

## PARKS AND OPEN SPACE

Since the North Burnet/Gateway area currently has very little residential stock, there has been no real demand for parks or public open space. The concept driving the open space plan is to achieve a high quality, well maintained, well connected system of public and private open space. Based on the densities designed in the Master Plan and required by current land values, a well-connected network of open space becomes important as an escape and as necessary community gathering space. The park and open space system should be dispersed through the district so as to be proximate to all land uses, especially residential. A variety of open space should be provided, including neighborhood parks, greenbelts, rails with trails, pocket parks, greens, plazas, and squares. Off-leash dog parks may also be needed, as the number of residents and their pets increase over time. Each resident should be within a pleasant two to five minute walk of an accessible, moderately sized open space and no more than a ten minute walk from a larger neighborhood or district park. This relationship is conceptually illustrated in Figure 4.33. Connections between these open spaces should be accommodated via pedestrian walks, bike paths and public transit. These open spaces should not accommodate auto parking on site.

Walnut Creek in the north end of the district offers access to approximately 80 acres of natural greenbelt and will connect via the Walnut Creek trail to Walnut Creek Metropolitan Park, an area regional park approximately two miles east of the district and to Balcones District park to the west. The North Burnet/Gateway Plan encourages creation of additional, smaller greenbelts along the few remaining natural creeks and drainages which may feature walking or cycling trails.

Currently, the North Burnet/Gateway area presents a major gap in north-south bike-ways through Austin. US 183 is a significant barrier to a north-south bike connection

and the existing roadways in the planning area are not designed to accommodate bicyclists. The Master Plan illustrates a conceptual plan for connecting bike routes and open space from the Shoal Creek trail in the south to the future Walnut Creek trail in the north and throughout the North Burnet/Gateway planning area. The plan encourages rails with trails along both commuter rail lines. Currently the Union Pacific rail line does not allow trails within the railroad right-of-way, however rails with trails should be incorporated into detailed planning for the Austin-San Antonio commuter rail line to provide a direct north-south connection under US 183 to the Shoal Creek bike route.

Naturally landscaped neighborhood and district parks should be distributed throughout the area. Neighborhood parks are generally 1 to 4 acres. Larger parks may exceed three acres if, through design, the park creates a central open space that serves an entire neighborhood or group of neighborhoods, or incorporates physical features which are an asset to the community, such as pond frontage, high ground or significant stands of trees. Many of the larger open spaces illustrated on the plan are shown on public land. As discussed earlier, the development of this land as a catalyst must be executed to set a strong standard for the district. Providing high quality open space on these parcels is a major component of that precedent.

In addition to the more natural neighborhood parks, greenways, and open space in the district, plazas, greens and squares provide important community gathering space in an urban context (see the following page). A plaza is an open area adjacent to, or part of, a civic building or facility. Plazas function as gathering places and may incorporate a variety of temporary activities such as vendors and display stands. Plazas are usually 75 percent paved in concrete, stone, pavers or crushed stone. Plazas should be level, stepped, or gently sloping (less than three percent grade).

A Square is usually spatially defined by the facades of surrounding buildings, enfronting with streets on at least two sides. Squares are at the intersection of important streets set aside for civic structures and monuments. Squares are generally less than one acre and should be at least 25 percent paved and surrounded by buildings on at least 60 percent of its perimeter.

A Green is similar to a Square in that it is spatially defined by the facades of surrounding buildings (as a room is defined by its walls), enfronting with streets on at least two sides. However, a Green is more informally planted than the more formally planted Square.

The North Burnet Gateway planning area is envisioned to become a dense, mixed-use, vibrant collection of neighborhoods. The role of quality open space in the district is paramount to provide breathing room for residents and visitors. A summary of the Plan's parks and open space recommendations follows:

### Recommendations

1. Use the conceptual illustration of parks and open space (Figure 4.33) as a guide for creating a distributed hierarchy of parks spaced by reasonable walking distances.
2. Provide for a range of public open space types for community use from actively-programmed public squares and plazas in the district core, to larger, more loosely programmed park spaces in the residential neighborhoods.
3. Create Rails with Trails as the existing freight rail lines are converted to commuter rail lines. These will provide important connections to the existing Shoal Creek bike route south of the planning area and to the future Walnut Creek trail at the northern boundary of the planning area.
4. Set a precedent for high quality open space by developing a portion of publicly



Green



Plaza



Square



Playground



Park



# CONCEPTUAL DISTRIBUTION OF OPEN SPACE

Figure 4.33

This map presents a potential redevelopment vision and does not constitute regulatory standards



owned parcels or public/private partnership projects as city parks.

5. Ensure that open space is high quality and long-lasting.
6. Create a public open space system that becomes a source of community pride and an attractive feature for encouraging positive growth in the district.
7. Design all open parkland to accommodate some stormwater detention (see Stormwater Management section).
8. Create good pedestrian/bicycle linkages between neighborhood parks and greenbelts.

## COMMUNITY FACILITIES

The North Burnet/Gateway area represents the opportunity to redevelop a significant area of Austin into a new community, a place for perhaps 80,000 residents to live, work, shop and recreate in a truly mixed-use, mixed-income neighborhood. City planning texts for decades have suggested that all neighborhoods should include the appropriate civic facilities to support the day-to-day needs of its residents. A private sector-driven development process usually thinks of the balance between jobs, housing and retail but often over-looks the need for civic facilities.

These facilities are accommodated in the Master Plan and conceptual locations for school sites, open space and civic sites have been illustrated (see Figure 4.34). The location of facilities should be considered generally with the following criteria in mind:

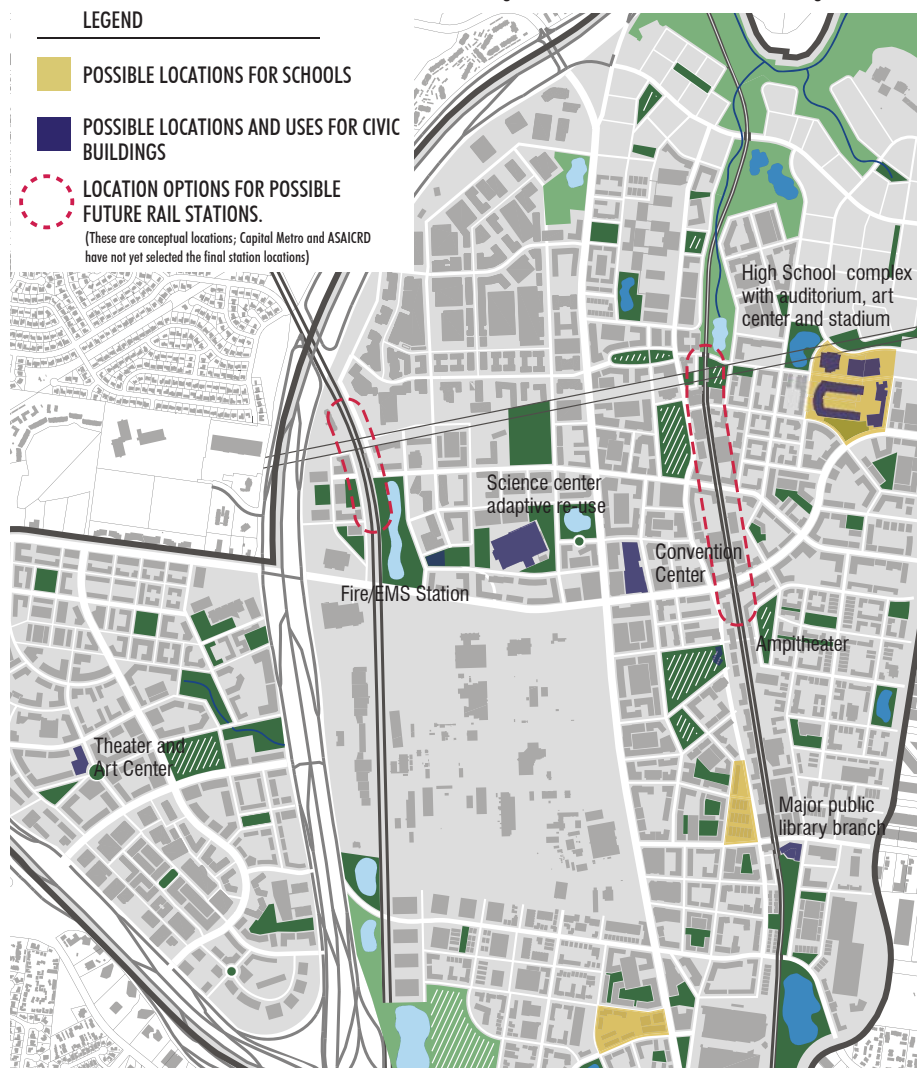
- Schools and community centers should be co-located to stimulate better utilization of space and be sited near a public open space.
- Police substations, fire and EMS stations and branch libraries should be dispersed throughout the district and be built in a format similar to that required by all private sector development, i.e., meeting

urban design standards by locating buildings on-the-street and reinforcing the public realm. They should be integrated into another building, such as an apartment or mixed use building, where possible.

- All civic buildings should be distinguished in their design and used to celebrate important civic sites.
- Cultural facilities such as museums, artist's studios and galleries, special event venues, sports arenas and the like could be retrofit into large industrial buildings to give a new vitality in the Commercial Mixed-Use and Warehouse Mixed-Use subdistricts.

Given the current market for senior housing and the community's desire to incorporate high-quality senior housing into the Master Plan (see Public Workshop Results), healthcare providers should be encouraged to locate in the district as well. A location for a hospital has not been identified in the Master Plan, but rather, it should be acknowledged that the proposed gridded street network should accommodate a wide variety of larger uses in an urban form – multiple stories fronting the street with structured parking accessed from the rear. Any community facilities should also be required to adhere to the same design criteria as other buildings.

Figure 4.34: Potential school and civic building locations





All civic buildings should be distinguished in their design and used to celebrate important civic sites.



Public Buildings that contribute to a strong sense of place in Habersham, South Carolina, Wellington, New Zealand, and Pawtucket, Rhode Island



## STORMWATER MANAGEMENT

The North Burnet/Gateway area is located at the top of three watersheds that meet at a high point near the intersection of Burnet Road and Braker Lane. The Walnut Creek drainage flows generally north; Little Walnut Creek flows generally southeast and Shoal Creek flows south. The North Burnet/Gateway area is challenged with a development pattern that was largely in place prior to Austin's current stormwater management policies; flooding has been a problem in neighborhoods downstream in these watersheds; and water quality is a concern as in most urbanized areas. Most developed land in the area has a high percentage of impervious cover and few sites have stormwater management facilities in place.

As a result, stormwater management is an important issue influencing the future sustainability of the North Burnet/Gateway area. All new development and redevelopment will be required to comply with the City's current stormwater management regulations. Redevelopment of this area also presents an opportunity to integrate innovative stormwater management techniques into an urban development pattern. With this in mind, this plan provides the following recommendations:

### Recommendations

1. Encourage district-wide cooperation and solutions for stormwater management.

Ownership in the North Burnet/Gateway area is highly fragmented, with approximately 360 parcels ranging in size from less than one-half acre to over 300 acres. The underlying value of land is at an average of \$15 to \$30 per square foot (see Figure 2.9), and flood control and water quality detention ponds meeting current City stormwater management requirements typically take up to five to seven percent of a site. Providing stormwater management on-site may be difficult and expensive for smaller redevelopment properties.

- a. Encourage new development or redevelopment of larger properties to "oversize" detention capacity where possible through a density bonus system or other City incentive program. Surrounding smaller properties may be able to pay a fee-in-lieu and utilize the excess capacity.

- b. Explore opportunities for accommodating a moderate amount of detention during storm events by integrating flood, erosion, and water quality control facilities with provision of new parks.

- c. Explore designing all streets, including street-tree zones on the sides of streets and street medians, with shallow bio-filtration media to accommodate and treat stormwater runoff.

- d. Encourage protection of the natural creek drainages in the Walnut Creek watershed. Three of the four creek drainages in the North Burnet/Gateway area that are still in a natural state are located in the Walnut Creek watershed, which is currently considered a "suburban" watershed. Voluntary application of urban watershed creek setback standards to the areas of the district in the Walnut Creek watershed is encouraged to create a setback from creeks up to the 64-acre drainage point, similar to that required in the Little Walnut and Shoal Creek watersheds.

2. Work with the City Watershed Protection and Development Review Dept. (WPDR) to determine how to administer impervious cover limits for mixed-use in a comprehensive manner in the North Burnet/Gateway planning area.

Currently the City's impervious cover regulations are based on single-use zoning districts and the watershed in which a property is located. (In Walnut Creek, they are further required to meet watershed impervious cover limits by land use type.) As part of the implementation strategy for this plan, the City will be writing a design-based zoning overlay for the North Burnet/Gateway area that

allows and encourages mixed-use development. It will be important to determine how to administer the impervious cover limits for the mixed-use subdistricts when the zoning overlay is developed.

This also presents an opportunity to take an area-wide approach to impervious cover regulations. The North Burnet/Gateway plan anticipates the development of more parks and open space throughout the plan area. For this reason, it may be possible to allow increased impervious cover on a site without increasing the overall impervious cover allowed in the watershed under current regulations. In other words, more impervious cover allowed on a particular site would be off-set by new parks or open space within the same watershed in the district. This would allow for a more urban form of development with more building coverage on a site, which may be needed to create the financial incentive to redevelop existing uses. The phasing of this area-wide impervious cover approach however must be in step with the actual development of new parks and open space to ensure an appropriate balance of impervious cover within the watershed.

3. Explore opportunities for alternative stormwater management practices in redevelopment.

Redevelopment in the North Burnet/Gateway area presents an opportunity to explore the use of alternative stormwater management techniques that reduce the amount of land needed for facilities and embrace new technologies. WPDR recently added five alternative water quality control techniques to the Environmental Criteria Manual (ECM), all of which offer additional, potentially more flexible means to meet site water quality requirements. Techniques include porous pavement, rainwater harvesting, biofiltration, tree credits, and modified vegetated filter strip sizing.

Because of the type of heavy "flash flood" storm events often experienced in the

Central Texas region, and the amount of stormwater that needs to be captured in a short period of time, there are fewer alternative flood control techniques suitable for Austin's local conditions. However, the location of detention facilities in alternative locations (subterranean or on top of parking structures) may become increasingly desirable and financially feasible in the redevelopment of the North Burnet/Gateway area over the long-term.

The goal is to explore opportunities for innovative on-site stormwater management solutions which take into account the desired level of density and urban development pattern, the inherently high land values, and the performance goals of a long-term sustainable stormwater management program.

a. Continue to evaluate the viability of providing stormwater management "credit" for alternative water quality control techniques and consider developing performance criteria for evaluating alternative flood control techniques.

b. Explore the opportunity for using redevelopment in the North Burnet/Gateway area for alternative stormwater management technology pilot projects to test their effectiveness in the Austin area. For example, current assessment of green roofs have not shown them to be effective for water quality and flood control purposes, however it is conceivable that green roof systems could be designed to meet these needs and tested through a pilot project.

4. Integrate stormwater management into the design of other public infrastructure needs, and design stormwater management facilities to meet other community aesthetic or recreational needs.

a. Stormwater management should be considered in the design of streets, parks, and other community facilities or infrastructure. Opportunities to integrate biofiltration, rainwater harvesting, porous pavement, and other stormwater manage-

ment techniques should be considered early in the project design for any public facilities.

b. Stormwater management facilities, including private detention ponds, should be designed to be attractive with vegetative edges. (Note there are some restrictions to the use of trees and woody vegetation on the dam structure of detention ponds) Where feasible, redevelopment should design detention ponds as amenities and be included in conjunction with park or recreational facilities.

## GREEN BUILDING AND SUSTAINABILITY

The vision for the North Burnet/Gateway planning area involves development and re-development in a manner that would help absorb some of the region's expected population growth. It is important that the development of the built environment involve goals favorable to achieving long-term sustainability.

Achieving a sustainable future means meeting the needs of the present without compromising the needs of the future, and in doing so helping to make more live-able communities. Sustainability in the North Burnet/Gateway planning area involves taking active measures to protect against negative environmental impacts.

Recognizing the City of Austin has set specific goals in an effort to be a leader in green building, renewable energy, and sustainable technologies, the North Burnet/Gateway Plan includes the following recommendations:

### Recommendations

1. Improve air quality and public health by providing alternative transportation choices. Provide clear alternatives to auto-centric development patterns by providing an environment that is pedestrian, bicycle, and transit-friendly.

2. Require all new buildings and renovations of existing buildings to meet the minimum Austin Energy Green Building Rating or similar certification from the EPA (ENERGY STAR) or LEED (rating system of the US Green Building Council). If LEED Certification is selected, a minimum of two Energy and Atmosphere credits must be achieved.

3. Encourage all new buildings to meet the goals of the Austin Climate Protection Plan in effect at the time they begin the permit process. Current goals are to make all new single-family homes zero net-energy capable by 2015 and increase energy efficiency in all other new construction by 75% by 2015. Zero net-energy capable means that a building provides enough energy efficiency that all of its energy needs could be accommodated by on-site energy sources such as roof-top solar panels.

a. Reduce energy use of buildings through better design and choice of materials and systems. Green buildings can achieve significant energy savings.

Buildings should have their longer sides oriented south as much as possible, and should minimize exposure to the west. As much as possible, minimize unshaded glazing on east and west exposures to reduce heat gain. Encourage glazing systems on northern and southern facades that reduce glare and provide opportunities for daylight harvesting (utilizing daylight to provide quality light indoors to minimize electric lighting). Overhangs, balconies, porches etc. should be utilized to provide shading of windows.

Buildings should be well insulated and use high efficiency heating and cooling systems. Systems should be sized and installed properly.

b. Encourage distributed energy generation (solar/thermal, wind power, etc.) within the North Burnet/Gateway area and promote use of alternative energy sources through the Austin Energy Green Choices program.



4. Encourage roofing and paving design and materials that reduce the urban heat island effect (the tendency of urban areas to be several degrees warmer than the surrounding countryside). This includes using light colored roofing, siding and paving materials to reflect, rather than absorb the sun's heat and by maximizing planted areas and shading paved areas and dark surfaces. Green roofs (planted vegetation on roofs) are a good option to help reduce the heat island effect and also provide air quality benefits.

5. Encourage protection of existing trees and plant new trees where possible. Trees should be considered part of the neighborhood's infrastructure. Trees improve air quality by absorbing carbon dioxide and other harmful pollutants and to help reduce the urban heat island effect. Based on a tree canopy survey conducted by the City in 2000, only 11.4% of the North Burnet neighborhood is covered by tree canopy and only 12.8% of the Gateway area. Together, the combined planning area is almost five percent (4.85%) of the total land area of Austin's urban core, but provides less than half of one percent (0.46%) of the total existing tree canopy in the urban core.

a. Through the North Burnet/Gateway design standards require redevelopment to include a "street tree zone" to provide shade between the street and sidewalk. Near powerlines, smaller trees which do not grow more than 25 feet should be planted. Trees can cool neighborhoods by three to six degrees if planted to shade areas that absorb heat such as streets, sidewalks and parking lots.

b. Trees should be planted in all parks and street medians.

c. On the few remaining vacant tracts of land with a large number of existing trees, parks and open space should be strategically located and designed to protect trees of significant size (19-inches in diameter or greater). Buildings should be sited to protect as many existing trees as possible.

6. Reduce solid waste production. Divert construction and demolition waste from the landfill to the fullest extent achievable and utilize existing infrastructure through adaptive reuse of buildings and building materials (developments in Austin have documented that more than 50% waste diversion is achievable). Design buildings to incorporate recycling collection areas and encourage tenants to recycle.

7. Promote the use of environmentally compatible building materials by selecting regional materials that are non-toxic, recycled and sustainably harvested.

8. Conserve water by installing low water use plumbing fixtures and appliances, using low water use native plants in landscaping, and utilizing rainwater harvesting, air conditioning condensate, or other recycled or non-potable water sources for irrigation.



A key goal of this Master Plan is to increase the residential population in the North Burnet/Gateway area in order to create a lively urban mixed-use neighborhood that supports transit ridership and a jobs-housing balance in the area. As discussed previously, demographic trends point to future buyers who embrace density and diversity. A wide range of housing options and affordability options will benefit the diversity of the community and the long-term sustainability of the district. Providing affordable housing located adjacent to transit offers a viable transportation option, and a potential cost savings for low- to moderate-income families.

Recent trends in the cost of housing show that urban core home prices and rents continue to increase at a higher rate than in suburban areas. Moreover, workforce wages are not rising quickly enough to keep pace with escalating housing costs. Many states and municipalities address this issue through the use of inclusionary housing requirements, which compel developers of market rate housing to include a percentage of affordable units in any new project. In Texas, municipalities do not have the authority to enact inclusionary requirements; therefore the recommendation of this Master Plan is to utilize an incentive-based approach, including the establishment of a density bonus for developments that include a percentage of affordable housing units. Due to the projected overall density, the mixed-use development pattern and proposed transit service level, workforce housing could be distributed throughout the planning area.

A summary of the North Burnet/Gateway Plan's recommendations regarding housing is presented below:

## Recommendations

1. Provide zoning entitlements that allow high density housing developments in the North Burnet/Gateway area (see "Land Use and Zoning" section of this chapter), to increase the supply of housing in Austin

and begin to accommodate some of the housing demand that will be generated from expected population growth in the region.

2. Encourage high density housing in close proximity to transit to help reduce vehicle dependency.

3. Provide density bonuses for developments that include at minimum, rental units for households with incomes at or below 60% of the area median family income (MFI) or ownership units for households with incomes at or below 80% MFI.

4. Continue providing City of Austin development incentives (fee waivers, expedited review, etc.) for development of affordable housing and consider increasing the value or the number of incentives offered for redevelopment in the North Burnet/Gateway area.

5. Create public/private partnerships to include affordable housing in all development on public land.

6. Encourage a mix of housing unit types and sizes.

7. Encourage development of housing for seniors and persons with disabilities.

8. Evaluate other opportunities for encouraging affordable housing, including community land trusts and use of the affordable housing General Obligation Bond funds.

## JOBS/HOUSING BALANCE AND THE NEED FOR AFFORDABLE HOUSING

Participants in the public workshops for the North Burnet/Gateway Plan expressed a desire to achieve a jobs-housing balance within the district, so that people could both live and work in the area. The future development of new commercial and office space will spur the growth of businesses in the area, as well as a corresponding increase in the number of employees. The

North Burnet/Gateway Plan envisions the development of a sufficient number of housing units to accommodate the people working in the area, to achieve the goal of the plan to create a dense and vibrant town center with less reliance on automobiles. In addition to achieving a balance of jobs and housing units, it is also important that an appropriate amount of the new housing is affordable to the prospective employees of the district. Affordable housing located near employment centers provides the same benefits as market-rate housing, such as supporting a stable workforce or improving air quality by reducing daily commuting times, but serves workers earning lower wages. Yet, unlike market-rate housing, the market does not always provide housing for this wage sector.

To accurately project the need for workforce housing in the North Burnet/Gateway area is difficult. The consulting firm Diana McIver and Associates (DMA) was hired to conduct an affordable housing analysis for the North Burnet/Gateway Plan, and has developed a methodology for estimating the affordable housing need in the district based on anticipated employment in the area. The number of units needed was determined by surveying commercial spaces in Austin and of the industries occupying each type of land use, to provide an indicator of the incomes of the employees in a given space. Based on the land uses proposed in the North Burnet/Gateway Plan, a salary distribution by land use category was developed. The wages paid per employee was compared to the estimated median income for a single person in Austin, which is approximately \$49,800.

The simple analysis conducted comparing expected employee wages with the Austin median income for a single-person household provides a snapshot of the potential jobs/housing balance and affordable housing need for the area. It is recognized that this is an imperfect analysis: some households will have two-wage earners; while other households may have

two or more persons, but only one wage-earner. Assuming larger household sizes and determining whether or not there are multiple workers in a given household will alter the outcome of the analysis at any income level, but this initial calculation provides a conservative estimate of the potential housing needs in the area.

Based on the estimated land use and employment distribution, approximately 63% of the jobs in the North Burnet/Gateway planning area could pay salaries at or below 80% median income for a single-person household, with 34% at or below 60% of MFI. In order to support a jobs-housing balance, which would enable those employees working in the area to also live in the area, the distribution of affordable housing should match the distribution of average incomes by occupations.

Therefore, in order to achieve a balance of jobs and housing affordable to wage-earners in those jobs, a goal for the district would be 63 percent workforce housing. Given the costs of redevelopment in the area, reaching this percentage of affordability will be difficult if not impossible. This challenge indicates a need for innovative solutions and multiple approaches to encourage development of affordable housing so people who work in the area can also live nearby.

## STRATEGIES TO ACHIEVE AFFORDABLE HOUSING

Achieving a marketable return on investment on land that is currently valued at \$15 to \$30 per square foot (see Figure 2.9) will require residential densities of 15 dwelling units-per-acre or more. These densities are based on an average value of \$300,000 per unit. To encourage the inclusion of affordable units in residential developments, more market-rate housing units must be developed to offset the foregone revenue for the affordable units. A density bonus, allowing the construction

of more units, would help to compensate for the cost of affordable units.

This recommended “public benefit” density bonus structure is intended to encourage developers to include a reasonable percentage of workforce housing with every residential project. Designed appropriately, the affordable units should be indistinguishable from market-rate units. Should site constraints or other limitations preclude the inclusion of affordable units, a developer could contribute a predetermined amount to a publicly administered housing fund dedicated to developing workforce housing in the district. Such a “fee-in-lieu” fund could also be supplemented with other sources. Another important opportunity to provide affordable housing that is unique to the North Burnet/Gateway area is the potential redevelopment of two key city-owned properties in the area: the 40-acre Kramer Lane Service Center, and the currently vacant 24-acre Austin Water Utility property. These parcels could provide opportunities for housing development at a relatively low cost to the City. The City could enter into a public/private partnership to develop the properties and include affordable housing. In addition, the inclusion of affordable housing should be considered for any new civic uses proposed for the district. Because the North Burnet/Gateway area is envisioned to be a more urban, mixed-use neighborhood, it is recommended that civic uses are co-located with other uses, including housing.

An important key to planning for housing in close proximity to transit will be to encourage a variety of housing types. Apartments, condominiums, townhouses, accessory units, etc. should all be developed. A good mix of unit types will ensure that a broader range of household types and income levels can be served in this area. Residential developments should incorporate options for both smaller and larger households. Housing for seniors should be included in the district, because a densely developed area with easy access

to transit and services could provide seniors the long-term ability to live independently.

The report on affordable housing for the North Burnet/Gateway area prepared by DMA (Appendix 3) describes several existing City of Austin affordable housing programs and initiatives, as well as other housing incentives and possible methods of addressing affordability, including community land trusts, additional fee waivers, infrastructure reimbursement, and use of the affordable housing General Obligation Bonds to spur initial investment and housing development in the area.

Meeting the projected affordable housing need in the North Burnet/Gateway area will be a challenge, as shown by the DMA analysis and housing trends in Austin in general. Because no single solution will address the area’s affordable housing need, it will be important to create a regulatory environment that encourages the development of housing and to implement creative solutions to achieve housing affordability.



To meet the project goals of developing a better mix of uses and a higher development density, the utility infrastructure of the planning area will play a key supporting role. From the existing conditions analysis, it was determined that the study area is currently well served by the existing utilities. An analysis of the future conditions was necessary to determine the capacity and needs that will arise as the vision develops over time.

The utility analysis was performed with the same two future development scenarios as the traffic analysis. For comparison purposes, the utility analysis looked at the future utility infrastructure conditions in 2035 if the North Burnet/Gateway area were to develop with the conventional suburban development patterns. The uses were kept as they exist today, with the addition of the known development plans in the area, including the Shops at Arbor Walk, Austin Commons, Endeavor, the Domain (both Simon Properties and Endeavor Real Estate planned developments), and Whole Foods. The second analysis used development assumptions from the 2035 North Burnet/Gateway Master Plan.

The utility analysis was based on an assigned Living Unit Equivalent (LUE) for each parcel. Each proposed land use type has a typical LUE demand as estimated by the AWU. Each discrete future land use “subdistrict” is made up of a blend of unique land use types. In the case of mixed-use development patterns, the LUE was estimated in accordance with the subdistrict uses. As an example, the Neighborhood Mixed Use subdistrict is a combination of retail, residential, and educational uses. A “weighted average” for each subdistrict was created based upon the percentage of area for each land use type. The result was a “future condition” LUE demand. See the Utilities Appendix 1 for a map of the parcel LUEs. Each of these future LUE tracts was then assumed to tap onto the existing infrastructure system at a certain “node” location. These assignments were

based upon the percentage of the total area that could reasonably go one direction or the other due to distance (or proximity) to a specific water/wastewater line.

The actual future development of a specific tract of land could involve constraints that would alter these general LUE distribution assumptions. As specific tracts of land develop in the future, they would submit a Service Extension Request (SER) to AWU. AWU staff will examine the specific SER submittal relative to the water and wastewater assignments for the North Burnet/Gateway Plan and ensure system improvements are made in accordance with the expected buildout of the plan area. If the development of a specific tract or group of tracts begins to trend to a water/wastewater line or system that is different from the assumptions in this analysis, then the results of this analysis could shift and differ from the evolving needs of the developing study area. These water and wastewater models should be revisited periodically to keep the future needs in touch with actual development patterns.

## WATER

The water analysis for the 2035 “conventional land use scenario” indicated that the existing water system proved adequate to serve the North Burnet/Gateway area. Therefore, the existing water infrastructure serving the North Burnet/Gateway area is capable of some additional development density.

The analysis of the 2035 North Burnet/Gateway Master Plan did however identify a need for some improvements to the water system. The primary decision factor for determining whether an improvement to the water line was needed was when the velocity was estimated to exceed five (5) feet per second (fps).

Recommended Improvements for the 2035 Master Plan Scenario (Figure 4.35) are as follows:

It is estimated that nearly 17,000 linear feet (LF) of 12” diameter pipe will have velocities in excess of five fps under the 2035 Master Plan land use conditions. Without re-running the water model, it was easy to estimate the pipe diameter required to reduce the modeled velocity to five fps or less.

- The vast majority of the existing 12” lines will need to be upsized to 14” diameter lines with a few requiring upsizing to 16” diameter if the plan area develops as shown in the 2035 Master Plan.

These improvements are typically made by developers when providing local service to their developments. The 14” and 16” water lines are considered to be part of the “distribution” system, whereas lines larger than 16” are thought of as the “transmission” system and therefore cannot be tapped into directly for local service to a specific development project.

Based on the water system modeling for the 2035 Master Plan:

- The existing 24” lines would need to be upgraded to 30” or 36” diameter.
- The existing 36” and 48” diameter lines that are part of the main transmission system on the west side of MoPac would need to be increased to 42” and 54” respectively (note that this is based strictly upon velocity over five fps).

These improvements are typically funded by the City, either through reimbursements to developers when asked to oversize lines serving a development, or through City Capital Improvement Projects (CIP).

The general areas where the model shows these water system improvements would be needed at full buildout in 2035 are shown in Figure 4.35.

It is possible that as additional water lines are installed (e.g. via infill density), and as the existing lines are made larger (as discussed above), that the overall velocity demands on these main lines may not exceed the five fps criteria. A specific model was not prepared for all the many implementation scenarios that could exist as the area develops and AWU improves the system. Since the cost of replacing these lines is significant, consideration should be given to minimizing the water system cost by keeping these large lines unchanged. A conceptual cost estimate for these water improvements is included in the Utility Appendix. These estimates show the total costs for water system upgrades, and does not differentiate between public or private development costs. As mentioned above, once the other water system lines are upsized, it is quite likely that the velocity in these larger diameter lines would be reduced to a level where they would not need to be replaced. These 42" and 54" lines are included in the cost estimate strictly based upon the stated criteria and not an actual implementation.

It should be noted that as the study area is developed, a "high tech" company or other land use requiring large amounts of "industrial" process water, or very high required fire flow capacity, could locate within the area. Several of the existing UT facilities can generate high "immediate" flow or "instantaneous" flow demands. Such demands can create high one-hour peaks. The modeling effort did not allow for any of this locally heavy water demand. A special detailed study would have to be performed by AWU should that type of development be proposed.

Given the uncertainty of the future development on the UT property between Burnet Road and MoPac, a special water model analysis was performed relative to the UT Pickle Research Campus tract. One model assumed the UT Pickle Research Campus would develop fully as it would in a Neighborhood Mixed Use subdistrict. A new 24" diameter water

line under MoPac at the Capital of Texas Highway intersection would be required in this scenario. That improvement would reduce the high velocity condition along the south side of the UT tract from 10 fps to under just over 6 fps. The second model reduced this same area demand to about 25% of the maximum LUE demand that would occur if it were to develop in a Neighborhood Mixed Use subdistrict. A new parallel water line would not be needed in this model. The velocities in the existing 24" line would be just over 5 fps. Should the UT demand begin to grow, the new waterline should be located in the Capital of Texas Highway area under MoPac and not as a parallel line to either of the two existing MoPac crossings.

## WASTEWATER

Like the water infrastructure, the wastewater analysis for the 2035 "conventional land use scenario" indicated that the existing waste-water system proved adequate to serve the North Burnet/Gateway area. Therefore, similar to the water system, under the "conventional land use scenario", the existing wastewater infrastructure serving the North Burnet/Gateway area is capable of some additional development density due to recent improvements through ACWP.

The analysis of the 2035 North Burnet/Gateway Master Plan wastewater infrastructure models indicated that the existing wastewater system was "strong" in capacity. Even though the system performed well in the 2035 Master Plan scenario, a few line improvements would be necessary to accommodate the plan conditions.

Recommended Improvements for the 2035 Master Plan Scenario (Figure 4.35):

- It is estimated that nearly 1,100 linear feet (LF) of 15" diameter pipe that serves the Domain development would need to be increased to an 18" line and 3,200 linear

feet (LF) of 12" diameter pipe will need to be increased to 15" line.

- There is approximately 2,000 linear feet (LF) of 8" diameter pipe that runs along Burnet Road in the Walnut Creek tributary. This pipe would need to be increased to 12" diameter line to serve the system in the future.

These improvements are usually made by developers when providing local service to their developments. Typically the City reimburses the developer for wastewater lines 18-inches or greater.

## ELECTRICITY AND GAS

To accommodate the plan goal of promoting a pedestrian-friendly environment, the street system and streetscape will need to be modified to assist in creating a more urban form. As was discussed in Chapter 2: Existing Conditions, there are many large overhead distribution and transmission lines that travel through the planning area, and in particular along Burnet Road. In accordance with converting Burnet Road into an urban Transit Boulevard, it is recommended that the overhead power lines along Burnet Road be placed underground. Along with the visual benefits of placing overhead electrical lines underground, there are also other benefits of placing these lines underground. The urban form can develop with: buildings that set closer to the property lines, trees can be placed to line the streets, and ample sidewalks can be accommodated. The primary disadvantage of placing power lines underground is the high cost to do so and the difficulty of finding space in existing areas for the needed pad mounted equipment.

No capacity analysis was performed for the electricity or gas services in the area. These services are generally supplied by utility companies according to the market demand and would therefore not be part of a public improvement project.



# RECOMMENDED UTILITY IMPROVEMENTS

Figure 4.35

