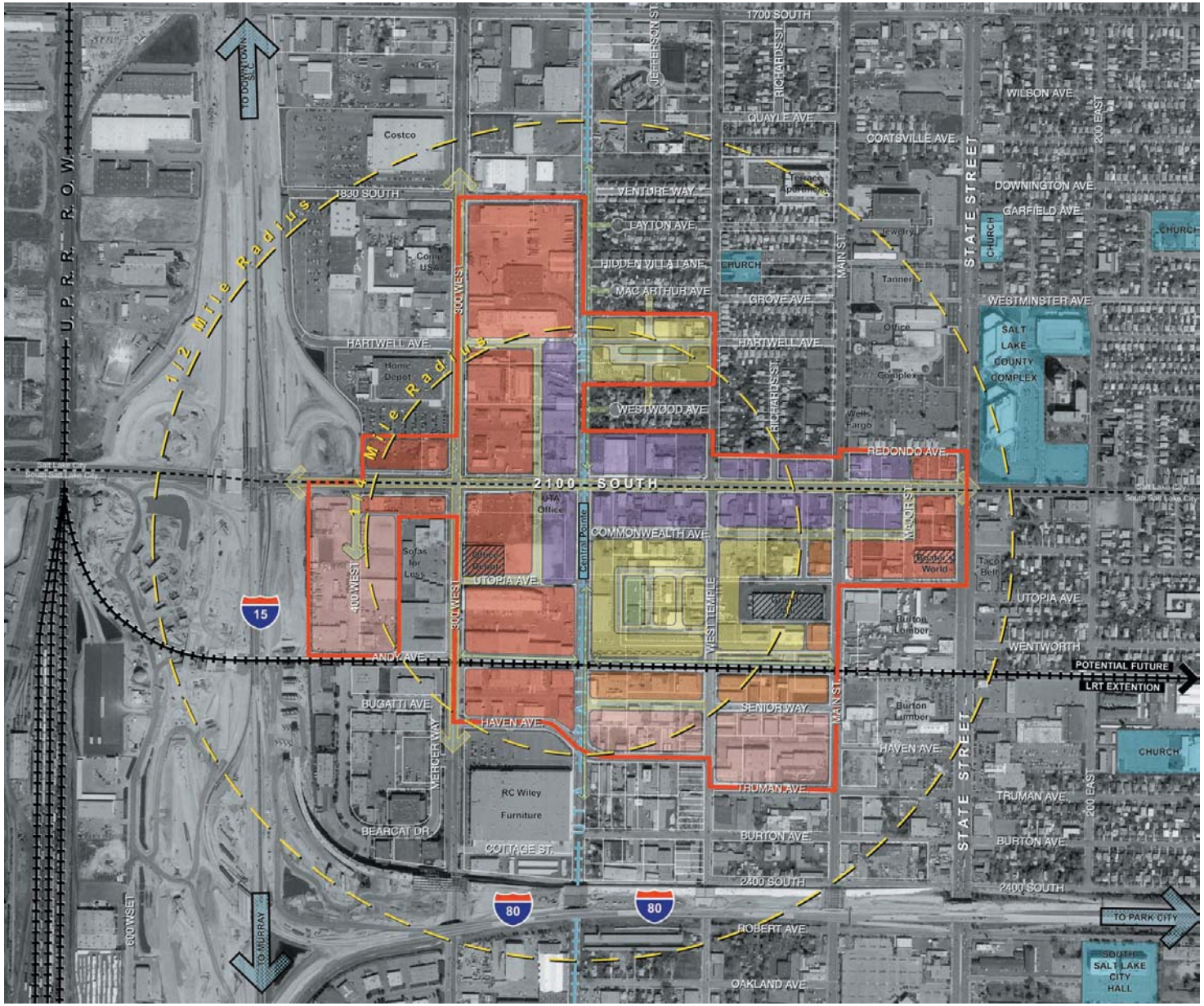
Mark-Up Map



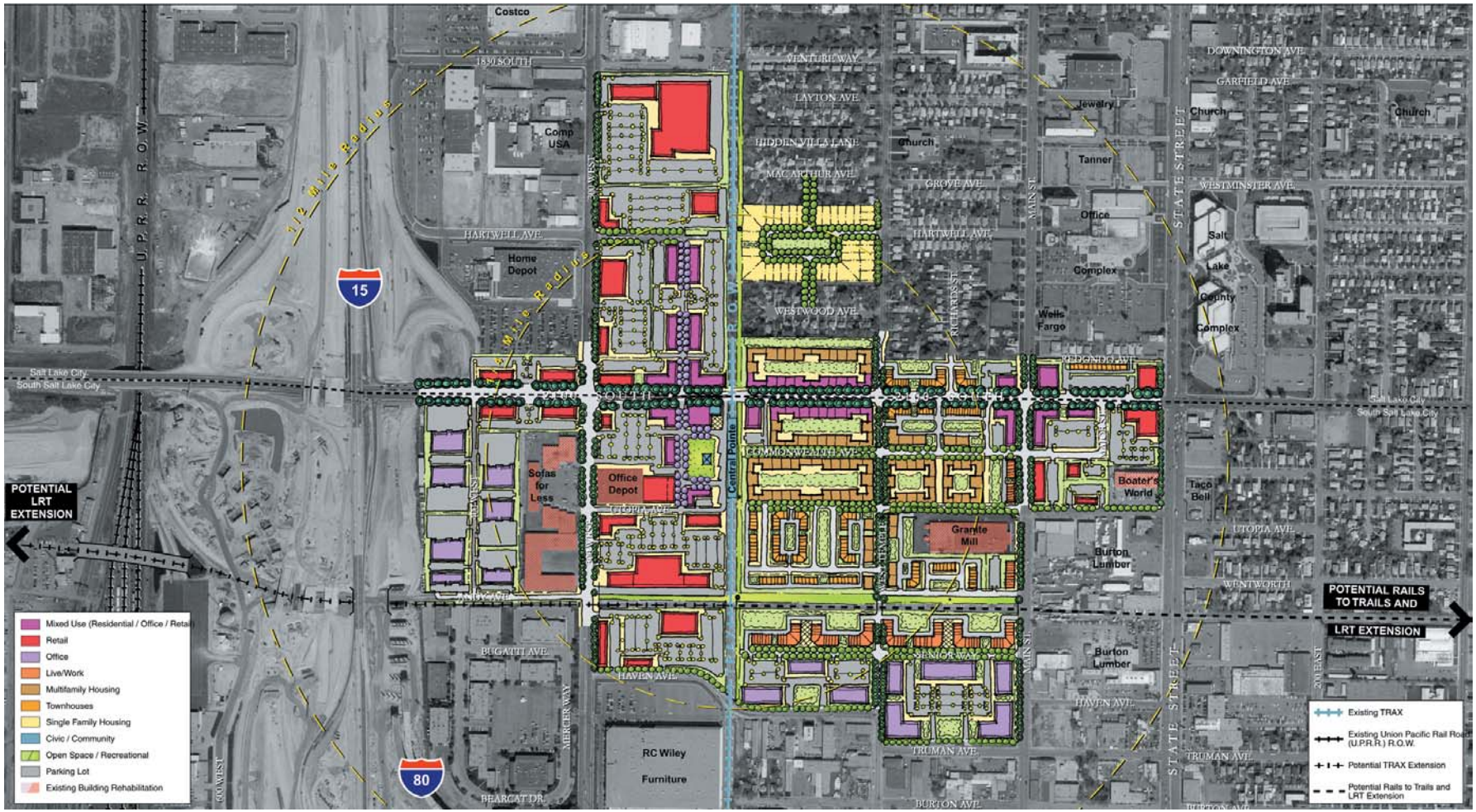
Consensus Map

Synthesis Plan

- Retail
- Mixed Use (Residential/Office/Retail)
- Employment
- Housing Units
- Live / Work Units
- Open Space / Green Connections
- Civic Uses
- New Street / Street Improvements
- Existing Building and Rehabilitation



2100 South- Central Pointe Station

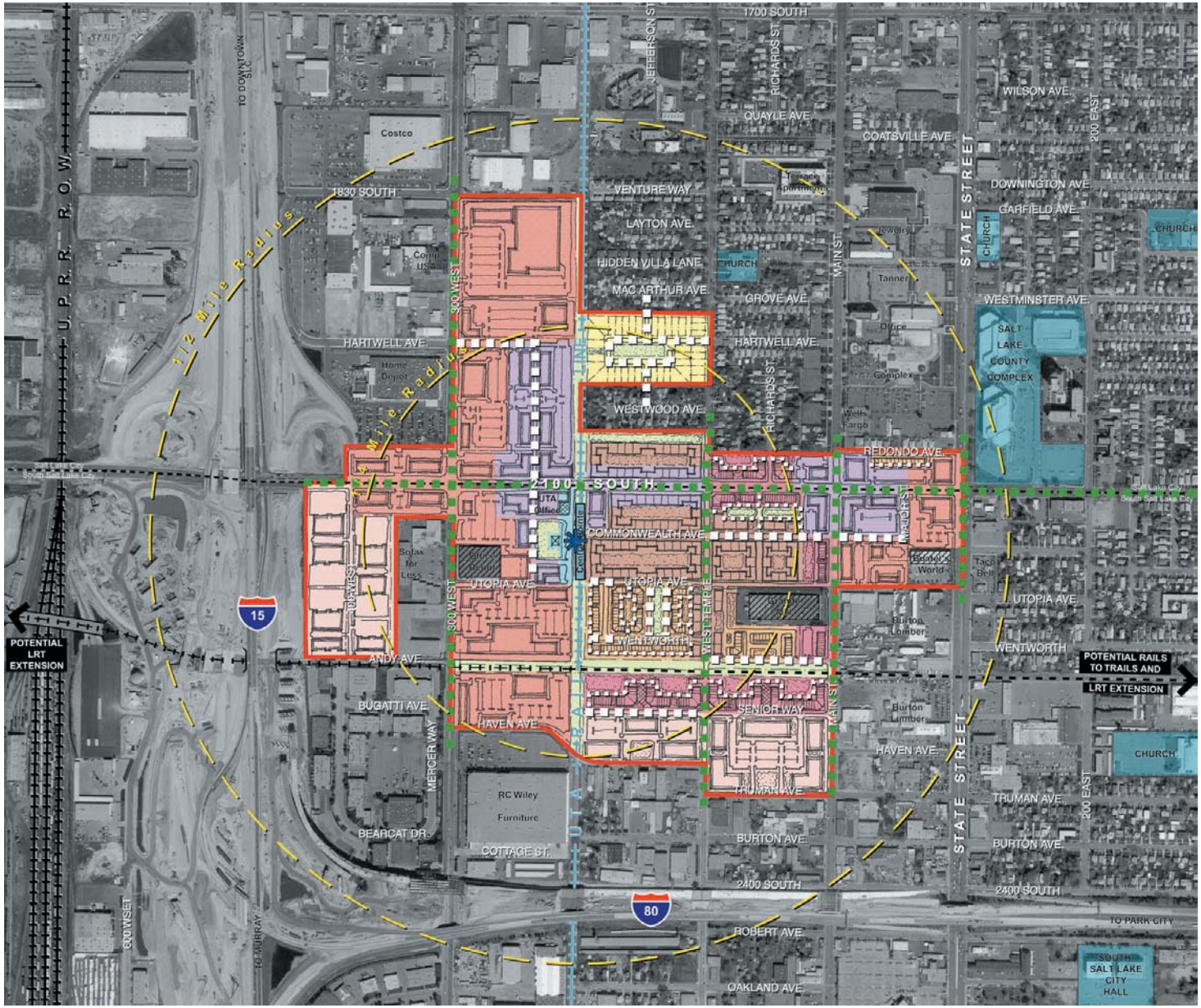


Illustrative Plan

This site plan represents an example of the potential redevelopment at 2100 South. In order for this plan to become a reality, some property consolidation will be necessary. Without property consolidation, this redevelopment of this area will be very different, with more small-scale developments creating a greater pedestrian orientation over many years.

Regulating Map

- Mixed Use (Residential / Office / Retail)
- Retail
- Employment
- Single Family Housing
- Townhouses
- Live / Work Units
- Multifamily Housing
- Open Space / Green Connections
- Civic / Community
- Existing Building and Rehabilitation
- Transit Node
- Major Street Improvements
- New Street
- New Alley



2100 South- Central Pointe Station

2100 South- Before

2100 South- After

PHOTO

4500 South- Murray North Station

The Fireclay Station study area primarily consists of several vacant or underutilized industrial parcels adjacent to the north-south TRAX rail corridor just north of 4500 South and between State Street and 300 West. Located approximately one mile northwest of the downtown core of Murray, this study site provides the largest potential redevelopment area among the four case study sites. As much of the vacant land was formerly used for industrial activities, site redevelopment must address brownfield and environmental mitigation issues. The study site has access to numerous bus routes, TRAX, and the 4500 South exit of I-15.

Economic Opportunities and Constraints

Murray's population is slightly older than the regional average, with somewhat smaller household sizes. Although Murray's household income is also slightly lower than the region's, there is a higher rate of homeownership. Hence, Murray appears to be a stable, although aging community that is positioned to capture new younger households as older community members transition out of their existing homes. Murray also has a strong economic base oriented towards services and trades. Although the area immediately surrounding the 4500 South station is currently primarily industrial in nature, this is not the City's economic strength; these uses are likely to be phased out over time. Murray's population growth is projected to be relatively small. However, expected job growth will be strong relative to population growth, although still projected to be smaller than the region as a whole. Real estate market conditions and regional economic trends suggest the following opportunities for development around the 4500 South station:

- Many of the industrial activities currently located around the TRAX station are either marginal now, or will become marginal over the long-term. Most of this land will be available for future redevelopment.
- There is a strong residential housing market in Murray for all types of housing products including single family houses and moderate density multi-family units.
- The area around the TRAX station can potentially support local and community serving retail uses. These activities will be most viable located along a major arterial, rather than adjacent to the station itself.
- Some future office development may be viable in this area. Office uses should be concentrated to create a critical mass. Mixed-use office and residential buildings may also be viable, depending on local market conditions at the time a particular project is being considered.

Proposed Land Use and Urban Design Guidelines

The study site consists of three distinct areas between Central Avenue and 4500 South, divided by the barriers of the Denver and Rio Grande (D&R) and TRAX rail lines. West of the D&R rail line primarily contains large industrial parcels with easy access to I-15. A second area, also composed of large industrial parcels, extends from the D&R rail line to TRAX. The third area, extending from TRAX east to State Street, contains some large-scale commercial properties. With the current understanding that no additional at-grade crossings of the TRAX line will occur within the study site, the area is limited to only one existing at-grade crossing, at Fireclay Street. Workshops focused on creating easy multi-modal access between all portions of the site and to surrounding areas.

TOD plans for this area must consider mitigation of brownfield sites and the limitations of at-grade crossings at the TRAX and freight rail lines that cut through the area. The past industrial uses necessitate a comprehensive environmental assessment in order to understand each property's development potential. Although environmental assessments may highlight limits regarding the use or intensity of

development, many development opportunities still exist after appropriate clean up procedures have been followed. For successful redevelopment, the city and regulating agencies must participate in a dialogue with property owners, potential developers and business operators to assess the costs, constraints and conditions for development.

4500 South also contains numerous amenities. There is excellent visibility and site prominence from the intersection of the highly traveled 4500 South, 300 West and I-15 on/off ramps. This amenity benefits the area west of the D&R rail line. This large area has the potential for property consolidation and development into an employment center or business park.

At the northeast corner of the study site, the Murray Laundry Tower is one of the city's few remaining icons. Workshop participants felt it should be incorporated into the development of a parkway along Big Cottonwood Creek. The creek divides the northern portion of the study area and provides an additional amenity, especially if the area develops residentially. Participants felt it was important to develop a varied housing stock, and to use Big Cottonwood Creek as a strong area-identifying feature and amenity. New housing opportunities were seen as most appropriate to the north and west of the station, where they could capitalize on the amenity of Big Cottonwood Creek. Housing density would decrease outward from the core.

The workshop proposal extends Fireclay west under the D& R rail line to 300 West. Lined with mixed-use buildings, this axis would create a walkable east/west connection across the site's entirety. The site's western portion would be redeveloped as an employment center, with street-fronting buildings creating a more walkable character and intimate streetscape. New north/south surface streets would provide other connections across the site. Creating these connections will take a joint effort between Murray City, the rail lines, transit providers, property owners and developers.

4500 South Station currently contains a moderate park-and-ride lot with access to TRAX and bus service. Due to the park-and-ride lot's remote location one block west of Main Street and two blocks north of 4500 South, there is currently limited retail and commercial development adjacent to it. Future area development would benefit from mixed-use development of offices over smaller-scale retail within a walkable core area around the intersection of Main and Fireclay Streets.

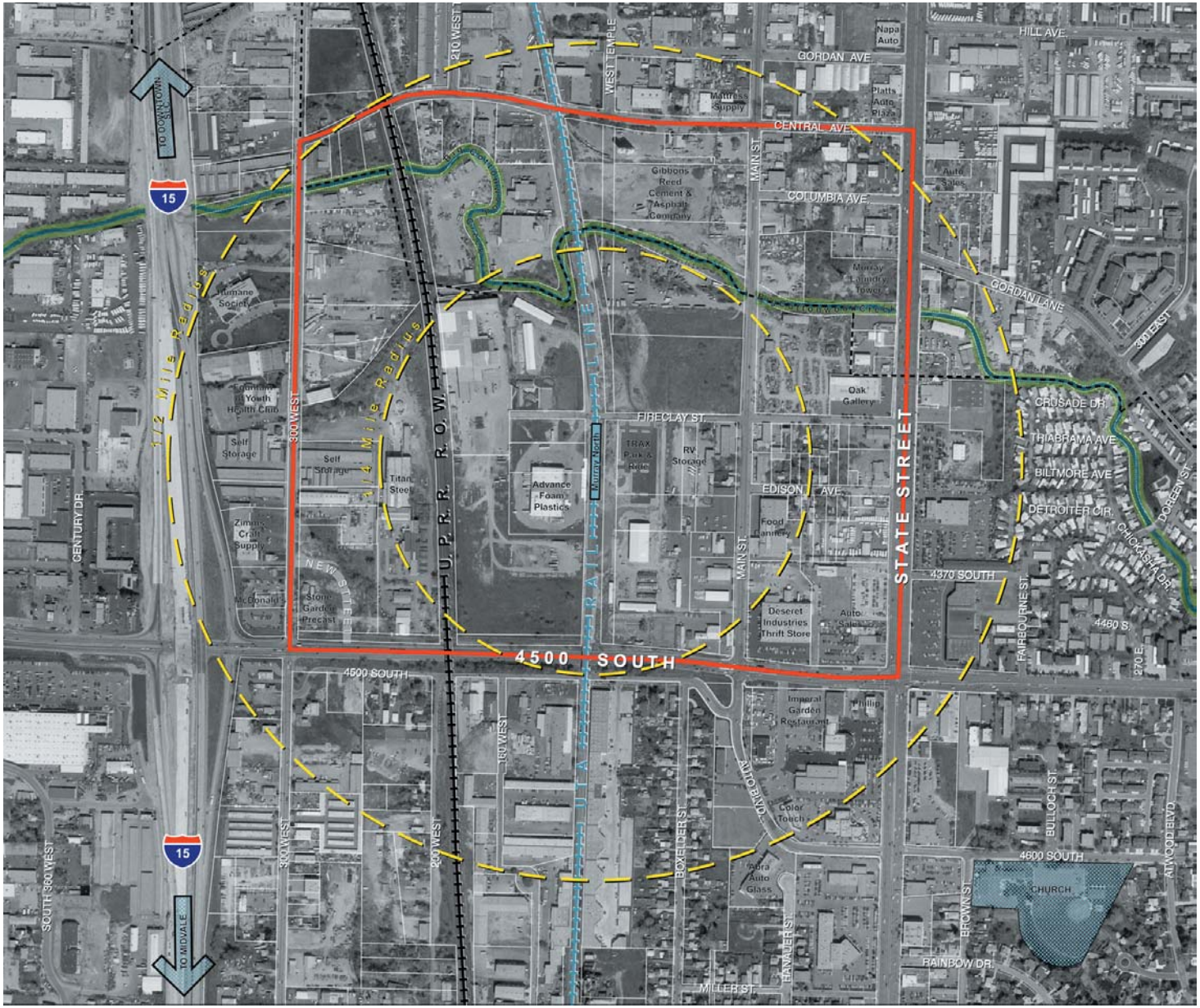
4500 South Station provides an example of the great potential to redevelop industrial properties along both the light rail and commuter rail corridors. Brownfields mitigation, rail crossings and construction of additional surface streets are issues that must be addressed prior to full-scale development.

Proposed site for TOD at 4500 South station, Murray, Utah

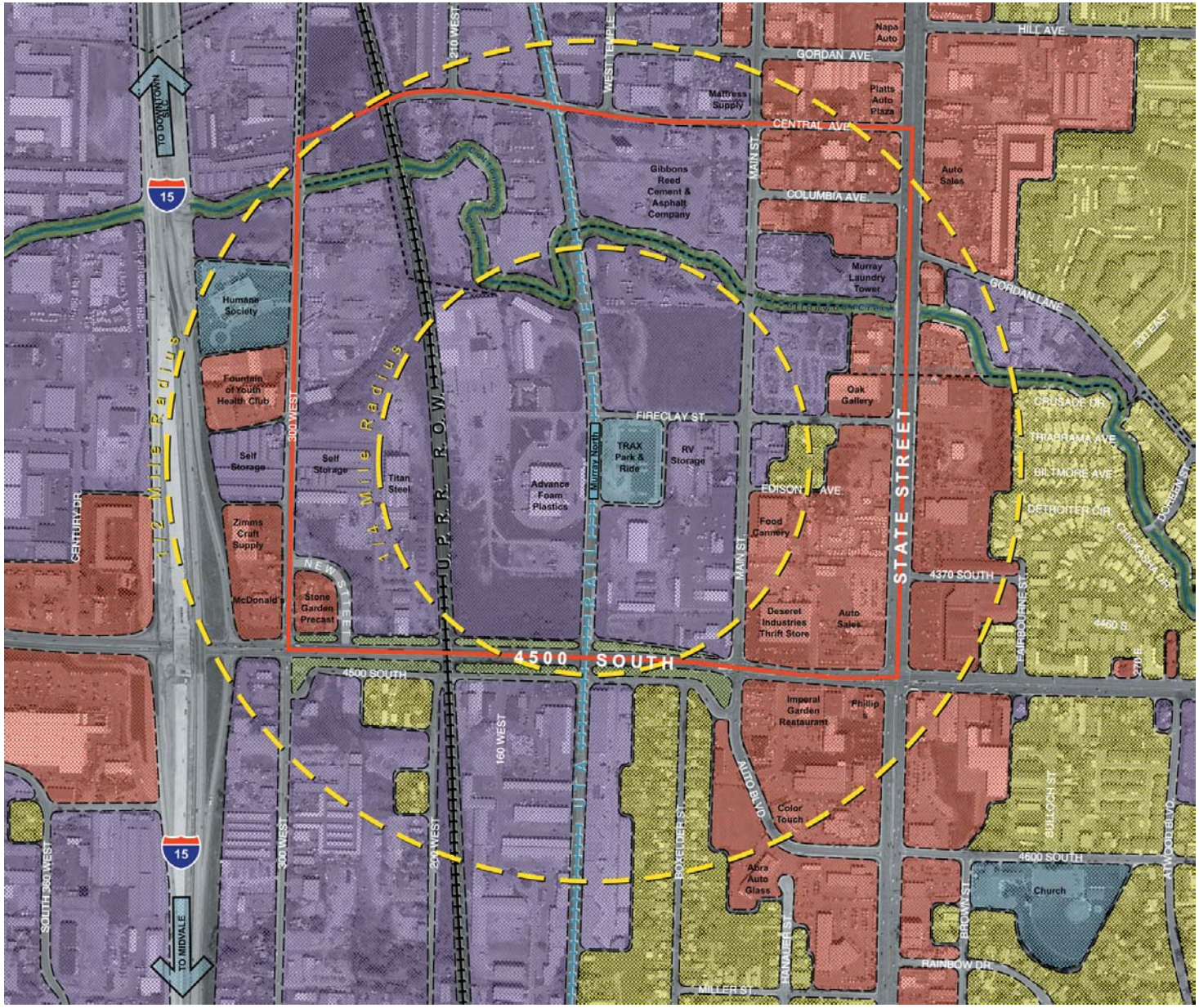
Existing Conditions

Study Boundary

1/4 and 1/2 Mile Radius



4500 South- Murray North Station



Approximate Land Uses

- Retail / Commercial
- Office / Industrial
- Housing
- Civic Uses
- Site Boundary
- City Limit
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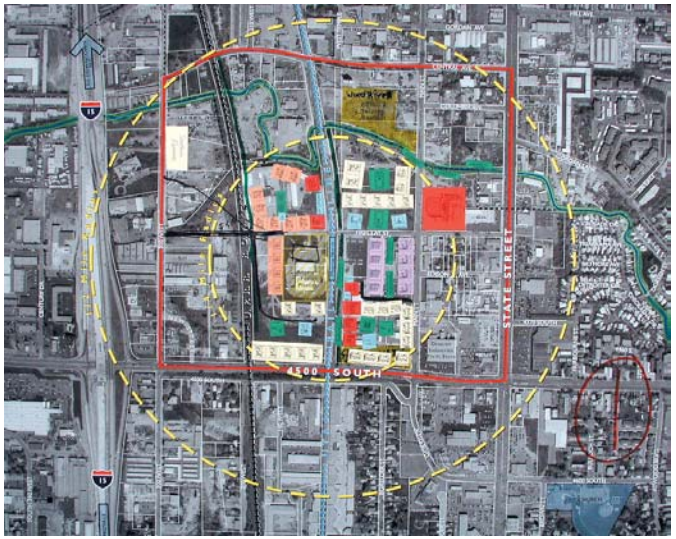
- Heavy Rail

Workshop Maps



4500 South- Murray North Station

Workshop Maps

Mark-Up Map

Consensus Map

Synthesis Plan

- Retail
- Mixed Use (Residential/Office/Retail)
- Employment
- Housing Units
- Live / Work Units
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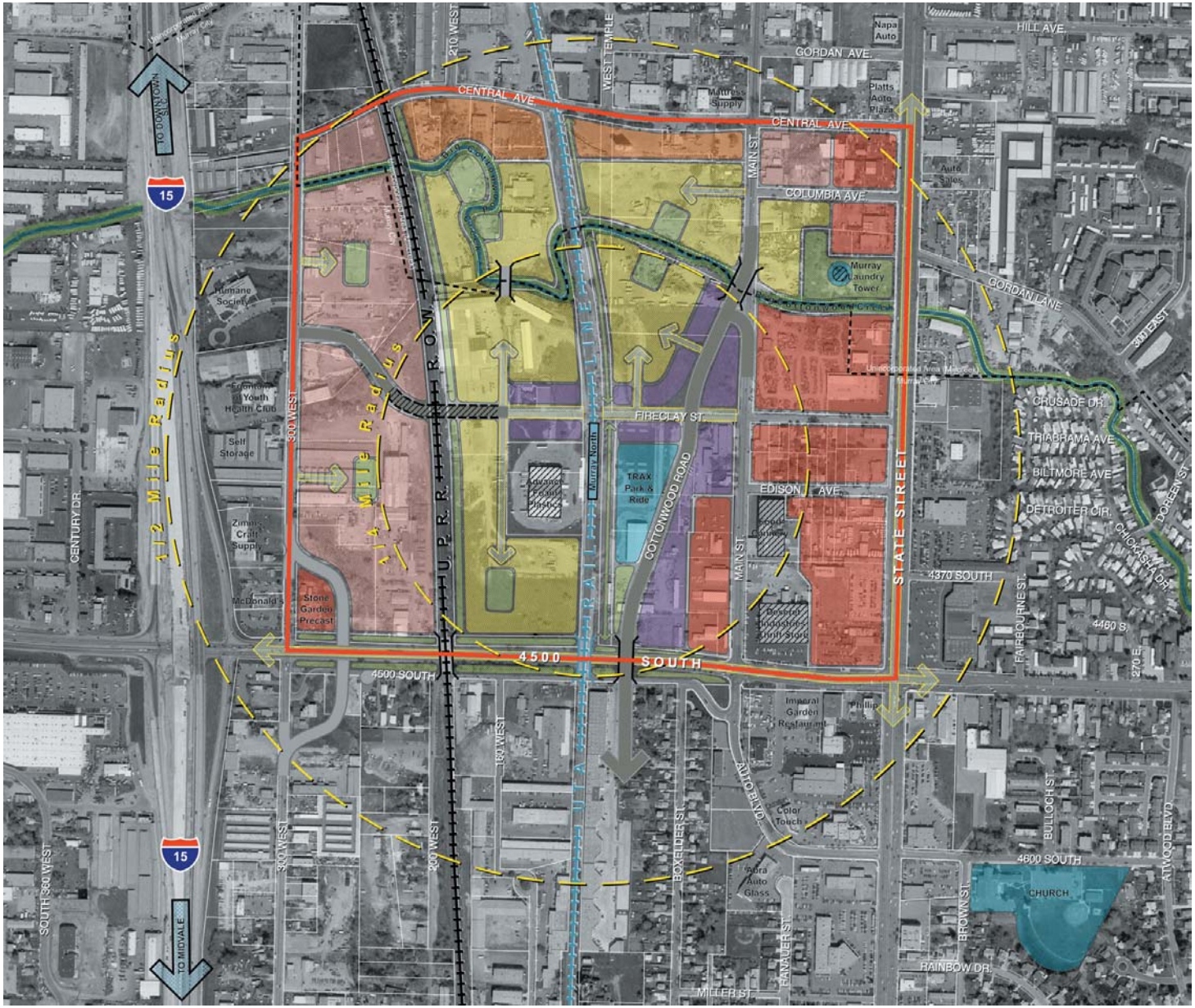
- Civic Uses
- New Street / Street Improvements
- Existing Building and Rehabilitation



4500 South- Murray North Station

Illustrative Plan

This site plan illustrates the need for site plan and land use flexibility. The parcel to the station's northeast may have environmental contamination issues, potentially precluding the residential uses currently shown there. If this is found to be the case, other uses may be more appropriate in that location.

Regulating Map

- Mixed Use (Residential / Office / Retail)
- Retail
- Employment
- Single Family Housing
- Townhouses
- Live / Work Units
- Multifamily Housing
- Open Space / Green Connections
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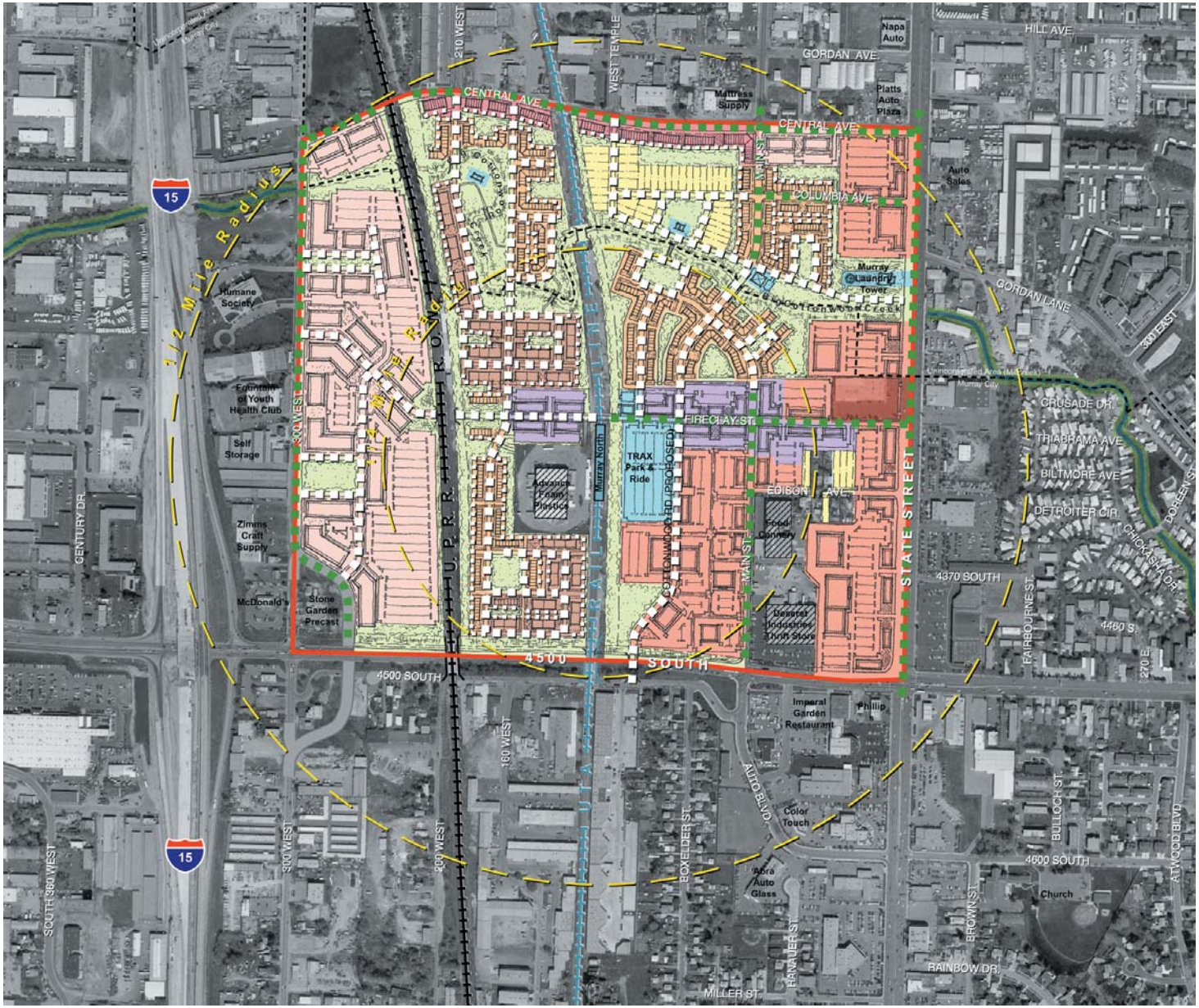
- Existing Building and Rehabilitation
- Transit Node
- Major Street Improvements
- New Street
- New Alley



Layton Downtown- Proposed Commuter Rail Station

The proposed Layton commuter rail stop is located along the Union Pacific rail line near historic downtown Layton. The site is divided into three areas by the rail line that separates the residential and agricultural areas west of the rail line from the downtown area, and I-15, which separates downtown from the Fort Lane Shopping Center. All three areas have limited freeway access to and from I-15, and east/west circulation is confined to Gentile Street on the north. Kay's Creek winds through all three areas running northeast to southwest.

The workshop proposed a new east/west road to connect the Fort Lane Shopping Center to Main Street and west to the proposed station and new growth areas. Trails along Kay's Creek would provide additional means of pedestrian circulation through the study area, connecting to a future trail system across the city. These new circulation routes will open this area to greater development opportunities.

Workshop participants stressed the need to develop design guidelines that would benefit and sustain historic downtown Layton and local residential neighborhoods, balance growth and preservation needs and develop distinct neighborhoods based on smart growth ideals.

The revitalization of historic downtown would include the development of a transit station to support preservation and growth plans. A station and surface parking would be sited along the rail line reserving the street edge for higher-density mixed-use development that would support employment and downtown living within walking distance of the station. Kay's Creek would be developed as a pedestrian-friendly zone fronted by urban amenities such as nearby mixed-use buildings. The proposal also creates an arts and business district east of Main Street with connections to the transit station to the west and surface parking to the south.

West of downtown there is great potential for residential development. Because people were concerned that new growth respectfully develop existing agricultural lands, higher-density housing is kept adjacent to the rail line. Three-to-four story apartments and higher density town homes located near the Kay's Creek corridor would step down in scale to single family homes to the west, similar to the scale of existing local development. Neighborhood parks, play areas and landscaped sidewalks support the expressed need for walkable neighborhoods linked by green space.

In the Fort Lane area, development plans include the creation of a new retail center at the corner of Fort Lane and Gentile Streets. Plans include bringing buildings to the street, creating smaller scale parking areas and focusing the development onto an amenity, such as a manmade creek or water feature. A new street would provide access through the area and link the Layton City civic district and High School to the north to the a new highway off-ramp.

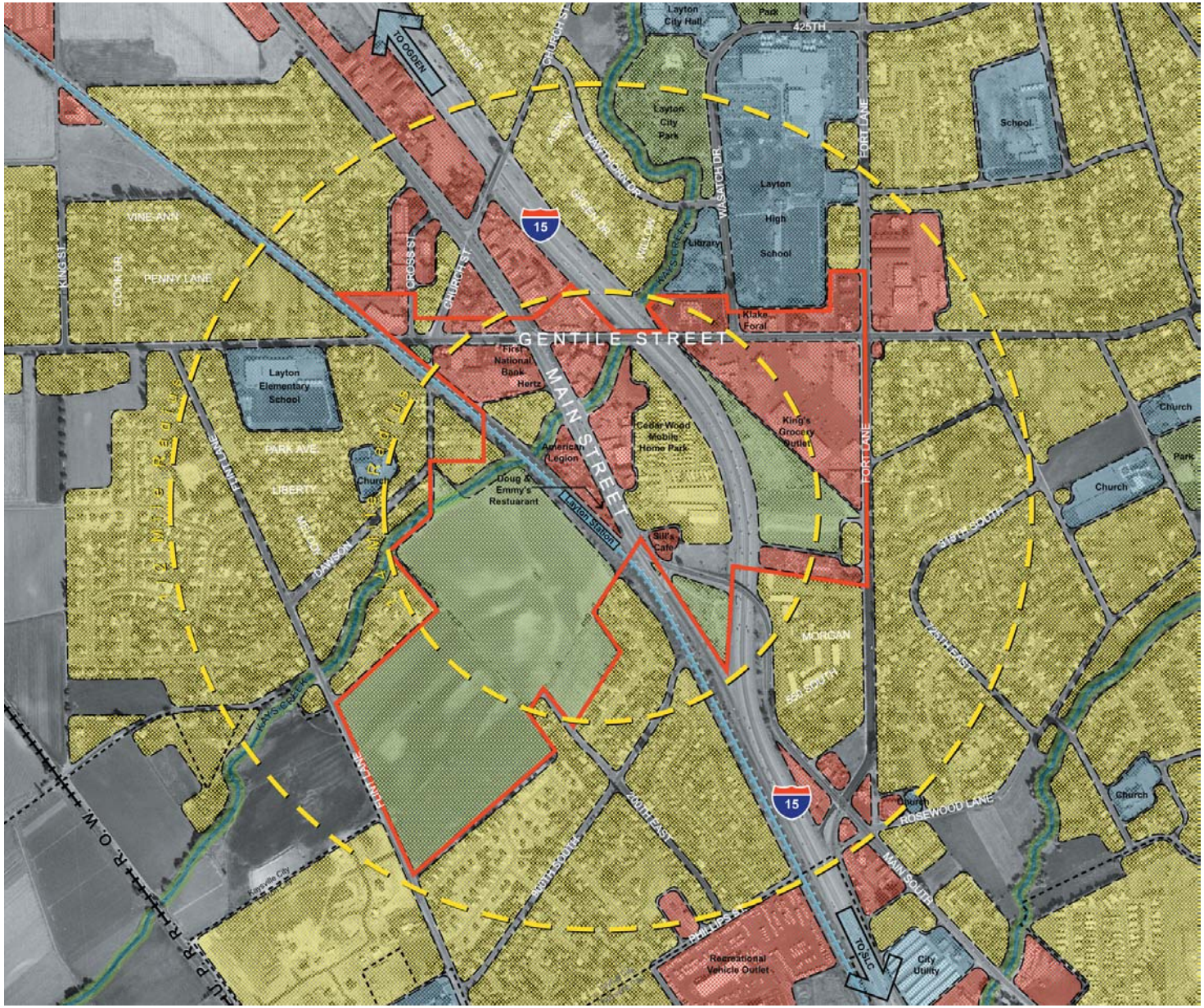
The Fort Lane Shopping Center could be a potential receiving zone for the transfer of development rights, a tool for the preservation of open space lands. This current low-density retail area would benefit from a greater density, allowed by purchasing the development rights from critical lands in other areas. Along the Great Salt Lake shoreline in Layton and other cities, a number of property owners have expressed interest in limiting future development on their land through the sale of development rights.

Existing Conditions

Study Boundary

1/4 and 1/2 Mile Radius

Layton Downtown- Proposed Commuter Rail Station



Approximate Land Uses

- Retail / Commercial
- Office / Industrial
- Housing
- Civic Uses
- Site Boundary
- City Limit
- Light Rail
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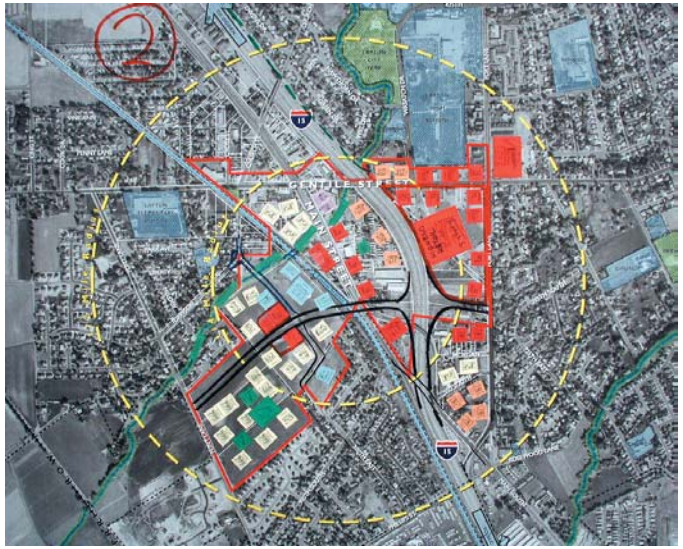
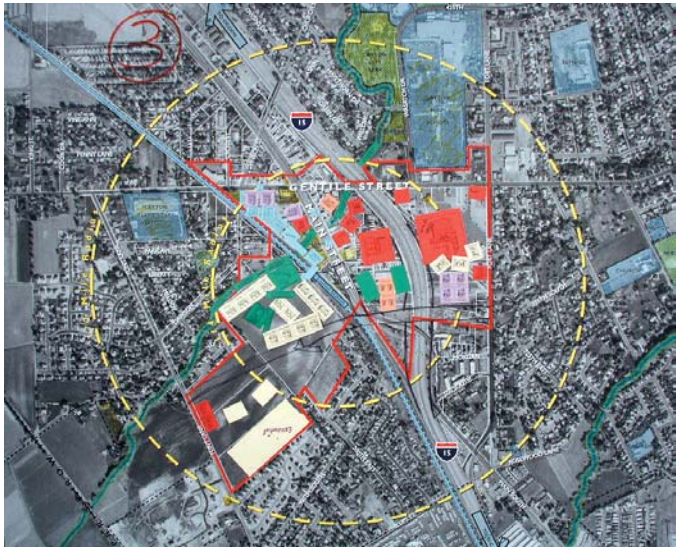
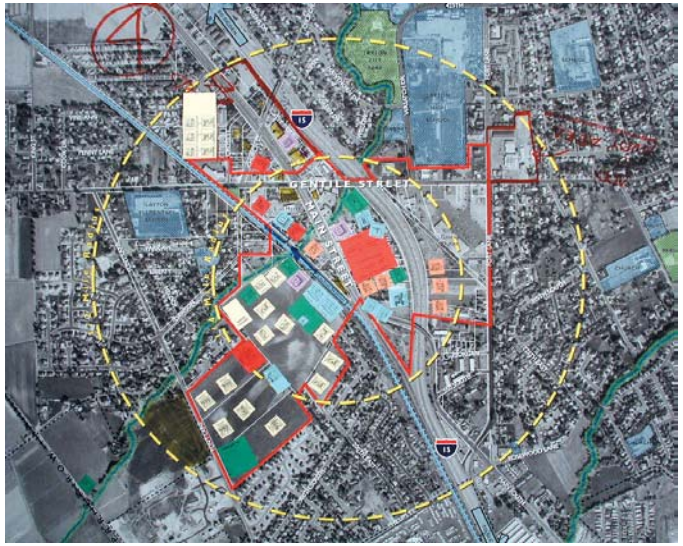
Workshop Maps

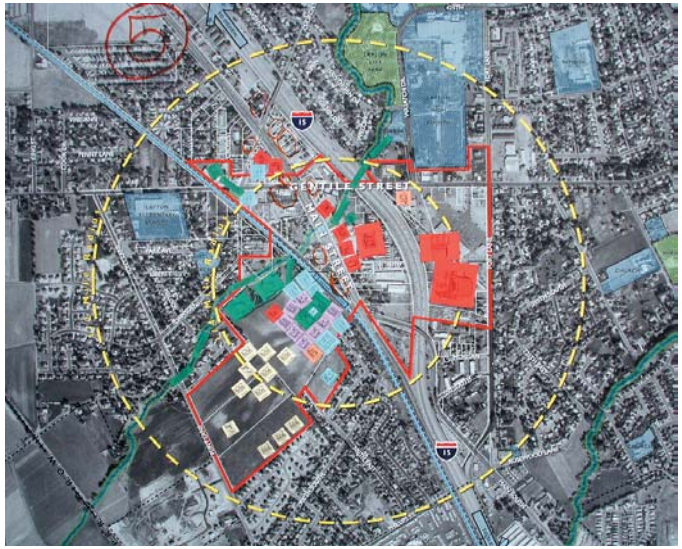
Layton Downtown- Proposed Commuter Rail Station

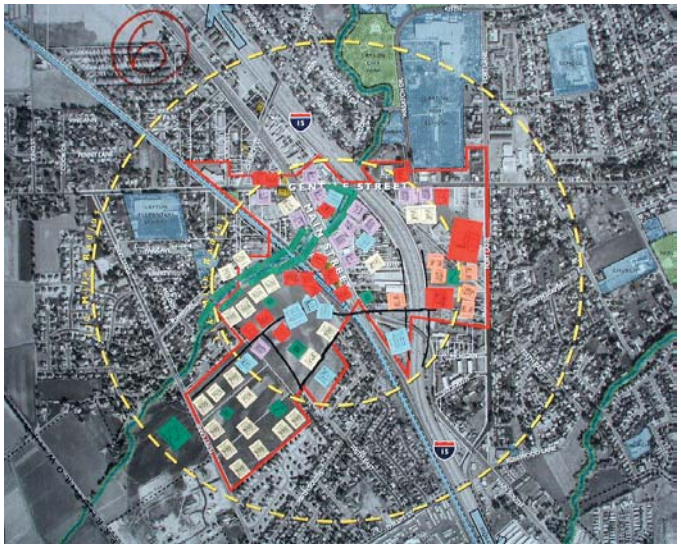


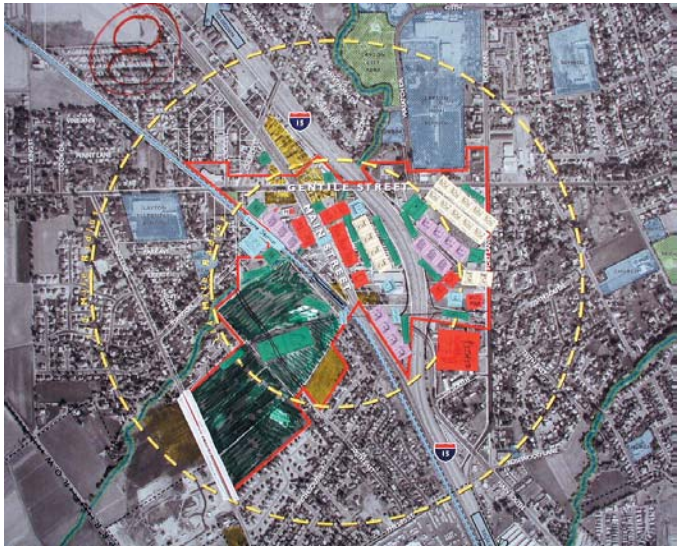




Layton Downtown- Proposed Commuter Rail Station

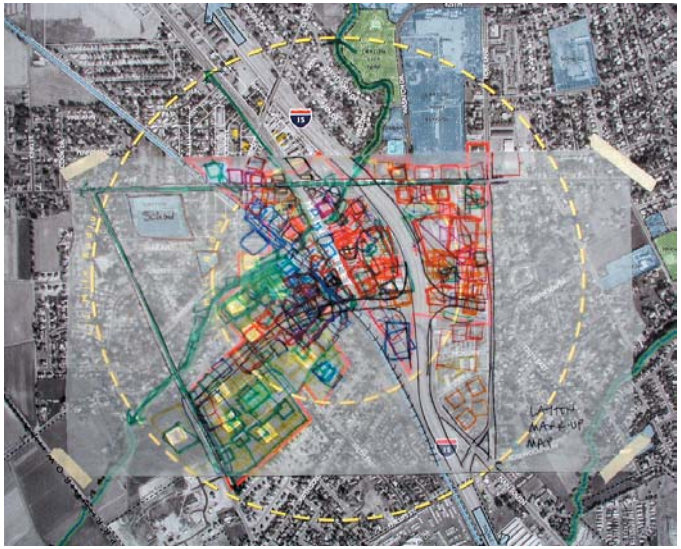




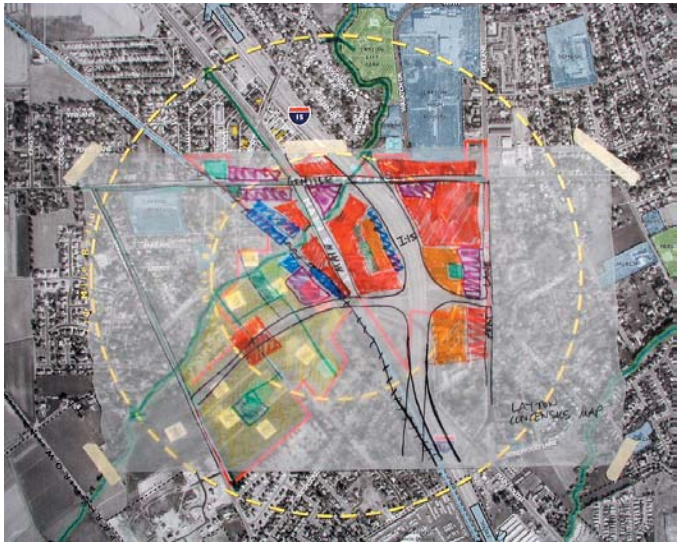


Workshop Maps

Workshop Maps



Mark-Up Map



Consensus Map

Layton Downtown- Proposed Commuter Rail Station

Synthesis Plan

- Retail
- Mixed Use (Residential/Office/Retail)
- Employment
- Housing Units
- Live / Work Units
- Open Space / Green Connections
- Civic Uses
- New Street / Street Improvements
- Existing Building and Rehabilitation

Layton Downtown- Proposed Commuter Rail Station

ILLUSTRATIVE PLAN

Layton Downtown- Proposed Commuter Rail Station

Regulating Map

- Mixed Use (Residential / Office / Retail)
- Retail
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- Single Family Housing
- Townhouses
- Live / Work Units
- Multifamily Housing
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- Civic / Community
- Existing Building and Rehabilitation
- Transit Node
- Major Street Improvements
- New Street
- New Alley

Photo Rendering

Layton (Main Street)- Before

Layton (Main Street)- Interim

Layton (Main Street)- After

West Jordan- Proposed Light Rail Station

The West Jordan study area surrounds the intersection of Redwood Road and 7800 South, the location of a proposed light rail station. Current development divides the study area into distinct zones. Commercial development, ranging from strip malls to big box retail stores, spreads southeast from the intersection of Redwood Road and 7800 South. West Jordan City Hall and West Jordan Park sit just west of Redwood Road and create a core civic area. Industrial development composes much of the eastern half of the study area. Diverse residential development, consisting of single-family residences, town homes, and apartment buildings, is also located in the study area. A mobile home lot is directly south of the rail line.

West Jordan's auto-oriented character creates a widely-spaced development pattern that offers few opportunities to walk between services within sight of one another. In order to create a more walkable city center without compromising the scale of arterial streets, workshop participants suggested traffic calming measures, improved pedestrian-scale streetscaping, emphasizing pedestrian crossings and creating new inner-block streets to support smaller scale development. Many participants felt increasing the density of shopping areas through the addition of multi-storied mixed use and nearby residential development would create a community of users and owners and de-emphasize the current auto-oriented pattern. A series of interconnected streets and integrated open spaces throughout new development would provide greater access across the area.

New residential development would complement existing housing in the area, increasing the area's residential density. An existing trailer park and open space west of Redwood Road would become two and three story apartments and town homes. Near the proposed transit station, multi-storied apartment blocks would look onto community green space. These new developments would create a 24-hour neighborhood of day and evening users.

East of the transit station, existing light industrial uses would be developed into an employment center consisting of two-to-four story office buildings. These buildings would engage the street and have parking in the rear. A walkable green space along the rail line would serve as a convenient commuter pathway. Transit station parking would be both surface and structured. The garage would include retail and office space on its street-facing edge.

West Jordan workshop participants repeatedly emphasized the creation of interconnecting surface streets with slow speed traffic to create a walkable civic core area around the West Jordan City Hall and the transit station. Green space linkages, including small parks, landscaped medians and sidewalks, and the introduction of landscaping into retail parking lots would enhance the area's pedestrian character.

Summary of Case Studies

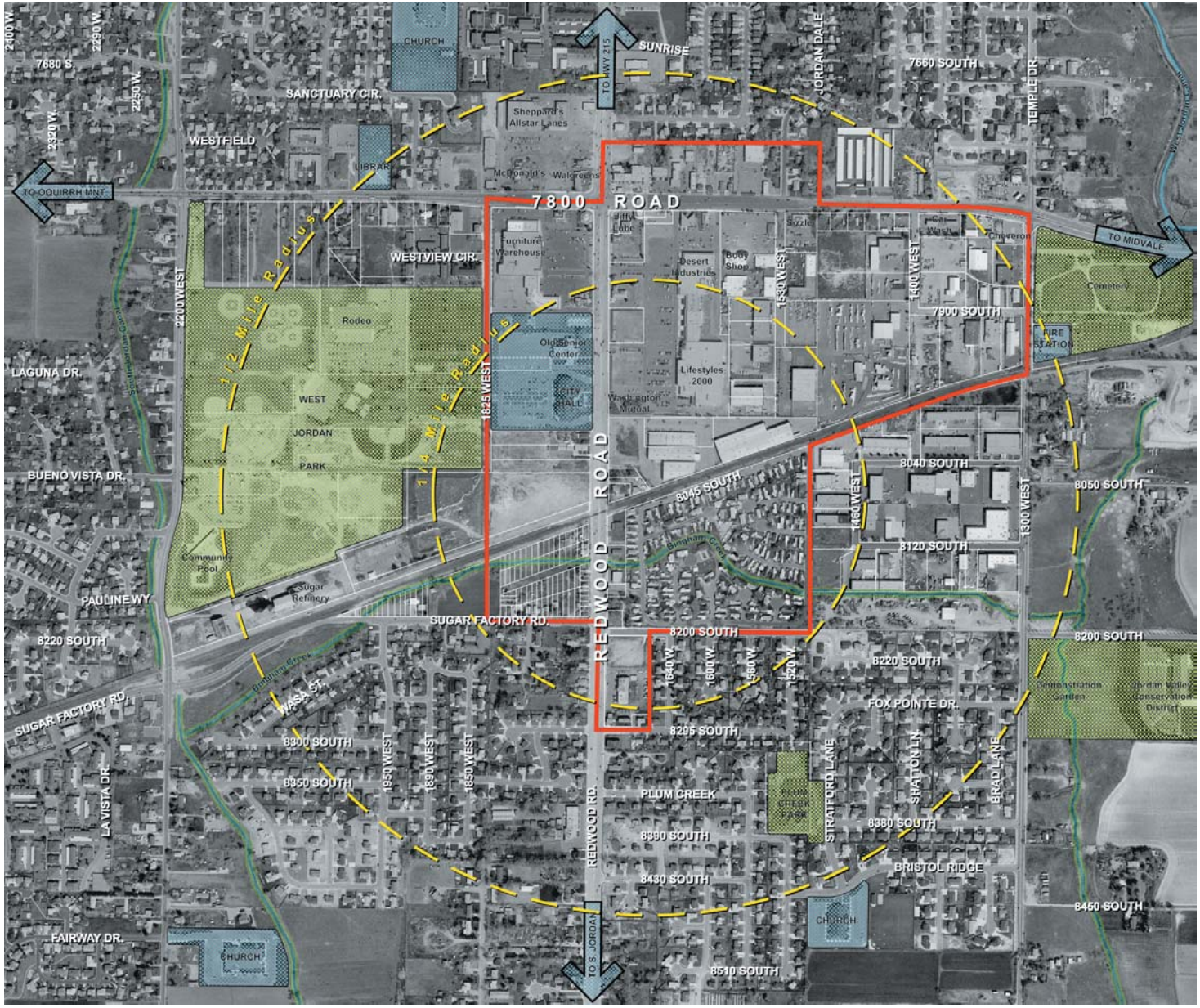
Each of the four case study sites benefits in unique ways from the TOD Guidelines. Drawing on the features of compact development, a mix of uses and pedestrian friendly design, these areas have been able to create a TOD design responsive to their existing scale and context.

Potential site for West Jordan TOD

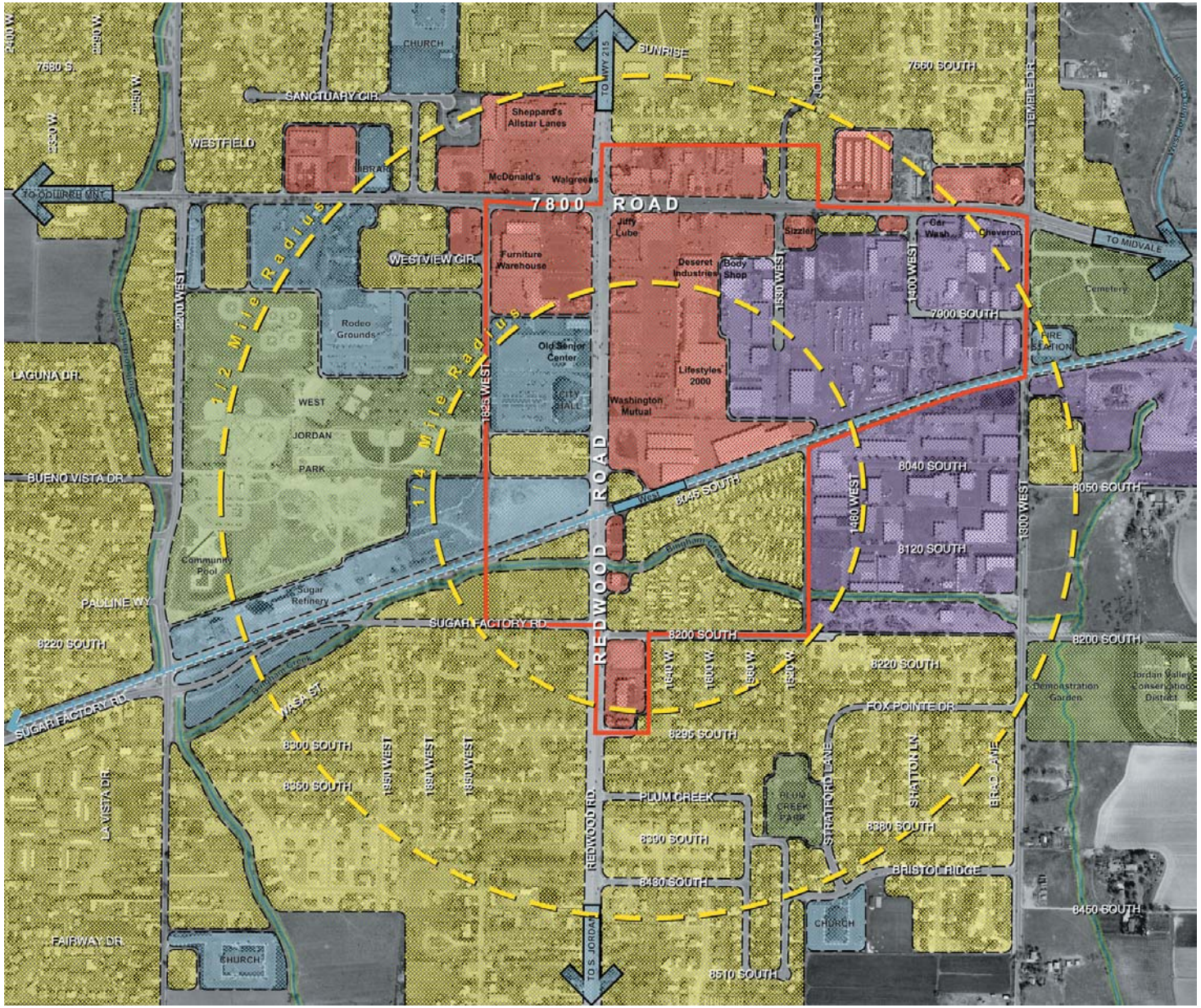
Existing Conditions

Study Boundary

1/4 and 1/2 Mile Radius



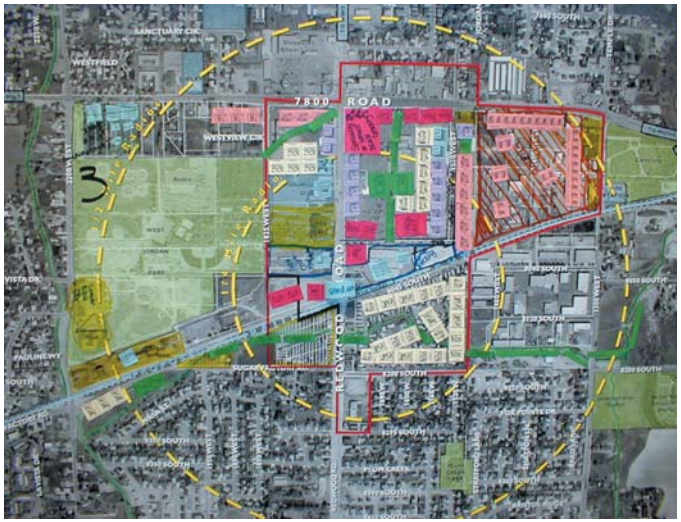
West Jordan- Proposed Light Rail Station



Approximate Land Uses

- Retail / Commercial
- Office / Industrial
- Housing
- Civic Uses
- Site Boundary
- City Limit
- Light Rail
- Heavy Rail

Workshop Maps



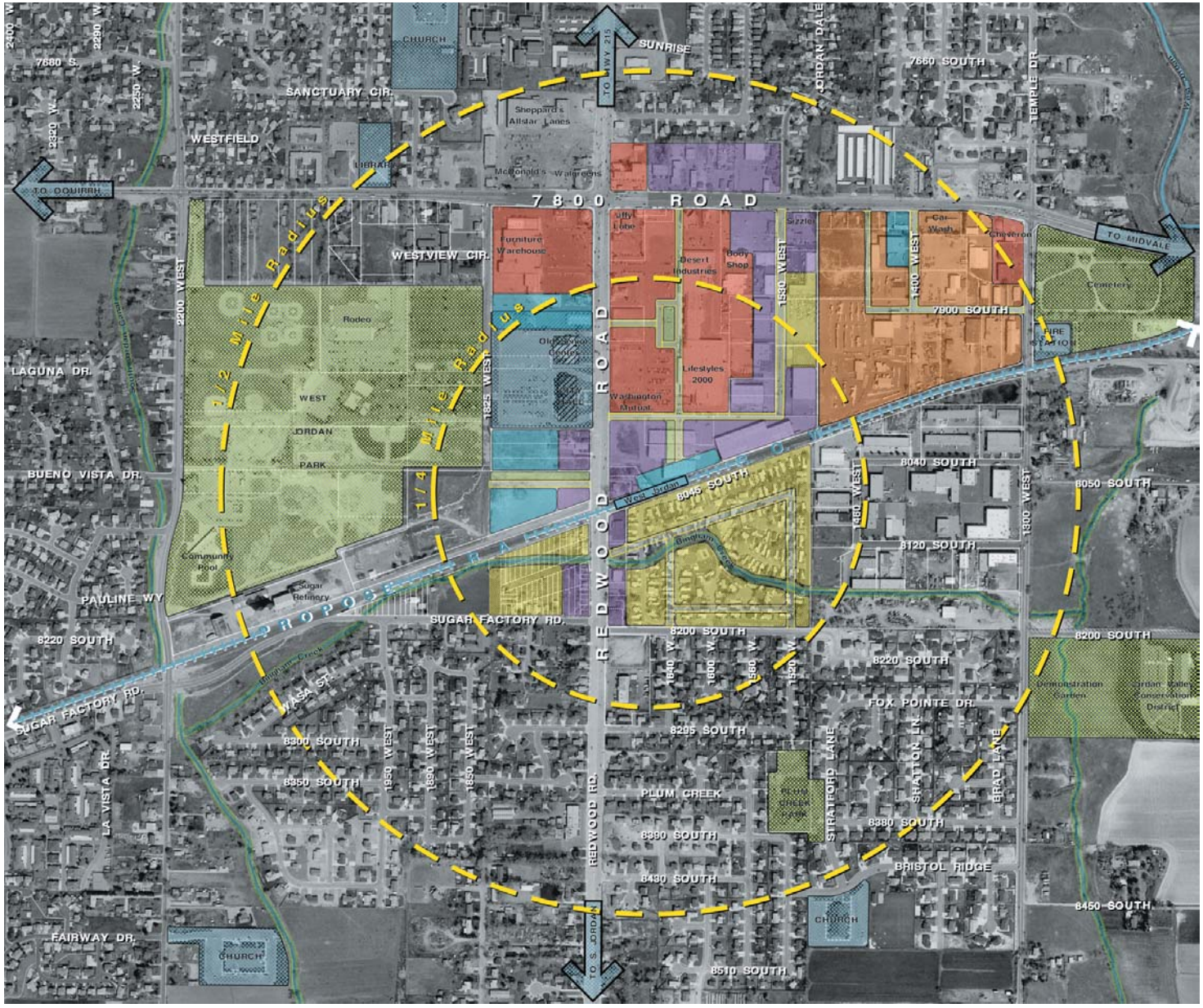
West Jordan- Proposed Light Rail Station

Workshop Maps

Workshop Maps

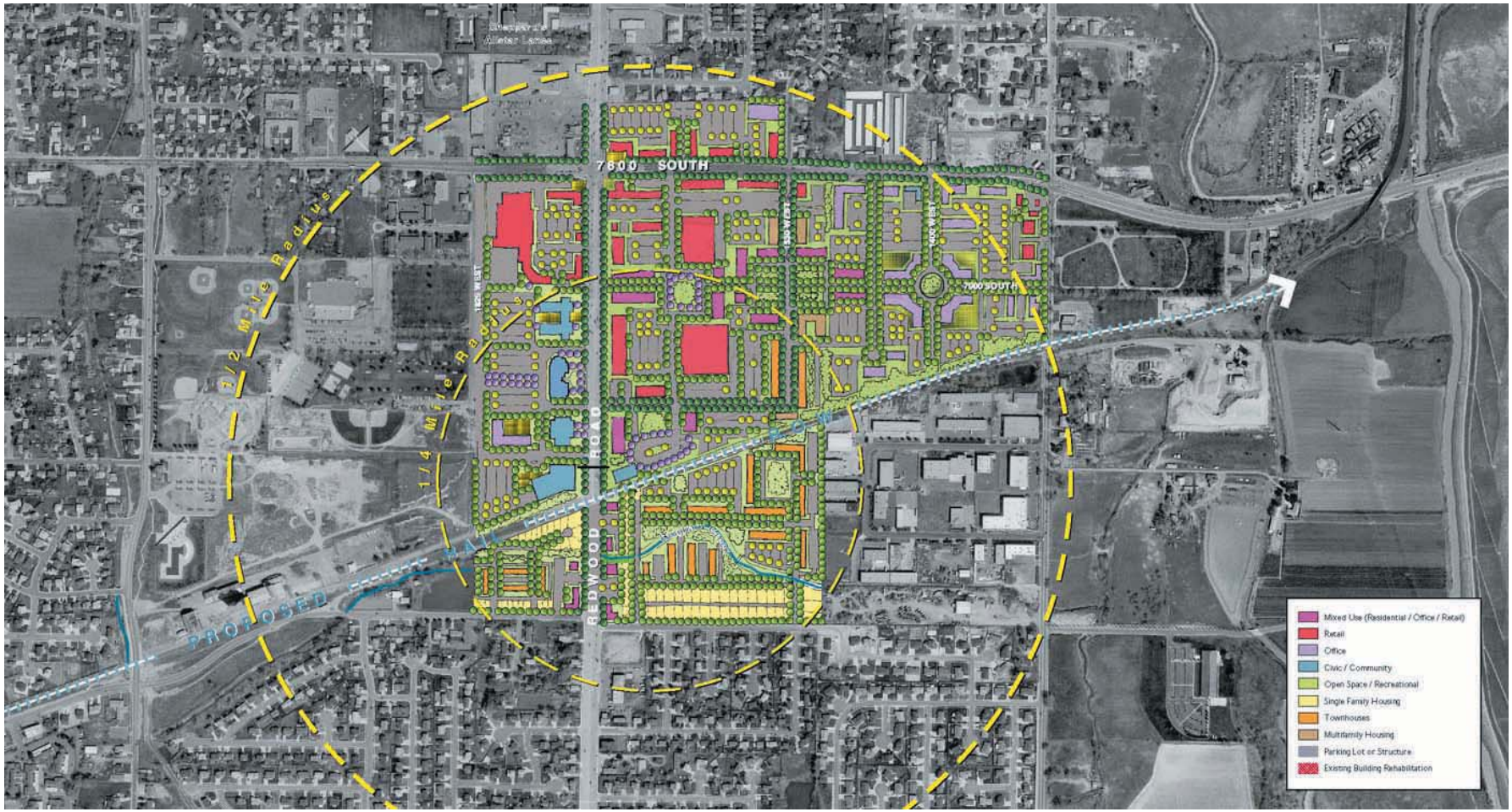
Mark-Up Map

West Jordan- Proposed Light Rail Station



Synthesis Plan

- Retail
- Mixed Use (Residential/Office/Retail)
- Employment
- Housing Units
- Live / Work Units
- Open Space / Green Connections
- Civic Uses
- New Street / Street Improvements
- Existing Building and Rehabilitation



ILLUSTRATIVE PLAN

West Jordan- Proposed Light Rail Station

Regulating Map

Appendix B: Sample TOD Ordinance

Appendix B: Sample TOD Ordinance

This section provides communities with a model to aid in the development of a TOD ordinance. Ordinances often share many of the same elements, but are not universally applicable; exact code language, allowable uses, dimensions and other standards vary depending on the context. For this reason, this section presents an outline of the steps involved in the development of a TOD ordinance, and an outline of the elements which should be considered within the language of the actual ordinance.

Ordinance development should involve a public involvement process, including several brainstorming workshops. Local governments, the general public, developers, and key opinion leaders should all be involved in the ordinance development process. Ordinance adoption will be more successful if all interested parties have been involved from the beginning of its development.

The Ordinance Development Process

1. Identify Purpose and Goals of TOD Ordinance Development.

- Goal setting session – what should the TOD ordinance accomplish?
- Brainstorm types of standards

2. Identify Area(s) for Potential TOD Designation

- Where would a TOD designation make sense and why?
- Define draft boundaries of areas for TOD designation
- Identify unique qualities and characteristics of each potential TOD location.

3. Inventory Existing Zoning

- Does a new zone need to be created or should an existing zone be modified to incorporate TOD concepts?
- What other existing regulations/codes/guidelines apply to the areas being considered for TOD?

4. Identify Appropriate Uses and Standards

- What uses should be encouraged and considered permitted uses? What uses should be prohibited?
- What uses should be conditional and under what conditions?
- What standards are necessary to accomplish the goals and objectives?

5. Research other ordinances

- Obtain ordinances from other jurisdictions with successful TOD programs
- Choose ordinances from other places that meet the objectives and sensibilities of the project.

6. Formal adoption process with local governmental bodies

Model TOD Ordinance Outline

A TOD ordinance is most commonly developed as an overlay over existing zoning. In an area defined on a land-use map, special provisions apply that may alter the standards or provide incentives for certain types of development. A TOD ordinance's purpose is to encourage types and styles of development that support transit use and a walkable neighborhood. In a TOD ordinance, special standards are developed that pertain particularly to transit within a defined area around a transit center.

Section I. Purpose/Goals and Objectives

This section states the purpose of the ordinance and the goals which it is designed to meet. This section may be a list of objectives, or a brief discussion. It is important in providing guidance to property owners, the general public, and reviewers of the ordinance.

Section II. Definitions

Ordinances often use terms that readers may be unfamiliar with, or terms which can be interpreted in different ways. By providing definitions for the terms used within the ordinance, the intent of certain language is clear and the potential for misunderstanding is decreased.

Section III. Process

This section lays out the process through which development proposals are approved under the new TOD ordinance. The process may include a site plan or plat application, a city engineer and planning staff review, planning commission review, and/or city council review. The approval process may differ for each proposed development type.

Section IV. Uses

Certain types of land uses complement and enhance a TOD, while others detract from it. Defining desired and allowed uses for the TOD area eliminates the development of incompatible land uses. TOD ordinances aim to encourage a mix of complementary uses. Complementary uses are those that offer goods and services at different times of day and provide a consolidated "one-stop" area for people to live, work, shop, and recreate. Within most ordinances two types of uses are specified which may occur within the planed area: permitted and conditional. An overlay TOD district may not allow uses that are prohibited in the base, underlying district.

Permitted Uses: Permitted uses are allowed in the zoning district without special approval. Permitted uses in a TOD may include mixed-use buildings, residential uses of all types with higher density, retail, service, office, restaurants, entertainment, home-based occupations, health care facilities, day care facilities, churches, and open space. Notably, TOD ordinances should allow mixed-use buildings, which are often not allowed in underlying zones.

Conditional Uses: Conditional uses are land uses which may be permitted within the TOD zone under certain circumstances or specific approvals. Uses which may be considered conditional in a TOD overlay zone could include lower density housing, group homes, commercial parking lots, hotels, large-scale shopping centers or office uses, or other larger scale uses.

Section V. Lot Standards

Maximum/minimum lot area: Lot sizes may be varied in a TOD area to reflect different desired conditions. Greater densities should be allowed than in surrounding areas, stepping up as one approaches the transit station. This can be achieved by decreasing the maximum lot area.

Setbacks: TOD ordinances generally require or encourage smaller building setbacks. An overlay ordinance may either require a specific setback, or may waive the setback requirements imposed by the underlying zoning.

Build-to lines: Build-to lines are setbacks that buildings must approach, rather than be behind. By bringing buildings close to the sidewalks, they create a pedestrian-friendly atmosphere.

Lot coverage and FAR: Lot coverage requires buildings to be on a certain percentage of the lot square footage. FAR (floor-area ratio) is a measure of the amount of built square footage in relation to the size of the lot. Both act to regulate the amount of development that can be built on a parcel. A TOD ordinance may alter the amount of area covered with structures in TOD area to maximize use of ground to achieve desired densities.

Maximum/minimum landscape percentages: Landscape percentages should be regulated in an ordinance in order to maintain a consistent streetscape. The addition of landscaping can enhance the street front and create a pleasant pedestrian environment.

Maximum/minimum building footprints: The scale of development is important in a TOD zoning district. Because TODs are oriented to transit and pedestrian use and big box retail developments are not normally an appropriate scale for walkable communities. Buildings with very large footprints and attendant parking are designed for automobile access, and are not easily accessible for pedestrians. Additionally, the often uninteresting design of such big box developments can detract from the aesthetics of the street environment and deter pedestrians. A TOD ordinance can regulate the maximum building footprint size, thereby selecting against these auto-oriented building types.

Access management: A TOD ordinance should allow and require pedestrian connections within developments and neighborhoods. Automobiles should be accommodated, but a TOD ordinance should de-emphasize auto reliance.

Section VI. Building Standards

A TOD ordinance may impose several building standards in order to ensure style and design compatibility and encourage pedestrian access.

Building height/stories: To achieve a certain feel for a TOD area or to obtain greater density of use, building height requirements may be altered in a TOD area.

Façade variation: Requiring façade variation through ordinance can enhance the appearance of a streetscape and create a more interesting and inviting pedestrian environment. Ordinances may require a minimum glass requirement and a maximum reflectivity so people can see into buildings.

Design/Architectural guidelines or standards: Requiring design and architectural standards through a TOD ordinance can enhance the appearance of the streetscape and provide for pedestrian interest. Consistent design guidelines can also create a more cohesive development. Design guidelines can occur at all levels and may include regulation of building materials, specific building features, compatibility with historic buildings, color palettes, entry features, or many other building design elements.

Building Orientation: An important design element in encouraging pedestrian, bicycle, and transit use is building orientation. A TOD ordinance should require buildings to be oriented to the street and sidewalk, rather than to a rear parking lot. Locating a building entrance to the street encourages pedestrian use, while enhancing the appearance of the buildings from the street front.

Section VII. Parking

A TOD is designed to prioritize transit and non-motorized modes of transportation. Transit and pedestrian-supportive developments require minimum densities. Requiring large amounts of parking space decreases the potential density of an area, tying up valuable land. Ample free parking and convenient auto access also encourages driving to the detriment of other transportation modes and neighborhood character.

Parking Minimums and Maximums: Many TOD ordinances either waive parking minimums, or have maximum parking restrictions. Reducing the number of available parking spaces discourages automobile use and promotes transit use.

Design: A TOD ordinance should manage parking and vehicular access by utilizing shared parking and driveway access, with on-street parking and parking located behind buildings or in the interior of the block. If large parking structures are needed, an ordinance can require retail or office space on the street level, or require that the structure be underground and topped by retail or office. On-street parking creates a buffer between sidewalks and the street, and should be allowed on all streets in TOD zones.

Section VIII. Landscape and Signage Standards

Specialized landscaping and signage standards can enhance the style of development sought in a TOD area, and can act to create a greater pedestrian character and district identity.

Section X. Criteria for Review/Required Findings

A TOD ordinance should specify the criteria for review of proposals in a TOD overlay zone. Staff reports and decisions should indicate how each criterion was addressed as findings and a basis for the governmental decision.

Section XI. Development Agreement Requirements

Planned developments can be required by ordinance to meet several general conceptual guidelines in their design. Such guidelines may include building orientation, pedestrian or transit access, façade variation and glass, architectural detailing, parking restrictions, signage, and lighting. The details of the development standards can be memorialized in a development agreement.

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5B. Urban Design

Goals

Urban design in TODs should reinforce the pedestrian-oriented and transit-supportive character of the district, and create a friendly and useable public realm, presenting an alternative to typical auto-oriented site and building designs.

Urban design in this document refers to site planning configurations, building façade treatments and massing, and streetscape, public space and public building design. These factors largely determine the character of a neighborhood or urban district. Appropriate urban design is often the deciding factor for people making choices about whether to walk, use transit or drive. Simply placing random elements from the strategies in the following pages will not ensure successful urban design. Rather, these strategies should be applied to a particular context, and the elements should be combined to create a coherent whole.

- *Encouraging pedestrian and transit use*

People choose to walk rather than to drive either because it is more convenient or because they prefer to walk. Walking will be a preference if it is an enjoyable way for people to access their needs. Therefore, in order to induce people to walk, paths between origins and destinations must be both short and direct enough to be convenient, and also a pleasant experience that makes people want to walk. Land use and circulation characteristics such as mixed-use neighborhoods and street connectivity create the first precondition: that many destinations will be within walking distance of homes, workplaces, or other destinations. Urban design creates the second: that the walk to these destinations is an enjoyable experience, and people will choose to walk over driving.

By orienting communities toward transit stations and designing with transit stations as an accessible focal point, successful urban design can also reinforce the use of transit systems. As with walking as a mode choice, people will use transit if it conveniently accesses their destinations and is a pleasant and enjoyable experience. The transit experience includes not just the ride itself, but also the walk to and from the transit stop at either end of the trip. Making these walks attractive, stimulating and safe enhances the transit experience and encourages repeat transit use. Additionally, urban design can make the transit hub a notable and central place that raises the stature and awareness of the transit system in people's minds.

- *Street activity and economic health*

Urban design also influences the economic vibrancy and social life of a neighborhood or urban district. Good urban design can create a distinct, recognizable character for an area and create a positive image of a place that encourages people to frequent it. Many other factors also influence a district's economic robustness. However, good design that emphasizes access by all transport modes greatly enhances a retail district's success. A pedestrian-friendly design character also enables enough street

use and activity to support area stores and create a safe environment over which shop owners and people on the street can maintain a friendly watch. Over time, a lively, distinct district with a healthy pedestrian character begets a constituency to keep an area clean, safe, well-used and well-funded.

- *Finding an appropriate urban grain*

TOD should possess a fine-grain, or permeable, development structure. Development grain refers to the overall scale and permeability of development, circulation systems and ownership parcels. Development grain is a defining attribute of urban form: it creates the overarching character and scale one senses as they pass through or walk around a neighborhood. A fine-grained district has small lot sizes, short building frontages, small blocks and frequent pathways and entries, as in a medieval European city or an older urban neighborhood. A coarse-grained district, such as the areas around the 2100 South and 4500 South TRAX stations, contains large parcels, unbroken blocks, large featureless buildings and vast parking areas, as in a big box retail district. Most areas lie on a spectrum inbetween these extremes.

A fine-grained neighborhood character is often more pedestrian-friendly than a coarse-grained one. Fine-grain neighborhoods contain visual variation, accessibility and frequent connection points. They are built at a pedestrian scale. However, in some cases coarse-grained districts also contain opportunities for TODs. They may have large redevelopment parcels that can act as catalysts for the transformation of a whole area, or old warehouses that can be renovated to become more mixed-use and pedestrian-friendly. The urban design strategies following present specific solutions toward achieving an appropriately-grained urban development pattern.

"Proposed South Jordan Sunrise walkable development," near proposed TRAX Station.

Site and Building Design Strategies

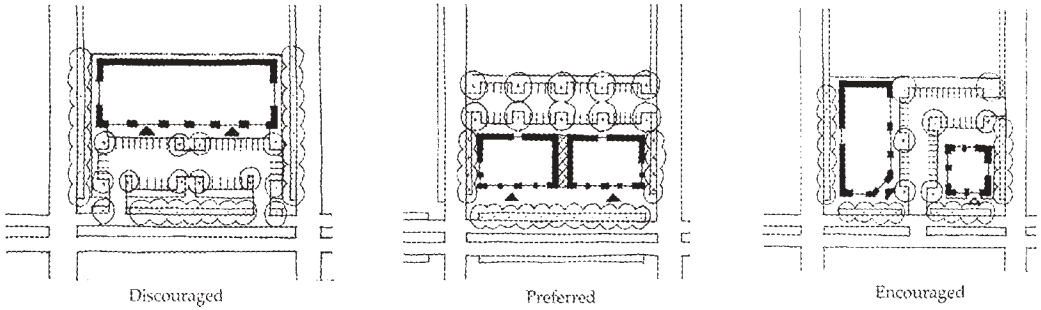
- *Street-oriented building placement*

Buildings located close to and facing the street create a pedestrian-friendly streetscape. Placing street-facing buildings near the sidewalk edge with minimal setbacks rather than behind large front parking lots or garages adds definition to the sidewalk public space and adds activity and architectural variety to the street.

Parking areas should be kept behind or to the sides of buildings wherever possible so that building entries can directly access sidewalks. This condition often necessitates innovative site arrangements for parking areas. Parking behind street fronting buildings requires secondary entries to the rear or walkways that bring guests or shoppers to the front. Where parking lots are located to the front or side of buildings, they can be augmented with buffering landscaping or attractive fencing that defines the sidewalk edge. Large parking structures can be screened with active ground floor uses such as shops that support the street environment. On-street parking is a simple yet often neglected solution that allows guests and some residents to park along the front of buildings without disconnecting the sidewalk from the building. Alleys set a simple precedent of site configurations that honor the street and the pedestrian by placing buildings and pedestrians before cars.

The relationship between sidewalks, building fronts, primary entries, and parking varies by building use. For example, in urban conditions, buildings may be attached and reach the sidewalk edge with minimal variation, creating a street wall that defines the street as outdoor space. In suburban residential environments, it is more appropriate for the street wall to be permeable, with side yards, more landscaping and varied setbacks. In every case, however, a shift from auto-dominated environments to places that accommodate the car without compromising the pedestrian involves rethinking building and parking placement arrangements so that buildings more directly connect to streets.

Existing areas that lack a pedestrian-oriented quality can be transformed over time through infill, intensification, and redevelopment with new street-facing buildings. Local regulations that require new buildings or retrofits to have a street-facing orientation, site close to the sidewalk with small setbacks, and have parking behind or to the sides are an important aspect of encouraging TOD-friendly urban design.



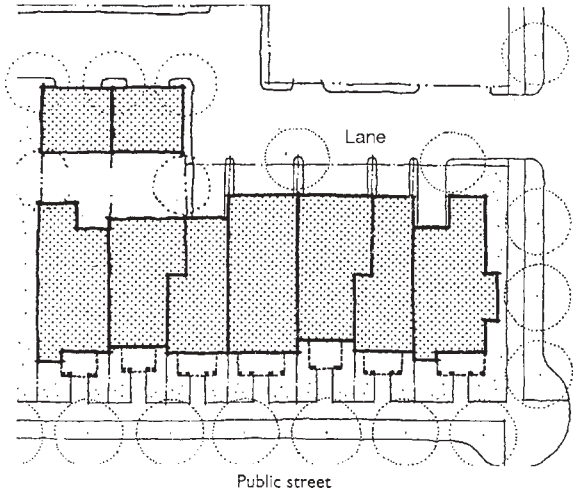
BUILDINGS SHOULD BE PLACED NEAR STREETS, NOT BEHIND PARKING AREAS, TO BETTER DEFINE THE STREET ENVIRONMENT

- *Visible and accessible entries*

In addition to placing buildings near the street with parking behind, building entries should directly access streets, not turn their back to them. Entries that are directly accessible are located on the shortest possible path between the building entry and the street. Entryways enliven streets by providing access points through which people come and go. Where street-facing entries are infrequent or non-existent, so too will be pedestrian traffic and street life.

In many buildings, entries orient to parking lots, forcing a pedestrian on the sidewalk to walk to the reverse building side to access the entry. Street-facing buildings should have their primary entry oriented to the street. Multi-story buildings may have an accentuated primary entry for upper floors oriented to the street, additional entries that provide convenient access from parking or street facing entries for individual ground-floor uses. A combination of these entry locations ensures that long building frontages will be punctuated with architectural interest and the activity of people coming and going.

Accessible entry location also means that entries should be barrier-free for the disabled, mobility impaired, the elderly and families with baby strollers. While it is often desirable to punctuate an entry with a staircase, stoop, or porch, this type of design feature should be balanced with concern for those for which stairs are an impediment. The principles of Universal Design, which stresses psychological and physical equality for disabled access to buildings, suggest that at least half of all entrances to a building should be accessible, including the primary public entrance. For this reason as well, primary entrances should be located as near to streets and transit stations as is feasible.

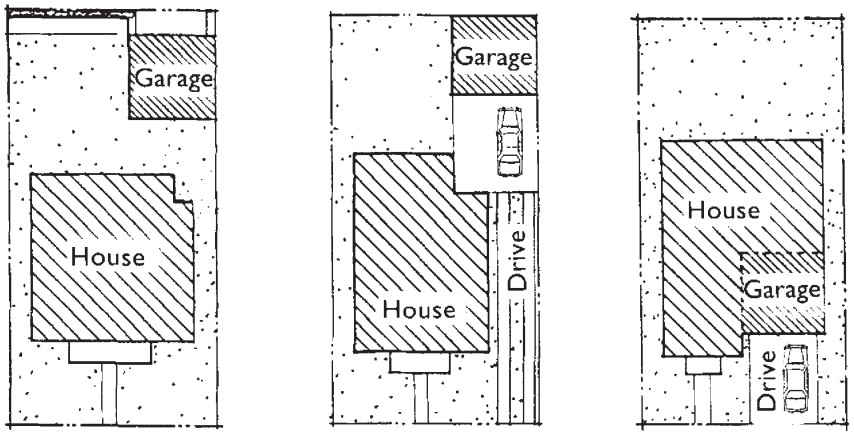


THESE BUILDINGS PRESENT AN ALTERNATIVE ARRANGEMENT TO TYPICAL SUBURBAN SITE PLANS: BUILDING ENTRIES DIRECTLY ACCESS THE SIDEWALK, AND PARKING AREAS ARE LOCATED BEHIND BUILDINGS, ACCESSED BY AN ALLEY. THIS ARRANGEMENT ENABLES THE STREET TO BE THE DOMAIN OF PEDESTRIANS AS WELL AS CARS, AND CREATES A MORE DEFINED STREET SPACE.

- *Garage treatments*

For all buildings within a TOD, the visual presence of garages should be minimized, creating pedestrian-friendly streetscapes and signaling that streets and public areas place people before cars. In many new residential neighborhoods, home facades are often buried behind broad, featureless garage doors. Overly prominent garages become de facto home entries, deadening the streetscape and creating a monotonous walking experience.

In residential neighborhoods, moving garages away from the street edge necessitates innovative or traditional garage treatments. Garages that are accessed by alleys provide an attractive alternative, allowing streets to be fronted entirely by home entries and to include entry features such as porches. Alley-accessed garages also eliminate the need for curb cuts on the street, allowing for more on-street parking, and minimizing potential conflict points between cars and pedestrians. Where alleys do not exist, side drives, which connect along the side of a house from the street to garages partially hidden behind the main house, are another potential site solution.



EXAMPLES OF SINGLE-FAMILY GARAGE TREATMENTS IN ORDER OF PEDESTRIAN DESIRABILITY: ALLEY-ACCESSED GARAGE, DETACHED SIDE-DRIVE, AND RECESSED GARAGE. ALTHOUGH THE SPECIFIC TREATMENTS MAY DIFFER FOR OTHER BUILDING TYPES, THE PRINCIPLE REMAINS THE SAME: GARAGE AND DRIVEWAY PRESENCE IS MINIMIZED TO ENHANCE THE PEDESTRIAN ENVIRONMENT.

When garages are located near the front of homes, their visual prominance can be minimized by recessing them behind the main façade and by designing them so that the garage accounts for no more than 35-45% of the home façade, or even less as overall façade width increases. Where two or more car garages are used, tandem parking, with one car directly in front of another, presents an attractive solution that minimizes the visual impact of the garage by allowing the garage façade to be just wide enough for one car.

Commercial parking garages can also be altered to minimize their deadening visual impact. Where possible, parking garages may be located in the interior of blocks, so that they are hidden from public spaces. Where parking garages do front on streets, the street-facing ground floor should be lined with retail uses that activate the street and shield the parking lot from public view at pedestrian level. Another alternative is to break parking lots into smaller, discrete lots, so they are less visually obtrusive and are easier to cross.

INHABITED SPACE CAN TRANSFORM AN UNSIGHTLY PARKING LOT WALL INTO AN INTERESTING PEDESTRIAN ENVIRONMENT.

- *Architectural variation*

Architectural treatments bring identity and character to a neighborhood or urban district. While architectural variation may seem to exert a subtle effect on pedestrian character, it is often a defining characteristic of great pedestrian and transit-friendly neighborhoods. Development in a TOD should provide architectural variety within buildings and among different buildings on the same block.

The provision of differing façade reliefs, features and materials changes supports visual interest on the street and relieves monotonous facades. A large range of features can provide façade variety, from historic elements to modern tectonics. Facade variations will vary based on buildling type. Examples of facade variations include extrusions from the building façade, such as porches, balconies or roof features for single-family homes, repeated features such as bay windows for attached residential uses, or materials changes that distinguish first floor uses from those above for commercial or mixed-use buildings.

Architectural interest also originates in variation among buildings. In many large development projects the economic imperative is to repeat a building design with minimal variation. For single-family neighborhoods, this often leads to monotonous streets filled with homes lacking individual character and identity. In multi-family areas this often produces developments that feel more like projects than neighborhoods. Large-scale developments can be encouraged or required with design guidelines of development codes to differentiate the façade treatments of buildings on the same street and side by side.

Union Square, Ogden, Utah

Capitol Theater, Salt Lake City, Utah

Varied architecture enlivens a streetscape and makes for a more interesting place to walk, both in contemporary and historic buildings

Pedestrian-scale street and building variation heightens the interest of walking environments and can decrease the perception of the length of walking trips. A walking trip past uninteresting buildings with large footprints, vast parking lots, or monotonous home fronts can seem much longer than it actually is. By contrast, walking in an area with stimulating and varied architecture adds pedestrian interest and can make walking trips seem quicker, and increases the distance people are willing to walk to access destinations.

- *Transparency*

Transparency refers to the visual and actual interaction between buildings and the street. A successful street environment has a close connection and permeability between the public and private spheres, inviting people to constantly transition in and out of buildings. As a result, streets will seem lively and well used. A number of building design strategies achieve successful building transparency.

Buildings that gradually transition from the private realm to the public realm encourage interaction between the two. For example, a front porch or stoop provides a location for residents of homes or apartments to sit within the comfort of their home, yet still watch or interact with people on the street. Similarly, on a pedestrian-oriented commercial street, outdoor dining or café uses provide an area that can be maintained and used by shops and their patrons, yet still retains a public nature that enables visual or social interaction with passers-by on the street.

THIS WASATCH FRONT BUILDING SUCCESSFULLY ILLUSTRATES TRANSPARENCY AND INTERACTION BETWEEN THE PUBLIC AND PRIVATE REALMS

Transparency is also achieved through appropriate window and door treatments. Windows and doors that make up a high percentage of building frontage provide the possibility of interaction with the street. The appropriate percentage varies depending on the use: ground-floor retail uses typically have the highest window percentage, close to 45% or more, to orient to people on the street and encourage people to interact with the retail spaces. Residential uses may contain 25% or more of their façade in windows or doors and still retain a positive interaction with the street.

Windows that consist of as clear glass as possible, especially at ground levels also enhance public/private interactions; reflective-glass buildings create a forbidding presence that deadens the street. Operable windows within talking distance of street level provide an additional forum for interaction between people in buildings and on the street. Finally, as mentioned above, frequent entries, especially in commercial buildings with long frontages, encourage greater public/private realm interaction and street activity.

- *Compatible height, massing and style*

TOD architecture should relate in scale and style to the context it inhabits. Compact built environments such as those created by TOD may be worrysome for people who fear that new growth will create an unsightly visual disconnect between low single-story development and blocky high-rise clusters. This is a valid concern; however, compact growth need not contain these dissonant attributes. Instead, TOD development may employ various design strategies to remain in scale with the character of surrounding areas.

Building height that steps up closer to the transit station creates a gradual transition that is visually harmonious. Upper-story setbacks can reduce the visual impact of building heights from street level, and allow more light to access streets. In suburban or small town environments, four or five stories may be the maximum acceptable height even with transitions, while in urban districts this number will be higher. However, the principle of height transitioning can be highly effective in all cases toward integrating the visual impact of compact TODs with lower-density existing conditions.

Integrating massing and grain treatments of TODs with surrounding areas also eases the visual impact of density transitions. An abrupt transition from a detached single-family residential neighborhood to the larger building and parcel scale of an office, multi-family or retail district can be as jarring as a significant change in building heights. Contemporary economic realities often require a minimum building or parcel size. In these cases, numerous strategies can accommodate such changes to keep different scales compatible with existing neighborhoods. For example, long retail frontages may be broken up with different architectural treatments. Roof features, building height variation, and horizontal shifts in building plane break up building massing, and cause buildings to appear more scaled to a pedestrian perspective.

Finally, contextual architectural style helps to define the unique character of an area and integrate higher intensity development with existing development. Achieving contextual stylistic treatments does not mean exactly mimicking existing building types. However, it does involve choosing compatible materials, forms, ornamentation treatments and colors, and understanding an area's unique architectural features and styles.

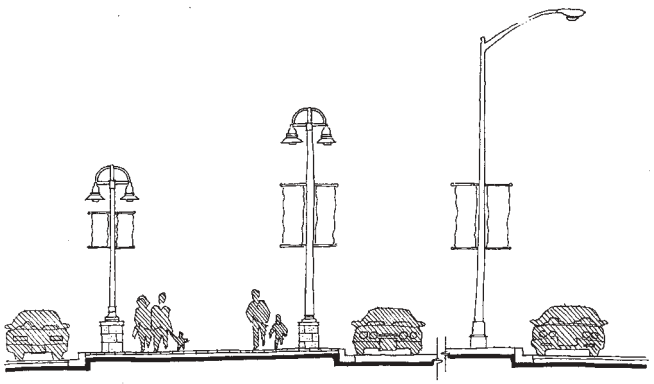
GRADUAL HEIGHT AND MASSING TRANSITIONS AND CONTEXTUAL STYLES HELP INTEGRATE LARGER STRUCTURES INTO LOWER-DENSITY AREAS

Public Space Design Strategies

- *Streetscaping*

Streets constitute the majority of our public realm, yet are often unusable as public space. A prerequisite to streetscape design in TODs is to think about streets as the public realm. TOD should contain streets that are safe, active, and comfortable spaces that people will use for walking or tarrying. Streetscape design is important from both a circulation and an urban design standpoint. Many of the same strategies that improve pedestrian circulation also apply as urban design strategies.

For example, wide sidewalk right-of-ways are both a circulation amenity for pedestrians and a design strategy that emphasizes the street edge as useable public space. Wide sidewalk right-of-ways enable people to stop and talk without blocking the passage of others. They also enable sidewalks to include amenities that make streets attractive, lively, and more interesting. Such amenities could include street trees, sidewalk furniture, art installations, retail kiosks, or outdoor eating areas. All of these can transform an urban or town center street into an active public environment.



HUMAN-SCALED LIGHTING FIXTURES: AN ESSENTIAL STREETSCAPING ELEMENT

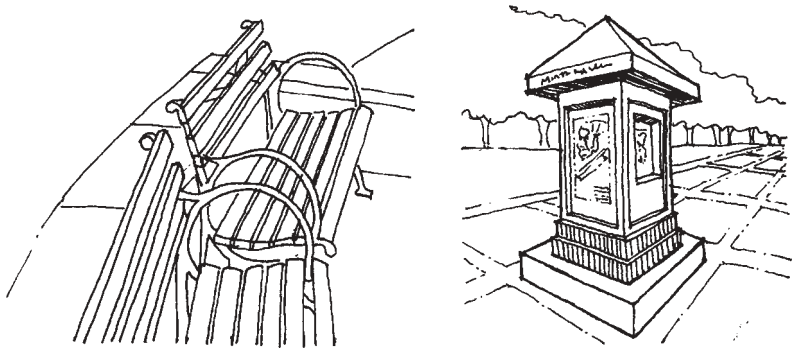
STREETSCAPING GREATLY ENHANCES AN AREA'S LIVABILITY AND CAN GIVE A DISTINCT, RECOGNIZABLE CHARACTER TO A NEIGHBORHOOD

Buffering sidewalks from streets also helps turn sidewalks into true public spaces people feel comfortable and safe using. On-street parking buffers sidewalks from streets, and also slows traffic on the street. In residential and some commercial areas, a planting strip between the sidewalk and the street has the same effect, along with other benefits. Alternatively, in quiet residential areas with low traffic levels, shared streets provide a uniquely useable street space. Shared streets do not distinguish between auto and pedestrian zones, but give the whole street over to both. Cars are encouraged to go extremely slow through paving and landscaping treatments, and people can use the entire street for chatting or playing games.

- *Civic Plaza at transit station*

The transit station is a highly appropriate location for a public gathering space such as a plaza or small park adjacent to station entrances. Public gathering spaces adjacent to transit emphasize transit as a hub of community life. The transit plaza can be the center of a community, and contain space for informal socializing and formal events. More prosaically, a transit plaza creates a comfortable place for people to wait for a bus, a ride or a friend, or just to get their bearings after exiting the transit system.

The scale of the transit plaza should be large enough to be a comfortable and not crowded place to wait, but not so large that it loses its connection to nearby town center uses. The transit plaza, as a center of neighborhood activity, is an appropriate place for events and for small-scale retail activity such as a flower or newspaper kiosk. Finally, the design of the plaza should take care to emphasize visibility and safe well-lit pathways through the space. In combination with high activity levels, this will ensure that the transit plaza does not become a desolate and unsafe environment.



APPROPRIATE STATION PLAZA AND STREETSCAPE ELEMENTS INCLUDE BENCHES AND INFORMATIONAL KIOSKS

- *Landmark features*

Many potential TOD locations in the Wasatch Front, especially existing TRAX stations along the former industrial rail right-of-way, are currently lacking in identity and sense of unique place. For example, 2100 South Station is located in an area of underutilized, featureless small industrial sites with few defining features. TOD in this type of area can create districts with a distinct identity and strong sense of place. In addition to the inherent value of improving the place, a well-designed, distinct TOD will become prominent in people's minds and cause people to associate the neighborhood's positive attributes with the transit system.

The use of landmark features and nodal points presents an effective strategy for defining an area. Many areas already contain some sort of landmark or node, that can be capitalized on and marketed as an important feature of a TOD. For example, at community workshops in Murray, many participants felt that the Laundry Tower was an important area landmark and should be integrated into redevelopment plans for the area. Similarly, Layton's historic buildings create a landmark that gives Layton residents a sense of connection to their town's identity.

Station Design

West Jordan's City Hall and Murray's laundry tower, potential orienting landmarks

As a centrally located civic structure, the transit station is an obvious choice for a neighborhood landmark. Notable landmark features at a station may include a tower or distinctive roof feature. Or the station entrance may be on axis with main approach streets so that it can be seen from many points in the neighborhood. Other civic buildings such as a library or a school may also act as a distinguishing landmark for an area. West Jordan's attractive City Hall, located across from a proposed light rail station, provides such a landmark.

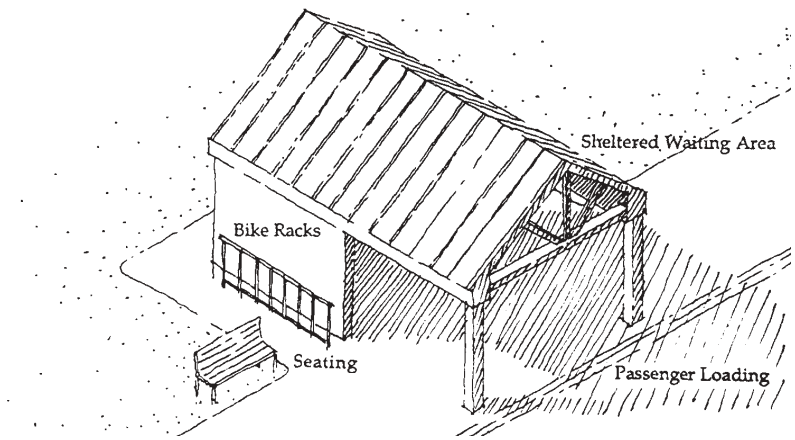
Transit stations range in scale from a simple bus stop along an active road to a light rail stop at the center of a neighborhood to a complex multi-modal hub where various forms of transit interact. The design challenges each station faces will be unique to its situation; however, all transit stations should respect the following principles.

- *Connections to adjacent spaces and buildings*

Most importantly, transit stops should be well-connected to adjacent uses and path and roadways that connect to the rest of the neighborhood. Major community buildings or landmarks visible upon exiting the transit system orient passengers and connect the transit stop with the heart of the community. In locations where development extends to both sides of the transit line, stations should provide pedestrian connections to both sides.

With rail systems, how to connect the station to the community involves a decision about whether the station will be at-grade with surrounding roads and buildings, or elevated from them. Elevated stations can provide greater system speed, but create a visual disconnect between areas on either side of the tracks. Elevated stations should contain pedestrian crossings over or under the tracks, or a station mezzanine level that contains exits to either side. At-grade light rail stations are preferable from an urban design standpoint. At-grade stations allow visual and pedestrian connections across the rail right-of-way, creating a coherent public space around the transit station and eliminating the need for dark underpasses that may become unsafe.

Bus stops require less complicated right-of-way crossings. However, bus stops on busy arterials easily lose their connection with uses on the other side of the road. At bus stops, roads may be retrofit with traffic calming techniques or facilitated pedestrian crossings. Bulb-outs work especially well in tandem with bus stops by creating a lane out of traffic where buses can pull over, and a sidewalk extension where people can wait for the bus to arrive.



BUS STOPS MAY BE SIMPLE STRUCTURES PROVIDING AT LEAST SHELTER, SEATING, AND INFORMATION, OR INTERMODAL HUBS SUCH AS THE OGDEN INTERMODAL TRANSIT CENTER THAT CONTAINS SIGNIFICANT INDOOR WAITING AREAS

- *Station amenities*

Transit stop amenities vary by the size and type of the station. At a minimum, as in a local bus stop, the station should have a shelter for poor weather, bike racks, system information and enough seating to accommodate people who are waiting. Slightly larger stations, such as a bus hub or a light rail stop, should contain a greater number and variety of amenities, such as an expanded or indoor waiting area and more seating. Small retail uses such as a convenience store, newspaper kiosk, or attended information booth are often helpful to transit riders, and are appropriate to integrate into stations of this size.

Major intermodal hubs or transfer stations such as the Ogden Intermodal Transit Center should contain high levels of amenities, potentially attended bike storage, lockers, or a grand focal waiting area. Major transit hubs also present opportunities for retail uses integrated into the station, such as an eating court or shops. However, in-station retail should be used sparingly, only in instances where there is high enough retail demand to accommodate in-station retail and retail in adjacent neighborhoods. In-station retail should not outcompete other area retail, so surrounding streets remain lively, well-used and free of vacant storefronts. Large hub stations may additionally be integrated into commercial complexes, as long as they still retain a strong relation to the street. See Chapter 6: Implementation, for a full description of joint development strategies.

- *Transit station as community landmark*

A well-designed transit station can become a community-centering landmark in a TOD, both a distinctive central place that draws people by choice and necessity, and a symbol that people associate with their community's identity. The station's nodal importance can be expressed through a variety of design treatments. For example, stations can generate community landmark quality through distinctive and unique architecture, a style that picks up on the vernacular of surrounding buildings, or vertical punctuations that align with major community routes and can be seen throughout the neighborhood.

THE PARK CITY TRANSIT CENTER IS A RECOGNIZABLE STRUCTURE THAT PICKS UP ON THE TOWN'S MOUNTAIN CHARACTER.

- *Parking and Loading Areas*

Large park-and-ride lots adjacent to a transit station don't maximally capitalize on station potentials to bring a concentration of potential transit riders into walking distance of the station. Vast surface parking lots at park-and-rides create a pedestrian-unfriendly, land-consumptive environment. Wherever possible, park-and-rides should be phased out or reoriented at TODs in favor of higher-intensity, pedestrian-oriented uses and parking should be reduced to reflect that a higher percentage of trips would occur by transit.

However, in some locations commuter parking is necessary in conjunction with a pedestrian-oriented district. TOD is often located at regional transportation hubs, where multiple bus routes and local rail systems, come together. Because of the regional importance of these transit centers, parking supply may need to account for patrons beyond the standard 1/4 to 1/2 mile service area. Commuters often travel to their closest transit station from lower density suburban areas to park and continue their commute into higher density business districts and employment zones.

The proposed commuter rail station in downtown Layton presents such an example, where commuter parking is necessary but an important goal of station area planning is to create a main street pedestrian-oriented environment. Where park-and-ride lots must be located in a TOD, there are several design strategies that minimize their visual impact and allow for more intense use of station-adjacent lands.

Structured parking is a land-efficient parking solution, taking up less horizontal space by stacking cars vertically. Parking structures can be shared between the transit system and adjacent development, and a parking structure can replace a surface lot over time as station-adjacent land begins to be developed.

Linear parking lots with only one or two parking rows on either side of the station are another alternative that create less of a visual impact than square shaped lots. This configuration also enables a shorter crossing distance from the station to adjacent streets and buildings, bringing neighborhood uses functionally and psychologically closer to the station itself and creating a more intimate, defined urban space.

Some TODs contain a barrier such as a highway or freight rail corridor that separates the area adjacent to one station side, which makes it difficult to create a pedestrian-friendly district (see Chapter 4A: Size and Shape of TOD). In these180 degree TODs, the pedestrian-inaccessible side may be an appropriate site for a park-and-ride, linked to the station by some sort of pedestrian connection such as an overpass or bridge. In this way, the distance from the park-and-ride to the transit station is walkable, and the surface parking lot does not detract from the pedestrian-friendly area on the other side of the station. The Envision Utah community design workshops proposed this type of arrangement at the proposed Layton commuter rail station.

Transit stations also require some degree of loading and waiting areas, from a simple kiss-and-ride for passenger drop-offs, to multiple bays for buses, shuttles and taxis. As with other station elements, loading areas should provide facilitated pedestrian connections to the station and adjacent uses. To minimize accident potential with frequent bus and car traffic, pedestrian crossings through loading areas should emphasize safety and visibility.

LOADING AND WAITING AREAS SHOULD EMPHASIZE PEDESTRIAN SAFETY, SO AS NOT TO PRESENT A BARRIER BETWEEN STREETS AND STATIONS

5C. Parking and Transportation Demand Policy

Goals

To balance parking supply and demand in a manner that realistically reflects the presence of transit, and to minimize the visual and symbolic effect of parking.

At present, people make the majority of their trips in cars. Overdependence on the automobile necessitates that vast amounts of land be given over to parking. One study found that 20% of urban land is devoted to off-street parking and another 25-30% to streets (SCVTA 2001). Parking is a land-consumptive land use that dominates a neighborhood's landscape and decreases the area's walkability. Additionally, an overly high supply of free or cheap parking provides an incentive for people to drive to destinations, rather than to take transit, walk or bike, going against the basic principles of TODs, which encourage and reinforce the use of alternative transportation modes.

Parking is often a "make or break" issue for TOD projects. Too much parking can limit the efficacy of TOD by increasing costs, attracting cars, taking up space that could otherwise be devoted to more attractive uses, and in general eroding the quality of place for pedestrians. Many developers, lenders, and local governments are not aware of the option of reducing parking or strategies to achieve that goal, and lenders may not finance a project if it doesn't contain a standard parking ratio. However, in pedestrian and transit-friendly TODs, standard ratios may not accurately reflect local parking demand. Parking supply strategies should work in tandem with other mobility and transportation demand strategies to identify and create supporting programs that make it easier for people who live in TOD areas to own fewer cars and make fewer and shorter auto trips.

- *Provide a parking supply that accurately reflects transportation alternatives*

A TOD's transit presence and walkable character encourages people to take fewer auto trips and access many destinations without a car. Because these convenient transportation alternatives exist, parking ratios (the number of parking spaces per dwelling unit or square foot of developed space) in TODs should be lower than in a typical suburban situation. This reflects alternative transportation opportunities, and in turn reinforces their use by discouraging driving.

Given the Wasatch Front region's low-density character, people will still need cars for some trips- a TOD does not equal a car-free zone, nor does it eliminate driving as a choice. However, a transit and pedestrian-friendly district allows the average person to take fewer auto trips, and the average household to own fewer cars. Therefore, the average residential building will need fewer parking spaces, and commercial buildings can have smaller parking ratios due to the fact that a greater percentage of their customers will be arriving without a car.

- *Minimize the visual impact of parking*

Surface parking lots greatly detract from an area's walkable character. Districts characterized by vast surface parking lots are visually dead and uninteresting to the pedestrian. They also decrease the number of connections available between destinations, and make different destinations considerably further apart from one another. Some strategies for mitigating the visual effect of parking are discussed in detail in the previous section; however, an important prerequisite for limiting the visual impact of parking is to limit the number of parking spaces themselves.

Parking Maximums and Minimums

TODs should link parking requirements for commercial and residential development to actual parking utilization and vehicle ownership levels, factoring in the type of location, population density, use, and demographic variables that affect auto ownership and use.

Parking quantity is currently dictated by several factors, including local zoning regulations, tenant requirements and financing institutions. These standards are often based upon national standards that are designed to meet the highest demand periods such as the Christmas shopping season for retail uses. Nationally based parking standards do not account for locational and demographic characteristics, and are often higher than is necessary in an area. One national study found that typical peak parking for office uses is between 2.0 and 2.8 per 1,000 square feet, while most standards are in the range of 3.5 to 4.0 per 1,000 square feet (Shoup 1995). Overly high parking minimums are especially relevant in TODs where there are viable alternatives to driving alone. More people will arrive in the district without a car, and fewer parking spaces are necessary.

TOD should ensure that parking supply does not exceed what is necessary for the district. Minimum parking requirements should be reduced in TOD districts to realistically reflect the presence of transportation alternatives. However, parking reductions, a negative incentive to driving alone, must complement demand management practices such as shared parking, transit, and ride-share programs that provide a positive incentive to take transit and create convenient alternatives to driving alone. That is, if an area reduces parking supply per developed square footage, it must also take steps to reduce parking demand.

Reducing required parking minimums can also provide a significant financial incentive to developers, due to cost savings from constructing less parking. Developers may also use the area saved by lowered parking requirements to build more or to provide more open space on site.

One idea that is still under exploration is for developers to purchase transit passes for the residents of their development located in a TOD. This would be an incentive to the residents to locate in the area by offering free transit service - perhaps for a timespan of one to three years. The passes would be purchased from UTA for a discount, similar to the corporate EcoPass program UTA currently offers.

In exchange, the developer would work with the community to have the parking requirements for the development reduced, perhaps from 2 spaces/per unit down to 1 or 1.5 spaces. This would in turn reduce their expenditure on the development, by allowing them to maximize the amount of land they could build upon. The money spent on purchasing the passes would be much less than the amount needed to meet standard parking requirements.

Parking maximums are another effective strategy to manage parking supply. Parking maximums set an upper limit on the number of parking spaces allowed for each development. It is common practice for retail developers to provide more than the required minimum parking spaces, especially in areas where land is abundant. This practice is land-consumptive and unnecessary. Realistic parking maximums in TOD zones reflect neighborhood parking demand and encourage land area to be efficiently used for developed or open space, rather than for asphalt fields. Parking maximums, in combination with reduced parking minimums, can prevent an unnecessary oversupply of parking, and are an integral aspect to successful TOD.

Shared Parking

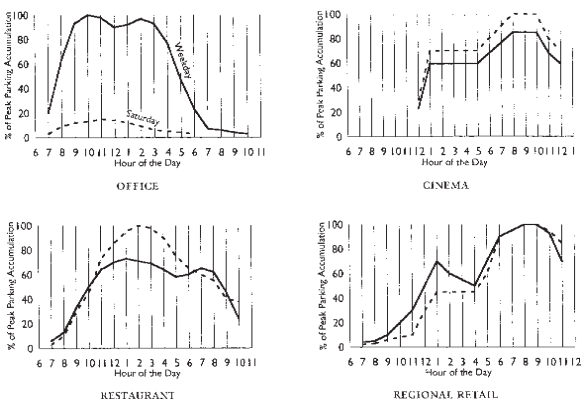
Shared parking recognizes that different land uses, including multi-family, mixed-use, office, retail, entertainment and transit uses, routinely experience peak parking accumulations at different times of the day, week, or season. Parking spaces not occupied by one use at a given time can accommodate another nearby use at that time. An interrelationship between adjacent land uses not only increases the vitality of businesses but also results in lower parking demand.

A successful local example of shared parking is Jordan Common in Sandy, which combines restaurant and office uses. The office building enhances the restaurant's noon business; many of the noon diners are office employees who are already parked at the offices, and so don't use up more parking spaces. In the evening, when restaurant parking demand is at its highest level, office demand has dropped off sufficiently to provide more than enough space for the restaurant. With two complementary land uses sharing the same parking stalls, the area devoted to parking has been significantly reduced.

Municipal parking requirements should allow shared parking arrangements so that parking spaces are used more efficiently, and the land used for parking lots can be limited. The following steps help determine shared parking ratios for mixed-use districts:

Land Use	Single Use Peak Hour Demand (spaces)	Percentage of Peak Demand for Key Times [1] Weekdays					Saturdays				
		10AM	1PM	5PM	8PM	10PM	10AM	1PM	5PM	8PM	10PM
Retail	3/1,000 sq. ft.	50	75	75	65	25	50	100	90	65	35
Office	3/1,000 sq. ft.	100	90	50	5	5	15	15	5	0	0
Restaurant	10/1,000 sq. ft.	20	70	70	100	95	5	45	60	100	95
Cinema	1/3 seats	0	60	60	85	85	0	70	70	100	100
Health Club	5/1,000 sq. ft.	10	80	100	30	10	60	80	60	30	10
Hotel	1/room	45	30	60	90	100	40	30	60	90	100
Residential	1-2/ unit (see requirements)	85	80	85	95	100	70	65	75	95	100

[1] Source of peak demand percentages is the Urban Land Institute's *Shared Parking Standards.*



PERCENT OF PEAK PARKING AT DIFFERENT TIMES OF WEEKDAYS AND SATURDAYS FOR SELECTED LAND USES

1. Start with municipal parking standards for each building type which uses the shared parking arrangement.

2. Determine the parking demand for each building type for key times when parking conflicts are most likely to occur, e.g. weekdays and Saturdays at 10 AM, 1 PM, 4 PM, 8 PM and 10 PM.

3. Determine the aggregate parking demand for these key times by summing the demand of the various land uses for each key time.

4. Determine the minimum shared parking space requirement by noting the largest of the aggregate parking demand figures.

For more information, see the Urban Land Institute's 1983 publication, Shared Parking, and the Institute of Transportation Engineer's *Shared Parking Planning Guidelines.*

Example of Shared Parking Calculation

The following example illustrates how to determine the parking demand from joint-use shared parking for a mixed-use area combining a 10,000 square-foot restaurant and 200,000 square feet of office space:

South Jordan parking standards require 10 spaces per 1,000 square feet of restaurant space and 3 spaces per 1,000 square feet of office space. The 10,000 square foot restaurant and the 200,000 square foot office building thus require 100 and 600 spaces, respectively, or 700 total.

To determine parking demand if spaces are shared, parking demands for the 2 uses are added for peak times on weekdays and Saturdays, to see which hour produces the highest parking demand. In this case, the highest total demand is at 2 pm on a weekday, when the restaurant is at 70 percent of peak and the office is at 95 percent of peak, for a total demand of 640 spaces, 60 fewer spaces than would be required with the individual conventional requirements. Even larger reductions in demand are possible with uses that have greater differences in their demand curves, such as office and cinema.

District Wide Parking

Similar to the concept of shared parking, district-wide parking reduces the need for providing parking on a project-by-project basis, resulting in maximized developable land and increased parking efficiency. Plans for TOD should include some sort of coordinated effort to provide alternatives to driving and can result in limits to the total parking supply in the TOD.

District-wide parking may consist of a series of public parking structures or lots. In place of each development project having to provide an individual parking lot for its patrons, parking is consolidated at a few locations. Developers can pay money into a parking fund for their required parking share rather than providing it on site. In exchange, developers will benefit from the decreased cost of having to build expensive parking and can develop a higher percentage of their site.

District-wide parking allows people to park once to access all they need within a district. In many contemporary commercial centers, parking lots are so wide that people are induced to drive from one store to another so as to be closer to store entrances. Therefore, each store must accommodate a greater number of cars. District-wide parking allows commercial streets to have a greater pedestrian orientation and to be closer together, so that people can walk from use to use, and fewer total parking spaces will be necessary. Additionally, a district-wide parking policy allows individual buildings on primary commercial streets to take up greater street frontage, resulting in fewer curb-cuts and gaps in the street wall, giving the district a greater pedestrian orientation.

The siting of district-wide parking facilities is important to their success. District-wide parking is most appropriate in town and village centers near the transit station. Parking lots should not be on the main street, but nearby enough to be convenient for people to reach servicing establishments. Public parking areas located in block interiors minimize their visibility from town center streets. Surface parking lots

broken up into several smaller lots throughout a district also minimize the visual impact of parking. However, visible signs throughout the district should direct users on its location, availability, and for whom the parking lot is intended so that customers are not driven away because they can't find parking.

In a district-wide parking arrangement, all parking in the TOD project area could be owned and managed by a single entity such as a parking authority. This entity would have the ability to collect revenues and incur bonded indebtedness. Any excess revenues not needed to cover the cost of parking construction as well as operations and maintenance could be used to enhance transit access to the station. Because many different uses will be sharing parking in this arrangement, fewer spaces will be necessary than if each accounted for its peak parking demand individually.

On-street parking, Pleasant Grove, Utah

Parking Structures and On-Street Parking

Off-street customer or employee parking in commercial development is often necessary to accommodate parking demand. Although this practice provides easy access for auto users, it separates land uses and reduces walkability. Excessive land given over to parking uses reduces residential and commercial densities and increases the distance between buildings and streets. On-street and structured parking present two solutions that can be used in many circumstances to create a land-efficient TOD while still accommodating parking demand.

Structured parking reduces the amount of land needed for each parking space, freeing up land for more development or for open space, and allowing a TOD to be compact. This is especially important adjacent to transit stations, where development intensities should be higher to capitalize on the transit presence and to encourage transit use.

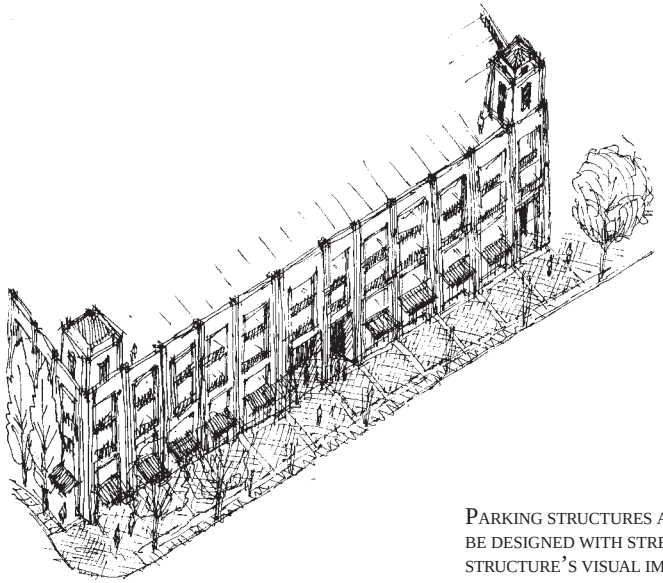
Parking structures are obviously not appropriate in all locations- no one wants a parking structure in their backyard. Additionally, parking structures are often considered economically unfeasible by developers and financiers.

However, in many locations, structured parking is an appropriate and economically feasible solution. In town centers adjacent to transit stations, development intensities are higher than in surrounding areas, and structured parking frees up land that can accommodate additional development, providing additional rents to developers. Structured parking in these locations may be shared among numerous developments and the transit line to spread the development and operating costs, and at the same time allow for a more pedestrian and transit-friendly district.

On-street parking is another simple solution that minimizes that need for off-street surface parking lots. On-street parking can increase the number of available parking spaces in a district without creating a negative visual impact. Although on-street parking will not accommodate an area's entire parking supply, it is a valuable tool to

create a human scale environment and to maximize developable areas. In fact, on-street parking in many areas can create the sense of a narrower, more intimate street and the pedestrian perception of safety by creating a buffer between roads and sidewalks. On-street parking in front of retail buildings also supports smaller retail uses with high turn over.

Often, on-street parking is prohibited by roadway standards that call for high design speeds. However, in redeveloping areas that have become more pedestrian-friendly or transit-oriented, high design speeds may no longer be necessary. Agencies should re-evaluate their roadway functional classifications to determine if uses of streets have changed over time, and street classifications should be modified when land uses change. Original design speeds may not match the evolving character of the street, and may result in a street that is less safe. Lowering design speeds is an appropriate solution where adjacent land uses are pedestrian and transit-supportive. Allowing on-street parking provides one method of achieving lower design speed.



PARKING STRUCTURES ARE A LAND-EFFICIENT PARKING SOLUTION THAT CAN BE DESIGNED WITH STREET-FRONTING RETAIL THAT MINIMIZES THE PARKING STRUCTURE'S VISUAL IMPACT

Car Sharing

Car sharing is an idea that is gaining popularity across the country. Car sharing refers to programs in which people who do not own cars, but need cars for some trips, may join a club that enables them to access vehicles shared by all members. Car sharing programs are especially effective in areas such as TODs, where people can make the majority of their trips, including their daily commute, without their own car. However, they still may desire the use of a car for some trips, such as weekly trips to the supermarket. Often, car-sharing clubs have membership dues, and/or members pay per use. Members can reserve times to use the car in advance.

Car sharing arrangements enable people to enjoy the benefits of access to a car without the hassles of ownership. Car-sharing programs thus encourage lower auto ownership levels, necessitating fewer parking spaces in a district or individual development. Multi-family residential developments can provide a shared car for residents of the project, in exchange for having to provide fewer parking spaces. District or citywide car-sharing programs may also be effective, and enable a city to lower overall parking minimums.

Parking Pricing

Parking pricing refers to any number of strategies that apply cost and subsidies as tools to influence people's transportation choices, and to make parking users pay the true cost of parking. One study estimates that 95% of people nationwide park for free at work. (Edwards 1994) Ample free parking encourages people to drive alone, even where alternatives exist. Instead, parking costs should be passed on to those who use the parking. For example, employers might increase parking charges for drive-alone commuters or reduce parking charges for carpoolers and vanpoolers. Or employees can be given the option of "parking cash-outs," that is, trading in their free parking space for transit subsidies if they choose not to use the space.

Additionally, parking can be financially "unbundled" from other land uses like housing, to create a separate market for parking in which people pay for parking separately from other uses. Rather than including the cost of parking in the cost of housing (and passing the expense onto all users), people would pay only for the amount of parking they actually use. Unbundling parking means treating parking separately from the rest of the development from a financial standpoint.

At the level of a single project, this means that residents of a building would rent or purchase a unit separately from a parking space, and pay for the latter only if they want it. This potentially also lowers housing costs, by not forcing people to buy a parking space. At the neighborhood level, it becomes conceivable that some individual projects would include no parking at all and instead people who want parking could rent a space in a separate parking market.

In all cases, unbundling parking means that individual developments can build less parking, making financing easier both because parking is expensive to build and because reducing parking increases the amount of inhabitable space that can be built, and therefore the profitability. In some cases, particularly with small and oddly shaped infill parcels, the efficiency of buildings is vastly improved if parking is taken out or minimized.

Other Transportation Demand Management Strategies

Transportation Demand Management (TDM) refers to strategies employers or building owners can take to reduce the number of drive-alone commuters to their offices, thereby decreasing demand for parking spaces. TDM strategies should be used in tandem with reduced parking supplies, because more people will come to work by transit or in carpools.

Most importantly, TDM strategies provide preferential options to those who arrive by means other than driving alone. Preferential treatment of single occupant vehicle commuters through subsidies and free parking reinforces the drive-alone commute and discourages use of public transit or participation in ridesharing programs. When employees are charged for parking or provided with financial or other incentives to take transportation alternatives, many people will alter their driving behavior and fewer will commute alone to work. In direct cost comparisons, providing TDM services such as those described below is typically much less expensive than building parking.

Several parking management strategies can influence transportation and parking demand. These are discussed below:

- *Employee Transportation Allowances*: In this program, employers provide financial assistance such as coupons redeemable for transit passes to employees who use transit for their round-trip commute. If employers regard the drive-alone commute as a less desirable choice and reflect this belief in the level of subsidy, employees are more likely to consider other transportation alternatives. UTA's EcoPass program currently offers employers the choice to pursue this.

- *Preferential Parking*: Employers and developers can reserve the most desirable parking spaces for ridesharing vehicles as an incentive for participation in a ridesharing program.

- *Workplace-based carpool programs*: Carpools may develop from informal arrangements among neighbors or co-workers. However, employers should also proactively encourage ride-sharing through programs such as ride matching. Promotional efforts may be as simple as providing bulletin board space for employees to solicit carpools. Employers also can provide ridesharing incentives, such as preferential parking or flexible work schedules. Larger employers, particularly those with personnel or human resource departments, may assume a broader role, including identification and matching of pool participants. UTA runs rideshare and vanshare programs.

- *Shuttle services*: Major employers can also provide shuttle services from the transit station to the workplace, perhaps in conjunction with a transit provider or a business district association.

HOV lane on I-15, Salt Lake City, UT

Chapter 6: Implementation

6A. Comprehensive Planning

6B. Transit-Supportive Zoning and Land Use Policies

6C. Public/Private Partnerships

6D. Financing and Funding Public Improvements for TODs

6E. Brownfields Redevelopment Strategies

6A. Comprehensive Planning

Given the number of elements that must be coordinated to create an effective TOD project, comprehensive planning is crucial to success. Only careful planning can ensure that transit, land use patterns, the development program, infrastructure investments, and pedestrian amenities all support the goal of reduced automobile dependency and directed growth into transit and pedestrian-friendly neighborhoods.

Comprehensive planning for TOD involves the strategies listed in the following pages. Most importantly, TOD should plan for an entire district, rather than an individual development, to maximize linkages and synergies throughout an area. An individual development may contain many appropriate qualities, but does not constitute TOD in and of itself.

TOD planning should take a holistic approach, and include considerations of how TOD is designed within its own defined area, how it affects surrounding areas, and the district's regional role. For example, communities along a transit line may partner to create TODs in neighboring jurisdictions that enhance one another through complementary land use destinations, and not compete for the same retail opportunities to the detriment of both. TOD areas should also recognize their regional role in accommodating new growth, so as to work with other areas that are appropriate for lower levels of growth and greater land preservation.

In addition to helping ensure the functional success of TOD projects, good planning serves as an incentive to developers by reducing uncertainty and streamlining the process necessary for bringing projects to completion. Developers have cited the existence of a good plan, along with public infrastructure improvements, as among the most important factors in their decision to commit to a project. Communities that proactively plan for TOD will more easily attract transit investments because transit-supportive land uses are already in place.

Planning and financing are inextricably connected. The physical plan has significant consequences for financing strategies and an inappropriate or inadequate plan can make financing more difficult. Financing issues should be taken into account during the entire planning process and the plan should be set up so it reflects the financing strategy. Specific issues include:

- *Appropriate building types*

The plan should be designed around building types that are relatively easy to finance, such as buildings of appropriate size that are not overly ambitious in mixing uses, particularly where developers and financing institutions have little experience with mixed-use development.

- *Phasing*

Phasing is a critical tool to examine assumptions and demonstrate market viability as well as to respond to market change and limit risk. For instance, as the viability of reduced parking is proven and as the project matures to the point where transit gains a greater share of mode split, parking in subsequent phases can be reduced. Phasing can be used to test unknown markets, such as higher density housing in otherwise low-density areas, and phased introduction of different pieces of the overall development program can facilitate financing by creating momentum with the more straightforward elements for which there is known demand before building less certain elements such as higher density housing or retail.

- *Public investments*

Up-front decisions about public investments in infrastructure and amenities are crucial for attracting developers and creating confidence in lenders. Investments should be carefully planned and financing sources identified as part of the overall TOD planning process.

6B. Transit-Supportive Zoning and Land Use Policies

Local governments should carefully consider how their zoning and development codes either limit or accommodate station area development activities. Often, existing zoning will select against the very development types that create a successful TOD district, such as mixed-use areas, dimensional requirements that allow for compact, pedestrian-friendly development, or lowered parking requirements.

Many local zoning codes unwittingly discourage transit-oriented development through regulations designed to promote automobile-oriented, single-purpose, suburban-scale development. Identifying and eliminating these regulatory barriers is a necessary first step for creating successful transit station communities. Land-use regulations that are too stringent may discourage all development activity while regulations that are too broad may allow development that is not desirable. New regulations should not serve as a disincentive to TOD development.

Some common ways that zoning regulations can achieve station area objectives include:

- Creating a transit overlay zone;
- Establishing new zoning districts;
- Instituting design guidelines or standards; and
- Establishing a transfer of development rights program.

TOD regulations govern the amount of development in order to permit higher densities near transit stations, and the type of development by permitting a wider mix of land uses within a given area. They are spatial in that they attempt to minimize the distance between highly developed areas and public transit facilities.

TOD regulations share common legal issues with most land use policy. To date, there is no reported litigation on transit-oriented development. However, the individual elements of TODs such as mixed uses, flexible zoning, and the use of eminent domain powers and financial incentives to encourage joint development, have been litigated in courts.

Additional regulations and policies should be instituted to provide a vehicle for development approval and to ensure that obligations to the public and private sector are fulfilled. Specific plans provide the link between the community's comprehensive plan and implementing regulations for a specific area such as a TOD district. Development agreements protect private development rights while providing contractually for the enforcement of transit regulations. Joint development and capital improvement programs provide structural framework for financing and constructing the infrastructure needed to support these land-use patterns.

See Appendix B: Sample TOD Ordinance for a specific description of a transit-supportive zoning ordinance.

Goals of a TOD Ordinance

TOD-supportive land use policy and regulation should act toward the following goals:

- *Support higher development intensities*

TOD regulations should permit or require adequate densities to encourage the utilization of transit. TOD ordinances often encourage more intensive development patterns by establishing minimum densities, raising dimensional maximums or offering density bonuses. Density standards depend on the type of transit service within the TOD and the character of the adjacent neighborhood. Systems with higher capacities such as commuter rail or light rail are capable of serving areas with higher population densities. On the other hand, lower capacity systems, such as buses, may better serve areas with lower population densities.

- *Allow mixed land uses*

TOD typically contains a mix of residential and nonresidential uses that are transit-supportive. Several factors are key to the successful implementation of a mixed-use development program. Development controls can ensure that both residential and nonresidential development occurs on the site. Incentives, either regulatory or financial, may be needed to encourage non-residential development in some areas and residential development in others. Additionally, TOD ordinances may use detailed urban design guidelines to ensure compatibility between uses and to stimulate pedestrian activity.

- *Minimize distance between destinations*

An important threshold consideration for a local government working to develop transit-supportive land use policies is to define the jurisdictional coverage of the regulations. TOD ordinances typically cover a circular area extending outward from the transit station adjusted for topography, barriers and road networks. Zoning regulations should maximize the amount of development that is within walking distance of transit stops. Design guidelines may also act to minimize distances by requiring pedestrian access.

Creating or Modifying Zones

There are a number of zoning options that remove zoning barriers to better accommodate transit-oriented development:

- *TOD Overlay Zoning District*

The overlay, or floating, zone concept allows for districts that are not geographically-based, but instead are based on a common feature, such as a transit station. Overlay zones create a regulatory layer that changes or adds to the standards of the underlying district. TOD overlay districts can provide local communities with greater zoning flexibility in areas surrounding transit stations. A TOD overlay district typically extends one-half mile outward from the station. The overlay zone may allow for greater densities nearer the station, allow a variety of uses, lower parking requirements, and set pedestrian-oriented design standards.

- *Planned Unit Developments/Planned Communities*

The Planned Unit Development (PUD) or Planned Community (PC) concept evolved from the need to accommodate large scale and mixed-use projects and to allow more flexibility in planning and development. By creating master-planned communities, PUDs can provide such positives as community-wide amenities and integrated circulation for all modes rather than typical suburban patterns in which subdivisions are highly isolated from one another.

Under PUD or PC provisions in a zoning ordinance, rigid requirements found in conventional ordinances are waived to permit the clustering of housing units and other creative site development. Areas left undeveloped by the clustering may be committed to common open space in the particular project area or development site. Advantages of a PUD/PC potentially include protection of sensitive lands and open space, lower development costs, increases in density in appropriate locations, and flexibility for a mix of land uses.

An example of a transit-oriented PUD in the Wasatch Front region is the roughly 4,000 acre Sunrise community in South Jordan, currently in the planning stages. By creating a PC district, South Jordan is able to realize many of its wider goals, such as the preservation of 30% of the development area as open space, pedestrian and roadway connections throughout the site, design standards that ensure pedestrian-friendly design throughout the site, and development that is at highest density in a mixed-use town center located near a proposed TRAX station.

- *Creation of a Mixed Use District*

Mixed-use districts encourage the development of areas as a mix of compatible residential and commercial uses, enabling a walkable core in a TOD.

- *Creation of a Transit Business, Commercial, or Residential Districts*

Transit districts may incorporate a number of transit-friendly features, such as higher allowable development densities, lowered parking requirements, permitted shared parking, or design guidelines that create a pedestrian-friendly atmosphere and achieve the strategies set out in Chapter 5B. Urban Design.

- *Unified Development Ordinance*

A Unified Development Ordinance (UDO) provides a tool for developments that fall under two jurisdictions. The purpose is to provide one ordinance that is very similar across jurisdictional boundaries. It may allow communities to merge zoning ordinances and subdivision ordinances, and provides one similar document that both jurisdictions can use to regulate land use. Various communities along a transit line may use a UDO to create consistent TOD zones whose use reinforces one another by providing popular accessible destinations along the transit line.

Changing Roadway Standards

In addition to changing zoning policies, many cities may need to reassess their roadway and other engineering standards in order to enable transit-oriented growth in their communities. Roadway design elements such as street, lane, and sidewalk width, and intersection radii greatly influence pedestrian safety and neighborhood character. Studies illustrate that pedestrian/vehicle collisions occur with much greater frequency the wider a road gets. Municipalities can in many instances improve the character and safety of new growth areas by lowering road and intersection width standards, permitting on-street parking on wide arterial roads, and allowing or requiring traffic calming devices where it is appropriate to the street's purpose and desired character.

In some cases, attempting to narrow roadway standards may meet opposition from emergency services concerned about access and response times. However, the concerns of these agencies can often be mitigated through strategies such as providing an interconnected street system that offers multiple routes to destinations and providing access to emergency vehicles through auto barriers. There are many examples of communities, such as Boulder, Colorado and Portland, Oregon, that have successfully integrated narrower streets and public safety concerns. For more information on designing appropriate roadway standards, see Envision Utah's "Urban Planning Tools for Quality Growth."

Transfer of Development Rights

TOD regulations guide development within a transit station area or corridor. Additionally, communities can use growth management regulations to guide growth outside of TODs and support the implementation of transit-supportive development. For example, transfer of development rights, and urban growth boundaries may be used to shape regional land use patterns by directing growth into compact urban centers and nodes.

Transfer of development rights (TDR) is a tool that can be used for preserving open space and creating an incentive to develop in transit-friendly areas. The TDR process involves two zones: an area where further development is not desired, often sensitive open space areas, and an area capable of successfully accommodating an increase in development intensity. The TDR process transfers the right to develop the sensitive area, designated as the sending zone, to an area designated as a receiving zone. TDR is a smart growth tool directed at prioritizing lands for development or preservation without taking economic value away from those who own the lands that will be preserved.

Many communities can easily identify open space areas they would like to see preserved. The challenge is often to identify an effective receiving zone. Without properly identified receiving zones, the right to develop is often applied to other outlying areas, which counteracts the goal of saving valuable open space by concentrating development and containing growth.

TOD provides the opportunity for achieving two complementary goals through TDR – open space preservation and compact, centrally located development. TOD sites provide an ideal opportunity for receiving areas. Containing underlying transit infrastructure, these areas can easily accommodate an increase in the intensity of use without the need for major adjustments to mitigate the increase.

A number of factors affect the economics of TDR. Since development rights are usually purchased at market value, there must be an incentive to the potential buyer

of the development rights to purchase them. In order for this to happen, a receiving zone needs to be more attractive and profitable to the buyer. Since receiving zones are usually located in developed areas with existing road and transit infrastructure, land and development costs are likely to be higher than in sending zones at the developed fringe. Hence, in order for these areas to be economically attractive to the developer seeking to transfer their rights, receiving areas must accommodate higher development intensities that promise the potential for greater returns.

Base zoning in receiving areas must be carefully examined to ensure that the final density after the purchase of the development rights is feasible, and is consistent with the principles described in the previous section. The allowable maximum increase in intensity above the established base zoning should be a comfortable fit with the context of the TOD and its surroundings.

A local case study for completing an effective TDR is the TOD study site in Layton surrounding the proposed commuter rail station. Sensitive lands have been identified in the Layton area for which open space preservation is desired. As the community plans for the potential of a commuter rail station, the land within the study site contains areas with the potential for an increase in intensity to serve as the receiving end of a TDR process. As this site is developed, developers may find it profitable to purchase development rights from the identified sending areas in order to increase the intensity within the TOD site. The increase will provide the opportunity for the development to include additional desirable amenities to serve residents and commuters, thus improving the economic viability and public environment of the TOD area. Cities can act as banks and administrate TDR programs and can broker transfers between private entities.

Study site for TOD near Main Street and Gentile Street in Layton

6C. Public/private partnerships

Joint Development Potentials

All TOD requires careful coordination and cooperation between the public and private sectors. However, explicit public-private partnerships necessitate a higher degree of cooperation. In such projects, the public agency provides the land and charges developers ground rent, while the developer contributes expertise in building, financing, and other aspects of development. Joint development projects on land owned by transit agencies are the most common strategy for joint development TOD projects.

Regardless of the form it takes, joint development is a pairing of public and private resources to achieve a project that will benefit both sectors. Joint development also includes a value capture connotation in which the public transit agency attempts to recoup some of the related monetary benefits that result from public investment in transit. Revenues derived from joint development can be used by the transit agency to offset the original transit system real estate and capital costs, or to help pay for ongoing operating costs of the transit system.

One concern of joint development is that transit agencies rarely own enough land around their stations to develop a truly location-efficient neighborhood. Joint development projects may constitute an important piece of a larger transit-oriented development project, but they should not substitute for a broader station area planning process. A single isolated project on a transit station parking lot is not a truly transit-oriented neighborhood, with links to many different projects and uses. Moreover, transit agencies, developers, and cities must ensure that their goals for station area development are compatible and that they are not working at cross-purposes. Both of these concerns highlight the need for a multi-disciplinary, coordinated station area planning process that views the entire area, not just a single development, as potential for TOD.

Developer Incentives

Another proactive approach municipalities can take to encourage TOD is to provide incentives for developers to build in transit-friendly locations and manners. Such incentives may be financial, or take the form of a public investment in the area such as parks or a parking structure. They may also include development bonuses or less restrictive parking requirements, which can help developers increase revenue and decrease development cost.

Development bonuses may work in tandem with a transfer of development rights program, allowing developers to increase development intensities in return for providing transit amenities and a pedestrian-friendly design. Another developer incentive may come in the form of allowing them to build less parking, thus lowering their construction costs and potentially increasing revenue by having more land upon which to build. In exchange for being allowed to build fewer parking spaces, developers may provide residents with transit passes. These benefits are a win-win situation for a TOD, since compact growth and limited parking supplies support the transit system and the goals of a TOD.

Station area planning can use local, regional and state sources of public financing to pay for public improvements in station areas. In addition to public sources of financing, developers can also be required to pay for public improvements. This strategy is easier to implement when there are savings resulting from the characteristics of the TOD, such as reduced parking levels. Funding for brownfields sites is discussed in the following section.

6D. Financing and funding public improvements at TOD

Local Funding Sources

The following local funding sources can be marshaled to pay for TOD infrastructure and place-making improvements:

- *Tax increment financing (TIF) districts*

Utah, like many other states, has provisions for local governments to create tax-increment financing districts that allow revenue bonds to be issued against the future increases in property taxes within the district. Money raised in this fashion can be used to pay for up-front infrastructure investments and other improvements intended to attract private development.

However, financial markets are often wary of TIF bonds if the revenue to support the bonds does not yet exist. Often some development must occur to create a TIF cash flow that can be used to pay off the bonds. Alternatively, local governments can guarantee the bonds, but this exposes the city's tax base if the development does not occur as quickly as projected. Given these difficulties, cities often ask the developer to finance the improvements and then reimburse the developer from the tax increment generated by the development.

- *Joint development revenue*

Joint development, discussed in greater detail above, usually involves private development on land owned by a transit agency, which leases the land to a developer. Revenues from the ground lease may flow into the transit agency's general budget or they may be targeted to pay for a specific transit investment.

- *Special assessment districts:*

Special assessment districts, such as parking and lighting districts, levy assessments on the properties that will directly benefit from the physical improvements paid for by the assessment.

- *Capital improvement budget:*

Many of the features that make TOD projects successful, including sidewalks and other streetscape improvements can potentially be funded as a part of a city's normal capital improvements program. As TOD guidelines for individual station areas are adopted, planning and public works staff for each community should review which recommended improvements are best handled by the city, rather than a developer, and can be programmed into the city's ongoing capital improvements budget. Although city revenues may not be immediately available, indicating that the city is committed to making the improvement in the future will also help to build greater certainty about the future of the area and leverage more private investment earlier in the process.

- *Community Development Block Grant (CDBG) Funds:*

Community Development Block Grant funds (CDBG) are locally-distributed federal funds targeted towards various types of community revitalization activities. Often, these activities are consistent with TOD. For example, CDBG funds may be used for building public infrastructure and community facilities, providing affordable housing, supporting community businesses, and providing new jobs. Projects that are both transit oriented and meet the basic goals of the block grant program may be more competitive to receive CDBG funds than projects that do not offer the transit opportunity.

Regional Funding Sources

Regional sources of financing generally rely on federal transportation money channeled through regional bodies such as Metropolitan Planning Organizations (MPOs). Most of the funding of the Transportation Equity Act for the 21st Century (TEA-21) is distributed in this way. TEA-21 funds can be used to finance such projects as bike lanes, lighting, information kiosks, landscaping, public art, pedestrian improvements, and other types of place-making infrastructure and amenities to make the station area more accessible by non-motorized transportation modes. The Transportation and Community and Systems Preservation (TCSP) Pilot Program and the Transportation for Livable Communities Program are among the programs that receive funding under TEA-21.

A major residential street located in Salt Lake City providing center medians, street trees, on-street parking and bike lanes.

6E. Brownfields Redevelopment Strategies

Brownfields are former industrial sites available for redevelopment that may have environmental contamination issues. Brownfields range from large obsolete industrial sites to small parcels that once housed gas stations and drycleaners. Brownfields often already have major infrastructure and are in proximity to transportation corridors. As such, many are potentially attractive infill sites. However, many also suffer from contamination, which serves as a source of uncertainty and a disincentive for developers and may create significant additional costs and financial risk.

Remediation and development can be stymied by real and perceived liability and investment risks. Besides frightening off potential purchasers and developers, uncertainty about liability makes it difficult for developers to obtain financing for projects on potentially contaminated sites.

While contamination and its associated risks can increase redevelopment costs considerably, it also serves to lower the land costs for such sites. Many private sellers prefer to lower the price or even abandon their property rather than incur the costs of remediating potential contamination. If the risks associated with brownfield redevelopment are accurately gauged and managed, this discount in the price of land can compensate for clean-up costs and allow a reasonable return to investors.

Additionally, in the late 1990s, multiple pieces of federal legislation were passed to limit and clarify the liability of lenders and insurers. Many states as well have legislation designed to encourage the redevelopment of brownfields sites. However, local governments are the actors that are best positioned to connect potential redevelopers of contaminated sites with the many tools and resources available for assessing and overcoming these risks. Often, it is only possible to access state and federal assistance with the intervention of the local municipality.

Brownfields sites are prevalent along the TRAX lines. While they may create significant costs and risk, they are also opportunities for redevelopment, in which land costs may be cheap and outside funding sources are available.

- *Federal Funding Sources*

The Environmental Protection Agency (EPA), the U.S. Departments of Housing and Urban Development (HUD), Health and Human Services, Commerce, and Transportation (DOT) all have funding or financing programs available for brownfields clean-up projects. As part of the Brownfields Economic Development Initiative (BEDI), the EPA has both a pilot grant program for assessment and a revolving loan fund for redevelopment of contaminated sites. The grant program provides $200,000 grants for site assessment and planning only, and the revolving loan fund finances community clean-up programs for up to $500,000. HUD also has funding sources and tools that can be used for financing brownfields redevelopment: Community Development Block Grants (CDBG) can be used as collateral for Section 108 loan guarantees and BEDI grants.

The recent Superfund Amendments and Brownfields Recovery Act (SABRA) establishes a statutory brownfield funding program through the EPA. To be eligible for funding, the property must be considered a "brownfield site," defined as "real property where expansion, redevelopment, or reuse may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant."

Under the EPA's former brownfield program, parties interested in remediating brownfield sites could only obtain funding through loans. This often precluded sites from being redeveloped as recreational or open spaces, or other non-economic uses that are unable to generate sufficient revenue to repay the loans. SABRA allows EPA to establish a program to provide grants for remediation of brownfield sites. The grants may be awarded on a community-wide or individual-site basis, and are intended as seed money to leverage other financial resources.

The Dept. of Health and Human Services provides tax benefits, wage credits and tax-exempt bond financing that private and public agencies can apply to brownfields redevelopment. The Economic Development Administration offers Economic Development and Adjustment Assistance Grants averaging $200,000-300,000 to support environmental evaluation in distressed areas.

TEA-21 provides federal surface transportation funds that can be used for brownfields redevelopment in conjunction with transportation projects. Environmental contamination can be remediated with TEA-21 funds as part of road-building, transit, railroad, pedestrian, bicycle and trail facility projects. In order to receive funding through these programs, a brownfield project must be included in a Long-Term Transportation Plan and Transportation Improvement Program (TIP) by the regional MPO.

It is also possible to apply directly to DOT for grants and loans available through TEA-21. These programs include the Transportation and Community and System Preservation Pilot (TCSP) and the Rail Rehabilitation and Improvement Financing (RRIF) loans. TCSP grants totaled $44.2 million in 1999 and 2000 and are intended for innovative transportation projects including transportation-related brownfields projects. See http://tcsp-fhwa.volpe.dot.gov. RRIF provides loans and loan guarantees for intermodal or rail equipment of facilities and can be used for clean up associated with these projects. See http://www.fhwa.dot.gov/tea21/factsheets/r-rrebah.htm.

Funds are also available through the National Park Service, the State Underground Storage Tank Trust Fund Program and Federal Housing Finance Board. BEDI, CDBG, and TEA-21 funds can also be used to leverage private sector investment in brownfields projects. Only a few of these funding or lending sources are available to private developers without significant local government involvement.

Finally, the U.S. Department of the Treasury also has an important tax incentive. The Brownfield Tax Incentive allows the costs of environmental remediation for sites in targeted areas to be fully deducted in the year in which they are incurred, rather than having to be fully capitalized.

- *Local Funding Sources*

In addition to the above sources of funding, local governments can use tools of their own, such as tax increment financing, also discussed in the previous section, to attract developers to brownfield sites. Within redevelopment areas, projected TIF revenues can be used to issue debt for cleanup of sites that will contribute to the economic revitalization of a "blighted" area or reimburse owners the costs of clean-up. Empowerment Zone/Enterprise Community program funds, tax credits, and bonds may also be directed towards brownfields redevelopment projects, when these projects will provide new jobs for residents.

Public sector equity participation allows the public to become involved in brownfield remediation financing and assume some of the risk of contamination cleanup. Lease arrangements, reclamation banks and city ownership facilitate redevelopment through absorption of risk. Increases in tax revenues on redeveloped properties help to pay for this absorption. Five percent of the profits from tax-exempt general obligation bonds can be used for activities that are not normally tax-exempt, such as raising capital for redevelopment of brownfields.

- *Private Funding Sources*

Many private, non-profit companies and philanthropic foundations provide technical assistance, financing, and even subsidy to brownfield redevelopment efforts. For example, the Brownfields Non-Profits Network has an extensive website dedicated to informing the public about the many other state and national nonprofits available to help with recycling of contaminated land.

Brownfields Legal and Liability Issues

Brownfield sites along transit corridors present a challenge to TOD development, but also provide a valuable redevelopment opportunity. One of the primary impediments to brownfield redevelopment is perceived potential liability, which often discourages private investors from redeveloping brownfield sites that would otherwise be prime development opportunities. Understanding liability and other legal issues regarding brownfields is an essential prerequisite to undertaking redevelopment on brownfields sites.

- *Federal Brownfields Policy*

Brownfield cleanup and redevelopment is governed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLA identifies liability responsibilities for brownfield and "Superfund" sites (exceptionally contaminated sites that the federal government has listed as priorities for clean-up). The Small Business Liability Relief and Brownfields Revitalization Act, also called the Superfund Amendments and Brownfields Recovery Act (SABRA), amends CERCLA to provide greater flexibility and liability protection for the owners and prospective purchasers of brownfield sites. This amendment significantly facilitates brownfields redevelopment by limiting risk and uncertainty. Because brownfield sites are often located within close proximity to rail and transit systems, SABRA can serve as a catalyst for greater availability and options for TOD development.

Under SABRA, landowners who acquire or lease contaminated property, including Superfund sites and other brownfields, after January 11, 2002, can avoid liability if they can establish that the contamination occurred before they acquired the land. This clause, known as the "Bona Fide Purchaser" defense, eliminates an obstacle that had been included in CERCLA, which held landowners responsible for liability unless they could prove they did not know that any hazardous substances were disposed of at the site. Since sites classified as brownfields are known contaminated sites, acquiring brownfield sites made this defense largely unavailable.

SABRA also changes federal regulations to not hold owners of property liable when groundwater beneath their site has been contaminated by an off-site source. This eliminates concern that property owners can be held liable for groundwater contamination that has migrated from adjacent properties.

- *State Brownfields Policy*

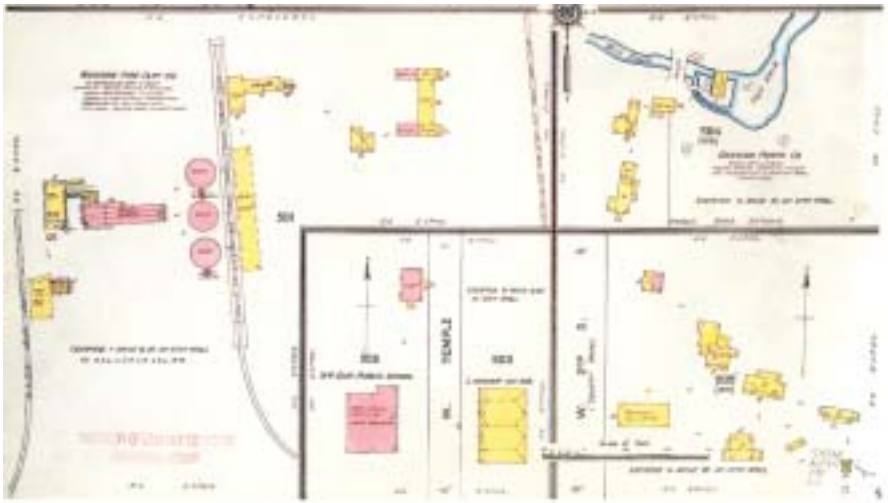
Utah's Department of Environmental Quality (UDEQ) runs a Voluntary Clean-Up Program (VCP) for brownfields sites to encourage the voluntary cleanup of sites where there has been a contaminant release threatening public health and the environment. Under this program, eligible sites and applicants may enter into an agreement with UDEQ in which the applicant supervised by UDEQ undertakes and pays for a site clean-up. In exchange for a successful clean-up, the landowner becomes exempt from further liability regarding contamination and clean-up issues. For more information on Utah's VCP, see: http://www.eq.state.ut.us/EQERR/superfund/vcphome.html.

Part of the agreement between UDEQ and the developer involves determining an appropriate future land use. Different uses require different levels of clean-up based on potential human exposure to the contaminant. Residential uses therefore require high levels of clean-up, while parking lots, which cap contaminated areas with asphalt, require less. This incentivizes building non-residential structures with surface parking. However, it is very important that residential and other compact uses should not be ruled out on contaminated sites, prevalent along the TRAX corridor, in favor of surface parking-oriented uses. There are numerous successful examples of residential development on formerly contaminated sites.

Summary of Brownfields Redevelopment Strategies

Although redevelopment of brownfield sites is often associated with liability risk, recent policy amendments have made liability risk less of an impediment to redevelopment than many perceive. The government has developed a legal framework, which is continually being refined, to protect prospective buyers from liability risks. Without the fear of liability risks, redevelopment of brownfield sites becomes an attractive development alternative. Although clean-up is potentially costly, brownfield sites can be acquired for much less than other real estate options.

The Murray Smelter pilot study is an example of what local communities can do to transform and redevelop brownfield sites. Redevelopment of brownfield sites near rail and other transit systems can expand and enhance TOD opportunities, while addressing contamination issues.



1911 San born fire insurance map showing approximate location of Murray Smelter site.

Murray City and 4500 Station: Brownfield Challenges and Opportunities

Murray and the 4500 Station present a good example of the challenges and opportunities presented by a transit station located in proximity to numerous brownfield sites. The Murray area was, and continues to be, home to several industrial operations. Many of these are located along the rail lines away from the town center. The Western Fire Clay Company, identified on the 1911 Sanborn map (left), is about one mile northwest of Murray town center, and adjacent to the 4500 South TRAX station (right). Many of the sites in the area, including this one which is crucial to proposed area redevelopment plans, are potentially contaminated.

This particular example stresses the need for station area plans to be flexible in order to accommodate situations in which high contamination levels are discovered, creating prohibitive site preparation and clean-up costs. For example, areas planned for residential development which, after further environmental analysis, turn out to be located on highly contaminated sites with restrictive clean-up costs, may have to be moved to other areas within a TOD.

While many sites highlight the challenges inherent in brownfields redevelopment, Murray also houses a successful example of a site that was transformed from a contaminated vacant site to productive reuse. The Murray Smelter superfund site is the former location of a large lead smelter. The lead smelting and arsenic refining operations operated for about 77 years, resulting in impacts to the soil, groundwater, surface water, and sediment at the 141-acre site. The site is surrounded by single-family and multiple-unit residential areas, schools, and office buildings. It is located in a valuable commercial business district; however, contamination and liability concerns had prevented its redevelopment.

As part of an EPA pilot study on brownfields redevelopment, the redevelopment process initially included seven discussion sessions with local property owners, tenants, Murray City, EPA, and the party responsible for pollution liability to discuss the integration of the assessment and cleanup with future land-use and redevelopment plans. A grant was issued to Murray City in 1997, and in April 1998 site cleanup activities began.

The site is now occupied by Intermountain Health Care, who plans to build a mixed-use hospital campus. The cleanup provided opportunity for the site to be transformed from an underutilized industrial site to a commercial site that returned the site to productive use and complements the surrounding area. The Murray smelter site demonstrates how brownfields assessment and cleanup can be a catalyst for implementing a redevelopment vision.

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How to Use These Guidelines

Handbook Applicability

This handbook lays out a comprehensive framework for understanding, designing, and implementing Transit-Oriented Development (TOD) in the Greater Wasatch region. It discusses the different types of TOD, describes TOD opportunities in the region, illustrates the different physical elements that make up an ideal TOD, and details strategies for implementing these principles.

Transit-oriented development complements and reinforces regional quality growth, enhances local planning and zoning efforts, and balances environmental preservation and quality of life issues with economic development; it is one aspect of an overall growth management effort. A balanced growth management strategy increases the concentration of uses in appropriate locations (for example, revitalization or transit-accessible areas) in order to take development pressure off other lands that are inappropriate for development (for example, environmentally-sensitive, rural preservation, or inaccessible areas). Therefore, while these guidelines primarily apply to areas around transit stations, it is important that they accompany an overall growth management strategy that prioritizes lands for development.

Furthermore, although these guidelines refer to areas with a transit presence, the design principles detailed here also can be applied in many other instances. The guidelines are good practice for any area that wants to create a distinct, walkable community. Areas without transit that promote compact infill or new growth place themselves in a good position to receive transit investments in the future, or to capitalize on already planned transit improvements such as TRAX extensions.

This handbook is intended to be of value to municipalities, transit providers, developers, and communities wishing to encourage TOD.

Municipalities can use this guidebook to:

- Determine where to establish transit-oriented communities;
- Revise plans, zoning and parking requirements and other development guidelines to become more transit-oriented;
- Review development permit applications with an eye to transit and pedestrian friendliness;
- Guide the design and/or retrofit of streets and other public spaces to be more pedestrian, bicycle, and transit-friendly;
- Provide material to educate developers and community members about the benefits of Transit-Oriented Development.

Transit Providers can use this guidebook to:

- Determine where to establish transit-oriented communities;
- Design transit stations that complement associated development and access from the surrounding community;
- Evaluate joint development potentials;
- Work with municipalities to create station area land uses that support the transit system; and
- Plan for ways transit riders can access the station without driving.

Developers can use this guidebook to:

- Design projects that take advantage of a transit presence;
- Increase project marketability for transit-oriented projects;
- Evaluate joint development potentials; and
- Work with municipalities, transit providers, and communities to get transit-oriented projects built.

Communities can use this guidebook to:

- Educate themselves and others about the benefits and principles of TOD; and
- Advocate for walkable, transit-oriented neighborhoods.

Handbook Structure

Chapter 1 (Introduction/About TOD) introduces the basic concepts and principles that guide transit-oriented development. Chapter 2 (TOD in the Wasatch Front Region) describes the Greater Wasatch region's existing land use and transportation system, and explains how transit-oriented development fits into this overall pattern. Previous planning efforts have analyzed TOD opportunity sites in the region, and this chapter also describes these opportunities. Chapter 2 also presents case studies of TOD, both how TOD might occur in a Wasatch Front community, and successful examples from elsewhere.

Chapter 3 (Applying TOD to Different Contexts) discusses different types of TOD, the instances in which they would be applied, and the major features differentiating them. Chapter 4 (Ideal TOD Planning Area and Land Use Composition) describes a typical TOD layout, including descriptions of its ideal size, and the land use components that make up a complete TOD. Chapters 3 and 4 will be primarily useful to help determine where to establish a transit-oriented community, understand the issues involved for a given context, and understand how to structure a TOD planning area.

Chapter 5 (General TOD Guidelines) details the various components that make up a TOD, including the circulation, urban design, and parking elements. This chapter contains the core descriptions and detailed guidelines of how to create a successful TOD, and will be most useful for those trying to design or regulate the design of TOD. These guidelines can be incorporated into plans, zoning revisions and other development standards or guidelines. Chapter 6 (Implementation) concludes with a description of the implementation tools available to realize TODs, including structuring TOD-friendly land use policy and regulations, and financing and funding TODs.

As part of the Wasatch Front TOD Study, 4 existing and proposed station areas representing a range of conditions were selected for in-depth study. Appendix A describes the public process and resulting plans for these four sites, with maps of existing conditions, the workshop process, illustrative plans, and regulating features. Appendix B details a sample TOD ordinance municipalities could adopt and adapt to their specific conditions.

GLOSSARY

Ancillary Unit: A secondary unit on a single-family lot that can be rented separately from the main house, often located over a detached garage.

Brownfields: Obsolete industrial sites with potential environmental contamination.

Community Transit Hubs: In UTA's long-range plan, a station area that links park & ride lots, TRAX stations, and regional intermodal centers with local and express bus service.

Commuter Rail: A rail transit system that covers long distances, usually with less frequent station spacing and train times than light rail, that runs on a separate right-of-way from cars, often sharing the right-of-way with freight trains. Also: Heavy Rail.

Developed Areas: Lands with buildings, infrastructure or parking areas on them. Excludes agricultural and natural park areas.

Gentrification: The process by which an under-invested or lower income urban area becomes revitalized with accompanying increases in land values, rents and tax base. Gentrification often implies the displacement of existing populations who cannot afford to live in an increasingly expensive area.

Greenfields: Lands, often at the urban fringes, that have never been previously developed, and may or may not have future development plans.

Greyfields: Obsolete commercial sites, often in older suburban areas, including underperforming shopping centers.

Gross Density: A measurement of residential density that includes in its land area calculation an entire area, including non-residential parcels, open spaces, streets and other infrastructure.

Human Scale: Architecture, infrastructure, streets and public spaces of a size and design that relate and connect to the individual not in a vehicle, often based on traditional community environments. Also: Pedestrian Scale.

Intermodal Center: A station location where more than one form of transit (i.e. bus and light rail) both stop.

Kiss-and-Ride: A passenger loading area at a transit station where private cars can drop off and pick up passengers.

Light Rail (LRT): A rail transit technology that can run along city streets or in a separate right-of-way. TRAX is a light rail system.

Mixed-Use Building: A building that contains space for more than one type of use type, such as residential or office space over ground-floor retail space.

Net Density: A measurement of residential density that includes in its land area calculation only private parcels containing residential development, and excludes non-residential parcels, open spaces, streets and other infrastructure.

Park-and-Ride: Parking lots associated with a transit station, where people drive from their homes, park, and transfer to transit lines.

Pedestrian-Friendly Design: Street, site and building design that creates a safe, comfortable and attractive environment for people who are walking.

Pedestrian Scale: see Human Scale.

Quality Growth Strategy (QGS): A long-term regional growth vision for the Greater Wasatch Area developed through an extensive community participation process.

Right-of-way: A linear corridor acquired or assembled from public easements, typically by a public or quasi-public entity, for a public purpose such as construction of a road or transit line.

Smart Growth: A combination of land use, transportation, housing and fiscal policies aimed at containing urban sprawl, and planning metropolitan growth in a way that minimizes environmental impact, reinforces the social, economic and environmental health of existing communities and provides a compact structure for new growth.

Sustainability: Growth and development that equitably improves human quality of life without straining natural resources beyond their long-term carrying capacity.

Traffic Calming: Street design that gives visual cues to motorists to drive in a manner more fitting to the local environment, including driving at reasonable speeds or driving along a suggested route.

Transit Provider: The entity responsible for operating a mass transit system.

UTA: The Utah Transit Authority, responsible for the UTA bus system and TRAX.

Vehicle Miles Traveled (VMT): An aggregate measure of how many miles a given set of people drives. Often used in comparison between communities with different characteristics (i.e. different levels of transit service).

Wasatch Front Region: The populated area along the base of the Wasatch Mountains, generally referring to the area between Provo on the south and Brigham City on the north.

Contents

How to Use These Guidelines.....3
Glossary.....5

Chapter 1: Introduction/About TOD 9

1A: What is Transit-Oriented Development? 10
1B: Myths About TOD 13
1C: Guiding Principles 16
1D: Basic Features of TOD 18
1E: Potential Benefits of TOD 20

Chapter 2: TOD in the Wasatch Front Region 29

2A: Historic Context.....30
2B: Existing Land Use and Transportation Framework.....31
2C: Planning Processes that Inform this Report.....34
2D: Local TOD Case Studies.....39

Chapter 3: Applying TOD to Different Contexts 43

3A: Applying TOD by Place.....44
3B: Applying TOD by Development Type 48
3C: Applying TOD by Transit Type.....53
3D: Shaping TOD Based on Economic Analysis.....56

Chapter 4: Ideal TOD Planning Area and Land Ue Composition 59

4A: Ideal Size and Shape of TOD.....60
4B: Land Use Component Areas.....62
4C: TOD and Housing Choice.....71

Chapter 5: General TOD Guidelines 73

5A: Circulation.....74
5B: Urban Design.....85
5C: Parking and Transportation Demand Policy.....99

Chapter 6: Implementation 107

6A: Comprehensive Planning.....108
6B: Transit-Supportive Zoning and Land Use Policies.....109
6C: Public/Private Partnerships.....114
6D: Financing and Funding Public Improvements for TODs.....115
6E: Brownfields Redevelopment Strategies.....117

Appendix A: Specific Station Area Plans.....123

1. 2100 South- Central Pointe Station.....124

2. 4500 South- Murray North Station.....134

3. Layton Downtown- Proposed Commuter Rail Station.....143

4. West Jordan- Proposed Light Rail Station.....153

Appendix B: Sample TOD Ordinance.....163

References.....168

Chapter 1: Introduction/ About TOD

1A: What is Transit-Oriented Development?

1B: Myths About TOD

1C: Guiding Principles

1D: Basic Features of TOD

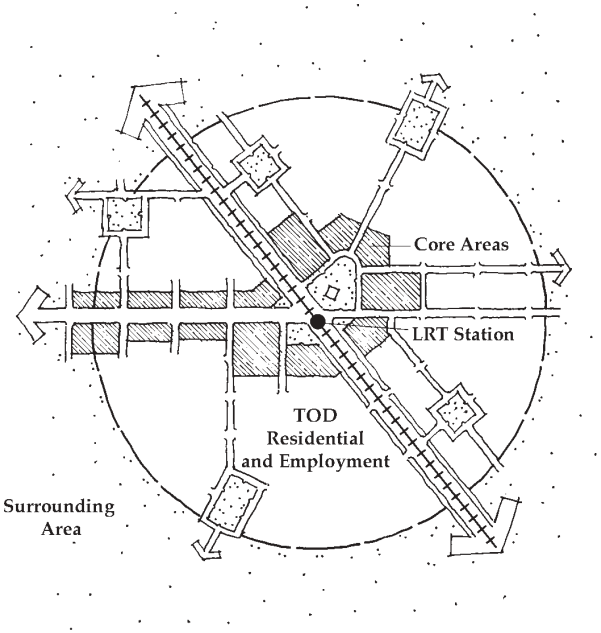
1E: Potential Benefits of TOD

1A. What is Transit-Oriented Development?

Transit-Oriented Development (TOD) concentrates jobs, housing, and daily conveniences around transit stations. By creating high-intensity, mixed-use land use patterns with pedestrian-friendly design at strategic points along regional transit systems, TOD allows people to use their cars less, walk, bicycle, and ride transit more, and use services within walking distance of their homes and local transit stations.

The basic components of Transit-Oriented Development are:

- ***Compact development*** *built at greater densities than exclusively auto-oriented development;*
- *A* ***diversity and mix of uses****, with daily conveniences and transit at the center;*
- ***Pedestrian-friendly design*** *that encourages and facilitates walking and bicycling and reduces auto dependency.*



TOD consists of compact, mixed-use development within walking distance of a transit station. Surrounding areas provide a critical mass of people to use the station and the neighborhood center.

Light rail station, Downtown Salt Lake City

Throughout metropolitan regions such as the Wasatch Front, the vast majority of contemporary development forces people to drive to access workplaces and daily conveniences from their homes. Low-density development isolated by use, and roadway systems with frequent dead-ends and cul-de-sacs create long, circuitous routes to destination points. Roadway design and streetscapes that favor the automobile and make walking unsafe or unpleasant further contribute to an environment in which few people will choose to walk. With over 35% of the Wasatch Front population (mostly youth and elderly residents) unable to drive, this development pattern overemphasizes the private sphere, both in transportation and living. Homes, offices, and shops often face parking areas and present blank walls to streets, and new developments place little emphasis on public space. It is possible to pass from home to car to workplace without stepping outside or encountering neighbors or community members.

TOD presents a community-oriented alternative to conventional suburban development, in which inward-facing development and surface parking lots are eschewed in favor of street-facing retail stores within walking distance of homes, workplaces and recreation, and neighborhoods that contain community amenities and livable streets. Residents, workers and visitors can still get around in their cars, but the physical structure of the TOD makes walking, bicycling, and using transit pleasant and enjoyable alternatives. While TOD does not eliminate the necessity or preclude the choice of using a car, it provides an alternative for those who cannot drive or prefer not to get in the car for every trip, and balances street design so that it accommodates driving, walking, biking and taking transit.

Interconnected streets offer multiple paths that minimize walking distances and distribute traffic so that every street is walkable. Transit at the center of walkable neighborhoods creates a viable alternative to single-occupancy auto use. Over time, as it becomes a greater part of the region's land use make-up, TOD will enable Wasatch Front citizens to take fewer trips in and be less dependent on their cars. In this manner, TOD broadens metropolitan living choices for a population that has diverse needs, incomes, and family structures.

The concepts of TOD are not a new idea- in the era before the popularity of the private car, American suburbs were built along streetcar lines, and contain many of the same features that today create successful TOD. Salt Lake City and other Wasatch Front communities had streetcar systems, and relics of these walkable, mixed-use neighborhoods still exist in communities such as the Sugar House neighborhood. These areas can act as models for contemporary transit-based development, and in some cases the former streetcar suburbs can be retrofit to capitalize on new transit systems and a renewed call for living arrangements that emphasize walking and transit in addition to private auto use.

At the same time that TODs create uniquely livable individual neighborhoods, they should also be thought of as part of a regional strategy. Located at strategic points on a region's transit network, TOD enables people to walk to many destinations from their homes and workplaces, and take transit to and from work or for evening

THERE ARE MANY PLACES IN THE WASATCH FRONT REGION THAT EXHIBIT THE TRADITIONAL PEDESTRIAN-FRIENDLY CHARACTERISTICS CALLED FOR IN TODS, SUCH AS THE TONY CAPUTOS BUILDING AT 300 WEST AND 300 SOUTH.

A HISTORIC STREETCAR ON 400 SOUTH IN THE EARLY 1900S

and weekend trips to recreational or entertainment destinations, thereby decreasing pressures on roadway systems. Recent metropolitan development has to a large degree spread investment along urban fringes while abandoning urban cores and inner suburbs. TODs can compensate for this by concentrating growth in redevelopment areas that have existing roadway and other infrastructure, or in existing built-up areas as small-scale infill investment.

Where new growth on greenfield sites does occur, TOD presents an efficient alternative to typical land-consumptive patterns. Because of its compact form, TOD helps preserve open space, and prevents formerly distinctive communities from facelessly blending into one another along arterials and highways lined with strip commercial development. To this end, TOD can be effective in combination with other growth management strategies such as urban service boundaries or rural preservation programs.

In sum, TOD is an effective and comprehensive land use, transportation, and urban design strategy that will lead to livable, distinct communities and a sustainable metropolitan region.

University lightrail station, Salt Lake City

1B. Myths About TOD

TOD is a new concept for many communities; as a new idea, it may provoke worry. Many of the ideas presented in this document may seem to require an unachievable level of change. Or people may worry that implementing TODs means they will lose many aspects of their lives that greatly contribute to its quality, such as privacy, ease of mobility or their own house and yard.

However, TOD does not mean that people will be restricted from living the way they want to live, nor will it cause changes that make communities unrecognizable as their former selves. Rather, TOD is about choice- TOD expands living options by providing living environments that are for the most part not available among contemporary development- communities that include the option of getting to work without sitting in traffic on the freeway, being able to walk to one's neighborhood center to sit at a café, go to the library, or go shopping, or trading off a larger yard for a greater investment in parks and community facilities.

Communities with TOD opportunities whose citizens are unfamiliar with TOD should explore these ideas further. As a first step, communities can undertake a planning and education process to discuss these ideas, generate feedback, and refute some common myths about the incompatibility of TOD with existing neighborhoods. Such a process can generate a sense of how TOD might look when applied to a specific neighborhood and what issues are of greatest concern to that community's citizens. Incorporating and educating citizens early in the TOD planning process will help create a TOD that fits in with the character of a community and does not cause undue worry about applying a new concept to a stable neighborhood.

Myth: There is no place for cars and people who drive in TOD

TOD does not eliminate driving as a choice, nor does it force people to give up their cars. In today's metropolitan environments, where destinations are scattered all over the city, that is an unrealistic and undesirable goal. Rather, TOD creates alternatives for people who don't want to use their cars to access all destinations in addition to those who can't drive- TOD community-members can walk to nearby stores or friend's houses, or take transit to work or downtown for events. In so doing, it enables people to own fewer cars, or to spend less time stuck in traffic and more time with their families.

In TOD, streets are balanced for pedestrian, bike, auto and transit needs. There is still plenty of space for cars, but there is the acknowledgement that they must share the right of way with others, and street and site design is changed accordingly. For example, traffic calming techniques allow cars through a neighborhood, but in a way that more equitably shares the street and accommodates pedestrian safety. Arterials, boulevards and highways can still allow for rapid through traffic across the region, in a way that reinforces access to TOD areas and commercial centers and does not cut off pedestrian movement.

Myth: The compact nature of TOD means it will be out of scale with my community

Well-designed TOD is harmonious with existing surroundings and enhances, rather than detracts from, the character of a community. The scale of TOD depends on its context. Although in most cases TOD will be built more compactly than surrounding areas given the current low intensity character of Wasatch Front development, this means different things in different places. High-rises will not tower over single-family neighborhoods.

Rather, TOD employs a variety of housing types and lot sizes such as townhomes, houses on small lots, mixed-use buildings and ancillary units to achieve a population density that supports transit yet blends into its surroundings. Building height and massing steps up as one gets closer to the transit station, so that there is no visual gap between lower-density and transit-oriented areas. In compact growth areas, pedestrian-friendly design can create the feel of a small town or an active urban landscape, depending on what a community prefers. In fact, TOD can greatly enhance the design of neighborhoods that currently lack a center by creating a publicly oriented central neighborhood area.

Myth: There is no place for single-family homes in TOD

Single-family homes are an important component of many TODs. Many older neighborhoods in Salt Lake City, such as Sugar House or The Avenues, contain high levels of single-family homes, are compact and walkable, and are among the region's most desirable addresses. Many parts of these neighborhoods are built at densities of 8-12 units per acre, enough to support transit, illustrating that single-family homes can be a successful component of TOD.

As in these neighborhoods, new TOD can contain single-family homes on a variety of lot sizes, as well as attached townhomes and a variety of multi-family and rental options. Higher-density housing types should be located nearer to transit stations, but these may consist of small lot single-family homes, homes clustered around green courtyards or higher-density types. Again, the mix of housing types in a TOD should depend on the context and neighborhood preference; there are no hard and fast rules about how much must be single-family versus other types. The goal is to expand living options by providing housing types that are not available in many locations, rather than to limit housing options.

Myth: TOD prescribes a mix of uses that will be incompatible with my community

Although TOD supports a mix of uses in all neighborhoods, as with scale and housing type, this means different things in different areas. Some areas may be appropriate for regional retail and employment opportunities and compatible housing types, while others may contain primarily residential uses, perhaps with some neighborhood shopping or small-scale offices at the center. There is no prescribed use mix for a TOD.

Developed by Steve Price, "in association with Dover Kohl & partners and Glatting Jackson" for Johnson City, TN

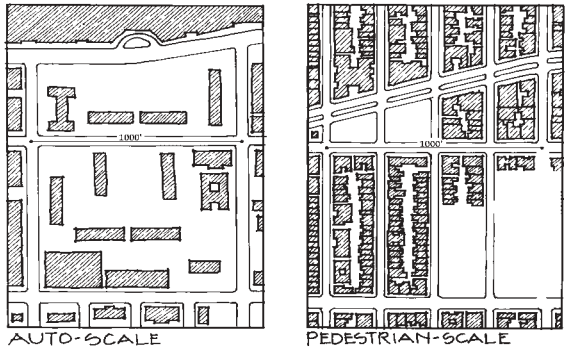
Myth: TOD will not work in my community because my community is too auto-dependent and low-density

TOD is a long-term regional strategy; its benefits will increase over time as the region's structure for growth begins to connect land use policy and transit investment. Neighborhoods that are currently not transit-supportive or pedestrian-friendly can be transformed over time to establish these characteristics. Incremental infill growth and reinvestment, redevelopment sites and new growth areas can all achieve a transit-oriented pattern given the right incentives and regulatory structure.

The Wasatch Front region currently has a prevailing low-density auto-oriented pattern that creates many challenges for the implementation and the efficacy of TOD. People living in proposed TOD locations may be concerned that TOD will lead to a greater concentration of people who have no alternatives but to drive and further clog up roads. However, communities that create transit-supportive land use environments can capitalize on existing transit service or future proposed transit investments such as a TRAX station. The Wasatch Front region already has TRAX, a fixed transit infrastructure, along which pioneering TODs can locate. Over time, as more and more communities develop in compact, transit-oriented forms, the many TODs will begin to reinforce one another by providing an increasing number and variety of destinations that are accessible without a car.

1C. Guiding Principles

As a strategy for dealing with urban settlement patterns, Transit-Oriented Development should keep in mind a set of guiding tenets as reference points to ensure that new development maximally benefits community life, social and economic systems, and the natural environment. The U.S. Department of Housing and Urban Development's handbook, "Strategies for Community Change" sets out four principles new planning efforts should follow. Keeping these principles in mind, the physical design of TODs can successfully contribute to a socially, economically and environmentally robust metropolis. The four principles are synopsized below:



Neighborhoods at auto scale and pedestrian, or human, scale. Pedestrian scale relies on a fine building grain, small blocks, and buildings oriented to streets.

- *Neighborhood and Region*

Metropolitan regions are increasingly interconnected; people often live in one community, work in another, and drop children off at school in yet another. Issues such as air quality, traffic congestion, and loss of open space are not contained within one neighborhood, and link regions. When transit systems enter a community, they further highlight the community's connections to the region as a whole. Consequently, TOD physical design should balance neighborhood and community scale and identity with regional needs. For example, while the region might benefit most greatly from dense development around light rail stations, it is important to keep higher-density development in character with the scale of existing neighborhoods through urban design and architectural treatments. Conversely, when significant regional investments, such as a rail system, come into a neighborhood, that community should capitalize on these investments toward regional goals, such as air quality improvement, by building compact, mixed-use TODs that encourage use of the transit system.

Planning efforts such as TODs should consider the needs of regional, district and neighborhood scales, and the connections between them.

- *Human Development and Human Scale*

Human scale development creates a physical and psychological connection between people, their surroundings, and their history. In the recent past, the character of many urban environments has lost much of the human scale that it had in the era of the streetcar suburbs at the turn of the 20th century. Large, featureless buildings lose their relation to the street, while windswept open spaces and auto-scale roadways create uninviting public environments. In these environments, buildings, roadways, and streetscaping elements such as signage or streetlamps are built to relate to people

in quickly moving cars. By contrast, human scale urban design strives to reverse this pattern, by providing architecture that is visually arresting at the street level and fits in with existing historic and urban contexts, and by building streets and public spaces that are active and well-used. Most importantly, human scale environments are safe, comfortable and stimulating for walking.

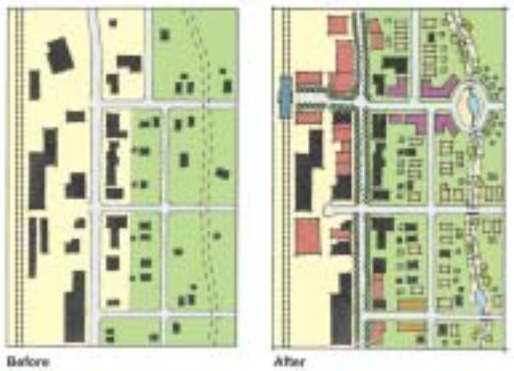
- *Diversity and Balance*

Heterogeneous communities meet the needs of a society that is increasingly diverse in its needs, cultures, demographics, and daily living habits. Diversity can manifest in numerous ways in the built environment. Development that has a mix of uses provides a traditional urban form, a contrast to isolated suburban environments, where shopping, friend's houses, and other destinations are frequently inaccessible without a car. TODs can also enable diversity by creating mixed-income housing, or greater variation of housing types such as residential units located over commercial uses or 'granny flats' behind single-family homes. Housing choice provides for a range of incomes and a range of family types in an inclusive environment that does not leave out major segments of the population. In turn, this gives all people who may work in or visit a community, such as teachers and single-parent households, affordable options to live there. Lastly, architectural and streetscape diversity provides aesthetic relief from frequently monotonous suburban environments.

- *Sustainability, Conservation and Restoration*

Sustainable growth takes place at the regional, neighborhood and site scales. Regionally, sustainable growth takes into account building, transportation, and natural layers, concentrates development and reinvestment in existing built-up areas and transit-served neighborhoods, and conserves agricultural preservation areas, valuable natural landscapes, and ecologically precarious lands. Sustainability also comes from creating distinct communities, whether in existing neighborhoods, redevelopment areas or new growth districts, that people take pride in and feel like they have a stake in maintaining and improving. Bringing usable open spaces and functioning ecological features into metropolitan landscapes provides an oft-needed connection to the natural world and a healing respite for urban dwellers. Redevelopment by cleaning up contaminated sites, or restoration of degraded natural features, minimizes environmental impacts and begins to reverse previous environmental destruction. Finally, sustainable urban forms aid air quality by relying on transit, walking and bicycling for transportation, and minimizing auto use.

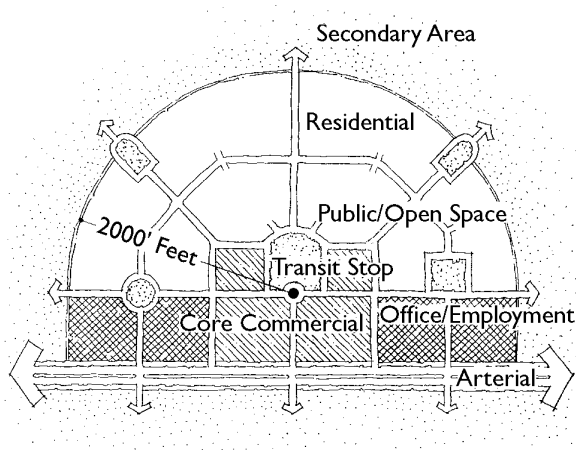
A BALANCED NEIGHBORHOOD CONTAINS A FULL SPECTRUM OF USES (ABOVE); SUSTAINABILITY INCLUDES DIRECTING COMPACT NEW GREOWTH INTO PREVIOUSLY DEVELOPED, TRANSIT-ACCESSIBLE AREAS (BELOW) AND AWAY FROM REMOTE GREENFIELD SITES.



1D. Basic Features of TOD

Compact Development

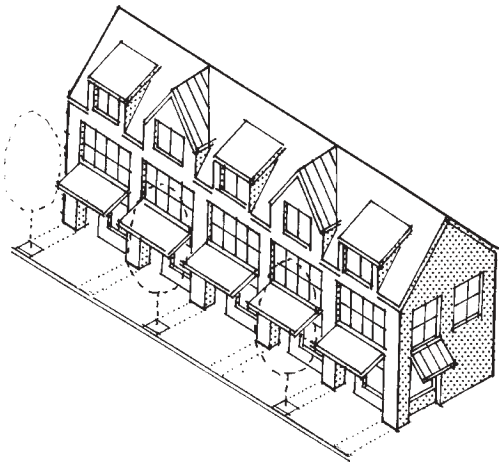
TODs are built compactly within walking distance (approximately 1/4 to 1/2 mile) of transit stations so as to provide a base of transit riders to support the transit system. To maximize the number of residents and workers within walking distance of transit, TODs contain higher residential and employment intensities but should not be out of context with surrounding areas. For example, a minimum residential net density of 30 units per acre is preferred in more urban areas. In suburban areas, densities may be on the order of 8-12 units/net acre. These intensities create a critical mass of people to use the TOD's streets and public spaces. Additionally, people are more inclined to use transit if it is within a convenient and comfortable walking distance of where they live, work or shop. Relatively lower intensities, though still higher than typical new suburban density, are appropriate for areas outside the 1/4 mile core of the TOD, enabling people to walk, bike, take the bus, or be dropped off at the transit station. Intensity should gradually build up closer to the station so as to be compatible with the scale of existing neighborhoods.



TODs have a density gradient, with greatest densities within 1/4 mile of the transit stop, about equal to a 5-minute walk, and lower densities and protected lands in surrounding areas.

Mix of Uses

Contemporary suburban development frequently divides uses into isolated pods. Besides forcing people to drive to all activities and destinations, single-use environments are only used for part of the day- for example, office areas shut down after working hours and on weekends. By contrast, TODs include diverse and complementary high-activity uses such as retail, professional services, housing, and employment adjacent to transit. A mix of diverse activities permits residents and employees to run errands on foot, without relying on a car. The center of a TOD contains a diversity of uses, including convenience retail and services, small offices, day care, and civic amenities such as libraries and post offices. Apartments or other multi-family housing options are also appropriate, often over ground-floor retail. A mixed-use environment creates the vitality and round-the-clock activity associated with active urban environments and reinforces the vibrancy of shopping and employment destinations. Residential uses are vital to TOD cores in order to provide use of the area at all times of the day and week.



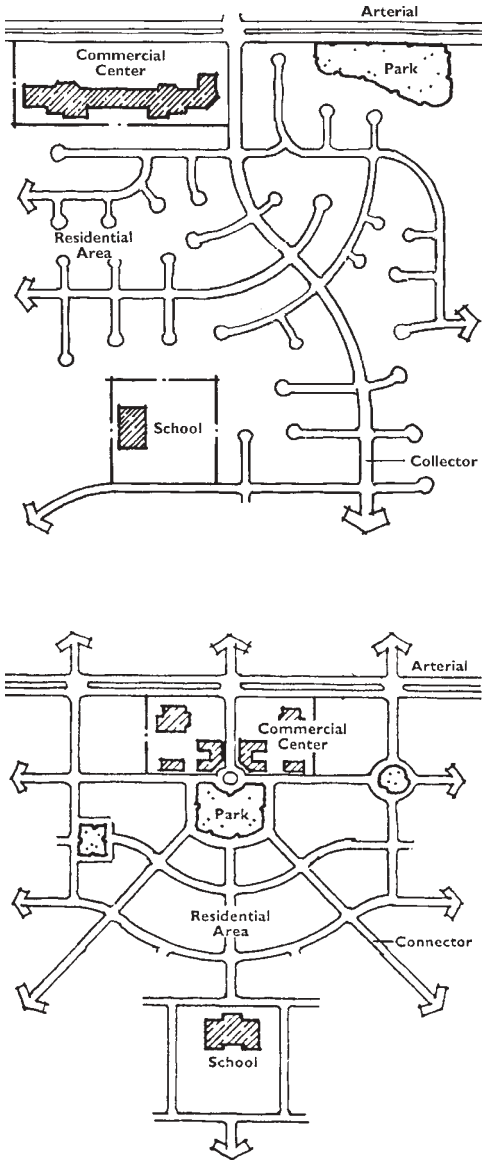
Mixed use can be vertical (within the same building) or horizontal (buildings within walking distance of one another).

Pedestrian-Friendly Design

TOD creates a vibrant pedestrian-scale urban landscape, in contrast to much recent development that has been designed primarily for auto access, and in which pedestrian features, walkable street design, or architecture that is interesting at the pace of a pedestrian are sorely neglected. Building and site design in TODs should create pleasant and enjoyable urban places that make walking an attractive, preferred travel option. Traffic calming devices such as curb bulb-outs can also help to create a feeling of pedestrian safety and comfort, and emphasize pedestrian needs in a way that many contemporary suburbs neglect.

Additionally, TODs contain an interconnected network of streets that enhance accessibility between transit stop or station areas and the adjacent commercial, community, and residential areas. Many modern suburbs require people to drive to access all destinations because streets are not connected and resulting routes are highly circuitous. Interconnected streets minimize walking and cycling distances, and distribute traffic so that cars do not funnel to a single arterial resulting in lowered traffic congestion. Streets with sidewalks and pedestrian paths through the TOD offer direct, quick connections to the transit station and adjacent central community areas. In combination with compact development and a mix of uses, pedestrian-friendly design presents a land use/transportation solution that reduces auto dependency and auto use and supports transit systems.

PEDESTRIAN FRIENDLY DESIGN INCLUDES CALM STREETS, CLEARLY DELINEATED PEDESTRIAN PATHS, AND HUMAN SCALE ARCHITECTURE.



IN CONTRAST TO TYPICAL SUBURBAN LAYOUTS (TOP), THE STREETS IN A TOD CREATE AN INTERCONNECTED NETWORK THAT ENABLES SHORT WALKING DISTANCES AND MULTIPLE ROUTE CHOICES (BOTTOM).

1E. Potential Benefits of TOD

Across the country, metropolitan regions and individual communities are attaining efficient and livable patterns of growth by encouraging development that makes walking and transit use convenient, whether in shaping new suburban areas or in revitalizing older urban and suburban areas. Cities have recognized that current patterns of growth are unsustainable, and eat into the very quality of life that draws people to an area.

TOD presents a sustainable alternative system for individual communities and for regions as a whole. Nationwide, many communities across the country have implemented TOD programs, presenting models that Wasatch Front communities can use for guidance. State and federal programs have also begun to recognize the value of smart growth initiatives, and have created opportunities to fund such initiatives at the regional, municipal, and community levels.

In the Wasatch Front region, citizens, developers and decision-makers have also recognized the benefits of regional growth management strategies and of TOD. The Envision Utah Quality Growth Strategy created a regional development scenario that calls for the preservation of valuable natural land, and the concentration of growth in redevelopment areas and around transit corridors. (Envision Utah 2000) The Utah Transit Authority recently released a handbook describing TOD planning. (UTA 2001) And some existing and planned communities such as South Mountain and Sunrise at South Jordan are bringing principles of TOD into new development.

The potential benefits of TOD are wide-ranging, covering fiscal, social and environmental concerns. TOD can benefit individual communities and the region as a whole as more and more communities adopt TOD as a growth strategy. The potential benefits of TOD include:

- Improved quality of life for households from less time in traffic and more time with families;
- Reduced transportation spending and increased housing affordability for households;
- Efficient use of infrastructure due to greater development intensities, both in existing and new areas;
- Increased return for developers from less money and land spent on parking and roads;
- More cost-effective transit brought about by greater ridership potential near major transit lines;
- Variety and choice of housing types, retail destinations, office locations, and community lifestyle;
- Decreased auto dependence and greater mobility choice, especially for those who cannot drive or afford a car;
- Revitalization and redevelopment of underutilized and disinvested urban and suburban areas into vibrant communities;
- Creation and enhancement of communities with distinctive identity and sense of place;
- Enhanced public health and safety through more active and cared-for public spaces and walkable and bikeable neighborhoods;
- Improved air quality and reduced traffic congestion;
- A structure for new growth in compact patterns and in redevelopment areas, preserving valuable agricultural land and natural features;
- A catalyst for redevelopment of brownfields sites;
- Improved water quality through less impermeable surface runoff and potential open space preservation.

Fiscal and Financial Benefits

- *Reduced household transportation spending and housing affordability*

The benefits of reduced automobile dependency can translate into direct savings for individuals, households and the region. Residents of walkable, transit-rich neighborhoods spend less on automobile transportation than people in auto-dependent areas. Direct household auto expenditures include the costs of buying a car, insurance, maintenance, tolls and gas. This same effect is visible at the metropolitan level. Average household spending in auto-dependent metropolitan areas such as Houston, Atlanta, and Dallas was found to be over $8,000, compared to slightly over $7,000 in Washington, DC and San Francisco and less than $6,000 in New York, Boston, and Chicago. (STPP 2000) International comparisons also provide evidence for these benefits. In 1990, American cities spent 13.2 percent of gross regional product on transportation, compared to 8.1 percent in European cities and 4.8 percent in wealthy Asian cities.

The full cost of automobile transportation includes not only household expenditures but also public spending on roads and bridges, public and private spending on parking (for example, the construction of hundreds or thousands of free parking spaces at a shopping center), and hidden subsidies such as public land given over to automobiles rather than higher-value development. Every dollar invested in transit can move far more people—if land use is supportive—than a dollar spent on automobile transportation.

Additionally, housing units without parking are significantly more affordable. In San Francisco, research found that the average increase in the price of a housing unit with a parking space compared to a unit without parking is $39,000 to $46,000. While it is not feasible in most cases to eliminate parking altogether, individuals can still reap benefits if they can choose whether or not to purchase or rent a parking space. For this to be the case, parking must be "unbundled," meaning residents can choose whether to pay a lower price for a housing unit without parking, or also pay for a parking space.

- *Infrastructure savings*

TOD's compact development pattern uses infrastructure efficiently, saving money for developers, residents, and government. Infrastructure outlays such as roadways and sewer lines are minimized in TODs due to the compact nature of the development, so infrastructure costs per unit are lower. That is, costs can be spread over more units for the same given area. While up-front capital costs are often high, due to provision of transit infrastructure, long term benefits often outweigh these costs in the form of savings on highway and road construction.

A Florida study showed that while providing infrastructure at a moderate residential density of 12 units/acre cost $24,000 per unit, at 3 units/acre the cost doubled to $48,000 (Kassowski, 1992). Similarly, in examining alternatives for Salt Lake City's growth, the infrastructure costs associated with continued suburban development patterns were projected to be over $30,000 more per housing unit than those associated with a more compact TOD alternative (Envision Utah QGET 1998). Additional infrastructure costs include not only local roadways and sewer lines, but also substantial highway costs required to support a disparate pattern of development in which transit is not feasible. In Orlando, transportation fees are reduced, and even waived, for projects that have local destinations that can be reached on foot and are built at densities that support transit, recognizing that transit-oriented development reduces the demand for expensive highway improvements.

- *Increased return and project marketability*

Reducing parking can lead to benefits for developers as well as residents. Since housing space is more profitable on a square foot basis than parking space, projects with reduced parking can be more profitable. With more housing units built in the project, it is easier to offset the fixed costs of land, entitlements, and so on. The same benefits could be realized in commercial projects as well. For example, the developer of the Mockingbird Station mixed-use project in Dallas calculates that he could have spent $6 million less on parking had the city changed parking requirements to take into account the project's location next to a light rail station and the consequent lower demand for parking.

While higher returns can be realized most directly if the projects respond to the location-efficient qualities of a station area, as in the case of reducing parking, there is also significant evidence that in a strong real estate market proximity to light rail can lead to rent premiums in surrounding commercial properties.

- *Value Recapture*

Reduced automobile dependence can yield significant savings for individuals and for society as a whole. For example, savings from reduced parking costs (whether in residential projects or other development) can be captured by households, developers, and local governments. They can be invested in assets, like housing, that appreciate in value over time and allow for individual household wealth accumulation. Collectively, savings can be invested in better design and place-making amenities, parks, and other elements that improve the quality of development and the built environment. The question, then, is not just how to reduce transportation spending, but also how to capture and direct the value of the savings.

Some methods for capturing the value of the savings from reduced transportation spending have appeared in recent years. Location efficient mortgages (LEMs) allow people who live in transit-rich neighborhoods and thus have lower household transportation costs to obtain a larger loan than they would be eligible for under the standard underwriting formula. Another tool available to local governments is to reduce parking requirements for TOD projects on the condition that developers invest some of the savings in public amenities that help the project become more transit and pedestrian-oriented.

Developers may also be able to market their projects based on their transit-friendly features. For example, the money saved from building fewer parking spaces may be put into providing discount transit passes for project residents or employees.

- *Increased transit ridership/Cost-effective transit*

By structuring higher-density development around transit stops, the Transit-Oriented Development approach increases the base of potential transit riders within walking distance of transit. Multiple connected streets also create direct routes between destinations, making distances shorter, and increasing the number of people who live or work within walking distance of transit. People are more likely to use transit if it is within walking distance and they do not have to drive or take a feeder bus to the transit station.

Several studies show that higher densities and compact patterns of development lead to substantially higher rates of transit ridership. One study showed that every 10 percent increase in population density is associated with a 6 percent increase in boardings at light rail (LRT) stations (Parsons Brinckerhoff Quade and Douglas 1995). In the San Francisco Bay Area, researchers determined that transit-oriented neighborhoods on average generate about 70 percent more transit trips and 120 percent more pedestrian and bicycle trips than nearby automobile-oriented neighborhoods (Bernick & Cervero, 1997).

Additionally, more compact development patterns mean that transit agencies will not have to extend their service to large catchments. Combined with higher ridership rates, TOD makes improved low-cost transit service more financially feasible for transit agencies, saving transit agencies, and by extension, taxpayers and transit riders, money.

Community/Social Benefits

- *Mobility, housing, and community choices*

By placing homes, workplaces, and daily services within walking distance or along transit lines, TOD enables people to choose how to get to their destination. Many people cannot drive because of age or health reasons. For many others, auto ownership creates a difficult financial burden that involves car payments, maintenance, auto insurance and gas purchases.

TOD offers choice for all ages, including those too young to drive, and senior citizens that can't or choose not to drive. According to the 2000 Census, the average family size in Utah is 3.57 and 32.2% of the population is under the age of 18. With the 8.5% of Utah's population that is 65 years and over, many of whom also don't drive, the number of elderly and youth non-drivers in Utah accounts for more than 1/3 of the population. With those who cannot afford to own a car or have only a single car per household, the number of transit-dependent people rises even higher. Yet little consideration is taken into planning communities that allow for independent mobility.

Even for those who use a car, the form of TOD enables them to choose which transport mode to take for individual trips, or to own fewer cars per household. Commute trips account for only about 1/3 of the typical person's daily trips, while socializing, shopping, errands, taking the kids to school, and other purposes make up about 2/3 of a person's daily trips. In a TOD, people can combine multiple destinations and purposes into one trip, rather than making several short trips by car.

Additionally, by alleviating traffic congestion and providing transportation choices TOD enables commute times to be shorter. Less time spent in traffic translates into greater amounts of time to spend with families and friends.

TODs also provide a choice of living arrangements and community lifestyle that is sorely lacking in most new development today, and that is appropriate for today's diversity of household types. Connections to community life and "town center" activities are increasingly cited as important considerations when buying a home. The TOD concept aims to recreate the feeling of traditional, walkable, neighborhoods. TOD gives people the choice of living in a more compact, mixed-use traditional neighborhood environment, rather than in an isolated, subdivision where all the housing tends to be of the same cost and style.

Additionally, by providing a greater range of housing types, particularly smaller units, TODs can also provide housing choices for people with a range of incomes from two parent families with children to childless couples to young and old individuals. Finally, by bringing uses into close proximity with one another, TOD can increase accessibility to services and amenities for the disabled or mobility impaired.

- *Urban revitalization and Infill*

TOD is an innovative strategy for revitalizing underutilized and disinvested urban and older suburban areas. Revitalization and infill of existing areas through the TOD approach preserves investments in a community, in terms of public infrastructure, historic assets and human attachments. Creating TOD in existing but underutilized urbanized areas is particularly cost-effective because the infrastructure and transit service already exists, along with an intensity of development, so that incremental improvements in the area's pedestrian accessibility, public amenities, and urban design will go far to improve the success of the area as a transit-friendly center. Furthermore, environments that experience both continuity and change over time often exhibit a richness and diversity of uses that is difficult or infeasible to include in new development.

TOD-induced revitalization brings numerous potential benefits to an underutilized area, including improved appearance, improved job and housing opportunities, an increased tax base, crime reduction through increased activity, and an overall sense of care about a place. At densities that maximize development revenue, TODs are also an efficient structure for infill and redevelopment of environmentally contaminated sites, or brownfields, which have considerably higher site preparation costs.

A related potential benefit is the preservation of existing historic structures. Renovating and preserving historic buildings contributes to an effective urban revitalization project by enhancing the original character of the area. In many urban revitalization TOD cases, the original character of the area may have originally developed in a manner conducive to TOD, such as neighborhoods along Salt Lake City's former streetcar system. In most communities that developed prior to the advent of the automobile, new neighborhoods were developed in a walkable manner each with its own core of services, to serve the residents of the surrounding area.

The concept of TOD has roots in these early neighborhoods and streetcar suburbs. Modern TOD can effectively build upon the historic roots that remain in urban core areas.

For example, in downtown Salt Lake City, the existing light rail system on Main Street and 400 South follows routes used by the streetcar system in the late 1800's and early 1900's. While there have been many changes over time, the streetscape of Main Street has remained in a TOD-consistent design, with buildings close to the sidewalk. Efforts are continually underway to further enhance the pedestrian and transit-oriented experience in downtown Salt Lake City and retain its historic character.

Conversely, the 400 South light rail line reveals the challenges of placing a transit line in an area that has been allowed to develop in a less pedestrian-oriented manner. Several blocks of retail are fronted by large parking lots while housing opportunities are diminished in much of the areas around the corridor. TOD presents an opportunity to retrofit this corridor to become more pedestrian-friendly and economically robust. In fact, Salt Lake City is currently considering proposals to adopt zoning ordinances designed to encourage more walkable areas along the 400 South transit corridor.

600 East light rail station, Salt Lake City

- *Communities with identity*

TOD can build upon a community's existing identity and serve as a mechanism for communicating that identity to others. Too often, communities have identifiable character aspects such as a strong community or a cultural or arts focus, that are not reflected in their built environment due to the sameness of chain stores, strip malls, and big box retailers. TOD can bring in unique community aspects to create a built environment that reflects and contributes to the character of the neighborhood.

TOD creates the opportunity to design communities that have a distinct identity that nurtures civic pride. A well-designed transit station provides a TOD with a landmark feature and a central public space that can serve as a meeting place for formal events, chance interaction among community members or casual people-watching. New communities are often built without a defining central civic area. By contrast, a TOD's walkable character and intensity of uses creates a community focus at which people will be present at all times of day, creating a stimulating and meaningful public environment.

Radiating outward from the transit station, TOD contains a publicly-oriented, stylistically distinct nature. Small lot homes with architectural variation that are oriented to the street provide opportunity for neighbor-to-neighbor interaction. Integrated open space systems provide small neighborhood centers, or connect neighborhoods to the core. Protected open space systems around compact growth can provide identity-enhancing development boundaries.

- *Public safety and health*

TODs have a high activity level and design features that enhance pedestrian safety. The activity level generated by a compact, mixed-use, pedestrian-friendly environment helps create a safe environment because there are always people present to look out for one another. Pedestrian-oriented design features in a TOD such as numerous storefronts, windows, and porches facing the street add the presence of "eyes on the street," helping to reduce property crimes.

In TODs, reasonable street widths and traffic calming measures enhance pedestrian safety. TOD discourages excessive travel lane widths, which in conventional streets are often designed to accommodate traffic speeds of 15 miles per hour faster than the posted speed limit (Vanesse Hangin Brustlin Inc., 1994). This practice often encourages drivers to speed and comes at the expense of pedestrian safety, especially for children, the elderly and the disabled.

TOD's walkable design can also enhance public health. Land use planning is rooted in the desire to protect the public's health. Public health protection has been cited as a basic responsibility of local government. The strict separation of uses that followed from zoning laws that separate industrial uses from residential areas has led to development that is less connected and less mobile, conversely leading to built environments that compromise health.

There is a direct link between the built environment and the current state of public health. Built environments in which land uses are functionally separated, and make no room for sidewalks and bike paths, select against biking and walking as commute or recreational options. As these opportunities for daily physical activity decrease, a corresponding increase in obesity is occurring nationwide. The Centers for Disease Control and Prevention reports that the major diseases of the 21st century will be chronic diseases, a category that includes obesity, heart disease, diabetes, asthma, and depression. These diseases can be moderated by the design of the built environment.

TOD can provide independent mobility opportunities for youth, increasing their level of physical activity. In 1977, children aged 5 to 15 years walked or biked for 15.8% of all their trips. By 1995, this had reduced to 9.9%. If this trend continues, there will be an increase in health care costs as these children age. Lack of physical activity and rises in obesity rates lead to considerable health care costs – in 1995, the direct costs of obesity were estimated at $70 billion. The estimated direct health care cost of physical inactivity was $37 billion. Together, over $100 billion of the burden on health care is attributed to obesity and low levels of physical activity in the United States each year. As children continue to grow up without mobility options, this number may only increase as they age and the long-term effects of inactivity are realized.

Even as we encourage people to walk, jog, or bicycle, much of our built environment is auto-oriented and does not offer a safe or welcoming place in which to pursue these activities. Planners and urban designers must address these issues in the design of new and retrofit communities. The compact, mixed-use design of TOD addresses these concerns by offering a method of transportation other than the automobile as the primary use, and providing the opportunity for people to easily incorporate activity into their daily lives.

Environmental Benefits

- *Regional air quality and congestion improvements*

At the individual community level, walkable transit-oriented communities create distinct places with numerous community benefits. At the regional level, the aggregate of various communities making these improvements will lead to air quality and traffic congestion improvements. The compact pedestrian-oriented design associated with TOD results in less driving and lower vehicle miles traveled (VMT) per household, improving air quality and relieving traffic congestion. TOD does not try to eliminate altogether the need for a car to make certain trips, because no community is entirely self-sufficient in contemporary metropolitan environments. However, the walkable, multi-use nature of TOD means that development there can accommodate many daily trips locally and without a car, reducing strain on roadways and air quality. In contrast to many suburban environments, where dead-end roads funnel traffic to increasingly congested arterials, TOD provides an interconnected circulation system, giving drivers a choice of through roads, decreasing strain on each one.

TODs also help reduce air pollution by cutting down on frequent short non-commute trips, such as shopping, getting kids at school, going out, or visiting friends. For the typical household, these trips account for an average of 10 auto trips per day, and one-third of average daily VMT. Short auto trips are more polluting per mile than longer trips, because a car's engine pollutes more when it is still cold. In examining alternatives for Salt Lake City's growth, it was determined that continuation of current suburban development patterns would result in 7.3% more mobile emmissions than a compact scenario.

- *Open space preservation*

TOD uses land efficiently, preserving open space. By channeling development into compact patterns around transit stops or stations, TOD helps reduce the amount of growth that occurs in the typical land-consumptive suburban pattern. As a result, open space and habitat can be preserved that would have been consumed by new development built at typical suburban densities. A recent study for the Salt Lake region showed that if growth continued at current densities given projected population increases, the region's developed land would increase by 325 square miles by 2020. A "Quality Growth Strategy" was also modeled, in which development was directed into compact settlements along transit corridors and to redevelopment and infill areas. In this scenario, the region added only 154 square miles of new growth by 2020, 171 fewer square miles, with the same population projections.

However, it is important to realize that the mere presence of transit service by itself will not attract an intensity of development to vacant or underutilized areas around stops or stations. There must be proactive local and regional land use incentives and controls, including designated TOD areas and growth management policies, to guide new development to station areas. TODs are most effective as part of an organized, concerted effort to address regionwide growth issues by improving the public transit system, channeling some development in compact patterns, and preserving specific valuable open space lands from new growth.

TOD can directly effect open space preservation as part of a transfer of development rights (TDR) program. A TDR program encourages the exchange of development rights from locations which should be preserved (sending zones) to those that are appropriate for higher development intensity (receiving zones). In the Wasatch Front region, many communities have found numerous appropriate sending zones, but few potential receiving zones. TOD can act as a receiving zone, an appropriate location for higher development intensities, and thereby directly decrease development pressure on conservation lands. See Chapter 6: Implementation for a greater discussion of TDR programs.

- *Brownfields redevelopment/Clean-up of contaminated sites*

Brownfields redevelopment refers to the clean-up and redevelopment of sites with a past history of environmental contamination. This type of site is potentially prevalent along the North-South TRAX light rail line, as it was previously used as a freight rail corridor, with many pollutive industrial uses lining either side of the tracks. Many of the best potential sites for TOD in the Wasatch Front region may contain some degree of contamination.

Redevelopment of brownfields sites returns blighted lands to active use and mitigates potential health hazards. TOD provides a great opportunity for reclaiming these sites as functional pieces of property. TOD creates an opportunity to redevelop many of these sites compactly, with higher development intensities that could provide higher returns to offset possible higher costs stemming from environmental analysis and site preparation. Brownfields redevelopment faces liability over clean-up, financial and environmental hurdles; however there are a wide array of funding opportunities available for brownfields sites. Financing development on brownfields sites is discussed in depth in Chapter 6: Implementation.

- *Mitigation of negative impacts to water quality*

One of the major contributors to water quality reductions is runoff from roads, parking lots, and other impermeable surfaces. By decreasing the need for wide arterials and highways and surface parking lots, TOD improves water quality as compared with standard growth. A study by the Natural Resources Defense Council comparing two Sacramento neighborhoods showed that the compactly developed community has only 80% of the impermeable surface area of the typical suburban development. (NRDC 2000) Additionally, TOD can decrease development pressure on rapidly developing environmentally sensitive lands such as wetlands, which greatly contribute to water quality.

THE WASATCH FRONT CONTAINS MANY VALUABLE AGRICULTURAL AND NATURAL RESOURCES. TOD CAN BE PART OF A GROWTH MANAGEMENT AND TRANSFER OF DEVELOPMENT RIGHTS STRATEGY TO HELP CONSERVE THESE LANDS.

POTENTIALLY-CONTAMINATED INDUSTRIAL SITES SUCH AS THIS ONE ARE HIGHLY PREVALENT ALONG THE TRAX LINES, WHICH WERE BUILT IN AN OLD FREIGHT RAIL CORRIDOR. TOD PROVIDES A STRUCTURE FOR REDEVELOPING THESE SITES.

Chapter 2: TOD in the Wasatch Front Region

2A: Historic Context

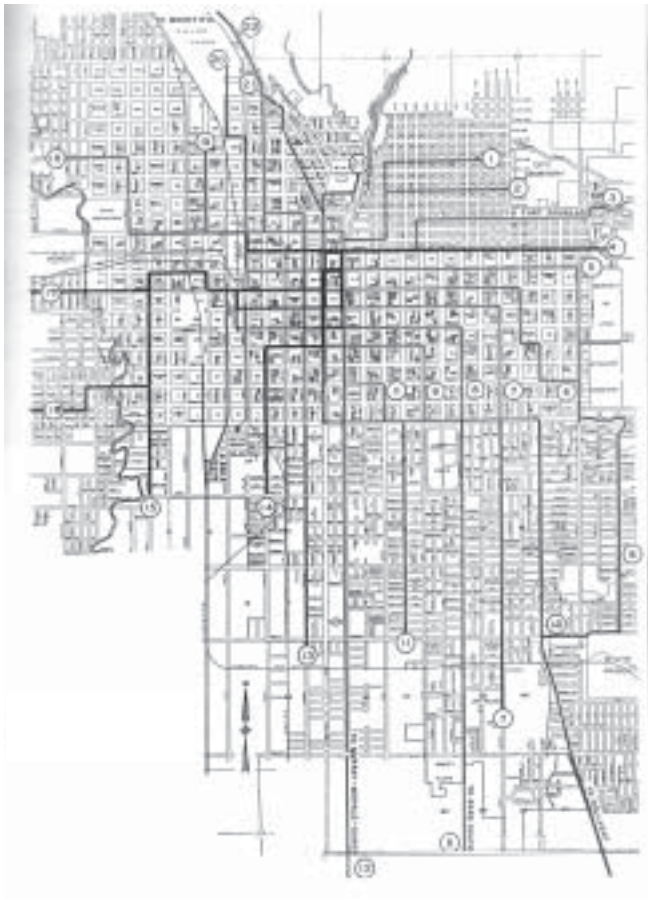
2B: Existing Land Use and Transportation Framework

2C: Planning Processes that Inform this Report

2D: Local TOD Case Studies

2A. Historic Context

The development of the Wasatch Front depended heavily on rail, including electric streetcars and interurban passenger lines. Salt Lake City, Logan, Ogden and Provo all had streetcars that ran, with varying frequencies, between 1872 and 1946. With the advent of individual transport and paved roads, streetcars were gradually replaced with autos and buses. Nonetheless, this period in the Wasatch Front's development left a legacy of transit-supportive land uses in the region's city centers and older streetcar suburbs, such as the Sugar House neighborhood, upon which new transit lines such as TRAX are beginning to capitalize.



Salt Lake's streetcar system at its peak extended throughout the city

TRAX lines through downtown Salt Lake City go down many of the same streets as historic streetcars, such as Main Street and 400 South. Some of these areas today retain a transit-oriented character, while others need to be retrofit to capitalize on recent transit investments.

2B. Existing Land Use and Transportation Framework

Growth Forecasts and Impacts

The Wasatch Front region, stretching from Ogden in the North to Provo in the south, currently enjoys a high quality of life, owing to the region's scenic beauty, recreational opportunities, and strong family and community culture. However, recent rapid rates of growth are expected to continue, threatening the attributes that contribute to the region's high quality of life by building upon and paving vast amounts of open space. Current state projections forecast the region's 1.6 million people will increase to 2.2 million people by 2020, and the state's population will increase to over 5 million residents by 2050, owing largely to the region's exceptionally high birth rates.

If all these new residents were to be accommodated at current regulated densities, it is estimated that the amount of developed land in the region would almost double by 2020, from 370 square miles to 695 square miles. This figure could rise to as much as 1350 square miles by 2050, or nealy 1000 acres of existing open space lost. Traffic congestion would also dramatically increase, with average speeds decreasing from 29 mph to 23 mph and an increase in average commute time from 24 to 34 minutes. These figures have further implications for air and water quality, infrastructure costs,

and lost productivity from increased time spent on the road.

The Utah Transit Authority (UTA) estimates that travel demand in the Wasatch Front region will double over the next 20 years, travel growth that highway systems cannot support, even with planned road expansions such as the Legacy Highway, a north/south link to parallel the congested I-15 corridor. They note "Projections for the region show decreases in transportation efficiency despite current investments." (UTA 2002) Consequently, the region has recognized the importance of alternative transportation modes, and several major transit projects have been recently completed, or are underway or proposed.

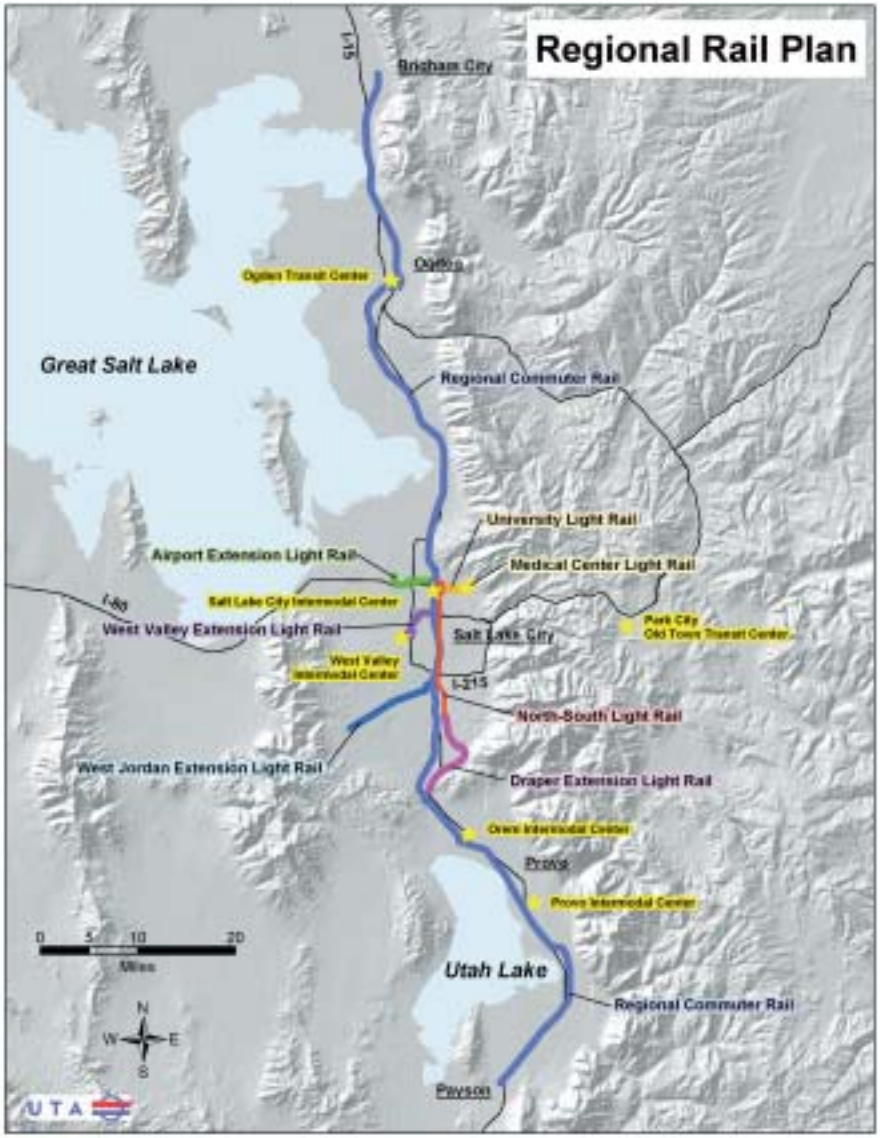
Currently, the region is served by a combination of bus and light rail. The region's light rail system, TRAX, now has two lines, with the December 2001 opening of the University light rail line connecting downtown Salt Lake City to the University of Utah. The original TRAX line heads south from downtown Salt Lake City to central Sandy City. UTA has presented plans to expand light rail service along these two corridors and add three new corridors, eventually providing service to University Hospital, Draper, South Jordan, West Jordan, West Valley City, and Salt Lake International Airport. A commuter rail service, serving longer distances with less frequent stops and fewer trains, is planned to connect the entire region from Brigham City in the North to Payson in the South. The light rail and commuter rail stations, with their fixed routes, create the best opportunities for transit-oriented growth. These plans are undergoing study and analysis to determine their feasibility and environmental impacts.

Additionally, buses operate on a grid on the major north-south and east-west arterials throughout the region. In the future, UTA plans to expand bus speed and frequency on some existing routes, and create several new routes on underserved arterials. UTA's long-range plan also identifies several future intermodal "Community Hubs," where bus lines, bikeways, trails, and sometimes rail will meet. These future high frequency, high-speed bus corridors and Community Hubs also create excellent opportunities for transit oriented-development.

While regional transit service is primarily coordinated by and under the control of one agency, UTA, land use regulation is considerably more fragmented. Nearly 100 municipalities across the region currently have control over land use decisions. Additionally, UTA owns some land around stations, primarily parking lots. These station-adjacent sites can be a prime location for TOD, creating potentials for joint development or transfer or sale of development rights.

TOD is a local solution to a regional problem, requiring municipalities to consider the regional potentials and impacts of their land use decisions. Zoning around transit stations greatly varies from jurisdiction to jurisdiction; in some cases, current station area zoning prohibits the possibility of building TOD by requiring low development intensities or restricting transit-oriented uses. This handbook will help to coordinate transit station area land use programs by presenting an ideal set of TOD guidelines. While the application of these guidelines vary depending on the context, they contain principles that should be applied to all transit station area planning.

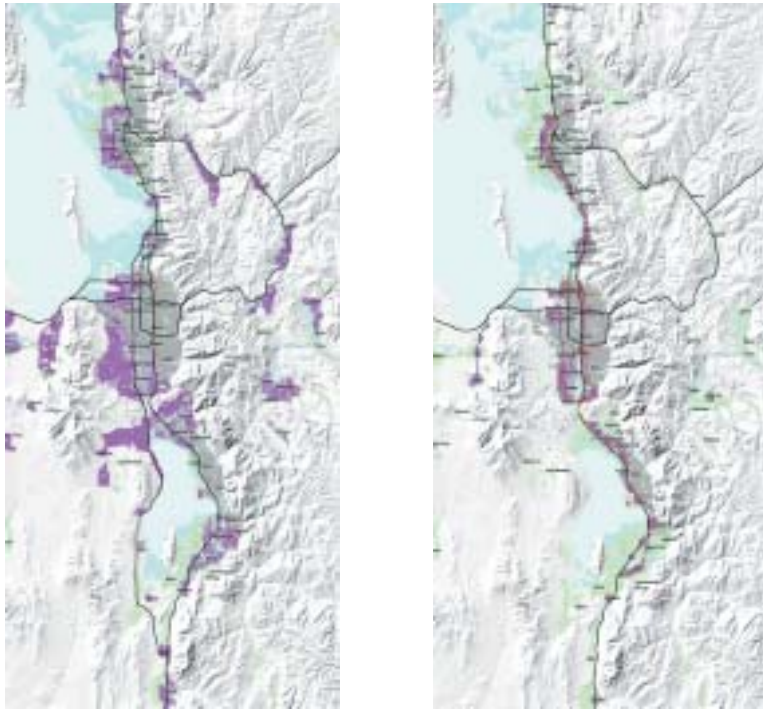
Agency coordination in early planning stages is especially vital to secure funding for future transit improvements. Because of the uncertainties involved with the development of new communities and transportation infrastructure, TOD must be a joint effort between stakeholders (public and private) responsible for land use, transit, and transportation development to fully capitalize on land use and transportation interactions. A central challenge for TOD in the Wasatch Front region is to bring the disparate parties responsible for development and transit service together to create pioneering TODs that reinforce transit investments, and transit investments that support transit-friendly developments.



UTA's Long Range Plan identifies several proposed light rail lines and a commuter rail line running North/South along the Wasatch Front. (Source: UTA Long Range Plan)

2C. Planning Processes That Inform This Report

Given high rates of expected new growth and its potential impacts, there is considerable discussion about how to guide this growth. It is widely recognized that current low-density, single-use growth will only contribute to traffic congestion, air quality, open space loss, and fiscal concerns. Recent regional planning efforts have analyzed how the region should grow, modeling a baseline scenario and impacts if no changes are made to current land use regulation and transportation regimes, and creating alternatives that emphasize directing walkable, mixed use developments along expanded transit corridors.



Scenarios A (left) and D (right) show the region's future developed area if built as currently regulated, and if new development is concentrated at high densities in existing development areas. Purple shows future growth and grey shows current urbanized areas.

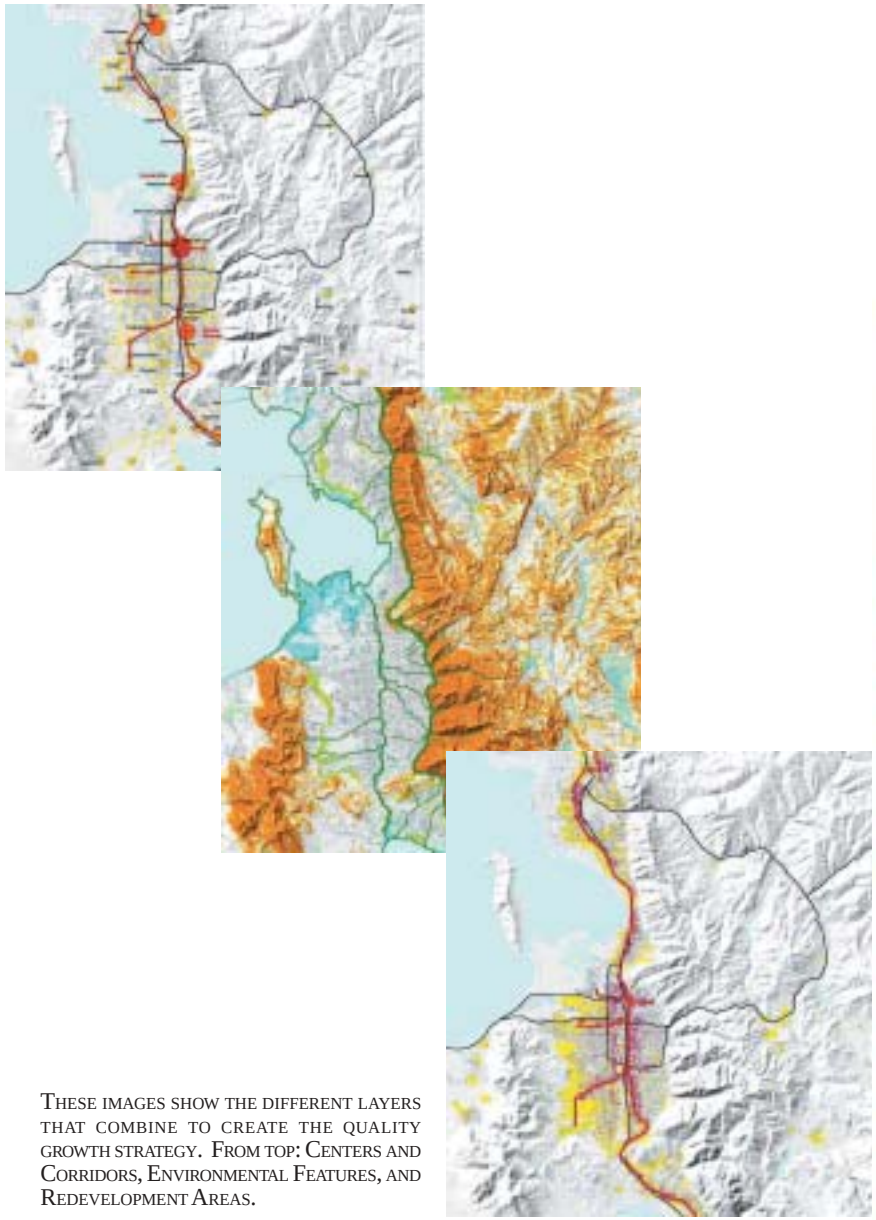
Envision Utah: Quality Growth Strategy (Regional Scale)

The Quality Growth Strategy utilized an extensive public workshop process to develop regional growth strategies and a series of alternative development and infrastructure scenarios for the Salt Lake region. Residents, property owners, business owners, and other stakeholders gave their input at more than 75 regional and local workshops, identifying their values, priorities, and ideas about where and how regional growth should occur. These workshops resulted in the creation of four alternative scenarios. The alternative scenarios were created to illustrate the spectrum of ways by which the region could develop, and the varying consequences of these different growth and development practices.

The scenarios range from a low-density alternative consisting of predominantly auto-oriented development types to a transit-oriented, higher-density alternative with more compact growth and higher levels of infill and redevelopment. A baseline scenario, representing how the region would develop given current growth patterns and local zoning standards, was included as a comparison. The scenarios were then modeled for their effects on land consumption, air and water quality, transportation patterns, and other factors.

After completing the models, the four scenarios were presented to the public, who selected a preferred alternative. The public overwhelmingly chose the alternatives that concentrate compact, walkable new development in redevelopment areas, and emphasize funding transit over auto-oriented infrastructure. This input was then used to create a "Quality Growth Strategy," which created a detailed vision for regional development, and was modeled in comparison to the baseline scenario. These TOD guidelines build off the Quality Growth Strategy by presenting detailed descriptions of how to achieve compact, transit-oriented growth at the site and neighborhood scale.

For more information on the Quality Growth Strategy process, please refer to the document, "Envision Utah: Producing a Vision for the Future of the Greater Wasatch Area."



These images show the different layers that combine to create the quality growth strategy. From top: Centers and Corridors, Environmental Features, and Redevelopment Areas.

Regional TOD Opportunity Sites

As a result of these planning processes, numerous potential TOD sites across the region along existing and proposed rail lines were identified. These sites include town centers, low-intensity use areas with redevelopment potential, urban neighborhoods, and new growth areas, and include sites served by existing and proposed light rail, and at stations along the proposed Ogden-Salt Lake City-Provo commuter rail. Because much of the existing and proposed light rail system will be built along existing rail rights of way, many stations are found in areas currently dominated by low-intensity light industrial uses. This common condition presents unique challenges and opportunities, discussed in greater depth in the following chapters.

In addition, the region has an extensive bus network. There are many town centers that light rail does not and is not planned to reach; buses additionally serve corridors where light rail and commuter rail are proposed, but may not be built for many years. Additional areas may be planned for light rail, but may not have light rail service for many years, with bus service in the interim. For these reasons, bus corridors and hubs should not be discounted as potential catalysts for TODs. These TOD guidelines are also appropriate along bus corridors, and in town centers and Community Hubs served by bus and not rail.

Potential TOD sites range from infill and revitalization areas, to larger redevelopment sites, to new growth areas (Downtown Layton, 2100 Station, and Layton, above)

THE CIRCLES ON THIS MAP SHOW SITES THAT HAVE BEEN IDENTIFIED AS POTENTIAL TOD SITES. THESE SITES ARE SITUATED ALONG EXISTING OR PROPOSED RAIL LINES, AT "COMMUNITY HUBS," OR IN EXISTING CITY AND TOWN CENTERS (FROM ENVISION UTAH 2000)

Envision Utah Community Design Workshops (Local Scale)

Four sites of varied scales and styles were chosen that represent the broad range of opportunities and constraints facing potential TOD areas in the Wasatch Front Region- from a historic downtown, to urban infill potential, to large-scale redevelopment, to a proposed light rail station at a primarily new growth site. These sites will serve as models for other sites throughout the region. At local workshops for each site, participants discussed preferred use type, intensity, and specific location of new development. Their comments were integrated into illustrative plans, regulating maps, and site-specific guidelines that illustrate how to govern the land uses for the site.

AT COMMUNITY DESIGN WORKSHOPS, PARTICIPANTS DISCUSSED APPROPRIATE LOCATIONS AND INTENSITIES FOR DIFFERENT LAND USE TYPES, WHICH WERE TURNED INTO ILLUSTRATIVE PLANS

As these findings and maps provide general models of how TOD can be applied in the Wasatch Front region, this document's TOD guidelines integrate the findings from the community design workshops. For example, the workshops found that environmental contamination issues were an important concern for redevelopment at many sites; consequently, the TOD guidelines deal with contamination issues in the implementation chapter. At the same time that the workshop process informs this document, the general TOD guidelines contain design principles, and regulation and implementation strategies, such as suggestions for specific building design standards, that should also inform subsequent planning and development at the four study sites.

The results of the community design workshop process are shown in Appendix A and are briefly described in the following section. Additionally, the existing conditions and design for the four study sites will be used as examples throughout the document.

2D: Local TOD Case Studies

Workshop Site Case Studies

Building on the finding that the majority of workshop participants and survey respondents preferred land-efficient, transit-oriented scenarios, the community design workshops explored in detail how four sites could become transit-oriented developments. Two of the study sites encompass existing transit stations along the north-south TRAX line - Central Pointe Station located at 2100 South in South Salt Lake City and Fireclay Station at approximately 4500 South in Murray. The third site, near the intersection of 7800 South and Redwood Road in West Jordan, is a potential station along a proposed light rail spur. The fourth study site is located in the historic downtown area of Layton, near the intersection of Main and Gentile Streets next to I-15. The proposed commuter rail line may serve this station.

Two workshops were conducted at each study site to invite public input into potential TOD plans and to share local concerns. A wide variety of people participated in each workshop, including local citizens, community leaders, transit providers, property owners, developers, and business owners. The interactive workshop process allowed participants to provide input and guide future development within their own community. Participants created maps representing the potential for TOD around their community's study site.

The 2100 South site is discussed here to illustrate how TOD might look in a Wasatch Front community. All four sites are discussed further in Appendix A. Appendix A also shows illustrative plans, regulating maps, and workshop comments for the four sites.

Central Pointe Station, 2100 South, South Salt Lake City

2100 South station, at 2100 South and 300 West, involves two jurisdictions, Salt Lake City and South Salt Lake City. The site is a developed urban area containing commercial and light industrial uses, established residential neighborhoods and very few undeveloped properties. The area contains auto-oriented commercial and industrial development located south of 2100 South and along 300 West. North of 2100 South there is a greater residential presence. Two major north-south corridors bind the study area - I-15 to the west and State Street to the east, with freeway on and off ramps at 2100 South.

Economic Opportunities and Constraints

South Salt Lake City is a mature part of the Wasatch Front region with much slower projected overall population and employment growth rates than the region as a whole over the next 25 years. In order for the area to become a vibrant place to live and do business, new growth will have to take the form of infill development and strategic revitalization projects. The area around the TRAX station is currently a commercial district, with a residential concentration north of 2100 South and industrial activities to the south. New residential product types into the area immediately adjacent to the TRAX station and an appropriate mix of activities along 2100 South will maximize the opportunity for transit oriented development. An overview of real estate market conditions and economic trends suggests the following options for station area development:

- There is strong demand for new housing in the area but land supply is perceived as constrained.
- TOD guidelines for the area will signal the development community that new housing can be produced by redeveloping existing underutilized sites, to address land supply concerns. New residential neighborhoods should connect

to existing residential neighborhoods. This existing neighborhood is in Salt Lake City and commands higher real estate values than comparable units in South Salt Lake. Creating an image for the TRAX station area that is associated with the cache of Salt Lake City establishes higher value for new units and creates incentive for developers to build infill projects.

- Most retail uses in the area around the TRAX station are auto-oriented and serve a regional market. There is currently less demand for smaller-scale local serving retail amenities. While these uses can be viable, TOD guidelines for this area should concentrate pedestrian-oriented retail to key sites along 2100 South and limit the amount of ground floor retail so as not to over-saturate the limited market.

- There is virtually no demand for significant new office space in this area. The 2100 South area likely will never become a significant office node. Therefore, while office uses should be allowed in the TOD guidelines, they should not be considered a primary or catalyst use.

- The existing concentration of light industrial uses in the 2100 S. area appears stable and should be incorporated into future plans for the area, but should be appropriately buffered from residential uses.

Proposed Land Use and Urban Design Guidelines

Implementing TOD at the 2100 South study site involves addressing zoning issues, land consolidation, dual city involvement, and settling on an appropriate development scale. The 2100 South workshops focused on the reuse of underutilized industrial and commercial properties and the enhancement of established residential neighborhoods. Workshop participants felt that the area needs new residential opportunities, and improved pedestrian routes between residential areas and the station. Future area opportunities include a proposed TRAX extension to West Valley City to the west and rails to trails eastward toward Sugar House, with a long-term potential for a TRAX extension, both of which would bring more people through the study area that new development could capture.

EXISTING CONDITIONS AT 2100 SOUTH, RIGHT. WORKSHOP PROPOSAL, FAR RIGHT.

Workshop participants recommended higher-density development along 300 West, which currently houses big box commercial buildings that sit far from the street behind large surface parking areas. New development would locate mixed-use buildings near the street and increase parking lot walkability by adding shade trees and designated sidewalks.

A new street within existing blocks just west of the rail corridor would provide links from the north and south to 2100 South, and allow for smaller scale, mixed-use development within walking distance of the station along a pedestrian-friendly street. Mixed-use development, primarily commercial with office above, is seen as critical to bolster the viability of a pedestrian-oriented zone along 2100 South from 300 West to State Street. With the draw of local employment centers and the existing and proposed residential neighborhoods, increasing the walkability of 2100 South would help support businesses that provide daily services for those who live or work in the area.

East of the station and south of 2100 South would contain a new higher-density residential neighborhood, accommodating a variety of income levels and local amenities within walking distance of the station. This area currently comprises many small properties. New residential development in this area would feather out into surrounding light industrial and commercial area using live/work units as a transitional building type. Currently, South Salt Lake increases to three times its population during the day due to the influx of workers, and would benefit from increased home ownership opportunities.

Future development near 2100 South Station relies on the consolidation of commercial and industrial properties within the study site. Currently, large-scale development of catalyst projects is limited due to the large number of small property owners and small average parcel size. To achieve redevelopment-scale properties through site consolidation, property owners and South Salt Lake City prefer the voluntary joining of properties and similar options over the use of eminent domain. However, the use of RDA may still be a consideration.

Existing development near 2100 South light rail station.

Other Examples of TOD Opportunities at Existing TRAX Stations

- *Midvale Center Station, 7800 South*

UTA began purchasing land at Midvale Center and around other future stations in the 1980's when planning for TRAX. At Midvale Center Station (7800 South), UTA is proactively seeking to implement TOD by bringing a mix of residential, retail, and office space to the area using land that it already owns. UTA's ownership of key parcels eliminates the barrier of fragmented ownership present at many other stations and allows them to plan for an appropriate mix of uses. Other stations where UTA owns significant parcels can use the redevelopment of Midvale Center as an example.

UTA owns three parcels around Midvale Center Station. One vacant .28-acre parcel will be sold for single-family use. The other two parcels will be leased by UTA – a 1.25-acre parcel along State Street is earmarked for office development, and the other .75-acre parcel may become either apartments or a child care center. The area is currently a stable neighborhood consisting of single-family homes from the 1940's and 1950's and old, small-town mix of uses including a grocery store, restaurants, and retail in a somewhat compact setting. Future redevelopment in the area will focus on the large vacant or underutilized parcels, where TOD can enhance the current land uses.

- *1300 South Station, Salt Lake City*

The 1300 South Station in Salt Lake City currently functions as a destination point, with a minor league baseball stadium, Franklin Covey Field, one block down the street. Land surrounding 1300 South Station, currently zoned to allow a mix of uses, is identified as a TOD area in the draft of a Central City Master Plan being prepared by the Salt Lake City Planning Division. The area contains numerous TOD infill opportunities to enhance the area as a walkable, transit-accessible destination. For example, the city owns a five-acre site across from the ball field, which is currently used as surface parking.

In the past, the city has expressed interest in redeveloping this parcel into structured parking with ground floor retail, providing a greater choice of uses near the station. Directly south of the ball field and station area is single-family housing that would benefit from small-scale retail and other services within walking distance of their homes. The draft master plan and zoning for the area, which also covers the area around the 2100 South station, encourage development that will enhance these areas as TOD community hubs, suggests ways to make them more pedestrian-friendly and addresses the issue of implementing TOD.

Franklin Covey Field, a transit-accessible destination near the 1300 South Station

Chapter 3: Applying TOD to Different Contexts

3A: Applying TOD by Place

3B: Applying TOD by Development Type

3C: Applying TOD by Transit Type

3D: Shaping TOD Based on Economic Analysis

This book contains general principles for all transit-oriented development; however, these principles should be adapted or differently applied depending on their immediate context. For example, high-rise development would be out of scale and inappropriate for a small town center. Conversely, low intensity development with surface parking in urban locations would not maximize a site's development potential, and more restrictive parking standards especially apply in urban cores. This chapter discusses the different types of TOD, and the specific planning, design and development issues that each type confronts. TOD contexts are broken up by location (urban core, suburban center, etc.), development type (redevelopment, infill, and new growth), and transit technology (bus, light rail, and commuter rail). Each category (place, development type, transit type) is a layer that can be combined to understand the issues relevant to each particular TOD opportunity.

TOD is a regional solution that relies on the interplay of transit-supportive development in all contexts throughout the region. Although this chapter focuses on different categories of TOD, it is important to keep in mind that TOD will be most effective when applied to all contexts working together.

Downtown Salt Lake City, the urban core

3A. Applying TOD By Place

TOD guidelines vary depending on where the TOD is located in order to keep new development of a compatible scale and contextual style with existing conditions and community desires. This section discusses TOD issues and appropriate TOD guidelines for a variety of places throughout a metropolitan region, from the urban core to the suburban fringe.

Urban Core

Urban cores are historic regional centers that now contain high development and daytime population densities. Typically, the urban core is the business and employment center of the region. Building styles include high-rise office towers, major civic uses, a diversity of pedestrian-oriented businesses, and high-density housing types. The urban core is also typically the best served by transit- commuter routes that converge in this location to serve daily traffic in and out of the city center. In the Wasatch Front region, downtown Salt Lake City is obviously the urban core; however, other sizeable regional downtowns such as downtown Ogden or Provo can also be considered urban cores; though somewhat smaller in scale, TODs in these locations have similar appropriate development types and issues.

With the highest level of transit service and existing built densities, urban core regions are appropriate for the highest density of transit-oriented development, from major mixed-use buildings to apartment towers. Indeed, low development densities in these locations should be avoided so as to maximize the use of existing transit infrastructure. Land use regulation should enable higher densities in order to make development feasible in these areas with high land values. By virtue of having historic areas, architecture that is built to the street, and great amounts of development in proximity, urban cores have a pedestrian-oriented character. New development should work to enhance this character, or repair gaps in the pedestrian fabric that may have been lost in the past.

An additional concern for urban cores should be to create a 24-hour presence. Often, downtown districts are perceived as being dangerous and are all but deserted after working hours and on weekends; TOD in these districts should encourage uses that keep population in the city center during the evenings and weekends, such as entertainment or restaurant uses. Most importantly, urban core TODs should encourage a greater residential presence, which is often lacking in American downtowns.

Urban Neighborhood

Urban neighborhoods are walkable older neighborhoods surrounding the urban core. These "streetcar suburbs" were mostly built in the first half of the 20th century. Urban neighborhoods include a wide range of housing types, from multi-family buildings to small lot homes, serving a mix of incomes. Architecture usually relates to the street, with small residential setbacks; these neighborhoods generally have a highly walkable character. Urban neighborhoods contain a greater mix of uses than contemporary suburbs, and often have a neighborhood commercial area or civic center.

Because these neighborhoods sprang up often around transit in a time when auto use was less common, they are often excellent locations for contemporary TODs. The Sugar House neighborhood is an example of a Wasatch Front neighborhood that can be infilled with compatible development to take greater advantage of the neighborhood's walkable character and transit presence.

Planners should consider neighborhood character and gentrification issues when dealing with urban neighborhoods. New development should contain a similar character and scale to existing development, so as to respect existing contexts and historic structures. Additionally, infill TOD should provide for existing residents, businesses and property owners while also attracting newcomers. Existing neighborhood users should not be priced out of the neighborhood by rising property values, and cities should proactively protect against this occurrence (see TOD and Housing Choice, Chapter 4).

A SUBURBAN TOWN CENTER (DOWNTOWN LAYTON)

Suburban Town Center/Community Hub

Suburban town centers are the foci of suburban communities. They may contain a grocery store, post office, or other small retail and service uses. Suburban town centers are often served by transit, usually bus lines. Depending upon the community, these centers can vary from a small town main street environment to an auto-oriented retail strip. However, in many Wasatch Front communities, the TRAX system does not run through the town center but through low-intensity industrial areas, for example in South Salt Lake or in Murray. Redeveloping these areas with connections to existing neighborhood retail or civic centers is an important challenge for TOD at TRAX stops in industrial areas.

While town centers may have existing street grids, moderate densities, and a mix of uses, surrounding areas are primarily low-density housing along circuitous suburban roads within the region's large blocks. Suburban town centers depend to a greater

degree on auto use than urban neighborhoods. Older suburbs and small towns that have been absorbed by the metropolis often have a small-scale center, but many modern suburbs do not have real town centers. In other cases, suburban retail centers along busy arterials can be retrofit to create a more pedestrian-friendly environment.

TOD represents an opportunity to create town centers where none previously existed, to enhance and intensify existing auto-oriented town centers, or to revitalize older pedestrian-oriented town centers. In order to effectively create walkable TODs in suburban town centers, population densities and pedestrian connections to surrounding residential areas should be emphasized and increased.

Suburban Employment/Retail Center

By definition, suburban employment or retail centers attract large numbers of people to a discrete location, usually at densities that make transit economically feasible. Such areas have also been called "edge cities," because of the high concentration of development at the fringes of the metropolitan area. Light rail or heavily used bus lines already serve many suburban employment or retail centers. Examples of suburban employment or retail centers in the Wasatch Front region include the Valley Fair Mall in West Valley City, which is along a proposed light rail line, or the South Towne Area in Sandy.

Despite their transit-supportive densities, these areas are most often designed for auto use. They are greatly setback from roads, and entries face onto vast fields of free parking. Large building footprints and block sizes limit visual diversity. To the pedestrian, such environments can be daunting, if not dangerous. TOD should focus on retrofitting these environments by creating new blocks through superblocks, or creating a more varied architecture, so that they become more pedestrian-friendly. Adding housing on parking lots to create a more mixed-use environment, where people will not need to get in their cars to access their work or shopping environments, is also appropriate when economically possible.

In some cases, older shopping centers or office complexes may have become obsolete are nearly abandoned. These so-called "greyfields" present opportunities for redevelopment that takes advantage of existing infrastructure and directs new growth into previously developed locations.

University or Institutional Campus

As with suburban employment and retail centers, major educational and research institutions draw a concentration of people to one location, making them excellent destinations for transit systems. College campuses, such as the University of Utah, on the University TRAX line, are especially appropriate for TOD land use types.

EXAMPLE OF A SUBURBAN EMPLOYMENT AND RETAIL CENTER

University campuses already contain a mix of residential and daily uses. Also, students are often more willing to live at higher densities and are more often transit-dependent than the general population. Development near institutional campuses should maximize connections from the walkable campus to the transit station. Development should include residential uses for a mix of users, from students on tight budgets to employees of all incomes.

Park-and-Ride

Many transit stations contain park-and-rides, many-hundred space parking lots which people use to access the transit system for commuting purposes. Park and rides are often located on major arterials or within areas with low intensity development. Park-and-ride lots expand the use of transit by suburban residents and therefore play a role to relieve peak hour congestion. In many cases, they are extremely well used. However, they represent an inefficient use of land directly adjacent to transit stations, and should be balanced with transit-oriented uses.

Often surface park-and-ride lots represent an interim use. As real estate values increase, parking can be incorporated into parking structures so that station-adjacent land develops. As park-and-ride lots are usually under single ownership, that of the transit agency, redevelopment does not face the prohibitive ownership issues that often make redevelopment more difficult in other areas. Cities can more quickly encourage the transition of surface park-and-ride lots to structured parking by offering redevelopment funding for all or a portion of the cost of building the parking structure. Before such redevelopment occurs, while a station is still surrounded by park-and-ride lots, it is important to consider site design to enhance pedestrian safety and visual interest. For example, park-and-ride lots should provide clearly delineated walkways through parking lots. Finally, park-and-ride lots should consider connections to surrounding uses, so that those who are not using the parking lot can still access the transit station. See Chapters 5B. Urban Design and 5C. Parking for a description of strategies to reduce the visual impact of park-and-ride lots and to better integrate them with compact, mixed-use TOD neighborhoods.

Summary of Place Types

Whether in the urban core or at the suburban edge, development opportunities vary by scale and pattern. Large redevelopment sites contain many of the same issues in all locations, as do smaller, finer-grain infill opportunities. Many potential TOD locations contain a combination of development type opportunities. Communities should assess which development type and scale best applies and which type they are most capable of implementing for their TOD sites. Implementation of different development and redevelopment scenarios is further discussed in Chapter 6.

TOD development scale should be consistent and appropriate for the setting in which it is located. The potential TOD sites identified along the Wasatch Front cover a wide range - from smaller downtowns to urban core areas. The TOD approach can work in many different contexts and is not a one size fits all package. TOD scales vary, and the scale chosen for a particular area must be appropriate for the setting.

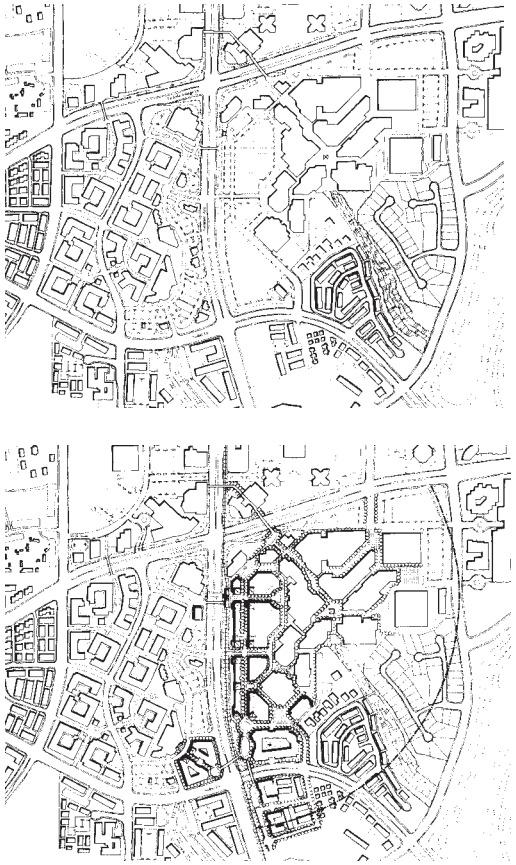
Smaller communities may be concerned that adopting a TOD area may alter the quality of life they enjoy by being too intensive. The key to successful implementation of the TOD is to correctly identify the appropriate scale and work with the community to develop an intensity of use that relates well to the surrounding area. For example, a TOD in downtown SLC may be capable of handling net densities of up to 100 dwelling units per acre, while a TOD in a much smaller community, such as downtown Layton, may have a more appropriate net density of 10-15 dwelling units per acre. By choosing a development scale appropriate to the location, TOD, although it is composed of compact growth, need not be out of scale with surrounding areas.

3B. Applying TOD By Development Type

Redevelopment of Opportunity Sites

Existing vacant or underutilized sites with potential for large-scale redevelopment can be remade as TODs. At transit stops that currently lack a pedestrian-oriented quality, TOD can help transform large vacant parcels or underutilized sites via redevelopment. For example, the 4500 South station in Murray has a large redevelopable parcel located Northwest of the station, across Fireclay from the existing TRAX park-and-ride lot. It is also important to consider places that have reached the end of their "economic cycle," such as older shopping malls or obsolete industrial areas. Similarly, brownfield sites (obsolete and potentially contaminated industrial sites) can often be redeveloped as TODs.

Appropriate development at large redevelopment sites can be a catalyst to the transformation of an entire area. However, there are often additional challenges with such development. For example, environmental contamination at brownfield sites can significantly affect development financing and risk. The challenges and opportunities presented by brownfield sites are discussed in Chapter 6. Fragmented ownership patterns may present an additional challenge for large-scale redevelopment.



Major redevelopment may include developing on large surface parking lots so that buildings come to the street and create a more pedestrian-friendly atmosphere

Redevelopable opportunity sites include aging shopping centers with vastly underutilized parking lots, such as this one in Layton, or in the site plans above right

The Crossings: Redevelopment of an Inner Suburban Strip Mall Site

The Crossings in Mountain View, California, presents a successful example of opportunity site redevelopment in an older suburban area. The Crossings replaced an aging and underperforming shopping center with 400 housing units clustered around a new commuter rail station that links the area to San Jose and San Francisco.

Mountain View zoned the area taken up by The Crossings, as well as areas at other transit hubs in the city, for compact density, mixed-use and other TOD-supportive guidelines. Net residential densities at The Crossings range from single-family homes at 12 units per acre to townhouses and rowhouses at 30 units per acre to apartments at 50 units per acre. The average net density is 22 units per acre, allowing all units to be within walking distance of the train station.

Retail storefronts facing the train station and a small plaza currently house commuter-oriented retail uses, such as a barbershop and a café, which commuters can use on either end of their work trip. Small parks are distributed throughout the site as community focal points, and provide areas for neighborhood gatherings. An interconnected network of streets and pedestrian paths knits the neighborhood together, and also provides connections to an existing supermarket, allowing residents to walk directly to the store without crossing arterial streets.

Commuter Rail station

Ground floor retail space with units above at the train station (left); Small lot single-family homes front on a neighborhood park (right).

The original shopping mall (lower) and transit-oriented neighborhood (upper)

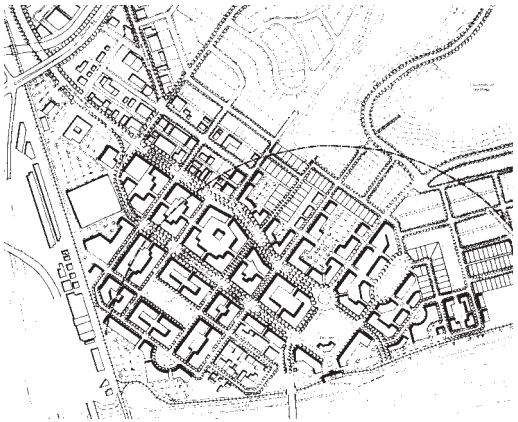
Incremental Infill/ Neighborhood Revitalization

Existing urban areas with high revitalization potential are natural candidates for TODs. They have existing infrastructure and frequently already have a highly walkable character and a transit-oriented history. Additionally, directing growth into these areas takes development pressures off of greenfield sites at the urban edge. Hence, transit stops or stations in older districts (including struggling main streets, downtowns, or commercial districts) should be a priority when designating TOD areas for revitalization. This allows existing areas to benefit from incremental improvements such as building renovations, street landscaping, and small-scale infill development, and to take advantage of structured funding programs. Utilizing existing infrastructure may make development of the area more economically attractive as impact fees for infrastructure may be lower than those for new development in outlying areas.

An important concern for revitalization-based TODs should be to ensure that current residents and business owners realize some of the benefits that accrue from new development, and are not driven out by increasing rents. Consequently, housing that includes an affordable component is an important aspect to TODs in revitalization areas.

SMALL-SCALE INFILL AND STREET IMPROVEMENTS ON STREETS SUCH AS THIS ONE NEAR 2100 SOUTH STATION CAN CREATE A MORE PEDESTRIAN-FRIENDLY ENVIRONMENT.

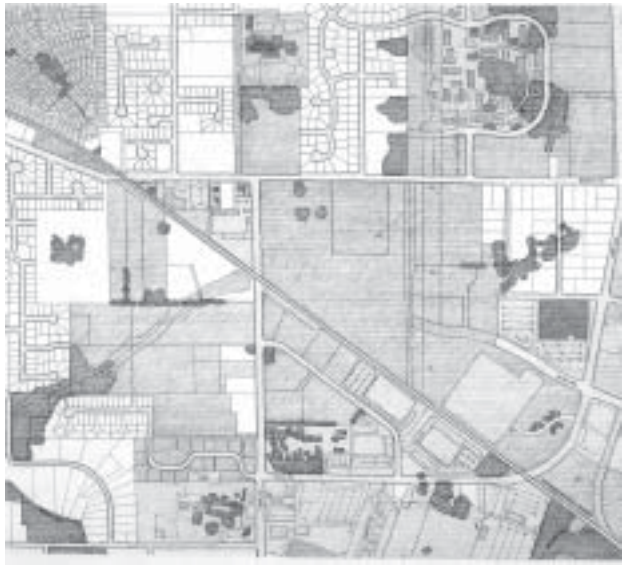
Additionally, TOD in infill and redevelopment areas must balance historic preservation with new development. Historically, downtown and urban core areas were developed in a transit-oriented manner – people accessed the area by ways other than the automobile. As TODs develop in areas with existing buildings that may be of a historical nature, it is necessary to take into consideration the context of the area and the existing density of development. When possible, existing structures should be preserved, as they contribute greatly to the character and history of an area. The interconnectedness of the Wasatch Front's grid street system is another historic component that contributes to the success of TODs and should be preserved. Incorporating these historic elements with new development in the TOD can serve as a bridge between past, present, and future.

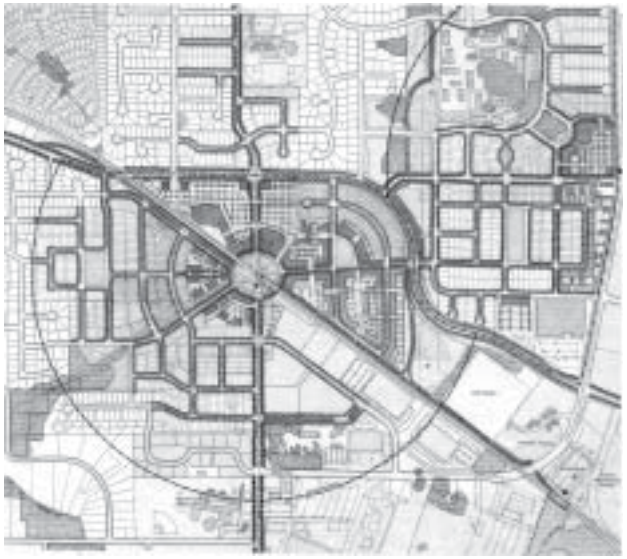


SMALL-SCALE CHANGES SUCH AS STREETSCAPE IMPROVEMENTS, CREATING NEW PEDESTRIAN CONNECTIONS AND RENOVATING, EXPANDING OR CONSTRUCTING NEW BUILDINGS ON SMALL PARCELS CAN GREATLY IMPACT INFILL DISTRICTS AND MAKE THEM MORE PEDESTRIAN AND TRANSIT-FRIENDLY

New growth area, Layton

These diagrams show new growth areas in Portland, Oregon. Existing greenfield sites (upper) become compact development on interconnected streets oriented around a light rail station (lower).





New Growth Areas

Transit alignments and TODs should be sited in new growth areas, or greenfields, only where the opportunity to take advantage of vacant land with a critical mass of development can be maximized. In new growth areas, transit planning and land use planning should complement each other to maximize the potential for high transit ridership. Areas planned for high intensities of development should have the highest levels of transit service, and areas with planned transit service should be zoned for a medium or high density of development.

Greenfield sites consist of large tracts of land that are often available for subdivision. Current funding and financing regimes favor such type of development; however, these areas frequently contain rapidly diminishing environmental resources or prime agricultural land, and should be developed compactly or not at all to preserve land. With much of the easiest to build upon land in the Wasatch Front region already urbanized, new growth areas will frequently also face environmental constraints on portions of their sites such as difficult slopes or wetland or riparian zones.

THESE IMAGES SHOW HOW AN AREA WITH MAJOR REDEVELOPMENT SITES (2100 SOUTH, UPPER PHOTOS) AND A RELATIVELY NEW GROWTH AREA (LAYTON, LOWER PHOTOS) CAN INFILL WITH NEW GROWTH AND STREETSCAPE IMPROVEMENTS.

3C. Applying TOD By Transit Type

In addition to variation based on location and development opportunity, TOD differs based on the type of transit. Transit features such as frequency of service, station spacing and road-sharing versus separate right-of-way concerns all shape the appropriate characteristics for TOD. The Wasatch region's primary existing and planned transit technologies are discussed below. In addition to these types, TOD planners should consider the intermodal possibilities where different transit types come together.

Light Rail

Because they are on fixed, permanent routes, and are a relatively noiseless and pollution-free technology, light rail stations possess the best opportunities for TOD in the Wastach Front region. Light rail stations call for the highest development intensity, so as to create the highest ridership base in order to justify and support high capital costs and frequent service. Light rail will be most often used as a commute option, although it will also be used for shorter trips due to its frequency and speed. Additionally, light rail has proven to be very popular on weekends in the Wasatch Front region to get to downtown cultural and entertainment destinations. Accordingly, almost all uses are appropriate around light rail stations, including employment, residential, shopping, and entertainment and civic destinations, as well as small-scale transit-associated retail such as a newspaper stand or cafe.

Due to the cost involved and rail's potential to carry much higher ridership than buses, areas of low to moderate development intensity served by LRT should be transformed over time through proactive planning, infill, and redevelopment to higher intensities and a pedestrian-friendly character.

Stations on light rail lines are spaced an average of one to two miles apart, so development densities are not continuous along the length of the transit line. TOD's for these areas would be discrete nodes with somewhat lower density uses between adjacent station areas. The station and adjacent plazas or public spaces thus becomes the focal point of the TOD, and should present a unique and memorable character to distinguish the TOD neighborhood from others along the line.

Commuter Rail

Commuter rail, like light rail, is a fixed investment, making higher densities appropriate around stations. However, due to less frequent service, it is primarily used for commuting or long trips, typically 20 miles or more, and not for shorter inter-daily trips. Commuter rail will additionally receive considerably less use at non-commute hours or on weekends. Stations are typically placed every three to five miles. Because of their infrequent spacing, commuter rail stations require more parking to serve people from a wider surrounding area. Easy bus and drop-off connections should be made from these areas to the nearest station so that people living in surrounding areas can also access the rail, though they may be out of walking distance. Areas directly around commuter rail stations may be very high density. However, there should be a density gradient between stations, which may even pass through rural or very low-density areas.

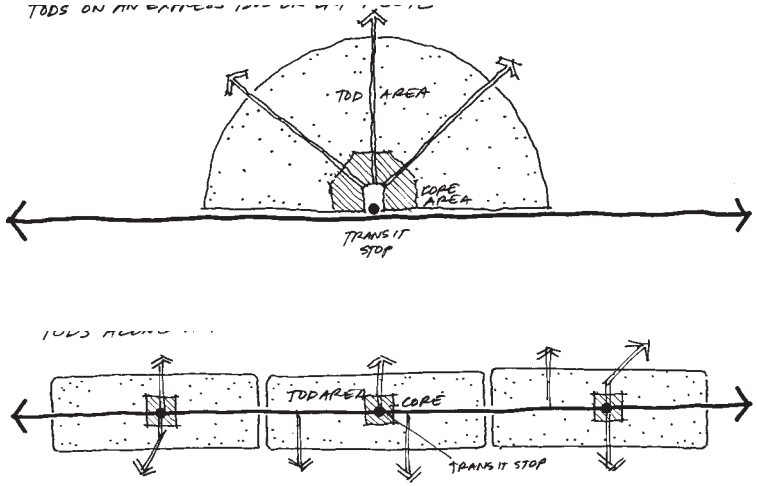
Nonetheless, having a mix of employment and residential uses in TODs at commuter rail stations will create a ridership base for the system, and create a meaningful place with the station at the center. Transit-associated uses that people would access at either end of a commute trip, such as small-scale shopping and day care, are also appropriate uses at commuter rail stations. An additional consideration with commuter rail-based TOD is that freight trains may use the same rail lines, making housing less attractive directly adjacent to station areas.

Rapid and feeder buses

UTA's bus system serves a much larger area, with many more lines and closely spaced stops than the rail system will even when built out. People use bus service for a variety of destinations, including commuting, local shopping and other short trips. For this reason, TODs along major bus routes should form a somewhat continuous corridor of moderate density, punctuated with higher density nodes where bus lines cross or reach designated Community Hubs. At these stations, TODs should be configured similarly to those at rail stations, with a moderate to high intensity of development and a wide mix of uses.

Additionally, bus service includes the possibility of dedicated right-of-way busways, which provide high-capacity transit service similar to LRT, and can be later retrofitted for LRT service as corridor densities increase and funding allows. Major stops along dedicated bus right-of-ways should have medium to large-scale TODs.

Feeder bus near University of Utah, Salt Lake City



Along transit lines with less closely spaced station placement, TOD should encompass a larger area, serving people within walking and feeder distance (upper). These stations may also need to include parking for commuters who live in surrounding areas. Transit lines with closely spaced stops, such as regular bus lines, should encompass a narrow radius of development defined by the bus corridor. (lower) These TODs don't typically necessitate commuter parking.

Converting Bus to Rail: Salt Lake City's Sugar House Neighborhood

UTA's long range plan identifies several proposed light rail corridors and a commuter rail corridor that someday will carry Utah riders along the Wasatch Front. However, in many cases, it will be many years before these rail lines and stations are funded and built. UTA is currently acquiring rights-of-way for many lines.

Some areas, currently served by bus, may convert to light rail in the future as the TRAX system expands. These areas may already have components that are typical of a TOD and contribute to a pedestrian-oriented environment. Depending on local zoning ordinances and master plan processes, the scale and mixed-use of these areas may already be addressed to maintain or enhance their walkable nature.

For example, the Sugar House community in Salt Lake City is rooted in a compact, walkable design. Located approximately 3 miles to the southeast of downtown Salt Lake City, Sugar House has a central commercial area that developed over a century ago. The area was once served by the streetcar system. As the residential areas flourished, it became a streetcar suburb and the commercial district continued to grow to serve the residents.

Early zoning in Salt Lake City contributed to the strip of commercial uses that extend out along the main streets (2100 South and 1100 East). However, the core still retains many features that contribute to the unique character of the commercial area. Buildings in the core are built to the street, trees contribute to the streetscape and there is a mix of uses, including retail, restaurants, and civic uses such as a library and post office. Single-family and multi-family residential areas within a 1/4 to 1/2-mile radius of the commercial core contribute to the pedestrian-oriented environment.

Current zoning and master plan policies enhance the walkable design of Sugar House. The majority of the commercial core is within a commercial zone that encourages and allows for a mix of uses. The area is under design review to maintain the aspects of the area, such as the lack of large setbacks, which contribute to its pedestrian orientation. Residential development is encouraged by allowances for an increase in building height if developers include a residential component.

Two major bus routes currently serve the Sugar House area, intersecting at the core. Its walkable character provides the ideal setting for the mix of uses necessary for an effective TOD. The right-of-way for the abandoned rail line into the area has been purchased under the recent agreement between UTA and Union Pacific. This rail corridor has been identified in master plan policies as a potential light rail spur, as well as a rails with trails corridor. With historic roots to a walkable design, and policies that serve to enhance this character, Sugar House is an example of an area where TOD attributes may already be in place, ready to handle the arrival of a light rail station in the future and capitalizing on bus service in the present.

An example of street-fronting, walkable development in the Sugar House neighborhood

3D. Shaping TOD Based on Economic Analysis

The development program for a specific TOD area should be based on economic factors in addition to metropolitan location, development opportunity, and transit type. Such factors include regional economic and demographic trends and projections, local real estate market conditions, and specific opportunity sites. Without such information, development types specified in a station area plan may not be feasible or realistically implementable. Successful TOD will occur when there is a synergistic relationship between a locally appropriate public regulatory framework and private market forces.

Regional Economic and Demographic Trends and Projections

Information about the growth and evolution of the regional economy, including employment trends by sector, provide a critical benchmark against which local employment trends can be measured. In addition, the spatial distribution of various industry sectors throughout the region indicates what types of uses are likely to locate in which areas. For example, the 4500 South station in Murray is located in a primarily industrial area. However, an economic analysis of Murray relative to the region shows that manufacturing employment accounts for a relatively small percentage of the City's overall employment. Furthermore, most new manufacturing employment in the region is occurring outside of Murray, illustrating that the area around the TRAX station has lost its competitive location as an industrial area. Although existing uses and businesses may not leave in the near-term, over the long-term it is appropriate to plan for this area to redevelop with a new land use pattern. A similar analysis shows that while there has been has been some attempt to develop office buildings in the area around the 2100 South station, there are other much stronger office nodes within the region. It follows that office development should not be considered a major component of future TOD in this area. Demographic trends also indicate demand for housing and support for various types of retail activity at 2100 South.

Many TRAX stations are currently located in built-out communities, communities with very little remaining developable land. These areas are growing much more slowly than the region as a whole. Therefore, these cities will have to carefully program future development to meet demand in specific housing niches, and plan for realistic increments of new retail development, based on the buying power associated with population growth and any existing or projected gaps in the retail market.

Regional economic data are most valuable to understand long-term trends and projections. These data illuminate how a place has evolved over time and how it is likely to change in the future. Regional economic and demographic projections provide a long-term view of how an area might change, consistent with the typical 5 to 20 year planning horizon for TODs, as opposed to real estate market information, which provides a shorter-term analysis.

Economic analysis indicates that 2100 South may not be a competitive location for office development. Hence, TOD in that area should focus on other land uses.

Local Real Estate Market Conditions

Real estate market conditions describe the current development activity occurring a particular area, including trends in rents, sales prices, and vacancy rates, and information about the types of businesses and households that are currently located in the area. This information provides a current snap shot of what types of development products viable in the immediate near-term, in contrast to the long-term regional information discussed above. A viable TOD area plan allows for some development consistent with existing market conditions, as well as holding opportunities for change to occur over time.

Specific Opportunity Sites

Many TOD projects in the Wasatch Front region occur in areas where land use patterns are in transition. In these instances, it is often important to encourage a "catalyst project" to set the tone for the new land use pattern and district character, and to signal to the market that new investment is feasible. To encourage this, TOD guidelines can identify the sites that have the best near term development potential based on regional trends and local real estate market conditions. The local jurisdiction can then work proactively with local property owners and developers to encourage new development, and help to jump start other projects in the area. Opportunity sites should be highly visible from major roads and transit lines, they should be big enough to create a critical mass of new development so as to support themselves, and should be located in a place where future projects can easily follow.

LIGHT RAIL STATION, DOWNTOWN SALT LAKE CITY

Chapter 4: Ideal TOD Planning Area and Land Use Composition

4A: Ideal Size and Shape of TOD

4B: Land Use Component Areas

4C: TOD and Housing Choice

4A. Ideal Size and Shape of TOD

The layout of a transit-oriented development should maximize convenience for residents, workers and visitors to access the transit station, and to access destinations from the transit station. The planning area for a TOD should be large enough to supply an adequate population to generate activity around the transit station and provide a base of riders for the transit system. This population base can also support the mix of complementary land uses around transit stations. Typically, people are willing to walk roughly 1/4 to 1/2 of a mile, or about five to ten minutes, to access transit or destinations from transit. Hence, within this rough radius from the transit stop should be the densest concentration and highest mix of uses. A TOD that extends in a circular shape for 1/4 mile around a stop or station encompasses 125 acres, while a TOD that extends in a semi-circular pattern on one side of the transit line encompasses 63 acres. Of course, the TOD shape rarely will be a perfect circle or half-circle, but will be affected by the street pattern and by natural and manmade boundaries such as topography and high-traffic arterial streets.

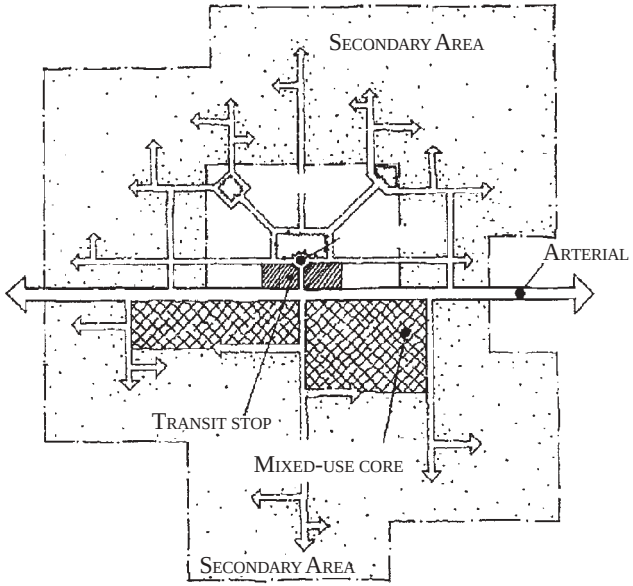
The 1/4-mile radius should not be thought of as a clearly demarcated barrier, within which uses are clustered at very high densities, and outside of which development is greatly contained; it is merely a guide to understand which locations are within walking distance of the transit stop. Instead, there should be a gradual intensification of use as one approaches the station, keeping in mind that the highest development intensities should be within comfortable walking distance of the station. Building intensities even within 1/4 mile core areas will vary greatly from TOD to TOD, depending on the type of transit and the location of the station, from small town center environments to major urban districts. Bus stations typically necessitate smaller minimum TOD sizes than rail stations, because stations are spaced more closely. A string of TODs centered on bus stops along a bus route will thus define a fairly continuous narrow corridor of development.

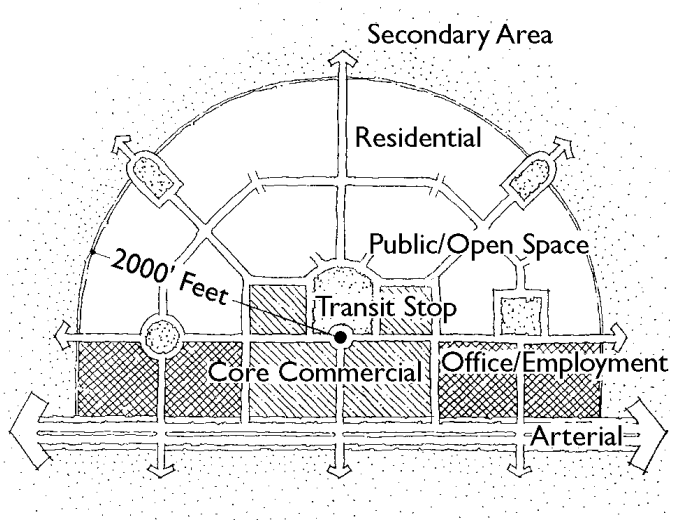
While the focus of a TOD will primarily be within 1/4 mile of the station, the TOD does not end at this radius. Surrounding areas, up to one mile or more from the station depending on how far stations are spaced apart, are integral parts of TOD. Surrounding areas provide a larger residential and employment base from which to draw people to use the transit and to support the shops and services near the station. TOD planning for the TOD should encompass these areas as well. The focus for these areas should be on connecting them easily to the transit station, so that people can bike there, take feeder buses, or be dropped off. Low intensity areas beyond reasonable feeder distance of the transit line are also integral to the success of the TOD; these areas should be preserved for their own value and to decrease development competition with TOD sites.

Barriers and Isolated Areas

Ideally, the transit station should be at the center of what can become a 360-degree pedestrian-oriented district. All areas within the TOD should have easy pedestrian connections to the transit stop and the central mixed-use area. However, in many cases, transit station areas will contain unfortunate barriers, disallowing sites that would otherwise be incorporated into TODs from being developed. Such sites could potentially include areas cut off by highways or train tracks, prohibitively contaminated sites, environmentally sensitive areas such as wetlands, or large parcels under single ownership that are not likely to be redeveloped. TOD planning for these areas should recognize the limitations that these sites create, and take care to maximize connections between the station and sites adjacent to or behind the barrier.

In situations where a freeway or other feature cuts off all areas beyond one side of the train station, a more appropriate configuration may be a one-sided, or 180-degree TOD, with the transit stop and mixed-use core radiating out from the accessible side of the transit line. Areas to the other side of the barrier may be appropriate places to





locate more auto-oriented uses if demand exists. For example, sites with a high level of highway access located between highways and heavily-trafficked arterials may be an appropriate place to locate retail that relies on high auto visibility.

The proposed Layton commuter rail stop presents an example of how to accommodate barriers in a TOD. Three parallel sets of tracks create a north/south barrier, and a creek that crosses the tracks presents an east/west barrier, dividing the station area into quadrants that are difficult to access from one another. The proposal generated from the Layton community design workshops calls for utilizing the creek as a pedestrian way underneath the rail crossing. The creek, once thought of as a barrier, becomes a connector across a wide rail right-of-way. Park-and-ride areas are situated in the Northeast quadrant, connected to the station by a road over the creek, while the more pedestrian-friendly areas are situated to the South of the creek, between the station and Layton's existing Main Street district. (see Layton illustrative plan, Appendix A)

The ideal TOD (upper) consists of a walkable mixed-use core surrounded by residential and employment districts that are well-connected to the core. Open space and civic uses should be located at key points throughout the district; Where barriers cut off development on one side of the transit line, a 180 degree TOD is appropriate (lower).

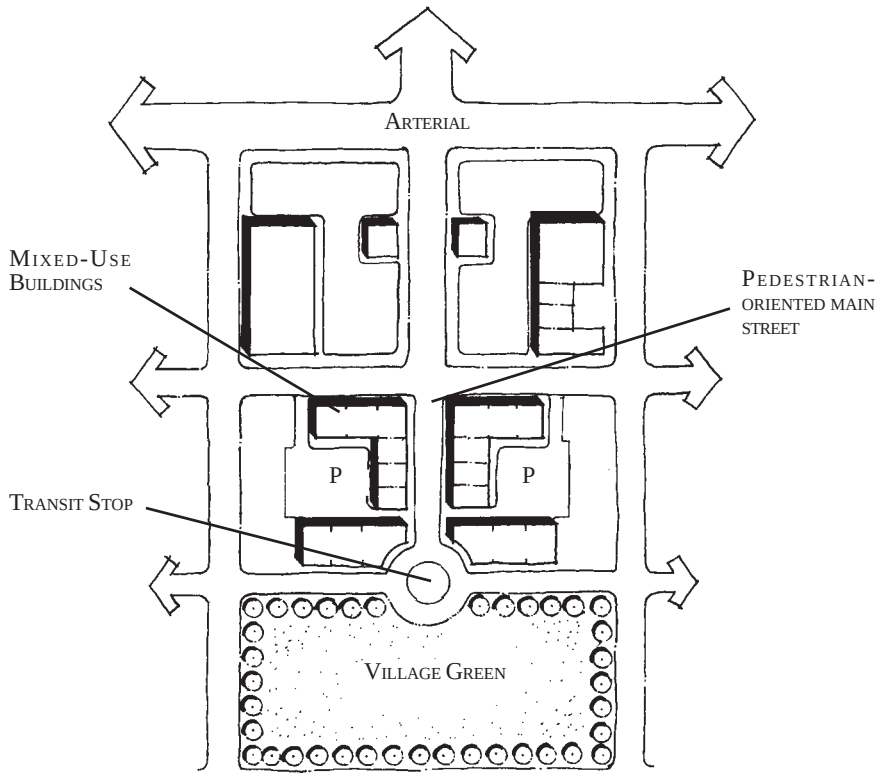
4B. Land Use Component Areas

The Mixed-Use Core

The mixed-use core area consists of compact, mixed-use development, comprising all lands within walking distance of the transit station. This area can also act as a town or neighborhood center for the community in which the transit station is located. Where there is an existing town center near the transit line, the preferred option is to locate stations and new development adjacent to the existing center, with accessible pedestrian connections between the two. New growth should strive to revitalize or enhance the existing center, working towards its economic health and improving its urban vibrancy.

The mixed-use core, loosely comprising the 1/4 mile walking radius around the transit station, contains the highest development intensities within the TOD. Building heights are two stories and higher, depending on the TOD location. Two to four story buildings are appropriate for a small town center, while higher buildings are appropriate for more urban conditions. Multiple stories allow for greater development intensity, architectural interest, and vertical mixed-use building types. These features in turn provide greater street activity. Where there are one-story buildings, one option is to build them up with parapets or roof features to generate architectural interest and better define the street space. In many locations, mixed-use core buildings can be attached to create a well-defined street edge. Combined with appropriate building heights and architectural features, this treatment creates an intimate public street of the kind that has always defined American main streets. Additionally, buildings can define a positive space around the transit stop, to create a public hub of activity.

In addition to containing a high concentration of development, the mixed-use core should contain a wide variety of uses, including neighborhood and regional shopping, housing, employment and civic uses. Retail uses are especially important for creating a critical mass of activity; hence, TODs will be most successful if they locate where retail is viable over areas that are already saturated with retail uses. High intensity employment and institutional uses, such as hospitals or educational facilities, will also greatly enhance the mixed-use core by providing a base for street activity and retail use. A housing presence is crucial to ensure that the TOD does not become vacant in evenings and on weekends. Residents can also support locally-serving retail, such as a pharmacy or a hardware store, that help to create a sense of distinct local community.



The mixed-use core: A concentration of offices, retail, housing and civic amenities within walking distance of the transit station

Pedestrian-friendly building and roadway design is especially important in the mixed-use core, to encourage walking to and from the transit station. A complete discussion of pedestrian-friendly design guidelines can be found in Chapter 5. While all areas should share these pedestrian-friendly characteristics, these attributes should be most evident in mixed-use core areas, where the highest number of pedestrians will occur.

The compact, mixed-use, pedestrian-friendly design in the mixed-use core creates the potential to generate ample street activity. This can be capitalized on through the creation of generous pedestrian streetscapes, frequent building entries, indoor/outdoor uses such as cafes, and quality public spaces. The public space around the transit station can be surrounded by active, highly transit-oriented uses such as day care, or commercial concessions such as newspaper or flower kiosks.

Finally, because the mixed-use core is the most highly transit-accessible location, parking should be underemphasized. Examples of mixed-use core parking goals and strategies include placing parking behind buildings, minimizing surface parking, and sharing lots between uses. On-street parking presents another valuable pedestrian-friendly parking solution that is not land intensive for busy core areas. Parking for the transit station should not interfere with connections to the core's uses. More detailed discussion of parking strategies is also found in Chapter 5.

THE MIXED USE CORE SHOULD BECOME A LIVELY PEDESTRIAN DISTRICT

THE BRIDGE PROJECTS

The Bridge Projects:

The Bridge Projects, located at 511 West and 200 South in Salt Lake City, was developed by the non-profit organization Artspace. It opened in September 2001. The ground floor of the building has offices for two nonprofit agencies, TreeUtah and Volunteers of America, and a Community Writing Center and classroom operated by Salt Lake Community College. Retail shops occupy the ground floor space fronting the street, which also contains a 4,000 square foot public art gallery and event space. Additionally, the project provides 62 units of affordable housing, occupying the top three floors of the four-story building. Nearby shopping centers offer retail job opportunities for residents. The Bridge Projects was awarded the 2001 Merit Award from the Utah Society of the American Institute of Architects.

Pierpont Avenue Area :

The Pierpont Avenue area in downtown Salt Lake City contains several buildings, such as those illustrated here, that contain a mixture of uses, including retail, office, and residential uses. Additionally, the area as a whole has grown to be mixed-use through the development of individual properties by various owners. Affordable apartments and higher-priced condos blend with restaurants, retail, and artists' live/work studios. Projects in the area have received support from Salt Lake City's redevelopment authority, which has encouraged the mixed-use pattern of development for the area. This area is a fine example of how it is possible for mixed-use neighborhoods to develop using an organic, small-scale approach.

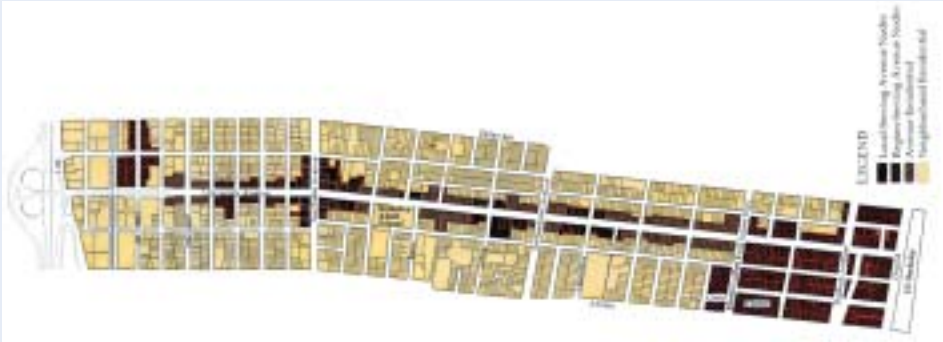
TWO EXAMPLES OF MIXED-USE BUILDINGS FROM THE PIERPONT AVENUE AREA OF SALT LAKE CITY

Examples of Mixed Use Development: University Avenue, Berkeley, California

THE FIVE-STORY BERKELEYAN, BUILT IN 1998 AT THE EDGE OF THE UNIVERSITY OF CALIFORNIA CAMPUS, PROVIDES 55 RENTAL APARTMENTS, 25% AFFORDABLE, 10,000 SQUARE FEET OF OFFICE SPACE, AND 4,000 SQUARE FEET OF GROUND FLOOR RETAIL AND CAFÉ SPACE. THE BUILDING CONTAINS ONLY 39 STACKED PARKING SPACES BECAUSE OF ITS LOCATION BESIDE A RAPID TRANSIT STATION, THE UNIVERSITY AND DOWNTOWN BERKELEY.

Across the country, developers are building successful new mixed-use developments, especially in areas where zoning facilitates and encourages their construction. The two buildings on this page are examples from Berkeley, California, built as a result of the University Avenue Strategic Plan. University Avenue, one of the city's most important corridors, connecting the city's waterfront, downtown and university, has the reputation of being a rundown strip of auto-oriented development. The Strategic Plan seeks to create a more aesthetically pleasing, pedestrian-friendly, safe and active area, creating an overlay zone that stipulates minimum densities, and provides density bonuses for mixed-use buildings accompanied by street-oriented design guidelines. As a result of this zoning change, several new mixed-use developments have been built along the corridor, including the two pictured here.

THE FOUR-STORY UNIVERSITY LOFTS, BUILT IN 1997, PROVIDES 29 MARKET-RATE CONDOMINIUMS, A 4,000 SQUARE FOOT INTERIOR OPEN SPACE, AND GROUND FLOOR RETAIL AND RESTAURANT SPACE.



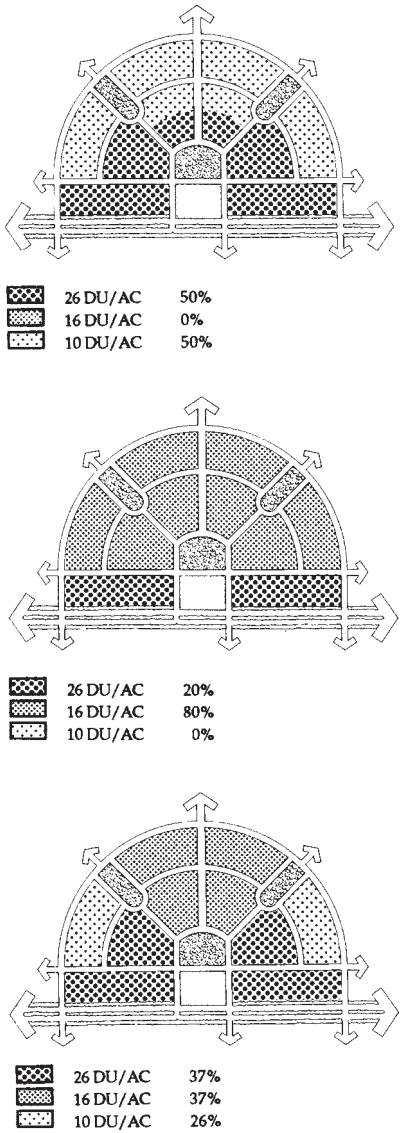
THE STRATEGIC PLAN CALLS FOR A ZONING OVERLAY THAT ALLOWS FOR GREATER DEVELOPMENT INTENSITIES TO CREATE NODES OF ACTIVITY AT STRATEGIC INTERSECTIONS ALONG THE UNIVERSITY AVENUE CORRIDOR

Secondary Employment and Residential Areas

The success of TODs relies on properly designed surrounding areas to supplement the mixed-use core. The surrounding area consists of employment and residential buildings beyond the 1/4-mile radius that roughly defines the mixed-use core. This area can be up to a mile or more from the transit station, depending on how far apart stations are spaced. For example, if stations are spaced 1 mile apart, the secondary area would compose roughly the area between the 1/4 mile radius from either station, where the mixed use cores end. There is no clear demarcation between where the secondary area for one station ends and the next begins, but it is helpful to consider secondary areas in relation to a specific station so that land use decision-makers can plan for connections from the secondary area to the transit stop. Creating efficient connections from secondary areas to transit stations via ubiquitous sidewalks, pedestrian pathways, bikeways or feeder buses is a primary concern when designing secondary areas.

Secondary areas should be somewhat lower intensities than mixed-use cores; however, they should still accommodate enough people to support the transit station and enable distances between destinations to be walkable or bikeable. Generally, necessary net residential densities to support transit are 10-15 units/acre in outer suburban areas, and 20-30 units/acre in more urbanized districts. Note that these are minimums and could be higher. As mentioned above, in order to blend new development with existing development, there should not be a sudden change where building intensity shifts between secondary and core areas, but a gradual intensification of development as one approaches the mixed-use core and the transit station.

Uses in the secondary area primarily include residential and employment. These uses create a base of individuals who can use the transit station to get to and from home or work. These people can also support the shops and services in the mixed-use core. Cities might consider limiting retail uses and high intensity employment and residential development in this area to avoid competing with those same uses in the mixed-use core. However, small-scale neighborhood retail will often be



DIFFERENT NET RESIDENTIAL COMBINATIONS THAT AVERAGE 18 DWELLING UNITS PER ACRE IN SECONDARY RESIDENTIAL AREAS OUTSIDE THE MIXED-USE CORES. 18 DU/ACRE IS TRANSIT-SUPPORTIVE AND CAN BE DESIGNED IN CHARACTER WITH EXISTING RESIDENTIAL DEVELOPMENT. HIGHER INTENSITY DEVELOPMENT IS LOCATED CLOSER TO THE TRANSIT STATION AND MIXED-USE CORE.

Examples of Contextual Compact Housing

Single-family homes in the Sugar House area of Salt Lake City, at 8 units/ net acre, adjacent to Fairmont Park

Single-family homes in Salt Lake City's Capitol Hill neighborhood at 12 units/net acre

Multi-family housing in Capitol Hill at 20 units/net acre

Examples from the Wasatch Front Region

Single-Family Homes at 12 units/net acre

Townhomes at 30 units/net acre

Podium apartments at 50 units/net acre.

Examples from The Crossings, Mountain View, California

appropriate. Auto-oriented uses that generate virtually no pedestrian activity should be discouraged in TOD secondary areas. If such uses already exist within the TOD zone, cities can encourage their gradual redevelopment to intensities appropriate to the secondary areas.

As in mixed-use cores, secondary employment and residential areas should emphasize pedestrian-friendly design. In too many instances, contemporary residential design lacks basic pedestrian amenities such as sidewalks or street trees. TOD secondary areas should contain these features, as well as basic site and building design that reinforces pedestrian orientation, such as minimal building setbacks and parking conditions that are subordinate to pedestrian interests. A full description of pedestrian-friendly building and site design conditions can be found in Chapter 5.

PIERPONT AVENUE AREA. SALT LAKE CITY, UTAH

Open Spaces and Civic Uses

Small parks and plazas are distributed throughout a TOD, so that no home or job is more than a few blocks away from one. The compact nature of TODs generally means that there will be less private open space for each household or workplace. Instead, there should be an emphasis on a variety of open space types within the TOD, including urban plazas and pocket parks, small neighborhood parks that can act as centers for their small community, major regional parks and ballfields, linear green connections, and natural areas. Not every TOD needs to have all of these types, however some sort of open space plan is highly important. Parks provide for a combination of active uses and passive recreation, both places where one can go to participate in community life and places where one can get a respite from the built environment.

Civic uses are also an important component of TOD. Civic buildings provide a unique identity and civic pride to an area and a forum for community gatherings and interaction. Because of their unique character, civic buildings may be located on axis with major circulation routes to reinforce the community's identity. Schools and church buildings are examples of appropriate civic uses in walkable TOD areas, so that children can access them independent of having to rely on a parent to drive them there. These buildings also provide a community focus. Civic buildings, including the transit station may also be located adjacent to civic plazas or parks to provide outdoor community spaces. Civic buildings may also provide indoor public gathering spaces where community members can interact when the weather is poor and outdoor spaces are inaccessible.

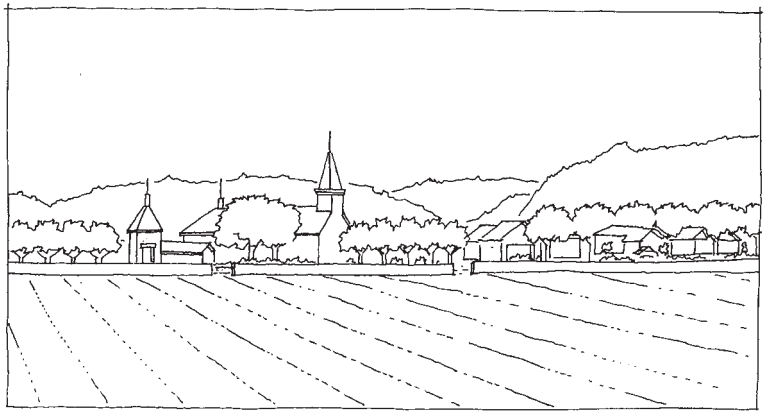
Natural, Open Space and Rural Areas

Natural, open space and rural areas include regional-scale undeveloped and undevelopable areas, including large regional parks, floodplain areas, undeveloped Wasatch mountainsides, agricultural zones, and more. As discovered in the Envision Utah regional planning process and elsewhere, Wasatch Front residents consider natural and recreational areas as an essential input to their quality of life and psychological well-being.

Natural, open space and rural areas may seem anathema to TODs, which emphasize compact growth, development intensity, and pedestrian activity. These low intensity areas are usually not part of the core development that comprises a TOD, and many of the design guidelines contained in this document do not apply to them. Nonetheless, they are an important aspect of the regional growth picture that TOD influences, and should be included in TOD planning. TOD is a strategy to direct growth into lands that can best absorb development impact and away from those that are more valuable in an undeveloped state or are ecologically sensitive. Hence, an important preliminary stage of TOD planning is deciding which areas are appropriate for new development, and which are most valuable as undeveloped lands.

Once it is determined which areas are and are not appropriate for new development, TOD strategies should protect open space lands so that future growth does not cover them and eliminate their value as open lands.

Open spaces of all sizes are crucial to TOD. Links to larger parks (upper) enable active recreation and a respite from daily life to be accessible from TOD. Neighborhood parks (lower) provide a central community space for passive recreation and social interaction.



TOD'S CLUSTERED DEVELOPMENT, IN COMBINATION WITH OTHER GROWTH MANAGEMENT PROGRAMS, ENABLES NATURAL OR AGRICULTURAL LANDS TO BE PROTECTED FROM DEVELOPMENT AND RETAIN THEIR RURAL CHARACTER.

Conversely, land use regulation in areas around transit stations and corridors, especially in redevelopment areas, should increase allowable development intensities to accommodate the region's inevitable development pressures stemming from its growing population. Both halves of this strategy supplement one another, and are necessary components of a regional growth management strategy. Clustering development at TODs relieves growth pressures on open lands; at the same time, keeping open space and rural lands free of overdevelopment decreases competition at TOD sites, facilitating their success.

In addition to helping to preserve open lands by accommodating new growth, TODs can provide connections to these areas for non-auto travelers. Many TODs will be located within easy walking or biking distance of major parks. In these instances, bikeways, trails and/or feeder buses that connect transit stations to nearby park gateways could become a TOD's central amenity.

TOD CAN PROVIDE A GATEWAY TO A WELL-USED NATURAL AND RECREATIONAL AREA, ENCOURAGING PEOPLE TO USE TRANSIT TO ACCESS RECREATION AND ENTERTAINMENT DESTINATIONS, IN ADDITION TO ITS USE AS A COMMUTE OR DAILY TRIP OPTION.

4C. TOD and Housing Choice

TOD is intended to provide a wider range of choices in transportation, retail, and housing. Housing for people of all incomes is especially appropriate in TOD projects both because housing choices in TOD allow a greater number of people of all job classes, from executives to low-paid service workers, to access their workplaces without driving, and because lower income citizens are more often transit-dependent than the general population. Expanding their options to live near frequent and effective transit increases their access to employment opportunities and services.

Furthermore, as discussed earlier, TOD should be part of an overall growth management strategy. While it is commonly assumed that growth management practices tend to increase housing prices by limiting the supply of land, recent research suggests otherwise. A recent Brookings Institution report suggests that market demand, not land constraint, determines housing price. Traditional land use regulation is often exclusionary, the report argues, by requiring minimum housing unit sizes and restrictions on multi-family buildings that make mixed-income housing construction economically unfeasible. By contrast, "When crafted properly, growth management programs break the chain of exclusion by incorporating policies that increase housing densities, mandate a mix of housing types, and promote regional fair share housing." (Nelson et. al., 2002) Hence, TOD as part of a successful regional growth strategy must stress the inclusion of housing for all income levels.

Expanding housing choice implies ensuring both a range of housing types (single family and multi-family, large units and small units, units with and without parking, mixed-use projects and exclusively residential projects) and a range of price levels. To a great extent diversity of housing types and transit proximity alone can promote housing affordability without separate housing subsidies. Smaller units in multi-family projects are more affordable than larger units or single-family houses, particularly when parking is unbundled, and not included in the cost of a housing unit, but sold separately. True transit-oriented development can also help reduce household transportation spending, freeing up more money for housing expenditures.

However, diversity of housing types alone cannot guarantee all the benefits of TOD. Below market rate housing has an important role to play as well. First, it can help ensure that the benefits of TOD are accessible to as broad a cross-section of the population as possible. Second, affordable housing developments can be used sometimes to prime the market in areas where market rate rents and/or sales prices might not be high enough in the near term to justify development. Since affordable housing developments bring their own sources of subsidy, the gap between construction costs and overall project values is less of an issue. If designed and managed well, affordable housing developments can change the image of a neighborhood, signal new investment, and help to lower risk and increase value for future developers of market-rate projects.

Ancillary units are one example of a housing type that provides housing variety and an increase in the number of people in an area, without significantly impacting neighborhood character

Chapter 5: General TOD Guidelines

5A: Circulation

5B: Urban Design

5C: Parking and Transportation Demand Policy

Chapter 5 describes guidelines that apply in general to all TODs. The chapter discusses circulation, urban design, and parking and transportation demand strategies. While the specifics of how the guidelines apply will differ depending upon the TOD context, it is important that the underlying principles are met with some or all of the strategies listed below.

Circulation strategies should emphasize access by all transportation modes; Downtown Salt Lake City

5A. Circulation

Goals

TOD circulation systems should foster connectivity between all locations and the transit hub, enable various mode choices, and increase accessibility by bringing more uses into proximity with one another.

TODs present an alternative to typical suburban development based on the automobile. Circulation systems should reinforce the creation of viable alternatives to auto trips, by creating interconnected street and pathway systems that lead to transit hubs. Pedestrian and bike-friendly circulation systems can accommodate many local trips, while connections to transit lines can accommodate some commute and other long trips. Circulation systems should still accommodate the car and allow auto access to most locations; in fact, many of these strategies can help alleviate traffic congestion by providing multiple route and mode choices. However, rapid auto access should be de-emphasized in favor of pedestrian and bicycle safety, comfort, and connectivity to the transit station and throughout the neighborhood.

- *Plan for accessibility*

An important philosophical underpinning for the circulation system should be to focus on accessibility rather than mobility. Mobility refers to the speed at which one can cover distances across a metropolitan area. This measure of a circulation system's success inherently favors automobile transport. Its solution to traffic problems lies in creating ever-wider roadways that can move people long distances. However, mobility neglects the importance of individual places in favor of transport. Additionally, systems built on the mobility paradigm inevitably reach their limits as impacts or costs become unbearable, or land becomes scarce and there is no room to further widen or add new roads.

By contrast, accessibility is a measure of the quantity and variety of destinations that can be easily reached by individuals; it is not based on how far people can go

or how quickly. Accessibility is an endpoint. Mobility is one means to that end, but there are other solutions that do not devalue places in the manner that mobility planning does.

For example, a TOD system improves accessibility by bringing more uses into walking distance of homes and workplaces in compact, connected, mixed-use environments. Additionally, bringing uses into a compact built environment frees land that would have been used for roadway and parking infrastructure, further increasing the variety of destinations within walking distance. Pedestrian-safe and bicycle-friendly design further increases the number of destinations that are accessible from homes and workplaces by increasing the distances people are willing to walk or bike. While people may not be able to cover as great distances as quickly as with a mobility-based system, there is no need to, because many daily needs are within a short and safe distance of each other.

The combinations of land use, urban scale, livability and transportation options described above also foster an environment in which area residents and visitors are able to change their travel behavior patterns, reducing vehicle miles traveled, the number of vehicle trips taken and the number of autos owned. They also increase average auto occupancy for vehicular trips.

Certainly there are trips that will take individuals out of walking or biking distance of their homes- many of these can be accommodated in TOD by transit, and others will be auto trips. However, accessible TOD environment provides an alternative that can minimize demand on roadway systems that subjugate places and destinations to roadway and parking infrastructure. TOD treats streets not just as movement corridors, but as valuable places in and of themselves. Thinking about circulation in terms of accessibility rather than mobility is an important prerequisite to TOD circulation planning.

- *Provide for all transportation modes*

It is also important to consider the transportation network's regional significance. Major arterial roadways often conflict with key TOD elements such as pedestrian-friendliness, human scale and multi-modal accessibility. Given the Wasatch region's prevailing auto-oriented pattern, however, such arterials remain necessary parts of the regional transportation system. Where major arterials pass through TODs, the needs of through traffic should be considered, and balanced with TOD goals such as pedestrian access and access to the transit station. Well-designed roadway networks reinforce access to walkable neighborhoods while still providing accessibility for trips passing through a TOD. By creating transportation mode and roadway choices that alleviate congestion, TOD improves access for auto users as well as transit users, cyclists and pedestrians.

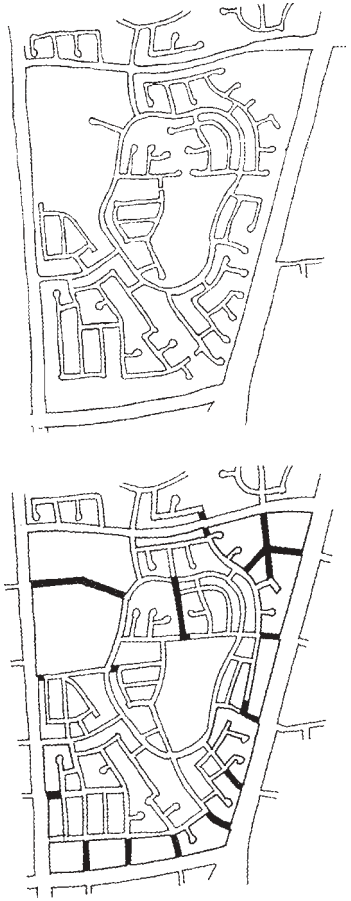
Passengers boarding Commuter Rail. Courtesy Caltrain, Redwood city, CA

Circulation Strategies

- *Connected street systems*

Public streets and pedestrian paths should offer an interconnected network linking transit to the rest of the TOD, and land uses within the TOD to one another. Street alignments and pedestrian paths should create a network that minimizes distances and avoids circuitous routes. Local traffic, whether car, bike, or pedestrian, should be able to filter through the TOD on a grid-like pattern of multiple parallel routes. Frequent parallel routes distribute traffic and keep traffic volumes to a tolerable level at which pedestrians will enjoy walking. As a general guideline, roads should occur every 600 feet or so- this guideline works in tandem with small block sizes, discussed in the following section. Pedestrian connections can be more frequent. Streets do not have to conform to a rigid grid, but can follow topography, existing barriers, or innovative designs, as long as they remain frequently connected.

Connected street systems stand in contrast to typical contemporary subdivisions, which contain numerous cul-de-sacs and dead-ends that funnel traffic onto a few major roads. By forcing people to walk out to the arterial and around a pod of homes to reach town centers or other homes, such layouts make walking distances numerous times greater than if cul-de-sacs were simply connected through to roads behind the cul-de-sac (see diagram, right). Existing dead end-oriented suburban layouts can often be retrofit by providing pedestrian easements or a path from dead-ends to arterial roads. This small change greatly decreases walking distance to neighborhood destinations, and encourages people to walk to local destinations such as the market or a friend's house.



CONNECTED STREET SYSTEMS: UPPER, A TYPICAL CIRCUITOUS SUBURBAN LAYOUT SURROUNDED BY A GRID OF MAJOR ROADS, AS MIGHT BE FOUND IN THE WASATCH FRONT REGION. LOWER, HOW SUCH A LAYOUT MIGHT BE RETROFIT TO PROVIDE MORE CONNECTIONS TO THE MAJOR ROADS AND THROUGH THE NEIGHBORHOOD. THESE CONNECTIONS CAN BE ROADS, PARKS, OR SIMPLE PEDESTRIAN EASEMENTS.

Connectivity can be part of the local development review process. One approach is to regulate maximum block size. To modify existing areas to achieve this interconnected pattern, street connections or easements for future streets or pathways can be obtained where necessary from individuals or businesses as their properties develop or redevelop. The addition of internal street or alley connections can also create more frequent connections in existing suburban areas. Alleys as a circulation solution that encourages connectivity are further discussed on page 84.

- *Small block size*

A small-block street pattern shortens walking distances between destinations in a TOD, increasing the number of uses that are accessible by foot from homes and workplaces. Additionally, small block sizes limit parcel sizes, forcing smaller building footprints and increasing street variety. Small blocks create a human scale form that is consistent with traditional urban neighborhood patterns. One approach to achieve walkable scale neighborhoods is to set maximum block sizes, discouraging non-connected street layouts and enabling pedestrian accessibility and streetscape interest.

Maximum block sizes vary depending on the use and the neighborhood. Town center areas have the finest grain of ownership and building patterns, and the highest degree of pedestrian activity. Residential areas also have a small-scale ownership pattern. Consequently, these areas typically have the smallest block sizes, no more than 4 or 5 acres. A 4-acre block is about 300 by 600 feet. Similarly, block sizes are generally smaller in more urban areas because these areas tend to have a finer-grain scale of development already, while more suburban areas typically have a larger-scale block and street pattern.

While smaller blocks enhance pedestrian accessibility, they may be constraints to large-scale development. Parking requirements and site layouts for major employment and big box areas limit the minimum parcel size; consequently for these uses block sizes may need to be 6 to 8 acres or more. An 8-acre block is about 600 by 600 feet. Where site layouts necessitate larger block sizes, pedestrian connections should be provided across the site, and from buildings to the street, to minimize walking distances. Private streets or lanes that connect through the private parcel and allow pedestrian access at all hours can provide desirable pedestrian access. Whenever possible, such developments should have at least one main entrance directly on to the sidewalk.

Large site redevelopment presents an opportunity to break down formerly large block sizes into more manageable pedestrian-scale blocks. Many times, such opportunity sites will be located at a break in the city grid. In these instances, existing streets can be reconnected through the site during redevelopment to stitch together the disconnected street system. Obsolete shopping centers frequently present this type of opportunity.

Note that the block sizes suggested in this section are maximums and differ depending upon the context; smaller block sizes are always possible and are encouraged.

- *Traffic calming*

Traffic calming refers to street design that gives visual cues that force motorists to drive in a manner more fitting to the local environment. This includes driving at reasonable speeds or driving along a suggested route. Traffic calming measures also enhance the livability of the streetscape. Traffic calming has been used in many instances to retrofit urban and suburban neighborhoods that have lost much of their charm and pedestrian activity due to streets designed primarily for automobiles. New districts as well can include traffic calming in residential and town center streets, increasing pedestrian safety and comfort, and thereby encouraging greater pedestrian activity.

A variety of traffic calming techniques can be used to improve a neighborhood or urban district's walkability. For example, intersection bulb-outs narrow the street width and widen sidewalks at street crossings to make pedestrian crossings easier, and create a tighter lane for cars so that they slow down, especially when turning. Turning vehicles account for the greatest number of auto/pedestrian conflicts at intersections. Traffic circles are another technique to induce cars to slow down at intersections.

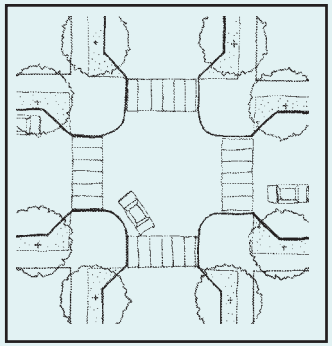
Traffic calming solutions that more greatly effect driver behavior are also effective, and may be appropriate at key locations such as street crossings adjacent to elementary schools or crossings from the transit station to a main street. Examples of this type of traffic calming include crosswalks raised to sidewalk level and intersection diverters that reroute traffic, eliminating selected turning movements.

Some simple and common street treatments that are not typically thought of as traffic calming techniques have similar effects, slowing cars and buffering pedestrians from traffic. For example, on-street parking is a simple signals to drivers that they need to slow down. Compared with a high-speed arterial with no on-street parking, an urban or town center street with parking on both sides is a comfortable and safe place to walk.

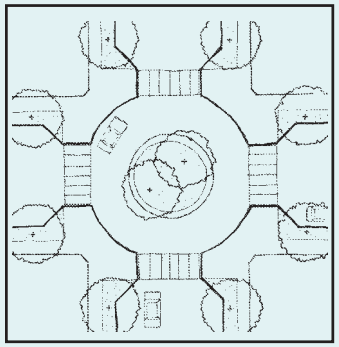
Salt Lake City's traffic management program provides a model for how to structure traffic calming programs in developed areas. A selection of traffic calming techniques are illustrated in the following pages.

Examples of Traffic Calming Techniques

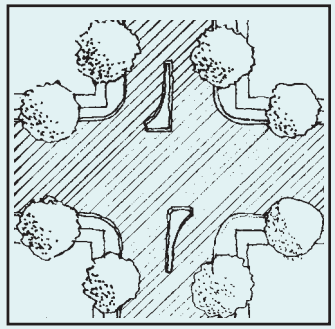
INTERSECTION BULB-OUTS



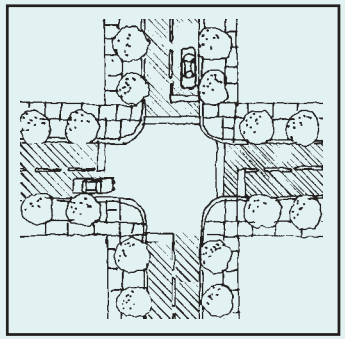
TRAFFIC CIRCLE WITH INTERSECTION BULB-OUTS



FORCED RIGHT TURN MEDIANS



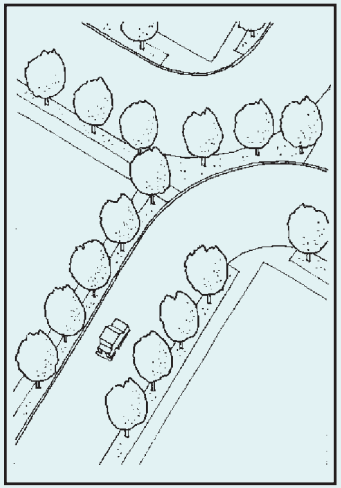
RAISED CROSSWALK



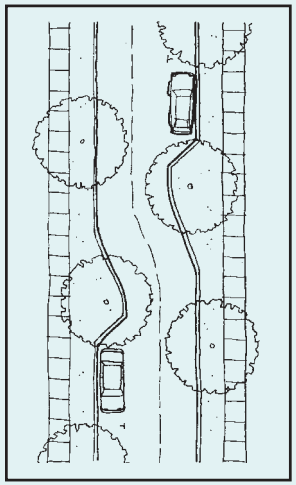
Intersection Treatments

Examples of Traffic Calming Techniques

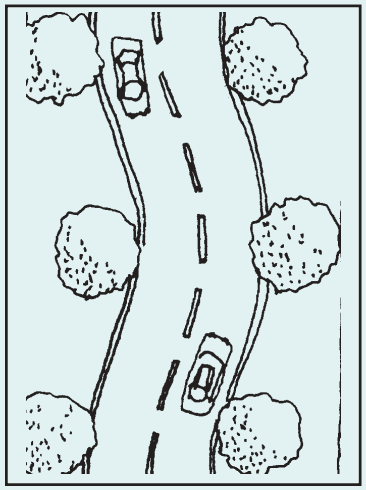
DIAGONAL MEDIAN



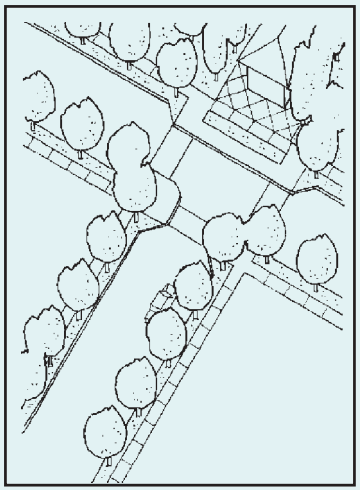
ANGLED SLOW POINT



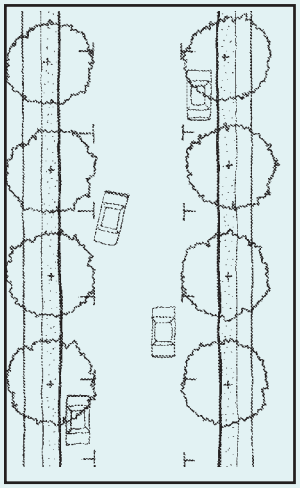
CHICANE



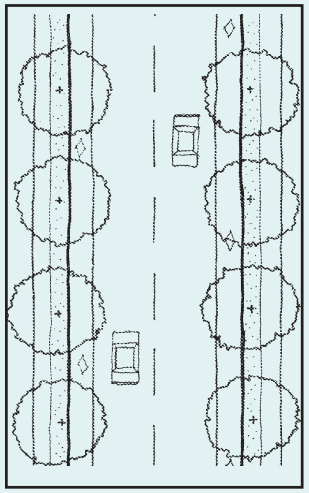
T- INTERSECTION



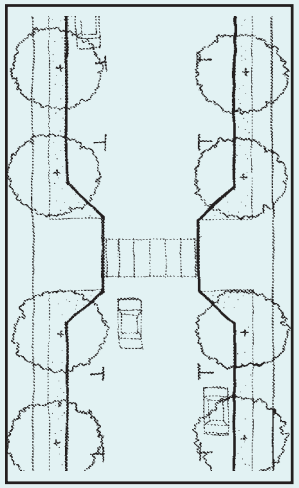
PARKING LANE/NARROWER DRIVING LANES



STRIPED BIKE LANE/NARROWER DRIVING LANES



MID-BLOCK BULB-OUT



Mid-block/Block length Treatments

• *Appropriate Roadway Standards*

Roadways are multi-functional, moving cars, trucks, pedestrians and bicyclists.Roadways provide access to various land uses, and act as important public spaces. Additionally, roadway design plays an essential role in defining the character and livability of a neighborhood or district. However, roadways are often designed only for the movement of cars and trucks to the exclusion of pedestrian and neighborhood character and non-motorized circulation. Excessively wide roadways such as are required in many city codes detract from a neighborhood's visual character and pedestrian safety by encouraging cars to speed and creating streets that are exceptionally wide to cross.

The traditional "functional street classification" system typically establishes one set of standards for the design and operation of roadways within an entire jurisdiction. This system fails to differentiate between different types of access needs, neighborhood character, or the character of adjacent land uses. For instance, TOD relies more greatly on pedestrian mobility and on-street parking than an industrial or strip commercial district. Consequently, street design should reflect the design and land use character of surrounding districts, rather than conform to a uniform set of standards.

Developing street types that could be combined with existing functional classifications accounts for these differing needs. This would allow for the introduction of street design and operational changes to create a balanced street that serves pedestrians, bicyclists, transit users, and motorists. The following section describes how municipalities might reconfigure their roadway standards to be more responsive to surrounding land uses, neighborhood character, and pedestrian and bicycle concerns. For specific information on appropriate roadway standards for residential streets in the Wasatch Front region, see the Envision Utah publication, "Urban Planning Tools for Quality Growth."

Traffic engineers and planners have traditionally defined surface street systems as a functional hierarchy consisting of three basic types: arterial streets, collector streets and local streets. Standards for the design or operation of each street within a roadway network are typically derived from its functional classification. These standards affect standards for lane width, intersection and signal spacing, travel speed, volume and local access (such as whether or not driveway access or onstreet parking is allowed). The provision of pedestrian, bicycle or transit amenities may also be dependent upon a particular street's functional classification.

As shown in the table below, the traditional functional classification system (leftmost column) can be expanded to reflect street type (top row) as well as function. Creating street types combined with functional classifications allows for a wdier range of street designs that take into account the adjacent land uses, neighborhood character, and the availability of transportation alternatives.

The cells in the table indicate different characteristics that should be considered in design. For example, a mixed-use collector street and an industrial collector street would have different characteristics. A mixed-use collector emphasizes accommodating several transportation modes while an industrial collector emphasizes accommodating heavy trucks and automobiles.

Functional Class	STREET TYPE				
	Residential Street	Main Street	Mixed-Use Street	Commerical Street	Industrial Street
Arterial	X	X	X	X	
Collector	X	X	X		X
Local	X	X	X		X

FUNCTIONAL STREET CLASSIFICATIONS AND STREET TYPES

Roads with the same functional classification, but different street types will have different attributes. These are described in the table below. Examples of street types that differ from standard functional classifications are also described on the next page.

Functional Class	Street Type	Transit	Side-walks	Bike Facilities	Desired Speed	Traffic Calming	On-Street Parking	Planter Strip	Center Lane	Lane Width	Travel Lanes
ARTERIAL											
	Residential	Accom	5’-10’	Lanes	<35	Some	Yes	Yes	Plant,TL	11’-12’	6-Apr
	Main Street	Priority	10’+	Lanes	<25	Some	Yes	Yes	Plant,TL	11’-12’	6-Apr
	Mixed-Use	Priority	10’+	Lanes	<35	No	Yes	Yes	Paint,TL	12.5’-14’	6-Apr
	Commercial	Priority	5’-10’	Lanes	30-45	No	No	No	Paint,TL	12.5’-14’	6-Apr
COLLECTOR											
	Residential	Accom	5’-9’	Lanes	<35	Yes	Yes	Yes	Plant,TL	9.5’-10.5’	4-Feb
	Main Street	Accom	10’+	Lanes	<25	Possibly	Yes	Yes	TWTL	9.5’-10.5’	4-Feb
	Mixed-Use	Accom	10’+	Lanes	<30	Possibly	Yes	Yes	TWTL	11’-12’	4-Feb
	Industrial	Infreq	5’-6’	Lanes	<30	No	No	No	Paint,TL	12.5’-14’	4-Feb
LOCAL											
	Residential	Infreq	4’-6’	Route	<25	Yes	Yes	Yes	None	9.5’-10.5’	2
	Main Street	Accom	5’-6’	Route	<25	Yes	Yes	Yes	TWTL	9.5’-10.5’	2
	Mixed-Use	Accom	5’-6’	Route	<25	Yes	Yes	Yes	TWTL	11’-12’	2
	Industrial	Infreq	5’-6’	None	<25	No	No	No	None	12.5’-14’	2

Transit:

“Priority” = Regular bus or light rail srvice with short headways between buses and amenities such at bus stops

“Accomodate” = Regular bus service with longer headways and limited amenities at bus stops

“Infrequent” = Demand-reponsive service, such as paratransit, on a limited bases

Center Lanes:

“Plant, TL” = Rasied, planted median with turn lanes

“Plant, TL” = Painted median with turn lanes

“TWTL” = Continuous two-way turn lanes

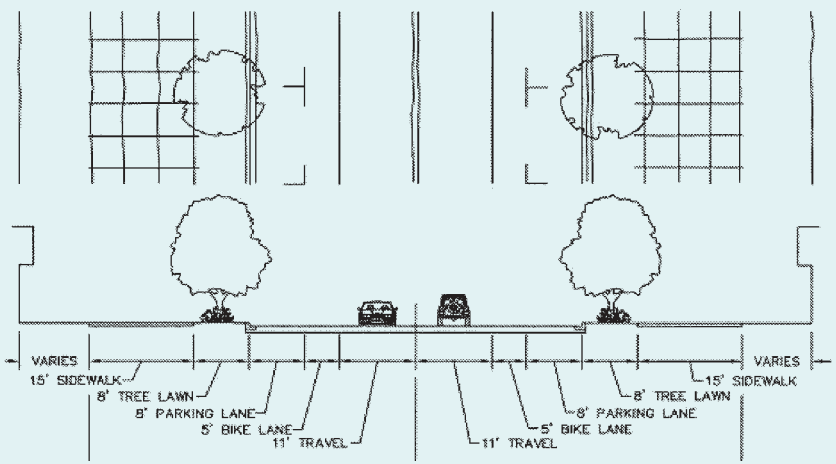
Attributes of different street types

Examples of Street Types

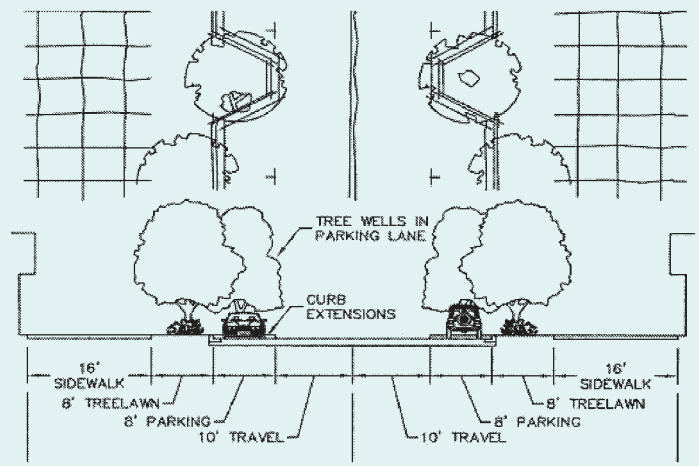
Mixed-Use Streets, located in high intensity mixed-use commercial, retail, and residential areas, have substantial pedestrian activity. Mixed-Use Streets emphasize alternative transportation modes with increased frequency of pedestrian, bicycle and transit design elements. Therefore, they often include features such as wide sidewalks, bike lanes and other bicycle facilities, tree lawns and on-street parking. They may also include landscaped medians, narrowed travel lanes, traffic circles, and reduced pedestrian crossings at intersections.

Main Streets serve medium-intensity retail and mixed land uses including neighborhood centers. Unlike Commercial Streets, Main Streets are designed to promote walking, bicycling, and transit within an attractive landscaped corridor. Vehicle through-traffic speed should be de-emphasized on Main Streets.

Main Streets generally consist of two to four travel lanes, although typically have only two lanes. On street parking is usually provided to serve adjacent land uses. Curb extensions within the parking lane can accommodate tree wells creating a double row of street trees in combination with a tree lawn. To further create a pedestrian-friendly atmosphere, Main Streets have wide sidewalks, ranging from 10 to 25 feet in width, street furniture, outdoor cafes, plazas, and other pedestrian amenities. Main Streets may also have narrowed travel lanes, different paving materials, tree planters in the parking lane and other traffic calming features.



RECOMMENDED MIXED-USE STREET SECTION



RECOMMENDED MIAIN STREET SECTION

- *Sidewalks*

Sidewalks as a circulation strategy may be included in many of the categories listed here, such as connected street systems or traffic calming devices. However, the provision of sidewalks is an important enough topic to discuss on its own. In many contemporary subdivisions, sidewalks are entirely absent or are woefully disconnected. Sidewalks are the most important piece of a pedestrian circulation system, and all streets in a TOD, and elsewhere, should have them.

Sidewalks should also be wide enough to accommodate expected pedestrian levels, and should include landscaping and amenities that make them comfortable, enjoyable places to walk, inducing more people to use the pedestrian network. A park strip and street trees between the sidewalk and the street creates a buffer for pedestrians that increases safety and comfort. In urban and town center streets with higher levels of pedestrian activity, sidewalks should be wider, including both a pedestrian zone and a frontage zone to allow for adequate and comfortable separation from buildings. In more urban conditions, park strips may be inappropriate in favor of trees in grates or planter boxes and street furniture such as benches. Smaller, regularly-spaced bulb-outs can increase the perceived sidewalk width.

COMPATIBLE SIDEWALKS CREATE A COMPLETE PEDESTRIAN NETWORK AND AN ACTIVE STREETSCAPE. 9TH AND 9TH AREA, SALT LAKE CITY, UTAH

- *Bicycle networks*

Bikeways are an important component of a TOD's circulation system, enabling people to efficiently access the mixed-use core and transit station from surrounding areas, including areas from which it is too far to walk to the station. Creating a safe and direct bicycle network should be a priority in TOD.

There are numerous strategies to create a safe and comfortable bike network. Bike lanes are a common solution that dedicate a delineated portion of roads to bicycles. However, the introduction of bike lanes should not be used to hide fast and dangerous roads beneath a veneer of bike-friendliness. Widening roads to add separate bike lanes may encourage faster-moving traffic by making the roadway appear wider.

Many communities use bike lanes in tandem with traffic-calmed streets for bicycle safety and comfort. Dedicated trails and pathways through parks and greenways can provide further links for a bicycle network. Defining common bike routes that access important destinations and cross neighborhoods is a first step in determining which roads need bike lanes or calming treatments.

Finally, bike storage and parking facilities are an important component of a bicycle system. Cyclists are often discouraged from riding if there is a nowhere safe to leave their bicycle without it getting stolen or damaged. Transit stations may have attended bike parking that is considerably safer than leaving a bike locked to a pole. Bike racks should be included at smaller hubs, on commercial streets and in parking lots.

- *Alleys*

Alleys are a traditional solution that allows homes to front on streets by moving loading services and garages to the rear of homes. In this manner, alleys enhance the primary pedestrian network, by making streets more pleasant places to walk, and increasing their safety by lessening the number of curb-cuts and potential auto/ pedestrian collision points.

Moreover, alleys create alternative pedestrian routes that break up the scale of large blocks. Alleys are an intimate roadway type that need not be as wide as streets. They can often be attractive places to walk and have a distinctive character brought about by individual garage, rear fence and landscaping treatments. Salt Lake City contains many examples of alleys that allow streets to be more pedestrian-oriented, create more frequent pedestrian access, and are great places to walk in and of themselves.

THE ALLEY CREATES AN ADDITIONAL PEDESTRIAN ACCESS THROUGH THE NEIGHBORHOOD, AND CAN ALSO CREATE A CASUAL PLAYSPACE FOR CHILDREN

- *Off-street Trails, Bicycle and Pedestrian Pathways*

Off-street trails can also be an important part of a TOD's circulation network. Such trails provide safe and attractive places to walk, jog or bicycle, and are often used for transportation or commute purposes as well as for recreation. Trails are especially applicable to Wasatch Front community's circulation, many of which have stream corridors or linear parks, such as the Jordan River Parkway, cutting through them.

JORDAN RIVER PARKWAY, BICYCLE AND PEDESTRIAN PATH, SALT LAKE COUNTY.