Chapter 3
TRAVEL FORECAST: 2040 TRAVEL DEMANDS

The principal function of the year 2040 transportation plan update is to develop forecasts of the 2040 travel demands in the Fort Wayne-New Haven-Allen County region. The travel demands are based upon the projected socioeconomic data representing future activity within the Metropolitan Planning Area. The existing highway system was utilized for the initial evaluation of capacity deficiencies. The existing highway system includes a number of completed projects that were constructed during the tenure of the 2035 Transportation Plan.

The Congestion Management Process (CMP) (see Appendix A) provided the basis for the initial assessment. The CMP includes a systematic data collection and analysis feature that evaluates highway performance based on hourly volumes and available capacity. The volume to capacity ratios provide sufficient information to assess corridor performance during peak periods, and estimate the duration of any congested conditions. Through this series of analyses, future deficiencies were analyzed and evaluated, and project justification was developed.

Travel Forecasting Process

The methodology used to forecast travel demands for the 2035 and 2040 Transportation Plan Updates has been updated and enhanced from what was used for all previous Transportation Plans. Figure 8 displays a flow chart that schematically describes the forecasting process. The forecasting or modeling process used for this study and all previous studies follows a standard transportation/planning forecasting approach.

Travel Forecasting Procedure

The travel demand-forecasting model used for the Metropolitan Planning Area follows standard guidelines, yet it is specially tailored for this area. The NIRCC model utilizes a GIS-based travel demand modeling software, TransCAD. Using TransCAD's GIS techniques, the model incorporates extensive geographic and traffic operational databases into the highway network and the traffic analysis zone (TAZ) GIS layer for use in the modeling process. Peak-period modeling capabilities are also embedded in this model through time-of-day (TOD) models. The NHTS Add-On and NIRCC's 2012 household survey together with a Citilink transit on-board survey was fully analyzed to derive key modeling components such as trip generation rates, trip length frequency distributions, mode shares, time-of-day distributions and vehicle occupancy rates. Trips are loaded onto the highway system with a capacity restraint trip assignment procedure. This procedure replicates how drivers choose an alternative route when their preferred route becomes congested. Only the general approach to the modeling process will be described in this section to set the context for discussions regarding results of the travel forecasting procedure.

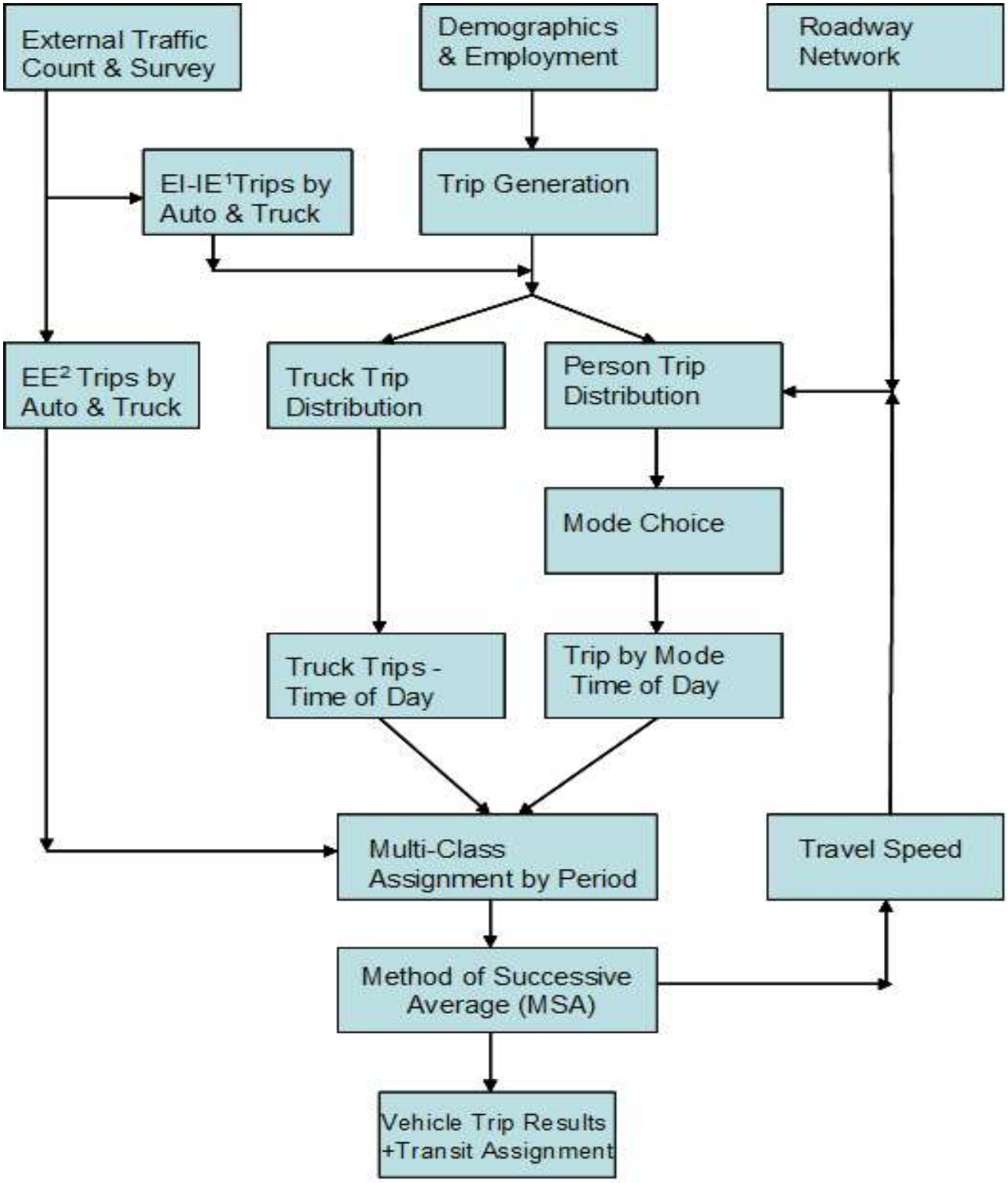

Figure 8

Travel Forecasting Procedure

The NIRCC model is structured to implement "four-step" processes with a travel time feedback loop. The four steps are trip generation, trip distribution, mode choice and trip assignment. Based on this structure, the model runs a four-step assignment initially, and then "feedback" the congested travel time from assignments back to trip distribution and starts subsequent model runs. With the feedback routine, trips are distributed and assigned on the network in a more effective and realistic manner since trip destination and route choices are determined based on congested network condition. In addition, the transit trip assignment is based on the congested travel time from the last iteration of model runs.

Major features of the NIRCC TransCAD model are summarized as follows:

- **Study Area.** The model study area previously only covered the NIRCC planning area (portions of Allen and Whitly Counties), the new network and TAZ structure covers the NIRCC planning area, plus it has been expanded to fully cover Allen County. Trips external to this study area (i.e., external-internal or external-external trips) are captured by 31 external stations.

- **TAZ Development.** TAZs were appropriately defined throughout the study area to be bounded by the modeled roadway network with a minimum of network passing through any zone. Each TAZ is populated by demographics and employment attributes not only for the 2015 base year but also for 2040. There are a total of 471 internal TAZs in the MPA.

- **Network Update and Transit Route Development.** The highway network was updated with more roadway data sources and the current traffic count data. The network includes extensive geometric and operational link attributes. Traffic signals were also coded in the network to estimate delays associated with this control device. Consistent with the new TAZs, network details with proper centroid connectors were appropriately added throughout the study area. The transit route component has been developed concurrently with the development of the roadway network and TAZ's, so that any special considerations needed for transit modeling are accommodated in the design of the new TAZ structure and/or road network. The development is done for all fixed bus service routes.

- **Improved Estimation of Free-Flow Speeds and Link Capacity.** Instead of using posted speed limits as a surrogate for free-flow speeds, free-flow speeds were estimated based on a tool developed by Corradino. The new tool was developed from GPS and other speed surveys conducted in the NIRCC and other areas. Based on the speed surveys, the relationship between free-flow speeds and several determining factors such as posted speed, access control and area type was identified for each facility type. This relationship was expressed in various forms of nonlinear regression models. Geometric and operational link data were utilized for improved estimation of link capacities. It calculates the speed and capacities based on the concepts presented in the HCM2010. This methodology derives various capacity

adjustment factors from bi-factor nonlinear regression formula. The estimated peak-hour capacities were then converted to peak and off-peak period capacities.

- **Intersection Delays.** Delays associated with traffic signals were estimated to adjust directional link free-flow speeds and capacities. The HCM 2010 method of calculating vehicle delay that takes into consideration green time and progression effect was adopted.

- **External Trip Estimation.** External travel to the model area was estimated using the Indiana Statewide Travel Demand model (ISTDM) version 6. Each external station corresponds to a link in the ISTDM. The base year external to external trip matrix was derived via sub-area extraction from the ISTDM. Base year 2010 External-Internal and Internal-External total demand was also derived from the ISTDM. Rates of growth at each external were also developed from the ISTDM.

- **Trip Generation Model.** Simply speaking, travel demand modeling is the process of translating different types of trips into vehicular traffic on the network. Trip production and attraction models were developed for each of these trip purposes through various statistical analyses using trip data from the NHTS Add-On and NIRCC's Household Travel Survey data.

- **Trip Distribution Model.** During the development of the model, unique friction factor tables were calibrated to survey data for each of the trip purposes, including truck trips.

- **Mode Choice Model.** The model takes account of auto, transit, bike and pedestrian. This mode choice model has the factors for daily only and are derived from the NHTS Add-On and NIRCC's Household Travel Survey data and the Citilink transit on-board survey.

- **Time-of-Day Models.** The model consists of four time-of-day (TOD) models: morning peak, midday, evening peak, and night. Modeling factors that are unique to each time period were derived from the NHTS Add-On and NIRCC's Household Travel Survey data. Compared to a single daily model, the TOD modeling generates a more accurate travel model by treating each period uniquely.

- **Truck Model.** Travel patterns of trucks are different from those of passenger cars, thus it is desirable to have a separate truck mode in the model. In each of the four step processes, the model maintains a separate truck model to address the unique travel characteristics of trucks. Truck trips are separately generated and distributed. Then, they are assigned to the network for each TOD simultaneously with the corresponding passenger car assignments.

• **Vehicle Trip Assignment and Feedback Loop.** Link free-flow speeds derive the first phase of the model run, or initial assignment. It is used for network skimming, trip distribution and route choice. Following the first phase, link congested-speeds are estimated and used to redistribute trips in subsequent model runs, or feedback assignments. The final assignment results are obtained from the feedback assignment.

• **Transit Trip Assignment.** The link congested-speeds and travel time are used to assign the transit passengers onto the transit routes. The assignment rule is to find the shortest path of the general cost for passengers. The generalized costs is a combination of travel time, cost and other factors.

Analysis of Regional Activity Forecasts

Regional control totals were established for each variable as the first step in the projection of year 2040 socioeconomic conditions. Table 4 compares base year (2015) and forecast year (2040) regional control totals for each of the key variables influencing travel demands.

Table 4. Summary of Regional Socioeconomic Variables

Socioeconomic Variable	2015 Base Year	2040 Forecast Year	Percent Increase	Annual Percent Rate
Population	349,542	408,694	16.92%	0.63
Households	142,277	168,348	18.32%	0.68
Automobiles				
Ownership	271,750	321,545	18.32%	0.68
Per Household	1.91	1.91		
Employment				
Retail	25,963	32,510	25.22%	0.90
Industrial	50,505	61,045	20.87%	0.76
Office	63,609	73,070	14.87%	0.56
Service	54,487	70,045	28.55%	1.01
Total	194,564	236,670	21.64%	0.79

The socioeconomic projections reveal modest increases in all the major socioeconomic variables for the Metropolitan Planning Area. The projections for population and households indicate relatively steady and comparable growth. The projected housing growth slightly out-paces the population growth. This is due primarily to new housing starts growing at a faster rate than the population in the MPA from 2000 to 2010. It is assumed that these growth rates will stabilize.

The overall population and housing assumption reflects a stabilization of average persons per household. Population growth has gradually slowed since 1970 within the Metropolitan Planning Area. Housing

growth has remained fairly consistent with some short periods of slow growth during the past twenty years. Since 1985 the area has experienced active housing development. The 2010 Census indicated that the ratio of persons per household was 2.51 for the Metropolitan Planning Area. The 2040 persons per household ratio is 2.43 indicating the stabilization of this value.

In the late seventies and early eighties assumptions concerning auto ownership, based on recent fuel shortages, anticipated that limited energy resources and increasing costs would induce a reduction in automobile ownership. This phenomenon never occurred. Automobiles became more fuel-efficient and their size was reduced. Fuel prices dropped and stabilized. Auto ownership continued to rise. It is anticipated that this trend will stabilize in the near future as we reach saturation levels of vehicles per household and as households decrease in size. The forecasted automobile ownership values for 2040 are consistent with the existing ratio of automobiles per household. Autonomous vehicles (AVs) may significantly change traveler behavior, vehicle ownership, vehicle miles of travel, and network congestion. But because of the uncertainty of when and what implementation impacts that AV vehicles will have, we have decided to not include it in this transportation update.

Autonomous vehicles (AVs) and Connected Vehicles (CVs) may significantly impact travel behavior, trip making, travel patterns, vehicle ownership, vehicle miles of travel and network congestion within a region. NIRCC recognizes these potential impacts on the transportation system and closely monitors the emerging technological advancements in both autonomous and connected vehicles. At this time, a considerable amount of uncertainty exists regarding both the pace and saturation at which this technology will advance and reach levels that yield predictable changes to regional travel. Current trip forecasting methods that generate, distribute, apply modal splits and assign trips to the transportation network are not calibrated to elucidate the trip making characteristics of autonomous and connected vehicles.

Current research indicates that connected vehicles will afford more efficient use of existing roadway capacity, the applicability to specific corridors in an urban setting remains uncertain. Present opinions on the impacts of autonomous vehicles are more ambiguous with conflicting thoughts on how vehicle ownership, vehicle miles of travel and vehicle hours of travel will change. Until there is more certainty on the speed and saturation level of this emerging technology, and forecasting models can be designed to replicate the travel behavior, it is not practical to incorporate the potential effects of autonomous and connected vehicles into the transportation plan.

Retail employment has been the fastest growing source of employment in the Fort Wayne area since the 1970’s. A steady growth rate in this employment category is expected to continue but will level off and begin to increase more gradually. The 2010 employment figures indicate continued growth in retail employment.

Industrial employment has remained fairly consistent over time with a conservative growth pattern. The loss of International Harvester and related industrial employment in the early eighties was partially offset by the new General Motors assembly plant and associated manufacturing facilities built in the mid nineteen-eighties. Warehousing and distribution centers have also contributed to continued growth in this category.

Office employment has remained fairly consistent with respect to its rate of growth over the years. This category is expected to be slightly higher than the retail sector for new growth in upcoming years. The finance, real estate, and health care trades are represented by this category. Service employment has also remained fairly consistent with respect to its rate of growth over the years. This category will see a slightly higher growth rate than the other categories. The accommodation, restaurants, education, and administration trades are represented by this category.

The general growth patterns of the socioeconomic variables indicate that existing travel corridors will remain important to the basic travel patterns of the year 2040. The northern and northwest areas of the region will remain active in terms of socioeconomic growth, especially along the Dupont Road/ State Road 1 corridors. The areas around major interchanges of Interstate 69 and 469 remain attractive for development.

The new residential and employment centers will intensify the travel demands on existing corridors and create the need for managing congestion through traffic operation improvements, widening facilities, extending new roads, improving transit service, implementing intelligent transportation system strategies, and controlling access more efficiently. There is a resurgence of development within the downtown core, with planned commercial, residential, and recreational areas. These include the Riverfront area, the Landing, and the Electric Works developments. Development is becoming more balanced between the urban and suburban areas.

Trip Generation

The trip generation model used population, employment, household size, workers and vehicles per household, and household income to estimate the number of trips starting and ending (trip ends) in each zone. The socioeconomic data utilized for trip generation is provided in Appendix's B and C. Trip ends were estimated for eight different internal purposes: Home-Based Work Low Income, Home-Based Work High Income, Home-Based Shopping, Home-Based Other, Home Based School, Home Based Univ/ College , Non Home Based Work, and Non Home Based Other trips.

Table 5 summarizes the regional level results of the application of the trip generation models to the projected socioeconomic characteristics. The productions and attractions by trip purpose are provided for the years 2015 and 2040. The relative proportion of trips by purpose show little change between the forecasted years.

Table 5. Travel Demand Forecast Regional Summary

Productions					Attractions				
Trip Purpose	2015 Trips	2015 Percent	2040 Trips	2040 Percent	Trip Purpose	2015 Trips	2015 Percent	2040 Trips	2040 Percent
HBWLO	68,706	5.6%	81,251	5.6%	HBWLO	70,046	5.6%	82,960	5.6%
HBWHI	107,096	8.8%	128,319	8.8%	HBWHI	110,534	8.9%	132,047	8.9%
HBS	153,496	12.6%	181,815	12.5%	HBS	160,382	12.9%	189,603	12.7%
HBO	354,400	29.1%	420,626	28.8%	HBO	363,888	29.2%	431,731	28.9%
HBSCH	128,448	10.6%	153,019	10.5%	HBSCH	129,452	10.4%	153,537	10.3%
HBU	15,413	1.3%	18,391	1.3%	HBU	16,364	1.3%	19,485	1.3%
NHBW	27,921	2.3%	33,971	2.3%	NHBW	27,789	2.2%	33,844	2.3%
NHBO	206,990	17.0%	249,962	17.1%	NHBO	213,141	17.1%	257,177	17.2%
TRK	154,724	12.7%	191,630	13.1%	TRK	154,807	12.4%	191,630	12.8%
Total	1,217,194	100.0%	1,458,984	100.0%	Total	1,246,403	100.0%	1,492,014	100.0%

HBWLo= Home-Based Work Low Income Trips
HBWHi= Home-Based Work High Income Trips
HBS= Home-Based Shopping Trips
HBO= Home-Based Other Trips
HBSCH= Home Based School - K12
HBU= Home Based Univ/College
NHBW= Non Home Based Work
NHBO= Non Home Based Other

The number of trip productions and attractions for 2040 are logically higher than those forecasted for 2015. This increase in trips is directly attributed to the increase in socioeconomic variables. The primary variables affecting the increased number of trips include households, automobile ownership, and employment.

Trip Distribution

The production and attraction trip-ends, estimated for each traffic zone for the year 2040, were matched using a trip distribution model. The model gives the second dimension to travel patterns by connecting trip productions and attractions (trip ends) to form trips. The model works zone by zone, allocating trips produced in one zone to trip attractions in other zones. The distribution is generally based upon the number of attractions of a zone and the distance between zones.

The form of the gravity model is expressed as:

$$T_{ij} = P_i \left(\frac{A_j F_j K_j}{\sum_{k=1}^{zones} A_k F_k K_k} \right)$$

Where,

Tij = O-D trips between TAZ i and TAZ j,
Pi = total trip productions of TAZ i,
Dj = total trips attractions of TAZ j,
Fij = friction factor between TAZ i and TAZ j, and
Kij = socioeconomic factor between TAZ i and TAZ j.

In the model, all Ks are equal to 1. The trip distribution modeling process incorporated the following data inputs and modeling elements:

- Production (P) and Attraction (A) trip ends by trip purpose from the trip generation model, and for each trip purpose the total P must be equal to the total A,
- Interzonal and intrazonal travel times computed using the NIRCC roadway network,
- Friction factors calibrated for each trip purpose using gravity model procedures,
- Socioeconomic adjustment factors, or K-factors, developed as part of the overall model validation process, and
- Gravity model applications by trip purpose using TransCAD procedures.

The results of the 2040 trip distribution of forecasted travel desires indicate an increase over the current distribution. This is expected due to the increase in socioeconomic activity. The general trends appear similar with suburban to suburban activity continuing to increase. The attractiveness between suburban areas and the central urban core will remain important and increase proportionately with redevelopment activity.

Evaluation of the Transportation System

The travel demands are based upon the projected socioeconomic data representing future activity within the Metropolitan Planning Area. The existing plus committed highway system was utilized for the initial evaluation of capacity deficiencies. The existing highway system includes a number of completed projects that were constructed during the tenure of the 2035 Transportation Plan.

Existing Highway System

The existing highway system was utilized for the initial evaluation of capacity deficiencies. The recently completed projects are displayed in Figure 9. The Congestion Management Process (CMP) (see Appendix A) provided the basis for the initial assessment. The CMP includes a systematic data collection and analysis feature that evaluates highway performance based on hourly volumes and available capacity. The volume to capacity ratios provide sufficient information to assess corridor performance during peak periods, and estimate the duration of any congested conditions.

The lane capacities utilized in the CMP are designed to represent the practical capacity based on a Level-of-Service D. The basic lane capacities are based on a relationship of facility type (i.e. freeway, arterial, collector, etc.) and geographic area that reflects the land use and travel characteristics (i.e. central business district, suburban, rural, etc.). These two criteria are important determinates of lane capacity. Table 6 displays the basic lane capacities used for the CMP evaluation process. Exceeding the level-of-service D lane capacities (defined as a ratio of volume to capacity greater than 1.0) indicates situations of levels

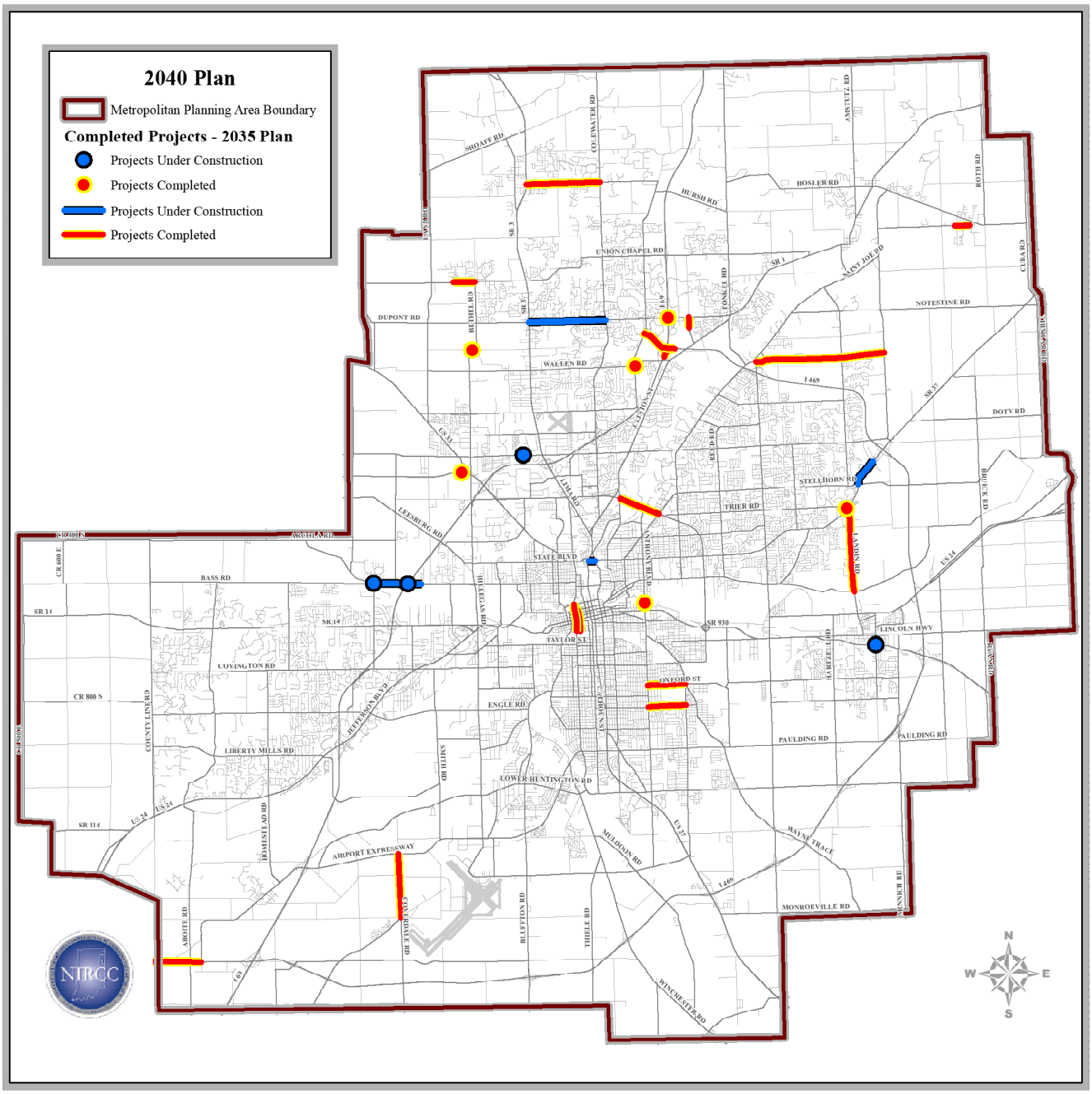

Figure 9

Completed Projects from the current 2035 Plan

of service “E” or “F” exist on a corridor or section of roadway. Levels of service “E” and “F” represent congested conditions and failure of the system to efficiently meet travel demands.

Table 6 Lane Capacities

Highway Class					
Land Use	**Freeway**	**Expressway**	**Two-Way Arterial**	**One-Way Arterial**	**Collector**
CBD	1800	745	605	650	480
CBD Fringe	1800	790	715	715	575
Suburban	1800	865	715	805	575
Rural	1800	820	590	n/a	540
Outlying CBD	1800	790	715	715	575

The deficient corridors currently operating under congested conditions are displayed in Figure 12. These corridors served as the initial assessment for identifying strategies to reduce and eliminate congested conditions. The CMP evaluates a variety of improvement strategies including transit; bicycle and pedestrian; management and operations; and minor roadway improvements before considering added capacity projects. The CMP evaluation is also validated through the travel forecasting process which furthers the evaluation of congested conditions to the horizon year of the plan. This evaluation is based on the projected socio-economic conditions for the region.

The lane capacities utilized for the travel forecasting process represent initial Vehicles per Hour pre Lane assumption (VPHPL) for the various facility types. The VPHPLs are provided in Table 7. These capacities are then adjusted within TransCAD based on operational and geometric characteristics such as the number of lanes, types of shoulders, and location. The use of vehicles in this situation includes a mixture of passenger cars, light-duty trucks, heavy-duty trucks, tractor-trailers, buses, and recreational vehicles. The capacities established represent travel characteristics within and near the urban area and are more sophisticated than the capacities utilized in the CMP. The travel demand forecasting process utilizes a capacity restraint and equilibrium assignment process that adjusts route selection based of congestion and travel time replicating typical human travel behavior. This process allows for the identification of highway corridors where capacity problems will arise in the future. These locations will be referred to as capacity deficient or deficient corridors. Simply stated this translates into congestion and congested corridors. This evaluation is conducted by analyzing roadway sections. The results of this evaluation will be discussed in the conclusion of this chapter.

Transit System

The public transit system was included as part of the travel forecasting process for this transportation plan update. The public transit system currently carries less than eight thousand trips per day and approximately two million trips per year. This accounts for less than one percent of the total trips within the region.

Table 7: ICAP - Initial Vehicles per Hour per Lane Assumption								
		Speed						
FACILITY	Decription	<45	45	50	55	60	65	70
1L1W_rur	One lane one way, rural	1900	2000	2100	2200	2200	2200	2200
1L1W_sub	One lane one way, suburban	1900	2000	2000	2250	2250	2250	2250
1L1W_urbcbd	One lane one way, all urban	1900	2000	2000	2250	2250	2250	2250
2d_rur_pa	Principal arterial, two-way, rural	1900	1900	1900	2200	2200	2200	2200
2d_sub_pa	Principal arterial, two-way, suburban	1900	1900	1900	2200	2200	2200	2200
2d_urbcbd_pa	Principal arterial, two-way, rural	1900	1900	1900	2200	2200	2200	2200
2xd_rur	Two lane, two direction, rural	1700	1700	1700	1700	1700	1700	1700
2xd_sub	Two lane, two direction, suburban	1700	1700	1700	1700	1700	1700	1700
2xd_urbcbd	Two lane, two direction, all urban	1700	1700	1700	1700	1700	1700	1700
ML1W_rur	Multilane, one-way, rural	1900	2000	2100	2200	2275	2350	2400
ML1W_sub	Multilane, one-way, suburban	1900	2000	2100	2100	2250	2350	2400
ML1W_urbcbd	Multilane, one-way, all urban	1900	1900	2100	2100	2250	2350	2400
mld_fa	Multilane, undivided, two-way, fringe area	1900	1900	2000	2100	2250	2350	2400
mlxd_rur	Multilane, undivided, two-way, rural	1900	2000	2100	2200	2250	2350	2400
mlxd_sub	Multilane, undivided, two-way, suburban	1900	1900	2000	2000	2250	2350	2400
mlxd_urbcbd	Multilane, undivided, two-way, all urban	1900	1900	2000	2100	2250	2350	2400
connector	Centroid connector	20000	20000	20000	20000	20000	20000	20000

NOTE: Model period capacities are a function of the initial capacity, but then modified for a variety of factors, such as;Lane width, shoulder width, number of lanes, percent heavy vehicles, driver population, and intersection control effects.

At this performance level, it is difficult for travel forecasting and modeling procedures to accurately replicate transit usage. Meaningful results from the forecasting procedures for transit trips are limited in their value to the decision making process. However, the forecasting process can assist in determining preferred transit strategies and assess ridership increases.

The evaluation of the public transit system and recommendations for future improvements are primarily based upon historical trends and recent transit studies. The existing transit system and route structure serves as the base for the evaluation process. Recommended improvements are derived from the results of the transit studies and surveys. These studies identify deficiencies of the transit system, assess the level of unmet needs, and include comments and suggestions for transit improvements. This process is documented in the Citilink Transit Development Plan Update Report prepared in Fiscal Year 2010 and the Coordinated Public Transit – Human Services Transportation Plan for Allen County Update completed in Fiscal Year 2017. The projects identified in the 2010 Transportation Development Plan and the strategies identified in the 2017 Coordinated Plan are included as a component of this plan. However, Citilink initiated a new Comprehensive Operations Analysis (COA) / Transit Development Plan (TDP) in early 2018 with completion anticipated in mid-2019. Recommendations from the COA/TDP that are endorsed and approved by Citilink will be amended into this plan.

Currently there are urban and rural transit systems operating within the MPA. Fort Wayne Public Transportation Corporation (d.b.a. Citilink) is the urban transit provider, providing fixed route service and complementary demand response paratransit service. Their current service area is the incorporated boundaries of the City of Fort Wayne and the City of New Haven, as well as a very small portion of northern Allen County near Parkview Regional Medical Center. There are two (2) rural transit providers within the MPA. The Whitley County Council on Aging (dba Whitley County Transit (WCT)) is the rural transit provider in Whitley County. Their service area includes all of Whitley County, including a small portion on the western edge of the MPA. The Huntington County Council on Aging (dba Huntington County Transportation (HAT)) is the rural transit provider in Huntington County. Their service area includes all of Huntington County, including a small portion on the southwestern edge of the MPA. Aging and In-Home Services of Northeast Indiana (dba Countilink) ceased operations as the rural transit provider in Allen County at the end of 2013. Between 2009 and 2013, Countilink provided demand response public transit service anywhere within Allen County as long as the trip origin or destination is outside the incorporated boundaries of the Cities of Fort Wayne and New Haven. Allen County no longer has a rural public transit provider. Citilink is the primary transit provider within the MPA.

Citilink currently provides bus service on thirteen (13) fixed routes and two (2) point-deviation routes throughout Fort Wayne and New Haven at thirty (30) and sixty (60) minute frequencies (headways), dependent upon the route and time of day. Buses operate between 5:45 AM and 9:30 PM on weekdays and

7:45 AM and 6:15 PM on Saturdays. Most of the routes utilize the Fort Wayne Central Business District as a hub and transfer point. However, in 2013, a route known as MedLink (Route 15) was established to provide a link between the Parkview North and the Parkview Randallia locations. The two (2) point-deviation routes (Routes 21 and 22) currently operate to provide access to suburban medical and retail facilities. The existing Citilink transit route network is displayed in Figure 10. Until the summer of 2008, the majority of the routes ran on thirty (30) minute headways, however funding issues resulted in several of the routes having their service frequency reduced to sixty (60) minute headways. Currently, twelve (12) routes run on sixty (60) minute headways, and three (3) run on thirty (30) minute headways. Citilink intends to restore the thirty (30) minute service as funding is made available to provide more frequent service on heavily used routes, beginning with routes 1, 2, and 3.

Citilink also operates two (2) circulator routes for area universities and colleges. In partnership with Ivy Tech Community College Northeast, Citilink provides a free shuttle service, known as campusLink, for students, faculty, staff, and even the general public to get around easily between Ivy Tech's Coliseum and North campuses, IPFW, and nearby student housing. A similar service in partnership with the University of Saint Francis, known as the Cougar Express, runs between their Spring Street and Downtown campus locations – serving as a free downtown circulator. The campusLink and Cougar Express routes are included in the Citilink transit route network displayed in Figure 10. Both services operate during the school year on weekdays at 30 minute frequencies, and provide a direct connection to Citilink's fixed-route bus service.

In addition, Citilink also provides complementary demand response paratransit service, known as ACCESS, for the entire city limits of the City of Fort Wayne and within a ¾ mile radius of Route 10-New Haven and Route 15-MedLink. This is a significant service for the area. Many public transit providers only provide this service within a ¾ mile radius of their fixed routes, as required. Citilink exceeds this requirement by providing paratransit service to a substantial portion of the urban population. This significantly reduces the burden on other specialized transportation providers and ensures a high degree of mobility to area residents.

Citilink's service area (incorporated boundaries of the City of Fort Wayne and the City of New Haven, as well as a very small portion of northern Allen County near Parkview Regional Medical Center) currently contains approximately 77% of all households, 76% of the population, and 85% of the employment opportunities within the Metropolitan Planning Area. If the service area does not expand, by 2040 it is estimated that these numbers will decrease to account for approximately 70% of all households, 67% of the population, and 82% of the employment opportunities within the MPA. Citilink transit routes do not fully serve their entire service area. Portions in the northeast, southwest, and surrounding the Fort Wayne International Airport do not currently receive transit service. An analysis of Citilink service indicates that approximately 55% of the households, 54% of the population, and 73% of employment opportunities

are currently within a ½ mile of a transit route. Utilizing the current route network, a similar analysis for socioeconomic conditions projected for 2040 indicates approximately 50% of the households, 47% of the population, and 70% of the employment opportunities will be located within ½ mile of a transit route. Recommended expansion of the Citilink service area will help to address this service reduction.

The service area of the rural transit providers within the MPA currently contains approximately .5% of all households, .5% of the population, and .2% of the employment opportunities within the MPA. By 2040 it is estimated that these numbers will increase to approximately 1.1% of the households, 1% of the population, and .3% of the employment opportunities. Since WCT and HAT both operate demand response systems, transit service is available to 100% of their service area including those portions within the MPA.

Collectively, the three (3) transit providers currently provide transit service to approximately 56% of all households, 54% of the population, and 73% of the employment opportunities within the MPA. These numbers are projected to remain relatively constant for the projected 2040 socioeconomic conditions with transit reaching approximately 50% of all households, 47% of the population, and 70% of the employment opportunities. The coverage area of transit service within the MPA is displayed in Figure 11.

Conclusion

The evaluation of the existing plus committed highway system was utilized for the initial evaluation of capacity deficiencies when burdened with the 2040 travel demands. The CMP includes a systematic data collection and analysis feature that evaluates highway performance based on hourly volumes and available capacity. The volume to capacity ratios provide sufficient information to assess corridor performance during peak periods, and estimate the duration of any congested conditions. The deficient corridors currently operating under congested conditions are displayed in Figure 12.

The analysis of the travel demand forecast indicates that additional improvements are necessary to meet the projected 2040 travel demands. Highway and transit system improvements will need to be implemented to mitigate congestion and maintain desirable traveling conditions. This analysis sets the stage for developing and analyzing alternative strategies for improving the deficient corridors. The evaluation of the existing plus committed transportation system establishes the foundation for developing alternative scenarios of highway and transit improvements designed to maintain acceptable levels-of-service and meet the projected year 2040 travel desires.

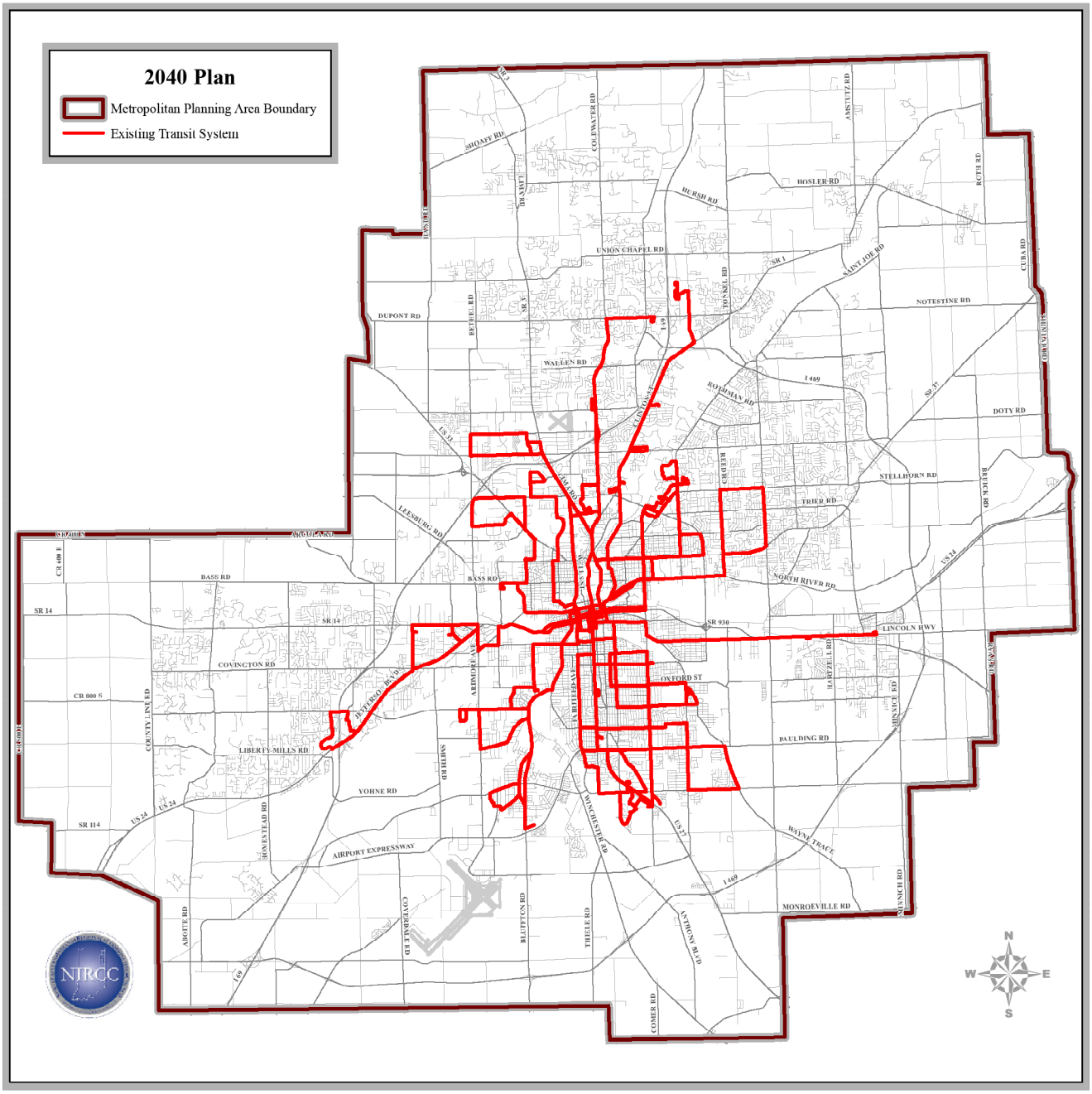

Figure 10

Existing Transit System

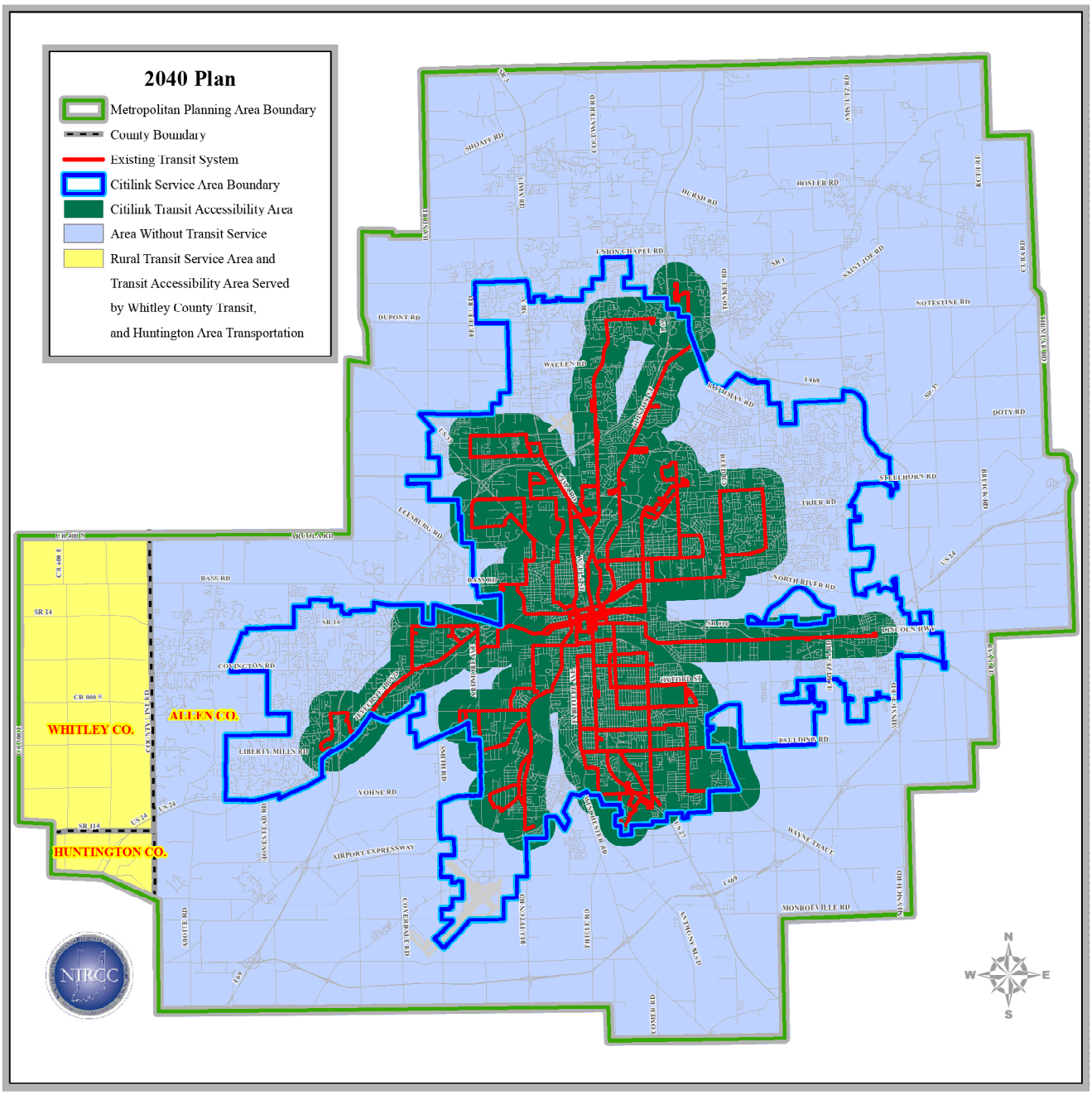

Figure 11

Transit System Accessibility

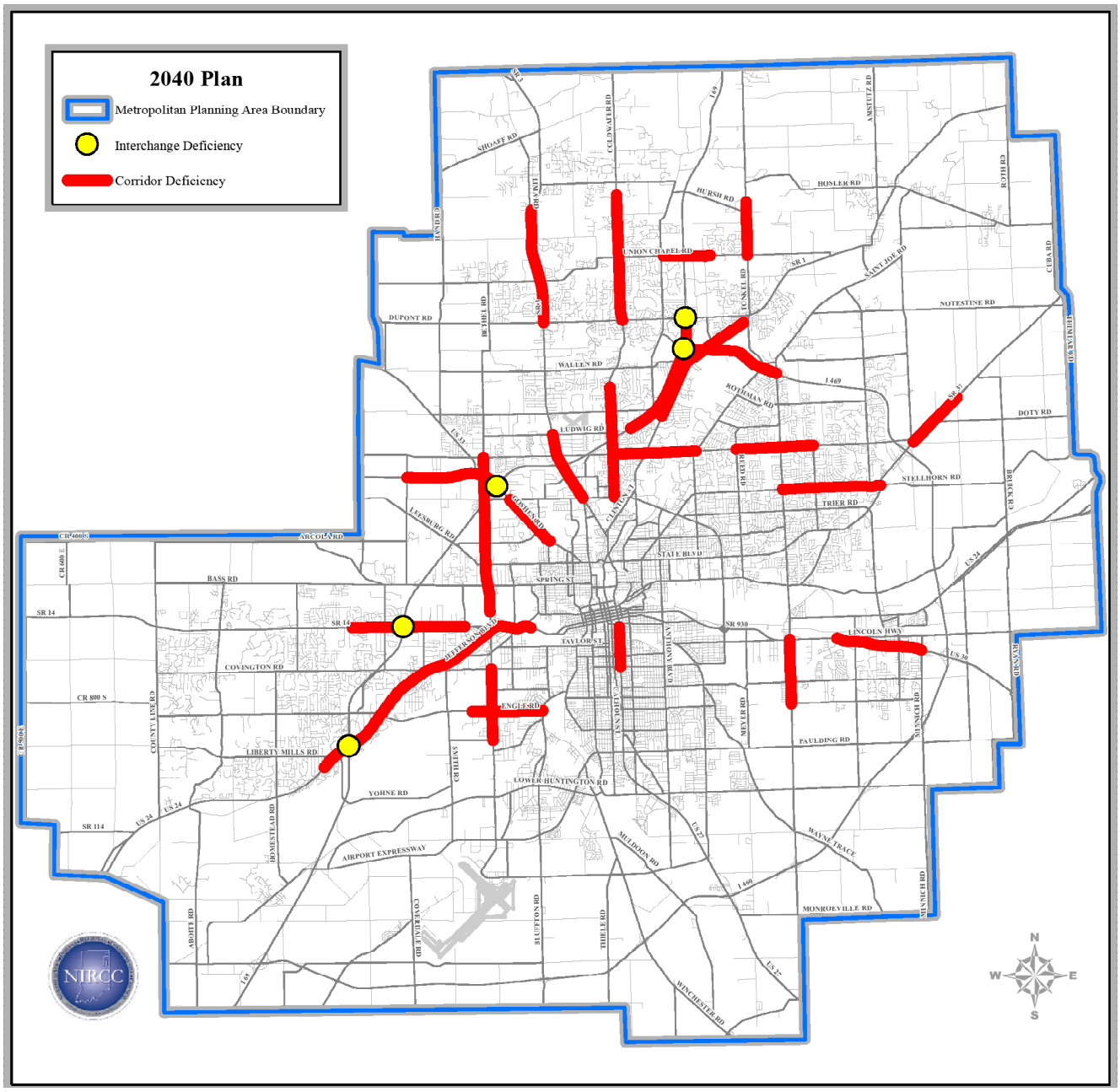

Figure 12

Network Deficiencies if no Projects were completed