PROPEL INDY

Smarter Transportation. Stronger Communities.

Travel Demand Model Development and Calibration Report

Version 1.0

12/20/2024

INDIANA DEPARTMENT OF TRANSPORTATION INDOT

NextLevel ROADS

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1. PURPOSE OF THIS REPORT

As part of the ProPEL Indy study, a dedicated travel demand model (the PEL Indy Model, unless otherwise noted) was developed as the primary planning tool to generate traffic data and support transportation needs and alternatives analyses in the study area. This report describes the 2023 Base Year model calibration, the 2023 Final model adjustment, and the 2050 Future Year model development process.

A Modeling Team was established at beginning of the study. The Modeling Team, which includes INDOT and the ProPEL Indy study consulting team, has held recurring meetings to discuss model development. The Indianapolis Metropolitan Planning Organization (IMPO) was consulted during the model development process.

The ProPEL Indy study limits include approximately 11 miles of I-65, 14 miles of I-70, and 1 mile where I-65 and I-70 overlap. The study limits are broken into the following four "spokes" as an organizational tool (see **Figure 1**):

- **65 Spoke** – From the I-465/I-65 interchange on the northwest side to the 21st Street interchange.
- **65/70 Downtown Spoke** – I-65 from the 21st Street interchange south to Alabama Street (west end of North Split project), I-65/I-70 from Washington Street (south end of North Split project) south to the South Split interchange, and I-70 from just west of the West Street interchange east to the South Split interchange.
- **70 West (W) Spoke** – From the I-465/I-70 interchange on the west side to just west of the West Street interchange.
- **70 East (E) Spoke** – From just west of the Keystone Avenue/Rural Street interchange (east end of North Split project) to the I-465/I-70 interchange on the east side.

The study limits extend slightly beyond I-465 and the I-65/I-70 South Split interchange to consider the potential influence of those system interchanges. Two active federally funded projects under construction (I-65/I-70 North Split) or in NEPA (I-65 Safety and Efficiency) are largely excluded from the study limits. ProPEL Indy does overlap with the I-65 Safety and Efficiency project on the southeast side of Indianapolis. The overlap with I-65 Safety and Efficiency extends from north of Fletcher Avenue on I-65/I-70 to the South Split interchange ending south of Morris Street along I-65. The remainder of the I-65 Safety and Efficiency project area, which extends south on I-65 to I-465, is excluded from the study limits.

The study area includes I-65 and I-70 within the study limits described above and local road intersections that influence or are influenced by the interstates.

Due to the nature of the study, the Modeling Team had consensus that it was best to use the latest IMPO Travel Demand Model (ITDM) as a starting point to develop a model that has full coverage of the study limits and provides consistent time-of-day (TOD) data for the ProPEL Indy study corridors. The ITDM has a 2022 base year and a 2050 future year and covers nine counties (Boone, Hamilton, Hancock, Hendricks, Johnson, Madison, Marion, Morgan, Shelby) in the Indianapolis metropolitan region, as **Figure 2** shows.

Figure 1: ProPEL Indy Study Limits

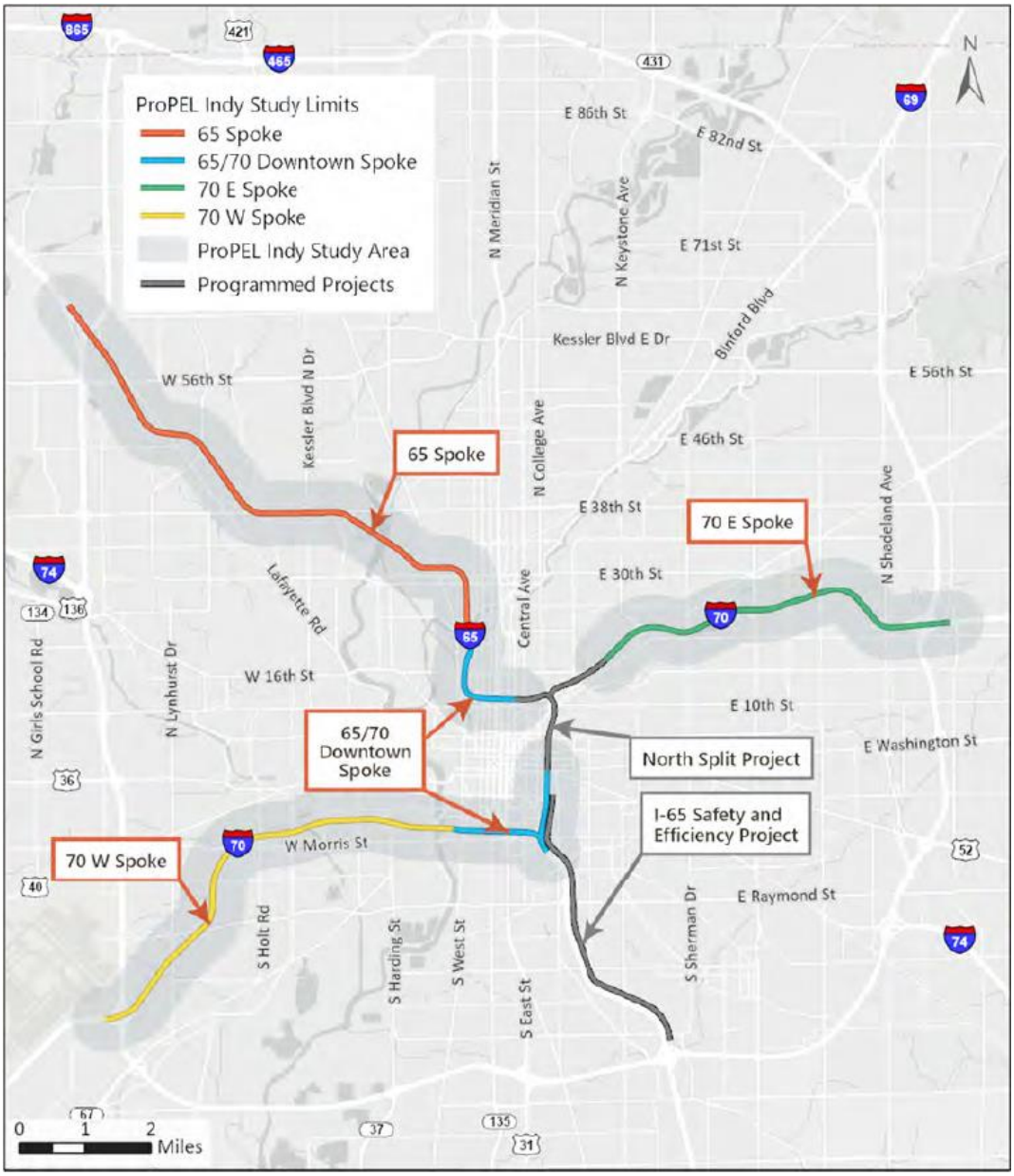
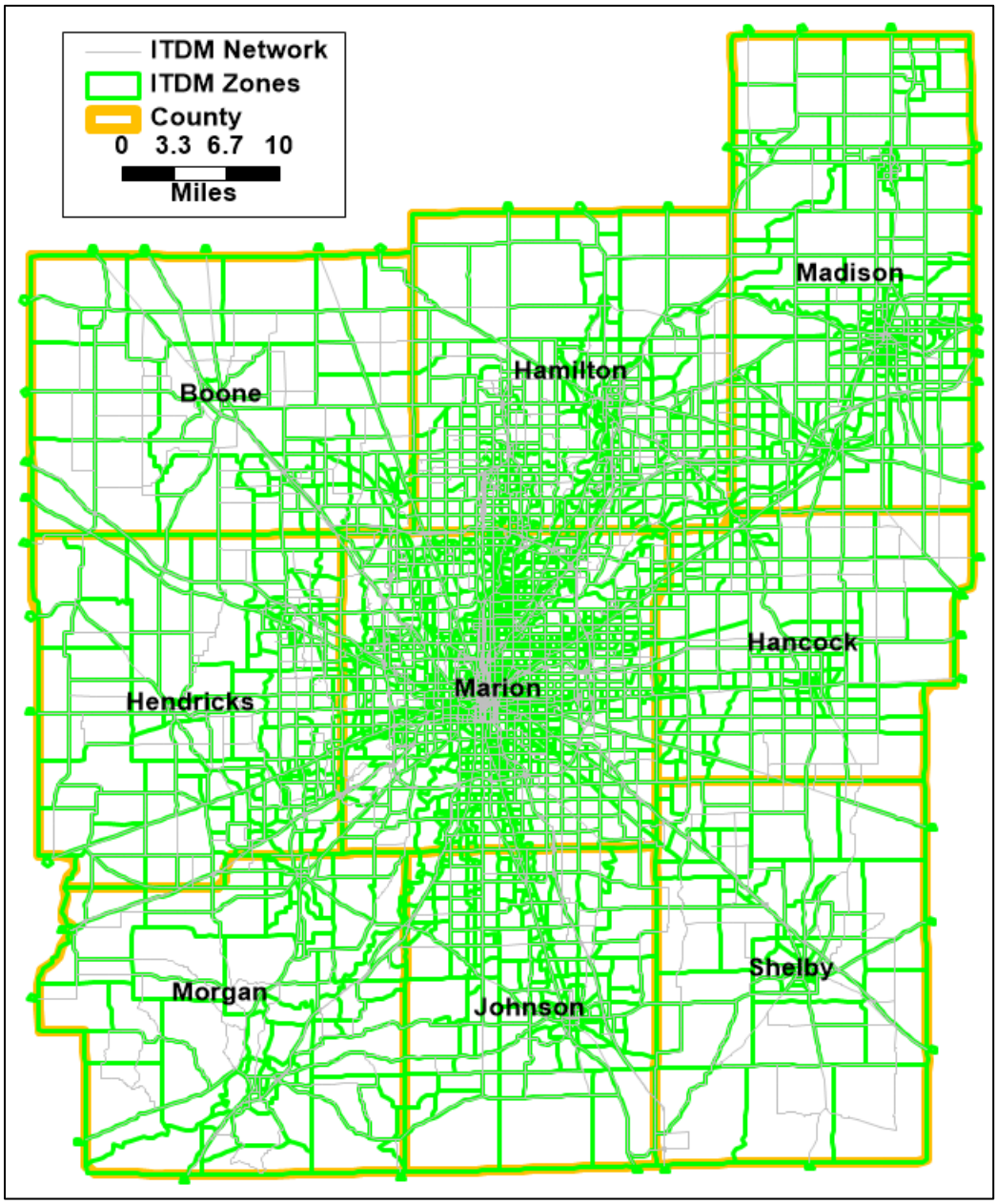


Figure 2: ITDM Network and Zones



The ProPEL Indy Model incorporated necessary enhancements to the ITDM, described in Section 2.0, to meet the study needs. With the ITDM base year of 2022, the model was calibrated to a 2023 Base Model to ensure its ability to reproduce traffic data in the existing conditions. 2023 was determined as a base year for the study because the traffic had settled after the COVID-19 pandemic and the North Split re-construction was completed and the interchange was opened to traffic in early May 2023. The 2023 Base Model was calibrated to INDOT traffic counts that

were collected during May and June 2023. The 2023 Base Model was then adjusted to a 2023 Final Model that represents normal traffic conditions in 2023 by accounting for the Indiana University Purdue University of Indianapolis (IUPUI) regular school season and assuming the completion of on-going major construction projects within the study limits. The 2050 Future Model incorporated INDOT's major existing and committed (E+C) capacity projects and IMPO's 2050 Metropolitan Transportation Plan (MTP) capacity projects in the network. The 2050 Future Model also updated the original ITDM zonal growth estimation by incorporating the imminent land developments that were confirmed by INDOT, IMPO, and other local agencies. The ProPEL Indy Model can be run for forecast years to generate consistent traffic data in support of the study.

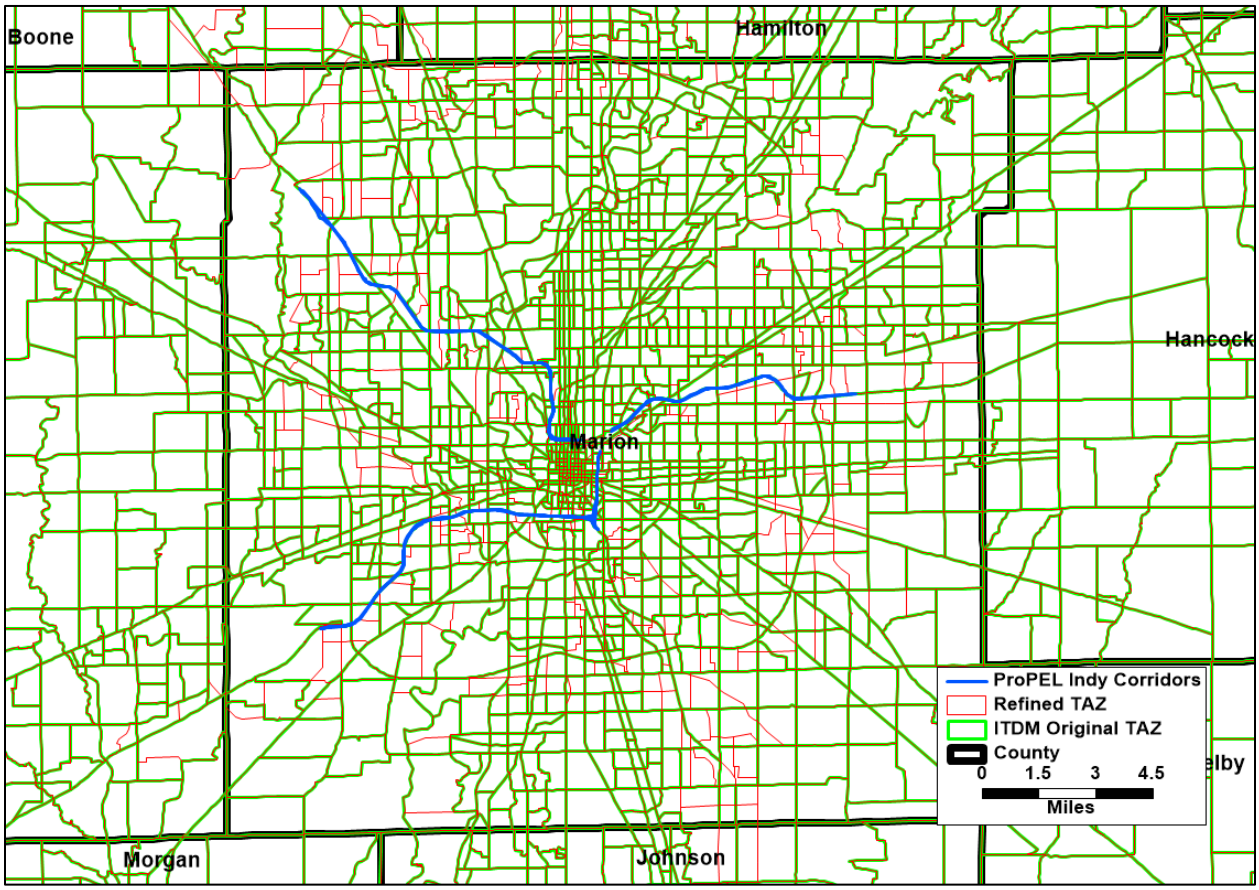
Note: After July 1, 2024, IUPUI officially separated into two schools – Indiana University Indianapolis and Purdue University at Indianapolis. This report refers to the schools as IUPUI, which was the name of the school when the travel demand modeling described herein was performed.

2. 2023 BASE MODEL

2.1. TAZ REFINEMENT

The ITDM is a high-level regional traffic forecasting tool that was developed for the 9-county region in central Indiana. For this study, it was necessary to add additional details to the ProPEL Indy Model for a more robust forecasting capability of analysis corridors. The ITDM has 3,078 traffic analysis zones (TAZ). This TAZ structure was refined to better represent land use patterns within an approximate 3-mile buffer of all freeways in the Indianapolis metropolitan area. The zone refinement also expanded to the Indianapolis suburban area along interstates, as needed. Special attention was given to zone refinements surrounding interchanges and major intersections where activity centers/major trip generators currently exist, or new developments are anticipated to occur. For example, an existing large zone may be split to smaller zones to separate vacant and occupied lands or distinguish residential and commercial uses. **Figure 3** shows the refined zone structure. The number of zones increased from 3,078 to 3,439 after the TAZ refinement process.

Figure 3: TAZ Refinement



The ITDM 2022 origin-destination (OD) trip tables (OD matrix with 3078 zones x 3078 zones) were disaggregated to the new OD trip tables (OD matrix with 3439 zones x 3439 zones) by autos and trucks separately, based on the refined zone structure. 2020 census block-level household data (see **Figure 4**) and INDOT's available 2023 Data Axle employment data, which provides business locations (see **Figure 5**) and employment data, were used in the OD table disaggregation process, according to the common modeling practice. For the auto OD table, the percent shares of households and total employment were generally used to disaggregate trips for origin zones and destination zones, respectively. For truck OD table, the percent shares of freight-related employment (including agriculture, construction, and industry jobs) were generally used to disaggregate trips for both origin and destination zones. The disaggregated auto and truck OD tables (3439x3439) served as a "seed" trip table in the 2023 Base Model calibration process.

Figure 4: 2020 Census Blocks

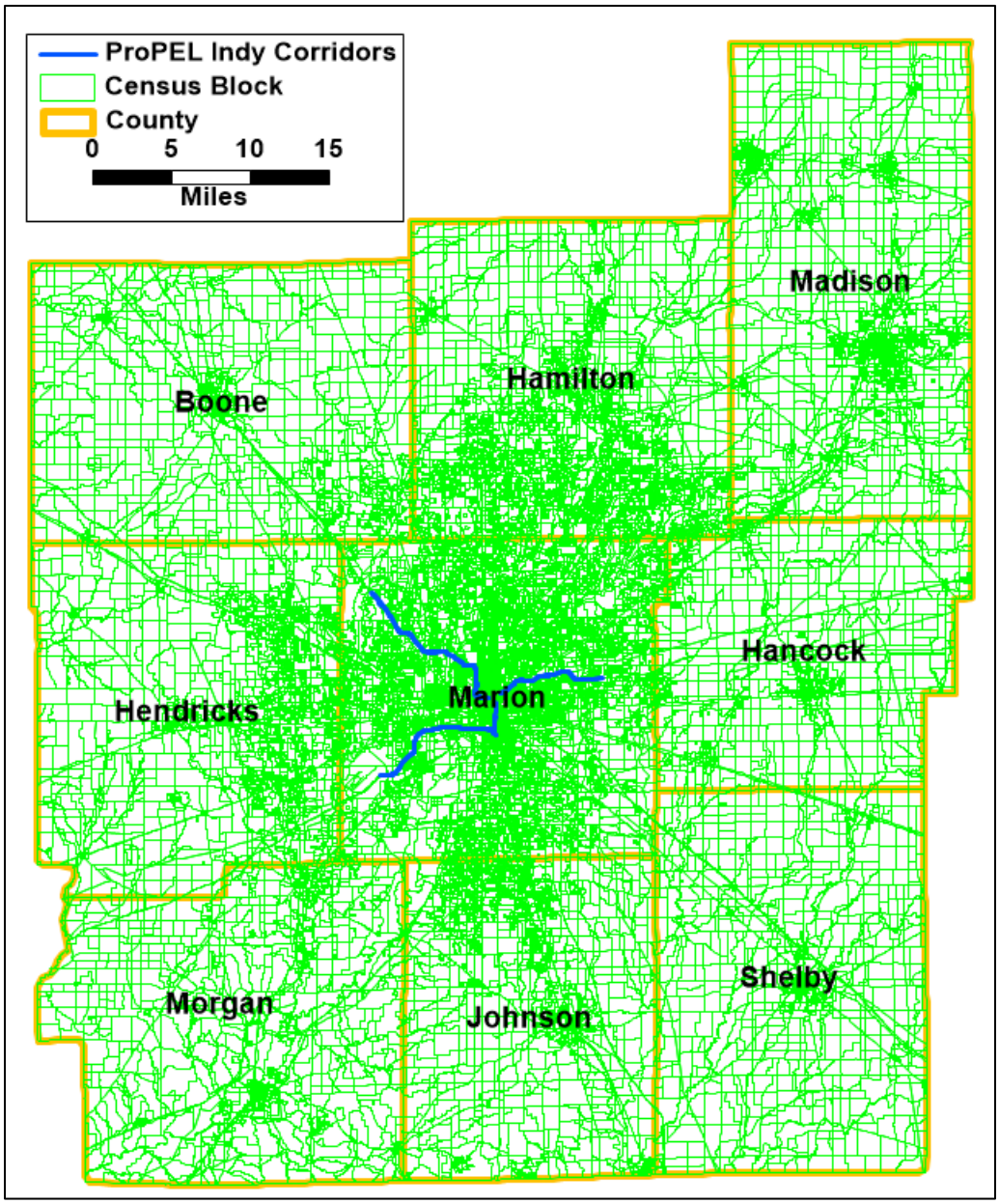
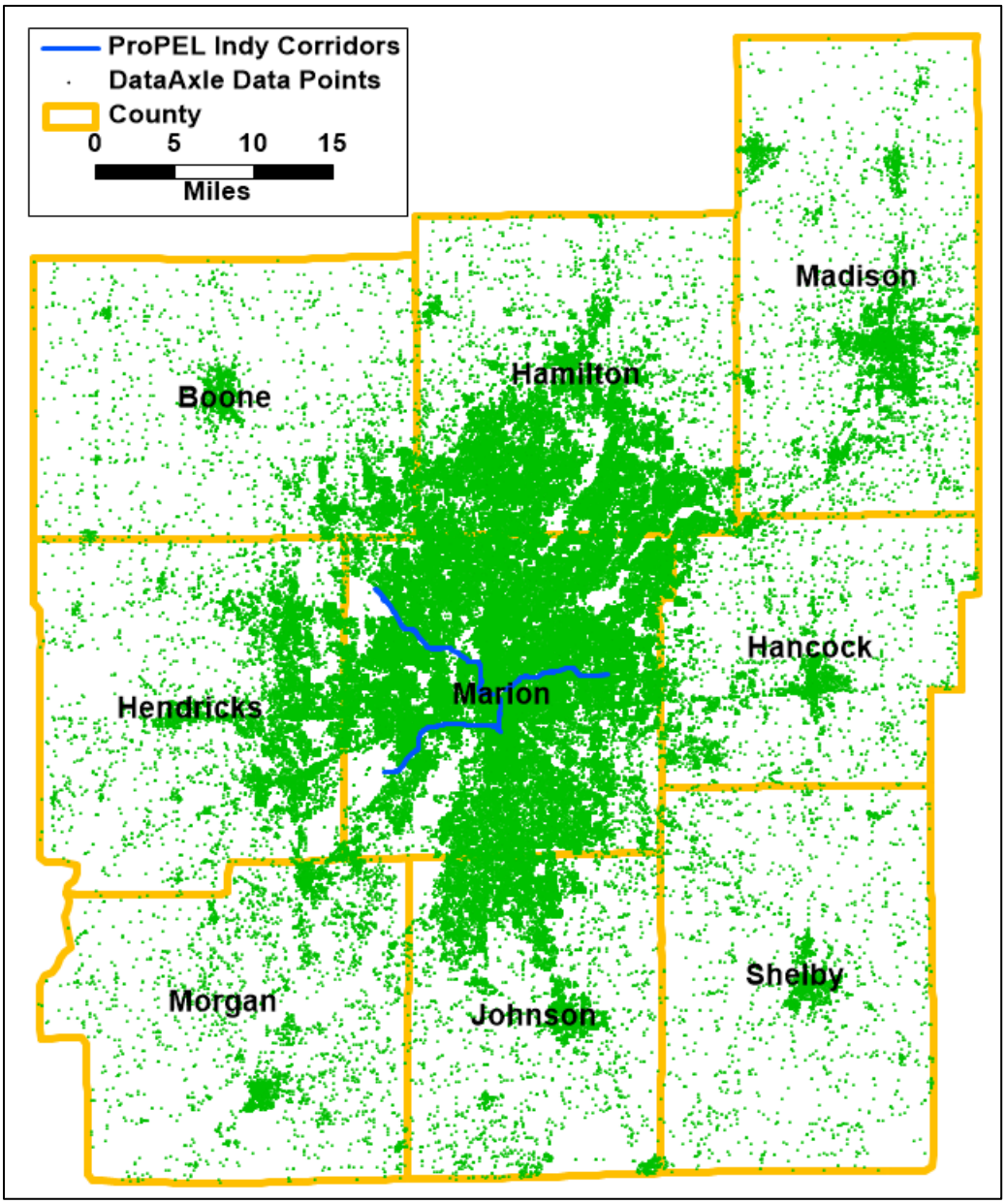


Figure 5: Data Axle Employment Data Points (2023)

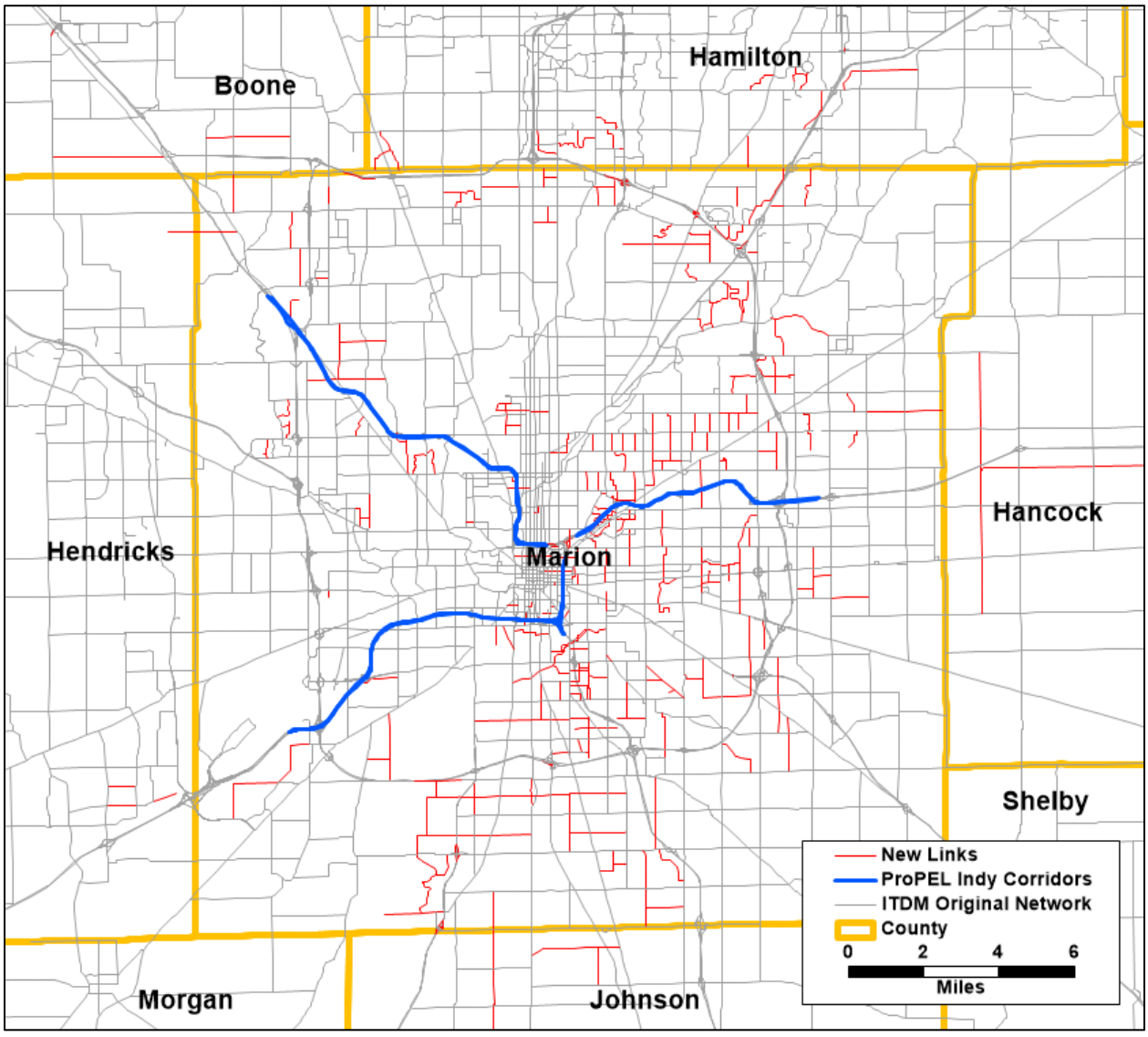


2.2. NETWORK REFINEMENT

The IMPO provided the latest 2023 network incorporating recently completed local projects within the 9-county area. This network was used as a starting point to develop the 2023 Base network. Similar to the TAZ refinement, the ITDM network was enhanced by adding more than 1,800 new links within approximately three miles of the ProPEL Indy study corridors and other

freeways in the Indianapolis metropolitan area (see **Figure 6**). Many of the new links are local roads with network connectivity functions providing access points to the study corridors or carrying local traffic parallel to the study corridors. For all new links, capacity and free-flow speed were estimated using the same procedure used to develop the ITDM. The refined network improves the accuracy of traffic loading on the ProPEL Indy study corridors within the study limits.

Figure 6: Network Refinement



INDOT provided a list of major capacity projects that have been recently completed within the proximity of freeways in the 9-county region and may not have been incorporated into the models obtained from the IMPO. **Table 1** summarizes these projects. The project information

from INDOT, along with a visual check of Google aerial map, was used to ensure these projects were incorporated in the refined network of the ProPEL Indy model. Additional network adjustments were made to account for actual roadway configurations present in work zones of several freeway projects that were active during May and June 2023, when INDOT collected traffic data for this project. The resulting network, which reflects the May/June 2023 condition, was used for 2023 Base Model calibration.

Table 1: INDOT Recently Completed Major Projects

DES	District	Project Location	Project Description
600407	Crawfordsville	Ronald Reagan Pkwy (N-S Corridor) from CR 300 N to 2000 ft N of US 136	New Road Construction
1592152	Greenfield	126th St & Reynolds Dr / Enterprise Dr / Parkside Dr	New Road Construction
1701173	Greenfield	From Windswept Rd to Franklin St	Auxiliary Lanes, Two-way Left Turn Lanes
1902191	Seymour	NB SR 67 at Crosby Rd 1.11 miles south of S Indiana St, WB turning lane	Auxiliary Lanes, Accel & Decel or Turn Lanes
1401647	Crawfordsville	New Alignment on Northfield Drive between CR 300 N to Airport Rd CR 400 N	New Road Construction
1600597	Greenfield	276th St. .6 miles W of Gwinn Rd to 281st at Gwinn Rd & along 281st over to SR 19	New Road Construction
1383489	Greenfield	at Old SR 238 (Exit 210)	Interchange Modification
1400873	Greenfield	Junction of 146th St, Lowes Way & Keystone Pkwy	New Road Construction
1383337	Greenfield	0.5-mile N of SR 13-to-0.85-mile N of SR 38	Added Travel Lanes
1297199	Seymour	At Worthsville Road, 7.7 miles N of SR 44	New Interchange Construction
1600650	Greenfield	Lowes Way to Keystone Ramp Phase II	New Road Construction
1383336	Greenfield	5.24 mi N of SR 37 (N jct.) (0.50 mi N of old SR 238) to 0.85 mi N of SR13	Added Travel Lanes
1383332	Greenfield	At SR 37 (N jct.) to 5.24 miles N of SR 37 (N jct.) (0.50-mile N of old SR 238)	Added Travel Lanes

2.3. TRAFFIC COUNTS

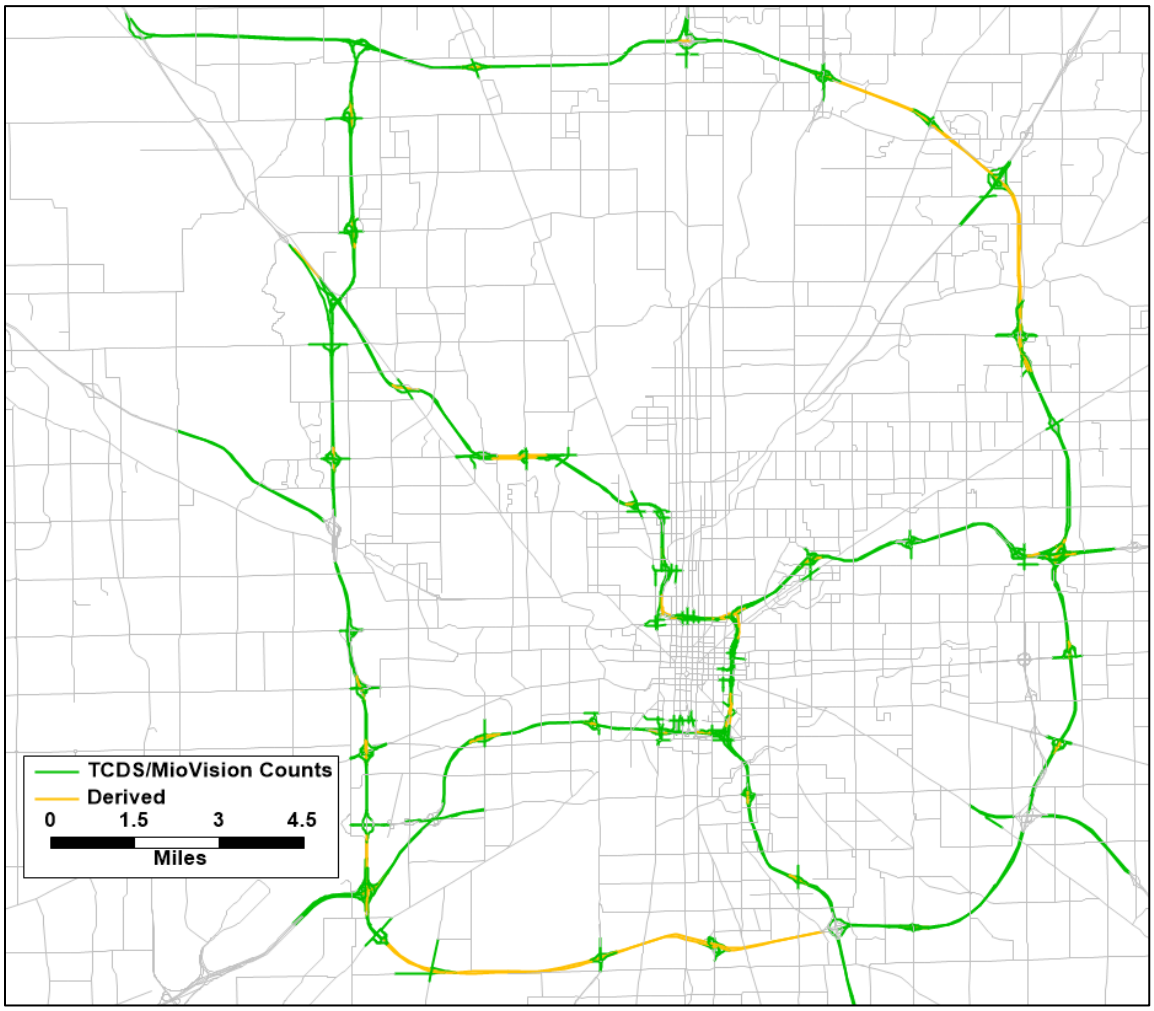
INDOT made extensive efforts to collect classified hourly traffic counts during May and June 2023, upon the North Split opening to traffic. Additionally, these post pandemic traffic counts are believed to reflect current remote work practices. As **Figure 7** shows, the counts cover freeway mainlines (I-65, I-69, I-70, I-74, I-465, and I-865), system ramps, ramp terminals, and adjacent arterials in the Indianapolis metropolitan region. As counts were not collected for I-465 northeast and southwest sections due to active work zones being present in these areas, mainline traffic data was derived for those locations using available counts at adjacent mainline segments and interchanges.

For model calibration purpose, the auto and truck counts were coded into the 2023 Base network by 5 time periods that are consistent with the ITDM:

- AM peak (6am – 9am)
- Mid-day (9am – 3pm)
- PM peak (3pm – 6pm)
- Evening (6pm – 9pm)
- Night (9pm – 6am)

There are more than 900 directional count locations, including approximately 80 counts for the ProPEL Indy study corridors, representing a good coverage of roadways in the study limits.

Figure 7: 2023 Traffic Count Locations



2.1. MODEL CALIBRATION

The 2023 Based Model was calibrated using the Origin-Destination Matrix Estimation (ODME) technique. This is an iterative process that used the ITDM 2022 disaggregated OD table (3439X3439) as a "seed" and expanded it until the estimated traffic flows systematically achieve the smallest deviation from traffic counts. It is noted that the "seed" OD table used a summer seasonal factor (0.46) to adjust IUPUI zonal OD trips to account for IUPUI summer traffic patterns corresponding to conditions when traffic counts were collected. The adjustment factor was derived from IUPUI 2023 spring and summer enrollment data.

The ODME process was performed separately for 2 vehicle types (auto and truck) and 5 time periods. The ODME calibration significantly improved the ProPEL Indy Model OD tables by achieving excellent correlation between model volumes and INDOT's traffic counts at both system and corridor levels.

Table 2 shows the Percent Root Mean Square Error (RMSE%) of the ProPEL Indy Model daily forecasts by vehicle type and compares them to the original ITDM data. From a systemwide perspective (all model links), the RMSE% of AADT was improved from 29.7% in ITDM to 20.9% in the calibrated model. The calibrated model also has much better RMSE% by separate auto and truck daily flows. For the ProPEL Indy study corridors, the calibrated model has small RMSE% by daily autos (20.1%), daily trucks (9.8%), and AADT (17.4%), compared to 20.4%, 32.2%, and 21.3% in ITDM, respectively.

Table 2: RMSE% of Daily Volume by Vehicle Type

	Original ITDM	ProPEL Indy Model (2023 Base)
Systemwide		
Daily Auto	30.7%	22.4%
Daily Truck	53.3%	17.4%
AADT	29.7%	20.9%
ProPEL Indy Study Corridors		
Daily Auto	20.4%	20.1%
Daily Truck	32.2%	9.8%
AADT	21.3%	17.4%

Note: for a reasonable comparison, the original ITDM network was adjusted to account for the constructions in May/June 2023.

Table 3 compares the TOD traffic forecasts between the ITDM and 2023 Base Model. The 2023 Base Model significantly improved RMSE% for all 5 time periods at both systemwide and corridor levels. The calibrated model provides more reliable forecasts to benefit the study, especially for the congested AM and PM peak periods. **Figure 8** through **Figure 12** illustrate the scatter plots between the 2023 Base Model traffic forecasts and traffic counts by 5 time periods, respectively. For each time period, the 2023 Base Model shows high R-square values for auto, truck, and total flows, with slopes very close to a 45-degree line. This indicates the modeled volumes match traffic counts very well.

Table 3: RMSE% of Time-of-Day (TOD) Volume

	Original ITDM	ProPEL Indy Model (2023 Base)
Systemwide		
AM Peak	53.7%	22.0%
Mid-Day	49.3%	20.1%
PM Peak	34.5%	22.1%
Evening	39.0%	24.0%
Night	82.6%	21.7%
ProPEL Indy Study Corridors		
AM Peak	45.7%	18.8%
Mid-Day	28.2%	16.9%
PM Peak	23.9%	18.2%
Evening	26.7%	21.8%
Night	63.0%	15.8%

Figure 8: 2023 Base Model Volumes vs. Traffic Counts (AM Peak)

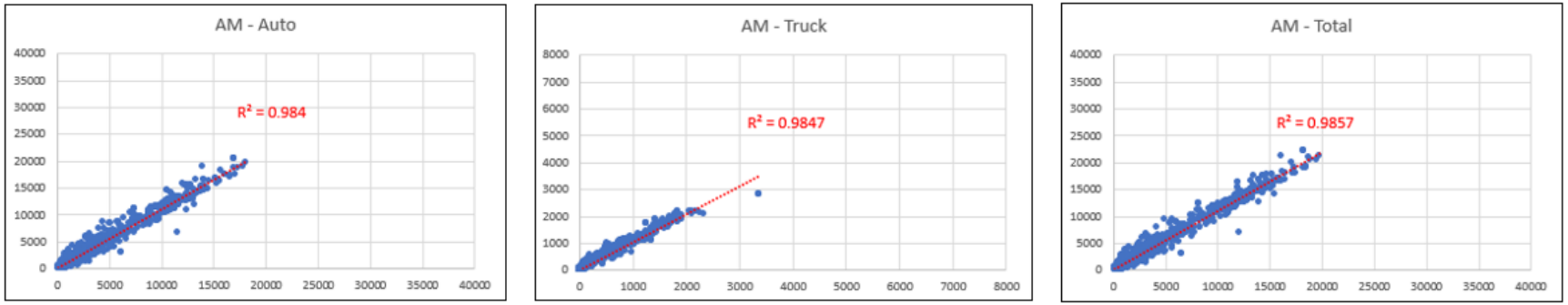


Figure 9: 2023 Base Model Volumes vs. Traffic Counts (Mid-Day)

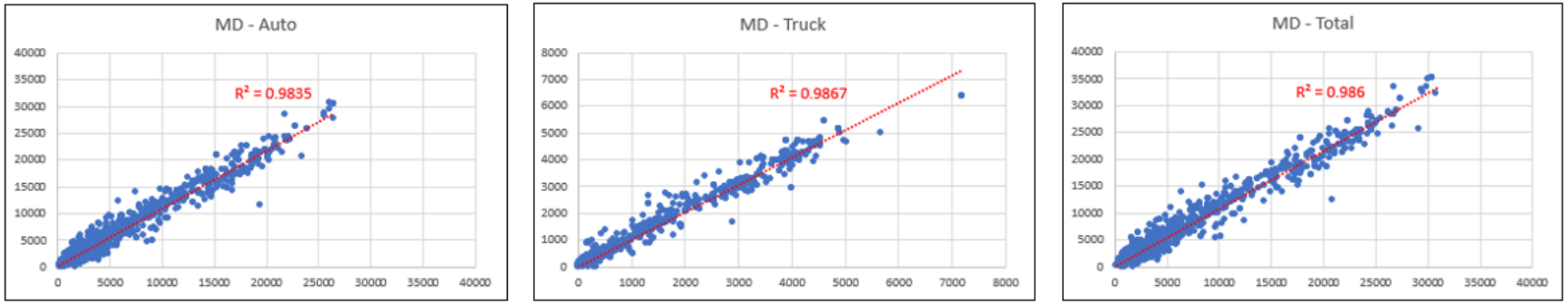


Figure 10: 2023 Base Model Volumes vs. Traffic Counts (PM Peak)

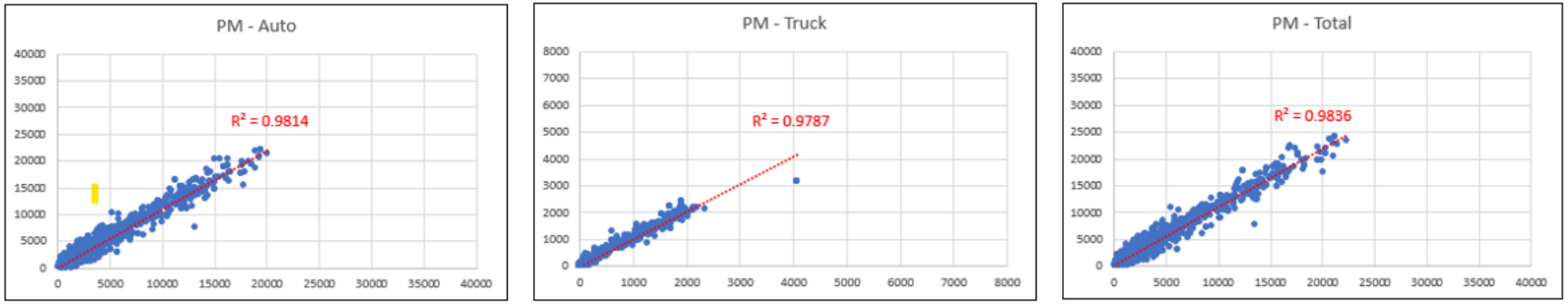


Figure 11: 2023 Base Model Volumes vs. Traffic Counts (Evening)

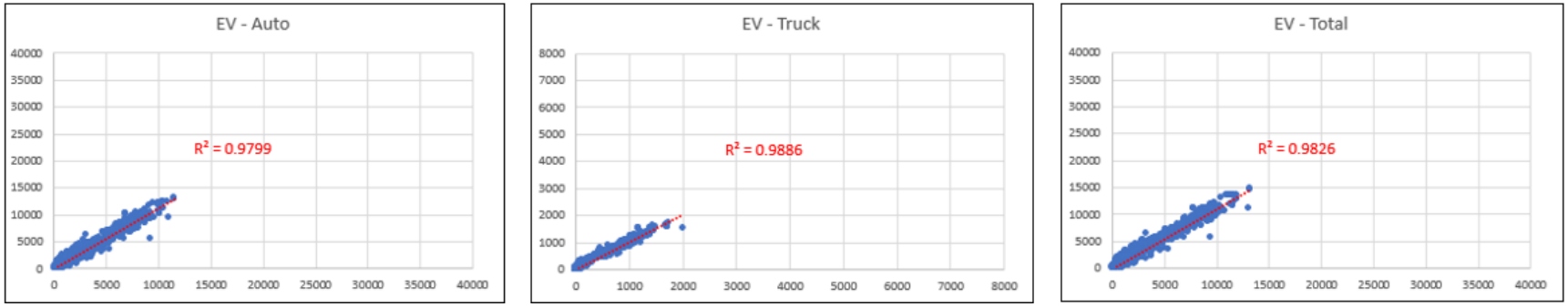
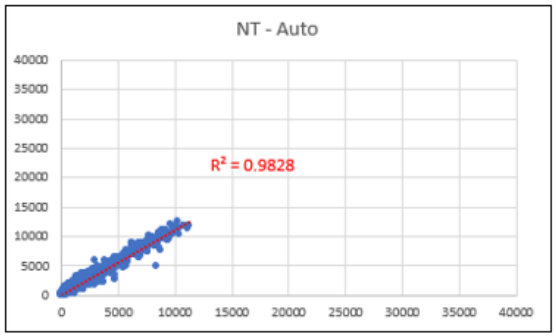
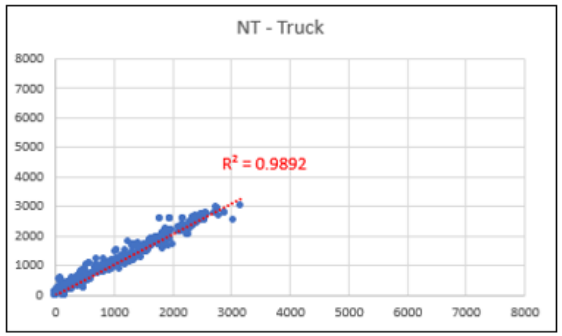
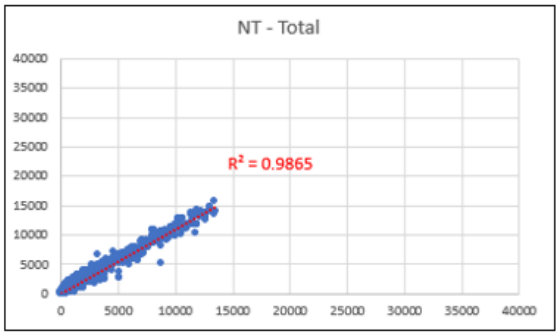


Figure 12: 2023 Base Model Volumes vs. Traffic Counts (Night)







3. 2023 FINAL MODEL

The 2023 Base Model was further adjusted to a 2023 Final Model to reflect normal traffic conditions by assuming the following:

- Work zones active during the May / June 2023 traffic counting are no longer active. The lane closures and other roadway impacts associated with the work zones were restored. The resulting network was considered as the 2023 Final network.
- IUPUI is in regular school season. IUPUI is a major trip generator in downtown Indianapolis and has a significant impact on nearby freeways and local roads, including the ProPEL Indy study corridors. As the 2023 Base Model was calibrated to traffic counts collected in May/June 2023 (i.e., IUPUI summer season), it only accounted for about 46% of total traffic from/to IUPUI during a regular school season. The remaining 54% of IUPUI OD trips were estimated by the original 2022 ITDM and added back to the 2023 Base Model OD tables. **Table 4** summarizes the supplemental IUPUI trips that were included in the 2023 Final Model OD tables.

Table 4: Supplemental IUPUI Trips

Time Period	Auto	Truck	Total
AM Peak	9,503	123	9,626
Mid-Day	7,404	117	7,521
PM Peak	7,780	123	7,903
Evening	3,721	59	3,780
Night	4,299	176	4,475
Total	**32,707**	**598**	**33,306**

The 2023 Final Model assigns the 2023 Final Model OD tables to the 2023 Final network. The traffic assignment followed the same procedure used in development of the ITDM. The 2023 Final Model forecasts auto, truck, and total traffic flows for a normal weekday and by 5 time periods.

4. 2050 FUTURE MODEL

4.1. 2050 NETWORK

The development of the 2050 network started with the 2050 ITDM network, which already included the capacity projects from the IMPO's 2050 Metropolitan Transportation Plan (MTP).

INDOT also provided a list of major existing and committed (E+C) projects. These projects include major capacity improvements throughout the 9 counties in central Indiana, such as new roadway constructions, added travel lanes (ATL), new interchanges, and interchange modifications, etc. **Appendix A** provides details of these projects. All of the projects were included in the 2050 model network by assuming construction will be completed before 2050. It is noted that the following E+C project was not included in the 2050 network per INDOT's guidance, because it fully falls within the ProPEL Indy study limits.

- Des #2100018. Added travel lanes on I-65 from Central Avenue to Fall Creek.

The 2050 network included the same network details as the 2023 network through a network refinement process.

4.2. 2050 OD TRIP TABLE

4.2.1. IMMINENT DEVELOPMENT

Extensive efforts were made to coordinate with INDOT Districts, IMPO, local planning and economic development agencies to collect information of large-scale imminent land developments that are surrounding the freeways (roughly within 3 miles) in the Indianapolis metropolitan region and may have impacts.

The Modeling Team justified the collected land development information by conducting additional review and assessment of available online sources and using professional judgment. Only the developments that are either under construction or have solid plans (e.g., announced or published construction plans) were included in analysis for 2050. The analysis used the numbers of new households and employments from the original information provided by agencies. For developments that agencies only provided land size (e.g., acres or square feet), the employment was estimated using the Institute of Transportation Engineers (ITE) Trip Generation Manual. The employment types were also re-organized to match those are being used by the ITDM. The household and employment growth from the confirmed imminent developments was cross-checked with the original growth estimated by ITDM through 2050. The imminent

development growth was incorporated in 2050 zonal data if it was not accounted for by ITDM. Otherwise, the 2050 ProPEL Indy Model continued using the original growth from ITDM. **Appendix B** provides details of these developments. **Figure 13** and **Figure 14** show the locations of the identified imminent development in the Indianapolis metropolitan area and the downtown area respectively. A total net growth of 6,697 households and 11,737 employments were estimated from the imminent development and incorporated in the 2050 model.

Figure 13: Imminent Development Locations (Indianapolis Metro Area)

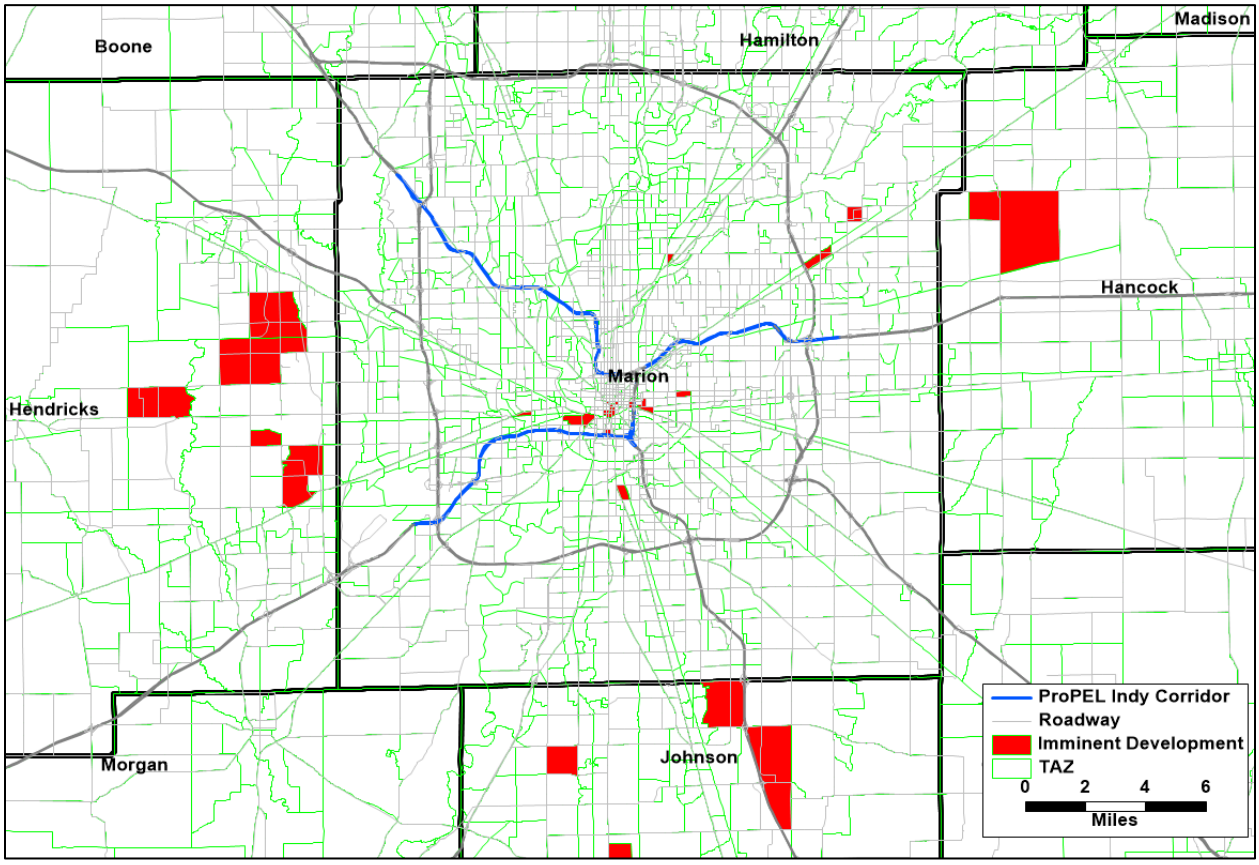
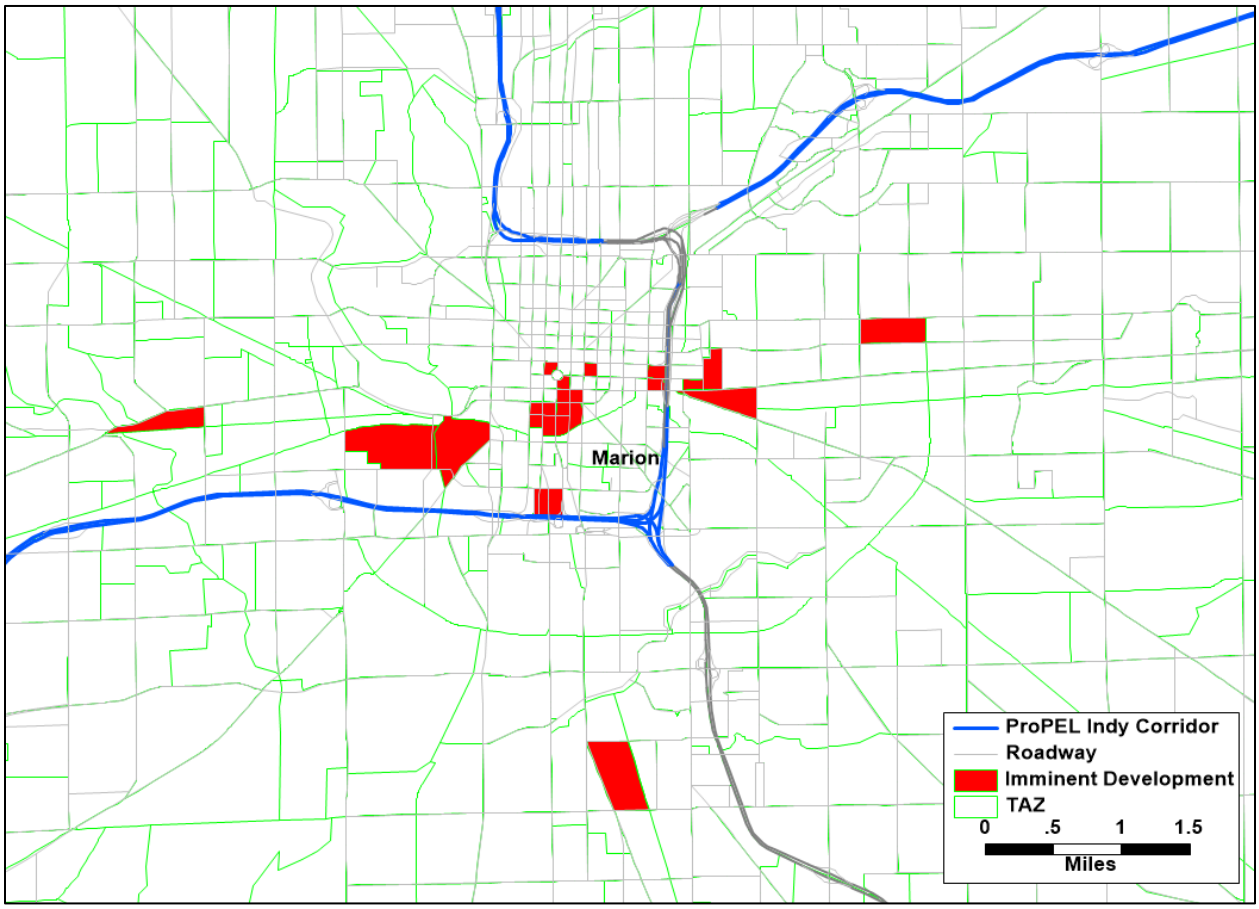


Figure 14: Imminent Development Locations (Downtown Indianapolis)



4.2.1. 2050 OD PIVOTING

The 2050 OD trip table was developed through a pivoting process. Pivoting improves the accuracy of traffic forecasting by allowing the ProPEL Indy Model to predict changes from a known base. In this study, the 2023 Final Model served as a known base. The 2050 OD pivoting process includes the following major steps:

1. Prepare key input data, including:
    a. Base zonal trips by origin (Os) and destination (Ds). This is from the 2023 Final Model.
    b. Synthetic Base zonal Os and Ds. This is from ITDM "2023" data. As ITDM does not have an official model year for 2023, the 2023 data was interpolated from official ITDM model runs for 2022 and 2050.
    c. Synthetic Future zonal Os and Ds. This is from an ITDM 2050 run which incorporates identified imminent development growth.

2. Use the key input data from Step (1) and a widely used approach described in *NCHRP 255 – Highway Traffic Data for Urbanized Area Project Planning and Design* to estimate the final 2050 zonal Os and Ds control totals.
3. Develop the final 2050 OD tables using 2023 Final OD table (as a "seed"), 2050 zonal Os and Ds control totals, and the Iterative Proportional Fitting (IPF) technique.

The OD pivoting process was performed by vehicle type (auto and truck) and time period separately. The 2050 OD tables include separate auto and truck trips by 5 time periods.

4.3. 2050 TRAFFIC FORECASTS

The 2050 model assigns 2050 OD tables to the 2050 network by vehicle type and time period separately. The traffic assignment followed the procedure used by ITDM. The ProPEL Indy Model forecasts auto, truck, and total traffic volumes and performance measures by 5 time periods along the ProPEL Indy study corridors. Daily traffic numbers are also aggregated based on time-of-day data. **Figure 15** shows 2050 daily traffic forecasts.

Figure 15: 2050 Daily Traffic Forecasts

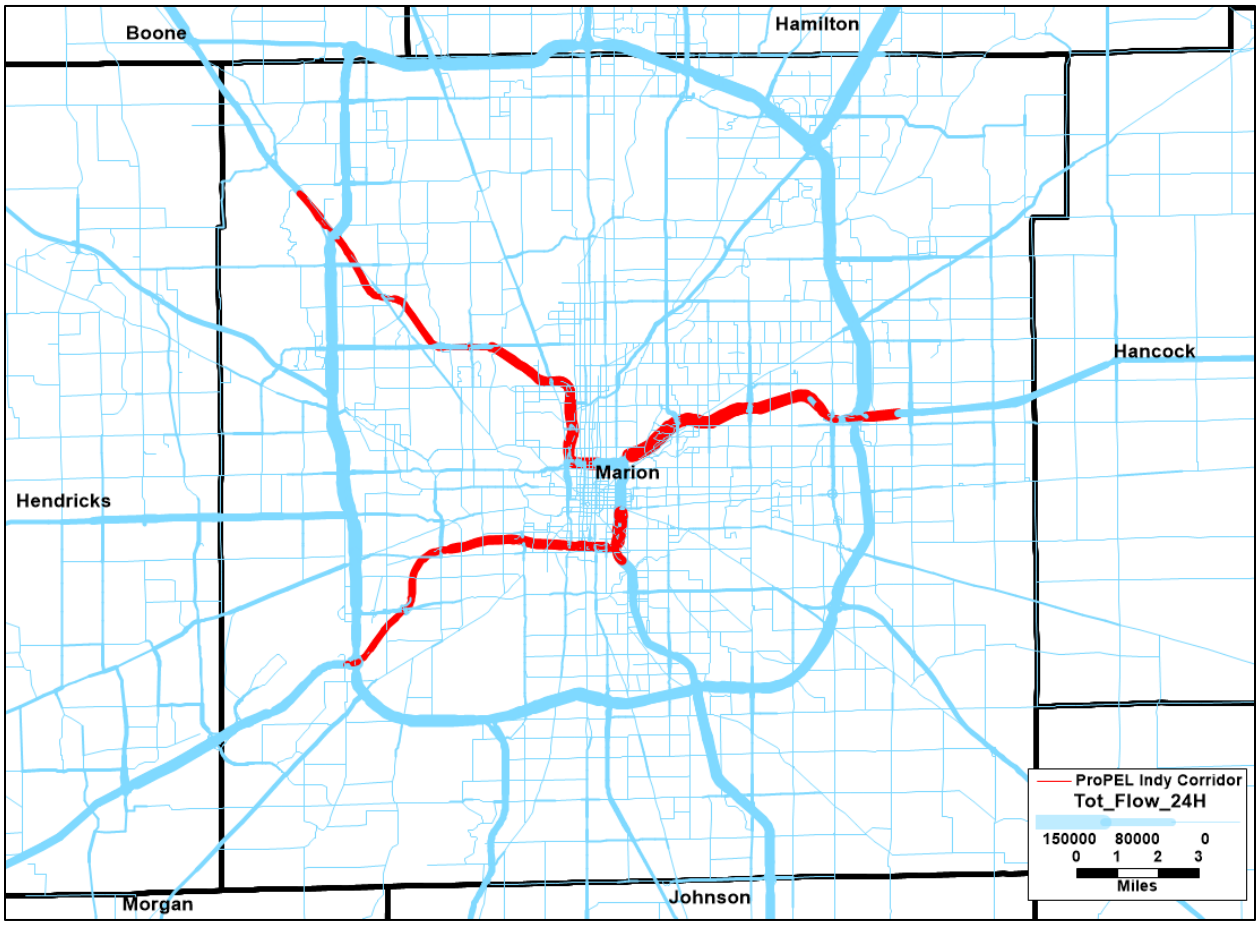


Table 5 summarizes and compares 2023 and 2050 ProPEL Indy Model data. For the Indianapolis 9-county region, the model shows an annual growth rate of 1.57% for auto trips and a higher annual growth rate of 2.25% for truck trips. This matches the national and state's trend of trucks growing faster than autos. The TOD distribution also looks reasonable, with more auto trips in daytime periods (AM peak, mid-day, and PM peak) and more truck trips in less congested periods (mid-day and night).

Table 5: Summary of ProPEL Indy Model Data

	ProPEL Indy Model (2023 Final)	ProPEL Indy Model (2050)	Change %	Annual Growth Rate
Auto Trips				
AM Peak	797,960	1,161,759	46%	1.40%
Mid-Day	1,767,920	2,921,947	65%	1.88%
PM Peak	1,052,144	1,533,861	46%	1.41%
Evening	715,572	963,385	35%	1.11%
Night	500,460	781,817	56%	1.67%
Total	**4,834,057**	**7,362,769**	**52%**	**1.57%**
Truck Trips				
AM Peak	44,770	80,835	81%	2.21%
Mid-Day	80,093	135,024	69%	1.95%
PM Peak	44,182	80,150	81%	2.23%
Evening	23,944	45,088	88%	2.37%
Night	54,162	110,063	103%	2.66%
Total	**247,152**	**451,161**	**83%**	**2.25%**

5. CONCLUSION

The 2023 Base Model calibration followed a procedure that is commonly used for large-scale regional models. The calibrated 2023 Base Model shows excellent goodness-of-fit with available traffic counts and significantly improves the ITDM RSME% of daily truck volumes by 35.9% at the system level and 22.4% within the study corridors. The 2023 Final Model replicates normal traffic patterns by accounting for IUPUI regular school season trips and avoiding construction impacts.

The 2050 Future Model accurately accounts for anticipated growth and future projects. The 2050 traffic forecasts are reasonable and match expectations of the study team. Therefore, the Modeling Team agreed that the 2023 Final Model has been well calibrated and that the 2050 Future Model will be used to evaluate transportation needs and alternatives in 2050 planning horizon for the ProPEL Indy study.

APPENDIX A – INDOT MAJOR E+C PROJECTS

Des #	Contract #	Work Type	Work Category	Route Type	Route #	Location	County	District Name	Letting Date
1600808	B-36910	Interchange Mod, Multi-Level	Interchange Modification	Interstate	65/70	I-65/70 N Jct	Marion	Greenfield	5/5/2020
1801695	R-41536	New Road Construction	New Interstate Construction Project	Proposed Route	69	PR 69 Marion Co Segment, 0.5 miles N of Wicker Rd via SR 37 to I-465	Marion	Greenfield	8/13/2020
1702919	R-41501	Added Travel Lanes	Added Travel Lanes Project	Interstate	70	I-70 1.0 mile west of Mount Comfort Road to 1.2 miles east of SR 9	Hancock	Greenfield	10/14/2021
2002530	R-43713	Interchange Modification	Interchange Modification	U.S.	31	US 31 from I-465 to 116th St in Carmel	Hamilton	Greenfield	
1400071	R-39231	Interchange Modification	Interchange Modification Project	Interstate	65	I-65 at SR 267 (4.5 mi N of I-865)	Boone	Crawfordsville	5/7/2020
1702147	R-39231	New Interchange Construction	New Interchange Project	Interstate	65	I-65 at CR 550S	Boone	Crawfordsville	5/7/2020
1500125		Interchange Modification	Added Travel Lanes Project	Interstate	69	I-69 at I-465, from I-465 to 1.55 mi N of I-465 (SB only)	Marion	Greenfield	
1400075	R-38526	Interchange Modification	Added Travel Lanes Project	Interstate	465	I-465 from White R. to W end of 465/69 interchange, and E end of interchange to bridge over Fall Creek	Marion	Greenfield	12/8/2021
1702149	R-41346	New Interchange Construction	New Interchange Project	U.S. Highway	31	US 31 at 236th St / Jackson St, 2.5 mi N of SR 38	Hamilton	Greenfield	7/14/2021
1901797	R-42188	New Interchange Construction	New Interchange Project	U.S. Highway	31	US 31 at 276th St, 5.0 mi N of SR 38	Hamilton	Greenfield	5/5/2022
2002592	R-43518	Interchange Modification	Added Travel Lanes Project	Interstate	69	I-465/69 interchange, I-69: I-465 to N of 82nd St., Binford Blvd: 0.8 mi S of 465 to 465, ramps	Marion	Greenfield	11/16/2022
2002530	R-43713	Interchange Modification	Interchange Modification Project	U.S. Highway	31	US 31 From I-465 to 116th St in Carmel	Hamilton	Greenfield	
2200176	R-44240	New Interchange Construction	New Interchange Project	Interstate	65	I-65 0.2 mi N of CR 300N	Boone	Crawfordsville	7/9/2025
		Interchange Modification	Interchange Modification	Interstate	465	I-465 South at I-65 Interchange			
1601072	R-39814	Added Travel Lanes	Added Travel Lanes Project	U.S. Highway	36	US 36 4.26 mi to 3.00 mi W of W leg of I-465	Hendricks	Crawfordsville	2/10/2021
1400065	R-42015	Added Travel Lanes, HMA	District Pavement Project (Non-I)	State Road	32	SR 32 from 0.2-mile E of Cicero Creek to SR 38 W. Jct.	Hamilton	Greenfield	3/10/2021
1802967	R-41841	Added Travel Lanes	Added Travel Lanes Project	Interstate	65	I-65 from 0.84 mi N of SR 32 to 0.80 Mi N of SR 47	Boone	Crawfordsville	10/07/2020
1700140		Added Travel Lanes	Added Travel Lanes Project	Interstate	465	I-465 SB Only From I-69 to 2.15 miles S of I-69 (Bridge over Fall Creek Rd)	Marion	Greenfield	

Des #	Contract #	Work Type	Work Category	Route Type	Route #	Location	County	District Name	Letting Date
1400075	R-38526	Interchange Modification	Added Travel Lanes Project	Interstate	465	I 465 I-465 from White R. to W end of 465/69 interchange, and E end of interchange to bridge over Fall Creek	Marion	Greenfield	12/08/2021
1800060	R-42253	Auxiliary Lanes, Passing	District Pavement Project (Non-I)	State Road	32	SR 32 from 3.69 mi W of SR 75 to 2.47 mi W of I-65	Boone	Crawfordsville	7/12/2023
1900173	R-42590	Added Travel Lanes	Added Travel Lanes Project	State Road	32	SR 32 from 19th to Presley Dr, Noblesville	Hamilton	Greenfield	7/12/2023
1400073	R-38912	Added Travel Lanes	Added Travel Lanes Project	Interstate	65	I 65 from 0.20-mile N of I-465 to 0.05-mile N of I-70	Marion	Greenfield	2/12/2025
1600854	R-41789	Added Travel Lanes	Added Travel Lanes Project	Interstate	465	I 465 from 1.33 mi S of I-865 (86th Street) to US 421	Boone, Marion	Greenfield	11/15/2024
1600857	R-41789	Added Travel Lanes	Added Travel Lanes Project	Interstate	465	I 465 from US 421 to US 31	Hamilton, Marion	Greenfield	11/15/2024
2000076		Added Travel Lanes	Added Travel Lanes Project	U.S. Highway	421	US 421 from 2.91 mi N of N leg I-465 to 2.86 mi S of SR 32	Boone	Crawfordsville	
1800203	R-42531	Added Travel Lanes	Added Travel Lanes Project	U.S. Highway	36	US 36 from 3.95 mi W of I-465 W leg to 7.34 mi W of I-465	Hendricks	Crawfordsville	4/8/2026
N/A		Added Travel Lanes	Added Travel Lanes Project	Interstate	465	I-465 from 1.2 mi E of SR 67 W jct (Mann Rd) to 0.3 mi S of I-70 W JCT	Marion	Greenfield	
1902867		Added Travel Lanes	Added Travel Lanes Project	Interstate	65	I-65 from 0.8 mi N of SR 47 to 0.8 mi N of SR 28	Boone, Clinton	Crawfordsville	
N/A		Added Travel Lanes	Added Travel Lanes Project	Interstate	465	I-465 from I-70 E to I-65 S	Marion	Greenfield	
N/A		Interchange Modification	Interchange Modification Project	Interstate	465	I-465/I-65 N Jct interchange (between 56th St and 71st St)	Marion	Greenfield	

APPENDIX B – IMMINENT DEVELOPMENT

Agency	Development Name	Development Description	Included in 2050 Model? (Y/N)	Net Growth Estimation	Notes
Johnson County	Meadows at Belleview (Residential Subdivisions)	197 Residential Lots	NO	197 household growth	The growth is already covered by the original ITDM data.
	A. Deerfield (Residential Subdivisions) B. Berry Chase (Residential Subdivisions)	A. 96 residential Lots B. 76 Lots (this subdivision is connected to Deerfield)	YES	172 household growth	
	Eagle Springs (Residential Subdivisions)	154 Residential Lots	NO	154 household growth	The growth is already covered by the original ITDM data.
Boone County	LEAP Lebanon Innovation District	Advanced Manufacturing Mega Site Development Mixed-Use/Village Center Potential Renewable/Green Energy	NO	N/A	All developments are in planning phase, not committed or imminent. Do not include in the model. Use ITDM original growth data.
	Eli Lilly	12 buildings of manufacturing, office and logistics space, containing 700 employees, on Eli Lilly campus	YES	130 NCS31_33 job growth 130 NCS48_49 job growth 130 NCS54 job growth	
	Eli Lilly	12 buildings of manufacturing, office and logistics space, containing 700 employees, on Eli Lilly campus	YES	103 NCS31_33 job growth 103 NCS48_49 job growth 104 NCS54 job growth	
Hancock County	Buck Creek-Concept Plan	Industrial Mega Sites Industrial Flex/Business Park Commercial/Retail/Hospitality Housing Mixed Residential Single-Family Residential Community of Mohawk Green Space Corridor (Unincorporated)	NO	N/A	All developments seem to be only in planning phase, not committed or imminent. Do not include in the model. Use ITDM original growth data.

Agency	Development Name	Development Description	Included in 2050 Model? (Y/N)	Net Growth Estimation	Notes
Town of Avon	Avon_Developments1.PDF Easton Grey	A. Easton Grey 1,400 Housing Units & 66 acres of retail and entertainment B. B.1 - New Town Hall - 66,000 sqft B.2 - Administration building for School Corporation building B.3 - Township Administration building B.4 - 8,000 sqft of meeting facility	Partially	1,400 household growth 40 NCS92 job growth	Some developments seem to be only in planning phase or have unavailable information.
	Avon_Developments2.PDF A. Van Trust REIT B. Chicago Industrial C. Chicago Industrial Housing D. Avon Landing Apartments	A. Van Trust REIT A.1 - 330,000 sqft A.2 - 125,000 sqft (industrial) building to be built this year B. Chicago Industrial (industrial park): 706,333 sqft of industrial building C. Chicago Industrial (Multi-family housing): ~3.29 million sqft of Multifamily housing. D. 280 apartments	Partially	1,852 household growth 962 NCS31_33 job growth	Some developments are already built, or are only in planning phase, or have unavailable information.
	Avon_Developments2.PDF A. Van Trust REIT B. Chicago Industrial C. Chicago Industrial Housing	A - 330,000 sqft (industrial) building to be built in 2024 B. Chicago Industrial (industrial park): 1,412,667 sqft of industrial building C. Chicago Industrial (Multi-family housing): ~ 3.32 million sqft of Multifamily housing.	YES	1,586 household growth 2017 NCS31_33 job growth	
	Avon_Developments3.PDF A. Distribution Realty Group B. Rise development	A. Distribution Realty Group: A.1 - 330,000 + 770,000 complete A.2 - 250,000 sqft industrial building to be constructed in late 2023. A.3 - 250,000 sqft industrial building planned in 2024 B. 200,000 sqft of incubator space for 30 companies	Partially	579 NCS31_33 job growth 594 NCS54 job growth	Some developments are already built.
	Avon_Developments2.PDF Chicago Industrial Housing	~4.1 million sqft multi-family housing	NO	N/A	Timeline of development is not available.

Agency	Development Name	Development Description	Included in 2050 Model? (Y/N)	Net Growth Estimation	Notes
Town of Avon	Avon_Developments3.PDF Chicago Industrial Housing	Avon Logistics Park: 880,000 sqft building 1,009,000 sqft building under construction	Partially	1,168 NCS31_33 job growth	Some developments are already built.
Town of Avon	Bellwood subdivision	169 homes	NO	169 household growth	The growth is already covered by the original ITDM data.
City of Lawrence	Trades District Development	Based on Master Plan PDF: A: 70,000-80,000 sqft of a Multi-Tenant Industrial B: 80,000-90,000 sqft of a Mixed-Use Office C: 70,000-80,000 sqft (250-275 spots) of Parking Garage & Community Services D: 70,000-80,000 sqft of an Experience Center E: 4 Engineering & Light Manufacturing buildings (~325,000 sqft - 32,000 sqft from frēijē Engineered Solutions Company) = 321,800 sqft F: 20,000-25,000 sqft Engineering & Light Manufacturing Addition G: 22,000-26,000 sqft Sales & Office H: 3 Multi-Tenant Food & Beverage K: Fuel & Convenience: L: Bank of America (~3,795 sqft)	Partially	402 NCS31_33 job growth 9 NCS44_45 job growth 54 NCS51 job growth 54 NCS52 job growth 54 NCS53 job growth 564 NCS54 job growth 54 NCS55 job growth 54 NCS56 job growth 475 NCS72 job growth	Some developments are already built or have no impact on socioeconomic data.
	Trades District Development	Based on Master Plan PDF: E: Engineering & Light Manufacturing building (~65,000 sqft) J: 4 Stand Alone Food & Beverage	YES	53 NCS31_33 job growth 97 NCS54 job growth 106 NCS72 job growth	-
	Keystone's development	A. 248 luxury apartments with amenities B. 25,000 square feet of retail space	YES	248 household growth 59 NCS 44_45 job growth	

Agency	Development Name	Development Description	Included in 2050 Model? (Y/N)	Net Growth Estimation	Notes
	Cohron Manufactured Homes Arbor Homes	250 additional homes 130 new homes	NO	380 household growth	The growth is already covered by the original ITDM data.
City of Greenwood	Grand Vista Subdivision	91 lots in section 1 (341 lots when fully built out)	YES	341 HH growth	
	Pulte (Del Webb)-Sagebriar	550 lots	NO	550 household growth	The growth is already covered by the original ITDM data.
	A. Pulte - Ridgetop B. Denton Floyd Arlington Farms Apartments	A. 80 lots B. 408 units	NO	488 household growth	The growth is already covered by the original ITDM data.
	Elmwood Estates	248 single family Lots/units	NO	248 household growth	The growth is already covered by the original ITDM data.
	Holly Springs	76 single family lots	NO	76 household growth	The growth is already covered by the original ITDM data.
	Scottsdale Estates	~448 lots	YES	448 household growth	
	Scottsdale Estates	~57 lots	NO	57 household growth	The growth is already covered by the original ITDM data.
	A. Emerson Pointe Apartments B. Oliver Springs Apartments C. Harmony of Greenwood D. Greenwood Springs Apartments	A. 218 units coffee shop - average 10 employees B. 236 multifamily units C. "134 rooms independent living; 62 rooms assisted living (likely not driving); 38 rooms development disability (likely not driving) D. 200 units	Partially	654 household growth 10 NCS72 job growth	Some developments are already built.

Agency	Development Name	Development Description	Included in 2050 Model? (Y/N)	Net Growth Estimation	Notes
	Endress + Hauser Expansion	~120,000 sqft commercial office and light industrial facility HR, legal/projects/solutions departments and innovation center	NO	N/A	The development is only in planning phase, not imminent.
Town of McCordsville	Broadsacre	256-unit apartment development	YES	256 household growth	Projected under Cityscape Residential
	A. Parkfield B. Aurora Commerce Center	A. 166-unit townhome development B. 1,008,072 sqft speculative bulk industrial warehouse (10% incomplete)	YES	166 household growth 347 NCS48_49 job growth	A. Projected under Cityscape Residential B. Developed by Al Neyer, and no signed tenants yet
City of Indianapolis	Angie's List Campus Redevelopment	Gathyr Apartments recently transformed a former surface parking lot into a 103 market-rate unit apartment	YES	103 household growth	
	Bakery Living Apartments TWG Development	Redevelopment of building into 201 apartment units; 5% for the lower class; 95% for "workforce housing"	YES	201 household growth	
	The Plaza at Central Greens	T&H Investments set up five new apartment buildings with a total of 122 units + 4,000 sqft of commercial space, social service programs and other on-site amenities	Partially	122 household growth	Some growth is already covered by the original ITDM data.
	A. Richardson Townhomes and Flats at Central State B. NXG Youth Motorsports campus	A. Woda Cooper Development Inc. proposed two apartment buildings with 136 units and 40 for-rent townhomes in total, with most units for near median income individuals B. NXG Youth Motorsports proposed adapting 3 buildings into motorsports education for minority youth	NO	N/A	The developments are only in planning phase or have unavailable information.
	Cole Motor Redevelopment	1820 Centures LLC is redeveloping two former jail sites into $120 million mixed-use development 110-140 apartments 15,000 sqft for early childhood center 10,000 sqft for career pathway center	Partially	125 household growth 36 NCS44_45 job growth 33 NCS54 job growth 33 NCS62 job growth	NCS62 job growth is already covered by the original ITDM data.

Agency	Development Name	Development Description	Included in 2050 Model? (Y/N)	Net Growth Estimation	Notes
		20,000-30,000 sqft for "neighborhood-oriented retail, like restaurants"			
City of Indianapolis	Cole Motor Redevelopment	60,000 sqft concert and event venue 30,000 sqft co-working space Street-level commercial storefront space 40 parking spots + 100-space surface parking lot	Partially	89 NCS54 job growth	Some developments have no impact on socioeconomic data or has unavailable information.
	Eleven Park	20,000 seat multi-purpose stadium (for soccer club) 600 apartment units 205,000 sqft of office space 197,000 sqft of retail space Public plazas, dog park, hotel, amphitheater and public parking garages	Partially	600 household growth 462 NCS44_45 job growth 609 NCS54 job growth	Some developments have no available information.
	City Market East	Phase 1: convert 420,000 sqft office into Renovations for 251 E Ohio Street Update a 530-space parking garage Phase 2: Replace non-historic East wing of City Market with 11-story tower with 60 apartment units +28,000 sqft of retail space +8,000 sqft of office space. Improvements to adjacent alleyways (for safety and traffic)	Partially	400 household growth	Some developments have no impact on socioeconomic data or has unavailable information.
	Bicentennial Unity Plaza	Basketball court Space for public events 30,000 square foot dining and entertainment venue will include a basement-level vintage speakeasy, street-level high-end chophouse and seafood restaurant, and upper-level space for special occasions and private events.	Partially	158 NCS72 job growth	Some developments have unavailable information.
	Elanco HQ	Phase 1: constructing a 220,000 sqft six-story HQ building on 35 acres (out of 103 acres)	YES	757 NCS54 job growth	

Agency	Development Name	Development Description	Included in 2050 Model? (Y/N)	Net Growth Estimation	Notes
	St. Lucas Lofts	38 units of multifamily afford housing development + 10 units of youth transitional housing	YES	48 household growth	
City of Indianapolis	Compass on Washington	36 one-bedroom units	YES	36 household growth	
	A. Convention Center Expansion and Hotel B. Signia Hotel C. Tapestry D. Tapestry by Hilton	A. 40-story hotel with 800 rooms B. 814 rooms C. 150 rooms D. 120 rooms	YES	50 employees (NCS72)	
	Drury Hotel	350 rooms	YES	13 employees (NCS72)	
	InterContinental	170 rooms	YES	13 employees (NCS72)	
	Kimpton	164 rooms	NO	12 NCS72 job growth	The growth is already covered by the original ITDM data.
	Residence Inn	135 rooms	YES	12 employees (NCS72)	
	Aloft	128 rooms	NO	12 NCS72 job growth	The growth is already covered by the original ITDM data.
	Motto	116 rooms	YES	12 employees (NCS72)	
	"IssuedPermits_NonRes"	No detailed info available	NO	N/A	The development has no available information.
	"22-23, Issued Permits NonRes and MultiFam"	No detailed info available	NO	N/A	The development has no available information.
	46 Flats	163 affordable units-rental	YES	163 household growth	
	A. Garfield Park Townhomes B. T & H Garfield Park Townhomes	A. 47 affordable units via lease purchase B. 11 HOME Assisted Units-rental	YES	58 household growth	