2 TRAVEL DEMAND MODELING

2.1 DAILY VOLUME FORECASTS

Daily volume forecasting was completed for roadways throughout the Longmont study area in order to determine corridors needing future improvements to handle anticipated traffic growth. Included in the forecasting process was validation of the travel demand model, inclusion of updates to the socioeconomic inputs, and calibration of the model volumes to produce daily volume forecasts. The following sections describe the process used to develop daily volume forecasts for the 2035 base and preferred alternatives.

2.2 MODEL VALIDATION

To serve as a basis for the transportation analysis completed in this Plan, travel demand modeling was completed for the City of Longmont. Travel demand modeling specific to Longmont was last completed over ten years ago as part of the Longmont 2005 Multimodal Transportation Plan. This update to the travel model required a complete reevaluation using the latest regional model version. The modeling effort started with DRCOG's travel demand model (Compass 4.0, Cycle 1, 2013), which was refined to more accurately replicate daily volumes in the City of Longmont.

The model refinement process began with a review of the existing model traffic analysis zone (TAZ) structure, and further subdividing of many zones within the study area. The Longmont study area was identified to occupy 93 original DRCOG TAZs, which after zone splits resulted in 224 TAZs. The refinement and addition of these zones required a complete review of the model network, with careful consideration paid to the loading characteristics of the transportation network to accurately reflect existing travel patterns.

2.3 LAND USE REVISIONS

Based on the subdivision of the model area into new zones, the land use for the complete model area required reevaluation to determine the 2010 (base model year) land use in each zone. City of Longmont staff utilized results from the latest Census update and municipal records to develop 2010 land use for the region. Socioeconomic data within the travel model is divided principally among households and employment; with further refinement of households into the categories of low income, medium income, and high income and jobs into the categories of production/distribution, retail, and service. The 2010 land use data was used as the basis for the development of 2035 land use forecasts. These land use forecasts were also developed by City of Longmont staff, congruent with the most recent version of the Comprehensive Plan, and allocated anticipated future development throughout the City based on the location of available land and expected development trends. Based on the final land use, which included the City of Longmont and additional adjacent unincorporated areas, there is expected to be an increase in households of 23 percent and in employment of 12 percent between 2010 and 2035. **Appendix A** contains the completed 2010 and 2035 land use data included in the travel demand model process.

With modest population and employment growth within the City of Longmont and intense volume increases on many roadways throughout the area, the model area was found to be highly affected by

additional development outside the study area. In order to gain some understanding of the anticipated development from these areas, the DRCOG socioeconomic data from the areas of Mead, Erie, and Tri-Towns (Dacono, Frederick, and Firestone) has been provided for reference. **Table 2-1** provides the 2010 land use, 2035 land use, and percent growth rate for Longmont and its surrounding communities.

Table 2-1: Longmont and Surrounding Communities' Land Use

Area	2010 Households	2035 Households	Household % Growth	2010 Employment	2035 Employment	Employment % Growth
Longmont	38,171	47,073	23%	36,001	40,201	12%
Mead	1,600	3,300	105%	750	1,250	72%
Erie	8,900	19,700	121%	2,400	8,400	250%
Tri-Towns	7,000	16,100	130%	3,400	8,100	138%

Overall, adjacent surrounding development is mostly concentrated in the three surrounding areas, which impacts the future traffic forecasts on East County Line Road, Weld County Road 1, and US Highway 287. The resulting interaction between these communities and the City of Longmont will spur the need for upgrades to regional roadways serving Longmont.

2.4 NETWORK REVISIONS

The roadway and transit networks were thoroughly reviewed to ensure consistency with the existing transportation network. These reviews began with the 2010 model to ensure consistency with existing number of lanes and operating characteristics. Following the validation of the existing model, committed road projects were added to the travel demand model during the 2035 planning horizon. **Table 2-2** lists the following committed projects that were included in the base 2035 model. It should be noted that this project list includes city funded and developer funded improvements.

Table 2-2: Committed Construction Projects

New Street	Limits
Spencer Street	SH 66 to Anhawa Avenue
Francis Street	SH 66 to Anhawa Avenue
Gay Street	SH 66 to Anhawa Avenue
Anhawa Avenue	Hover Street to Francis Street
Alpine Street	21st Avenue to Steppe Drive
Boston Ave	Main Street to Martin Street
Martin Street	SH 119 to Quail Road
Rogers Road	75th Street to current terminus
Disc Drive	Rogers Road to Kennedy Drive
Mountain Drive	Nelson Road to Blue Mountain Circle
Mountain Drive	Clover Basin Road to Plateau Road
Renaissance Drive	Pike Road to Plateau Road
Plateau Road	Renaissance Drive to Airport Road
Plateau Road	Mountain Drive to Renaissance Drive
Fordham Street	Nelson Road to Rogers Road
Dry Creek Drive	Lykins Gulch Road to Rogers Road
East-West street (between Nelson and Rogers Road)	Rogers Road to Dry Creek Drive

2.5 DAILY TRAFFIC FORECASTS

Due to the complexity of real-world driver behavior and individual roadway characteristics, travel demand forecasting models cannot be expected to result in precise representation of traffic volumes on each roadway. A common technique used to improve the reliability of travel demand forecasts is referred to as post-processing adjustment. This technique uses comparisons of the base year model's predicted traffic volume versus actual traffic counts (shown in **Figure 2-1)**. These comparisons provide estimations of the error associated with the model's representation of travel conditions. The model-produced forecasts can then be adjusted to account for the errors found in the model to provide more reliable forecasts. This post-processing adjustment process, as prescribed in the Transportation Research Board's publication NCHRP 255, was applied to all forecasts in this study.

Based on the updated travel demand model, 2035 Base daily traffic forecasts were prepared for the study area. The resulting volumes and volume to capacity ratios are shown in **Figure 2-2** and **Figure 2-3**.

Based on this analysis, several corridors within the study area are anticipated to experience congestion by 2035. These corridors include Ken Pratt Boulevard (SH 119), Hover Street, Main Street (US 287), and Ute Highway (SH 66).

Using the results from the 2035 Base model, a series of alternative corridor improvements was tested using the travel demand model. These improvements were designed to target future congestion and to provide additional parallel roadway facilities. Through a series of model runs, these alternatives were evaluated for efficacy and a final list of preferred projects was developed. A separate 2035 Preferred Alternative model run was completed including the following corridor projects shown in **Table 2-3**. These projects are also depicted in **Figure 2-4**.

Table 2-3: 2035 Preferred Alternative Improvement Projects

Project	Limits
Construct Pike Road	Main Street to 119th Street
Widen Pike Road	Hover Street to Main Street
Widen 119th Street	Pike Road to SH 119
Construct 119th Street	Sugar Mill Road to 3rd Avenue (at Pace Street)
Widen 119th Street	SH 119 to Sugar Mill Road
Widen Pace Street	3rd Avenue to 17th Avenue
Construct Boston Ave	Pratt Parkway to Price Road (with railroad crossing)
Construct WCR 26	realignment to 9th Ave east of WCR 1
Widen WCR 1	9th Avenue to SH 66
Widen Hover Street	SH 119 to Boston Avenue
Construct Martin Street	Pike Road to Quail Road
Widen 9th Avenue	Alpine Street to Pace Street
Widen Ken Pratt Boulevard (SH 119)	Nelson Road to I-25
Widen Ute Highway (SH 66)	Hover Street to I-25
Widen Clover Basin Drive	Airport Road to Dry Creek Drive
Widen 17th Avenue	Alpine Street to Pace Street
Widen 17th Avenue	Alpine Street to Ute Creek Drive
Widen Nelson Road	Grandview Meadows Drive to Hover Street

Figure 2-1: 2010 Average Daily Traffic Volumes

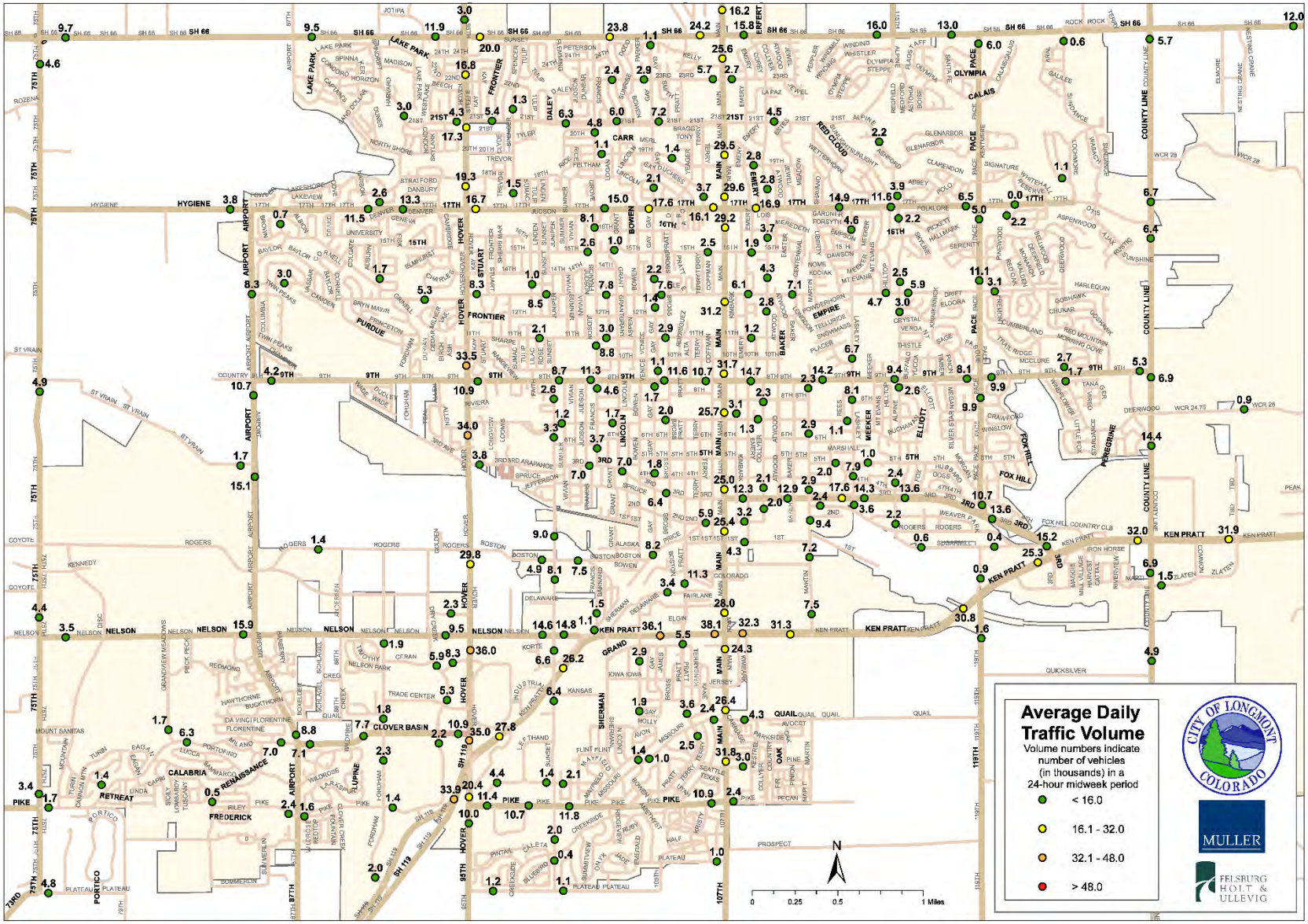


Figure 2-2: 2035 Base Plan Average Daily Traffic Volumes

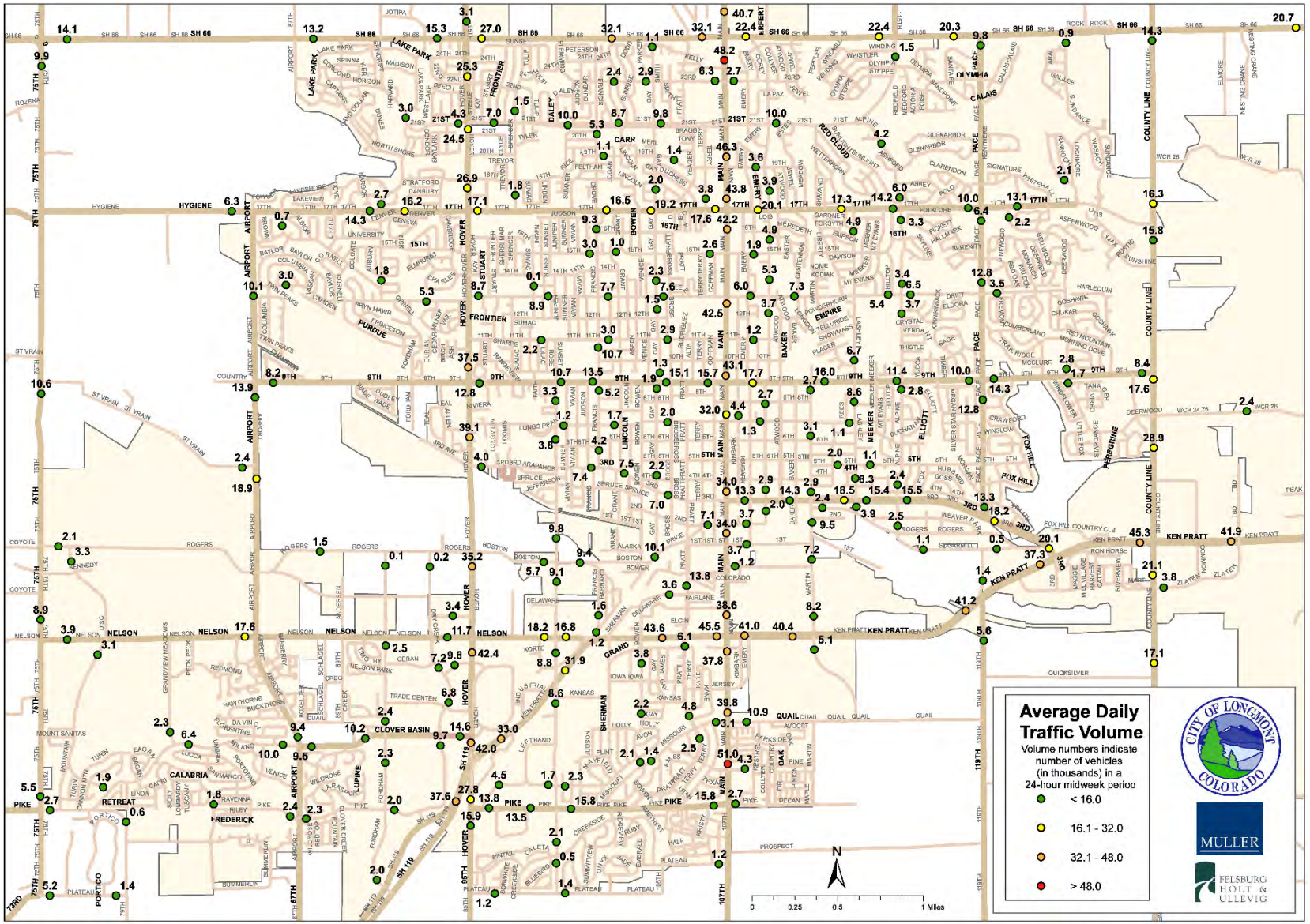
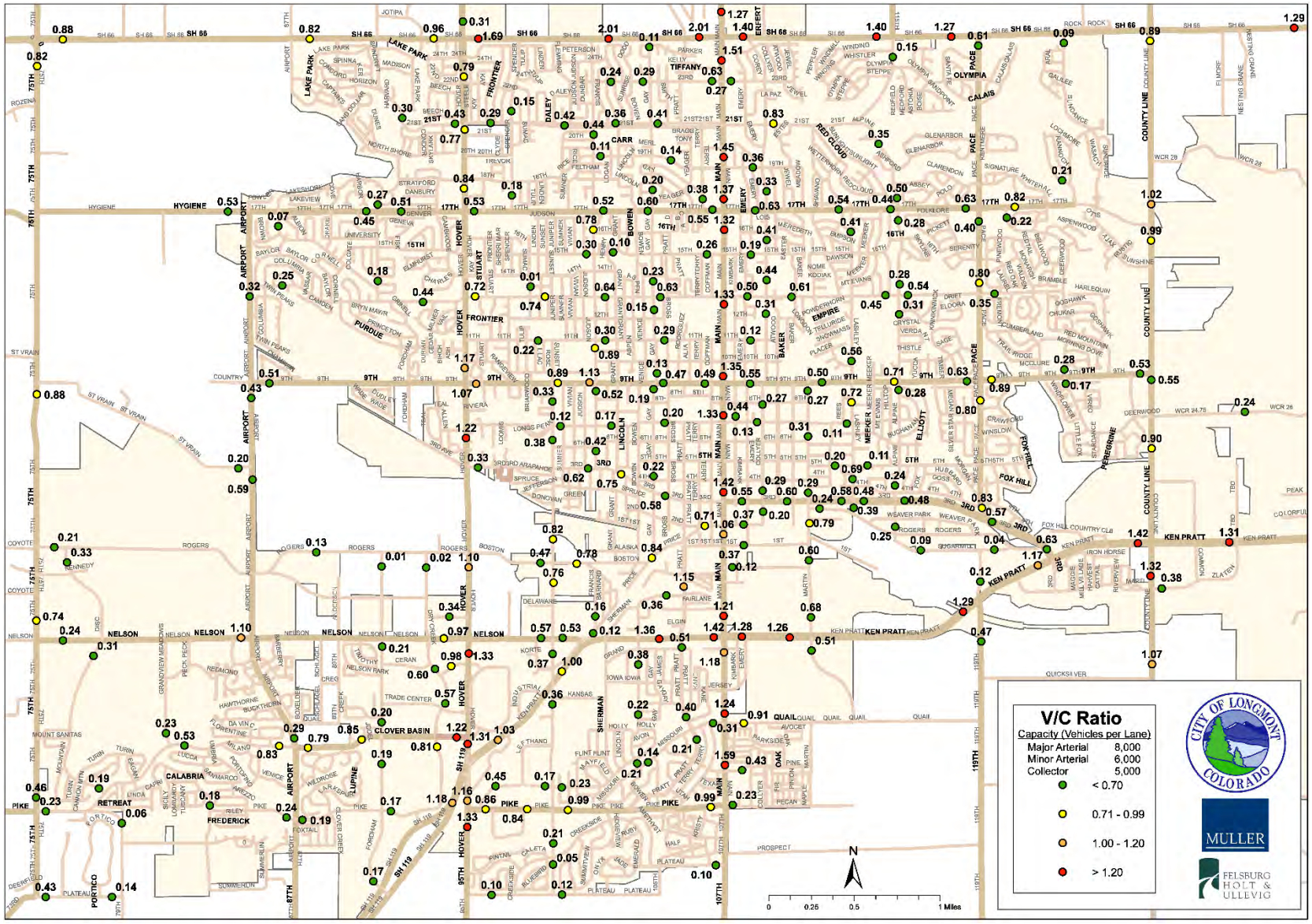


Figure 2-3: 2035 Base Plan Volume to Capacity (v/c) Ratio



Based on the updated travel demand model, 2035 Preferred Alternative daily traffic forecasts were prepared for the study area. The resulting volumes and associated volume to capacity are shown on **Figure 2-4** and **Figure 2-5**.

Figure 2-4: 2035 Preferred Alternative Average Daily Traffic Volume

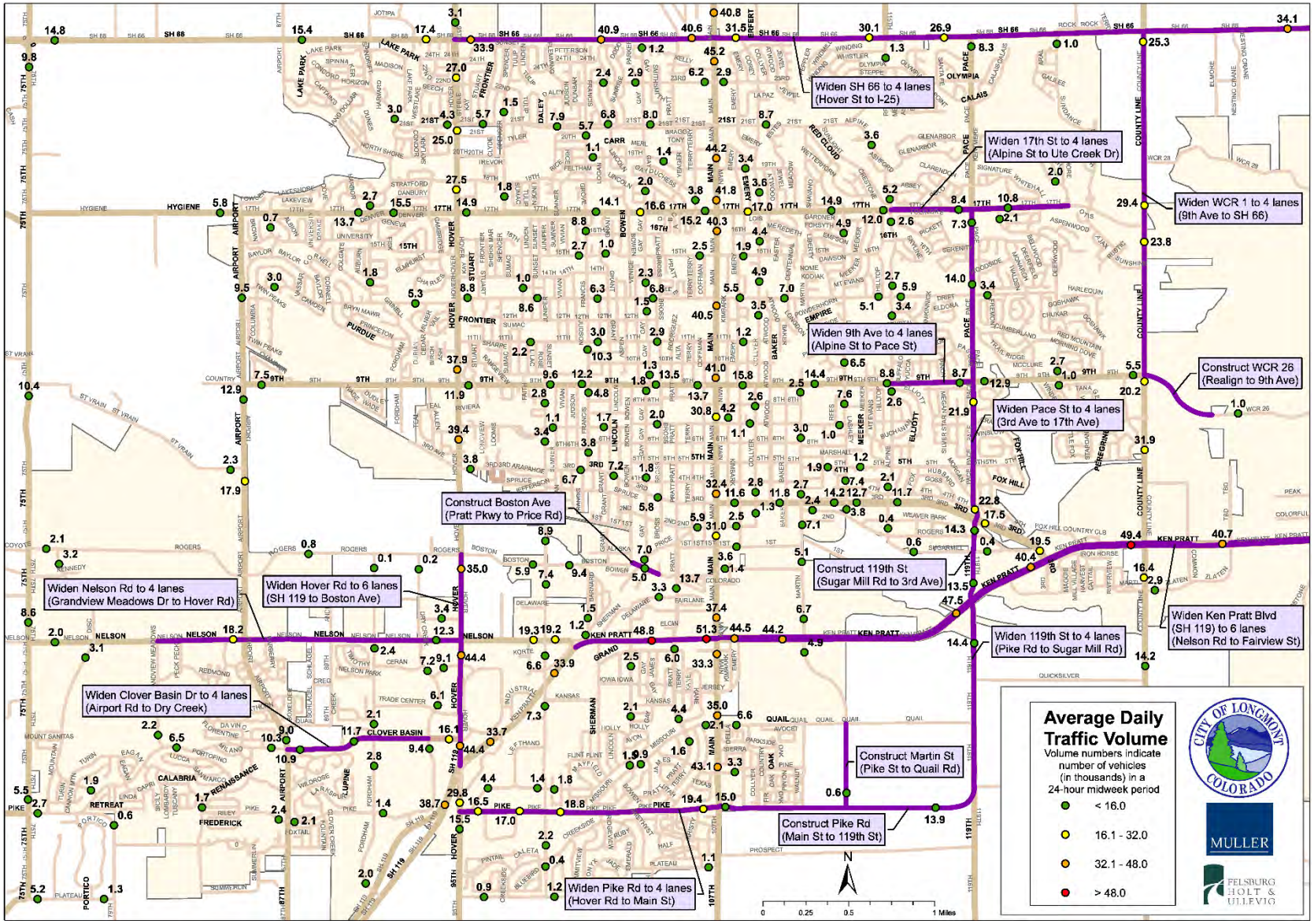


Figure 2-5: 2035 Preferred Alternative Volume to Capacity (v/c) Ratio