Town of Erie

Transportation Master Plan

January 8, 2008

TOWN OF ERIE
1874

LSA

TOWN OF ERIE TRANSPORTATION PLAN

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CONTEXT AND ISSUES

INTRODUCTION

The *Erie Transportation Plan* outlines the community's vision and goals for the Town's future transportation system and its connections to the rest of the Denver metro region. It provides guidance for elected officials and staff in making choices regarding the long-range transportation needs of the community. The *Erie Transportation Plan* describes the vision and policy framework for Erie's transportation system, presents the Roadway System Plan and how it was developed, discusses transit services/issues and opportunities, identifies planned bicycle and pedestrian facilities, and proposes a plan for implementation of future transportation improvements.

Several entities and agencies provide transportation facilities and services to accommodate travel to, from, and within the Town of Erie, including the Town itself, other local governments such as Boulder and Weld Counties, state agencies like the Colorado Department of Transportation (CDOT), and regional agencies like the Regional Transportation District (RTD) and the Denver Regional Council of Governments (DRCOG).

Erie's transportation system is envisioned as a multi-modal network of roads, bicycle lanes and paths, transit services, and pedestrian facilities that will support the planned land uses in the Town by providing mobility to residents and visitors. The Town is still relatively small in size, but has room to grow with new residential and commercial developments and investments in public infrastructure. This presents a unique and fortunate situation for the Town of Erie because it provides an opportunity to develop the transportation system to modern standards and implement transportation improvements as growth occurs.

The definitions of two terms, multi-modal and intermodal, go a long way towards describing the transportation facilities and services in the Town.

Multi-modal refers to the provision of travel mode options, including the automobile, bicycle, pedestrian, and transit. Although Erie's transportation system has historically been influenced primarily by the automobile and roadway improvements will continue to be needed, this is an exciting time for alternative travel mode choices in the Town. The passage of the FasTracks vote in November 2004 promises rail transit service in the vicinity of the Town that will benefit Erie's residents. Furthermore, CDOT's ongoing North I-25 Environmental Impact Statement

(EIS) effort is evaluating commuter rail, bus rapid transit, and other multi-modal options from Denver to north of Fort Collins that may one day benefit Erie residents and workers. A new RTD extension of the JUMP bus route will connect Erie with Boulder and the rest of the RTD system when it opens in January 2008. Bicyclists and pedestrians will benefit from off-street path facilities and modern design standards. These multi-modal transportation options will provide an alternative to automobile travel, resulting in reduced roadway congestion, better air quality, and improved quality of life through mobility choices.

Intermodalism refers to the connections between modes. The basic concept of intermodalism is to provide a seamless transportation system that facilitates easy and efficient movements between modes. With new opportunities for alternative modes, connections will be critical to the system's efficiency and effectiveness. Connections occur at the nodes where the travel modes intersect, such as the FasTracks rail stations that may be served by local feeder buses in Erie, interfaces between the on and off-street bicycle network, at bus stops where the transit rider becomes a pedestrian, and others. As the Town's transportation system matures, these connections will become as significant as the modes themselves.

PLANNING AREA

The planning area upon which the *Erie Transportation Plan* is based on was defined in the *Comprehensive Plan* and includes lands within the "sphere of influence," but outside the incorporated area.

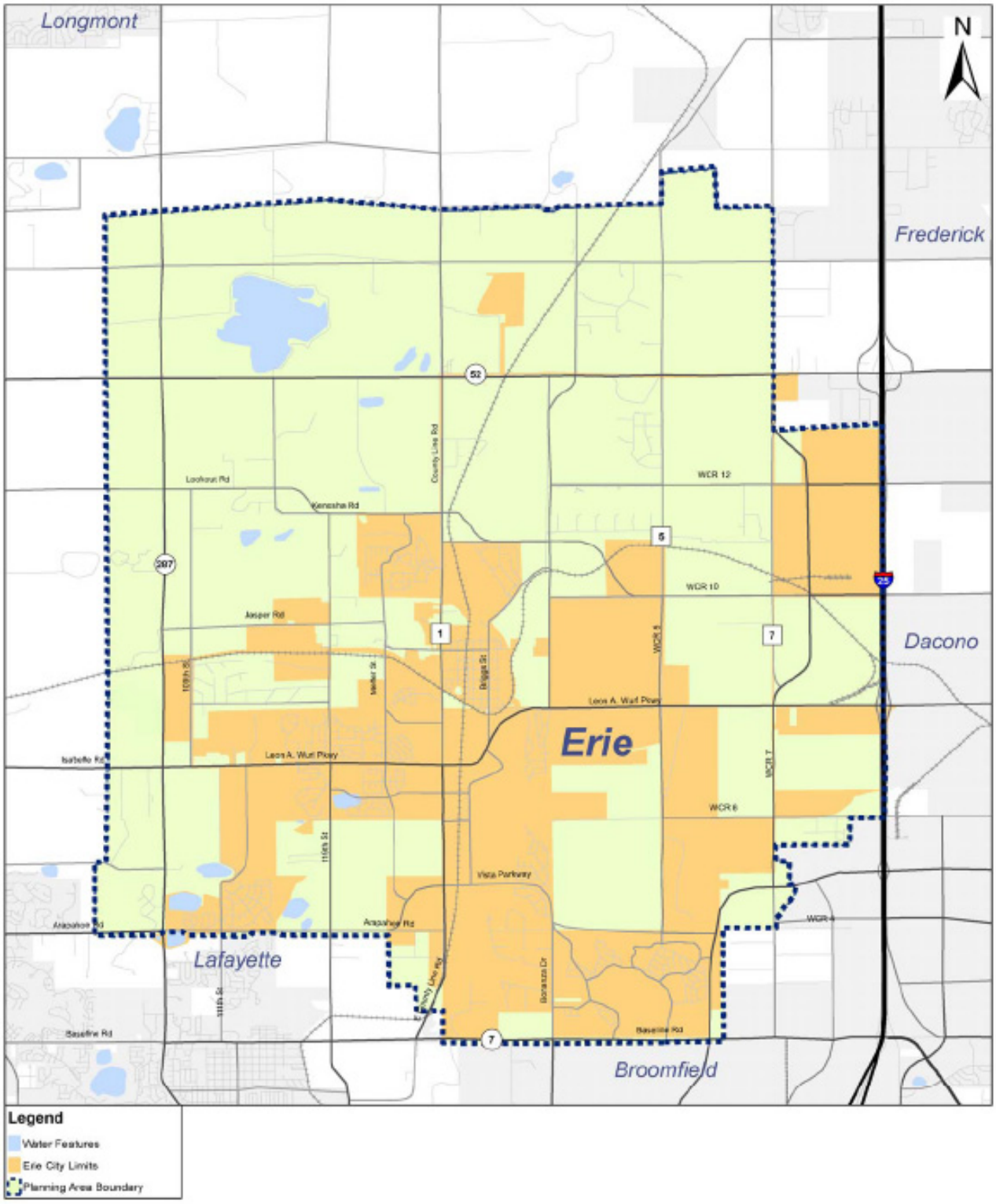
It covers a total of 46 square miles, extending from SH-7 on the south to north of SH-52 and also from US 287 on the west to I-25 on the east. Approximately 14 square miles of the planning area are incorporated by the Town in 2006. The Town of Erie planning area is shown in Figure 1.

Why do we need a Plan?

For several obvious and some not-so-evident reasons, the Town of Erie needs a long-range transportation plan. As congestion increases on area roads due to growth, development, and more travel through the town, it is clear that the current roadway system will not be sufficient to accommodate future needs. In addition, citizens of the community remain interested in alternative mode options that are healthy and efficient.

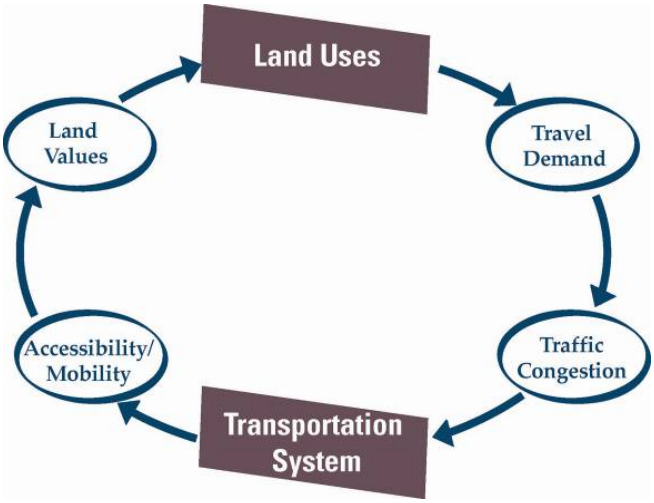
Beyond any of these reasons, a long-range transportation plan makes sense. Good planning involves citizens, increases efficiency and effectiveness of the investment, and promotes transportation services and infrastructure that are consistent with the community's desires. The planning process enhances the community's character and quality of life by considering the interaction between land use and transportation and their cumulative effect on the built and natural environments.

FIGURE 1: ERIE PLANNING AREA



RELATIONSHIP TO OTHER PLANS

The *Erie Transportation Plan* was prepared largely through the recent development of the Town's *2005 Comprehensive Master Plan* and includes references to other plans and planning efforts. The two plans are consistent, although the *Transportation Plan* provides additional details specific to the transportation system.



In addition to the *Comprehensive Plan*, there are a number of recent and/or ongoing studies that deserve mention in relation to the *Transportation Plan*:

- Hwy 7 CDOT Corridor Study
- Town of Erie Traffic and Safety Study (Kimley-Horn, July 2005 draft)
- North I-25 EIS
- Boulder and Broomfield Counties Transit Enhancement Plan

Roads and other transportation infrastructure in and around Erie are funded, constructed, and maintained by several different transportation implementing agencies, such as CDOT, RTD, DRCOG, Boulder and Weld Counties, and surrounding cities and towns. As such, the transportation system in Erie is affected by the plans of these outside agencies, which should be monitored on a regular basis. Of particular interest is DRCOG's *2030 Metro Vision Regional Transportation Plan*, which identifies long-range transportation improvements for the entire Denver metro region.

The *Erie Transportation Plan* identifies specific transportation infrastructure improvements through the year 2030. It is updated periodically to reflect changes to growth assumptions, plans of other agencies, and for other reasons. The Plan provides a guideline for transportation improvements within Erie as development occurs. The Plan also has estimated costs for typical roadway improvements. As such, it provides valuable information to support the Town's development process.

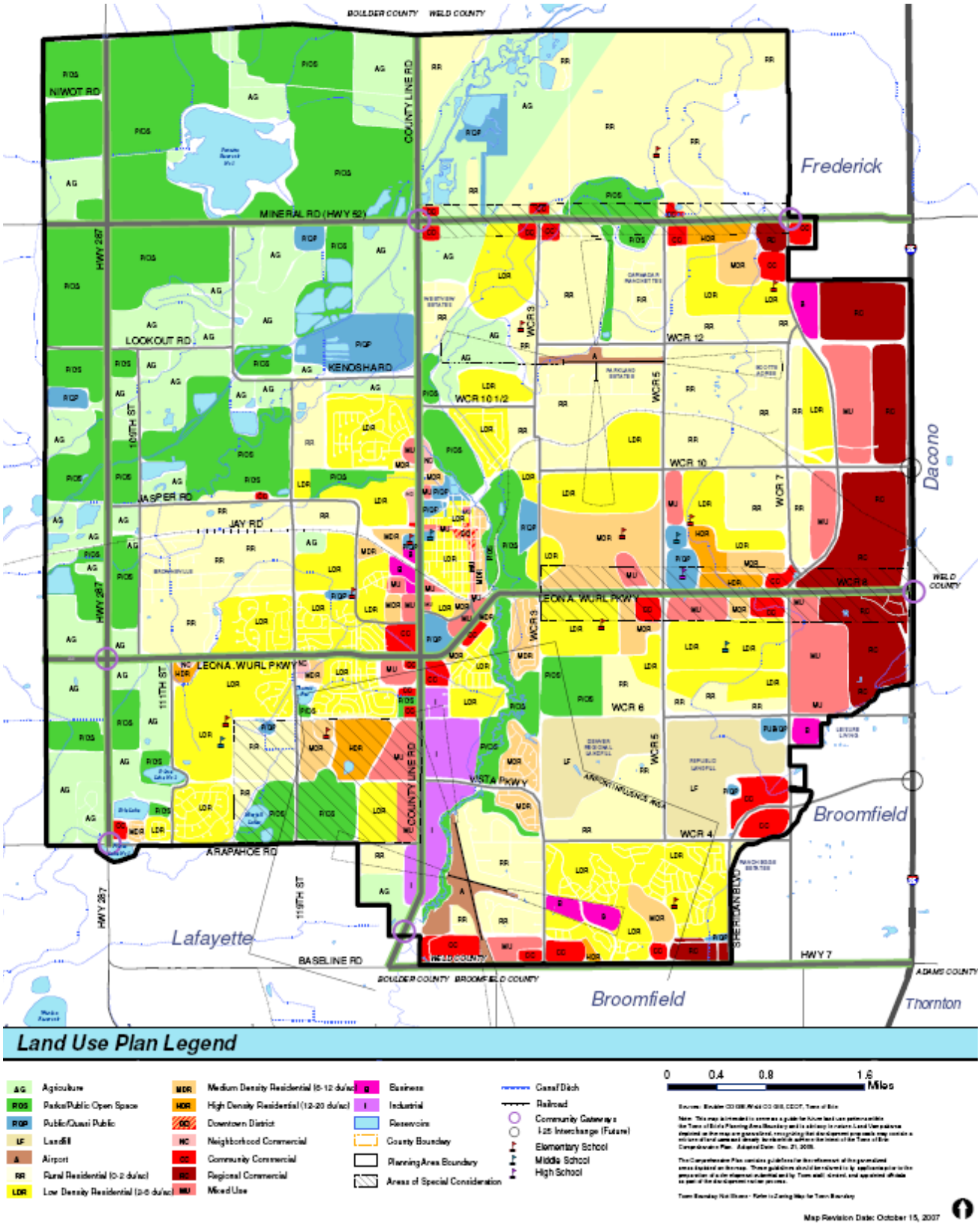
GROWTH IN THE TOWN

Although still a relatively small town with a small town character, the Town of Erie has been and will likely continue to experience a significant amount of growth. The Vista Ridge development along Highway 7 is a significant upscale residential development in the south part of the Town. Other residential and commercial developments are occurring closer to the historic core of the Town. A new high school was recently constructed along Leon A. Wurl Parkway at Weld County Road 5. Development pressures will likely continue in the planning area, particularly between the older part of Erie and I-25 to the east.

The *Erie Transportation Plan* was developed based on the current and future land uses identified in the *Comprehensive Plan*. The future land use map from the *Comprehensive Plan* forecasts the use and density of lands within the planning area for the conceptual buildout of the Town and is shown in Figure 2. Buildout is forecast to be well beyond the 2030 planning horizon of the *Transportation Plan*, so assumptions were made during the development of the *Comprehensive Plan* to identify direction and prioritization of growth so that 2015 and 2030 forecast scenarios for planning and testing of transportation alternatives could be prepared.

The *Comprehensive Plan* forecasts the number of dwellings and population for 2012, 2017, and 2025 in the Erie Planning Area. However, the travel demand model used to test alternatives and establish the roadway plan networks for the *Transportation Plan* is based on DRCOG's regional travel model that uses the horizon years of 2015 and 2030. As a result, the socioeconomic forecasts used to develop the *Transportation Plan* are based on the *Comprehensive Plan* but also include additional assumptions with regard to Buildout and employment. The socioeconomic forecasts used in the *Transportation Plan* modeling are included in Appendix A.

FIGURE 2: ERIE LAND USE PLAN



ISSUES

What are the important issues that the Erie Transportation Plan might address?

As a growing community, the Town of Erie faces numerous pressures related to land use, transportation, and the environment. Maintaining a balance among these pressures will help the Town retain its unique character and quality of life. Among these issues are:

- ***Increasing bicycle travel opportunities*** by constructing more bike trail, path, and lane facilities providing missing connections in the system and elevating the status of cyclists to gain parity with automobile travelers;

- ***Enhancing transit options*** through system coordination with RTD on existing and future opportunities, optimizing route and fare structures to reflect the needs of a growing Town, and improving bus stop amenities such as shelters and pedestrian connections;

- ***Adding multimodal connections*** to the historic core of the Town;

- ***Serving the traveling needs of visitors*** to the Town;

- ***Providing a pedestrian-friendly community*** by constructing missing segments in the sidewalk network, increasing pedestrian safety at crosswalks and intersections, and implementing amenities and facilities in activity areas consistent with walkable community objectives;

- ***Constructing sensible and effective roadway improvements*** that maintain the character of the Town, stay ahead of the congestion problem, provide for multimodal travel, and are environmentally sensitive;

- ***Managing congestion*** through lower-cost solutions, including travel demand management, transportation system management, technology, and intelligent transportation systems;

- ***Managing heavy truck traffic*** by balancing the freight/hauling needs of the landfill and other industries with the safety and quality of life of the larger community; and

- ***Balancing land use, transportation, and environmental objectives*** to enhance quality of life, minimize the effects of sprawl, and promote the economic competitiveness of the Town.

POLICY FRAMEWORK

What are goals and policies that guide transportation decisions in the Town of Erie?

The following goals and policies are from the Town's *2005 Comprehensive Plan* to guide the development of Erie's transportation system:

Goal #1: Balanced, Multi-Modal Transportation System

Ensure that new development patterns are designed to achieve safety, connectivity, and mobility for all modes of transportation in established as well as developing areas of the community.

POLICIES

TM 1.1 — COORDINATE LONG-RANGE LAND USE AND TRANSPORTATION DECISIONS

Ensure that adequate transportation facilities, including roadways, sidewalks, bus stops, bus pullouts, and other facilities are in place or planned for as needed to serve new development. The Town will require new development to provide adequate transportation facilities (including bicycle, pedestrian, and transit facilities) to be in place or planned for, including provisions for funding, at the time of development need.

Consider multi-modal (bike, pedestrian, transit, auto) access and compatibility for proposed developments through the Development Review Process.

Reduce impacts to arterial streets by providing internal circulation and connections between developments using collector street systems in and around large commercial areas.

TM 1.2 — INTERCONNECTED NEIGHBORHOOD STREET AND SIDEWALK PATTERNS

Design neighborhood street systems to encourage internal walk, bike, and auto circulation while limiting traffic volumes and speeds on neighborhood collector and local streets with housing fronts. Install sidewalks on both sides of neighborhood collector streets and at least one side of residential streets in accordance with street design standards. In established areas, identify and install missing sidewalk segments rather than wait for new development to solve problems. However; new development should provide pedestrian access to activities within the

site, to future transit stops near the site, and sidewalks along streets bordering the site where appropriate.

TM 1.3 — REGIONAL COORDINATION

The Town should continue to participate in discussions with the Regional Transportation District (RTD), the Colorado Department of Transportation (CDOT), regional MPOs, and surrounding jurisdictions to ensure the Town's plans and standards are compatible with the ongoing transportation planning efforts of these groups and to ensure that future locations for park and rides, transit stops, and other transit facilities can be identified and set aside in conjunction with future development.

TM 1.4 — ESTABLISH IMPROVEMENT PRIORITIES

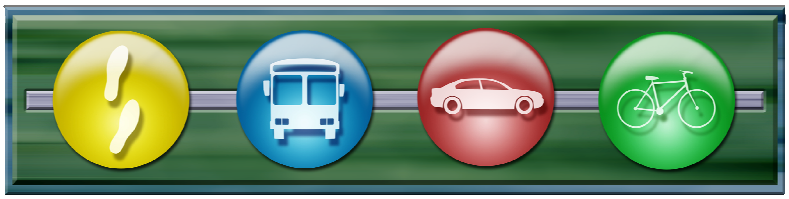
Erie's Capital Improvement Program (CIP) process should prioritize transportation infrastructure investments by considering local growth patterns, regional growth impacts, mobility benefits, and other factors. Funding availability from other transportation providers could be used in the project prioritization process, including funding from CDOT for state and federal roads, DRCOG Transportation Improvement Program (TIP) monies, or participation from RTD, counties, or the private sector.

TM 1.5 — PROMOTE CONNECTIVITY AND CONTINUITY ON LOCAL AND REGIONAL ROADS

Develop a roadway system plan that maintains the intended functions of mobility and access. Design and maintain roadway corridors to meet future needs in accordance with their intended functional classification. Establish access control criteria for growth corridors so that incremental developments to not cause an unmanageable access situation in the future.

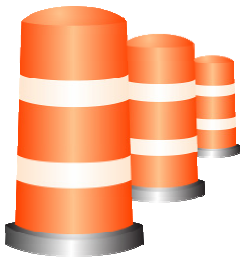
TM 1.6 — SUPPORT A VARIETY OF TRANSPORTATION CHOICES

Continue to support a multi-modal transportation system that includes vehicles, buses, pedestrian facilities, and bicycle paths. Future development will be planned to accommodate pedestrians and bicycles along all streets via connected sidewalks, crosswalks, benches, and shelters, and an enhanced network of bicycle paths. Neighborhood streets should be as narrow as possible to reduce vehicle speeds and increase pedestrian safety, but still allow for emergency vehicle access requirements. Sidewalks should be detached and wide enough to accommodate pedestrians. Whenever possible, bikeways should be detached as well.



When roadways are constructed or widened, include alternative mode connections, facilities, and amenities (including bus pullouts and stops where applicable) in accordance with street design standards and modal plans. Identify site design standards for corridors that will encourage multi-modal use.

TM 1.7 — SAFETY



The Town will ensure the design of the transportation system will meet all local, state and federal safety criteria. The Town will follow the recommendations of good engineering practice and the Manual on Uniform Traffic Control Devices (MUTCD). Implementation of the recommendations in the Traffic and Safety Study (draft July 2005) should be a priority for the Town in order to correct safety related deficiencies with traffic control devices.

TM 1.8 — BICYCLE AND PEDESTRIAN MOBILITY

The Town's sidewalk and off-street path system provides multiple facilities for pedestrian travel throughout the Town. Although often overlooked, the pedestrian mode of travel is significant because virtually every type of travel involves a walking component, usually in the form of connections between modes and activity centers. Pedestrian improvements should be focused on two priorities – (1) providing connections between developments and travel modes and (2) establishing pedestrian-friendly areas throughout the Town to improve quality of life with more mobility choices and new activity areas to live, work, shop, and play. In addition, pedestrian districts should be established for the downtown and other locations of high pedestrian activity and strategic bike/pedestrian grade separations and intersection improvements for pedestrians should continue to be studied and implemented where feasible.

Goal #2: Regional Transit Opportunities

Promote opportunities for regional transit to connect the Town to regional employment centers.

POLICIES

TM 2.1— PROMOTE A MULTI-MODAL TRANSPORTATION SYSTEM IN GROWTH AREAS

Coordinate transit opportunities with RTD and other regional interests, such as the Boulder County Transit Consortium and Weld County. In particular, identify potential transit opportunities as part of the US-36 and North Metro FasTracks corridors and the North I-25 Environmental Impact Study. Although all of the Boulder County portions of Erie and the newer parts of Erie in Weld County are already part of RTD, It may be desirable to add the rest of the Town to the RTD service area through a voting initiative.

ROADWAY SYSTEM PLAN

The roadway network forms the backbone of the transportation system in Erie. Roads provide automobile mobility and access to land developments throughout the Town. In addition to personal motor vehicles, roadways provide multi-modal mobility for transit buses, bicycles, and pedestrians. As such, the Town's roadway system must be continually maintained and improved to keep pace with development.

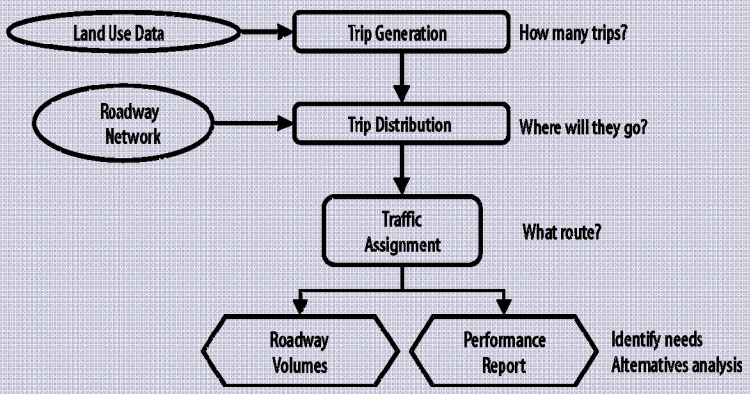
The identification of the roadway element of the *Erie Transportation Plan* started with the street network from the previous *1996 Erie Transportation Plan*. Additions and modifications were made during the development of the *Comprehensive Plan* based on studies of specific future land developments and analysis of the relationship between the new land uses and the transportation system.

Analysis Tools – Erie Travel Demand Model

As the Erie Transportation Plan was developed through an analysis of system deficiencies and potential alternative solutions, the process relied on estimates of future travel demand. Travel demand is forecasted using the Erie travel demand model, which was adapted from the regional Compass travel model maintained by DRCOG during the development of the Erie *Comprehensive Plan*.

The model process uses estimates of household and employment data and the existing roadway network as input assumptions. The Trip Generation module calculates the amount of trip-making that takes place based on activities associated with household and employment data. The Trip Distribution module determines the origin and destination of each trip. In the Traffic Assignment module, the specific route is computed through consideration of travel time, distance, and congestion.

Traffic Model



The model can produce reasonable results for several land use and roadway network scenarios. The intent is to produce estimates of average weekday traffic volumes for each roadway segment in the network. These are converted to peak hour traffic volumes for level of service analysis. In this manner, roadway deficiencies can be identified and potential alternative solutions evaluated.

A word of caution: the model is a tool that can be used to assist with the evaluation of potential roadway improvements. It is not a crystal ball. While the model provides valuable information, it is not sensitive to all aspects of the planning process. Model results should be considered in the context of other information, such as feasibility, environmental concerns, public acceptance, cost, and other criteria.

EXISTING CONDITIONS

The following Figures 3 and 4 show network assumptions and LOS conditions, respectively, for the year 2001. The year 2001 is presented because it is the base year for the DRCOG and Erie travel demand models for which roadway system information is readily available. The maps are based on 2001 socioeconomic data applied to the 2001 roadway network in the Erie travel model. As the map in Figure 4 demonstrates, there is virtually no traffic congestion on the roads within the Erie planning area in 2001 due to the relatively small size of the community, modest traffic volumes, and surrounding state, U.S., and Interstate highways that route regional traffic around Erie.

ROADWAY LEVEL OF SERVICE

A common measurement of operational performance for an intersection or corridor is level of service (LOS). In its simplest form, roadway LOS can be compared to a grading scale from "A" to "F," where "A" represents excellent level of service and "F" indicates failure. Level of service takes into account vehicular delay, maneuverability, driver comfort, congestion delay, and travel speed. It is typically reported for the worst peak hour of a typical weekday, also known as rush hour.

The Town of Erie tries to maintain LOS D for roads and intersection operations. Again, the LOS standard applies to the most congested peak hour of a typical weekday and implies that the LOS at other times would be better. Many communities similar to Erie including several in the vicinity of the Town use LOS D as their standard due to the balance of traffic congestion and improvement costs that it provides.

Level of service standards are not a guarantee of actual system performance at all locations at all times. They assist in identifying appropriate roadway improvement needs but must be balanced with other considerations such as funding availability, environmental issues, and other constraints. As congestion reaches high levels at specific corridor or intersection locations, the LOS standards can be relaxed. Some common performance measures and operating characteristics related to level of service are shown in Table 1.

Lane warrants and roadway functional classifications for the 2030 roadway system plan were determined based on the traffic volume forecasts and level-of-service capacity thresholds, which are shown in Table 2. The Town's LOS standard is "D" for roadways as previously discussed, so the figures in that column of Table 2 are particularly relevant to the selection of functional classification and number of lanes necessary to accommodate the expected traffic demands in the future.

FIGURE 3: 2001 ROADWAY NETWORK ASSUMPTIONS

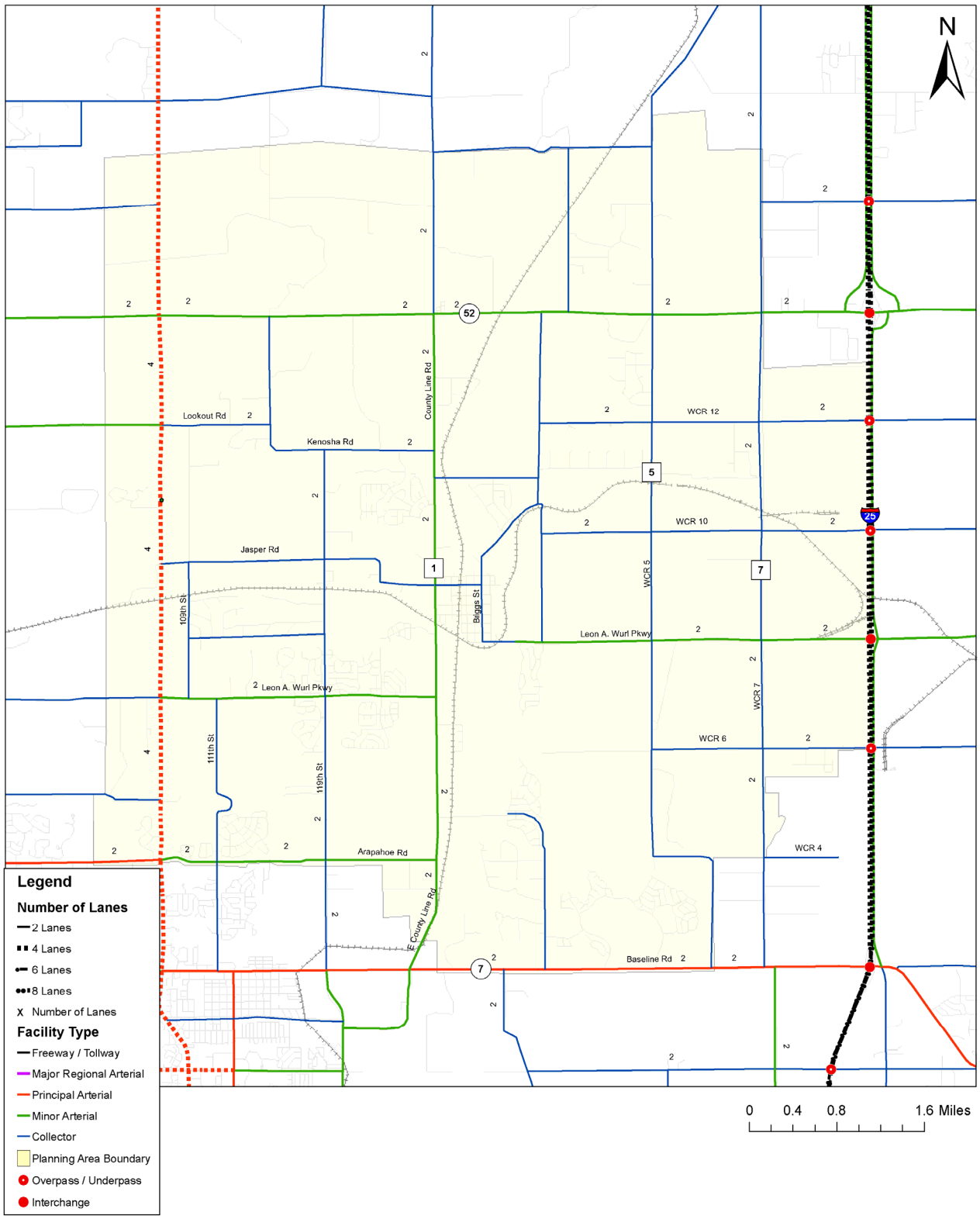


FIGURE 4: 2001 ROADWAY LEVEL OF SERVICE

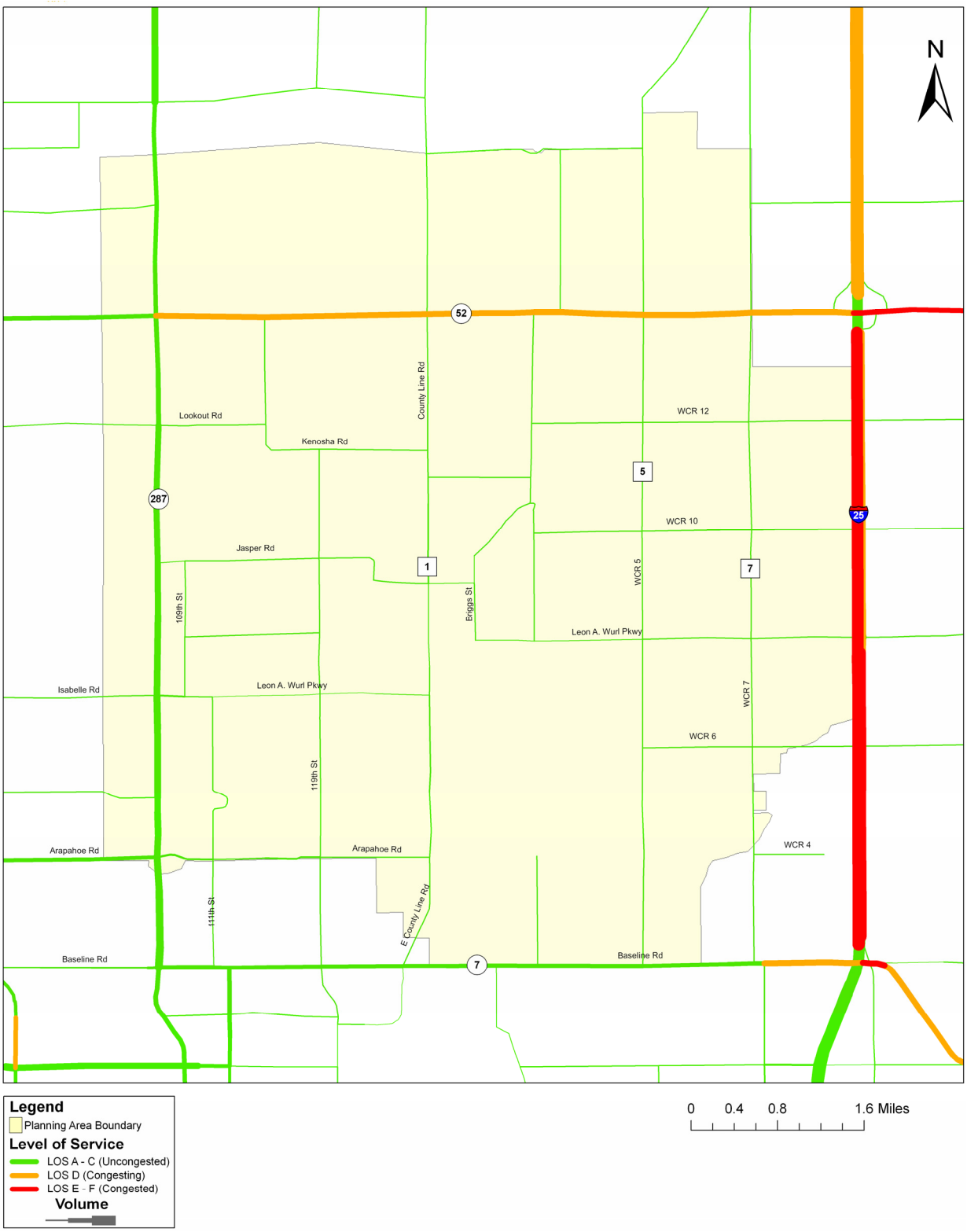
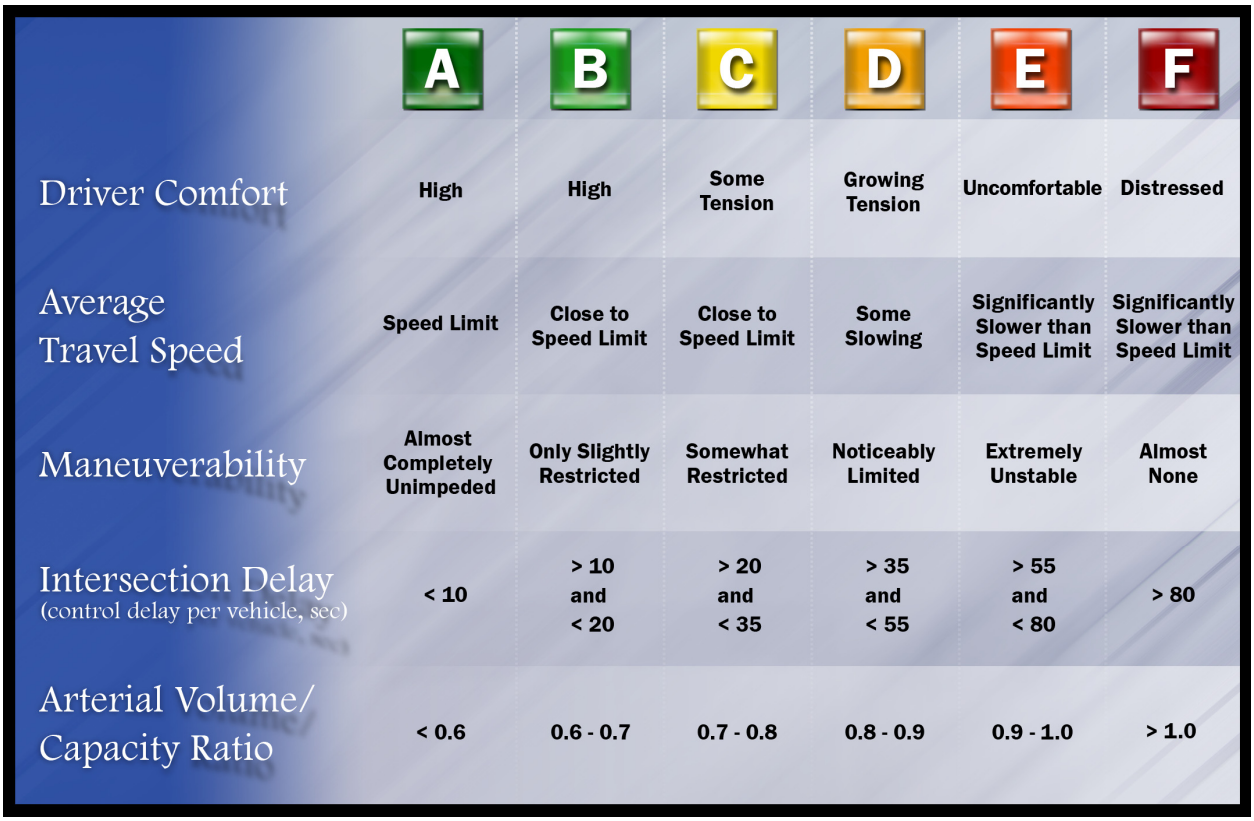


TABLE 1: LEVEL OF SERVICE CHARACTERISTICS



	A	B	C	D	E	F
Driver Comfort	High	High	Some Tension	Growing Tension	Uncomfortable	Distressed
Average Travel Speed	Speed Limit	Close to Speed Limit	Close to Speed Limit	Some Slowing	Significantly Slower than Speed Limit	Significantly Slower than Speed Limit
Maneuverability	Almost Completely Unimpeded	Only Slightly Restricted	Somewhat Restricted	Noticeably Limited	Extremely Unstable	Almost None
Intersection Delay (control delay per vehicle, sec)	< 10	> 10 and < 20	> 20 and < 35	> 35 and < 55	> 55 and < 80	> 80
Arterial Volume/ Capacity Ratio	< 0.6	0.6 - 0.7	0.7 - 0.8	0.8 - 0.9	0.9 - 1.0	> 1.0

TABLE 2: ROADWAY LEVEL-OF-SERVICE THRESHOLDS BY FUNCTIONAL CLASSIFICATION

	Level of Service				
	A	B	C	D	E
Major Regional Arterial/Expressway					
6 Lanes with Median	36,700	48,200	56,900	64,800	72,000
Principal Arterial					
6 Lanes with Median (Fig. 15)	27,500	36,200	42,700	48,600	54,000
Minor Arterial					
4 Lanes with Median (Fig. 16)	20,400	26,800	31,600	36,000	40,000
Collector					
2 Lanes (Fig. 17, 18)	6,100	8,000	9,500	10,800	12,000
2 Lanes with Center Turn Lane or Median (Fig. 19, 20)	9,200	12,100	14,200	16,200	18,000
Rural Arterial					
2 Lanes (Fig. 23)	8,200	10,700	12,600	14,400	16,000
4 Lanes	16,300	21,400	25,300	28,800	32,000

COMMITTED PROJECTS

The year 2001 is used to show existing conditions and is used as a baseline for comparison to future needs and conditions because information for that year is readily available from the regional travel model adapted for application in Erie. Since 2001, several roadway improvements have been constructed, are under construction, or have committed funds and will be constructed in the near future. There projects are important because they help in establishing a baseline roadway network upon which to evaluate needs and alternatives.

Committed projects include those with dedicated funding in the region's Transportation Improvement Program (TIP) prepared and maintained by DRCOG. They also include projects in the Erie Capital Improvement Program (CIP) that are funded with local transportation and general funds or through construction agreements with developers.

Committed capacity improvements in the Town of Erie, including projects constructed since 2001 or currently under construction, include the following projects:

- Leon A. Wurl Parkway from County Line Road to County Road 8 – upgrade to 4-lane minor arterial constructed in 2006/7;
- Leon A. Wurl Parkway at 119th Street – roundabout constructed in 2008 through a CDOT Safety Improvement grant; and
- State Highway 7/Vista Parkway & Mountain View Boulevard – signal installation and intersection improvements constructed in 2007/8.

NEEDS ASSESSMENT AND ALTERNATIVES ANALYSIS

During the development of the *Comprehensive Plan*, a needs-based 2030 roadway network was prepared in order to assess impacts and opportunities of future land use scenarios. The 2030 Needs network was ultimately refined into the 2030 Plan network based on a performance analysis of the land use scenarios and alternatives testing. For example, interchanges along I-25 were modeled at all east-west arterial streets intersecting the Interstate, but these were adjusted because the analysis did not support interchanges at all of these locations and served to identify the most necessary and logical locations for future interchange construction.

The transportation alternatives analysis for the *2030 Erie Transportation Plan* started with the roadway network that resulted from the development of the *2005 Comprehensive Plan*. Since Erie is a fast-growing town and development and infrastructure plans are constantly in flux, some additional testing of roadway alternatives was warranted. As a result, several alternatives were tested for the arterial streets in the area including SH-52, Leon Wurl, SH-7, County Line Road, 119th Street, Sheridan Parkway, and others. The selection of appropriate functional classifications land configurations for specific alternatives of interest were conducted as follows.

SH-52

A 4-lane cross-section is warranted and justified based on the traffic volume forecasts in 2015 and 2030, although DRCOG's 2030 network shows 2 lanes on this facility. The facility was tested in the 2015 and 2030 models as a 2-lane and a 4-lane principal arterial. The results indicated that traffic volumes under the 2-lane scenario are somewhat constrained and 3,000 to 5,000 vehicles per day are finding another route due to the traffic congestion. This rerouting of traffic has a relatively minor impact to other roads in the planning area. As a result, SH-52 is designated as a 4-lane facility in both the 2015 and 2030 roadway plan networks. The Town recognizes the current DRCOG designation of 2 lanes in 2030, but encourages CDOT to accelerate the widening of SH-52 as a safety improvement.

The Erie Comp Plan Buildout network shows SH-52 as 6 lanes. There is no DRCOG network or plan that identifies the post-2030 lane configurations, although the growth in the area suggests extra capacity beyond the current 2 lanes will be necessary. Buildout traffic forecasts around 40,000 vehicles per day west of County Line Road suggest the need for a 6-lane facility using the LOS D standard. East of County Line Road, higher volumes between 50,000 and 55,000 vehicles per day indicate a 6-lane road is warranted for the section. Therefore, SH-52 is designated as 6 lanes in the Buildout network.

Leon Wurl from WCR-7 to I-25

This section is shown as 2 lanes in the 2015 network although the traffic forecasts vary between 12,000 and 21,000 vehicles per day. The higher volume is due to high mid-block link loadings from adjoining land uses and would warrant 4 lanes, but the decision was to retain the 2-lane section in 2015 with the recognition that auxiliary lanes may be necessary in the run-up to I-25.

The traffic forecasts on this stretch vary between 21,000 and 36,000 vehicles per day in the 2030 model. The difference is due to high mid-block loadings simulated from adjoining land uses. This section is designated as a 4-lane road in the 2030 network with the recognition that auxiliary lanes may be necessary near I-25.

The Buildout model predicts about 42,000 vehicles per day on this section of Leon Wurl immediately west of I-25. This volume can be accommodated by a 6-lane principal arterial facility using the LOS D standard and is designated as such in the Buildout network.

Leon Wurl from US-287 to Meller Street

This section is shown as 2 lanes in the 2015 network. Although the section immediately east of Meller Street is 4 lanes, this does not cause an increase in traffic to warrant anything but a 2-lane facility west of Meller Street. In the *Comprehensive Plan* network, this section is shown as 2 lanes. However, the road is 4 lanes between Meller Street and County Line Road. At issue is the sizing of Leon Wurl from US-287 to east of 119th Street (at Meller Street) for 2 or 4 lanes

in 2030. The relatively low traffic volumes are in the range of 11,000 to 13,000 vehicles per day in 2030, which can be accommodated by the 2-lane section for a LOS D standard.

Buildout volumes range from 31,000 to 36,000 east of 119th Street to 42,000 vehicles per day between US-287 and 119th Street. When tested as a 4-lane facility in the Buildout scenario, volumes dropped to about 36,000 vehicles per day on this section but did not rise significantly on any other facility to warrant other improvements. The higher volumes west of 119th Street cannot be accommodated by a 4-lane road. A 6-lane section could handle the forecasted traffic volumes and so the facility was designated as such in the Buildout network.

WCR-7 from Leon Wurl to Sheridan Parkway

The low 2030 forecast volumes do not warrant a 4-lane section. The forecasted traffic volumes are about 8,000 vehicles per day in 2030. Therefore, this section was specified as a 2-lane configuration for the 2030 Plan network.

The Buildout traffic volumes on this road are above 60,000 vehicles per day, which is higher than even a 6-lane principal arterial can accommodate. Therefore, a 6-lane cross-section was specified in the Buildout network.

Bonanza Drive Connection to Vista Parkway

The short connection between Bonanza Drive and Vista Parkway was tested as an alternative in the 2030 network. This alternative included the extension of WCR-4 between Vista Parkway and WCR-5. Connecting Bonanza Drive to Vista Parkway indicated minor changes in localized travel patterns and volumes on local facilities. No other significant traffic impacts were noted in the modeling. Similar results can be expected with the 2015 network. Connecting Bonanza Drive to Vista Parkway will meet the Town's goals of connectivity of neighborhoods, safety and emergency response and economic development.

SH-7 S-Curve east of County Line Road

The 2030 network was tested with and without the S-curve on SH-7. The S-curve does not exist today. In the future, it was tested as a connection between Baseline Road and Arapahoe Road such that when heading west on SH-7, the highway curves north from its current alignment on Baseline Road to align with Arapahoe Road east of the intersection with US-287. Other corresponding network adjustments on Arapahoe and Baseline were made to accommodate the change. Model results indicate a redistribution of traffic in the local vicinity of the S-curve. For example, traffic volumes on US-287 between Arapahoe and Baseline increase by several thousand vehicles per day, lowering the level of service in this section from good to congesting. Volumes on other roads in the area change to a small degree and all are easily accommodated with the available capacity in the surrounding 2030 network. No changes were noted on roads further away, including Leon Wurl between US-287 and I-25.

The decision to re-route SH-7 is being studied by the Town of Erie and CDOT in the context of larger planning issues. As a result, it is identified as a potential re-alignment.

I-25 Interchanges

For the 2030 Plan network, three new interchanges were tested on I-25 bordering the Town of Erie. The Sheridan Blvd. interchange at I-25 appears to be utilized to a sufficient degree to warrant its implementation by 2030. However, the interchanges at WCR-10 and WCR-12 carry relatively light loads in the 2030 scenario, suggesting that only one of these interchanges is necessary by 2030. Although a full interchange analysis was not conducted, the interchanges at SH-52 and Leon Wurl (WCR-8) would be very stressed to handle the additional traffic if both the WCR-10 and WCR-12 interchanges were removed from the 2030 network. Therefore, the new interchange at Sheridan Road and I-25 is included in the 2030 Plan network. Further to the north, the interchange at WCR-10 was included in 2030. For the Buildout network, the interchange at WCR-12 was added.

The Colorado Transportation Commission issued Policy Directive 1601 effective December 15, 2004, so "that all requests for new interchanges and major improvements to existing interchanges be reviewed and evaluated in a fair and consistent manner". Procedural Directive 1601.1 effective October 2005 "encourages the integration of the CDOT and FHWA environmental and access permitting and approval procedures into the 1601 interchange approval process." Several requirements apply in CDOT's 1601 process as new interchanges on I-25 are requested, approved, and funded. As the area transitions from rural to urban, interchange spacing requirements decrease from 2 miles to 1 mile per CDOT's Design Manual. The spacings between SH-52, WCR-12, WCR-10, Leon Wurl/WCR-8, and Sheridan Boulevard are all 1 mile or greater consistent with the urban requirements.

Roadway Plans and System Performance – 2015 & 2030

As part of the development of the roadway system plans, a performance analysis was conducted to determine how well the roadway system operates in the future with the planned land uses. Several measures were reviewed; key among them are vehicle miles of travel, traffic congestion, and roadway level of service. These important performance indicators played assisted with the decisions with regard to size, type, and alignment of the roadways in the Erie planning area.

2015 Interim Roadway System

In order to assist with the prioritization of improvements for the 2030 roadway plan network, an interim year of 2015 was modeled. As discussed in Appendix A, 2015 socioeconomic data was prepared based on an interpolation of the 2001 and 2030 datasets to establish growth totals, which were then allocated to uses and geographic locations based on anticipated growth patterns.

Outside of Erie, the 2015 roadway network is an interim year network provided with the DRCOG Compass model. When reviewing this network, it appeared that there were a substantial number of roadway improvements throughout the Denver region in 2015 compared to the 2001 and 2030 networks. Furthermore, while the 2001 and 2030 networks are consistent and grow in a reasonable manner by functional classification, there are some concerns with the consistency of the 2015 network. Table 3 shows the number of lane-miles for each network and demonstrates the consistency issues with the 2015 network, particularly in the principal arterial category.

TABLE 3: LANE-MILES IN THE ROADWAY NETWORKS (DRCOG REGION)

	2001	2015	2030
Freeway	1,537	1,839	1,934
Expressway	351	566	546
Principal Arterial	2,864	4,337	3,763
Minor Arterial	2,307	1,909	2,677
Collector	2,903	2,933	3,018
Ramp	122	152	126
Total	10,084	11,736	12,064
Difference (2001 – 2015)		1,652	
Difference (2015 – 2030)			328

TABLE 4: LANE-MILES IN THE ROADWAY NETWORKS (ERIE PLANNING AREA)

	2001	2015	2030
Freeway	12	18	18
Expressway	0	0	0
Principal Arterial	42	54	116
Minor Arterial	43	37	51
Collector	91	109	105
Ramp	1	1	1
Total	189	219	290
Difference (2001 – 2015)		30	
Difference (2015 – 2030)			71

As Table 3 indicates, the improvements planned for the 2030 network are front-loaded so that the majority is implemented by 2015 at the regional level. This issue was discussed with DRCOG staff to determine its validity. They indicated that the 2015 network was correct based on regional planning assumptions and a transportation funding process in which bonding to finance projects will happen before 2015 with payback of the bonds occurring after 2015. This is an important assumption because it has the net effect of reducing traffic within Erie, which in turn reduces the need for roadway improvements within Erie in 2015. Within the Erie Planning Area however, the growth in lane miles by functional classification seems intuitive. Network assumptions are shown in Figure 5 and the capacity improvements between 2001 and 2015 are shown in Figure 6. Level of service results is included in Figure 7 for 2015.

FIGURE 5: 2015 INTERIM ROADWAY NETWORK

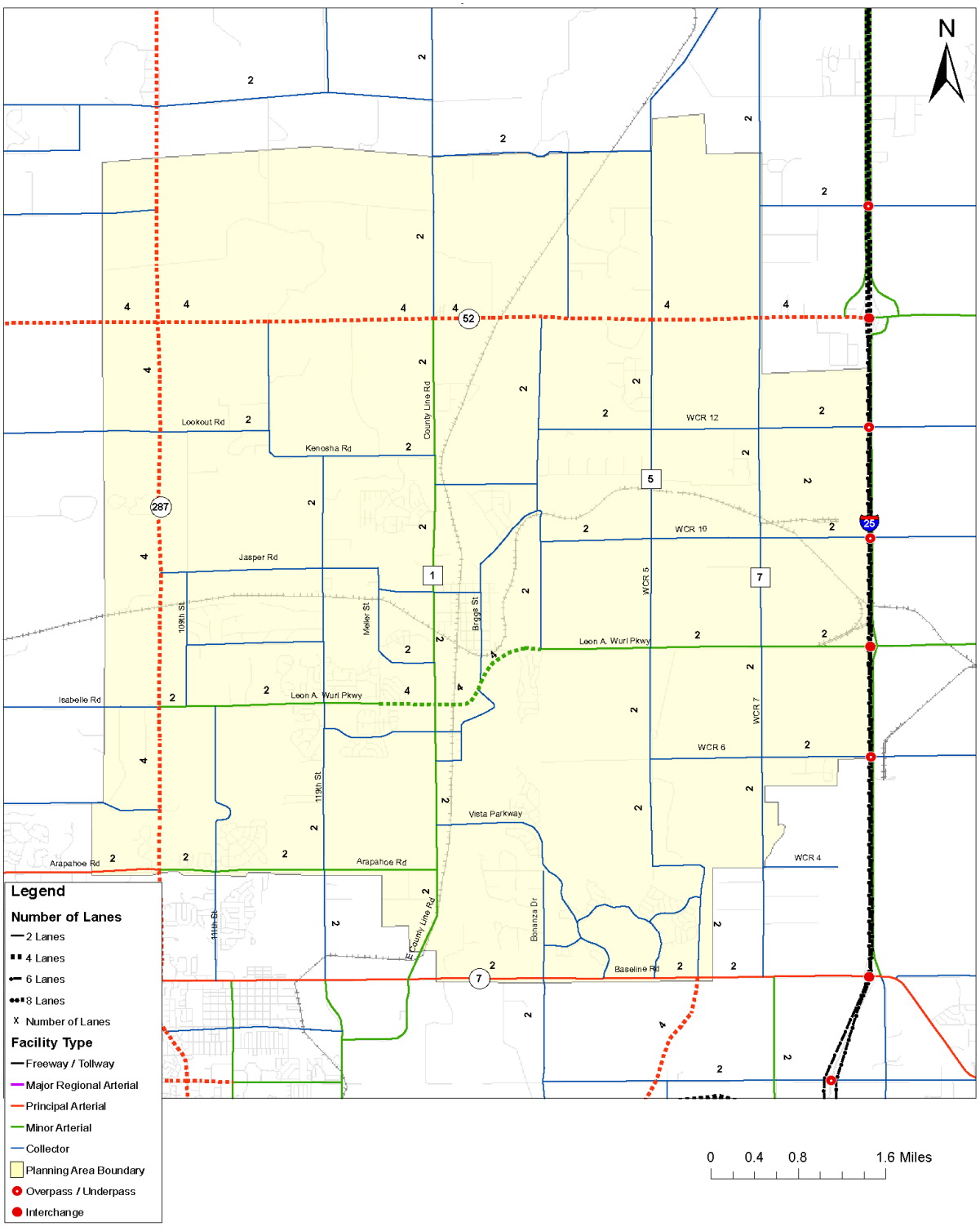


FIGURE 6: CAPACITY IMPROVEMENTS (2001 TO 2015, ERIE PLANNING AREA)

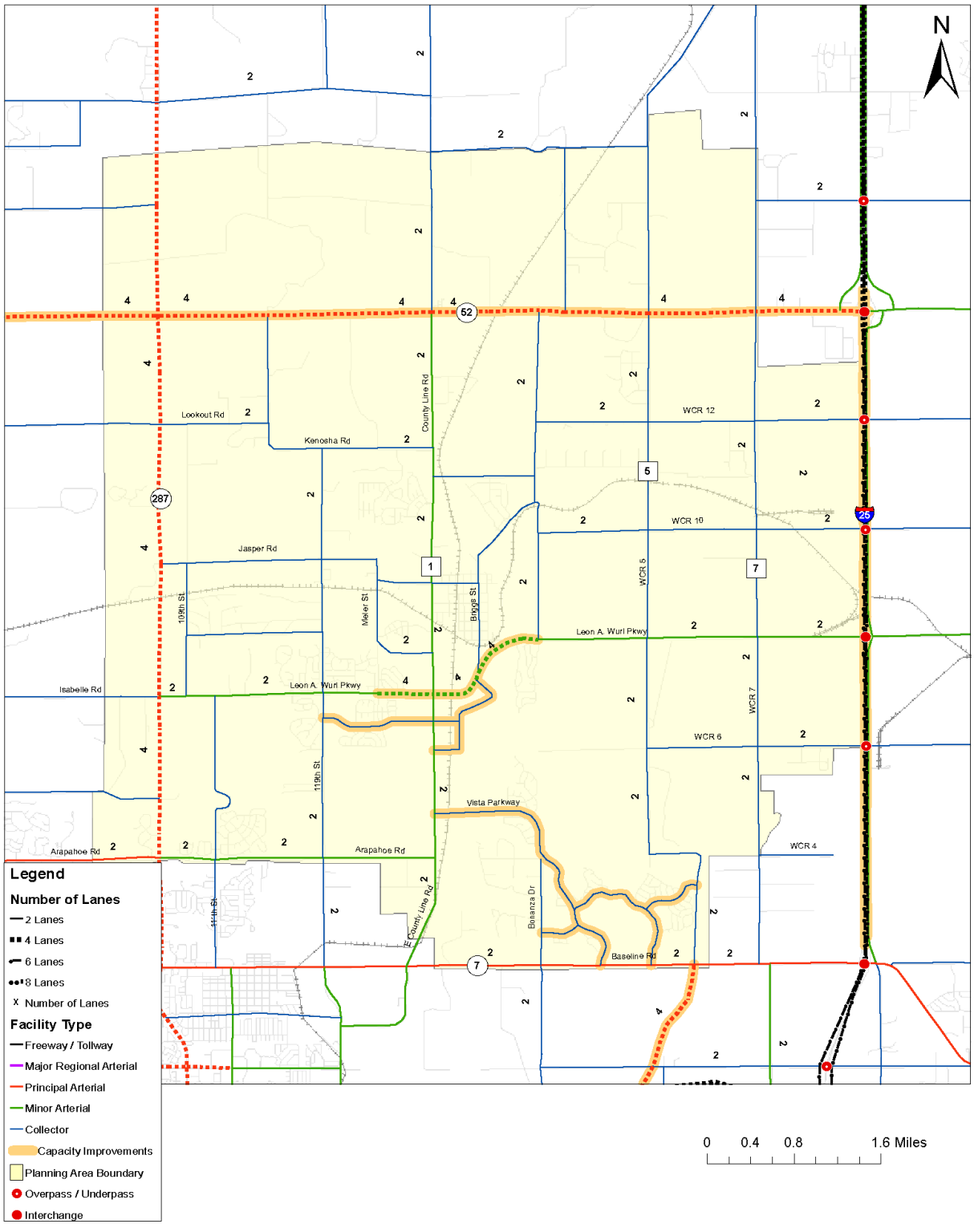
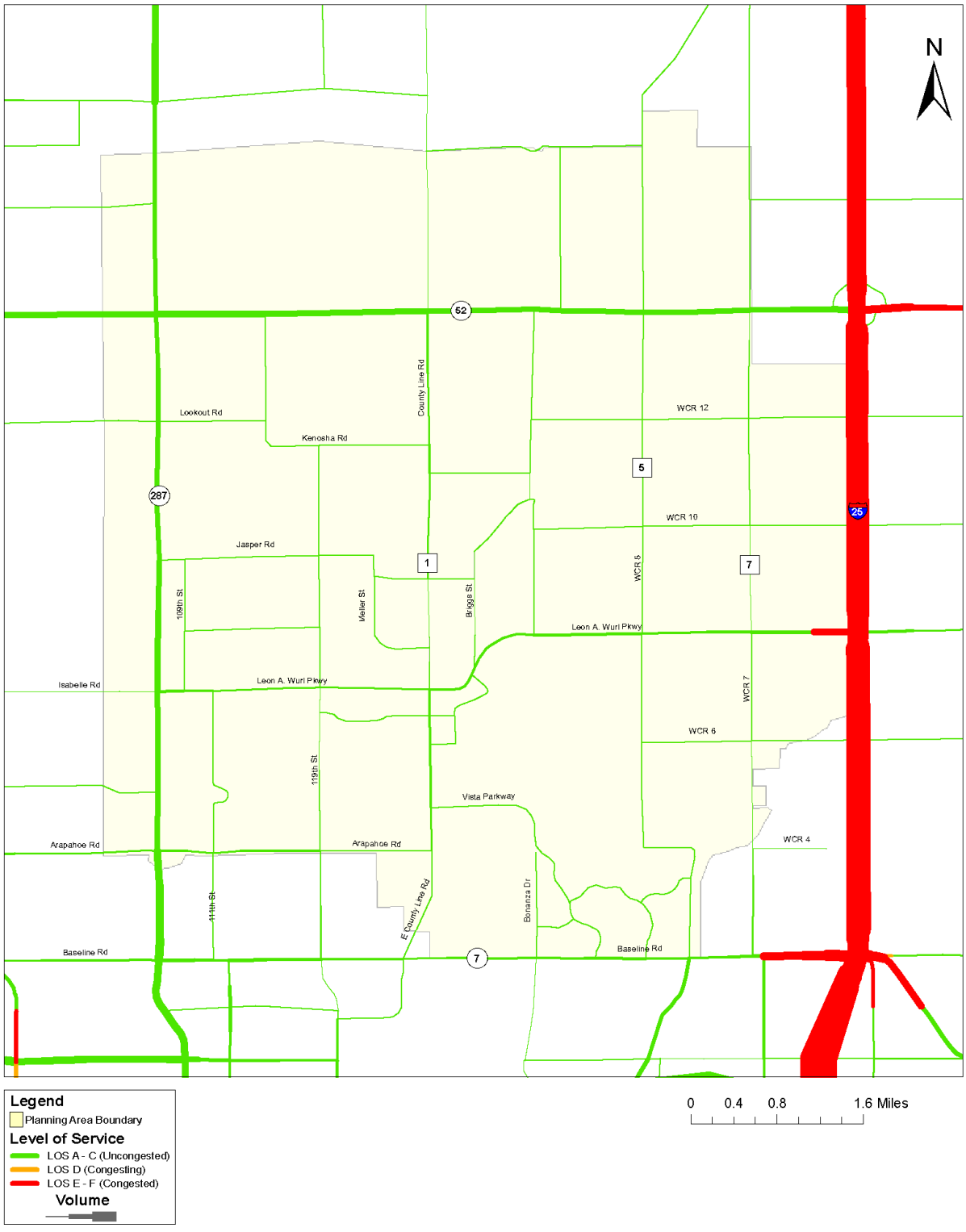


FIGURE 7: 2015 ROADWAY LEVEL OF SERVICE



2030 Roadway System

Based on the previous work of the *Comprehensive Plan*, the needs assessment, and the alternatives analysis, a 2030 roadway system plan was developed for the Erie planning area as shown in Figure 8 with capacity improvements from 2015 to 2030 shown on Figure 9. This network represents the system of streets and highways anticipated to be in place by the year 2030 and are consistent with established land uses and growth expectations.

Since the 2030 roadway network plan represents the design/horizon year for planning purposes, it was further refined to be consistent with the Buildout network, which represents the ultimate cross-section and functional classification for right-of-way dedication and acquisition activities.

The corresponding level of service map is contained in Figure 10. Although Erie has decision-making and funding responsibilities of many of these roadways, other transportation provider agencies have primary responsibility for numbered state and federal highways, county roads, and toll roads.

FIGURE 8: 2030 ROADWAY SYSTEM PLAN

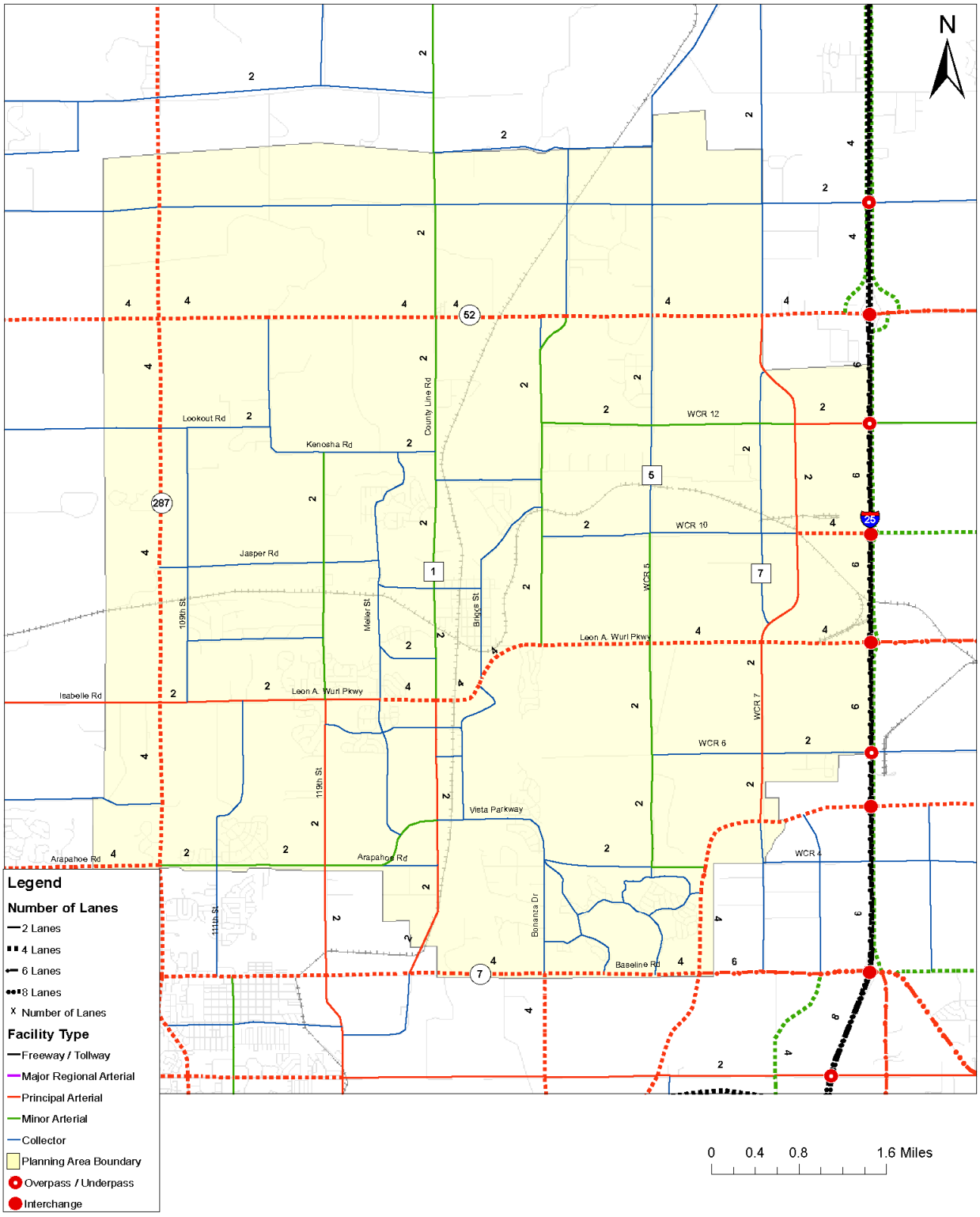


FIGURE 9: CAPACITY IMPROVEMENTS (2015 TO 2030, ERIE PLANNING AREA)

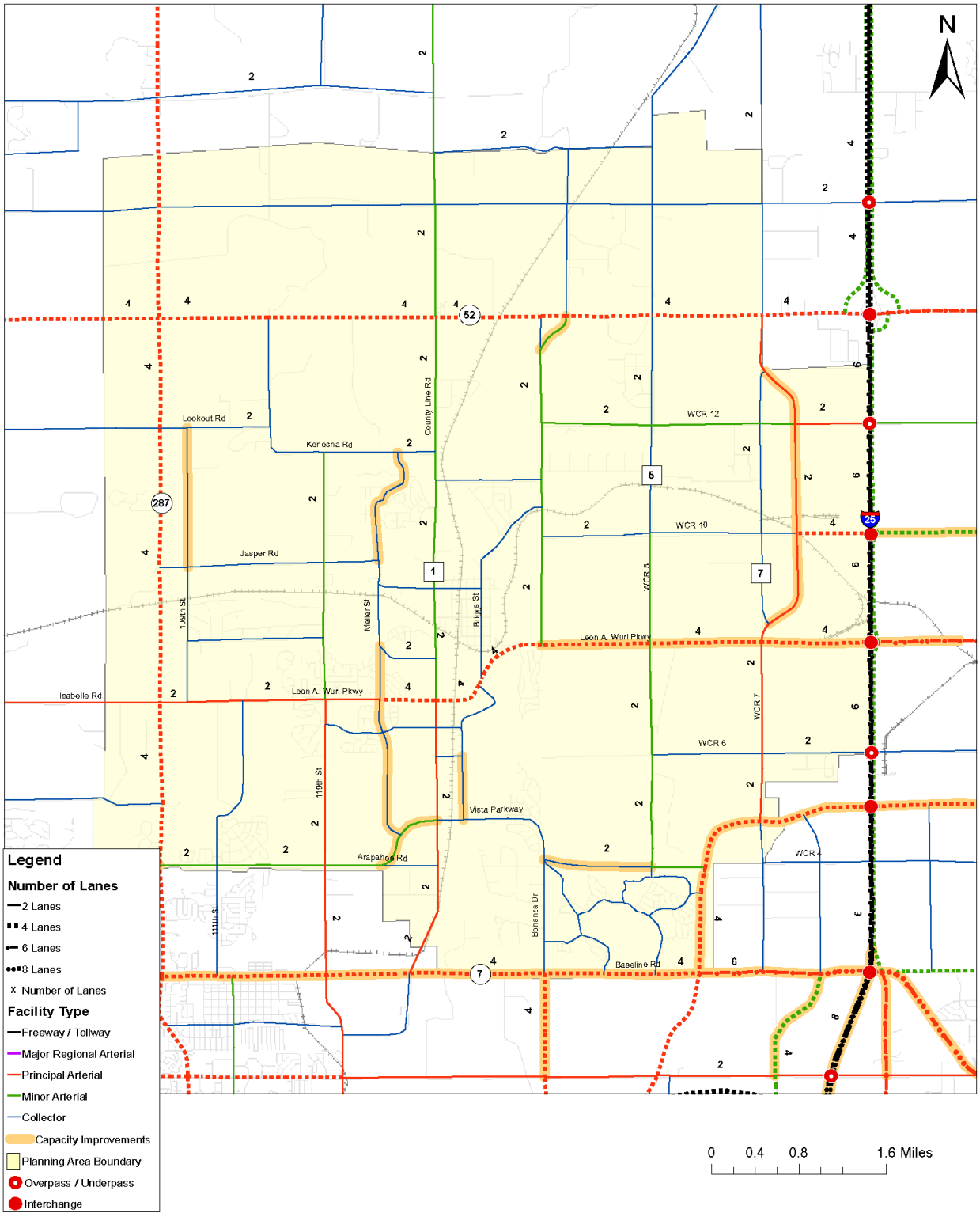
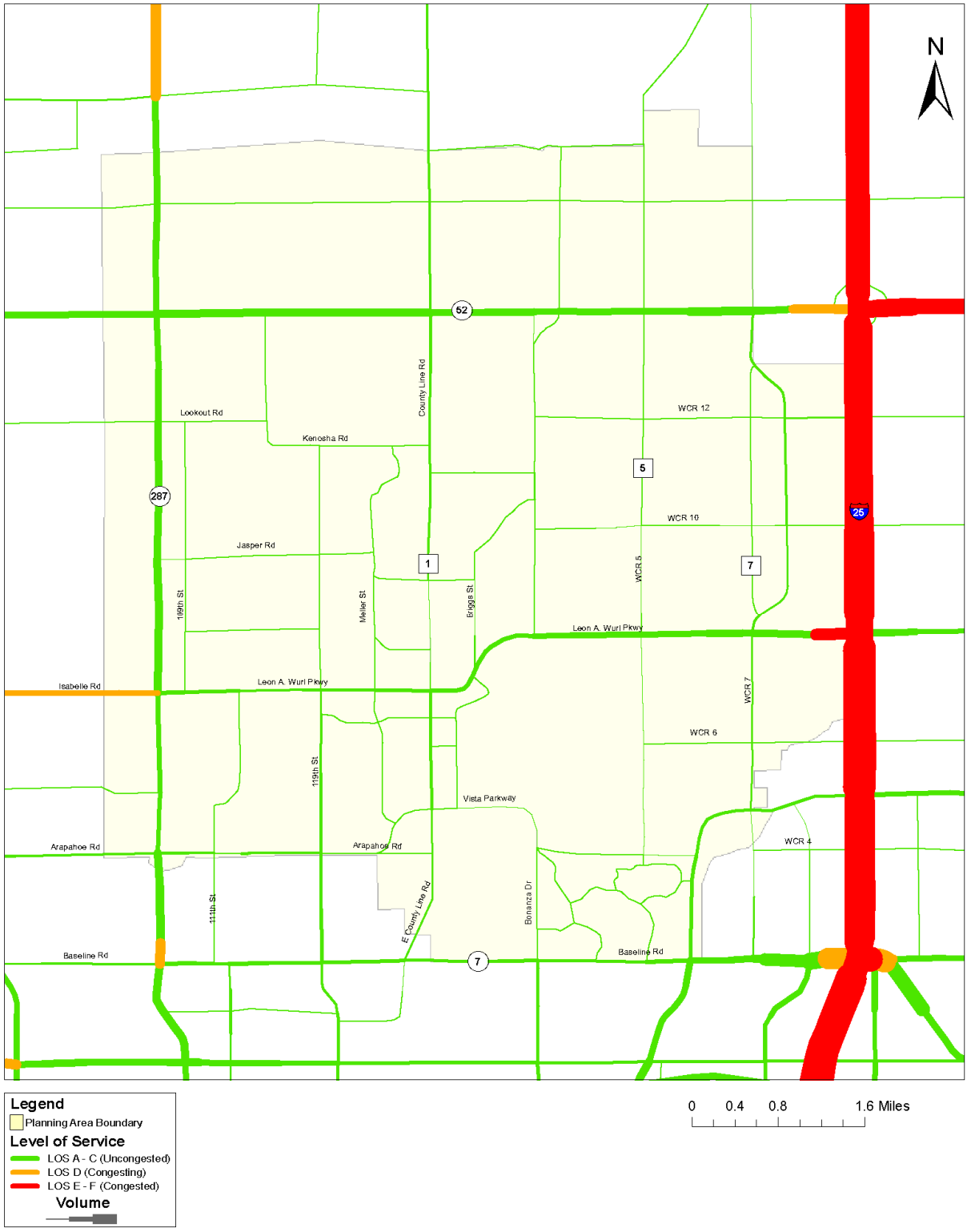


FIGURE 10: 2030 ROADWAY LEVEL OF SERVICE



SYSTEM PERFORMANCE

Table 5 identifies the network attributes and performance characteristics associated with the 2015 and 2030 infrastructure plans. Measures for the 2001 network are provided for comparison purposes. As the maps and performance figures indicate, traffic and congestion delay are expected to increase in the future. New roadway construction (i.e., lane miles) will also occur, but not at the same pace. What the maps and table do not clearly indicate is the significant new roadway capacity in the vicinity of but outside the Town between 2001 and 2030. For example, I-25, E-470, and the Northwest Parkway all will have capacity improvements between 2001 and 2030. The Town benefits from these improvements because they result in a situation in which overall roadway level of service actually improves on Town streets in the future. With completion of the Roadway System Plan by 2030, nearly all arterial roadways in Erie will operate at a level of service "D" or better.

TABLE 5: ROADWAY SYSTEM PERFORMANCE (ERIE PLANNING AREA)

Measure	Functional Classification	2001	2015	2030	Average Annual Percent Change (2001 - 2030)
Lane Miles	Freeways	12	18	18	1.4%
	Arterials	85	91	167	2.4%
	Collectors	91	109	105	0.5%
	Total	188	218	290	1.4%
Vehicle Miles of Travel (miles per day)	Freeways	208,900	374,500	496,100	3.0%
	Arterials	372,800	476,200	737,200	2.4%
	Collectors	12,500	53,000	46,900	4.7%
	Total	594,200	903,700	1,280,200	2.7%
Congestion Delay (vehicle-hours per day)	Freeways	102	200	1,252	9.0%
	Arterials	408	2,858	2,849	2.1%
	Collectors	2	5	8	3.2%
	Total	512	3,063	4,109	3.2%
Arterial Street Level of Service (percent)	LOS A-C (uncongested)	80%	99%	99%	n/a
	LOS D (congesting)	4%	0%	1%	n/a
	LOS E-F (congested)	16%	1%	0%	n/a

BUILDOUT ROADWAY NETWORK FOR CORRIDOR PRESERVATION

In order to provide insight into the long term transportation right-of-way preservation and infrastructure needs in Erie, a Buildout model scenario was developed. To do this, the region-wide model was adjusted to represent approximately the year 2060 in the Denver metropolitan area. This year was selected due to the convenience of having forecasted network and socioeconomic data already available for 2060 through other work efforts. The Erie planning area may or may not be entirely developed in the year 2060, but for conceptual, long term planning purposes, this year was considered reasonable.

The roadway network for the Buildout scenario is shown in Figure 11. Figure 12 shows the capacity improvements between the 2030 and Buildout networks. Figure 13 identifies the forecasted level of service for the Buildout scenario.

In application, the Buildout roadway network should be used along with the 2030 design year network and the 2015 interim network to determine necessary infrastructure improvements as necessary while also preserving adequate right-of-way for long term future needs.

Generally, the roadway system matches the travel demand reasonably well. However, there are some roadway segments that are overloaded. These are primarily 6-lane principal arterials. Eight-lane arterials were not modeled in part because the Town does not have an 8-lane cross-section in the street design standards. Also, many in the transportation community feel that arterials with more than 6 lanes may not be advisable investments due to diminishing returns with regard to carrying capacity. Finally, 8-lane arterials significantly hamper pedestrian activity.

Of particular note is the series of connections, or jogs, along the Lookout Road, Kenosha Road, and WCR-10 alignments. While these were removed from the 2030 network, they do appear to be warranted in the Buildout scenario to transform this series of disconnected east-west roads into a connected arterial corridor.

FIGURE 11: BUILDOUT ROADWAY NETWORK

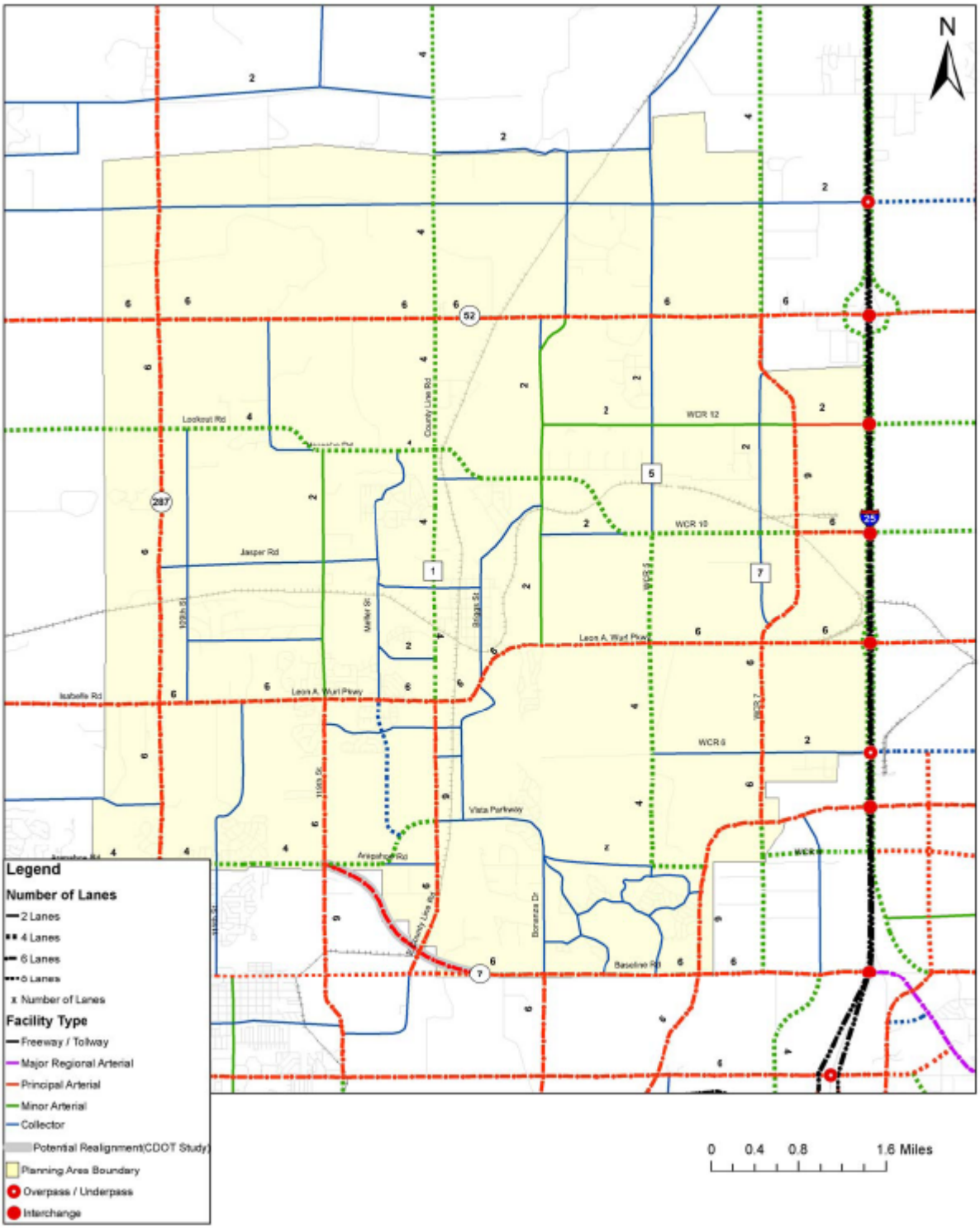


FIGURE 12: CAPACITY IMPROVEMENTS (2030 TO BUILDOUT, ERIE PLANNING AREA)

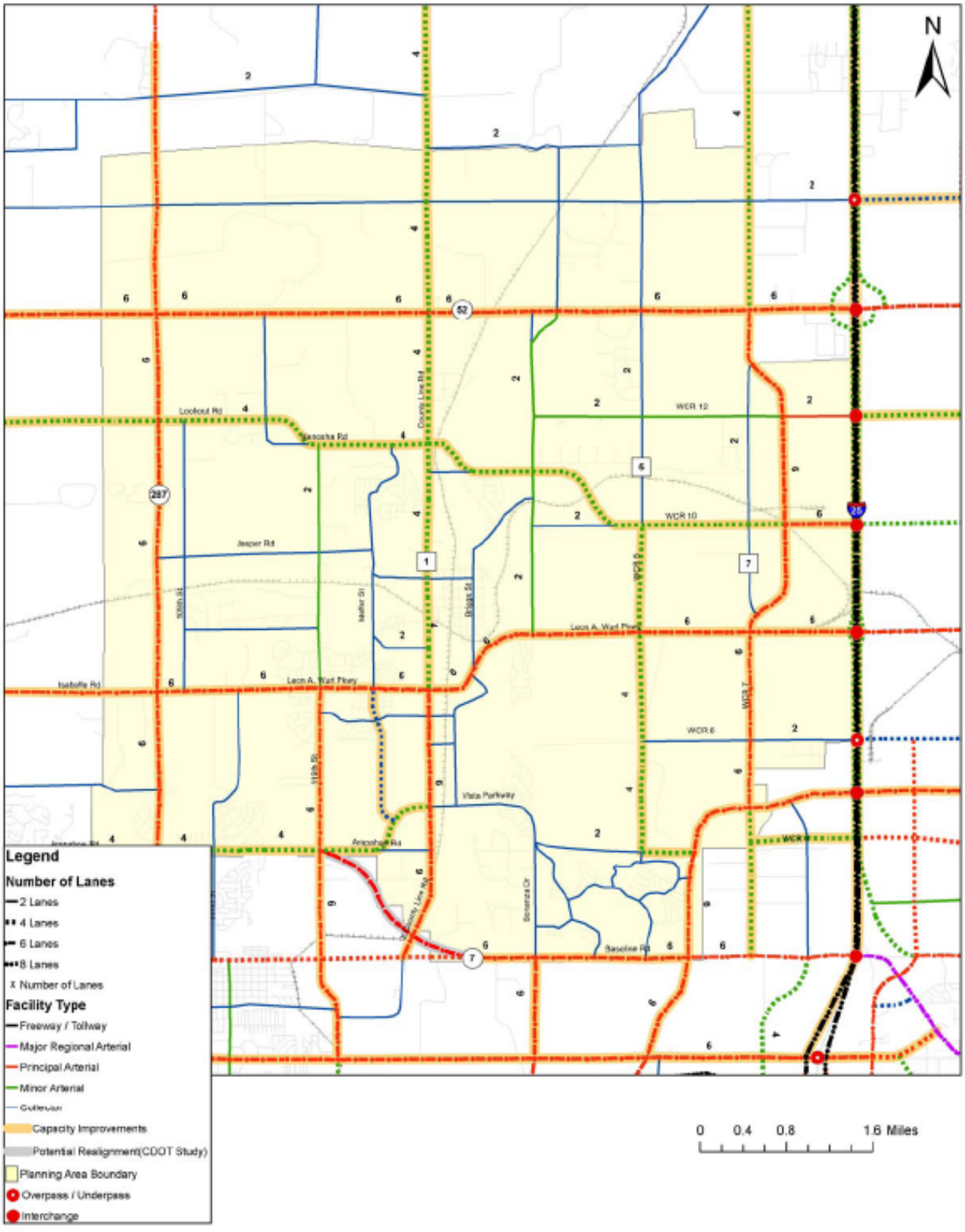
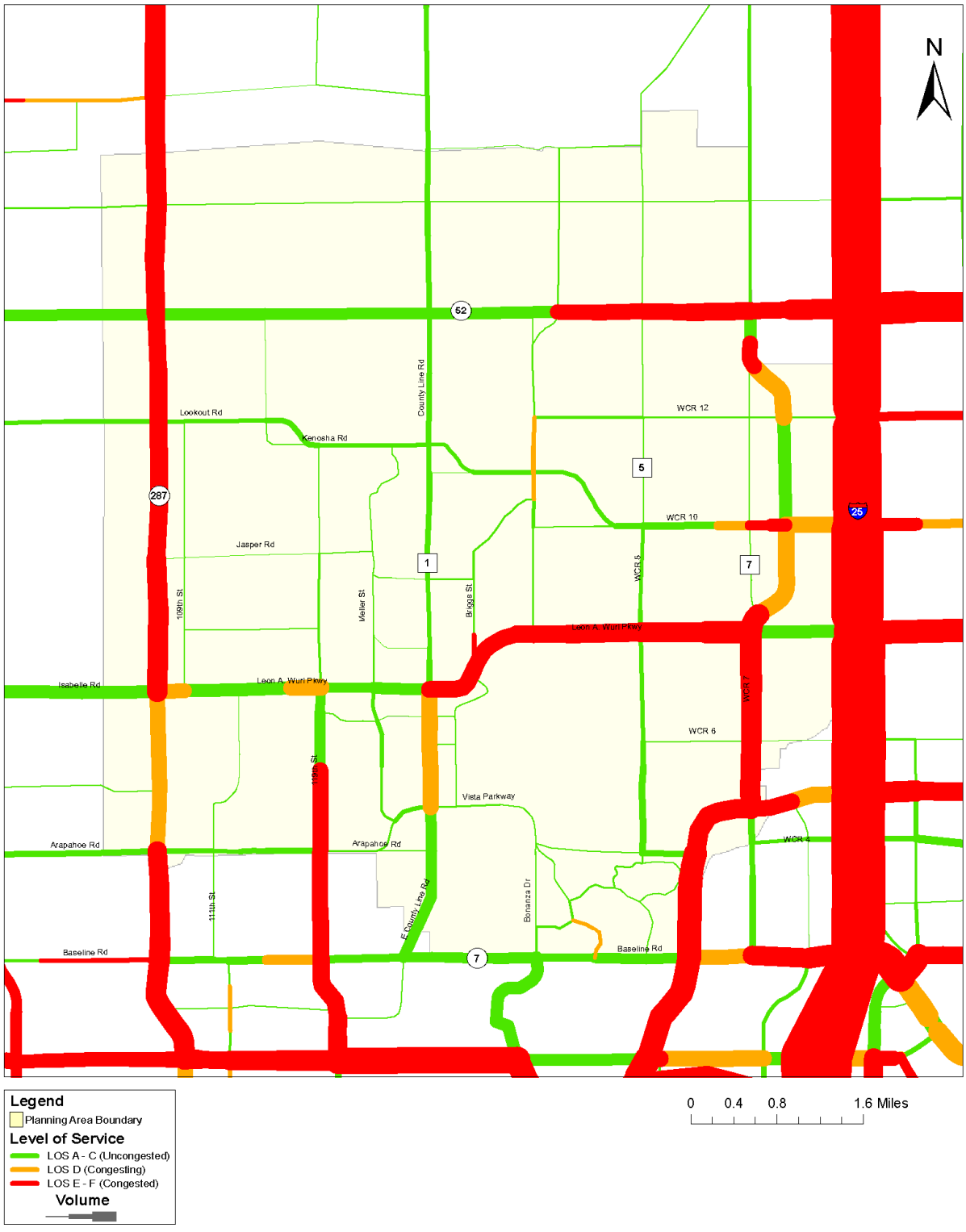


FIGURE 13: ROADWAY LEVEL OF SERVICE FOR THE BUILDOUT NETWORK



SIGNALIZED INTERSECTION WARRANTS

In the Erie Planning Area today, there are only a handful of signalized intersections due to the relative lack of traffic and congestion. Currently, intersections are primarily controlled by stop signs and to a lesser extent yield signs and flashing yellow or red lights. However, this will change as growth occurs and roads are improved.

The Manual on Uniform Traffic Control Devices (MUTCD, 2003 Edition) identifies 8 warrants criteria for the installation of traffic control signals. The MUTCD specifies consistent standards for traffic signals and other traffic control devices and is used by traffic engineers almost universally throughout the country. At least one of the MUTCD signal warrants must be met to justify a signal. For purposes of evaluating the need for future traffic signals, Warrant 3 - Peak Hour, was applied. This warrant looks at the peak hour traffic volumes on the major roadway and the higher volume on the minor roadway to establish signal need. The daily forecasted traffic volumes from the 2015, 2030, and Buildout model runs were converted to peak hour using a 9% peak hour factor and a 55/45 peak directional split.

Table 6 shows the potential warrants by year for each intersection in the planning area. These potential signal warrants are noted only for planning purposes and do not represent a guarantee of signalization at any specific time if at all. There are several other signal warrants that should be reviewed with observed data instead of the forecasted data applied for this analysis. Warrants may change based on development trends, roadway improvements, and other factors. Figure 14 shows these locations graphically.

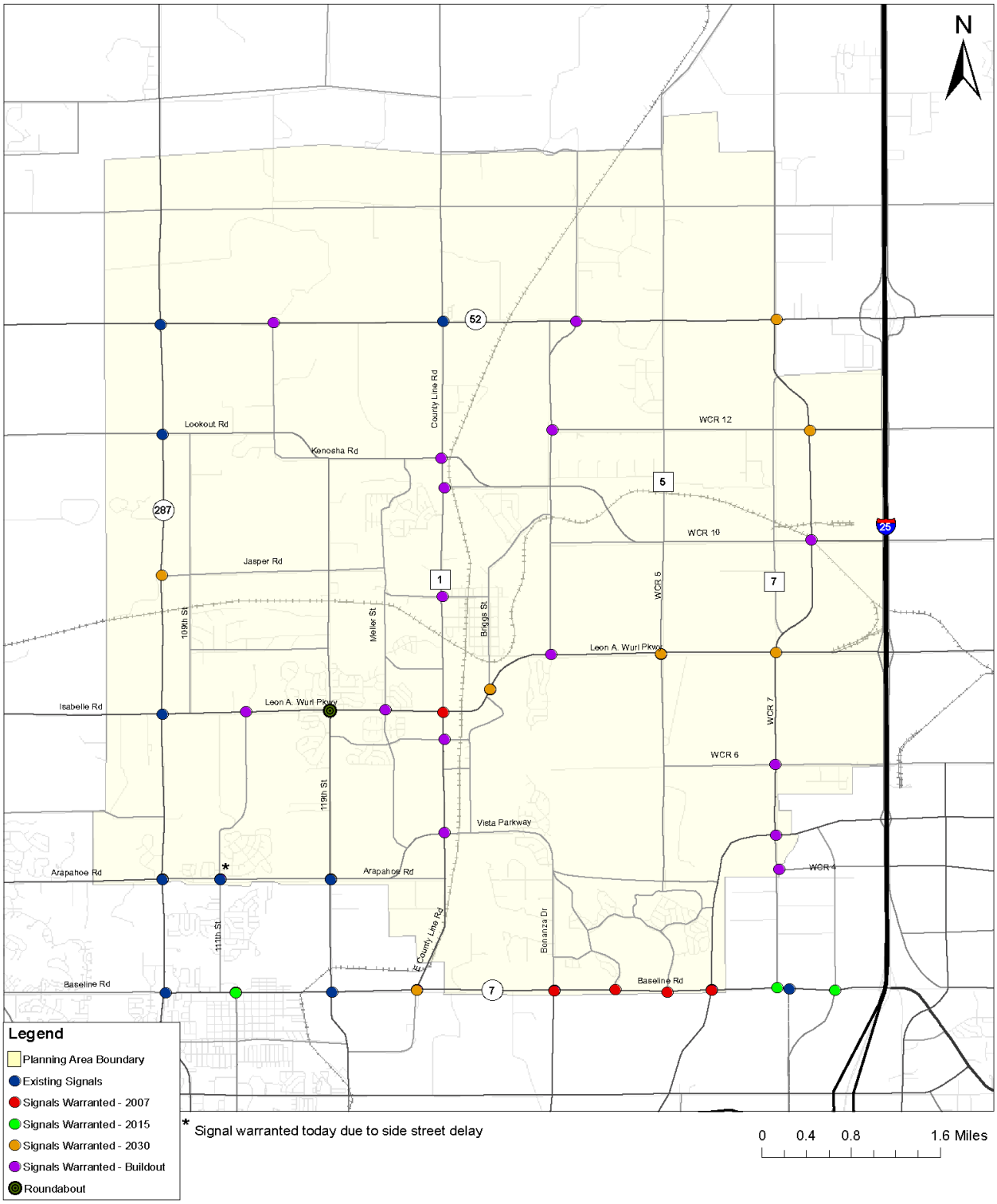
TABLE 6: POTENTIAL TRAFFIC SIGNAL WARRANTS BASED ON PROJECTED PEAK HOUR TRAFFIC VOLUMES IN ERIE'S PLANNING AREA

Cross Street 1	Cross Street 2	2015 Signal Warranted	2030 Signal Warranted	Buildout Signal Warranted
SH-52	County Line Rd.	Yes	Yes	Yes
SH-52	WCR 3	No	No	Yes
SH-52	WCR 5	No	No	No
SH-52	WCR 7	No	Yes	Yes
WCR 12	WCR 3	No	No	Yes
WCR 12	WCR 5	No	No	No
WCR 12	WCR 7	No	No	No
WCR 12	WCR 7 Bypass	n/a	Yes	Yes
Leon Wurl Pkwy.	US 287	Yes	Yes	Yes
Leon Wurl Pkwy.	109th St.	No	No	No
Leon Wurl Pkwy.	111th St.	No	No	Yes
Leon Wurl Pkwy.	119th St.	Roundabout Installation 2008		
Leon Wurl Pkwy.	Meller St.	No	No	Yes
Leon Wurl Pkwy.	County Line Rd.	Yes[3]	Yes	Yes
Leon Wurl Pkwy.	Briggs St.	No	Yes	Yes

Cross Street 1	Cross Street 2	2015 Signal Warranted	2030 Signal Warranted	Buildout Signal Warranted
Leon Wurl Pkwy.	WCR 3	No	No	Yes
Leon Wurl Pkwy.	WCR 5	No	Yes	Yes
Leon Wurl Pkwy.	WCR 7	No	Yes	Yes
Arapahoe	US 287	Yes	Yes	Yes
Arapahoe	111th St.	Yes	No[1]	Yes
Arapahoe	119th St.	Yes	Yes	Yes
Baseline/SH-7	US 287	Yes	Yes	Yes
Baseline/SH-7	N. Public Rd	Yes	Yes	Yes
Baseline/SH-7	119th St.	Yes	Yes	Yes
Baseline/SH-7	County Line Rd.	No	Yes	Yes
Baseline/SH-7	Bonanza/Tennyson St.	No	Yes	Yes
Baseline/SH-7	Vista Pkwy.	Meets Warrants, Installation 2008		
Baseline/SH-7	Mountain View Blvd.	Meets Warrants, Installation 2008		
Baseline/SH-7	Sheridan	Installation 2007		
US 287	Lookout	Yes	Yes	Yes
US 287	Jasper	No	Yes	Yes
US 287	Kenosha?	No	No	No
County Line Rd.	Kenosha	No	No	Yes
County Line Rd.	County Rd. 10.5	No	No	Yes
County Line Rd.	Jasper	n/a	No	No
County Line Rd.	Jay/Cheesman	No	No	Yes
County Line Rd.	Telleen Ave	No	No	No
County Line Rd.	Austin Ave	No	No	Yes
County Line Rd.	WCR 6	No	No	No
County Line Rd.	Arapahoe/Vista Pkwy	No	No	Yes
County Line Rd.	Arapahoe (old)	No	No	No
WCR 7 Bypass	WCR 10	n/a	No	Yes
WCR 7	WCR 7 Bypass	n/a	No	No
WCR 7	WCR 6	No	No	Yes
WCR 7	Sheridan	No	No	Yes
WCR 7	WCR 4	No	No	Yes

Notes:
(1) Arapahoe at 111th Street currently meets a signal warrant for side street delay.
(2) There is an existing signal at Arapahoe and 119th Street.
(3) County Line Road at Leon Wurl Pkwy – meets signal warrants 2007.

FIGURE 14: POTENTIAL TRAFFIC SIGNAL WARRANTS BASED ON PROJECTED PEAK HOUR TRAFFIC VOLUMES



ROADWAY FUNCTIONAL CLASSIFICATION AND DESIGN STANDARDS

Roads generally provide two important functions: mobility and land access. These functions conflict with each other in that the more land access (e.g., driveway openings) provided, the worse the mobility (e.g., vehicle carrying capacity) generally becomes and vice versa. Each road improvement is specifically designed to operate with certain characteristics based on the adjoining land uses, proximity to other facilities, and other factors. A road's functional classification describes these characteristics, and the street design standard identifies specific design parameters, right of way needs, and other measures.

FUNCTIONAL CLASSIFICATION

The functional classification of a roadway reflects its role in the street and highway system and forms the basis for access management, corridor preservation, and street design guidelines and standards. Roadway function tends to vary by facility depending on the amount of urbanization and access management in a particular corridor. Existing roadways may not meet all of the desired characteristics described by their defined functions but can be upgraded to do so when improvements to the roadway are made. Functional classifications are summarized as follows.

FREEWAY/INTERSTATE/TOLLWAY

As divided facilities with no direct land access and no at-grade crossings or intersections, freeways are intended to provide the highest degree of mobility serving higher traffic volumes and longer-length trips. These include I-25, E-470, and the Northwest Parkway.

EXPRESSWAY/MAJOR REGIONAL ARTERIAL

These are similar to freeways but can include some at-grade intersections at cross-streets. Access may be either full or partial control with small amounts of direct land access. Expressways are intended to provide higher levels of mobility rather than local property access. Currently, there are no expressways directly serving the Town of Erie, although SH-7 east of I-25 is envisioned as an expressway in the future.

PRINCIPAL ARTERIAL

Principal arterials permit traffic flow through the urban area and between major destinations. They are of great importance in the transportation system since they connect major traffic generators, such as business districts, to other major activity centers. Principal arterials carry a high proportion of the total urban travel on a minimum of roadway mileage. In urban areas, a gridded pattern of arterials is often recommended with 1-mile spacings for principal arterials.

Since movement and not necessarily access is the primary function of principal arterials, access management is essential to preserve capacity and enhance safety. Medians can be used to control potential conflict points and to separate opposing traffic movements. Left turn lanes are essential at intersections to maintain mobility for through traffic. Right turn deceleration lanes are desirable at intersections with significant turning activity. Principal arterials are either 4 or 6 lanes, with additional right-of-way necessary to accommodate auxiliary lanes in some cases.

Erie's design standards for principal arterials include raised medians and an 8-foot wide detached path on both sides of the roadway.

MINOR ARTERIAL

Minor arterials collect and distribute traffic from principal arterials and expressways to streets of lower classification and, in many cases, allow traffic to directly access destinations. They serve secondary traffic generators such as community business centers, neighborhood shopping centers, multifamily residential areas, and traffic between neighborhoods. Access to land use activities is generally permitted, but should be consolidated, shared, or limited to the extent possible. Erie's street design standards specify 4-lane minor arterials with off-street paths, parkways, and raised medians.

COLLECTOR STREET

Collector streets provide for land access and traffic circulation within and between residential neighborhoods and commercial and industrial areas. They distribute traffic movements from these areas to the arterial streets. Collectors do not typically accommodate long through trips and are not continuous for long distances. In areas where arterial streets are adequately spaced, collector streets should penetrate but not necessarily completely traverse through residential areas. Individual access from residential lots should be discouraged, particularly where bicycle lanes or routes are provided. The cross section of a collector street may vary depending on the scale and density of adjacent land uses and the desired character of the local area. Center turn lanes should be considered on collector streets adjacent to nonresidential development.

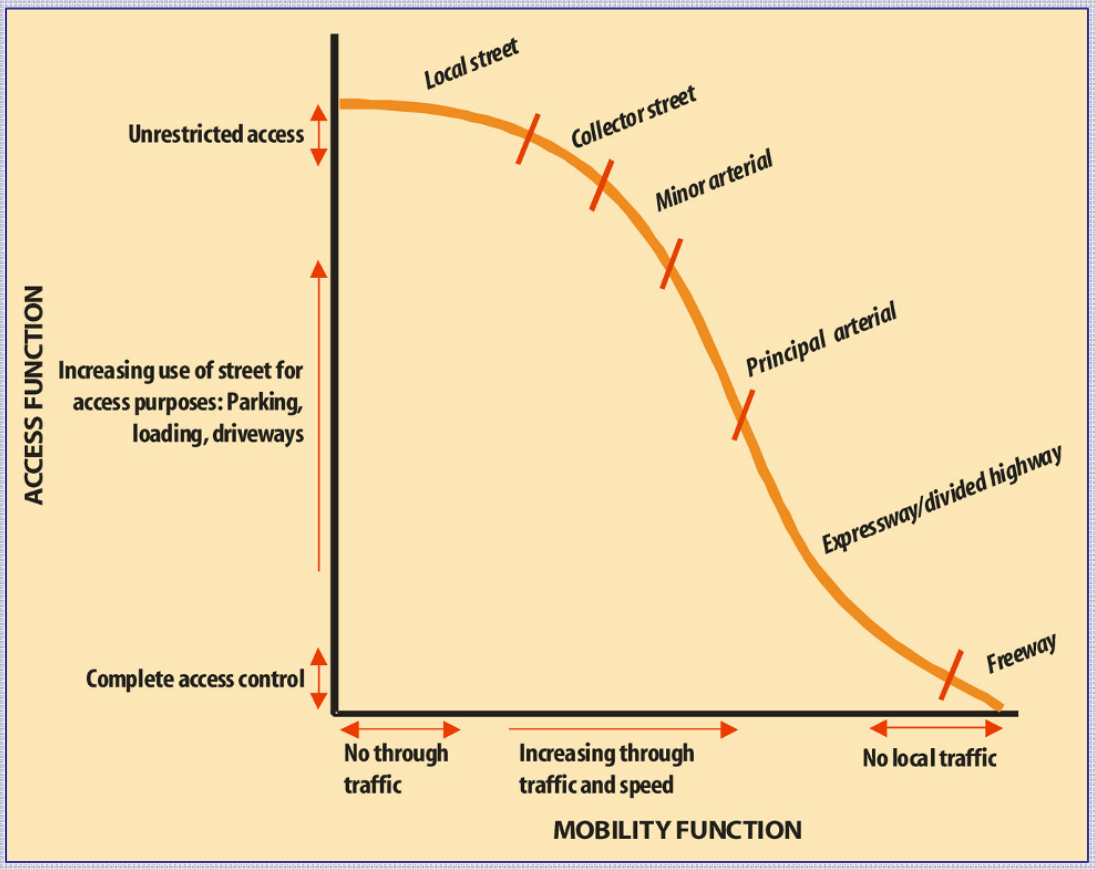
Erie's street standards include designs for collectors with raised medians, collectors with flush medians, collector streets with no parking or median, and residential collector streets with on-street parking.

Local Streets

Local streets provide direct access to adjacent land uses. Direct access from a local street to an arterial is discouraged. Local streets offer the lowest level of mobility and the highest level of local property access. Traffic volumes are typically low and speeds relatively slow. Local streets typically make up the largest percentage of roadway mileage yet carry disproportionately low traffic volumes. Erie has roadway design standards that vary for local streets that vary based on traffic volumes.

Roadway Functions: Access and Mobility

The two primary roadway functions of access and mobility are represented in the graphic below for the various roadway classifications.



STREET DESIGN STANDARDS

Each roadway type, or functional classification, is further described by the cross-sections of Erie's Street Design Standards. The Town reviews and updates the standards on a periodic basis. Those shown in the figures below are the current standards in place at the time of print. Street design standards are primarily intended for new roads. To the extent possible, they should be applied to widened or reconstructed roads in the built environment as improvements occur. Existing roads may not meet current design standards depending on when the road was constructed and what standards were in place at the time.

Figures 15-23 identify the ultimate mid-block cross-sections for each roadway functional classification, although scaled back designs are allowed for initial and intermediate phases.

FIGURE 15: STREET DESIGN STANDARD - PRINCIPAL ARTERIAL (6 LANES WITH MEDIAN)

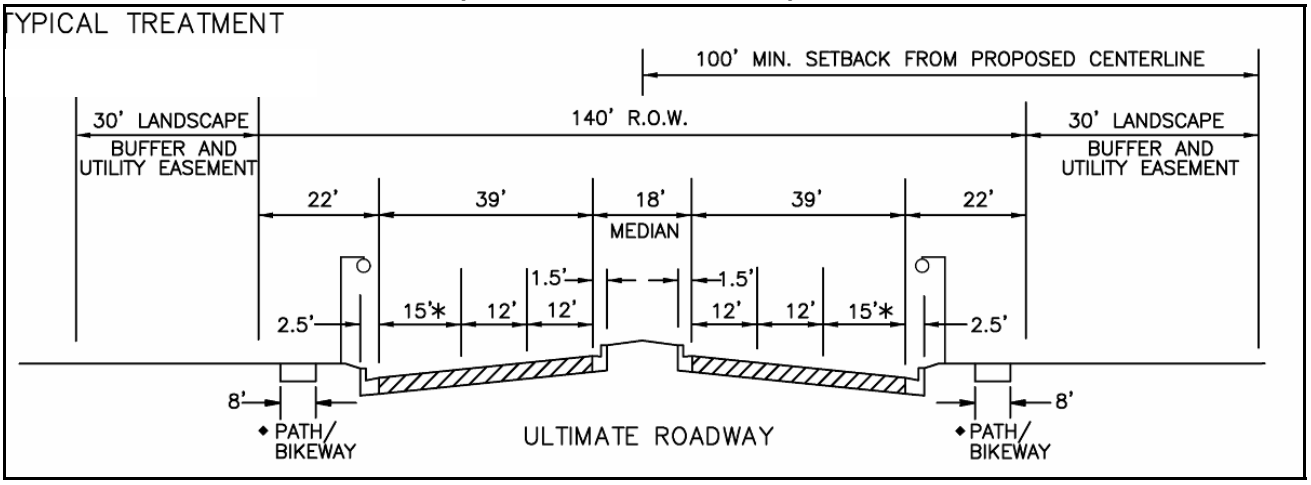


FIGURE 16: STREET DESIGN STANDARD - MINOR ARTERIAL (4 LANES WITH MEDIAN)

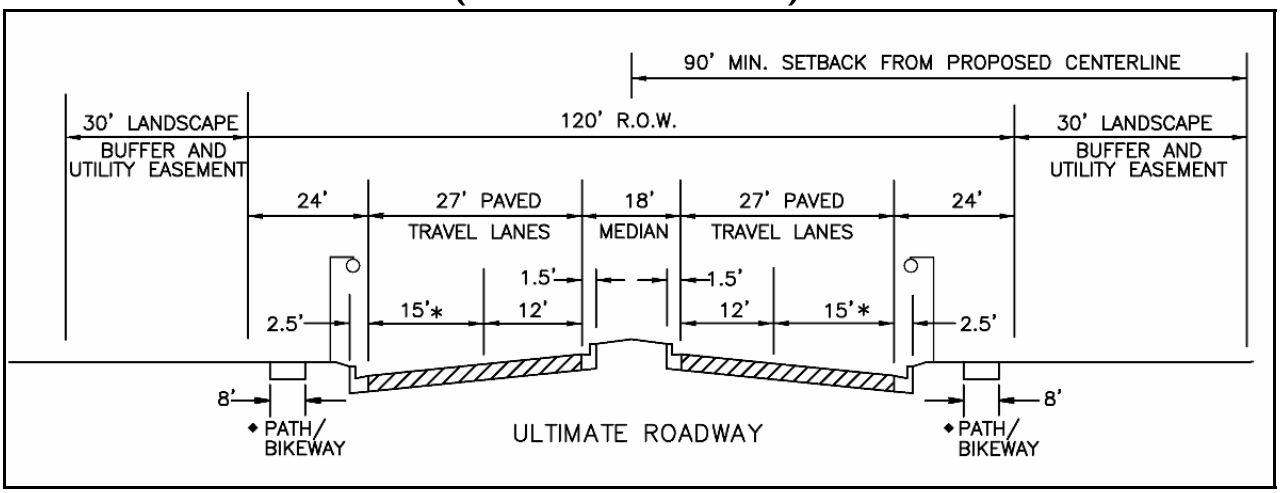


FIGURE 17: STREET DESIGN STANDARD - COLLECTOR (2 LANES, NO PARKING OR MEDIAN)

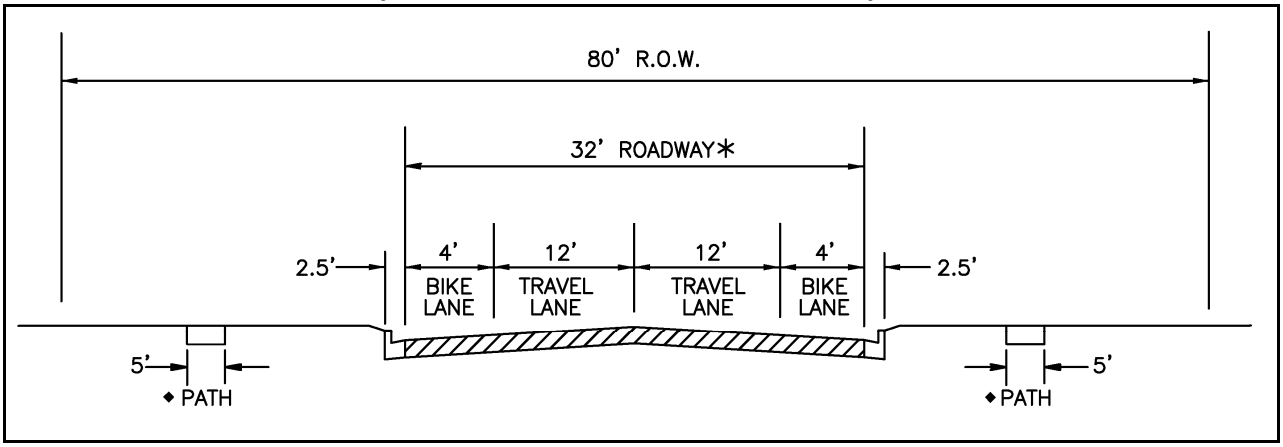


FIGURE 18: STREET DESIGN STANDARD - RESIDENTIAL COLLECTOR (2 LANES WITH ON-STREET PARKING)

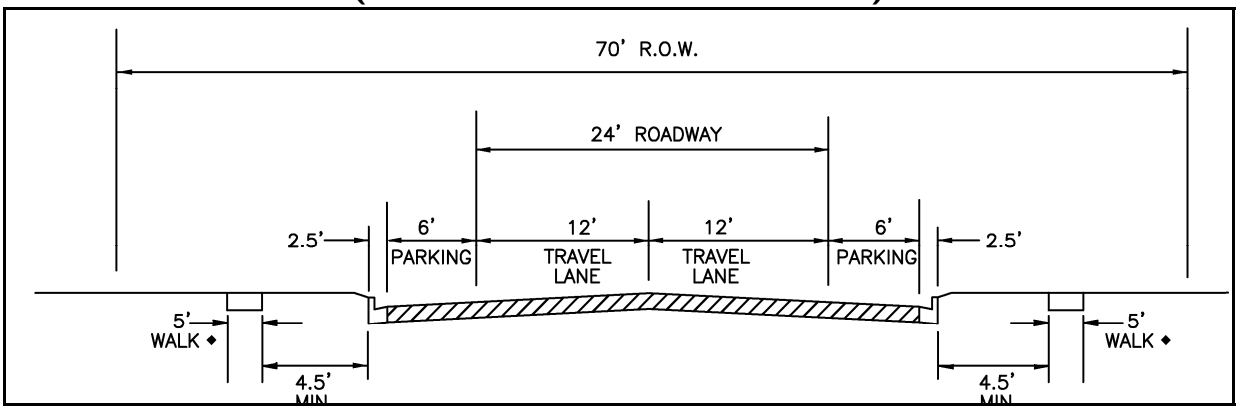


FIGURE 19: STREET DESIGN STANDARD - COLLECTOR (2 LANES WITH RAISED MEDIAN)

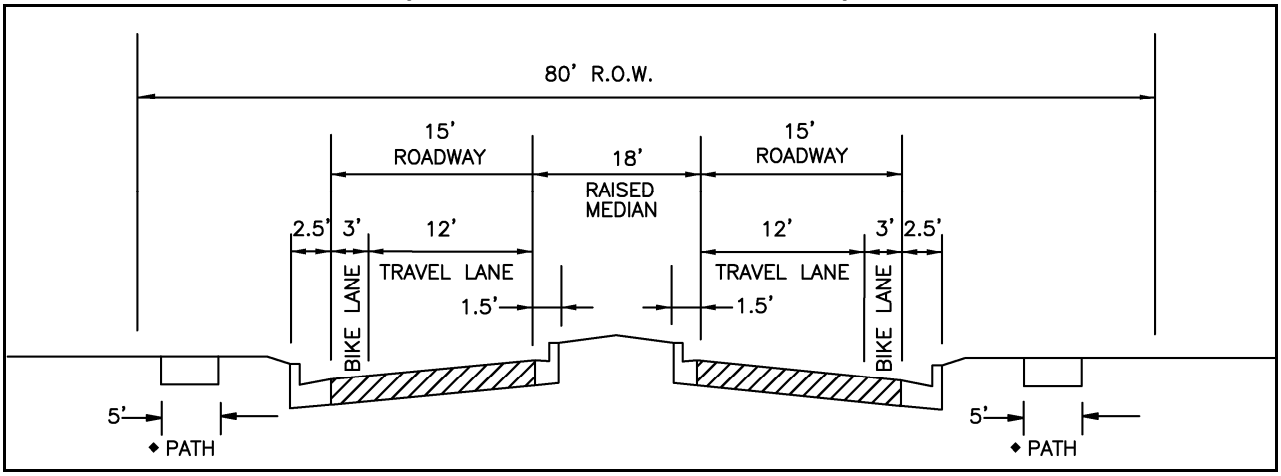


FIGURE 20: STREET DESIGN STANDARD - COLLECTOR (2 LANES WITH CENTER TURN LANE)

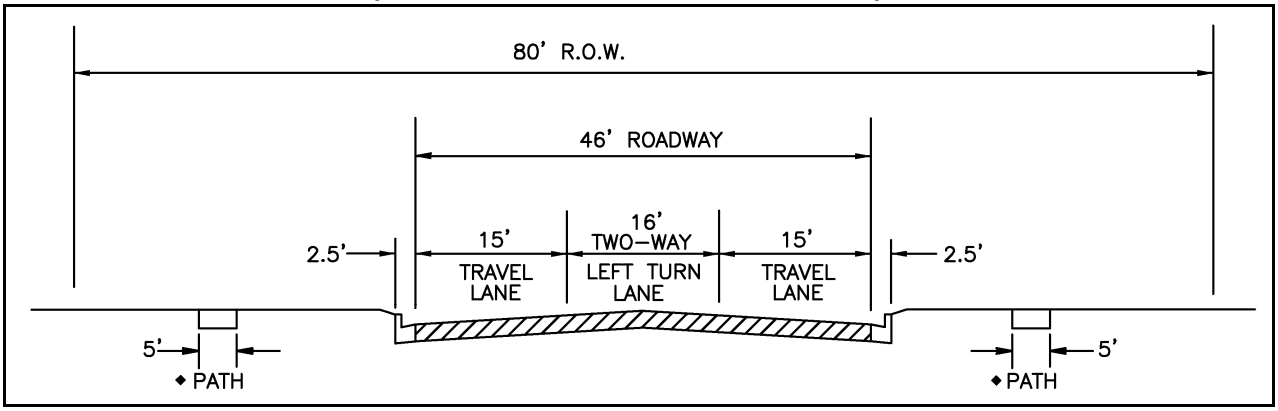


FIGURE 21: STREET DESIGN STANDARD - LOCAL STREETS (2 LANES WITH PARKING)

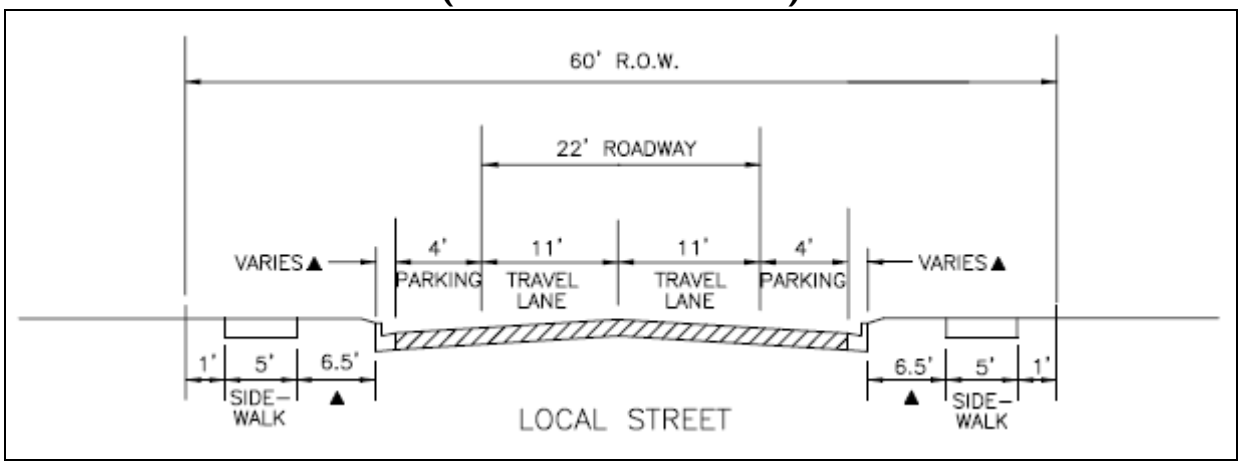
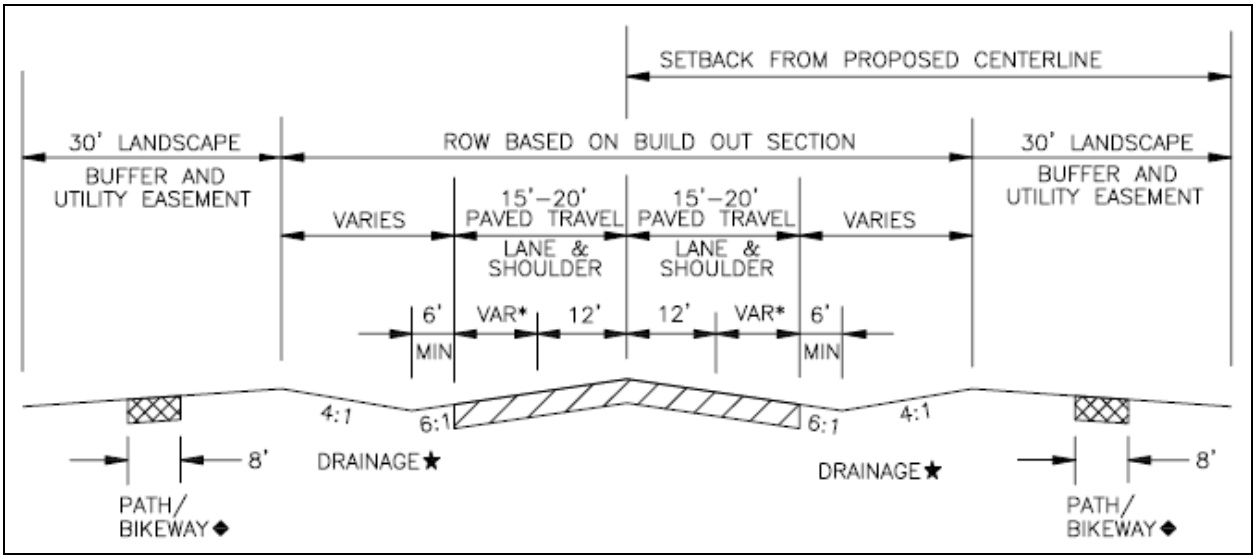


FIGURE 22: STREET DESIGN STANDARD - RURAL ARTERIAL (2 LANES)



MULTI-MODAL TRANSPORTATION

PEDESTRIAN AND BICYCLE FACILITIES

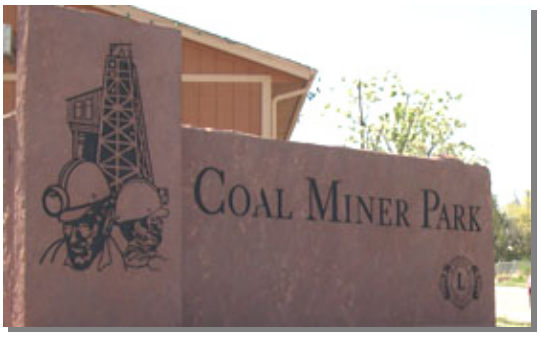
As the street design standards presented in the previous chapter demonstrate, Erie is committed to a roadway system that includes accommodation of pedestrian and bicycle facilities for new and improved roadways. Erie's 2005 Open Space and Trails Advisory Board Trail Connectivity Report identify off-street trails that further enhance the opportunities for non-motorized transportation in and around the Town.

TRANSIT SERVICE

As part of the development of the *Erie Comprehensive Plan*, some questions were raised with regard to future transit opportunities for connecting Erie to nearby cities and the rest of the Denver metro area. This section identifies some of the transit issues and opportunities that could affect Erie.

BACKGROUND

Several areas in the Town of Erie are included in the Regional Transportation District's (RTD) service area. Previous to 1993, the RTD service area was generally defined by county boundaries. Boulder County was included, but Weld County was not, so the parts of Erie in Boulder County were inside the service area.



In 1993, the law was changed to state that if any portion of a municipality is wholly or partially in RTD, then any subsequent annexations are also in the RTD service area. As Erie grew and annexed lands in Weld County, those lands were included in the service area. Today, all of the Boulder County side and the lands annexed on the Weld County side since 1993 are in the RTD service area.

CURRENT BUS ROUTES

Currently there are no RTD bus routes directly serving the interior of Erie, although two routes serve the western fringe of the town. The closest is the regional "L" route that uses I-25, SH-52, and US 287. RTD's regional routes typically provide morning and evening peak period service between downtown Denver and other communities with limited stops. The "L" bus doesn't stop on I-25, and the closest stop to Erie on SH-52 is at 115th. Along US 287 there a handful of stops, such as at Arapahoe Road; but no direct service into Erie.

The local Jump route travels SH-7/Arapahoe Rd. and stops near Erie at SH-7 and 111th Street. It is proposed that the Jump be extended to provide service between Erie and Boulder in the short-term future.

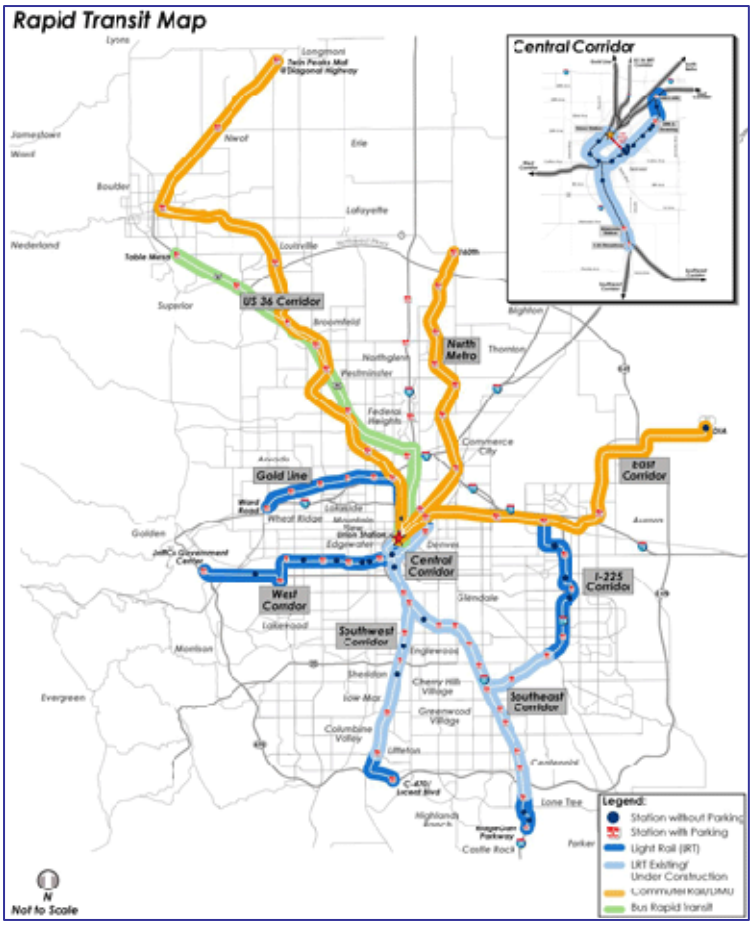
In 2008, a new bus route will be started and operated by RTD that connects the Town of Erie to the Boulder regional bus transit grid via Arapahoe Road and 95/96th Streets. The route is currently planned to provide transit service from the new Erie Community Center and Erie Community Library at the intersection of County Line Road and Leon Wurl Parkway. The new service is planned to run every 30 minutes from 6 AM to 8 PM Monday through Saturday. The bus line is being paid for with a two-year, $1.2 million federal grant with another $1.2 million in matching funds from Boulder County.

FASTRACKS

RTD's FasTracks program is a 12-year comprehensive plan to build and operate high speed rail lines and expand and improve bus service and park-n-Rides throughout the Denver metropolitan area. FasTracks was passed in the November 2004 vote. Two rail lines, the US 36 Corridor and the North Metro Corridor, will serve areas north of Denver and are of interest to Erie.

Erie will not be served directly by either of the two rail lines serving the north Denver metro area. However, there may be opportunities to connect Erie with other communities as these corridors are designed and implemented.

The North Metro Corridor is an 18-mile commuter rail line that extends from Union Station in downtown Denver to north of 160th Avenue (SH-7) in Thornton and Adams County along the Union Pacific Railroad right-of-way east of I-25. It is scheduled to open in 2015. When that occurs, there will be a significant reconfiguring of local bus routes to serve as a feeder system for the rail line.



Parking will be provided at the northern terminus of the line. The Park-n-Ride lot and feeder bus routes provide long-term transit opportunities for Erie.

The Environmental Impact Statement (EIS) process for the North Metro Corridor began in the summer of 2006 and is scheduled to be completed in 2008. Although it is difficult to speculate on how the local/feeder bus system will be re-configured, Erie's participation in the process will increase the community's opportunity for transit connections.

The US 36 Corridor includes commuter rail and bus rapid transit to connect Boulder and Longmont to downtown Denver via the SH119/Diagonal Highway and US 36. The EIS process for this corridor is underway; and opening day is scheduled for 2014. This corridor does not necessarily offer much for Erie due to its alignment, but some transit opportunities exist through future connections between Erie and the Boulder and Longmont communities.

BOULDER COUNTY TRANSIT CONSORTIUM

The Boulder County Consortium of Cities' Regional Transit Committee (BCC-RTC) studies regional transit issues and problems common to Boulder County, including the county and its municipalities and the City and County of Broomfield.

The technical committee that supports the RTC is reviewing options for increased bus service throughout Boulder County, including connecting Erie with Boulder by extending the Jump route or adding a new route along Valmont and Leon Wurl Pkwy.

SOUTHWEST WELD COUNTY TRANSIT ISSUES

Southwest Weld County is experiencing significant growth, and this trend is expected to continue in the future. In particular, the communities of Frederick, Dacono, and Firestone and the Mixed Use Development District east of Longmont are growing very quickly.

In the mid to late-1990s, a vote was held to bring southwest Weld County into RTD so that transit service could be provided in this fast-growing area and long range transit planning could be conducted. The voters rejected the proposal. However, the continued growth in the affected communities has precipitated new discussions for another vote, which could occur in the next few years.

NORTH I-25 EIS

The Colorado Department of Transportation (CDOT) is sponsoring an environmental impact statement (EIS) study for the North I-25 Corridor between the Colorado North Front Range and the Denver metro area.

The study is evaluating several options for the corridor including High Occupancy Vehicle lanes, express toll/High Occupancy Toll lanes, bus rapid transit, intercity bus service, general purpose freeway lanes and possible routes and station locations for passenger rail from Denver Union Station to Fort Collins, Greeley, and points between.

One of the potential results of the EIS process could include fixed-guideway rail transit along I-25 connecting with either the US 36 Corridor in Longmont with a station location in Erie or the North Metro Corridor in Thornton.

INTERMODAL TRANSPORTATION

AIRPORT

Erie's *Municipal Airport Master Plan* (February 7, 2002) serves as a guide for future development and infrastructure improvements for the Town's airport.

RAILROADS

The North I-25 Corridor EIS project that has been previously identified will examine commuter rail options that could affect the Town of Erie. One location that a transit station has been considered within the Town is in the vicinity of WCR-7 and WCR-10. If in fact the alternative with this station is selected, then additional planning would be warranted to maximize intermodal opportunities to integrate the commuter rail and station in the community.

PLAN IMPLEMENTATION

COST OF IMPLEMENTATION

The implementation of the planned roadway improvements in the Town will be conducted and funded by the state/CDOT, Town, Boulder, and Weld Counties, surrounding cities, developers and other sources. The LOS D standard for roadway and intersection performance was used to identify necessary capacity improvements for 2015, 2030, and Buildout. Infrastructure cost estimates were estimated based on the type of improvement using the unit costs shown in Table 7.

TABLE 7: UNIT COSTS FOR ROADWAY CAPACITY IMPROVEMENTS (2007 $$)

Category	Improvement	Unit Costs per Linear Foot (2007 $$)	Description	Unit Cost per Centerline Mile (2007 $$)	Unit Cost per Lane Mile (2007 $$)
New Roads on New Right-of-Way	New 2-lane Minor Arterial	$435	These are new roadways on new rights of way.	$2,296,800	$1,148,400
	New 4-lane Minor Arterial	$600		$3,168,000	$792,000
	New 2-lane Principal Arterial	$550		$2,904,000	$1,452,000
	New 4-lane Principal Arterial	$900		$4,752,000	$1,188,000
Road Widening - Significant Reconstruction	Widen 2-lane Collector to 4-lane Minor	$518	For these projects, the improvement will generally be an addition to existing roads of acceptable quality. These could include phased roadway construction in which one side of the road is built and operates as a 2-lane, two-way road until the second side is built within a relatively short time.	$2,732,400	$1,366,200
	Widen 2 to 4 lanes (Minor)	$518		$2,732,400	$1,366,200
	Widen 2 to 4 lanes (Principal)	$700		$3,696,000	$1,848,000
	Widen 4 to 6 lanes (Minor)	$621		$3,278,880	$1,639,440
	Widen 4 to 6 lanes (Principal)	$840		$4,435,200	$2,217,600
	Widen 2 to 6 lanes (Principal)	$1,080		$5,702,400	$1,425,600
	Widen 2-lane Minor to 6-lane Principal	$1,080		$5,702,400	$1,425,600
Road Widening - Addition of New Lanes	Widen 2 to 4 lanes (Minor)	$311	These widenings also include significant reconstruction of a low quality, existing road due to outdated design, deterioration, or other condition. Another example would be an older road with significant access control issues that would be addressed with the improvement.	$1,639,440	$819,720
	Widen 2 to 4 lanes (Principal)	$420		$2,217,600	$1,108,800
	Widen 4 to 6 lanes (Minor)	$373		$1,967,328	$983,664
	Widen 4 to 6 lanes (Principal)	$504		$2,661,120	$1,330,560

Unit costs are assumed to include the following components:

- Equipment mobilization
- Minor demolition
- Site preparation (clearing, grubbing, tree and shrub removal, etc.)
- Earthwork (excavation, shaping, compaction, grading, etc.)
- Base course
- Minor structures/culverts
- Sidewalks/bike lanes (where applicable)
- Pavement and striping
- Landscaping
- Project management and administrative costs
- Contingencies
- Noise walls required to mitigate existing conditions

Unit costs do not include:

- Right-of-way
- Demolition of significant structures
- Construction of major structures
- Noise walls required to mitigate conditions due to growth

The following assumptions were made in developing the estimated improvement costs:

- LOS D was used in the alternatives analysis to estimate the improvement needs.
- Only arterial street improvements were included in the infrastructure cost estimates.
- New collector streets were assumed to be funded by private development, so their costs were not included.
- The arterial street improvement costs are split into those on the state highway system and those that are the responsibility of the Town of Erie.
- There are no costs assumed for cases in which the roadway functional classification changes but the number of lanes do not. In some cases, such as a 2-lane collector changing to a 2-lane minor, this could occur without any actual improvement to the roadway. On the other hand, there may be improvements made. In any case, no costs were assumed, so there may need to be some adjustment for these conditions.
- The S-curve on SH-7 was not included in the cost estimates.
- Interchanges on I-25 were not included in the cost estimates.
- New traffic signals were not included in the cost estimates.

APPENDICES

APPENDIX A

Socioeconomic data for the years 2001, 2015, and 2030 is shown in Table A-1 and Figures A-1 and A-2 for households and employment in the Erie planning area. These figures were applied in the travel model to estimate future traffic volumes and roadway performance measures for developing both the *Comprehensive Plan* and *Transportation Plan*.

The 2030 socioeconomic data was developed based on the land use maps and control totals for households, population, and employment growth developed by the consultant that developed the *Comprehensive Plan*. Employee conversion factors and floor area ratios vary by land use category. For the employment control totals, a ratio of 0.60 jobs per household was used for new growth. When combined with the existing ratio of approximately 0.40 jobs per household for the planning area, the resulting 2030 ratio averages to 0.57 jobs per household. The socioeconomic growth between 2001 and 2030 was allocated to geographic areas in the planning area based on priority growth patterns provided by Town planners.

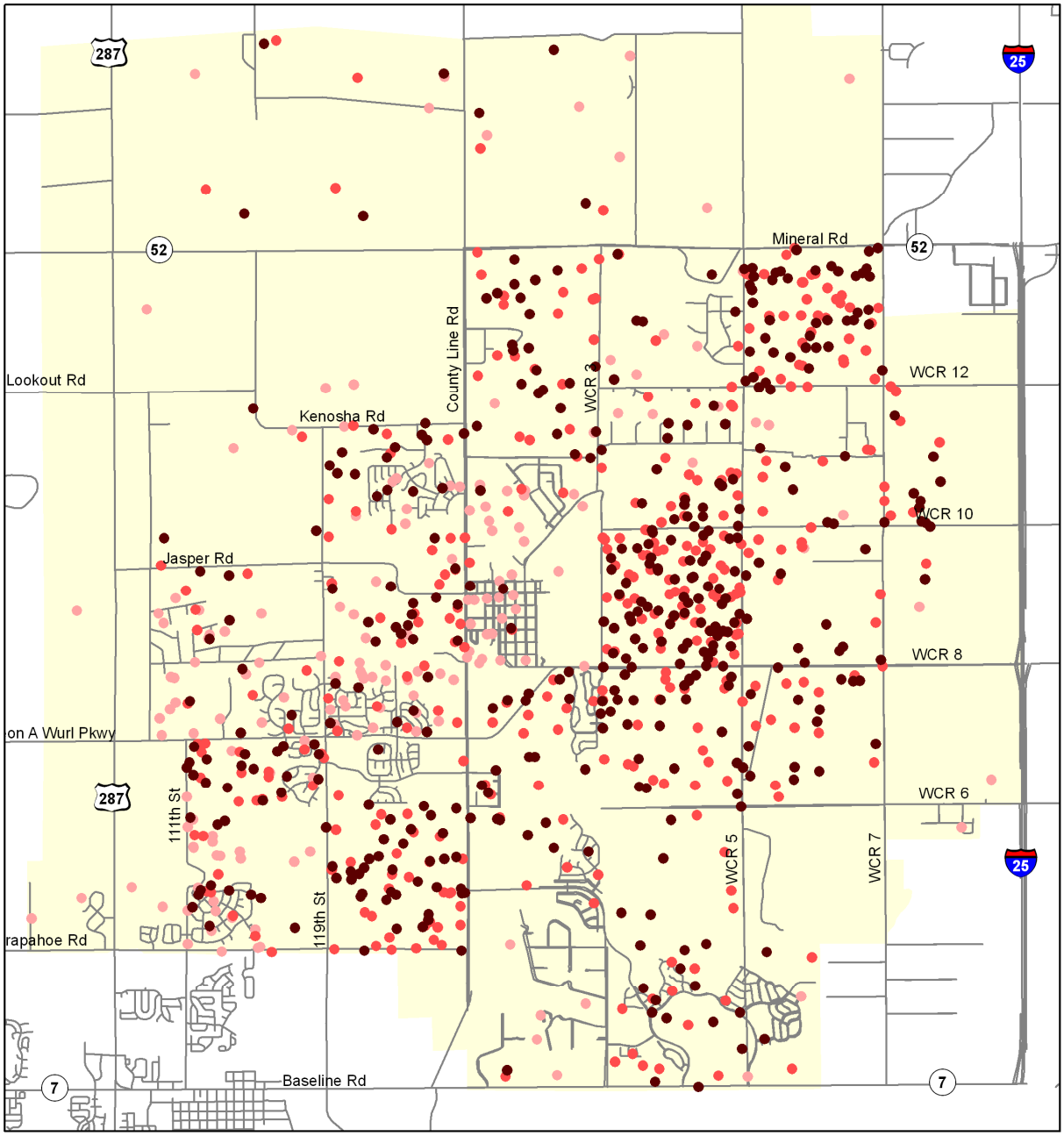
Buildout estimates for households and employment were calculated in a similar manner but were not constrained by control totals. Rather, the Buildout estimates include all of the demographic activity that can fit inside the Erie planning area based on acreage of land uses, conversion factors, and floor area ratios where applicable.

TABLE A-1: SOCIOECONOMIC DATA IN THE ERIE PLANNING AREA

	2001	2015	2030	Buildout (Capacity)
Households	3,357	10,217	18,197	25,927
Population	9,414	28,467	50,658	71,646
Basic Employment	761	996	1,320	6,520
Retail Employment	203	2,801	5,190	39,982
Service Employment	391	2,106	3,753	28,903
Total Employment	**1,355**	**5,903**	**10,263**	**75,405**
Persons per Household	2.80	2.79	2.78	2.76
Jobs/Household	0.40	0.58	0.56	2.91

As Table A-1 indicates, the 2030 socioeconomic data does not correspond to a Buildout condition for the Erie planning area. By the year 2030, the socioeconomic assumptions suggest the residential activity is about 71 percent of Buildout capacity. Employment activity for the year 2030 is about 14 percent of Buildout capacity. Clearly there will a significant amount of undeveloped land in the Erie Planning Area in the year 2030. Estimated household and employment capacities based on Buildout of the Erie Land Use plan are provided in Table A-1 to support a subsequent transportation analysis of Buildout conditions in order to identify right-of-way preservation needs for future transportation facilities.

FIGURE A-1: HOUSEHOLDS – 2001, 2015, 2030

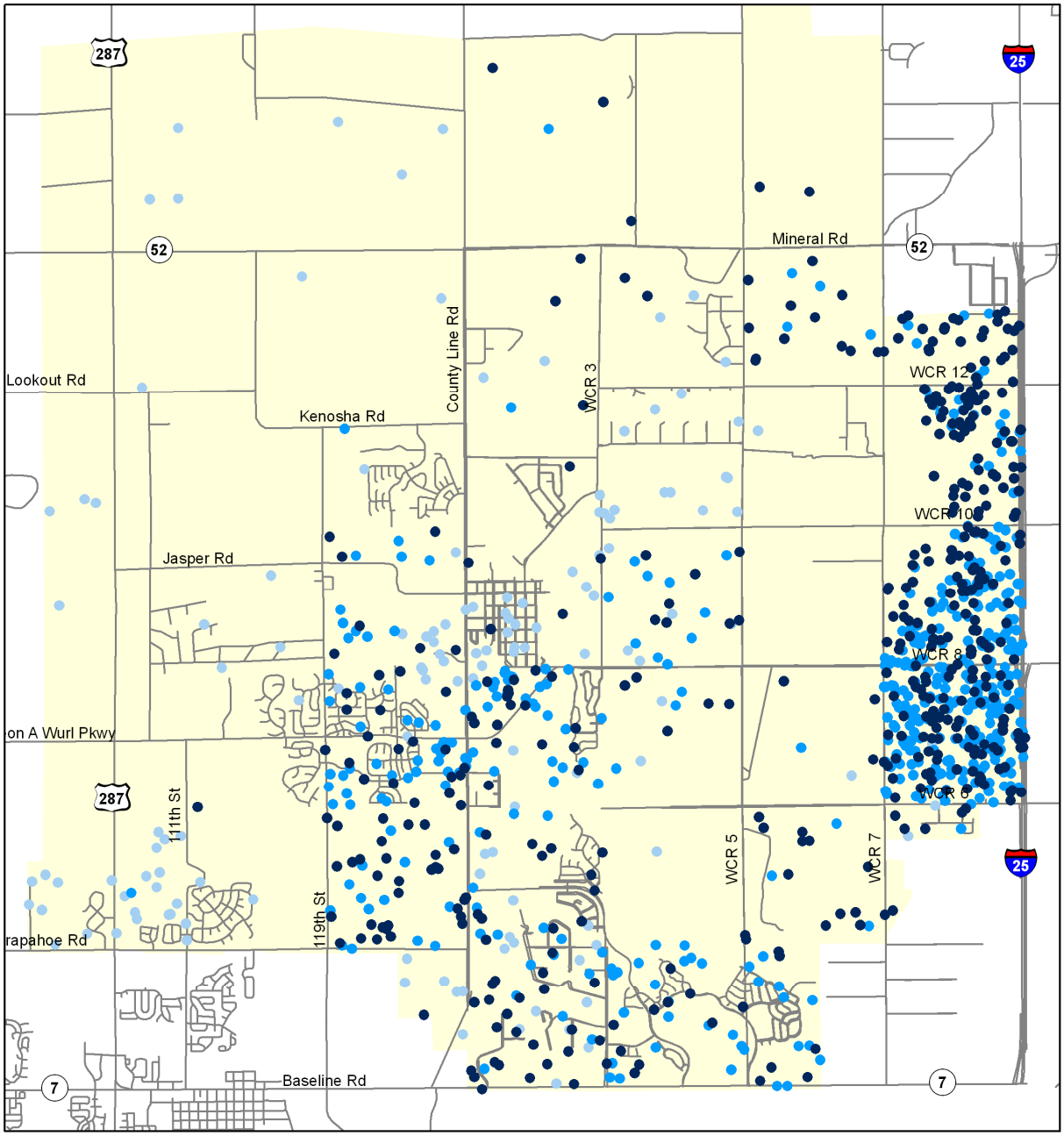


Legend

- Comprehensive Plan Area
- 20 Dwelling Units (2001)
- 20 Additional Dwelling Units (2001 - 2015)
- 20 Additional Dwelling Units (2015 - 2030)

0 0.5 1
Miles

FIGURE A-2: EMPLOYMENT – 2001, 2015, 2030



Legend

- Comprehensive Plan Area
- 10 Employees (2001)
- 10 Additional Employees (2001 - 2015)
- 10 Additional Employees (2015 - 30)

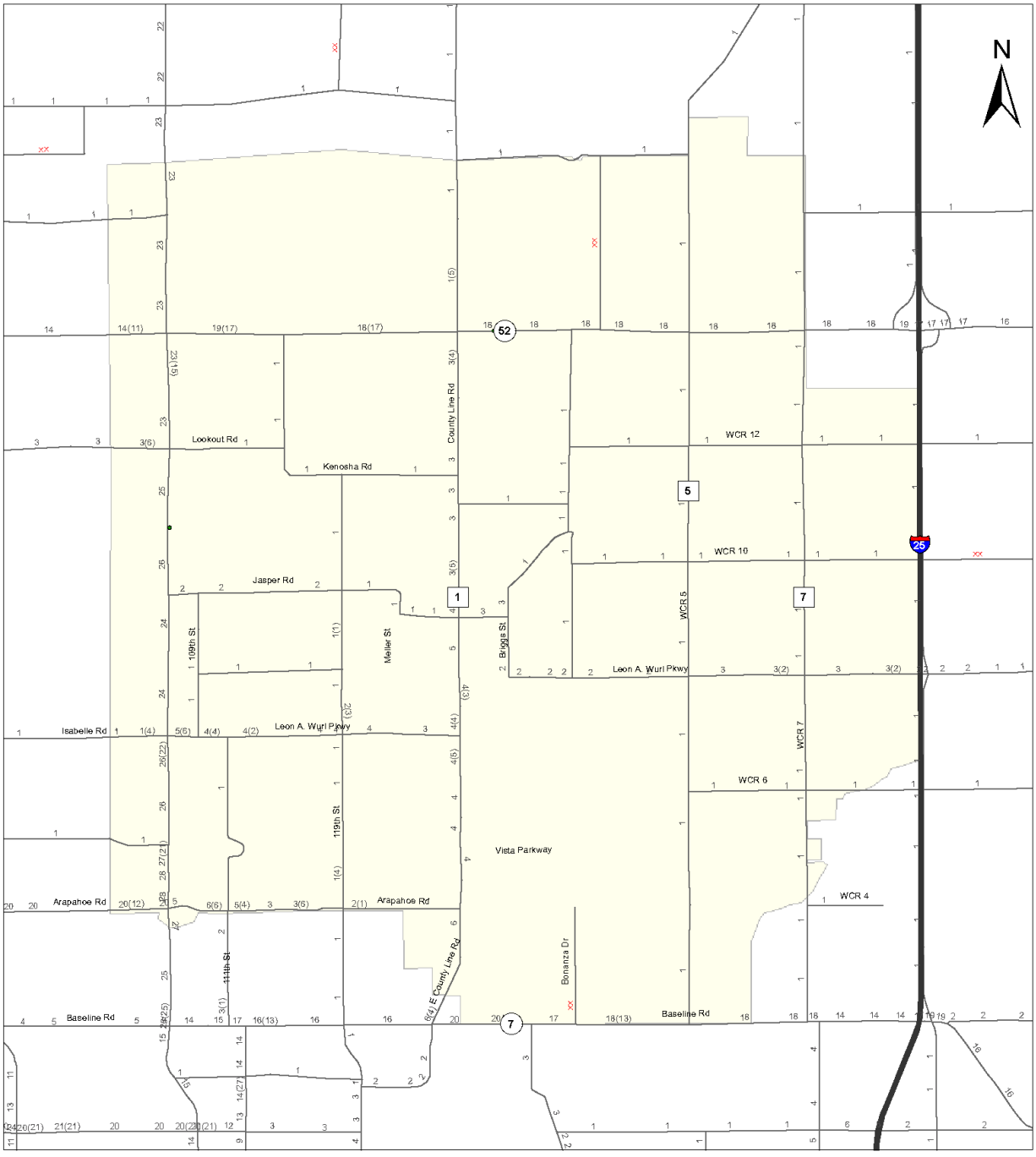
0 0.5 1
Miles

The 2015 socioeconomic data was developed based on an interpolation of the 2001 and 2030 datasets to develop control totals for the Erie planning area. The interpolation was done in two phases because the growth rate was assumed to slow after 2007. The socioeconomic growth between 2001 and 2015 was then allocated to geographic locations in the planning area based on priority growth patterns identified by Town planners. The 2015 dataset was developed to support an analysis of interim year needs in the Town.

APPENDIX B

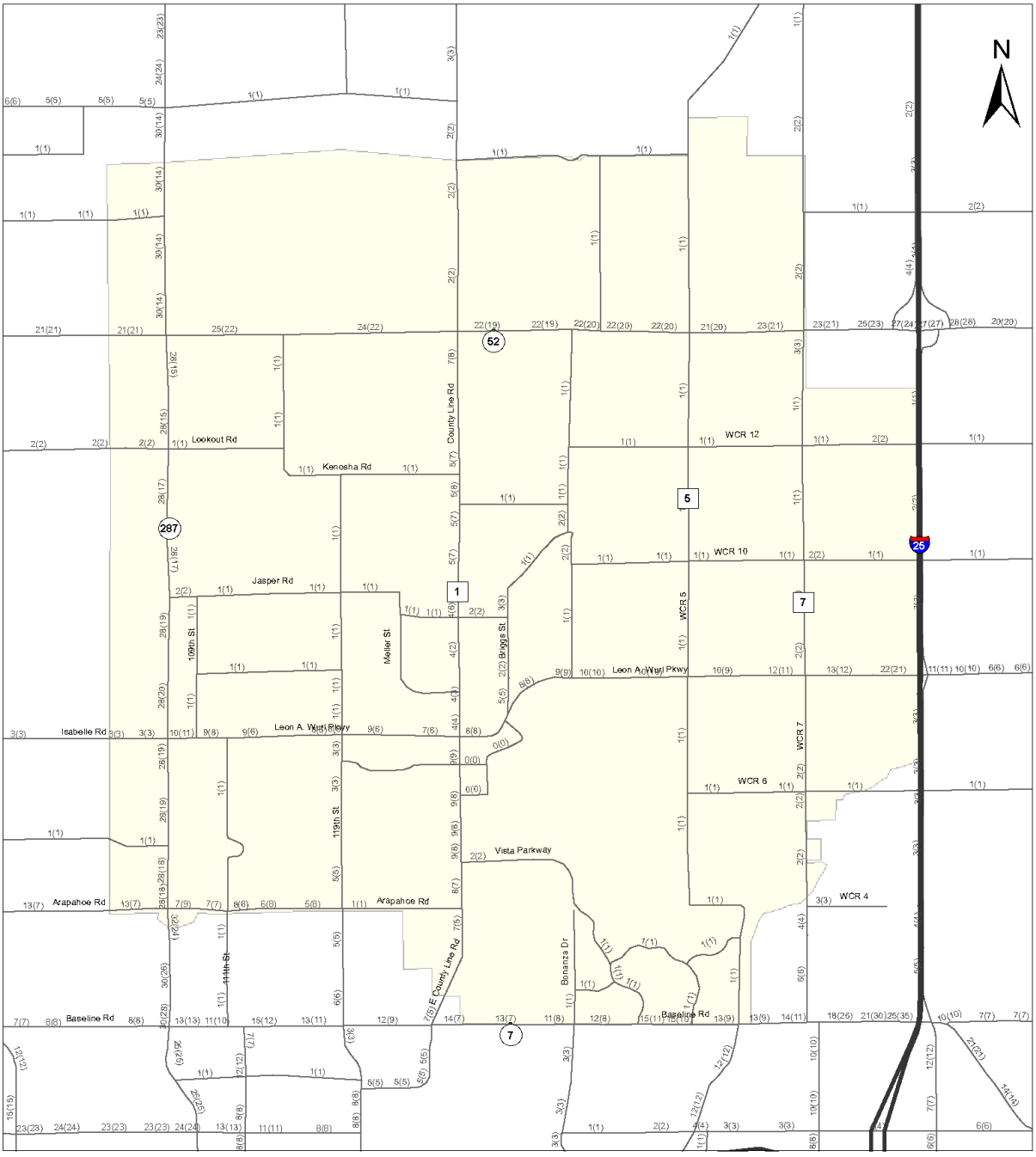
Figures B-1 through B-4 provide the modeled traffic volumes for the 2001 validation base year and the 2015, 2030, and Buildout forecast scenarios, respectively. The 2001 plot contains the modeled volume with applicable traffic counts in parenthesis. The forecast year plots show the raw model volume and the adjusted volume resulting from the NCHRP 255 process. This process applies adjustment factors to forecasted model volumes based on the magnitude and percentage of error in the validation. It is based on techniques described in the National Cooperative Highway Research Program (NCHRP) Report No. 255.

FIGURE B-1: 2001 VALIDATION BASE YEAR MODELED VOLUMES AND TRAFFIC COUNTS



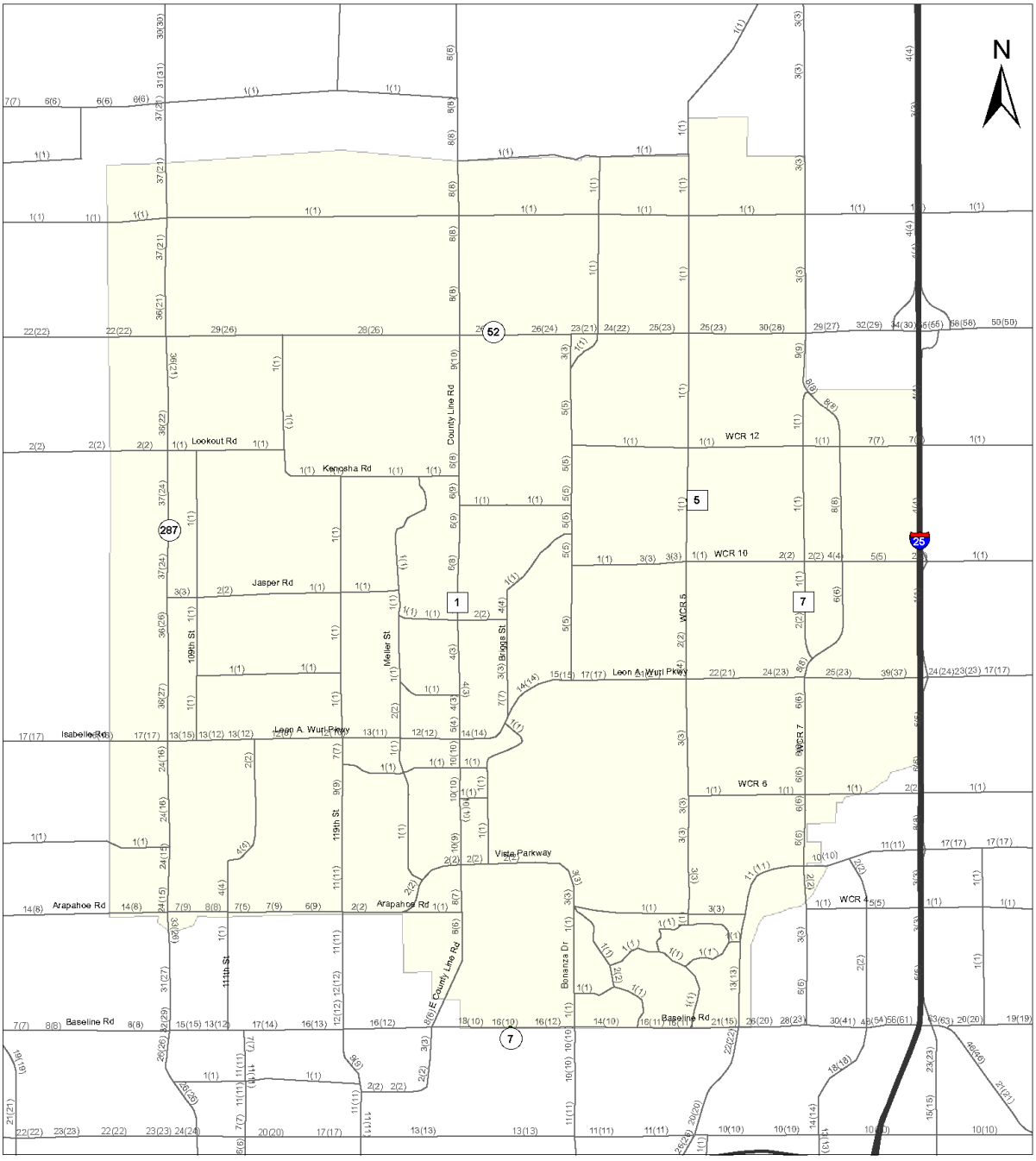
XX(XX): Total Volume in Thousands (Traffic Count in Thousands)
XX: Absolute Zero Volumes

FIGURE B-2: 2015 MODELED VOLUMES (RAW/ADJUSTED)



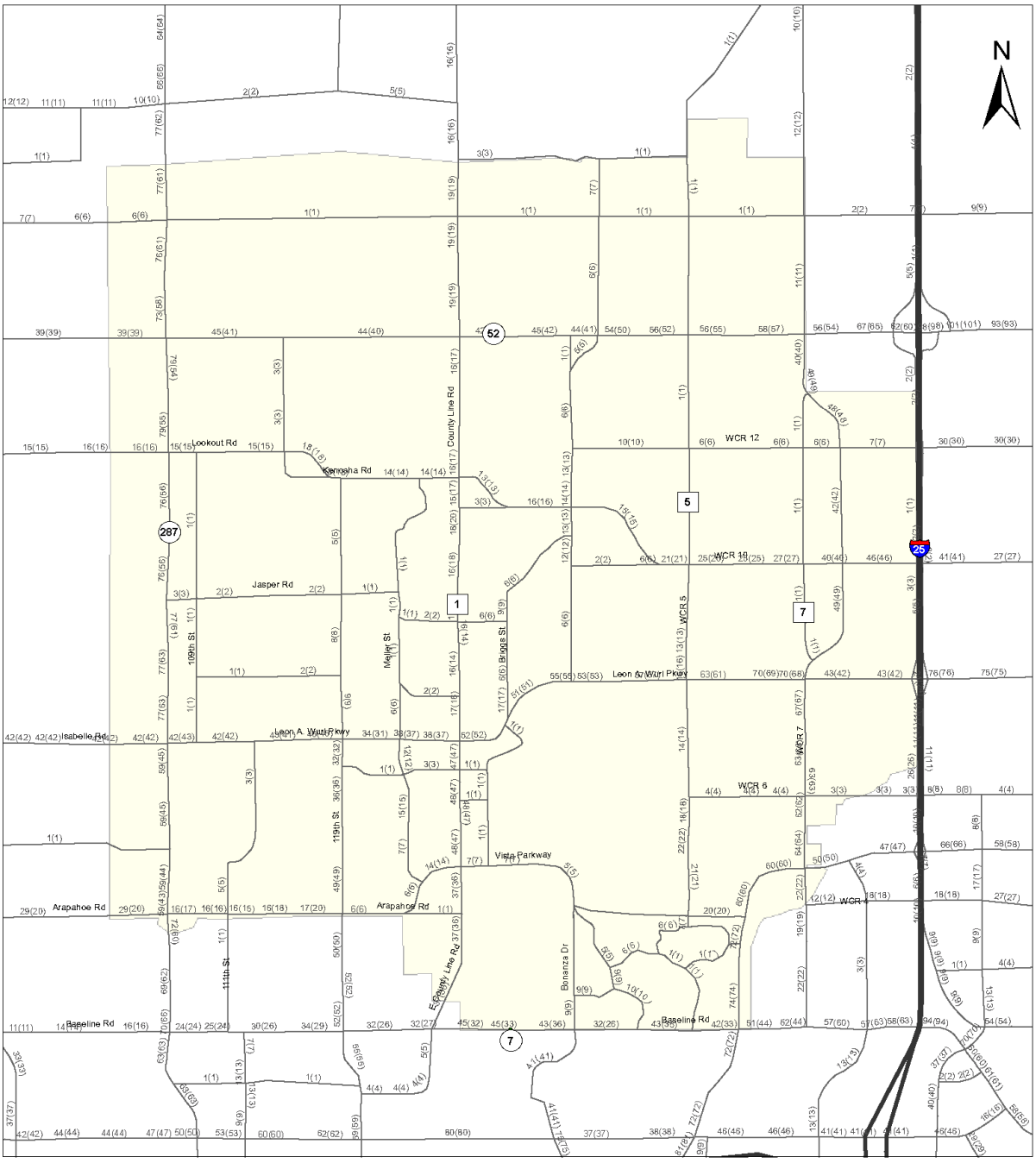
XX(XX): Model Volume in Thousands (NCHRP Adjusted Volume in Thousands)
XX: Absolute Zero Volumes

FIGURE B-3: 2030 MODELED VOLUMES (RAW/ADJUSTED)



XX(XX): Model Volume in Thousands (NCHRP Adjusted Volume in Thousands)
XX: Absolute Zero Volumes

FIGURE B-4: BUILDOUT MODELED VOLUMES (RAW/ADJUSTED)



XX(XX): Model Volume in Thousands (NCHRP Adjusted Volume in Thousands)
XX: Absolute Zero Volumes