INTRODUCTION

With the advent of automation, the acquisition, transmission, storage, analysis, and presentation of traffic data have changed over the years. The Traffic Monitoring System (TMS) in DelDOT is substantially different from what it was just a short time ago. Division of Planning uses High Desert's Jackalope and International Road Dynamic's software to retrieve and analyze traffic data collected in the field. The use of these two programs ensures that the Traffic Count Program is following the principles of 'Truth-in-Data' reporting required by the Federal Highway Administration and conforms to all federal reporting standards. This report contains traffic data for all roadway segments under DelDOT's jurisdiction, which represents approximately 90% of all roadways in the State of Delaware. The details of the collection process, analysis, and reporting of traffic data, along with other features relevant to traffic monitoring, are outlined in this document.

ROAD NETWORK

Delaware roads have been grouped into functional classes or systems as required by the Federal Highway Administration. The Functional Classification Systems are based on traffic characteristics and the function that each roadway serves as part of the entire network. The Functional Classification Map can be found in the home page of the Vehicle Volume Summary under the Diurnal Distribution Tables link. The Highway Network for each of the three counties is continually updated as required by the Federal Highway Administration.

TRAFFIC DATA COLLECTION AND DEVICES

Automatic Traffic Recorder or ATR Stations

The Automatic Traffic Recorders or ATR stations are devices that collect only traffic volume data for 365 days a year. They are permanently installed throughout the state covering all traffic pattern groups. Equipped with in-ground loop detectors, these ATR stations count the number of vehicles passing through each location continuously throughout the year and transmit the recorded data to a traffic monitoring program and then

processed and reviewed for accuracy. The data collected by these permanent counters is used to create growth factors that are then applied to any road segments that were not counted during the count year and any short-term count taken during the count year. A minimum of eight months of data from a permanent counter is needed to create a growth factor.

Weight In Motion station or WIM's

Weight In Motion stations or WIM's are specialized Automatic Traffic Recorders devices that collect traffic volume, class and weight data. These devices are also equipped with in-ground loop detectors permanently installed throughout the state covering all traffic pattern groups as required by federal law. The data collected by these permanent counters is also used to create growth factors that are then applied to any road segments that were not counted during the count year and any short-term count taken during the count year. A minimum of eight months of data from a permanent counter is needed to create a growth factor.

Wavetronix Device

Wavetronix Traffic Detection Devices are radar detectors used for collecting vehicle volumes and limited vehicle class data with the advantage of being a non-intrusive detection system. Wavetronix are used to collect data along segments of roads where high traffic volumes make it impossible to use pneumatic tubes or prevent the installation of Automatic Traffic Recorders (ATR). The data collected by the Wavetronix devices include both volume and class. The vehicle class is determined by vehicle length and not axle length. The classes are separated into three length-based groups and approved by FHWA. The data collected by these permanent counters are also used to create growth factors that are then applied to any road segments that were not counted during the count year and any short-term count taken during the count year. A minimum of eight months of data from a permanent counter is needed to create a growth factor.

System Detectors

System Detectors are devices located at traffic intersections throughout the state used for collecting volume only data using in-pavement loop sensors. These devices are highly reliable and were added to Delaware's

Traffic Counts program in 2022. The data collected by these permanent counters is also used to create growth factors that are then applied to any road segments that were not counted during the count year and any short-term count taken during the count year. A minimum of eight months of data from a permanent counter is needed to create a growth factor.

ROAD SEGMENT DESIGNATIONS

Restricted

Restricted sites are road segments that cannot be counted using pneumatic rubber hoses due to safety concerns or extremely high volumes. These sites are also in areas where in-pavement counters cannot be installed or are not available. These road segments are given an AADT created by using growth factors.

Continuous

Continuous sites are road segments that contain either an Automatic Traffic Recorder (ATR), Weight-in-Motion station, Wavetronix device or a System Detector that collects data year-round.

Short Term

Short Term sites are road segments that are counted by using pneumatic rubber hoses for a period of seven days. These road segments are in a three to six year count cycle.

Short Term Count Program

There were 3,648 roadway segments on the Road Inventory Network of DelDOT in 2025. Of these, 122 segments have permanent counters collecting data for the Traffic Counts Program. For the remaining 3,526 segments, the AADT or Annual Average Daily Traffic data was calculated using either short term counts or by applying a growth factor created from the data collected by the permanent counters.

The Short-Term Counts Program collects seven-day class counts through the state covering any road without a permanent counter or not labeled as restricted. The short-term counts are in a three to six year cycle. The advent of this schedule of traffic data collection requirement ensures accurate data on all roadway segments in the Road Inventory Network. On average, there are approximately 700 short-term counts performed annually. Short-term counts are performed for a one-week period using pneumatic rubber hoses which count axles and

collect both volume and class data. Since the number of axles in motor vehicles are variable, appropriate Axle Correction Factors (ACF) are applied to convert the counted axles into the number of vehicles.

Furthermore, the Average Daily Traffic or ADT is calculated after the period of one week is counted. To estimate the AADT, Seasonal Adjustment Factors are applied to counts for traffic variations over the course of the year.

AADT

The AADT or Average Annual Daily Traffic has been determined for each of the 3,614 segments of the Road Inventory network by several different methods. One way is by collecting data from a continuous counter for a minimum of eight months. The other method is by taking a seven-day short term count and then applying a growth factor to the final count. The third way is by applying a growth factor to any road segment that could not be collected during the count year or are labeled as restricted. As of 2025 Delaware has implemented a new procedure to create the AADT by using dedicated growth factors organized into Urban and Rural categories. These new factor groups are defined using Urban Area Boundaries (UABs) and county metadata, ensuring clear and automated site-to-group assignments to provide more accurate growth factors.

As of 2022 the traffic counts data was made available through an interactive map created by DelDOT called **Gateway**. Each segment will include 10 years of historical data, inventory road numbers, mile points and road names among other information concerning each specific segment of road. A link to DelDOT's Gateway interactive map and instructions on how to use the map are available on the Vehicle Volume Summary home page.

VOLUME DATA

Vehicle volume data is collected by all data collection devices. Traffic volume data refers to the number of vehicles traveling on a road and it's used to create a roads Annual Average Daily Traffic or AADT.

CLASS DATA

Vehicle classification data is collected from both permanent counters and short-term counts. The class data is

classified in accordance with the current FHWA Vehicle Classification scheme. This includes 13 vehicle classes collected from ATR's, WIM's and short-term counts using axle spacing to determine the vehicle classes. The class data collected from Wavetronix devices is grouped into three different groups and it's determined by vehicle length instead of axle spacing. These three class groups are approved by FHWA. It is important to note that not all permanent counters collect class data.

Traffic Pattern Group (TPG)

Six groups have been established to represent the traffic characteristics of all roads on Delaware's Road Inventory network. These Traffic Pattern Groups, ranging from TPG 1 through TPG 8 along with the permanent counting stations covered under each TPG are reflected in the Traffic Pattern Group table shown below. The Functional Classification for state-maintained roads can be found in Delaware's Gateway Interactive Map and under the Diurnal Tables page located in the Vehicle Volume Summary page.

Relation between Traffic Pattern Group and Functional Classification and TPG

1. Interstate, Freeways & Expressway = Urban interstate, Urban Other Expressways/Freeway, Rural Other Expressways/Freeway.

2. Urban Roads = Urban major collector, minor arterial, urban other principal arterials, Urban local, urban minor collector.

5. Rural Roads = Rural major collector, rural minor arterial, rural other principal arterials, Rural Local, rural minor collector.

8. Recreational = contains all Functional Classes.