

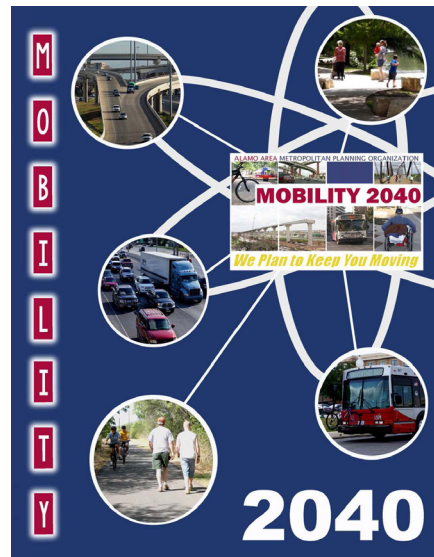
# WHERE ARE WE HEADING?

## SECTION 3

## FORECASTING OUR TRANSPORTATION FUTURE

Urban transportation systems are complex networks. A modern, innovative and multi-modal transportation system is critical for the region's future prosperity. To sustain our economy and quality of life, residents must be able to travel safely and reliably around our region so they can choose from a wide variety of jobs and communities in which to live. In addition, businesses must be able to count on the timely delivery of goods.

The interactions between land use, transportation, modes of travel, congestion and behavioral patterns of the traveling public are intricate. An essential tool to evaluate these interactions is a travel demand model. Within San Antonio, the Alamo Area Metropolitan Planning Organization (AAMPO) maintains the Travel Demand Model for Bexar, Kendall, Comal, Guadalupe, and Wilson Counties.



The model is an invaluable tool to aid planners and decision makers in understanding the impact future population and employment changes will have on the transportation network. The model allows planners to evaluate

### SUMMARY OF THE CURRENTLY ADOPTED, FISCALLY CONSTRAINED AAMPO MOBILITY 2040 PLAN

The currently adopted regional plan (which takes into consideration the region nearly doubling in population) shows significant congestion and increase in delay - particularly in the northwest portions of San Antonio. Two noteworthy statistics comparing 2010 and 2040: congestion will result in an almost 50% decrease in average speed AND delay will increase by over 900%.

the transportation system as a whole **and to test 'what-if' scenarios for different transportation alternatives.** In the simplest terms, the model turns people and employees into trips, finds their origin and destination and assigns them a path to complete their trip. The trips cover

an entire 24-hour period, so it accounts for all trip types: home to work, home to shop, and back to home, etc.

The model gives us a glimpse of our transportation system of the future based on our current path, assuming we do not change direction.

## Where Are We Heading Now?

Currently, San Antonio ranks 7th among the 10 largest cities (by population) and is the only of those 10 without light rail or a streetcar. A prior downtown streetcar plan proposed by VIA Metropolitan Transit (VIA) was put on hold in 2014 due to growing opposition and concerns over operating costs. After the streetcar was paused, the community voted in favor of a City Charter Amendment requiring voter approval of any proposed streetcar or light rail project in or through the City.

Despite a lack of success with its streetcar plan, VIA has been recognized

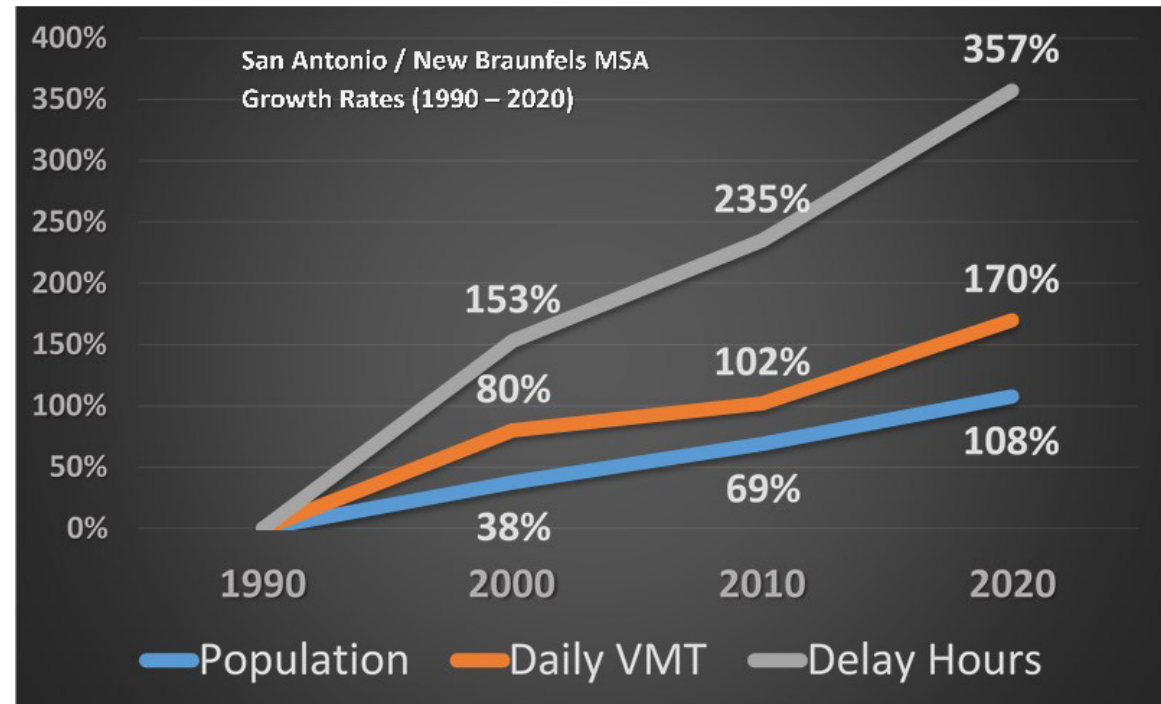


Figure 1: Source: Alamo Area MPO Study, February 2016

for its exemplary bus service. VIA successfully operates and maintains an extensive system of buses providing transit service across a very large area. Despite the requirement for voter approval, VIA is currently updating the Long Range Plan, Vision 2040, with Rapid Transit featured in the form of either Bus Rapid Transit (BRT) or Light Rail. The BRT consists of Primo (BRT running in mixed traffic flow), Primo Plus (BRT in a dedicated lane), and Light Rail (rail operating in dedicated right-of-way).

The need to move more people efficiently, effectively, and in a sustainable way

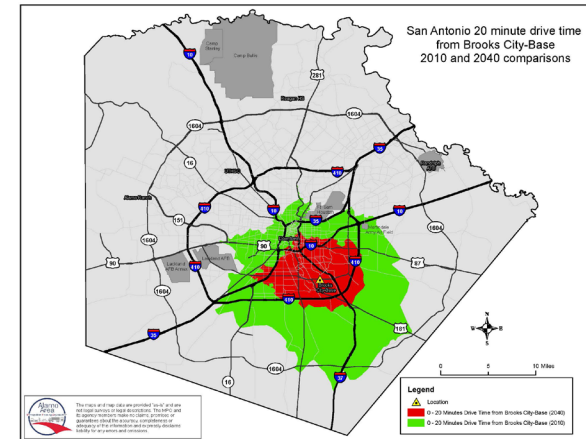
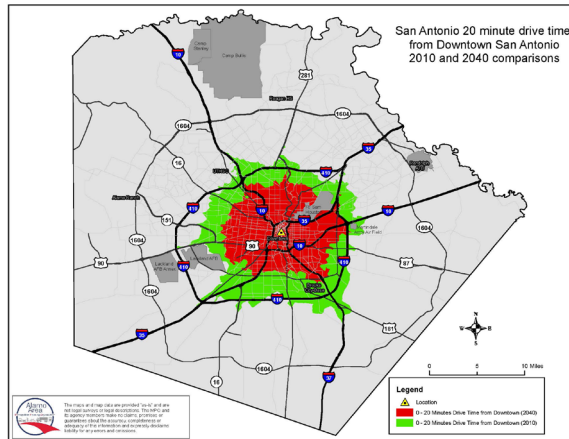
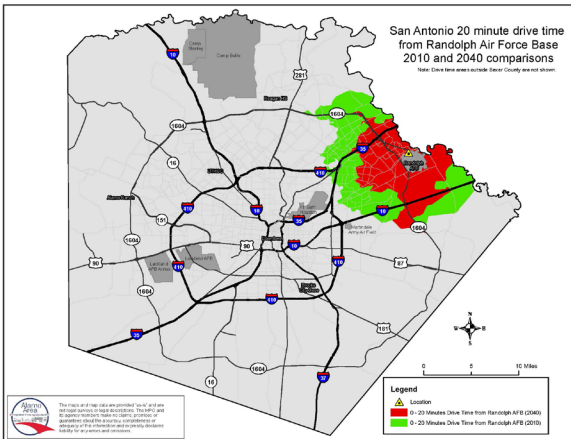
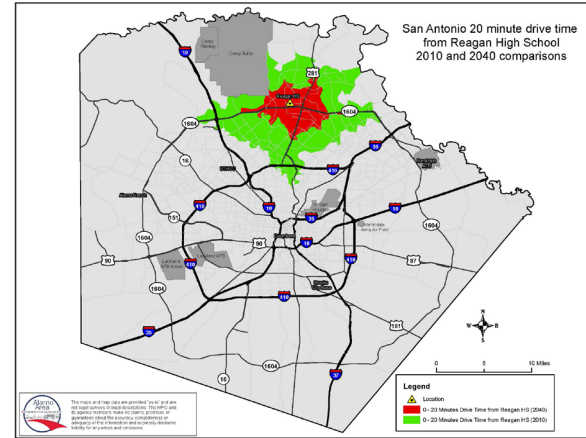
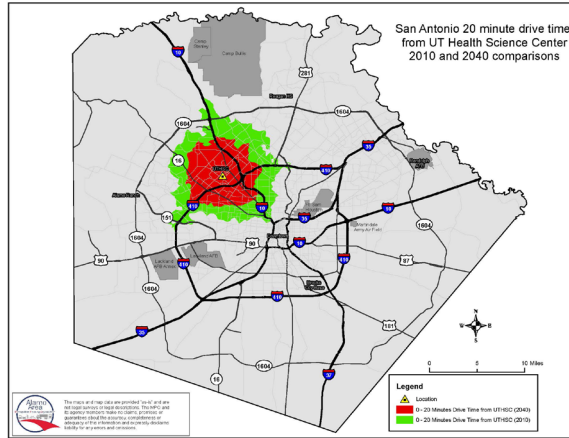
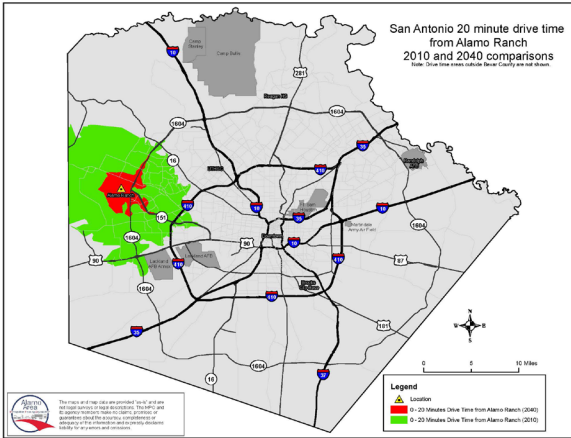
within the space we have is becoming increasingly important in anticipation of our population growing by the forecasted 1 million additional people.

### Congestion is Worsening

Congestion in the region is worsening, enough for residents to raise concerns regarding increasing congestion, but it is not yet to the theoretical tipping point that will motivate people to choose an alternative mode of transportation over their personal vehicle.

However, congestion (hours of delay) is growing at a much faster rate than the

# 20-MINUTE DRIVE TIME IN 2010 AND 2040



SOURCE: ALAMO AREA MPO

**LEGEND**

- ▲ Location
- 0-20 Minutes Drive (2040)
- 0-20 Minutes Drive (2010)



population or even the daily vehicle miles traveled. The graph in Figure 1 shows the rate of increase in delay hours in the region as compared to the increase in VMT and in population. One might assume that there is a direct correlation and that delay would increase at a rate similar to that of population. The graph shows this assumption is not true. Delay actually increases faster and as time goes on, the gap widens. This means that people are not adding miles to their trips; they are simply spending more time stuck in traffic. This also demonstrates how difficult it is to stay ahead of congestion by widening or building roads. If the trends shown in this graph continue, at some point in the future delay will far outpace our ability to add capacity through widening or building new roadways.

The series of maps on the previous page produced by the Alamo Area MPO visually demonstrate future reduction in travel distance within a 20 minute radius (due to congestion). They are a visual



*The Katy Freeway at Grand Parkway, Houston, Texas*

representation of the distance you could travel by vehicle in 20 minutes in 2010 (green) compared with how far you will be able to travel in 2040 (red). You can see that the distance is considerably less. The Regional Centers with the greatest decrease in travel distance are the Alamo Ranch and Brooks City Base Centers.

### **Why Not Build More Lanes?**

The simple truth is that you cannot build your way out of congestion by adding more and more lanes as congestion worsens. The Katy Freeway in the neighboring City of Houston is a prime example. A major expansion was completed 7 years ago, making it the widest freeway in the world - at one intersection it totals 23 lanes. This year, it was named the 8th most congested roadway in Texas by the 2015 Urban Mobility Report prepared by the Texas Transportation Institute (TTI). In the

Annual Urban Mobility Report reported by TTI (Texas A&M Transportation Institute), San Antonio's total annual delay doubled, which moved it's overall ranking among US Cities from 29<sup>th</sup> in 2011 to 24<sup>th</sup> in 2015.

The takeaway from this data is that delay is increasing and, as a result, San Antonio's ranking as a congested city is climbing as well. In 2040, It will take 25% longer to travel during peak conditions as compared to travel during non-peak conditions. That means a 30 minute trip during non-peak uncongested conditions will take at least 38 minutes in congested conditions, if not longer.

## AAMPO Forecast

An assessment of the ability of San Antonio's road network to accommodate the existing and anticipated traffic levels was recently completed as part of the Alamo Area Metropolitan Planning Organization's development of Mobility 2040: Metropolitan Transportation Plan. The AAMPO conducted travel demand modeling for the 2010 base year, a 2040 No Build scenario, and a 2040 Build scenario. A similar process is also underway as part of the Texas Department of Transportation's Texas Transportation Plan 2040.

Figure 2 shows the Levels of Service on freeways and arterials for 2010. Figure 3 shows the same for year 2040. "Levels of Service" are representative of the ease with which traffic flows and the amount of delay that is experienced by drivers and passengers in vehicles traveling along the roadway. The output from the AAMPO travel demand model correlates V/C ratios to LOS. Figures 2 and 3 illustrate the

potential impact to the transportation system if no additional improvements are made. Both maps display the model results for LOS based on volume to capacity (V/C) ratios. V/C ratios are defined as the relationship of the daily volume compared with the maximum capacity of the roadway. As the V/C ratio approaches or exceeds 1.0, the volume is nearing or exceeding the capacity of the roadway. High V/C ratios are represented in red. The impact to non-highway arterials is apparent with the red indicated on the road network in the map in Figure 3 and will need to be addressed as part of the City's Multimodal Transportation Plan.

In 2010, the majority of over-capacity roadways, those with V/C ratios at or greater than 1.0, are located primarily on the north side of the city where most of the growth had occurred. On the south side of San Antonio, the levels of service are typically good (LOS C or better), with some short segments of poor levels of service (LOS D or E) at the higher volume intersections.

With VMT increasing due to continued growth, the levels of congestion will worsen as we approach 2040. The largest increases in population between 2010 and 2040 are expected on the far west side, downtown and the far north side areas. Many of the improvements previously included in Mobility 2035 and those added by Mobility 2040 focus on the region's interstate highways. As such, the AAMPO's modeling found that most of the future needs would be along city streets, specifically major and minor arterials. One reason for this is that as interstates become congested, people look for alternate routes. Another reason is that some portions of the AAMPO study area include those that are experiencing rapid growth on previously undeveloped land with a transportation infrastructure that has not kept pace with growth. This can be seen in some parts of the San Antonio Extraterritorial Jurisdiction (ETJ).

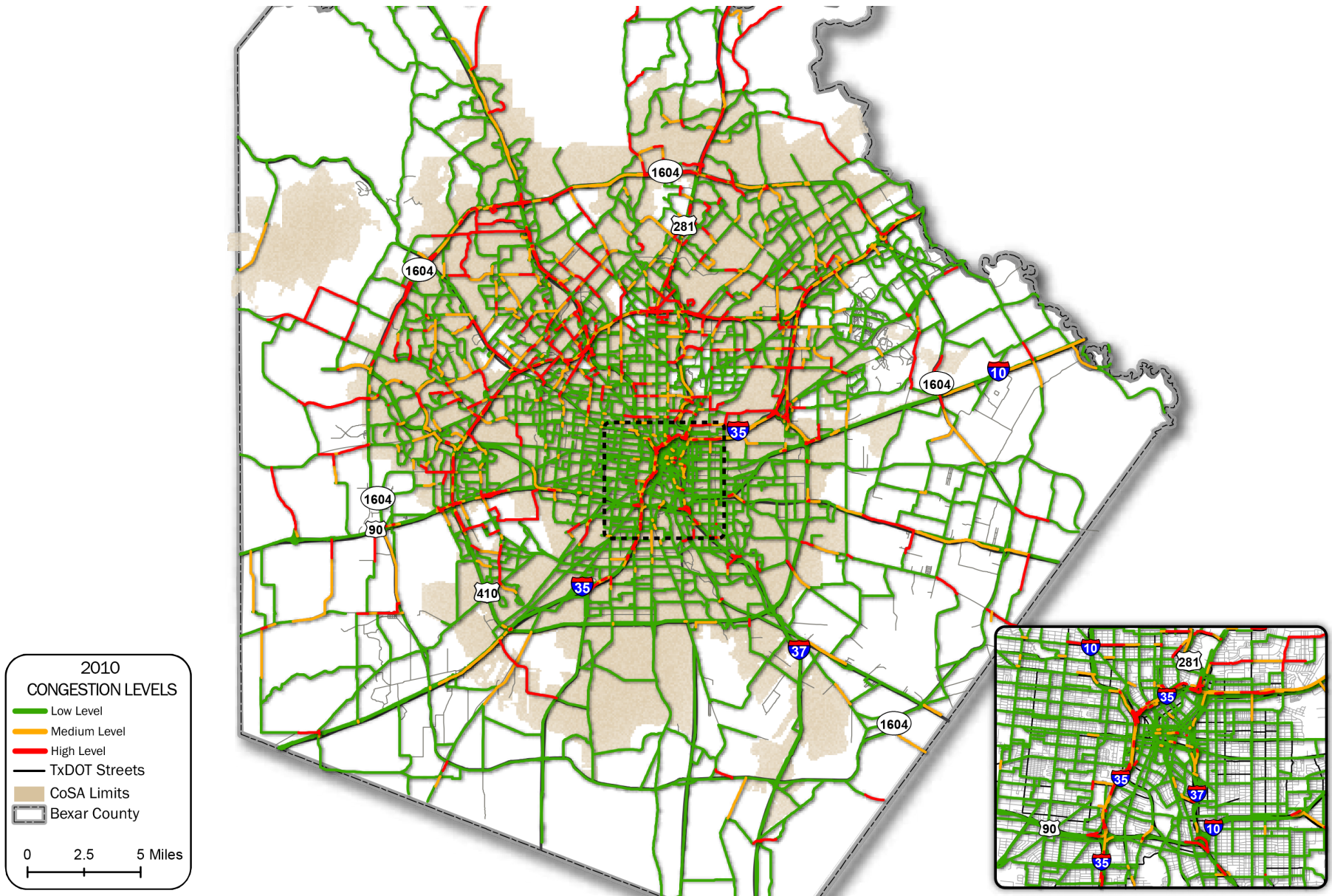


Figure 2: 2010 CONGESTION LEVELS



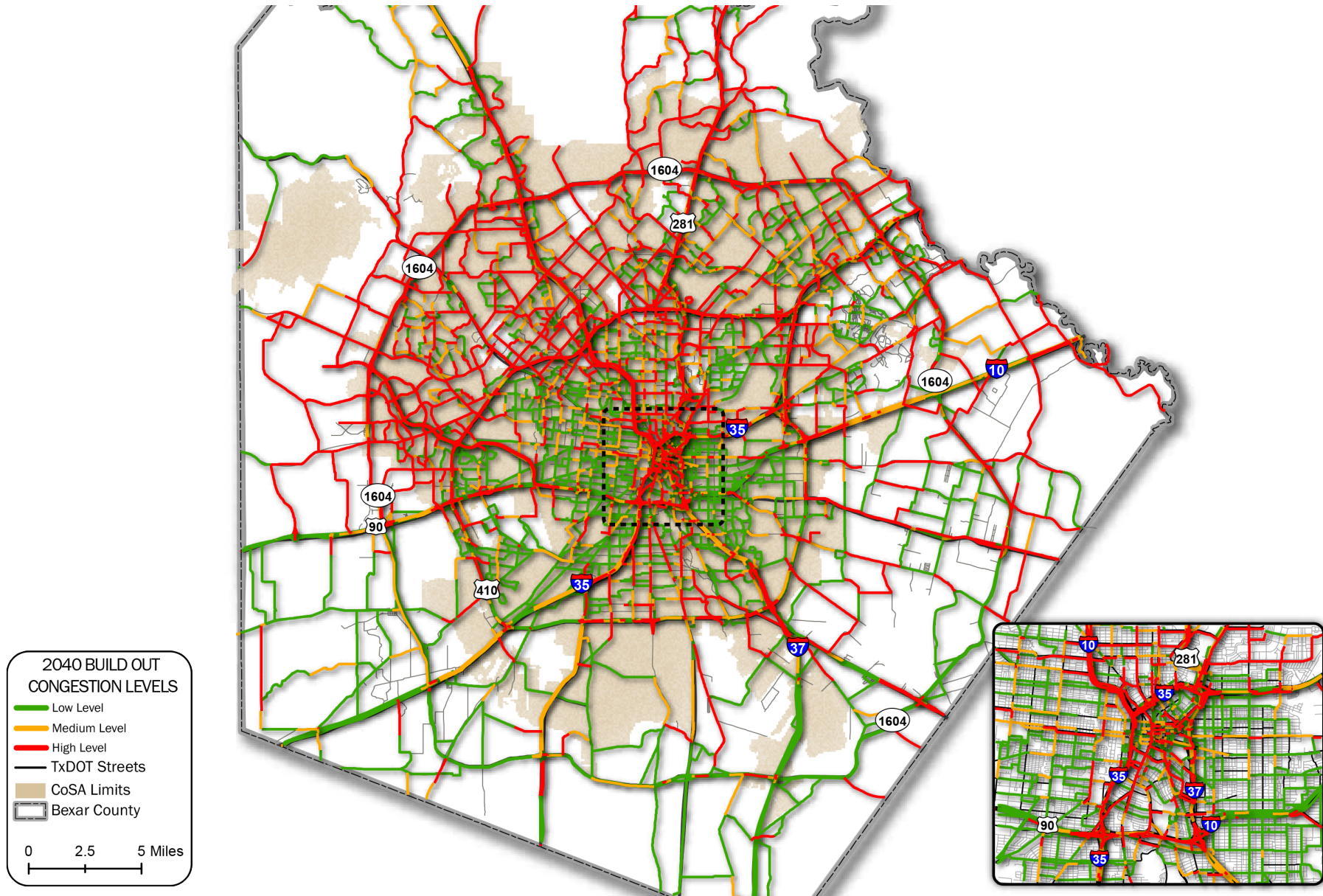


Figure 3: 2040 BUILD OUT CONGESTION LEVELS



As shown in Figure 3, the north side of the city is expected to be heavily congested by 2040. All major roads on the north and west sides of the city outside of Loop 410 are over capacity (with V/C ratios  $\geq 1.0$ ) with the exception of Wurzbach Parkway. The south side now shows significant congestion as well, with most major north-south roads operating at LOS F. The east and southwest sides are the only areas of the city that still have available capacity (20% or greater) on their road network.

## How Can We Add Capacity and Manage Congestion

Historically, our approach has been to identify the locations within the city and region where we are experiencing congestion and are significantly over-capacity. We invest in projects that widen those intersections or roadways or build new ones in that area to help handle the excess traffic. This approach is often referred to as “building our way

out of congestion”. Up until recently, San Antonio has given priority to this approach to improving our transportation system with only minor deviation. All of the indicators that we have at our disposal are pointing to the need to incorporate additional measures that offer transportation choices, improve connectivity and connect modes.

San Antonio can no longer focus on building our way out of congestion. Many of our major roadways are fully built out to the limits of the ROW. Widening these roadways would require significant acquisition of adjacent properties and expense. If we can't physically widen, how can we increase the capacity of our system? The answer lies with focusing on the movement of people instead of vehicles. If we begin to measure capacity in terms of person-trips rather than vehicle volume, we will begin to see that there are ways to increase the capacity of

a system that is physically constrained. A single lane of a freeway can carry 2,200 passenger cars per lane per hour during the peak, if it is not congested. If we assume that most of those cars are SOV's by applying an occupancy rate of 1.10 people per vehicle, the person trip capacity of that lane would be 2,420 person-trips per hour per lane. If that same lane is dedicated to BRT vehicles carrying 100 passengers, the capacity to move more people is increased to 6,000 person-trips per lane per hour assuming the buses are traveling at one minute apart (assuming more than one route uses this lane). If that same lane is dedicated to light rail service, over 20,000 people can be moved during the peak hour (225 people per car at 3 cars per train = 675 people per train at 2 minute headways = 30 trains). **Increasing capacity in our future must rely heavily on investing in ways to move more people within the same space we have today.**

## Quality of Life

Enhancing the quality of life through reduced congestion is measured by the EPA's regulation of emissions and air pollution to maintain good air quality in a region. A recent post in the San Antonio Business Journal stated the following:

The EPA is expected to designate the severity of non-attainment areas in 2017 where Bexar County and surrounding counties may be placed in the "marginal" non-attainment category.

AACOG Natural Resources Brenda Williams said that each category has progressively more stringent planning and control strategies.

Williams said AACOG is working with area businesses to reduce air pollution and promote carpooling, walking and cycling as ways to improve air quality.

<sup>[1]</sup> Sergio Chapa, San Antonio Business Journal



"By adopting measures to improve air quality now, we'll be helping to keep our region at the lowest non-attainment classification for the sake of our health, community and economy," Williams said in a statement.<sup>1</sup>

The connections between transportation, land use, and natural resources interact to influence the quality of natural resources. Focusing on our air quality through transportation initiatives is vital to creating and sustaining a high quality of life in San Antonio.

## SUSTAINABILITY PLAN



The currently adopted regional plan (which takes into consideration the region nearly doubling in population) shows significant congestion and increase in delay - particularly in the northwest portions of San Antonio. Two noteworthy statistics comparing 2010 and 2040: congestion will result in an almost 50% decrease in average speed AND delay will increase by over 900%.