

APPENDIX A: TRANSPORTATION MEMORANDUM

DATE: January 20, 2022

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SUBJECT: East Albany Plan – Gap Analysis Memorandum (DRAFT)

Project #21181-000

The purpose of this memorandum is to summarize the transportation system gap analysis for the East Albany Plan area. The gap analysis evaluated several facets of the transportation system with the assumed regional growth that is projected to occur through the Regional Transportation Plan (RTP) planning horizon of 2040. The following sections summarize background context, future vehicular mobility, pedestrian and bicycle experience, and planned infrastructure improvements.

EXECUTIVE SUMMARY

The gap analysis identified the following findings:

- Regional 2040 land use projections and assumptions based on existing Comprehensive Plan designations were coordinated with local agencies during the development of the Corvallis-Albany-Lebanon Model (CALM) development in 2014.
- The regional 2040 land use projections were used to develop traffic growth forecasts as part of the 2018 Albany Areal Metropolitan Planning Organization (AAMPO) Regional Transportation Plan (RTP). City staff have indicated that these forecasts may underestimate future growth potential. The land use in the East Albany area included the following changes from 2010 to 2040:
 - Employment growth throughout, but primarily south of US 20. There is also moderate growth assumed along Knox Butte Road and US 20 corridors.
 - Significant residential growth north of Knox Butte Road (some developments have already occurred), and high growth east of Goldfish Farm Road between Knox Butte Road and US 20.
- The East Albany area has limited connectivity with Knox Butte Road and US 20 providing the only east-west connections to I-5 and the portion of Albany west of I-5. North-south connections are also limited and are not continuous through the full area.
- The land use growth in the area is projected to add additional traffic and further degrade the primary routes. Traffic intersection operations would degrade, and some intersections would not meet mobility targets.
- The additional traffic on streets will further degrade the pedestrian and bicycle experience along these facilities. Many streets have curb-tight sidewalks or limited shoulder. In addition, the ability to safely cross these roads will become more difficult with the increased traffic.
- The Regional transportation plan identifies numerous future transportation projects to address regional transportation needs. These projects include approximately \$10 million in active transportation investments and \$30 million in roadway capacity enhancements. It is anticipated that some of these projects cannot be funded through 2040 with current revenue levels. Additional local projects would be needed to provide localized spot treatments and strategies, such as safe crossing opportunities.

- There are long term plans to modify I-5 and interchange configuration along the project area. While the timing of these improvements are not known, they will require future local circulation modifications adjacent to I-5.

REGIONAL GROWTH CONTEXT

The AAMPO RTP (adopted 2018) identifies future transportation projects to support regional transportation growth projections. The RTP used traffic volume projections based on the regional travel demand model (CALM) and regional land use projections that are consistent with Albany’s Comprehensive Plan. These land use projections and the resulting traffic forecasts were prepared for a year 2040 planning horizon¹.

The growth assumptions from the 2018 RTP (attached Figure 1, 2, and 3) indicate:

- Employment growth throughout, but primarily south of US 20. There is also moderate growth assumed along Knox Butte Road and US 20 corridors.
- Significant residential growth north of Knox Butte Road (some new developments have already occurred), and high growth east of Goldfish Farm Road between Knox Butte Road and US 20.

Table 1 summarizes the land use growth projections from 2010 to 2040 in the East Albany area. Some of this growth (such as homes north of Knox Butte Road) has already occurred. City staff have indicated that these growth forecasts may underestimate the future growth potential.

TABLE 1. EAST ALBANY LAND USE GROWTH PROJECTIONS (2010 TO 2040)

AREA	HOUSEHOLDS	EMPLOYEES	SCHOOL ENROLLMENT
NORTH OF KNOX BUTTE RD	1,606	174	823
KNOX BUTTE TO US 20	795	236	0
SOUTH OF US 20	156	870	0
TOTAL	2,557	1,280	823

Source: AAMPO RTP

FORECASTED TRAFFIC GROWTH

Table 2 summarizes the traffic growth that was forecasted for select locations within East Albany in the RTP. These roads are projected to experience traffic increases of approximately 30 to 40 percent through the planning horizon of 2040 as additional growth occurs in the East Albany area.

¹ The City’s Transportation System Plan (TSP) was adopted in 2012 with a horizon year of 2030 and was based on a prior set of land use assumptions and a different travel demand model that was not linked with the Corvallis travel model. The current CALM model was developed to capture the interaction between the two MPOs and surrounding areas.

TABLE 2. EAST ALBANY PEAK HOUR TRAFFIC VOLUME PROJECTIONS (30HV TWO-WAY VOLUME)

LOCATION	EXISTING VOLUME (2015)	PROJECTED VOLUME (2040)	PERCENT GROWTH
US20 (EAST OF I-5 RAMPS)	1,550	2,000	29%
KNOX BUTTE ROAD (EAST OF I-5 RAMPS)	1,500	2,050	37%
CLOVER RIDGE ROAD (NORTH OF KNOX BUTTE ROAD)	500	700	40%

Source: AAMPO RTP

TRAFFIC OPERATIONS

The RTP and TSP previously reported traffic operating conditions in the East Albany study area. The RTP provides the following overview of the intersection operations documented in the RTP:

Intersection operations were analyzed based on the 2000 Highway Capacity Manual² for signalized intersections and 2010 Highway Capacity Manual³ for unsignalized intersections. Level of service and v/c ratios are two commonly used performance measures that provide a gauge of intersection operations. Level of service is a “report card” rating (A through F) based on the average delay experienced by vehicles at the intersection. LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F represents conditions where average vehicle delay has become excessive and demand has exceeded capacity. This condition is typically evident in long queues and delays.

A v/c ratio is decimal representation (between 0.00 and 1.00) of the proportion of capacity that is being used (i.e., the saturation) at a turn movement, approach leg, or intersection. A lower ratio indicates smooth operations and minimal delays. As the ratio approaches 1.00, congestion increases and performance is reduced. If the ratio is greater than 1.00, the turn movement, approach leg, or intersection is oversaturated and usually results in excessive queues and long delays.

All non-state roadways within the study area are under the jurisdiction of the local or county agency. The City of Albany requires a Level of Service (LOS) D or better to be maintained for all signalized or all-way stop intersections. For uncontrolled and two-way stop controlled intersections the volume-to-capacity ratio should not exceed 0.85, for the worst movement.

ODOT intersections have mobility targets based on the Oregon Highway Plan (OHP). The volume-to-capacity target for interchanges is 0.85. Following the adoption of the AAMPO RTP, an alternate

² 2000 Highway Capacity Manual, Transportation Research Board, Washington DC, 2000.

³ 2010 Highway Capacity Manual, Transportation Research Board, Washington DC, 2010.

mobility target was adopted for US 20 (non-interchange locations), which is a volume-to-capacity ratio of 1.0 during the 30HV (peak season) condition and using a peak hour factor of 1.0.

Table 3 lists the intersection operations under 2015 existing and 2040 conditions. TSP conditions (2030 horizon) are reported for locations that were not included in the RTP intersection analysis. As indicated with bold text in the table, several intersections would be approaching or exceeding mobility targets in the future 2040 planning horizon.

TABLE 3. STUDY AREA INTERSECTION OPERATIONS (30 HV PEAK HOUR)

INTERSECTION	INTERSECTION CONTROL	MOBILITY TARGET	EXISTING (2015)		FUTURE 2040	
			LOS	V/C	LOS	V/C
I-5 SB / OR99E	Signalized	v/c < 0.95	D	0.84	F	1.43
I-5 NB / KNOX BUTTE RD	TWSC	v/c <0.85	A/F	0.19/ 1.06	B/F	0.66/ >2.0
KNOX BUTTE RD / TIMBER ST	TWSC	LOS D, v/c < 0.85	A*	0.26*	N/A**	N/A**
KNOX BUTTE RD / CLOVER RIDGE RD	TWSC	LOS D, v/c < 0.85	A/E	0.45/ 0.32	B/F	0.76/ 1.97
KNOX BUTTE RD / SCRAVEL HILL RD	TWSC	LOS D	A/B	0.13/ 0.14	A/B	0.13/0.25
I-5 SB / US20	Signalized	v/c <0.85	D*	0.70*	D	0.78
I-5 NB / US20	Signalized	v/c <0.85	A*	0.64*	C	0.85
US20 / GOLDFISH FARMS RD	Signalized	v/c<1.0	C*	0.24*	B*	0.68*
US20 / SCRAVEL HILL RD	TWSC	v/c<1.0	A/B	0.35/0.15	A/C	0.38/0.22
GRAND PRAIRIE RD / THREE LAKES RD	TWSC	LOS D	C	0.25	N/A**	N/A**
7 MILE LN / THREE LAKES RD	TWSC	LOS D	A/B	0.08/0.09	A/B	0.12/0.12

*Information gathered from City of Albany TSP, which has a horizon year of 2030 rather than 2040 and base year of 2008.

**Information displayed from City of Albany TSP base year operations (2008) because horizon year operations are not included at these intersections in either City of Albany TSP nor AAMPO RTP

FESCUE STREET CLOSURE

The East Albany area has limited connectivity with Knox Butte Road and US 20 providing the only east-west connections to I-5 and the portion of Albany west of I-5. North-south connections are

also limited and are not continuous through the full area. Prior planning conducted for the I-5 corridor (I-5: South Jefferson Interchange to US 20 Interchange) has identified the need to reconfigure interchange configuration through the corridor. One modification that has been identified is the closure of Fescue Street connection to US 20 at the I-5 northbound ramp terminal. The TSP and RTP identify additional future roadway extensions to provide access to this area, including a new traffic signal at Timber Street / US 20, extension of Timber Street to Three Lakes Road, and connection of Maple Leaf Avenue to Spicer Drive.

Due to the limited connectivity south of US 20, preliminary traffic analysis was conducted to understand the general feasibility and magnitude of improvements that would be needed to support access via Timber Street. The following assumptions and methods were used to perform this preliminary analysis:

- 2040 traffic forecasts prepared for the AAMPO RTP (including US 20/Fescue intersection) were used as the basis for the traffic analysis
- Assumed a full closure of Fescue Street connection with all traffic shifting to Timber Street
- Traffic volumes loading onto Timber Street would depend on future land use location and orientation. Three Lakes Road provides access to a large area, while Spicer Drive provides access to commercial properties. Assumed approximately one third of trips northbound and southbound on Timber Street would be destined to Spicer Drive.
- The driveway on the north side of US 20 opposite of Timber Street was assumed to have 25 vehicles for each turning movement into and out of the driveway.
- Timber Street was assumed to be a three-lane section, except as needed for additional turn lanes.
- The US 20/Timber Street intersection was assumed to be signalized with dual northbound left turn lanes and an eastbound right turn lane (run as an overlap with the northbound left turn).
- The Maple Leaf Avenue/Timber Street intersection was assumed to be two way stop controlled with free north-south flow on Timber Street.
- The two intersections were assumed to be spaced with approximately 600 feet of separation.

The analysis findings include:

- The US 20/Timber Street intersection would meet both City of Albany and ODOT mobility targets (LOS C, $v/c = 0.75$) but some movements, including left turns would likely have high delay.
- The 95th percentile queue for the northbound left turn would be approximately 200 feet, and would fit within the 600 foot spacing.
- The operations of the Maple Leaf Avenue/Timber Street intersection would generally be dictated by the level of traffic volume using Maple Leave Avenue and turning onto Timber Street. As analyzed, the high level of eastbound left turn movements would cause the intersection to operate at LOS F and exceed the City of Albany mobility target.
- Roundabout control for the intersection of Maple Leaf Avenue/Timber Street could help serve the turning movements at this location. The vehicle queuing analysis indicates that the 95th percentile northbound traffic queue at US 20 would not extend to this intersection.

ACTIVE TRANSPORTATION REVIEW

The future traffic conditions identify areas within East Albany that forecast operations near or over capacity for automobile mobility. Increasing volume and congestion along major connective corridors such as US20, Know Butte Road, Goldfish Farms Road, would also depreciate safety for pedestrians or cyclists traveling. Attempting to cross streets at marked or unmarked crossings will become more difficult as a results of increasing volumes. Cyclists riding on roadways would also have a degraded experience and increased risk with more traffic and no improvements made to bicycle facilities.

Generally, there are few sidewalks and marked crossings within East Albany under existing conditions. Some roadways such as US20, Knox Butte Road and Goldfish Farms Road, that could serve as connections for pedestrians or cyclists do not include consistent sidewalks, bike lanes, or marked crossings. Especially in areas where these facilities do not exist, added stress for users by increasing traffic volumes could deter users from choosing active modes of transportation.

Few pedestrian and cyclist facilities are present in East Albany and there are few planned projects to enhance active transportation in the area. To make active transportation modes into choice modes, and to provide mobility for those without access to automobiles, further investment in pedestrian and cyclist facilities may be necessary.

PLANNED INFRASTRUCTURE IMPROVEMENTS

The AAMPO RTP and City of Albany TSP include lists of financially constrained and aspirational projects. Table 4 lists the identified transportation projects to improve vehicle capacity in the AAMPO RTP.

TABLE 4. PLANNED TRAFFIC CAPACITY IMPROVEMENTS PROJECTS (EAST ALBANY)

ID	PROJECT NAME	COST
FINANCIALLY CONSTRAINED PROJECTS		
A18	Knox Butte Rd/Century Dr Interim Signal	345,000
A23	Knox Butte Rd Widening ROW	1,478,000
A20	Timber St Extension	966,000
A24	Know Butte Rd Widening ROW	31,000
A48	Timber St Extension/18 th Ave/Spicer Dr	650,000
A82	Timber St Extension/18 th Ave/Spicer Dr	863,000
A106	Knox Butte Rd Widening	1,901,400
A107	Knox Butte Rd Widening	825,000
A108	Knox Butte Rd Widening	1,256,000
A109	Knox Butte Rd Widening	7,688,000
A131	Scravel Hill Rd Improvements	9,699,000
		\$25,702,400
ASPIRATIONAL PROJECTS		
A78	US20/Timber St Signal	571,000
A96	Spicer Dr Extension (West of Timber St)	982,000
A97	Spicer Dr Extension (East of Timber St)	1,666,000
		\$3,219,000

Planned projects in East Albany will provide capacity improvements on corridors that project to experience significant delay and congestion in the future (i.e. Knox Butte Road). However, planned capacity improvements on roadways in East Albany will likely be expensive, totaling project costs of approximately 30 million dollars.

With the knowledge of forecast conditions, constructing bike and pedestrian facilities to provide connectivity between each other will become very important to control future vehicular demand. The AAMPO RTP identifies planned improvements to multimodal facilities within East Albany as listed in Table 5.

TABLE 5. PLANNED MULTIMODAL PROJECTS (EAST ALBANY)

ID	PROJECT NAME	COST
FINANCIALLY CONSTRAINED PROJECTS*		
A134	Goldfish Farms Rd Improvements	4,444,000
A138	US20 Improvements	2,068,000
A160	Airport Rd Sidewalks	485,000
LC8	Clover Ridge Rd Improvements	2,000,000
		\$8,997,000

*No additional Aspirational Projects are proposed in the AAMPO RTP for multimodal improvements in East Albany.

ATTACHMENTS

The following attachments are included:

- Figure 1 – Education Enrollment Growth (2010 to 2040)
- Figure 2 – Employment Growth (2010 to 2040)
- Figure 3 – Households Growth (2010 to 2040)

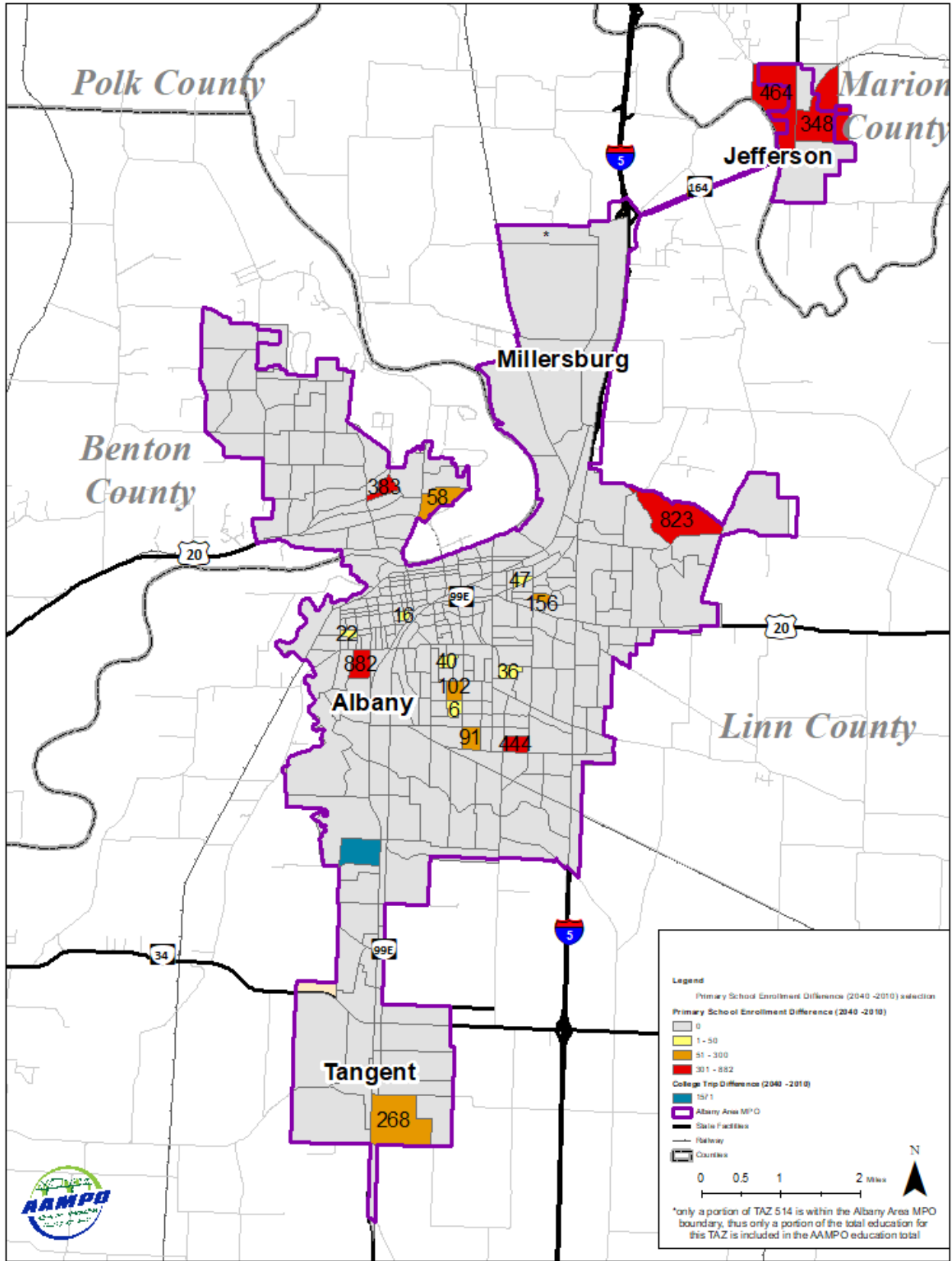


FIGURE 1: EDUCATION ENROLLMENT GROWTH (2010-2040)

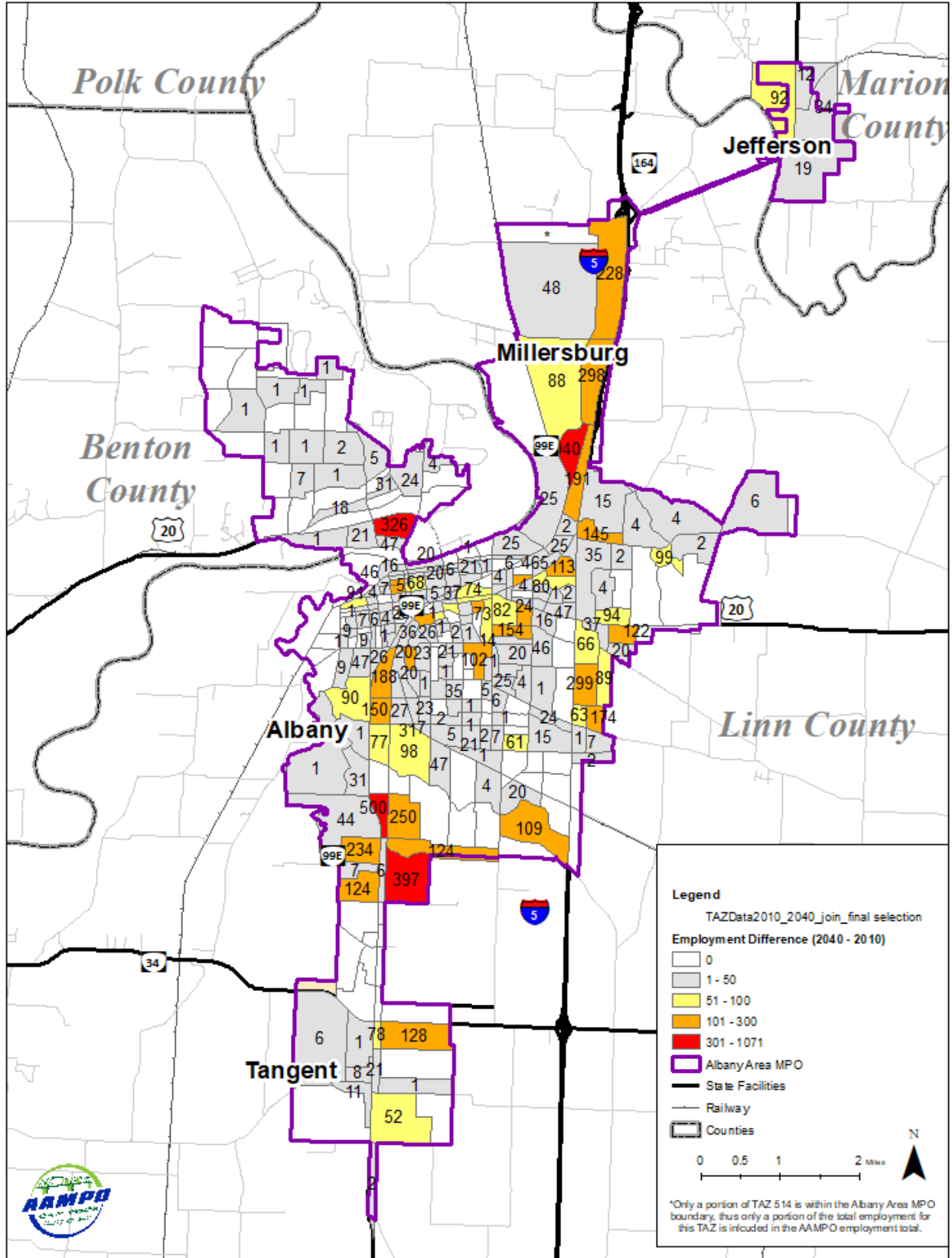


FIGURE 2: EMPLOYMENT GROWTH (2010-2040)

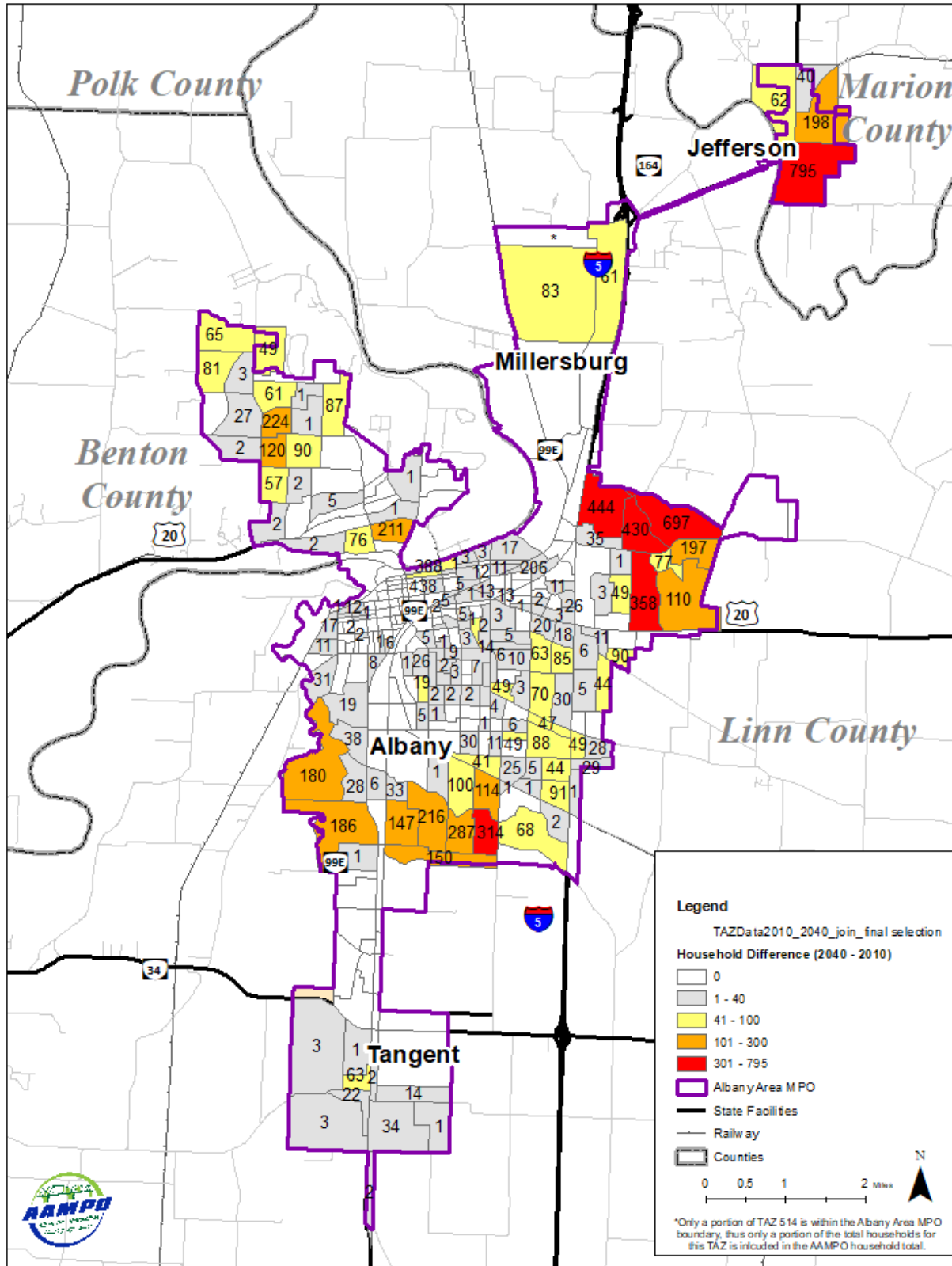


FIGURE 3: HOUSEHOLD GROWTH (2010-2040)