

Appendix G

TRAFFIC IMPACT STUDY

Lost City Renewables LLC

Muhlenberg County, Kentucky



COPPERHEAD
ENVIRONMENTAL CONSULTING

Traffic Impact Analysis

LOST CITY SOLAR

MUHLENBERG COUNTY, KENTUCKY



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27 January 2025

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INTRODUCTION

Lost City Solar, LLC, proposes construction of an approximately 250-megawatt (MW) alternating current (AC) solar energy facility in Muhlenberg County. The project would be situated on approximately 1,413 acres and is located approximately 0.4 miles east of Penrod and approximately 1.25 miles northeast of Dunmor.

The purpose of this traffic impact study is to characterize project-related traffic, assess potential impacts on roads and traffic, and identify best practices to avoid or minimize those impacts.

CURRENT CONDITIONS

Regional and Local Access

The Project Area is bordered by US 431 (US 431), KY 949 (KY 949), Mason-Poyner Road, and Forgy Mill Road (Figure 1). A brief description of the surrounding roadways follows:

KY 949 - KY 949 is a paved two-lane public road that extends east-west along the northern and eastern sides of the Project Area. This route is considered a *minor collector*, which means it generally distributes and channels trips between local roads and arterials. Minor collectors typically serve primarily intra-county travel, rather than statewide, in rural settings. The posted speed limit on this route is 35 mph from mileposts 0 to 0.961, which is from the US 431 intersection to approximately the Free Lane intersection. At this point, the posted speed limit increases to 55 mph for the remainder of the route. The truck weight class for KY 949 is A, or 44,000 lbs maximum.

There will be two access points to the Project Area from KY 949. One access point will be at approximately milepost 1.1 and the other at approximately milepost 2.

US 431 -The Project Area will be accessible from US 431 via access points on KY 949 and Mason-Poyner Road. There will be no direct access to the Project Area from US 431.

US 431 is a two-lane highway that extends north-south along the western side of the Project Area with a posted speed limit of 55 mph. The truck weight class for US 431 is AAA, or 80,000lbs maximum. This route is considered a *minor arterial*, which means that they provide service for trips that are generally moderate length and connect to their higher arterial counterparts. In rural areas they are identified and spaced at intervals consistent with population density and traffic typically travels at higher speeds.

Forgy Mill Road (County Road (CR) 1149) - Forgy Mill Road is an unmarked gravel public road with a posted speed limit of 35 mph. The route extends east-west along the southernmost portion of the Project Area where the substation will be located. The Project Area will be accessible from this road.

Mason-Poyner Road (CR 1162) – Mason-Poyner Road is an unmarked gravel road with a posted speed limit of 35 mph that borders the southeastern portion of the Project Area. The Project Area will be accessible from this road.

Free Lane (CR 1603) – Free Lane is an unmarked gravel road that extends north-south from KY 949 and has a posted speed limit of 25 mph. The route curves to the east and continues onto the Project Area. However, during and after construction, the Project Area will no longer be accessible from Free Lane.

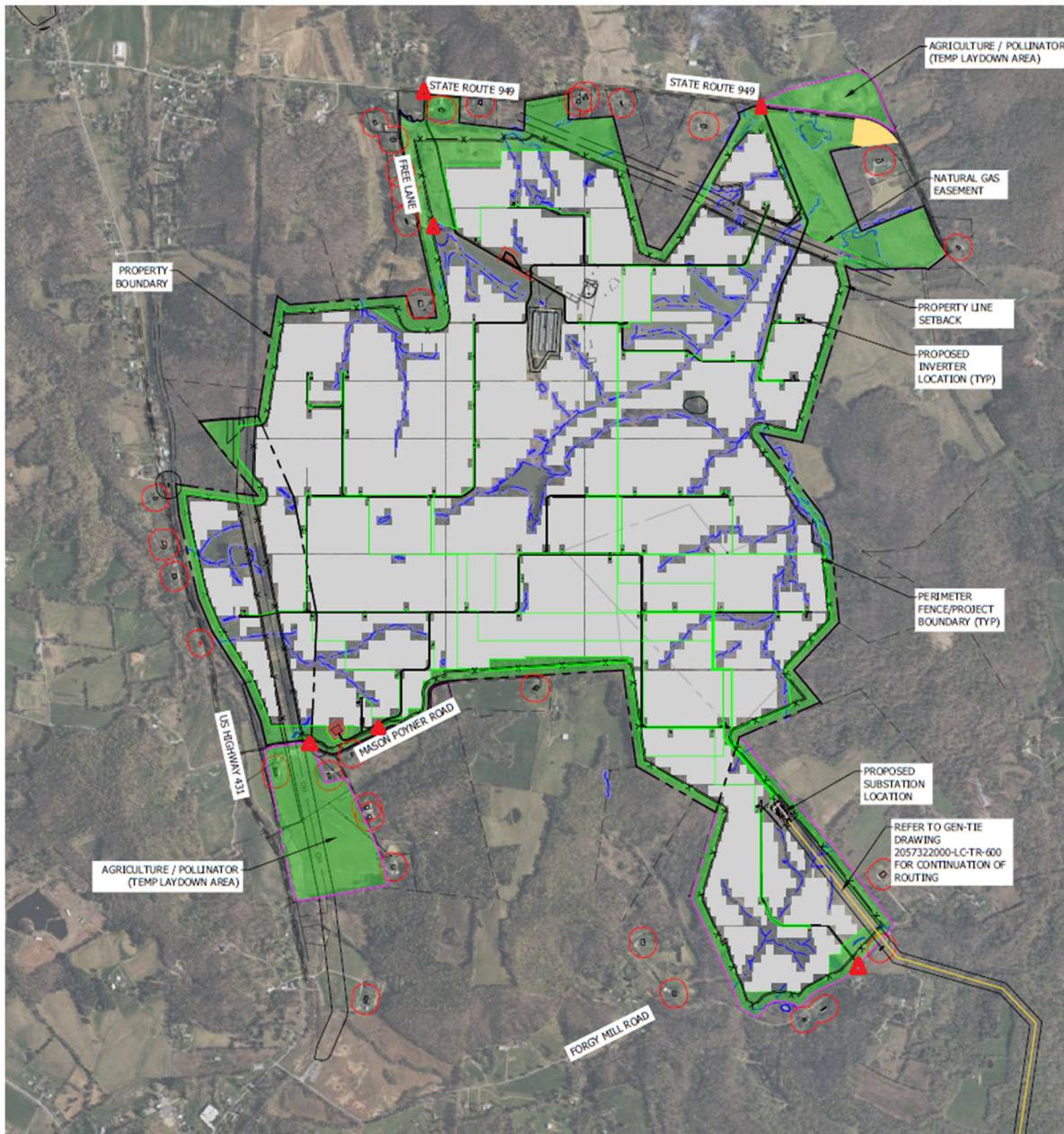


Figure 1. Overview of roadways surrounding the Project Area and site entrances. Site access is identified with red triangles.

Base Traffic Volumes

Existing traffic volumes on roadways in the Project vicinity were determined by querying the Kentucky Transportation Cabinet’s Interactive Statewide Traffic Counts tool. This online map displays the most recent average annual daily traffic (AADT) for selected roads throughout the Commonwealth. Note that traffic volumes for Mason-Poyner, Forgy Mill Road, and Free Lane are not available in the tool because KYTC does not have stations on these routes. Traffic volumes are only available for US 431 and KY 949 and the most recent collection year is provided in Table 1.

Table 1. Available traffic counts for roadways in the Project vicinity (data source: Kentucky Transportation Cabinet Traffic Count Reporting System).

Route	Station ID	Mileposts	AADT (year)	Functional Class
089-US-0431-000	089255	0 – 2.87	3,332 (2021)	Rural Minor Arterial
089-KY-0949 -000	089287	0 – 2.25	392 (2023)	Rural Minor Collector
089-KY-0949-000	089288	2.25 – 6.78	171 (2021)	Rural Minor Collector
Mason-Poyner Road	N/A	--	N/A	Rural & Urban Local
Forgy Mill Road	N/A	--	N/A	Rural & Urban Local
Free Lane	N/A	--	N/A	Rural & Urban Local

Historic Traffic Volumes

The historic traffic volumes along KY 949 have declined over a 12-year period. The segment from the US 431 intersection to milepost 2.24 saw an increase in 2020, however, the most recent AADT count in 2023 was even lower than even traffic counts in the previous 12 years. This spike in AADT counts in 2020 is considered a result of the COVID-19 pandemic and its effect on traffic. Over a 12-year period. The AADT counts have increased on US 431.

ASSUMPTIONS

During the construction phase, access to the project would be primarily via US 431 and KY 949 roads. Contingent on other factors, construction is anticipated to begin in 2026 and last approximately 12 to 18 months. During peak construction periods, approximately 300-400 laborers may be entering the site from any of the five available Project Area entrances on US 432, KY 949, Forgy Mill Road, and Mason Poyner Road. This number would be less on a daily basis during construction would equate to approximately 75 to 125 passenger vehicles, pickup trucks, or other types of employee vehicles onsite for the majority of the construction phase.

During construction, a temporary increase in traffic volume associated with travel of construction laborers, delivery of construction equipment and material, and delivery of solar panel components and equipment is anticipated. Laborer commutes with passenger vehicles and trucks would occur daily with traffic peaks in the morning, at lunch, and at the end of the workday.

Equipment deliveries will occur on trailers, flatbeds, and other large vehicles at various times during the day. Approximately 20 to 35 semi-trucks per day could be used to deliver facility components during peak periods. These vehicles would primarily use entrances to the Project Area on KY 949 with the exception of the delivery of the transformer, which would be delivered via Forgy Mill Road. Other construction and worker traffic will be split amongst the five access points to the Project Area.

Construction, delivery, and worker vehicles will not use Free Lane to access the site. The Free Lane entrance will remain for agricultural activities and access to the poultry barns and grazing.

During the operations and maintenance phase, a small maintenance crew will regularly drive through the area to monitor and maintain the facilities as needed. Crews will primarily utilize light trucks or pickup trucks for operation and maintenance. Occasional and infrequent flatbed trucks may be used to haul equipment to the Project Area to perform maintenance activities.

MITIGATION MEASURES

The following measures will be implemented by Lost City Renewables LLC, (“Lost City”) during and after the construction phase to reduce impacts to local traffic. A separate traffic management plan for the Project will be developed in coordination with the Muhlenberg County Road Department (MCRD) and the Kentucky Transportation Cabinet (KYTC) that will discuss traffic and staging onsite during construction to minimize the impact on traffic flow and keep traffic safe.

- Lost City will develop a road use agreement with the MCRD and the Muhlenberg County Fiscal Court. Such an agreement might include special considerations for overweight loads, routes utilized by heavy trucks, road weight limits, and bridge weight limits. It also might include use of a flag person during heavy commute periods, prioritize access for local residents, and implement staggered work shifts during daylight hours to manage construction traffic flow near the Project site.
- Construction activities, processes, and deliveries will be limited to the hours between 7:00 am and 7:00 pm, Monday through Saturday; construction activities that create a higher level of noise, such as pile-driving, will be limited to 8 a.m. to 5 p.m. local time, Monday through Friday. Non-noise-causing and non-construction activities can take place on the site between 6 a.m. and 10 p.m. local time, Monday through Sunday, including field visits, arrival, departure, planning, meetings, mowing, surveying, etc.
- Appropriate signage and traffic signaling will be used as needed to aid construction traffic and prevent severe traffic issues.

- Five access points will spread construction and worker vehicle entering and leaving the Project Area.
- Lost City will inform and obtain permits from state and local road authorities as pertaining to commercial vehicle classes used for transporting equipment and materials to the Project Area. Lost City will also comply with those permit requirements by coordinating with proper road officials prior to these trips.
- Lost City will fix or pay for repairs for damage to roads and bridges resulting from any transport to the site according to the road use agreement. For damage resulting from vehicle transport in accordance with all permits, those permits will control.
- Lost City will comply with laws and regulations regarding use of roadways.
- Lost City will consult with KYTC regarding truck and other construction traffic and obtain necessary permits from KYTC.
- Lost City will consult with the MCRD regarding truck and other construction traffic and obtain any necessary permits from the MCRD.
- Lost City will develop special plans and obtain necessary permits before transporting heavy loads, especially the substation transformer, onto state or county roads.
- Lost City will develop and implement a traffic management plan to minimize the impact on traffic flow and keep traffic safe. Any such traffic management plan will also identify any traffic-related noise concerns during the construction phase and develop measures that would address those noise concerns.
- Lost City will implement ridesharing between construction workers when feasible, use appropriate traffic controls, or allow flexible working hours outside of peak hours to minimize potential traffic delays during AM and PM peak hours.
- Lost City will properly maintain construction equipment and vehicles and follow best management practices related to fugitive dust through the construction process, including the use of water trucks. Dust impacts shall be kept at a minimum level in compliance with 401 KAR 63:010.
- Activities that disturb land during the construction of the Project may temporarily add airborne materials. To reduce the contribution of airborne materials, application of water to unpaved on-site roadways may occur. Vegetative buffer and revegetation measures along fencerows and property boundaries will help mitigate fugitive dust impacts to adjacent areas. Dust impacts will be kept at a minimal level to be in compliance with 401 KAR 63:010.

TRAFFIC IMPACTS

Construction Phase

Construction traffic will use existing roadway systems to access one of the five entrances to the Project Area (Free Lane entrance will not be used for construction traffic). Project construction is expected to take 12 to 18 months. While the number of construction workers will vary, it is

anticipated that the Project may have 300-400 workers onsite during peak construction activity (four to six months). A temporary increase in traffic volume associated with travel of construction workers, delivery of construction equipment and materials, and delivery of solar panel components and equipment is anticipated. The increased traffic may be perceptible to neighboring residents and commuters, especially given the relatively low AADT counts on US 431 and KY 949 (Appendix A).

Slow moving construction vehicles may also cause delays on smaller roads. However, these delays should be similar to those experienced by farm equipment and will only occur during a relatively short construction delivery period.

Permanent road or lane closures are not anticipated for the construction of the proposed solar facility. However, the presence of signage, signaling, personnel flagging traffic, and temporary lane closures may be employed to reduce risk of collision on the roadway. For instance, the presence of a flag person to temporarily stop traffic to allow for a delivery truck and trailer to safely turn into the site may be necessary at times of large equipment deliveries. Appropriate signage of trucks entering the highway or slow-moving vehicles would be used to warn oncoming traffic of potential risk.

In coordination with MCRD and KYTC, Lost City will develop and implement a traffic management plan to minimize the impact on traffic flow and keep traffic safe.

Operational and Maintenance Phase

Long-term impacts to traffic will be negligible because the project would require minimal staff during the operations and maintenance phase. The facility will be managed remotely and monitored by a small number of employees or contractors. Operations workers are expected to commute to and from the project site individually during the peak AM and PM hours. Work can also be conducted at night for up to thirty days a year. The operations and maintenance work is anticipated to require primarily the use of light trucks.

For vegetation management, periodic truck traffic will occur to deliver and move sheep as part of solar grazing activities or for mowing equipment.

During the operation phase, the additional volume to daily traffic is considered negligible, and it will have no measurable impact on the traffic and/or transportation infrastructure.

Impact on Road Infrastructure

Significant degradation of the existing roadways during or after the construction phase is not anticipated for the proposed Project. The temporary increase in localized traffic and the continued entry and exit of heavy trucks or equipment during the construction phase may result in some additional wear of the existing roadway or shoulder of the five planned entrances to the Project Area. A road use agreement with MCRD and Muhlenberg County Fiscal Court will be

implemented to address construction traffic, access, and restoration/maintenance of county roads. Oversize/overweight vehicle permits will be obtained from the State for travel on state roadways. The only delivery anticipated to be in this category is for the transformer, while all other vehicles will be typical construction size.

Access drives and internal roads will be constructed or improved as needed to accommodate vehicles and equipment necessary to construct the proposed solar facility. Internal roads would be compacted gravel or earthen, which may result in an increase in airborne dust particles. During construction, water may be applied to internal road system to reduce fugitive dust.

During facility operation and maintenance, there would be no significant increase in traffic. Long-term impacts to the road infrastructure and vehicle traffic are not anticipated as daily traffic to the site will be minimal. For example, employees would generally contribute less to vehicle traffic than a typical single-family home would.

Railroad Effects

No active rail line occurs in Muhlenberg County as CSX Transportation formally abandoned its last rail line in the County on September 5, 2000 (65 Fed. Reg. 57651). An abandoned railroad grade located within the Project area measures approximately 1,840 ft and is oriented northwest to southeast and parallels US 431. The proposed Project would have no effect on this abandoned rail line, nor would the Project utilize a railroad for deliveries.

CONCLUSION

Traffic in the Project vicinity is predicted to increase temporarily during the construction phase of the Project. This includes daily morning, midday, and evening peaks for construction laborers entering and exiting the Project site and periodic delivery of construction materials and equipment. Appropriate signage and traffic directing would occur as necessary to increase driver safety and reduce risk of collisions for approaching traffic. Lost City will develop and implement a traffic management plan to reduce traffic impacts and keep traffic safe.

In addition, Lost City will develop a road use agreement with MCRD and the Muhlenberg County Fiscal Court to repair or pay for wear and tear or damages to county roadways.

Construction traffic is not expected cause significant operational changes to existing roadways. The implementation of mitigation measures such as multiple access points, ridesharing between construction workers, appropriate traffic controls, or allowing flexible working hours outside of peak hours could be implemented to minimize any potential for delays during the AM and PM peak hours. All roadways within the Project area should continue to operate at an acceptable level of service.

During the operation phase, the additional volume to daily traffic from maintenance crews is considered negligible, and it will have no measurable impact on the traffic and/or transportation infrastructure.

Muhlenberg County, Kentucky does not have an active rail line and therefore, no effect on railways is anticipated.

APPENDIX A:

Average Annual Daily Traffic Count Data

Historical Traffic Volume Summary

Station Details:

Sta ID:	089287
Sta Type:	Full Coverage
Map:	MapIt
District:	2
County:	Muhlenberg
Route:	089-KY-0949 -000
Route Desc:	KY-949

Begin MP:	0
Begin Desc:	US 431
End Mp:	2.2490
End Desc:	UNION RIDGE ROAD
Impact Year:	
Year Added:	

Newest Count:

AADT:	392
Year:	2023
% Single:	
% Combo:	
K Factor:	12.80
D Factor:	58

Definitions:

Sta. ID - Three digit county number + station number

MP - milepoint

Impact Year – year of significant change to traffic pattern within station segment

AADT – Annual Average Daily Traffic – the annualized average 24-hour volume of vehicles on a segment of roadway

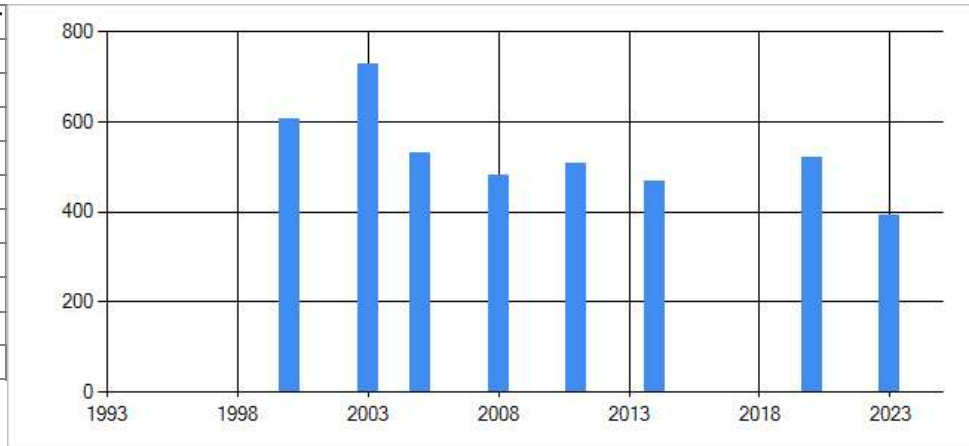
% Single – single unit truck volume as a percentage of the AADT

% Combo – combination truck volume as a percentage of the AADT

K Factor – peak hour volume as a percentage of the AADT

D Factor – percentage of peak hour volume flowing in the peak direction

Year	AADT	Year	AADT	Year	AADT
2024		2014	469	2004	
2023	392	2013		2003	729
2022		2012		2002	
2021		2011	509	2001	
2020	522	2010		2000	607
2019		2009		1999	
2018		2008	482	1998	
2017		2007		1997	
2016		2006		1996	
2015		2005	531	1995	



Historical Traffic Volume Summary

Station Details:

Sta ID:	089288
Sta Type:	Full Coverage
Map:	MapIt
District:	2
County:	Muhlenberg
Route:	089-KY-0949 -000
Route Desc:	KY-949

Begin MP:	2.2490
Begin Desc:	UNION RIDGE ROAD
End Mp:	6.7830
End Desc:	BUTLER COUNTY LINE
Impact Year:	
Year Added:	

Newest Count:

AADT:	171
Year:	2021
% Single:	
% Combo:	
K Factor:	15.80
D Factor:	57

Definitions:

Sta. ID - Three digit county number + station number

MP - milepoint

Impact Year – year of significant change to traffic pattern within station segment

AADT – Annual Average Daily Traffic – the annualized average 24-hour volume of vehicles on a segment of roadway

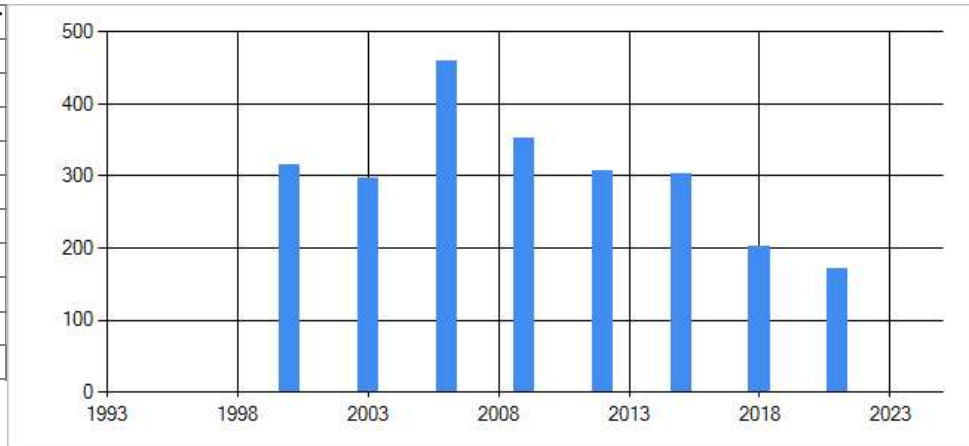
% Single – single unit truck volume as a percentage of the AADT

% Combo – combination truck volume as a percentage of the AADT

K Factor – peak hour volume as a percentage of the AADT

D Factor – percentage of peak hour volume flowing in the peak direction

Year	AADT	Year	AADT	Year	AADT
2024		2014		2004	
2023		2013		2003	296
2022		2012	307	2002	
2021	171	2011		2001	
2020		2010		2000	315
2019		2009	352	1999	
2018	203	2008		1998	
2017		2007		1997	
2016		2006	460	1996	
2015	304	2005		1995	



Historical Traffic Volume Summary

Station Details:

Sta ID:	089255
Sta Type:	Full Coverage
Map:	MapIt
District:	2
County:	Muhlenberg
Route:	089-US-0431 -000
Route Desc:	US-431

Begin MP:	0
Begin Desc:	LOGAN COUNTY LINE
End Mp:	2.8730
End Desc:	KY 949
Impact Year:	
Year Added:	

Newest Count:

AADT:	3332
Year:	2021
% Single:	5.74
% Combo:	6.87
K Factor:	10.70
D Factor:	57

Definitions:

Sta. ID - Three digit county number + station number

MP - milepoint

Impact Year – year of significant change to traffic pattern within station segment

AADT – Annual Average Daily Traffic – the annualized average 24-hour volume of vehicles on a segment of roadway

% Single – single unit truck volume as a percentage of the AADT

% Combo – combination truck volume as a percentage of the AADT

K Factor – peak hour volume as a percentage of the AADT

D Factor – percentage of peak hour volume flowing in the peak direction

Year	AADT	Year	AADT	Year	AADT
2024		2014		2004	
2023		2013		2003	
2022		2012	2199	2002	2640
2021	3332	2011		2001	
2020		2010		2000	
2019		2009	2100	1999	
2018	2548	2008		1998	
2017		2007		1997	2580
2016		2006	2490	1996	
2015	2171	2005		1995	

