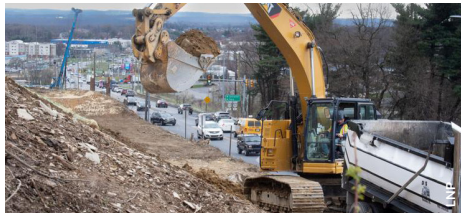

connects 2050

metropolitan transportation plan for lancaster county, pa

June 2024

LANCASTER COUNTY MPO
Metropolitan Planning Organization

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The full Lancaster County Metropolitan Transportation Plan, including Appendices A through I, is available for download from the Lancaster County Metropolitan Planning Organization website:

https://lancompo.org

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Prepared by

Lancaster County Planning Department
Lancaster, Pennsylvania
June 2024

LANCASTER COUNTY
MPO
Metropolitan Planning Organization

Funding for the plan was provided by the Pennsylvania Department of Transportation, Federal Highway Administration, and Federal Transit Administration.

County of Lancaster
ADA Policy and Procedure
Requests for Reasonable Accommodations by Persons with Disabilities

It is the policy of Lancaster County to assure that qualified individuals with disabilities have equal and full access to the county's proceedings, services, programs, activities, and employment. Nothing in this policy shall be constructed to impose limitations or to invalidate the remedies, rights and procedures accorded to any qualified individual with disabilities under state or federal law. To that end, County of Lancaster staff will make every effort to assist qualified individuals with disabilities who request reasonable accommodations by utilizing the guidelines and procedures established by this policy and other applicable county policies.

For more information, please visit https://www.co.lancaster.pa.us/575/Accessibility.

Lancaster County's Metropolitan Planning Organization
Title VI Policy

It is the policy of the Lancaster County Transportation Coordinating Committee (LCTCC) to comply with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, E.O. 12898, and related statutes and regulations in all programs and activities and requires that no person in the United States shall, on the grounds of race, color, or national origin be excluded from the participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which it receives Federal financial assistance.

Any person who believes they have been aggrieved by an unlawful discriminatory practice under Title VI has a right to file a formal complaint with LCTCC. Any such complaint must be in writing, signed by the complaining person (s) or representative, and filed with the LCTCC Title VI Coordinator within one hundred eighty (180) days following the date of the alleged discriminatory occurrence. A copy of Title VI Discrimination Complaint Form can be obtained from the Lancaster County Planning Department (LCPD) office, by calling the office or by visiting LCPD's website at www.lancastercountyplanning.org. Additionally, for assistance completing the form or translation and interpretation services contact the LCPC office at 717-299-8333.

LANGUAGE ACCESS TAGLINES

English
Hello! We provide translation and interpretation services. If you would like to read this document in English, please leave a request by calling our inbox at 717-299-8333 and pressing “7,” or send us an email at planning@lancastercountypa.gov

To request a document translation, you must include:
- the name of the document that needs to be translated,
- the requested language for translation,
- and an email or mailing address where we can send the translated document.

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Español (Spanish)
¡Hola! Ofrecemos servicios de traducción e interpretación. Si desea leer este documento en Español, deje su solicitud llamando a nuestro buzón de entrada al 717-299-8333 y pulsando "7", o enviándonos un correo electrónico a planning@lancastercountypa.gov

Para solicitar la traducción de un documento, debe incluir:
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Recibirá un correo electrónico confirmando su solicitud. Le enviaremos una versión traducida del documento solicitado lo antes posible.

tiếng Việt (Vietnamese)
Xin chào quý vị! Chúng tôi cung cấp các dịch vụ biên dịch và phiên dịch. Nếu quý vị muốn đọc tài liệu này bằng tiếng Việt, vui lòng để lại yêu cầu bằng cách gọi đến hộp thư của chúng tôi theo số 717-299-8333 và nhấn phím “7” hoặc gửi email cho chúng tôi theo địa chỉ planning@lancastercountypa.gov

Để yêu cầu bản dịch tài liệu, quý vị phải bao gồm:
- tên tài liệu cần dịch,
- ngôn ngữ được yêu cầu để dịch,
- và địa chỉ email hoặc địa chỉ gửi thư nơi chúng tôi có thể gửi tài liệu đã dịch.

Quý vị sẽ nhận được email xác nhận yêu cầu. Chúng tôi sẽ cung cấp cho quý vị bản dịch của tài liệu được yêu cầu trong thời gian sớm nhất có thể.

Deutsch (German)
Hallo! Wir bieten Übersetzungs- und Dolmetscherdienste an. Wenn Sie dieses Dokument in Deutsch lesen möchten, rufen Sie uns bitte unter der Nummer 717-299-8333 an und drücken Sie "7", oder senden Sie uns eine E-Mail an planning@lancastercountypa.gov

Um eine Übersetzung eines Dokuments anzufordern, müssen Sie Folgendes angeben:
- der Name des Dokuments, das übersetzt werden soll,
- die gewünschte Sprache für die Übersetzung,
- und eine E-Mail- oder Postadresse, an die wir das übersetzte Dokument senden können.

Sie erhalten dann eine E-Mail zur Bestätigung Ihrer Anfrage. Wir werden Ihnen so schnell wie möglich eine übersetzte Fassung des angeforderten Dokuments zukommen lassen.

Français (French)
Bonjour ! Nous fournissons des services de traduction et d'interprétation. Si vous souhaitez lire ce document en Français, veuillez déposer une demande en appelant notre boîte de réception au 717-299-8333 et en appuyant sur « 7 », ou envoyez-nous un e-mail à planning@lancastercountypa.gov.

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- le nom du document à traduire,
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Vous recevrez un email confirmant votre demande. Nous vous fournirons une version traduite du document demandé dans les plus brefs délais.

اللغة العربية (Arabic)
مرحبًا !نحن نقدم خدمات الترجمة التحريرية والفورية .إذا يُرجى ،العربية كنت ترغب في قراءة هذا المستند باللغة تقديم طلب بذلك من خلال الاتصال بصندوق بريدنا "الصوتي على الرقم 717-299-8333 واختيار الرقم "7 أو من خلال إرسال رسالة إلكترونية إلى البريد الإلكتروني planning@lancastercountypa.gov.

يجب عليك ذكر ما يلي عند طلب خدمة ترجمة مستند ترجمة تحريرية:
- اسم المستند الذي ترغب في ترجمته ترجمة تحريرية
- واسم اللغة التي ترغب في الترجمة التحريرية إليها
- وعنوان بريد إلكتروني أو عنوان مراسلات لإرسال النسخة المُترجَمة من المستند إليه

ستتلقى رسالة إلكترونية تؤكد استلام طلبك .وسنُقدِّم لك نسخة مُترجَمة من المستند المطلوب في أقرب وقت ممكن.

LANGUAGE ACCESS TAGLINES

မြန်မာ (Burmese)

မင်္ဂလာပါ။ ကျွန်ုပ်တို့သည် ဘာသာပြန်ခြင်းနှင့် စကားပြန်ခြင်းဝန်ဆောင်မှုများကို ဆောင်ရွက်ပေးပါသည်။ ဤစာရွက်စာတမ်းကို မြန်မာ ဖြင့် ဖတ်ရှုလိုပါက ကျွန်ုပ်တို့ ၏ 717-299-8333 သို့ခေါ်ဆိုပြီး “7” ကိုနှိပ်ခြင်းဖြင့် သိမ့ဟတ် planning@lancastercountypa.gov သို့ အီးမေးလ်တစ်စောင်ပေးပို့ခြင်းဖြင့် တောင်းဆိုမှုတစ်ခုချန်ထားခဲ့နိုင်ပါသည်။ စာရွက်စာတမ်း ဘာသာပြန်တစ်ခုတောင်းဆိုရန် အောက်ပါအချက်အလက်များ ပါဝင်ရမည်။

- ဘာသာပြန်ရန်လိုအပ်သော စာရွက်စာတမ်းအမည်
- ဘာသာပြန်ရန်တောင်းဆိုထားသော ဘာသာစကား
- စာပို့လိပ်စာ

ဘာသာပြန်ထားသော စာရွက်စာတမ်းကို ပေးပို့နိုင်သည့် အီးမေးလ် သို့မဟုတ် သင်၏ တောင်းဆိုချက်ကို အတည်ပြုသည့် အီးမေးလ်တစ်စောင် လက်ခံရရှိမည်ဖြစ်သည်။ တောင်းဆိုထားသော စာရွက်စာတမ်း၏ ဘာသာပြန်မှုကို တတ်နိုင်သမျှ အမြန်ဆုံး ကျွန်ုပ်တို့ ပေးပို့ပါမည်။

Українська мова (Ukrainian)

Доброго дня! Ми надаємо послуги письмового та усного перекладу. Якщо ви хотіли б ознайомитися з цим документом на Українська мова, залиште запит, зателефонувавши на наш номер для вхідних дзвінків 717-299-8333 та натиснувши «7», або надішліть нам електронного листа на адресу planning@lancastercountypa.gov

Щоб надіслати запит на переклад документа, ви повинні вказати:

- Назву документа, який потрібно перекласти.
- Потрібну мову перекладу.
- Адресу електронної або фізичної пошти, за якою ми можемо відправити перекладений документ.

Ви отримаєте електронного листа з підтвердженням вашого запиту. Ми надамо вам перекладену версію потрібного документа у найкоротший термін.

Kinyarwanda (Kinyarwanda)

Muraho! Dutanga serivisi zo guhindura indimi no gusemura. Niba ushaka gusoma iyi inyandiko muri rurimi runaka, nyamuneka tugezeho icyifuzo uhamagara kuri 717-299-8333 maze ukande “7,” cyangwa utwohererereze imeri kuri planning@lancastercountypa.gov.

Igihe usaba guhindurirwa inyandiko mu rundi rurimi, ugomba gushyiramo:

- izina ryinyandiko igomba guhindurwa,
- ururimi wifuzamo inyandiko,
- na imeri cyangwa aderesi ya imeri aho dushobora kohereza inyandiko yahinduwe.

Uzakira imeri yemeza icyifuzo cyawe. Tuzaguha verisiyo yahinduwe
y'inyandiko yasabwe vuba bishoboka.

नेपाली (Nepali)

नमस्कार ! हामी दोभासे तथा अनुवादन सेवा प्रदान गर्छौं । तपाईं यो कागजात नेपाली भाषामा पढ्न चाहनुहुन्छ भने, कृपया हाम्रो फोन नम्बर 717-299-8333 मा फोन गर्नुहोस् र “7” थिच्नुहोस् वा हामीलाई planning@lancastercountypa.gov मा इमेल पठाउनुहोस् ।

कागजात अनुवादन गर्ने अनुरोध र गर्दा , तपाईंले अनिवार्य रूपमा निम्न जानकारी समावेश गर्नु पर्दछ:

- अनुवादन गर्नु पर्ने कागजातको नाम,
- अनुवादन अनुरोध गरिएको भाषा,
- र इमेल वा पत्राचार ठेगाना जहाँ हामी अनुवादन गरिएको कागजात पठाउन सक्छौं ।

तपाईंले आफ्नो अनुरोध पुष्टि गर्ने इमेल प्राप्त गर्नुहुनेछ । हामी तपाईंलाई यथाशीघ्र अनुरोध गरिएको कागजातको अनुवादित संस्करण प्रदान गर्नेछौं ।

한국인 (Korean)

안녕하세요! 현재 다양한 언어로 번역 및 통역 서비스를 제공하고 있습니다. 이 문서를 한국인 로 읽기 원하시면 717-299-8333 번으로 전화 후 "7"을 눌러 요청을남기시거나 planning@lancastercountypa.gov 로 이메일을 보내주십시오.

문서 번역을 요청하는 경우, 다음 내용을 포함해야 합니다:

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요청하신 문서의 번역본을 가능한 빨리 제공해 드리도록

Kiswahili (Swahili)

Hujambo! Tunatoa huduma za tafsiri na ukalimani. Iwapo ungependa kusoma hati hii katika Kiswahili, tafadhali wasilisha ombi kwa kupigia kisanduku pokezi chetu simu katika 717-299-8333 na kubonyeza "7," au ututumie barua pepe katika planning@lancastercountypa.gov

Kuomba tafsiri ya hati, lazima ujumuishe:

- jina la hati ambayo inapaswa kutafsiriwa,
- lugha iliyoombwa ya kutafsiri,
- na barua pepe au anwani ya kutuma barua ambapo tunaweza kutuma hati iliyotafsiriwa.

Utapokea barua pepe inayothibitisha ombi lako. Tutakupa toleo lililotafsiriwa la hati iliyoombwa kwa haraka iwezekanavyo.

About *connects2050*

The Lancaster County Metropolitan Planning Organization (MPO) is the federally designated decision-making body for all transportation projects and programs that utilize federal funding. As a condition of receiving federal funds for transportation programs and projects, the MPO must adopt and maintain an up-to-date Metropolitan Transportation Plan (MTP), which means it must be reviewed and updated, as needed, every four years.

This document, *connects2050*, replaces the MPO's previous plan, which was adopted in 2020. The 2050 plan satisfies the federal requirements for metropolitan transportation plans, but differs from the prior plan in two key ways:

- Strategies recommended by the plan are closely integrated with land use concepts and planning tools in *places2040*, Lancaster County's comprehensive plan; and
- Public, municipal, and stakeholder outreach was aimed at enhancing collaboration in plan development and implementation, consistent with PennDOT's PennDOT Connects program.

Connects2050 outreach gauged the public's opinions on eight broad policy areas that could be the focus of the plan's goals and strategies. These eight areas were:

- Safety;
- Reliable Travel;
- Transportation Choices;
- Environmental Protection;
- System Maintenance;
- Critical Connections;
- Performance Goals; and
- Quality of Service.

Numerous factors were weighed in developing the plan's recommended strategies and implementation steps. Among these were:

- Public and municipal feedback;
- Consistency with federal requirements, including performance management goals and targets;
- System condition data and information;
- Transportation needs to support implementation of *places2040*; and
- Available funding.

This information and the resulting *connects2050* MTP are explored in the following pages.

Lancaster County Planning Department (LCPD) staff led the development of the MTP in coordination with the Federal Highway Administration (FHWA) Pennsylvania Division, PennDOT Central Office, and PennDOT Engineering District 8-0 under the guidance and direction of the MTP Advisory Committee.

The Lancaster County MPO adopted *connects2050* as its official MTP at its June 24, 2024 meeting.

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Proficiency Plan
Lancaster County, Pennsylvania


ONE WAY
STOP
ONE UNITED LANCASTER


KE LANE
LANCASTER BIKES


ANDY BOENAU

WHAT'S NEW?

Since *connects2040* was approved in June of 2020, several policies, procedures, and planning documents have been adopted that impact the way we plan for transportation. Many of these changes will enhance opportunities for citizen participation, engagement, and transparency in the transportation planning and programming process. The plans and policies adopted also encourage more investment in alternative modes of transportation, such as walking and biking. These changes are not only broadening the audience of transportation planning in Lancaster County—they are changing the way planning is done by making it fairer and more equitable to our diverse population. The following is a summary of some of the changes that have been made since *connects2040* was adopted.

Limited English Proficiency Plan

The 2023 Limited English Proficiency (LEP) Plan outlines how Lancaster County Planning will increase access for people with a limited ability to read, speak, or write English. The plan follows standards set by the US Department of Transportation. In Lancaster County, the main LEP language communities are Spanish and Vietnamese. Therefore, key planning documents will be translated into these languages. The plan also includes specific goals for outreach to the Pennsylvania Dutch language community. A key step in implementing the plan is to notify the public about our free language services. Anyone can request translation or interpretation help from our department. Instructions on how to make these requests, called Language Access Taglines, will be added to future publications in several languages.

Public Participation Plan

The purpose of the Public Participation Plan (PPP) is to provide the public, all interested parties, and LCPD staff with an understanding of the processes used to develop, update, and review land use and transportation plans or policies in Lancaster County. The goal is to provide a guide that outlines a clear and understandable process for meaningful public participation. This plan addresses public participation for the Lancaster County Planning Commission (LCPC) as well as the Lancaster MPO. Although this plan focuses on the plans and programs that are required by federal or state legislation to incorporate civic engagement into their processes, the tools and strategies outlined in this plan can be incorporated into the development of any project.

Title VI Compliance and Implementation Program

On April 25, 2022, the Lancaster MPO adopted a Title VI Compliance and Implementation Program. All entities who receive Federal Transit Administration (FTA) grant dollars either directly from the FTA or through the Pennsylvania Department of Transportation are subject to Title VI of the Civil Rights Act of 1964 and the U.S. Department of Transportation's implementing regulations. A Technical Update was prepared in February 2024 per guidance from the Federal Transit Administration (FTA).

Title VI of the Civil Rights Act of 1964 and related nondiscrimination authorities provides that no person in the United States be discriminated against under any federally funded program or activity based on race, color, or national origin. The obligation of Title VI applies to the Pennsylvania Department of Transportation (PennDOT) Transit Section as a recipient of federal funds and subrecipients, such as cities, counties, and grantees that receive federal funds from PennDOT. Moreover, when an agency or unit of government accepts federal funds, all its programs and activities are subject to Title VI requirements, regardless of their funding source. If any transportation program or activity receives federal funding from PennDOT, it must comply with Title VI.

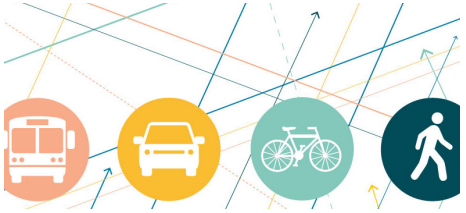
The Lancaster MPO's Title VI Compliance and Implementation Program is designed to ensure that no person is excluded from participation in, or denied the benefits of, all programs and activities based on race, color, national origin, disability, sex, age, religion, income status or limited English proficiency, as protected by Title VI of the Civil Rights Act of 1964.

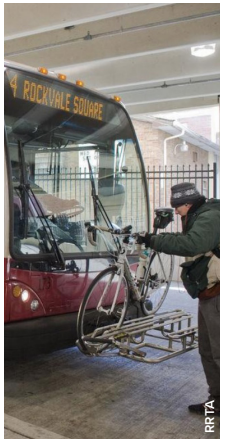
Transportation Improvement Program Selection Process

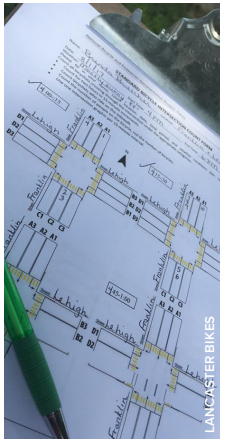
The 2025–2028 Transportation Improvement Program (TIP) Selection Process is a document that guides the selection and scoring process that the Lancaster MPO uses to evaluate projects for the inclusion on the TIP. Candidate projects are identified through monitoring the performance of the transportation system in the areas of safety, the physical condition of pavements and bridges, and the reliability of travel on the system. Then, candidate projects are evaluated with a system that scores projects in four areas: Safety and Security, Congestion Management, Multimodal Connectivity, and Economic Benefit. These scores are used by the MPO to make final selections for projects to program on the TIP.

Study Review Process

In February 2023, the MPO adopted a Study Review Process to coordinate transportation investment roles and responsibilities between stakeholders (municipalities and the MPO) for improvement projects identified in MPO funded and non-MPO funded transportation and land use studies. The Bridgeport Transportation & Land Use Study was the first to be reviewed through this new process. Lancaster County Planning Department (LCPD) staff will work with the Lancaster County Planning Commission (LCPC) to determine the appropriate level of connection between local implementation of the land use recommendations and MPO investment in transportation improvements.







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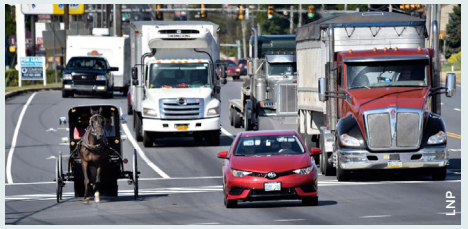


TRENDS, ISSUES, AND PERFORMANCE MEASURES

Socioeconomics

Our Growing Population and Workforce

- Based on the Census 2022 ACS 1-Year Estimates, Lancaster County's population is 556,629. The county has added almost 86,000 people since 2000, though the growth rate has slowed from just over 10% in 2000 to 2010 to about 7% between 2010 to 2022. Our population is also diversifying, with a growing number of people of Hispanic, Asian, and other backgrounds.
- Almost all of our communities are growing. Between the 2010 and 2020 Census, all but five of Lancaster County's 60 municipalities have registered increases in estimated total population. The map on page 16 depicts these population growth rates.
- When compared to surrounding counties, Lancaster County's 7.16% population growth rate between 2010 and 2022 is relatively low, with only York and Berks Counties having a lower rate of increase. However, Lancaster County's growth has outpaced that of many other counties in the state of Pennsylvania, as the statewide population increase in that time was only 2.12%.
- Lancaster County is expected to add about 35,000 additional residents by 2050, for a total population of roughly 591,000 people[1].
- By 2050, one in four Lancaster County residents will be over the age of 65, an estimated 137,580 persons[2].
- According to Elizabethtown College researchers, Lancaster County has the largest settlement of Plain Sect persons in the United States, exceeding 44,315 in 2023.[3] This number continues to grow and includes all populations that travel primarily by horse-drawn vehicle.

1 Lancaster County 2050 Population Projection, US Census Estimates (2022)
2 Lancaster County 2050 Population Projection, US Census Estimates (2022)
3 "Twelve Largest Amish Settlements, 2023." Young Center for Anabaptist and Pietist Studies, Elizabethtown College. https://groups.etown.edu/amishstudies/twelve-largest-settlements-2023

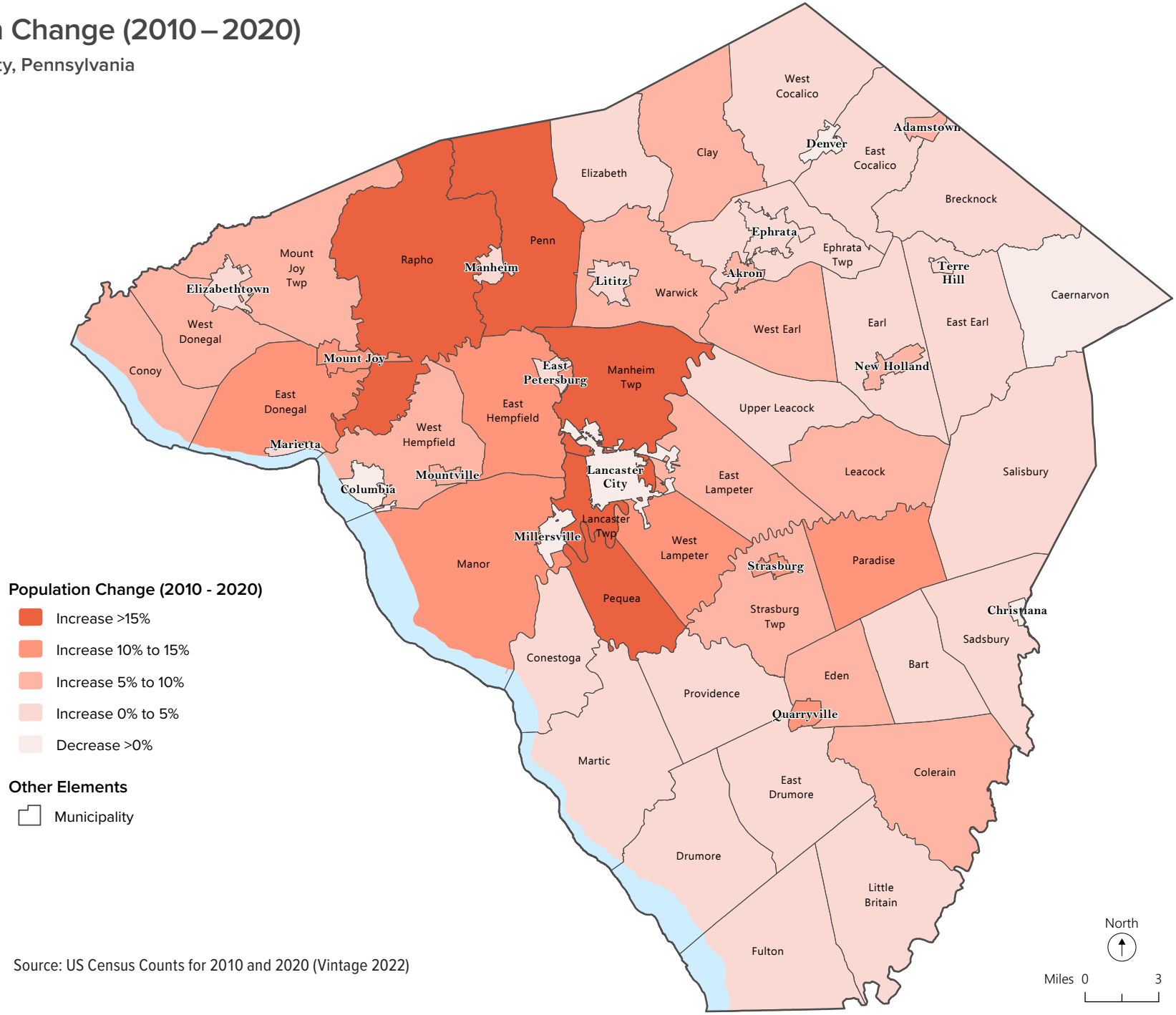
Population Growth by County (2010 – 2022)

County	*Population*		*% Growth*
	2010	*2022*	
Cumberland	235,406	268,579	14.09%
Chester	498,886	545,823	9.41%
Lebanon	133,568	144,011	7.82%
Dauphin	268,100	288,800	7.72%
Lancaster	**519,445**	**556,629**	**7.16%**
York	434,972	461,058	6.00%
Berks	411,442	430,449	4.62%
Pennsylvania	**12,702,379**	**12,972,091**	**2.12%**

US Census Estimates (2022), US Census Counts for 2010 and 2020 (Vintage 2022)

Population Change (2010 – 2020)

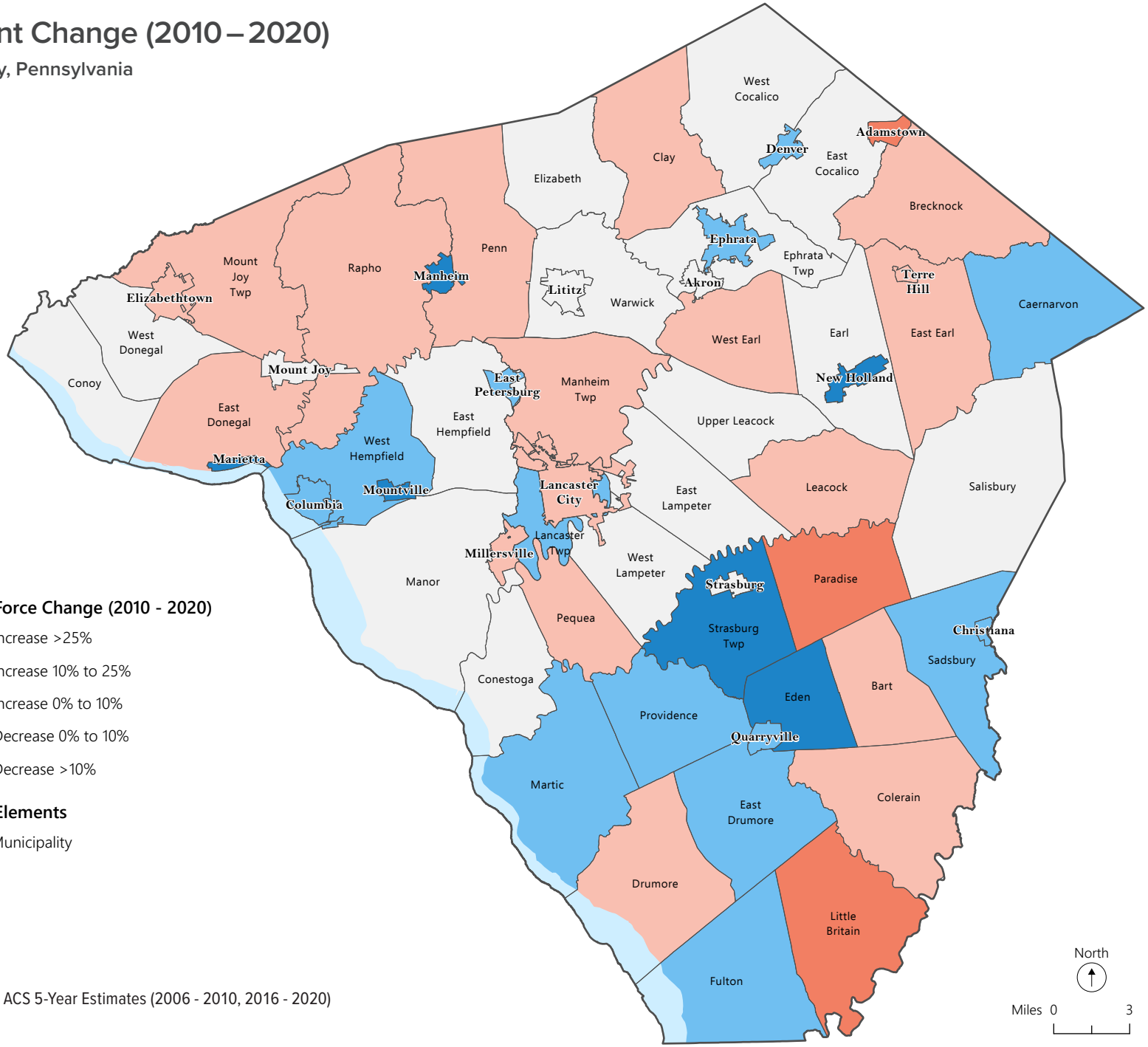
Lancaster County, Pennsylvania



Source: US Census Counts for 2010 and 2020 (Vintage 2022)

Employment Change (2010 – 2020)

Lancaster County, Pennsylvania



Labor Force Change (2010 - 2020)

- Increase >25%
- Increase 10% to 25%
- Increase 0% to 10%
- Decrease 0% to 10%
- Decrease >10%

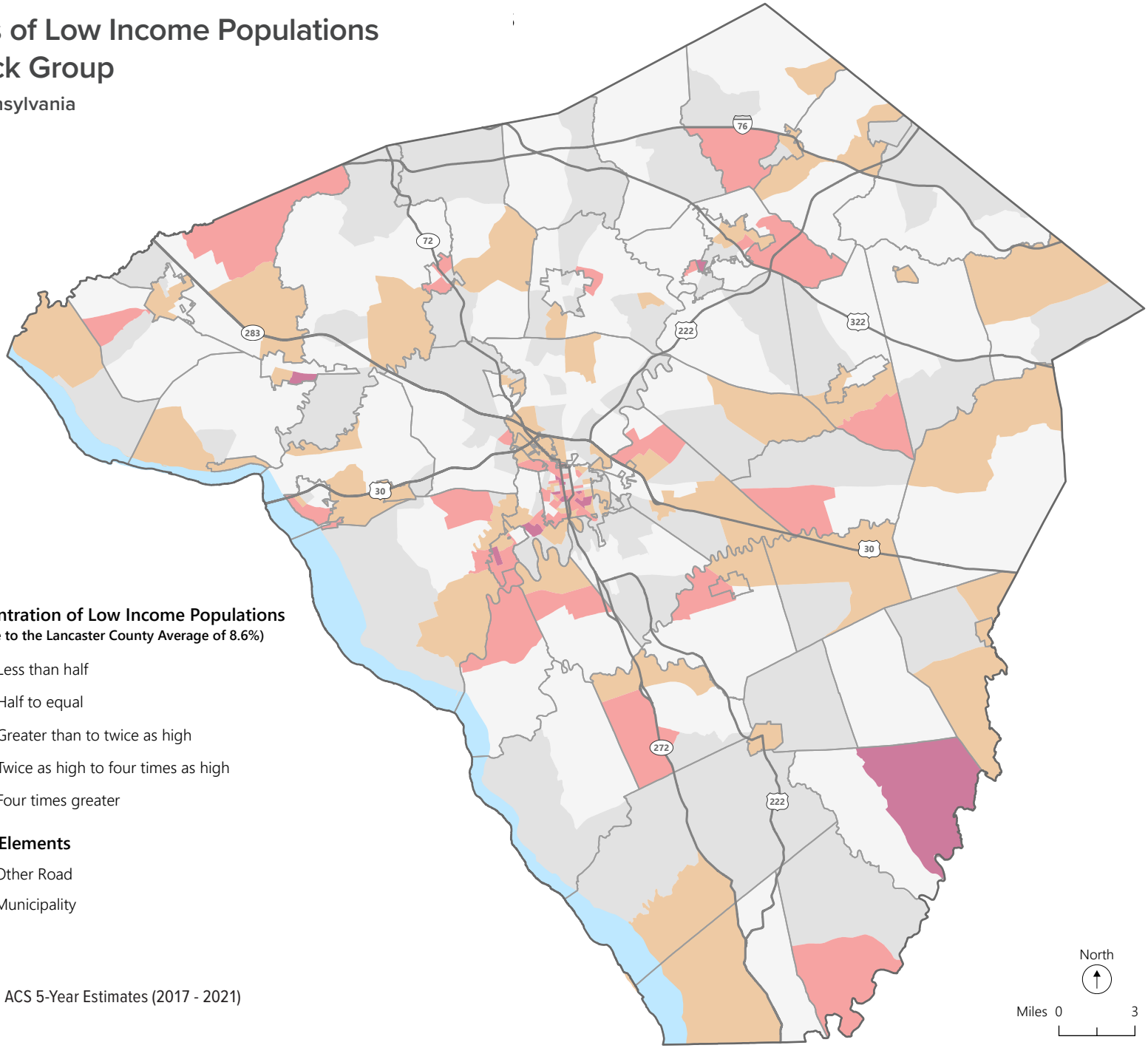
Other Elements

- Municipality

Source: ACS 5-Year Estimates (2006 - 2010, 2016 - 2020)

Concentrations of Low Income Populations by Census Block Group

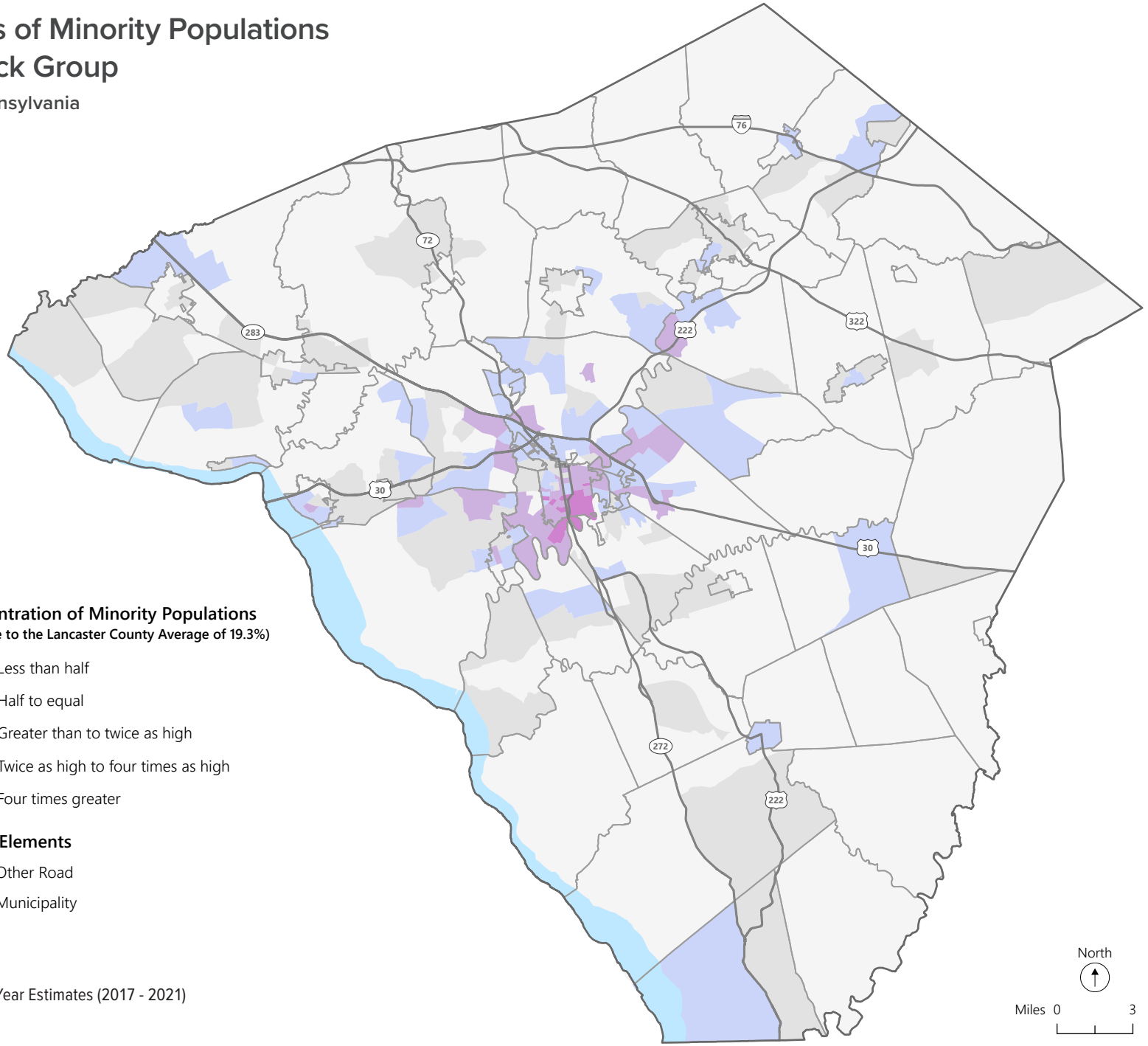
Lancaster County, Pennsylvania



Source: ACS 5-Year Estimates (2017 - 2021)

Concentrations of Minority Populations by Census Block Group

Lancaster County, Pennsylvania



Source: ACS 5-Year Estimates (2017 - 2021)

What do these **socioeconomic** trends mean for transportation planning?

- As one of the fastest growing counties in one of the fastest growing regions of the state, Lancaster County will see increased demand on its transportation system as residents, commuters, and visitors travel in and out of the county. This increase in the county's traveling public emphasizes the need to maintain its transportation infrastructure in a state of good repair to support growth over time.

- As Lancaster and its surrounding counties continue to grow, there will be additional demands on its transportation system. A growing population will require more transportation capacity and services, with a growing consumer market generating a greater demand for travel as well as trip-making in general.

- An increase in senior citizens translates to a need for more public transportation services, as they are less capable of driving than other residents. Increased driving behavior otherwise requires a highway system that is predictable to use, with greater reflectivity, maintenance, and protection of traffic in work zones, and improved signage all being needed among other considerations.

- Identification of Environmental Justice populations will enable the MPO to make use of this information to inform its investment strategies and project selection, even as it evaluates the benefits and burdens of its proposed programs on these population groups.

- The travel needs and safety of Plain Sect populations continue to be an important consideration of the MPO throughout the transportation planning process.

- Finally, a post-COVID increased trend towards work from home policies has affected commuting patterns in the county. As fewer people come into the office for work, there is less wear and tear on Lancaster County's road network. However, this trend comes alongside an increase in online shopping, causing greater wear on the county's roads due to heavy truck traffic.

Travel on our county's roadways has averaged 11.7 million miles — daily.

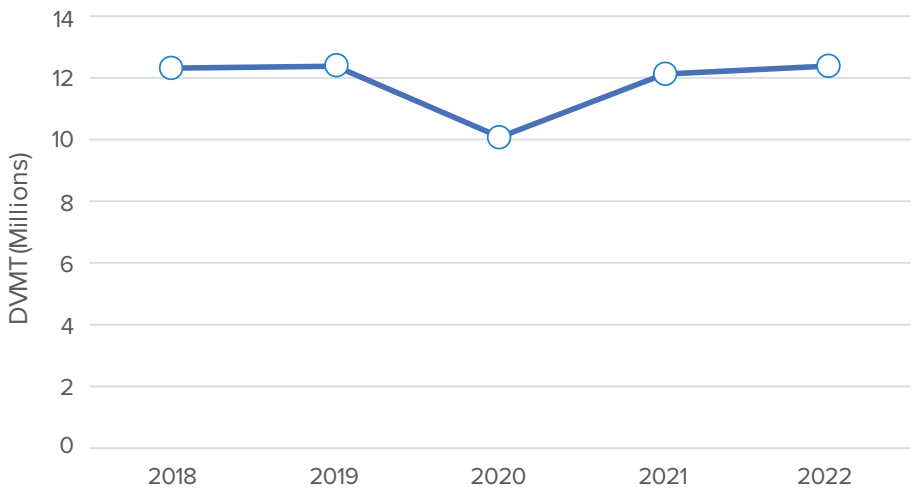
Roadway Network

Overview

- Lancaster County has Pennsylvania's second-largest roadway network, with more than 3,928 linear miles of roadway. Approximately one quarter of this network is owned and maintained by PennDOT, while nearly three-quarters is owned by local governments.
- Total travel demand on the county's roadways has experienced a slight decline over the past five years, averaging 11.8 million miles daily. Daily vehicle miles of travel (DVMT) trends show that travel demand on the county's roadway network has largely rebounded to pre-COVID pandemic levels.
- Only 907 linear miles of the county's roadways are on the Federal-Aid Highway Program (FAHP). Of this network, nearly 197 linear miles of roadway are locally owned.
- Lancaster County's roadway network includes nearly 31 linear miles of the Pennsylvania Turnpike, the county's only Interstate.

Daily Vehicle Miles of Travel (DVMT), 2018–2022

Lancaster County, Pennsylvania



Source: PennDOT Publication 600: Highway Statistics (2022)

- The National Highway System (NHS) includes Interstate 76, as well as US 30, US 222, US 322, PA 41, PA 72, PA 272, and PA 283. The NHS in Lancaster County comprises only 4.7 percent of the network, but accommodates 48 percent of all travel, attesting to its importance for mobility.
- In February 2019, FHWA certified portions of US 222 as a Critical Rural Freight Corridor (CRFC), making the roadway eligible for National Highway Freight Program (NHFP) funding. This allows the MPO to prioritize and program these dollars toward highway projects that will improve freight movement and efficiency through the corridor.

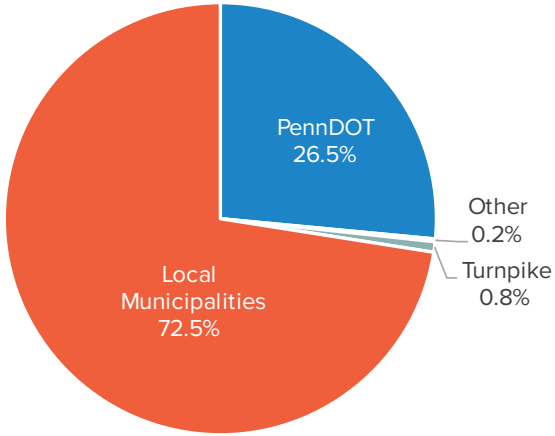
Just over a quarter of Lancaster County roadways are PennDOT-owned, but those major routes handle over three-quarters of all traffic.

What do these **roadway network** trends mean for transportation planning?

- In a growing county like Lancaster, roadways are the backbone of the county's transportation system. The passage of the Bipartisan Infrastructure Law (BIL) in November 2021 maintained a federal-level emphasis on the National Highway Performance Program (NHPP) and expanded project eligibility to resiliency improvements and cybersecurity. Of the county's 3,928-mile network, only 184 miles are eligible for NHPP funding. These include the county's roadways functionally classified as principal arterials (i.e., PA 283, US 30, US 222, PA 272).

Linear Miles of Roadway by Owner, 2022

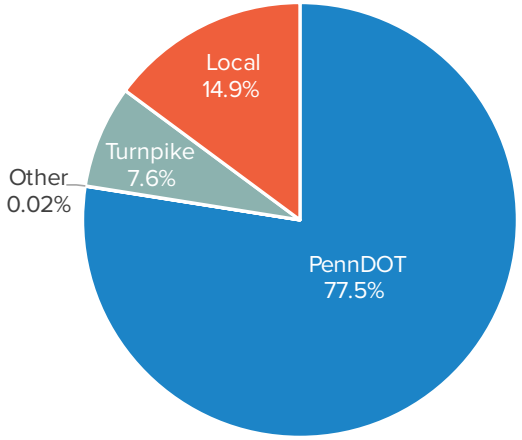
Lancaster County, Pennsylvania



Source: PennDOT Publication 600: Highway Statistics (2022)

Travel Demand on Roadways by Owner, 2022

Lancaster County, Pennsylvania



Source: PennDOT Publication 600: Highway Statistics (2022)

Functional Classification

Overview

- Lancaster County is currently working with PennDOT to update its functional classification system using new data provided from the 2020 United States Census.
- All roadways provide two functions, in varying proportions: mobility (moving through an area efficiently) and accessibility (connecting to driveways of residences and businesses). Interstates, for example, offer high mobility but low accessibility, whereas local streets primarily provide access.
- Functional class represents an important nexus between transportation planning and land use planning.

Roadways by Functional Class

Lancaster County, Pennsylvania

	Linear Miles
Interstate (PA Turnpike)	30.6
Other Freeway / Expressway	54.8
Other Principal Arterial	99.1
Minor Arterial	291.2
Major Collector	461.5
Minor Collector	229.2
Local	2,762.3
Total	**3,928.7**

Source: PennDOT Publication 600: Highway Statistics (2022)

What do these **functional classification** facts mean for transportation planning?

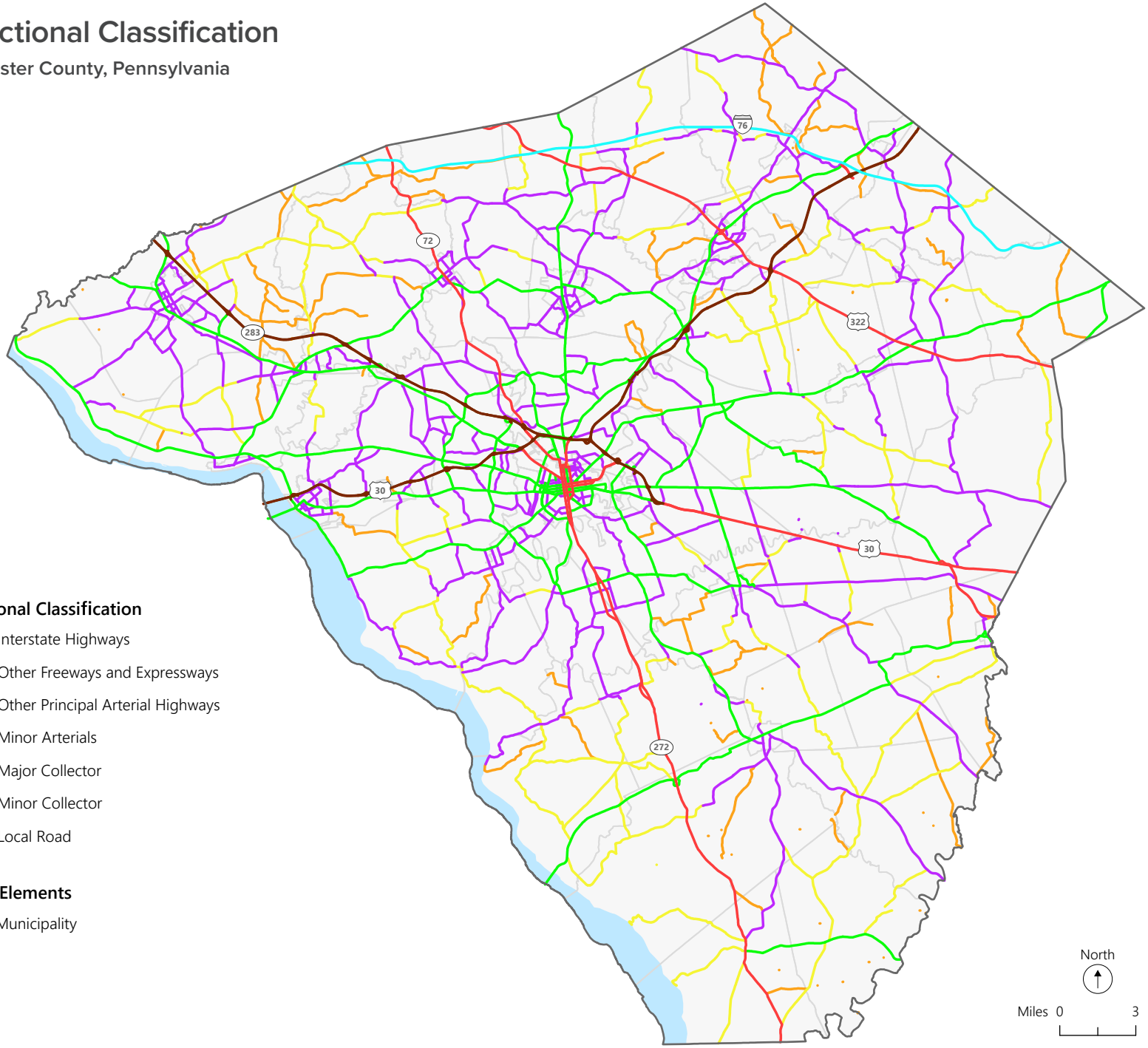
- Functional classification helps determine eligibility for many federal funding sources and supports greater potential for future funding. As such, maintaining functional class will be important for Lancaster County, particularly in light of increased federal emphasis on NHPP roadways.

- The county's small share of NHPP-eligible roadways, including Interstates and principal arterials, underscores the importance of the Lancaster MPO keeping its functional classification system up to date in order to leverage maximum funding potential.

Functional Classification

Lancaster County, Pennsylvania

Functional class indicates a roadway's primary purpose – the degree to which it moves travelers through an area quickly (as Interstates do) or provides access to driveways (as local streets do).



Roadway Safety

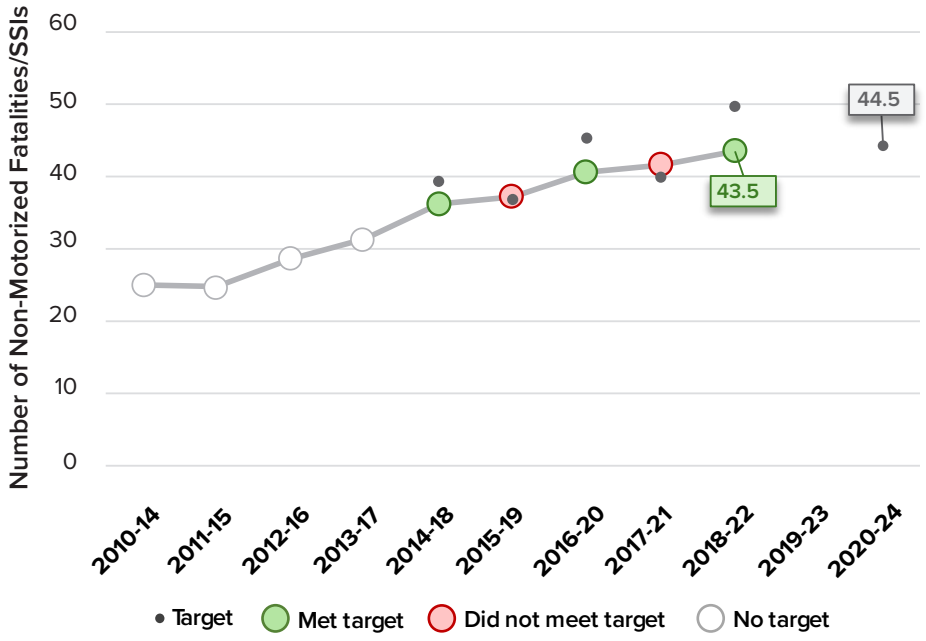
Overview

- Safety continues to be a top priority of both Lancaster County and PennDOT.
- In 2016, the USDOT published its final rulemaking on safety performance measurement and reporting, also known as "PM-1." The rulemaking established five safety performance measures:
  - Number of non-motorized fatalities and non-motorized serious injuries
  - Number of fatalities
  - Rate of fatalities per 100 million Vehicle Miles Traveled (VMT)
  - Number of Serious Injuries
  - Rate of Serious Injuries per 100 million VMT
- The rulemaking also set forth a process for State DOTs and MPOs to establish and report their safety targets. Since the publication of the PM-1 rulemaking, the Lancaster MPO has agreed to support the state's safety targets. As such, PennDOT assists the MPO in developing county-level targets that would support progress toward the state's safety targets—aiming for a two percent reduction in fatalities and a level target for serious injuries. Targets are updated and reviewed by the MPO on an annual basis.
- As of 2022, Lancaster County has not been meeting its targets for the number of fatalities or fatality rate per 100 million VMT. In the five-year period ending in 2022, the county averaged 53 fatalities, which is higher than its target of 46 fatalities. The fatality rate of 1.2 fatalities per 100 million VMT is only slightly higher than the target of 1.1. Trends by five-year average depict a gradual increase in fatalities from the five-year period ending in 2019 to present.
- Similarly, the county has not met its current target for number of serious injuries; however, it has met the target for serious injury rate per 100 million VMT. In the five-year period ending in 2022, the county averaged 240.6 suspected serious injuries, which is higher than its target of 240. Historical trends by five-year average show that suspected serious injury crashes in the county have increased over time. In the same five-year period, the county's suspected serious injury crash rate was 5.6 crashes per 100 million VMT, which is below the target of 5.9.

Non-Motorized Fatalities and Suspected Serious Injuries

Actual vs. Target Performance by Five Year Average, 2010–2024

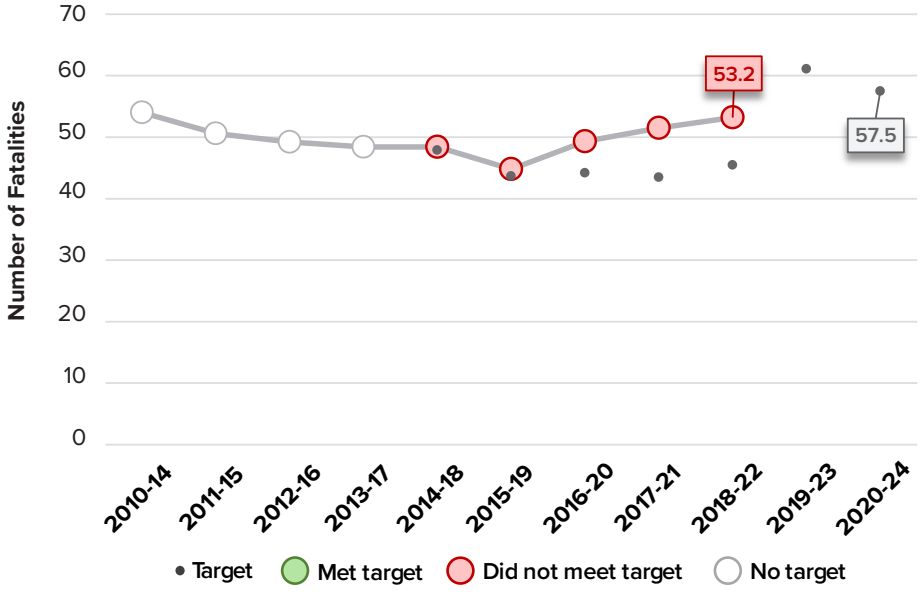
Lancaster County, Pennsylvania



Number of Fatalities

Actual vs. Target Performance by Five Year Average, 2010–2024

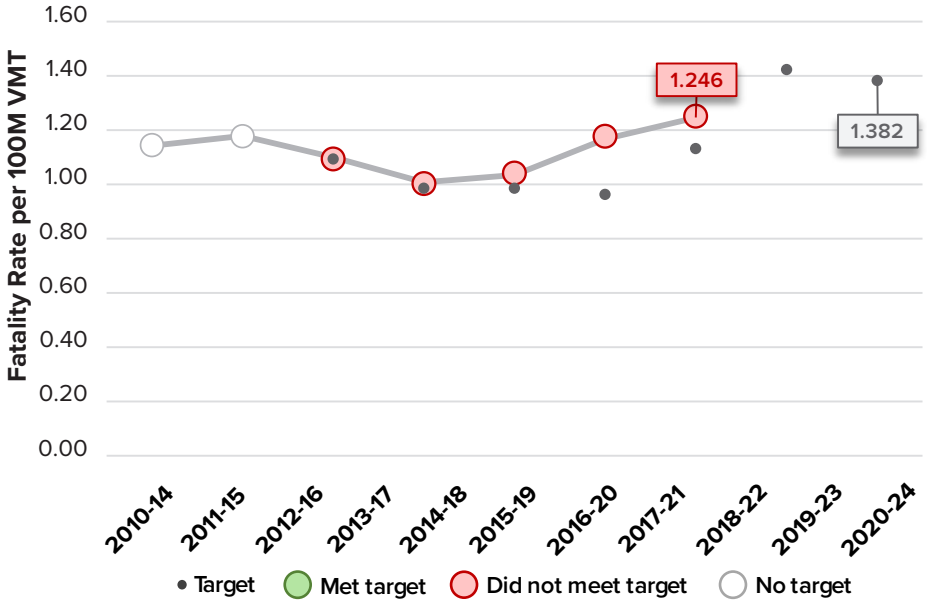
Lancaster County, Pennsylvania



Fatality Rate per 100 Million VMT

Actual vs. Target Performance by Five Year Average, 2012–2024

Lancaster County, Pennsylvania

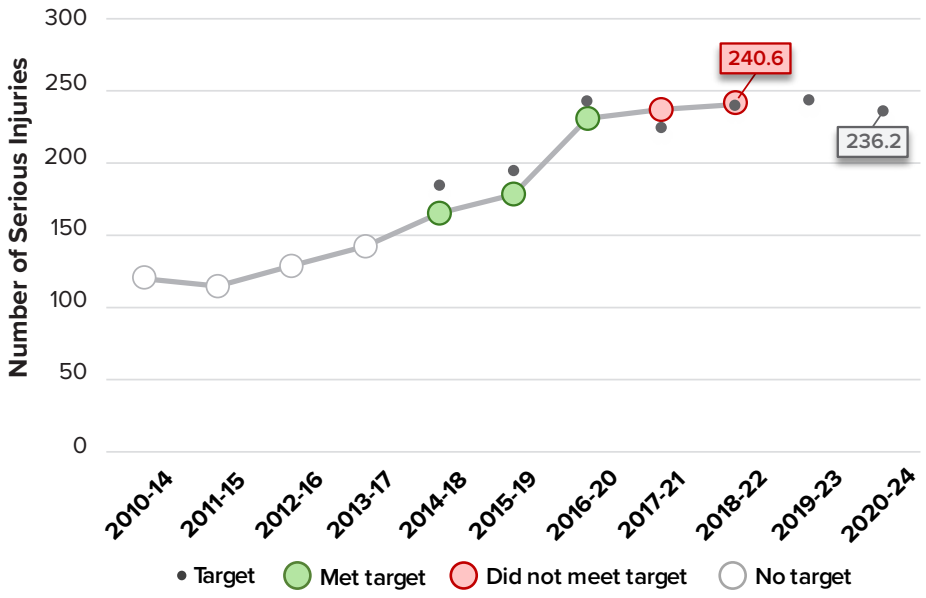


- Lancaster County has achieved its 2018–22 target for non-motorized fatalities and serious injuries, with a five-year average of 43.5 crashes and a target of 49.7 crashes. Even though the county has achieved its target, historical five-year average trends show that non-motorized fatalities and serious injuries are increasing.

Number of Serious Injuries

Actual vs. Target Performance by Five Year Average, 2010–2024

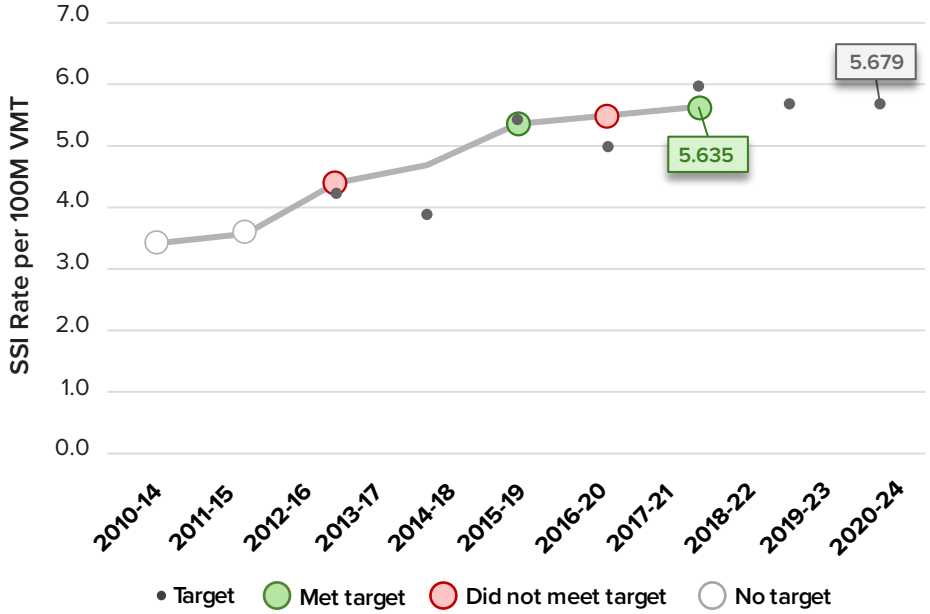
Lancaster County, Pennsylvania



Suspected Serious Injury Rate per 100 Million VMT

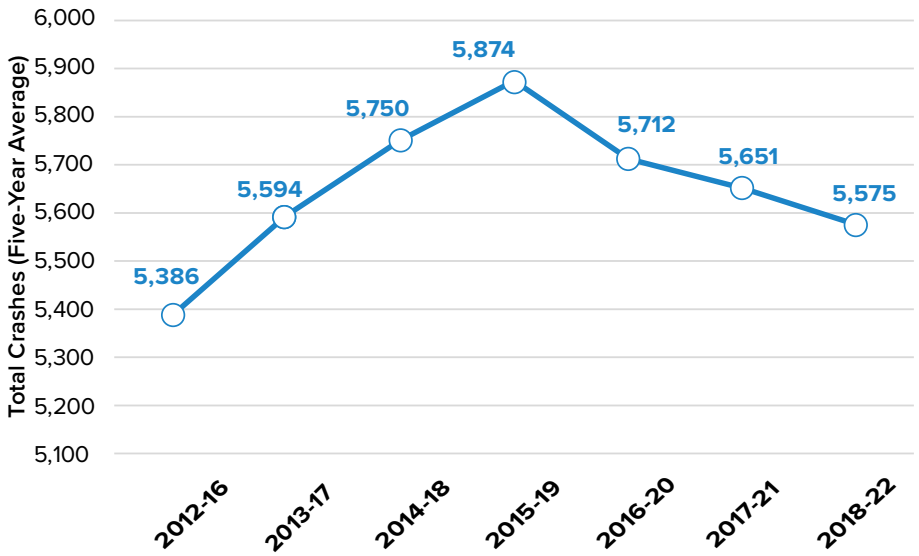
Actual vs. Target Performance by Five Year Average, 2010–2024

Lancaster County, Pennsylvania



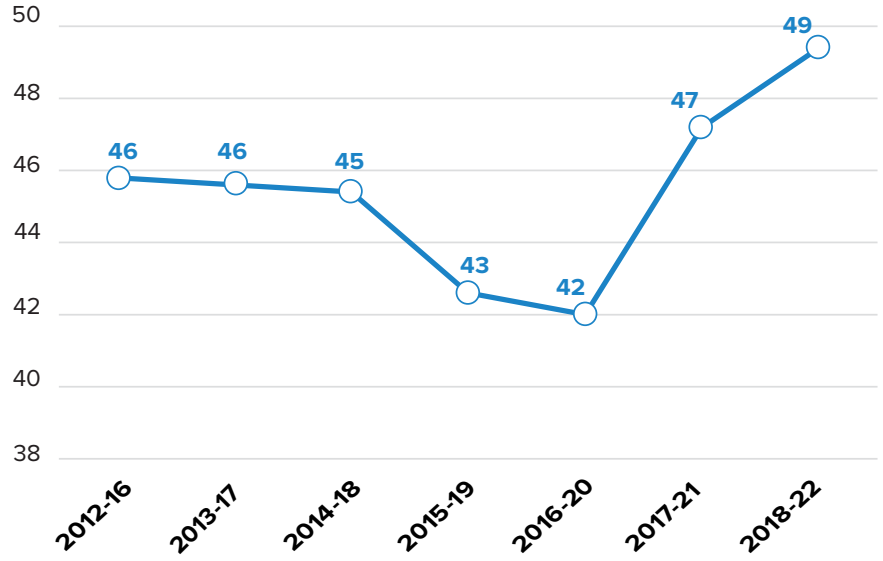
Total Vehicle Crashes by Five Year Average, 2012–2022

Lancaster County, Pennsylvania



Total Fatal Crashes by Five Year Average, 2012–2022

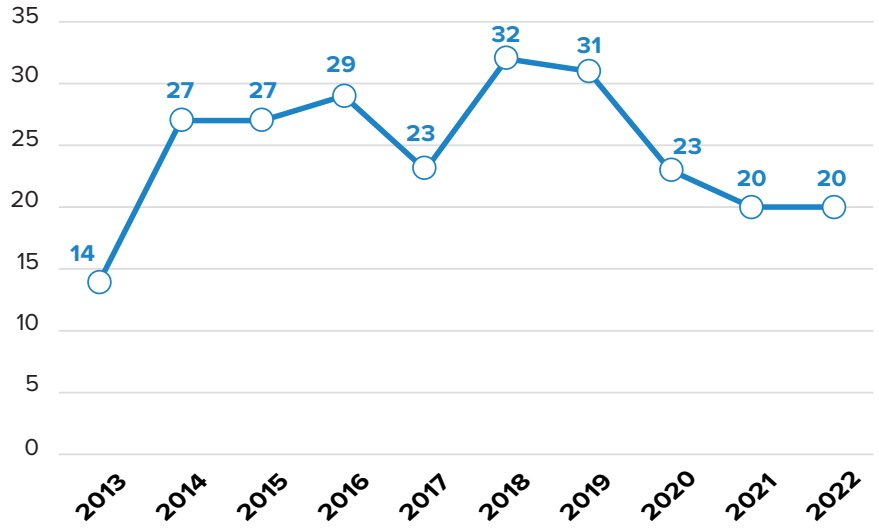
Lancaster County, Pennsylvania

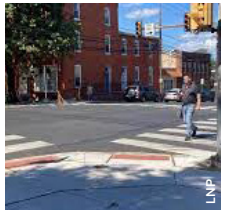


- For the five-year period ending 2022, the county has averaged nearly 5,600 crashes a year, and 49 fatalities. The total number of crashes has been decreasing, while the number of fatalities has increased since the previous MTP update (2020).
- Incidents involving motorized vehicles and horse-drawn vehicle travelers have decreased since the previous MTP update. Crashes involving these vehicles increased from 2012 through 2018, reaching a high of 31 crashes. Since then, crashes involving horse-drawn vehicle travelers has decreased to 20 crashes in 2022.
- The total number of crashes among drivers aged 65 or over has remained steady in Lancaster County in recent years. These crashes account for over 20 percent of all crashes within the county.
- Lancaster County averaged 63 bicycle-involved crashes and 1 bicyclist fatality per year over the last decade. During the same 10-year period, the county also averaged 141 pedestrian-involved crashes and 7 pedestrian fatalities. Both bicyclist and pedestrian fatalities have been decreasing since the high of 3 bicycle fatalities and 11 pedestrian fatalities in 2014.

Horse-Drawn Vehicle Crashes, 2013 – 2022

Lancaster County, Pennsylvania





What do these **safety** trends mean for transportation planning?

- Historical trends of each federal safety performance measure imply the need to further explore innovative approaches to identify and fund safety improvements throughout Lancaster County. This includes continuing coordination with PennDOT District 8-0 on potential Highway Safety Improvement Program (HISP) candidates, programming systemic improvements where possible, and working with municipalities to implement Road Safety Audits to identify low-cost, high yield countermeasures.

- Fully attaining state and national goals related to safety will rely on the implementation of driver assisted technology, which is anticipated to continue to develop over time. As driver assisted technologies are implemented, fatality goals should trend towards zero.

- Improved safety performance will also require improvements in highway design, driver behavior, and enforcement.

- Conflicts between motorized and horse-drawn vehicles remain a serious concern in Lancaster County and the focus of increased safety efforts. Improvements such as increased shoulder widths on primary Plain Sect routes would create safer distances between these modes.

- The Lancaster County Active Transportation Plan (ATP) maintains an implementation goal of improving safety for bicycle and pedestrian modes through education, awareness, and enforcement. The MTP's goals align with this effort and support the ATP's implementation.

- In March 2023, the City of Lancaster was awarded a $12.7 million competitive federal Safe Streets for All (SS4A) implementation grant to implement infrastructure improvements and safety initiatives as documented its Vision Zero plan. As the City begins its SS4A efforts, the Lancaster MPO can serve as a partner in this process as well as in other municipal efforts to improve safety.

- In 2023, the County of Lancaster on behalf of the Lancaster MPO was awarded a $200,000 competitive federal Safe Streets for All (SS4A) planning grant to develop a Safety Action Plan for Lancaster County to significantly reduce or eliminate roadway fatalities and serious injuries.

Our roadways continue to meet and exceed federal performance measures for pavement condition due to strategic investments in our roadway network.

Roadway Condition

Overview

- In 2017, the US Department of Transportation published the final rulemaking for Pavement and Bridge Condition Performance Measures, also known as “PM-2”. The rulemaking establishes four measures for state departments of transportation and MPOs to assess pavement condition on the National Highway System (NHS), including:
  - Percentage of Interstate pavements in “good” condition;
  - Percentage of Interstate pavements in “poor” condition;
  - Percentage of non-Interstate NHS pavements in “good” condition; and
  - Percentage of non-Interstate NHS pavements in “poor” condition.
- The passage of PM-2 also placed emphasis on the investment of National Highway Performance Program (NHPP) funds in projects that support progress towards the achievement of performance targets established by state departments of transportation.
- Pavement condition can be measured using IRI (International Roughness Index) as a measure of the roughness of the pavement surface. In the case of federal performance measurement, condition is measured based on IRI ratings.
- Since the PM-2 final rulemaking went into effect, the Lancaster MPO has agreed to support PennDOT’s 4-year performance targets for these measures as well as those for bridge condition. The state’s performance targets are updated and reviewed by the MPO on a regular basis as updates are made to the state’s Transportation Asset Management Plan (TAMP). Since Lancaster County does not have any Interstate mileage (except for an approximate 30-mile stretch of the Pennsylvania Turnpike), focus has been placed on the condition of non-Interstate NHS pavements.
- Since the Lancaster MPO began tracking these measures, historical trends show that the county has consistently achieved and exceeded targets for the percentage of non-NHS Interstate pavements in “good” and “poor” Condition. The county’s current performance (2022) related to non-Interstate NHS “good” condition pavement exceeds the state’s 2025 4-year performance target of 29 percent. Similarly, 3.4 percent of non-Interstate NHS pavement in Lancaster County is considered in “poor” condition, which outperforms the state’s 2025 target of 6.5 percent. This speaks to the collaborative approach taken by the MPO and PennDOT in effectively programming and investing asset management dollars (e.g., NHPP) toward projects that improve pavement conditions.

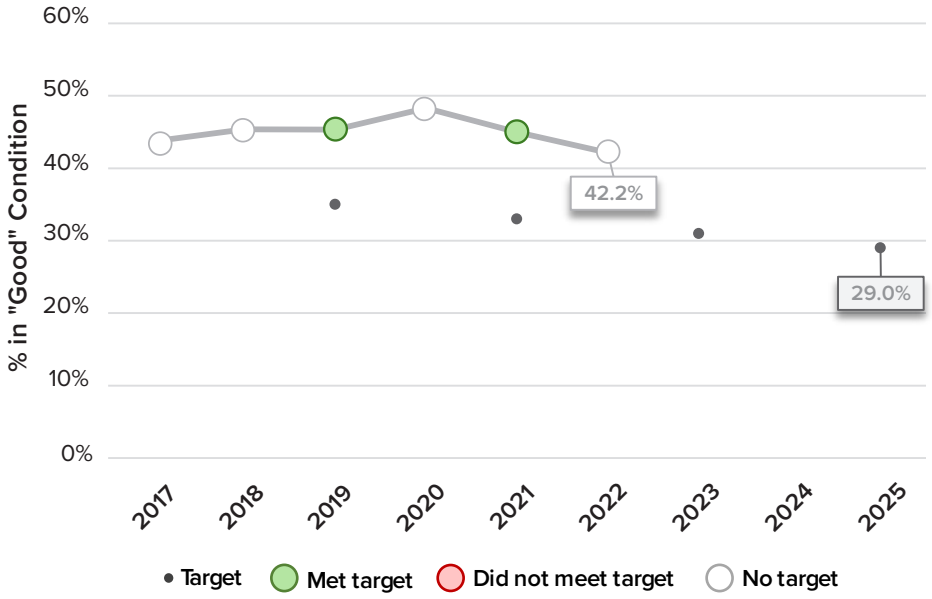




Non-NHS Interstate Pavements in "Good" Condition

Actual vs. Target Performance

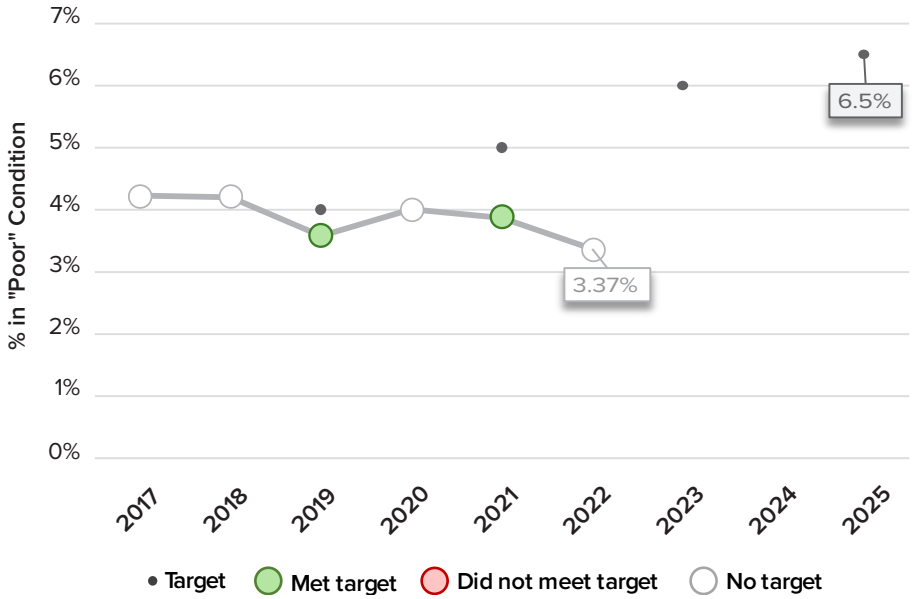
Lancaster County, Pennsylvania



Non-NHS Interstate Pavements in "Poor" Condition

Actual vs. Target Performance

Lancaster County, Pennsylvania

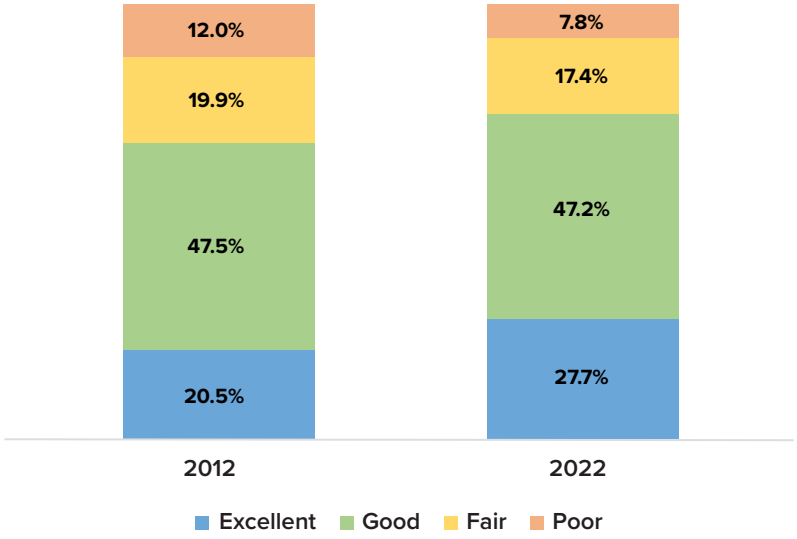


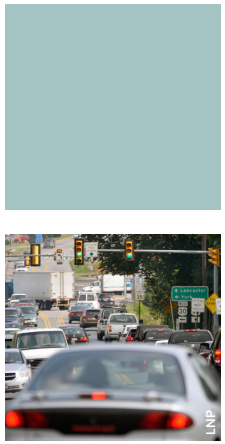
- At the state level, PennDOT has organized the roadway network into four Business Plan Networks (BPNs), which include 1) Interstates, 2) NHS, Non-Interstate, 3) Non-NHS, > 2,000 Average Daily Traffic (ADT), and 4) Non-NHS, < 2,000 ADT. These BPNs are used in evaluating highways and bridges, as well as making asset management decisions. In Lancaster County, higher-order networks such as the non-interstate NHS have the best pavement conditions among the four Business Plan Networks.

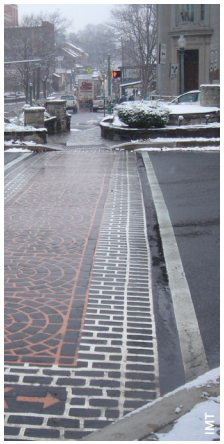
- When measured in IRI ratings, Lancaster County exhibited an increase of 35 percent in "excellent" pavement miles from 2012 to 2022. Since 2012, "poor" condition pavement miles have decreased by 35 percent. Since 2012, "fair" condition pavement miles also decreased by 13 percent. "Good" pavements miles have decreased by less than 1 percent.

Roadway Condition by IRI Rating, 2012 – 2022

Lancaster County, Pennsylvania

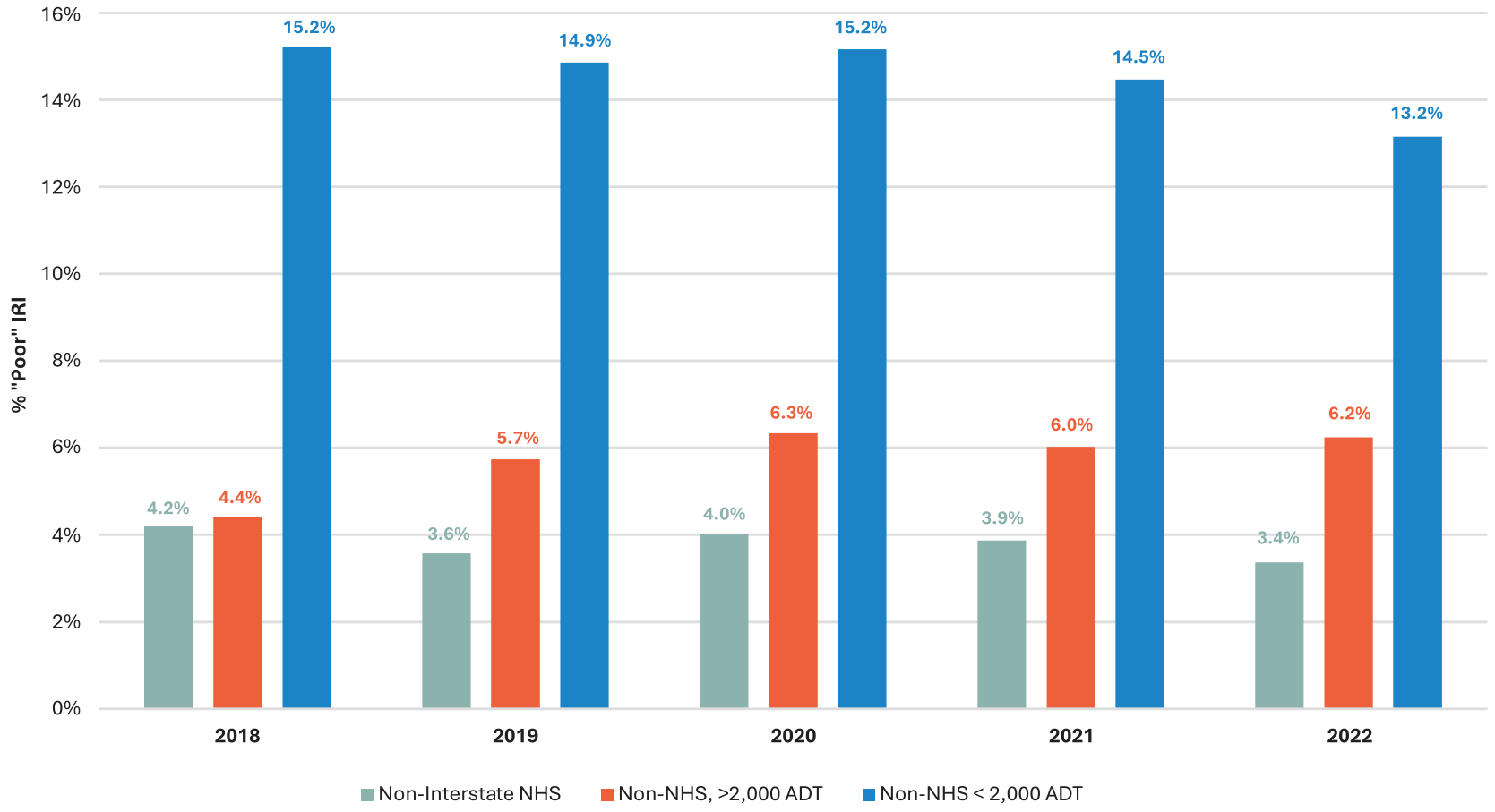






"Poor" IRI by Business Plan Network, 2018 – 2022

Lancaster County, Pennsylvania



What do these **roadway condition** trends mean for transportation planning?

- These pavement condition trends indicate a greater need for roadway resurfacing in our lower-order Business Plan Networks, specifically our non-NHS roadways with less than 2,000 ADT. While conditions on this network have improved in the past decade, it still has the highest share of “poor” condition pavement miles by IRI.

- Continued collaboration among Lancaster County, PennDOT, and local municipalities is vital in identifying roadways on the transportation network in need of resurfacing, reconstruction, or preservation activities. This collaboration is key in continuing to achieve performance targets and making strategic asset management investments.

- PennDOT and the Lancaster MPO continue to move away from a “worst-first” approach toward addressing infrastructure condition in favor of a “lowest life-cycle cost” approach. This approach is federally mandated and puts greater emphasis on timely maintenance for system preservation. This lowest life-cycle cost approach will not only extend the life of Lancaster County’s bridges and pavements, it lowers the total annual cost of maintaining each asset and allows the effective allocation of financial resources. The MPO will need to continue coordinating with its partners at PennDOT on this new approach in the development of future Transportation Improvement Plans (TIP).

State-Owned Bridges

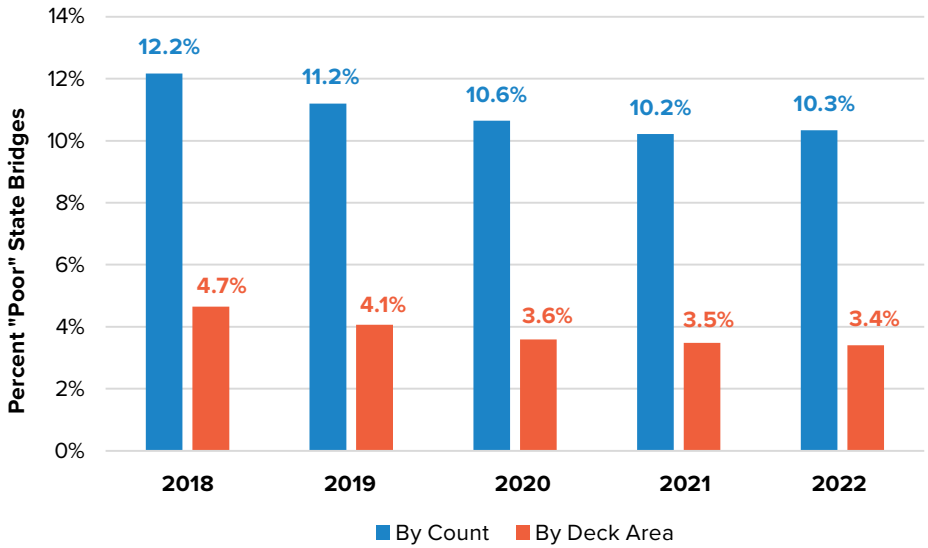
Bridge condition has been improving, on average, with a decreasing percentage of bridges rated "poor."

Overview

- There are 725 state-owned bridges longer than 8 feet in Lancaster County.
- Of these structures, 74 (10.2 percent) are rated as being in "poor" condition as of September 2023. Since the previous MTP update in 2020, the number of state bridges rated in "poor" condition has reduced from 81 "poor" condition structures. The share of "poor" condition state bridges in the county is tracking slightly higher than the statewide average of 9.2 percent.
- The percentage of "poor" condition state bridges continues to decrease, from a 2015 rate of 21 percent to just over 10 percent in 2023. This reduction reflects the successful work of Lancaster County and PennDOT in programming state-owned bridge projects.
- Of the county's state-owned bridges, 14 of these structures are weight-restricted (posted), while none are closed.
- A more meaningful measure is the share of bridge deck area in "poor" condition. Within Lancaster County, this rate is 3.29 percent, which compares favorably to the state average of 5.57 percent.
- Similar to pavements, bridges on the NHS are monitored using two performance measures established under the PM-2 final rulemaking:
  - Percentage of NHS bridges by deck area classified in "good" condition, and
  - Percentage of NHS bridges by deck area classified in "poor condition.
- Since the PM-2 rulemaking went int effect in 2017, the Lancaster MPO has agreed to support the performance targets established by the state for these two measures. As such, PennDOT established regional targets for

State-Owned Bridges Rated "Poor" by Count and Deck Area, 2018 – 2022

Lancaster County, Pennsylvania

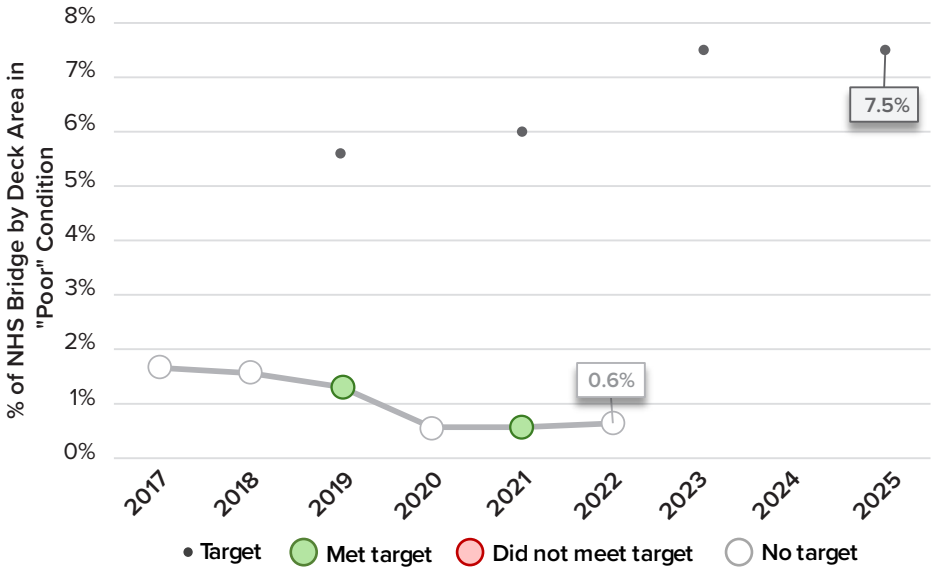


Source: PennDOT System Performance Reports (2018 – 2022)

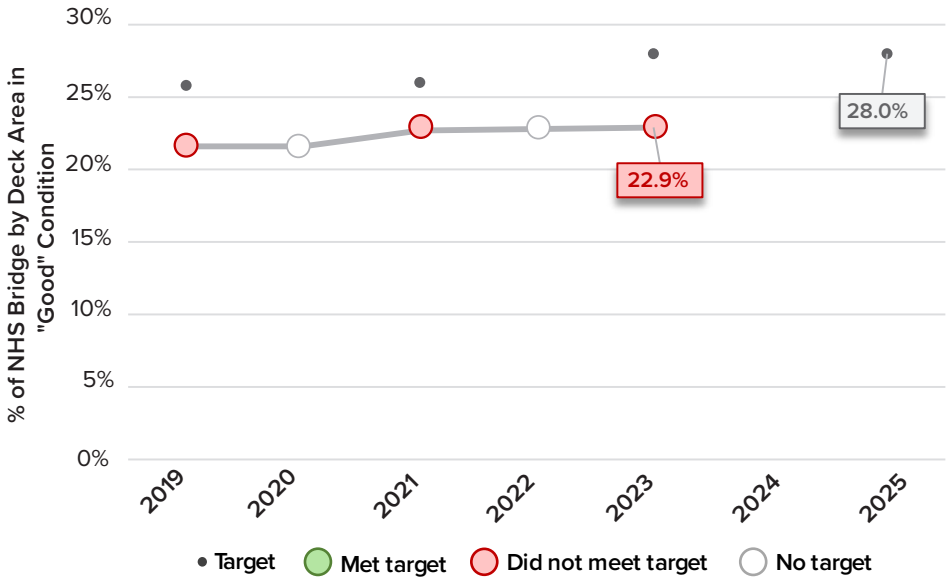
MPOs to assist in efforts aimed to make progress toward supporting the achievement of the state's targets for bridges.

- The Lancaster MPO has achieved and exceeded its target for the percentage of NHS bridges by deck area in "poor" condition. The share of NHS bridges with "poor" condition deck area in the county is 0.6 percent with a state target of 7.5 percent. When considering bridges with "good" condition deck area, the Lancaster MPO is not meeting the current statewide target of 28 percent; however, actual performance trends show the MPO's share of "good" condition deck area has increased in the last five years. The share of NHS bridge deck area in "good" condition in the county is 22.9 percent, up from 21.6 percent in 2019.
- Lancaster County's state-owned bridge stock includes three bridges that cross the Susquehanna River into York County; however, only one of these bridges falls on the NHS (Wright's Ferry Bridge). These three bridges – the Wright's Ferry Bridge (US Route 30), Columbia-Wrightsville Bridge / Veteran's Memorial Bridge (PA 462), and Norman Wood Bridge (SR 362) are the county's 3 largest by deck area. Two of the bridges classified in

NHS Bridges by Deck Area Classified in "Poor" Condition
Actual vs. Target Performance, 2017 – 2025
Lancaster County, Pennsylvania



NHS bridges by Deck Area Classified in "Good" Condition
Actual vs. Target Performance, 2017 – 2025
Lancaster County, Pennsylvania



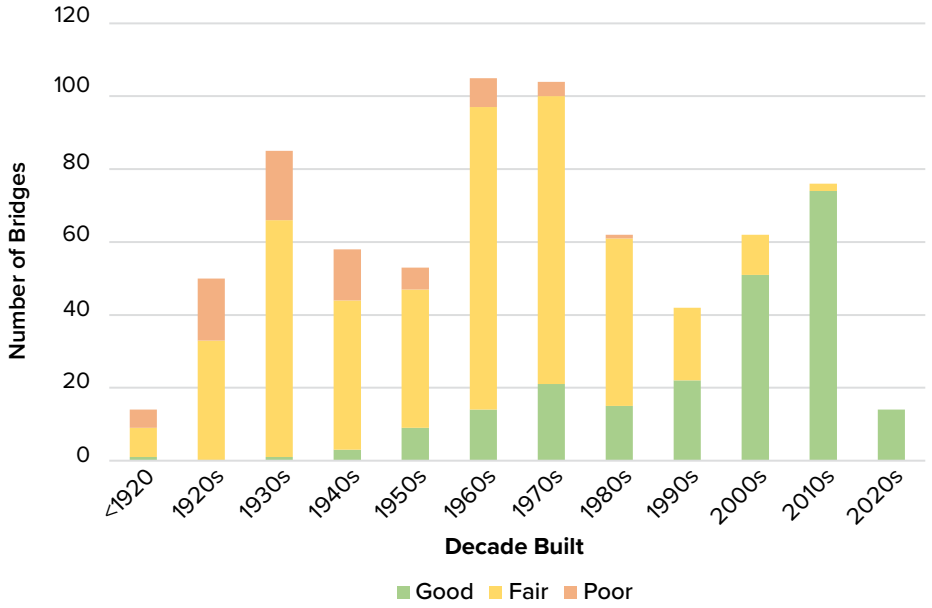
Most of our state-owned structures are older than 50 years.

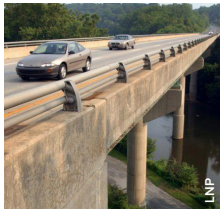
"fair" condition (Wright's Ferry, Norman Wood), and one in "poor" condition (Columbia-Wrightsville, which is also a posted bridge).

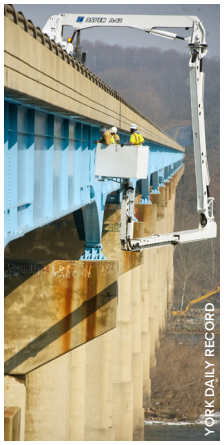
- The average age of a state-owned bridge in Pennsylvania is 57. Within Lancaster County, the average age is 55.
- Bridge construction activity has increased in recent decades. Since 2010, there have been 90 new and/or replacement state bridges constructed within Lancaster County.
- The percentage of "poor" condition state bridges continues to decrease by both count and deck area. The percentage of "poor" state bridges by count decreased from a 2018 rate of 12.2 percent to 10.3 percent by 2022. Similarly, the percentage of "poor" state bridges by deck area decreased from 4.7 percent in 2015 to 3.4 percent in 2022. This reduction reflects the successful work of Lancaster County and PennDOT to program state bridge projects.

State-Owned Bridges by Decade Constructed and Current Condition

Lancaster County, Pennsylvania







Top 10 Bridges by Deck Area, January 2024

Lancaster County, Pennsylvania

Bridge Key	*Feature Carried or Structure Name*	*Feature Intersected*	*Municipality*	*Deck Area (SF)*	*ADT*	*Overall Condition*
20997*	US 30, Wrights Ferry Bridge	Susquehanna River; Norfolk Southern RR; T-791	Columbia, West Hempfield	489,552	48,561	Fair
21270	PA 462, Columbia Wrightsville Bridge	Susquehanna River, PA 624; Norfolk Southern RR	Columbia, West Hempfield	319,536	10,623	Poor
21239	PA 372, Norman Wood Bridge	Susquehanna River; Norfolk Southern RR	Martic	121,800	4,276	Fair
40960*	US 30	Fruitville Pike; SR 4011	Manheim	60,846	129,602	Fair
21030*	US 30	Conestoga River	East Lampeter	58,035	105,303	Fair
20986	PA 23 / E. Walnut Street	Conestoga River	Manheim	51,660	13,527	Fair
41339*	US 30 WB	PA 283	Lancaster	35,861	31,206	Good
21072*	US 222 NB	Conestoga River	West Lampeter	33,081	10,430	Fair
21147	PA 272 Lancaster Pike	Pequea Creek	Pequea, Providence	32,660	24,600	Fair
41354*	US 30 EB	PA 283 EB	Lancaster	32,130	25,197	Good

Source: PennDOT BMS (January 2024)

* = National Highway System (NHS) bridge.

What do these **state-owned bridge** trends mean for transportation planning?

- As the county's bridge inventory continues to age, Lancaster County will be faced with a greater stock of bridges that are maturing and will require increasing maintenance and rehabilitation attention. Nearly 30 percent of the county's bridges were built in the 1950s and 1960s. Maintenance needs will accelerate as the bridges that were built during this era continue to age and deteriorate to the point where rehabilitation or replacement is required. The MPO and PennDOT will continue working together to maintain the county's bridges in a state of good repair and meet bridge performance targets for bridges on the NHS.

- 4 of the 10 largest bridges are not on the NHS. This means the MPO needs to evaluate the needs of non-NHS bridges even when it is not tracked as part of PM-2.

- The county's three bridges over the Susquehanna River are essential to its overall highway mobility. With these bridges classified in "fair" and "poor" condition and only one located on the NHS, Lancaster County will need to partner with PennDOT and its other partners to explore and pursue possible funding opportunities to address their needs.

- Posted and closed bridges can negatively impact emergency response, goods movement, overall mobility, and commerce. While these structures are typically on lower-order roadways, they are still important factors in the county's economy and for overall community mobility that, in appropriate locations, includes pedestrian and bicycle use.

Our local bridges are, overall, in worse condition than our state-owned bridges; but the number of "poor" condition local bridges continues to improve.

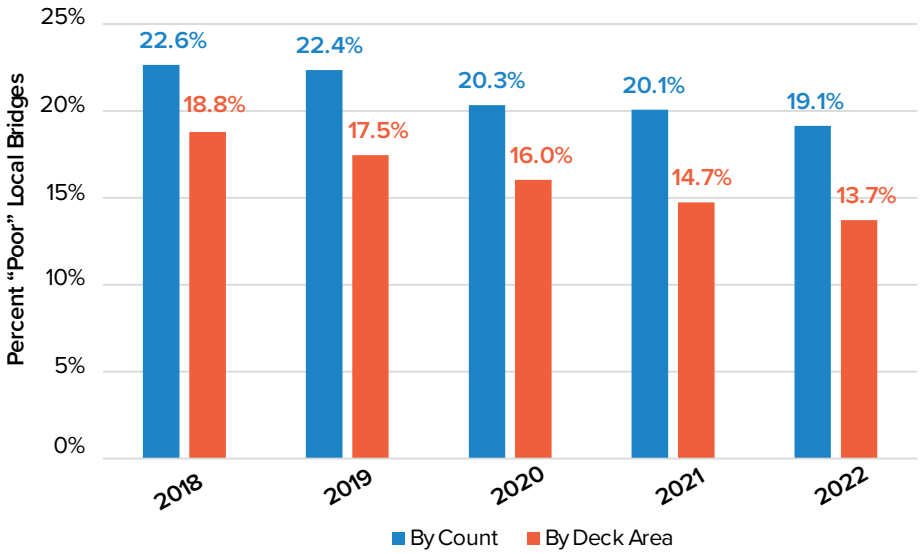
Local Bridges

Overview

- There are 303 locally owned bridges greater than 20 feet long throughout Lancaster County.
- Of this number, 60 are posted and three are closed. The number of closed bridges has decreased by two bridge structures and the number of posted bridges has reduced by one structure since the 2020 MTP update. Over the past five years, the number of posted and closed bridges have remained stable.
- The county's bridge stock also consists of 22 historic bridges. Of these bridges, 20 are historic covered bridges, one is a masonry arch, and one is a metal truss bridge.
- The average locally owned bridge in Lancaster County is 54 years old. Statewide, the average age is 60.
- The condition of locally owned bridges has improved slightly in the past five years. The number of local bridge structures rated as "poor" now at 58, down from a 2018 figure of 60.
- The share of "poor" locally owned bridges by deck area is now at 13.7 percent, compared to a 2018 rate of 18.8 percent.

Local Bridges Rated "Poor" by Count and Deck Area, 2018 – 2022

Lancaster County, Pennsylvania

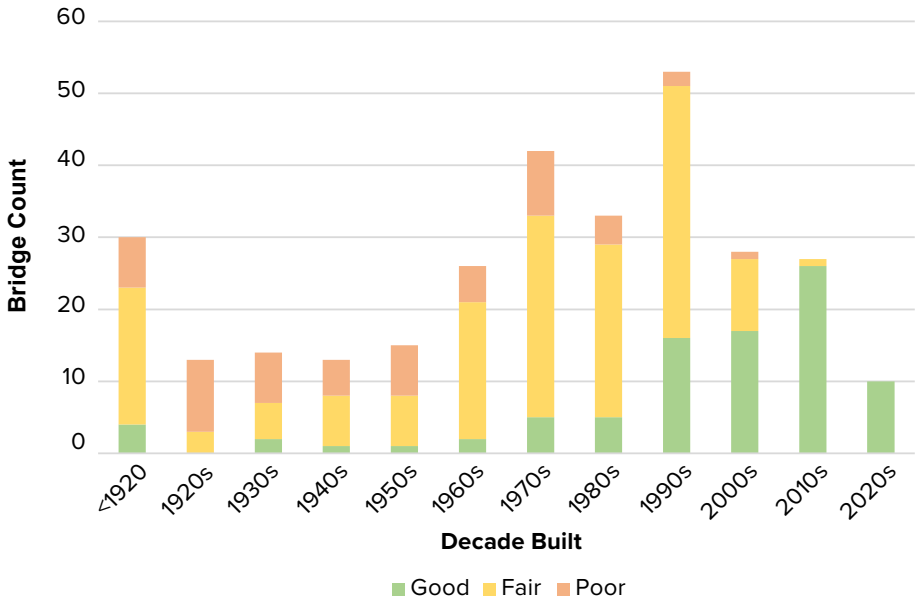


Source: PennDOT System Performance Reports (2022)

Our historic bridges are a cherished part of Lancaster County's identity. Preserving them requires proactive policy and budgeting decisions.

Local Bridges by Decade Constructed and Current Condition

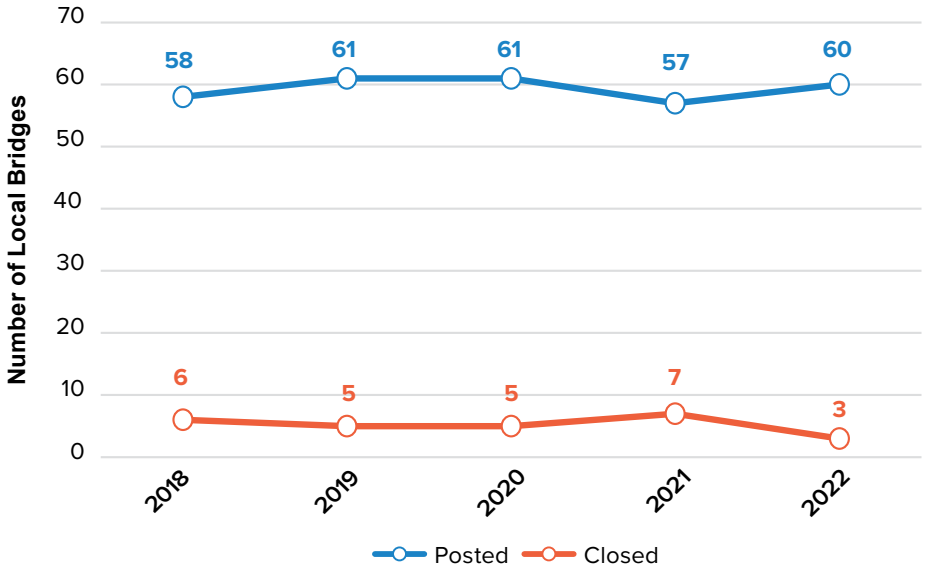
Lancaster County, Pennsylvania



Source: PennDOT BMS (January 2024)

Posted and Closed Local Bridges, 2018–2022

Lancaster County, Pennsylvania



Source: PennDOT System Performance Reports (2022)

What do these **local bridge** trends mean for transportation planning?

- Posted and closed bridges can negatively impact emergency response, overall mobility, and commerce. While these structures are on lower-order roadways, they are still important factors in the county's economy and for overall community mobility that includes pedestrian and bicycle use.
- Maintaining historic bridges is an intentional land use policy decision that supports the tourism industry as well as Lancaster County's unique identity.
- Covered bridges, even when well maintained, will always be posted for weight and height restrictions.
- Maintaining bridge infrastructure is a high cost to the county and its municipalities. Actions such as closing bridges, state turn-backs, and similar infrastructure decisions are potential ways of optimizing the use of municipal transportation dollars.

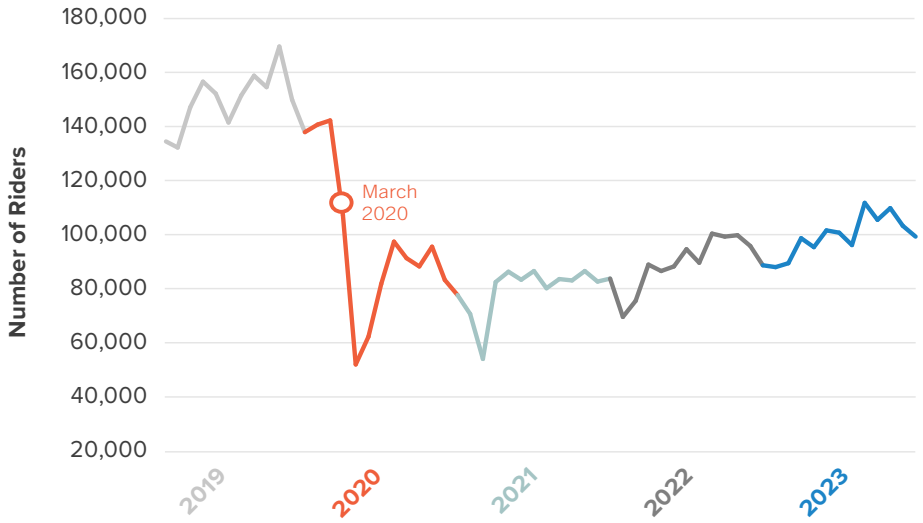
Public Transit

Overview

- There are three main types of transit available to the public within Lancaster County—fixed-route bus service, shared-ride service, and passenger rail. Approximately 21,927 county residents live within ¾ miles of a passenger train station and 342,521 residents live within ¾ miles of a bus route.
- South Central Transit Authority (SCTA) provides fixed-route bus service along 18 routes across Lancaster County under the operating name Red Rose Transit. In Fiscal Year (FY) 2019, ridership totaled 1.8 million trips. In 2023, Red Rose Transit ridership totaled 1.2 million trips. This is a 66.7% decrease in ridership, mainly due to the pandemic.
- rabbittransit and Lebanon Transit (LT) also operate one fixed route each for trips into Lancaster. rabbittransit's Route 12 links York to Columbia. LT's Saturday Special makes stops in Manheim, East Petersburg, and the Park City Center mall.
- SCTA also provides shared-ride services for Lancaster County, transporting seniors, individuals with disabilities, or persons unable to use the fixed-route bus within the county. Between FY 2019 and 2023, Red Rose Access service decreased from 292,000 to 185,742. This is a 63.6% reduction in ridership, mainly due to the pandemic.

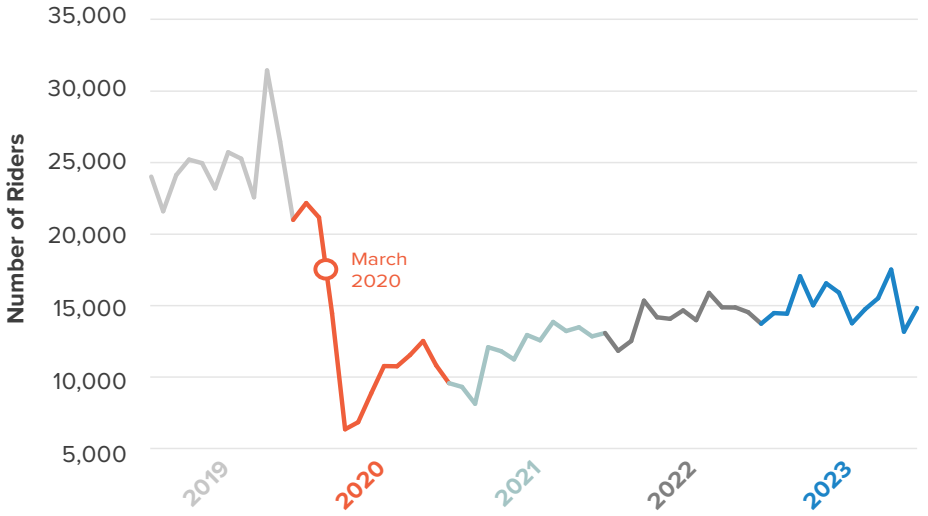
Red Rose Transit Ridership

Lancaster County, Pennsylvania



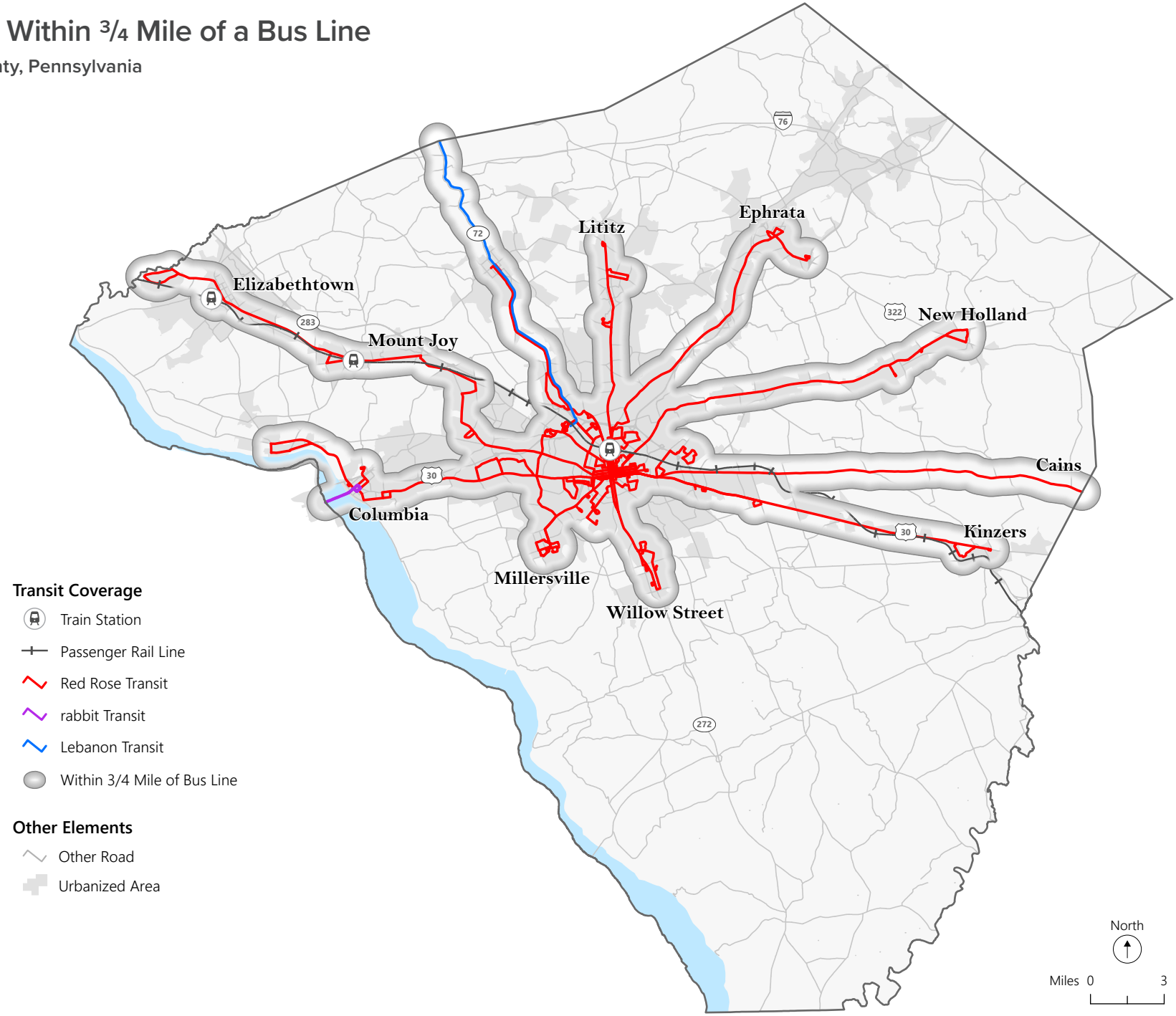
Red Rose Access Ridership

Lancaster County, Pennsylvania



Residents Within ¾ Mile of a Bus Line

Lancaster County, Pennsylvania



Total Residents Within ¾ Mile of Bus Routes

Lancaster County, Pennsylvania

	Decennial Census: Total Population				*ESRI Population Estimates: 2023*			*ESRI Projections: 2028*
	2000	*2010*	*2020*	*% Change (2000–2020)*	*Total Population*	*Daytime: Workers*	*Daytime: Residents*	*Total Population*
Within ¾ Mile of Bus Route	**285,465**	**314,678**	**336,973**	**18%**	**342,521**	**210,676**	**166,061**	**346,095**
Lancaster County, Pennsylvania	470,658	519,445	552,984	17%	559,987	271,923	272,974	564,772
% of County	61%	61%	61%		61%	77%	61%	61%

Source: Census Bureau, ESRI Business Analyst (2023)

Total Residents Within ¾ Mile of Train Stations

Lancaster County, Pennsylvania

Train Station	*Decennial Census: Total Population*				*ESRI Population Estimates: 2023*			*ESRI Population Estimates: 2028*
	2000	*2010*	*2020*	*% Change (2000–2020)*	*Daytime: Residents*	*Daytime: Workers*	*Total Population*	*Total Population*
Elizabethtown	5,657	5,610	6,156	9.0	3,687	1,866	6,297	6,387
Lancaster	10,371	11,146	10,905	5.0	4,600	13,788	11,176	11,591
Mount Joy	4,271	4,344	4,447	4.0	1,989	1,132	4,454	4,660
Total	**20,299**	**21,100**	**21,508**	**–**	**10,276**	**16,786**	**21,927**	**22,638**
Lancaster County, Pennsylvania	470,658	519,445	552,984	–	272,974	271,923	559,987	564,772
% of County	4%	4%	4%	–	4%	6%	4%	4%

Source: Census Bureau, ESRI Business Analyst (2023)

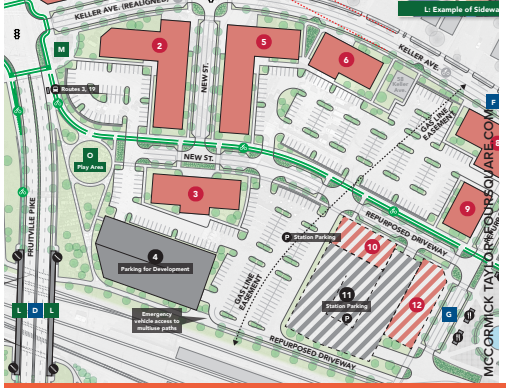
Amtrak's Lancaster station is constructing a pedestrian bridge to improve access to the station from the north-side of the tracks.

- Amtrak's Keystone Corridor traverses the county with stations in Elizabethtown, Mount Joy, and Lancaster. During FY 2023, these three train stations accounted for more than 456,000 trips on the Keystone Corridor line. This is down from the FY 2018 total of 700,000. While Amtrak's Lancaster Station has experienced a resurgence in ridership (380,361) since the COVID-impacted low of 2021 (179,094), it still has not recovered to the pre-COVID number of 577,305 in 2019.

Total On and Offs at Amtrak Stations

Lancaster County, Pennsylvania

Train Station	*Fiscal Year*				
	2019	*2020*	*2021*	*2022*	*2023*
Elizabethtown	100,505	46,517	22,232	39,359	51,022
Lancaster	577,305	298,202	179,094	305,698	380,261
Mount Joy	47,960	26,004	9,148	18,187	24,877
Total	**725,770**	**370,273**	**210,474**	**363,244**	**456,160**



LANCASTER TRAIN STATION SMALL AREA PLAN

In May 2023, the Lancaster County Planning Department completed the Lancaster Train Station Small Area Plan. Working with the City of Lancaster, Manheim Township, and other public, private, and non-profit entities, the plan provides a placemaking strategy for the neighborhoods surrounding the train station. To carry out the plan's recommendations and achieve its vision, the plan emphasizes collaboration between public and private partners.

The Lancaster Amtrak station is the second busiest Amtrak station in Pennsylvania and the 21st busiest in the United States, yet there is untapped potential in the neighborhoods around the train station. Since its completion, the land surrounding the station hasn't been used in a way that takes advantage of passenger rail service. The large highway-sized signs and lighting, high traffic volume, high-speed streets, and limited crosswalks, sidewalks, and trees are unfriendly to cyclists and pedestrians.

The plan's vision is to redevelop the area as a gateway community with a combination of mixed land uses, compact housing, and bike and pedestrian accommodations. A concept plan was developed to illustrate a possible design for neighborhoods surrounding the train station, and includes a connected street system, bike and pedestrian facilities, compact building layouts, and a diverse network of urban open spaces.

What do these **public transportation** trends mean for transportation planning?

- Public transportation in Lancaster County provides a basic mobility service for those who choose to ride, who do not own a car, or who are unable to drive. A reliable and efficient system that connects to businesses, recreation, and natural areas will influence economic development and relocation, and encourage development and investment in our urban communities.

- Integrating bicycle and pedestrian accommodations encourages public transit ridership. Growth in ridership helps reduce traffic congestion and air quality problems, especially in urban areas.

- Riders on shared-ride buses are primarily residents 65 years of age and older. As Lancaster County's senior citizen population continues to increase, shared-ride services will be in greater demand to support seniors' mobility and quality of life.

- While Amtrak's ridership numbers are below what they were before the COVID-19 pandemic, they are rebounding strongly.

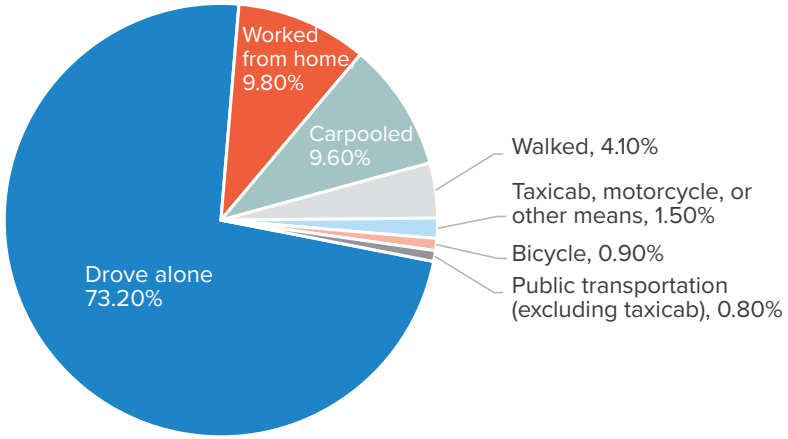
Active Transportation

Overview

- In April 2019, the Lancaster MPO adopted its Active Transportation Plan (ATP). The ATP promotes collaborative agency relationships to identify active transportation opportunities and prioritize non-motorized infrastructure investments. These opportunities are prioritized based on the ATP's established mobility hubs and cohesive countywide active transportation network.
- The ATP is a key component of the MTP's development, as it assists in the overall prioritization of investments within the county. Through the PennDOT Connects process, the MTP's vision for active transportation opportunities can be considered as part of project delivery.
- The Lancaster County bikeway and trail network comprises more than 252 miles of on and off-road designated routes, paved trails, unpaved trails, and state bike routes (BicyclePA Routes J-1 and S).
- According to the American Community Survey (ACS) 2022 1-Year Estimate, bicycle travel in the county constituted 0.9 percent of journey-to-work trips (up from the 2013–2017 ACS of 0.7% estimate), while 4.1 percent of the county's resident workers walked to work (up from 3.8%). Though data on bicycle and pedestrian travel is becoming increasingly available through GPS-related data sources, obtaining better information on these modes will be key to meeting the needs of these travelers.
- Lancaster County recorded 125 pedestrian crashes during 2022, down from 155 crashes in 2018. The county has averaged 141 pedestrian crashes and 7 pedestrian fatalities over the past decade.
- The county recorded 48 bicycle crashes in 2018—the lowest number of these incidents in a decade. Lancaster County averaged 63 bicycle crashes and 1 bicycle fatality each year of the decade ending in 2022.

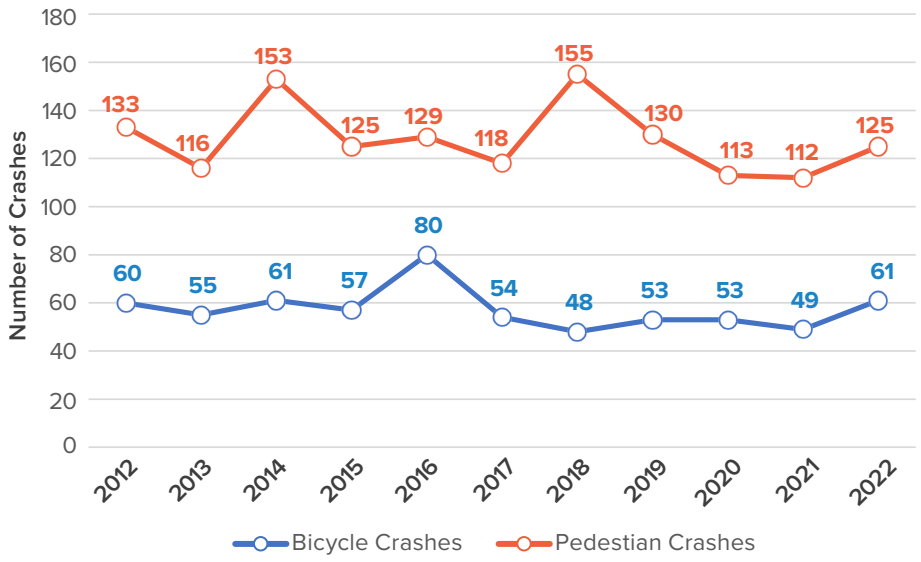
Commuting Trips by Mode, 2022

Lancaster County, Pennsylvania



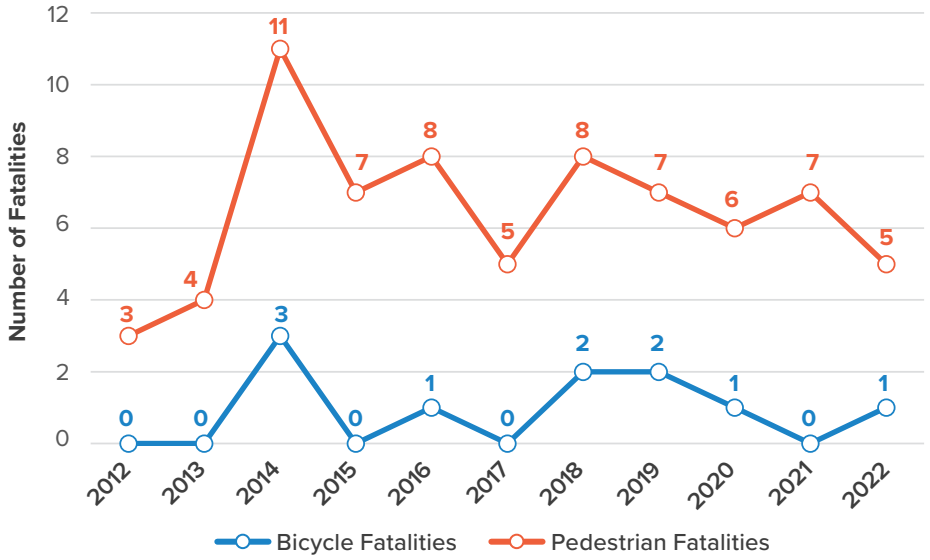
Bicycle and Pedestrian **Crashes**, 2012 – 2022

Lancaster County, Pennsylvania



Bicycle and Pedestrian **Fatalities**, 2012 – 2022

Lancaster County, Pennsylvania



Existing Bikeways and Trails

Lancaster County, Pennsylvania

Facility Type	*Miles*
On Road Designated Route	37.1
Regional Paved and Unpaved Trails	149.0
State Bike Routes	65.5
Total	**251.6**

Lancaster City, Pennsylvania

Facility Type	*Miles*
Bicycle Boulevards	1.1
Bicycle Lanes	3.8
Protected Bicycle Lanes	3.3
State Bike Routes	6.2
Shared Streets	7.9
Trails	2.0
Total	**24.3**

What do these **active transportation** trends mean for transportation planning?

- Commuter and transit-based bicycle infrastructure is limited throughout the county; however, recreational facilities are available. Incorporating this infrastructure improvement into TIP cycles, zoning, and land development ordinances will allow for the expansion and completion of sidewalk and bikeway networks. Downtown Lancaster City has instituted a program of installing bicycle lanes and bike-sharing stations to connect local businesses with residential areas.

- Prioritizing connections to parks and natural areas, as well as large employers and commercial areas, will continue to encourage use of bicycle and pedestrian modes of travel.

- Lancaster County features large trail networks that link urban areas in the county with destinations beyond. Efficient, safe networks are important features that bolster property values and enhance quality of life by providing greater opportunities for outdoor recreation. Completing trail gaps and improving accessibility will increase the use and value of these networks.

- Addressing safety issues such as high traffic speeds, lack of bicycle lanes and facilities, and poor maintenance are necessary to assist in the development of bicycle and pedestrian networks that contribute to the livability, safety, and health of Lancaster County and its communities.

- The Lancaster MPO has started a program of pedestrian and bicycle counts at various locations throughout the county. These counts will provide data that will help assess the transportation needs of pedestrians and bicyclists on our roadways.

- Off-road facilities are also being assessed for usage. Permanent pedestrian and bicycle counters have been installed on the Northwest River Trail, Conewago Trail, and Enola Low Grade Trail.

- In April 2022, the MPO adopted a motion designating the Enola Low Grade Trail as its highest priority for Federal Transportation Alternatives Set-Aside Program funding until all 29-miles of the trail is completed as originally envisioned.

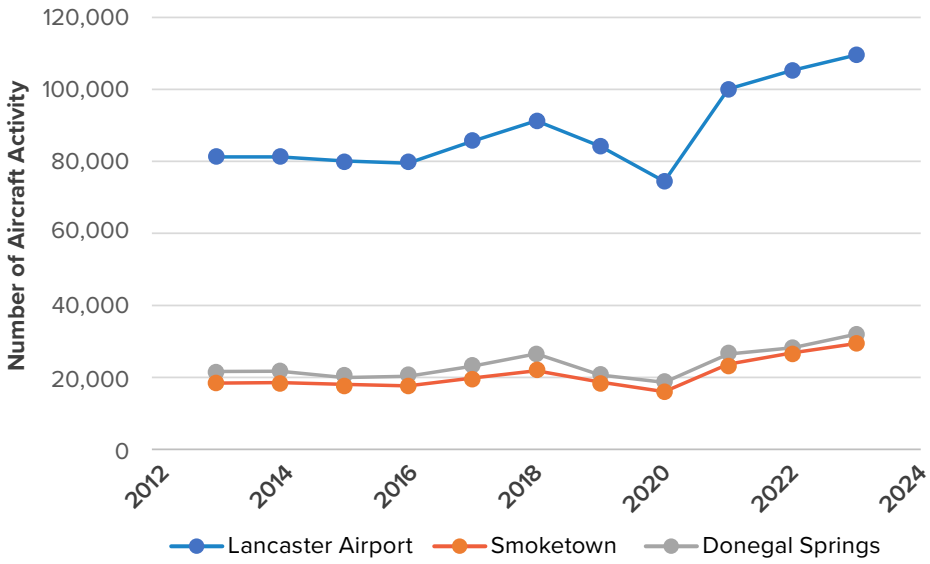
Aviation

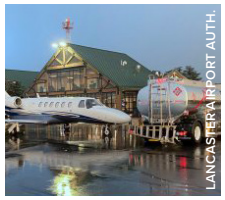
Overview

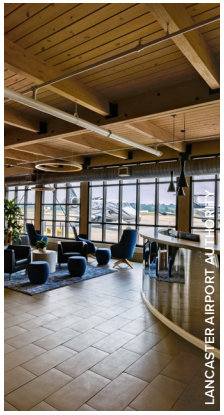
- Within Lancaster County are two private use airports and three public-use airports. The public airports are Lancaster Airport, Donegal Springs Airpark, and Smoketown Airport.
- The Lancaster Airport saw an increase of 106% in passenger traffic between 2020 and 2022. This growth can be attributed to the availability of flights to popular destinations such as Pittsburgh and Washington Dulles. Furthermore, starting in 2022, American Airlines introduced a Luxury Bus service, connecting Lancaster County to Philadelphia International Airport. In its first year of operation, this service transported over 9,000 passengers, providing convenient and seamless travel options for residents and visitors alike.
- The three public-use airports supported nearly 170,996 total operations in 2023 (an increase of 23% from 2018). Most of these operations continued to take place at Lancaster Airport, with approximately 105,592 take-offs and landings in 2023 (a rise of 20% from 2018). Notably, Donegal Springs and Smoketown airports also saw significant increases in traffic, recording 31,989 operations (up from 25,210) and 29,415 operations (up from 22,876 in 2018) respectively.
- Local general aviation activities, excluding commercial air transport, made up 51.4% of all take-offs and landings in 2023. Itinerant general aviation accounted for 47.1% of total traffic, while local general aviation contributed 50.7%. Air taxi services represented 5.1% of operations, and military operations constituted 1.6%.
- In addition to general aviation, the Lancaster County Airports offer a wide range of services, including flight training, skydiving, and aerial photography. These essential hubs also support critical operations such as aircraft manufacturing and maintenance, medevac flights, and pipeline patrols. All of these services contribute significantly to the region's infrastructure and economic well-being.
- Further connectivity to international destinations is available in neighboring Dauphin County via Harrisburg International Airport (MDT).

Airport Aircraft Operations, 2013 – 2023

Lancaster County, Pennsylvania





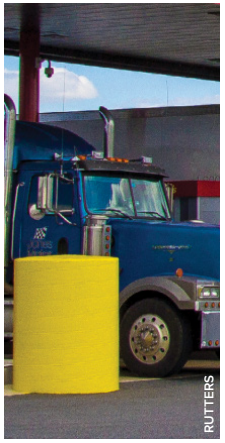


What do these **aviation** trends mean for transportation planning?

- Airport Hazard Zoning protects public safety as well as the viability of Lancaster County's airports by restricting the height of surrounding development. This helps preserve needed airspace for take-offs and landings. The airport hazard areas of the county's three public-use airports are made up of 16 municipalities, of which 13 have adopted Act 164 Airport Hazard Zoning. Lancaster County can assist these municipalities in enacting this important tool.

- Other factors that are important to airport preservation are broad community support, Airport Master Plans, zoning, and ensuring the compatibility of future development. The preservation of local aviation facilities is important in connecting local businesses to the global market. They bring jobs and have a positive economic impact on Lancaster County.

- Passengers flying into Lancaster Airport via Southern Airways Express can intermodally connect to destinations across Lancaster County and beyond. Using public transit or a rental vehicle, travelers can experience all that Lancaster County has to offer. Utilizing Amtrak service, travelers can also access surrounding regions, including Philadelphia and Harrisburg. It is important that Lancaster County continues to sustain these intermodal offerings and plan for adequate connections between modes (e.g., Lancaster Airport to Lancaster Amtrak Station).



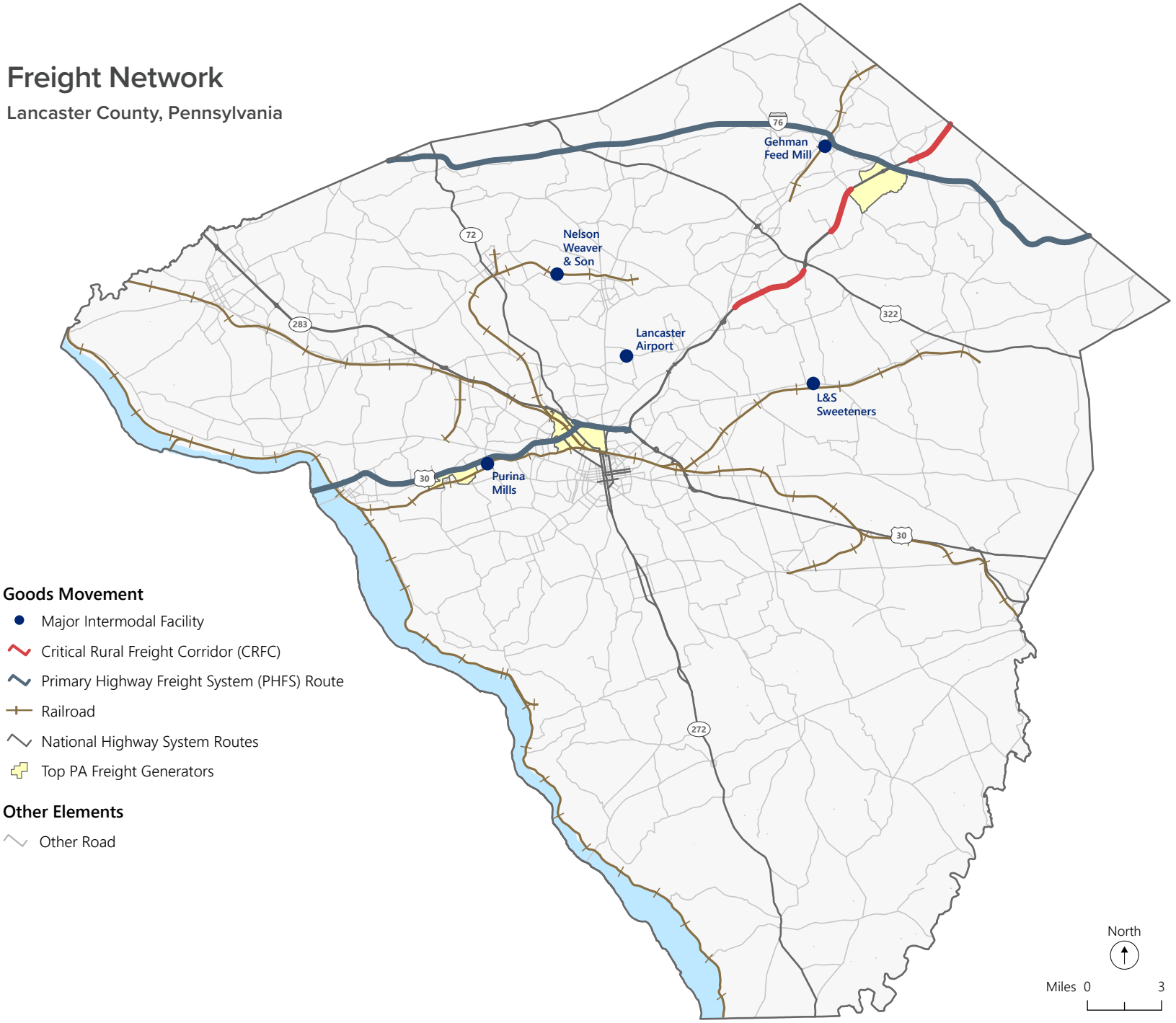
Goods Movement

Overview

- Lancaster County's transportation system includes nearly 40 miles of National Highway Freight Network (NHFN) roadways. The NHFN was established under the FAST Act (2015) to guide strategic investments in improving freight performance. The NHFN is comprised of four subsystems: the Primary Highway Freight System (PHFS), non-PHFS Interstates, Critical Rural Freight Corridors (CRFCs), and Critical Urban Freight Corridors (CUFCs):
  - **PHFS:** The approximately 30-mile stretch of the Pennsylvania Turnpike within the county falls on this subsystem.
  - **Non-PHFS Interstates:** The county does not have any roadways that fall on this subsystem.
  - **CUFCs:** The county does not have any roadways that fall on this subsystem.
  - **CRFCs:** As of July 2020, there are three certified CRFCs in Lancaster County totaling 7.5 miles. All three segments fall on US 222 and are located in Brecknock Township, East Cocalico Township, and West Earl Township.
- The county is also home to several major intermodal facilities including Lancaster Airport in Manheim Township (air and truck), Nelson Weaver & Son, Inc. in Penn Township (rail and truck), Gehman Feed Mill in Denver Borough (truck and rail), Purina Mills in East Hempfield Township (rail and truck), and L&S Sweeteners in Upper Leacock Township.
- According to FHWA's Freight Analysis Framework (version 5)'s, the Pennsylvania Turnpike (I-76), portions of US 222, and PA 283 are expected to experience large tonnage increases by 2050, as shown on the accompanying map.
- Approximately 95 percent of Lancaster County's commodities are moved by truck while the remaining 5 percent is moved by rail.
- Martin Limestone continues to be the county's top freight-generating company, shipping nearly 2.4 million tons annually across its two locations in Denver and New Holland. Other significant freight-generating companies include Manheim Auto Auction (1.6 million tons), Rohrer's Quarry Inc in Lititz (937,116 tons), and Wenger's Feed Mill in Rheems (777,060 tons).
- Among Pennsylvania's 67 counties, Lancaster County ranks third behind Allegheny and Montgomery Counties in greatest concentrations of employment in freight-intensive industries with 61,000 jobs.
- In the South-Central Pennsylvania region, rail freight shipment depends primarily on Amtrak's Keystone Corridor, which accommodates passenger trains during the day and freight rail at night.
- There are four Class I freight railroads in the region: Norfolk Southern (NS), CSX Transportation, Canadian National, and Canadian Pacific. NS is by far the largest freight rail service in the county, serving more than 10 customers daily.

Freight Network

Lancaster County, Pennsylvania



Goods Movement

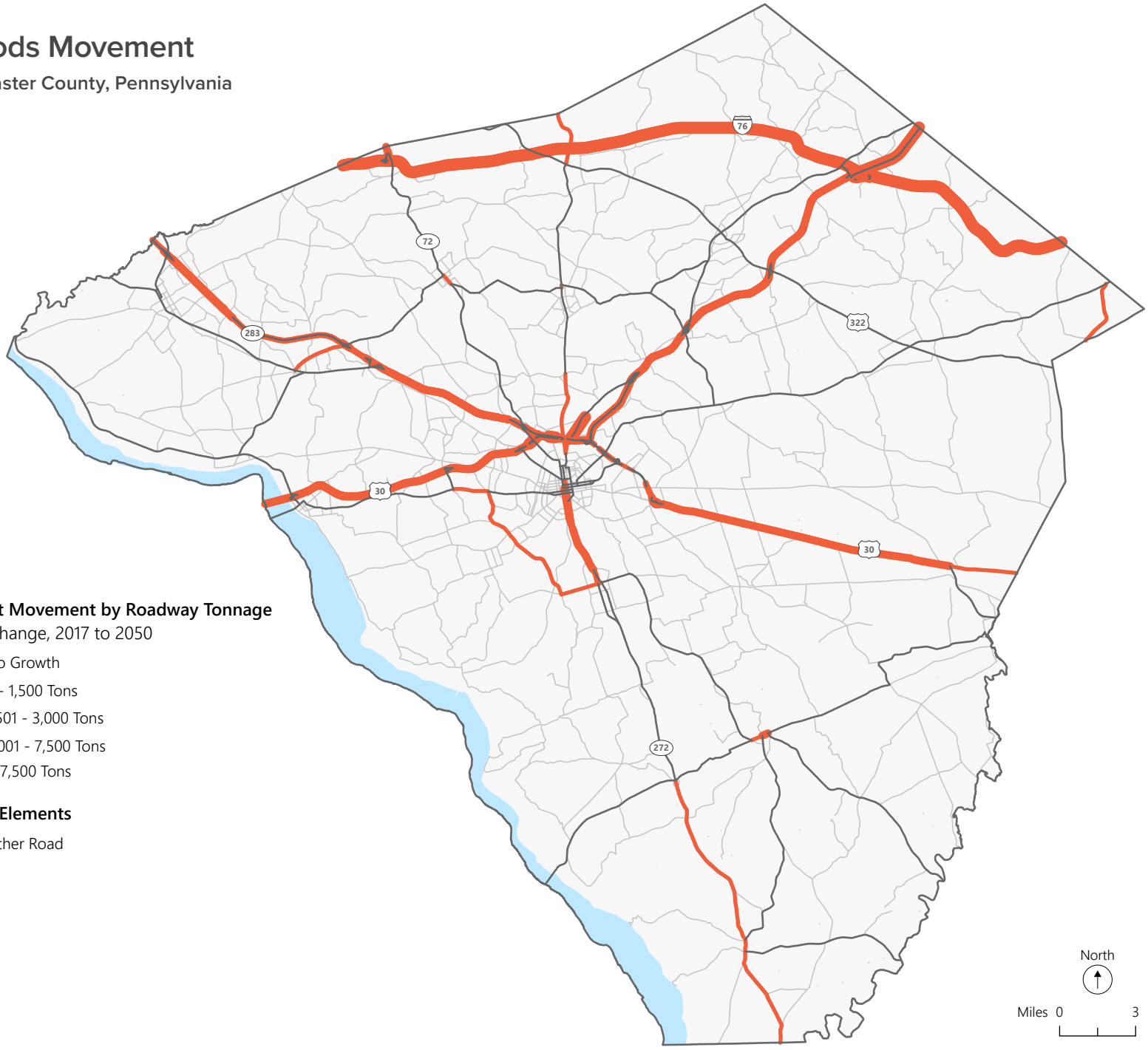
- Major Intermodal Facility
- Critical Rural Freight Corridor (CRFC)
- Primary Highway Freight System (PHFS) Route
- Railroad
- National Highway System Routes
- Top PA Freight Generators

Other Elements

- Other Road

Goods Movement

Lancaster County, Pennsylvania



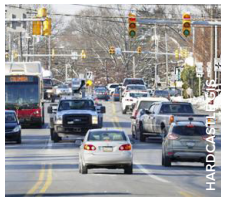
What do these **goods movement** trends mean for transportation planning?

- Given Lancaster County's regional position and its proximity to the global economic gateways of New York, New Jersey, Philadelphia, and Baltimore, increasing freight growth continues to be a major force affecting the safety and operation of the county's transportation system.
- Transportation infrastructure in Lancaster County will be expected to accommodate more than 70 million tons of freight per year by 2050. The county will need an adequate investment strategy to ensure its freight infrastructure is in a state of good repair by allocating resources to critical freight corridors. Investing transportation funding in freight-related improvements such as generous turning radii, lane widening, and improved shoulders (particularly on first- and last-mile corridors) can improve the efficiency of freight movement through Lancaster County.
- Trucking will continue to be the dominant mode of freight movement in the county through the plan horizon year of 2050, causing significant impact on the county's highway and bridge system. Ongoing planning for key freight networks such as the National Highway Freight Network and designated Critical Rural Freight Corridors must continue to be a priority. Prioritizing investment of any future allocations of National Highway Freight Program funds could assist in ensuring safety and good condition on critical freight routes.
- In order to thoroughly understand freight-related modal movement on the transportation network and related safety and condition needs, Lancaster County must continue to engage freight stakeholders and the economic development community.
- Rail freight transportation is an essential component of the county's economic competitiveness and sustained economic growth – preserving and restoring rail infrastructure is a priority.
- Railroads connect Lancaster County businesses to the global economy and have the added benefit of removing trucks for the county's roadways. This lessens congestion and helps preserve roadway pavements.
- Pennsylvania – as a significant rail state with 65 operating railroads – has enacted public funding programs through its Rail Freight Assistance Program (RFAP) and Rail Transportation Assistance Program (RTAP). PennDOT's Bureau of Rail Freight administers these grants annually based on available funding.
- Lancaster County will continue to seek opportunities to use public funding to enhance rail connectivity and accessibility when it is in the public interest.

System Management and Operations

Overview

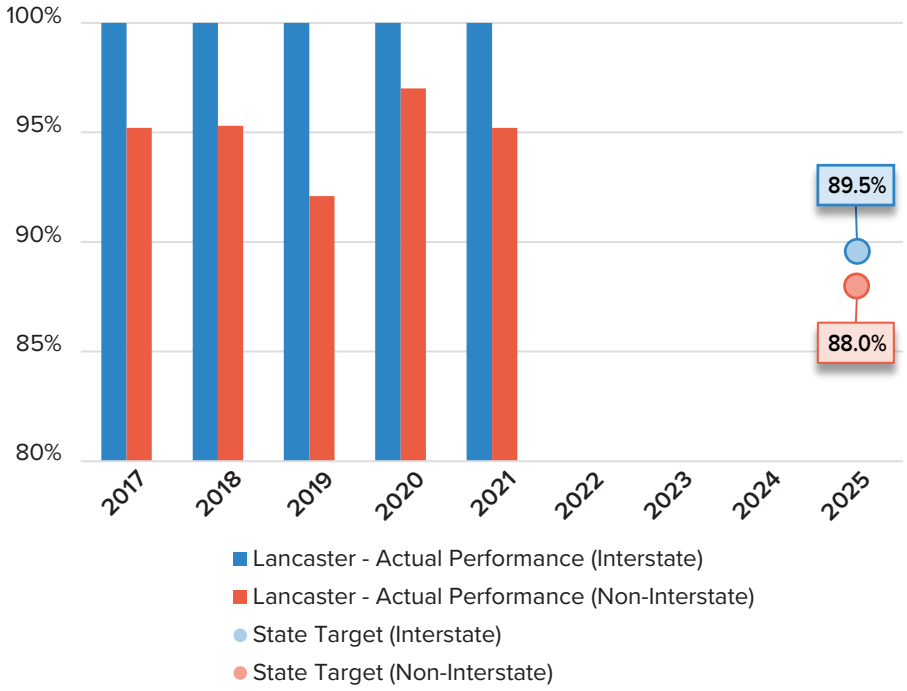
- As PennDOT and Lancaster County continue to operate within an increasingly constrained funding environment, there will be a growing need to emphasize operational improvements over capacity-building (handling more travelers on existing roadways). This is known as Transportation System Management and Operations (TSMO).
- Lancaster County presents multiple challenges in planning for operations, given its role as a tourist destination and its seasonal influx of tourist-related traffic. The county's many trip-generating colleges and universities, tourist destinations, and commercial and retail destinations underscore the high importance of operations planning – as does output from the county's Congestion Management Process (CMP), public feedback about congestion, and the policy, financial, and technical infeasibility of building more roadways.
- There are nearly 183 linear miles of National Highway System (NHS) routes throughout the county, underscoring the need for good traffic incident management during times of road closures due to incidents or inclement weather.
- In 2017, USDOT published the third in a series of rulemakings that establish performance measures (PM-3): National Performance Management Measures, Assessing Performance of the National Highway System, Freight Movement of the Interstate System, and Congestion Mitigation and Air Quality (CMAQ) Improvement Program. To measure performance of the NHS, state DOTs and MPOs are required to measure the following:
  - Percentage of Reliable Person-Miles Traveled on Interstates
  - Percentage of Reliable Person-Miles Traveled on Non-Interstate Highways
  - Truck Travel Time Reliability Index
- Lancaster County is currently meeting its targets for travel time reliability on Interstate and non-Interstate highways as well as truck travel time reliability. Both Interstate and non-Interstate reliability levels in the county are higher than the 2025 statewide targets of 89.5 and 88 percent, respectively. Similarly, the county's Truck Travel Time Reliability (TTTR) values are below the statewide target of 1.4, representing higher levels of reliability. A TTTR index value of 1.5 or higher is considered "unreliable."
- PM-3 also established performance to assess traffic congestion and on-road mobile source emissions for the purpose of carrying out the CMAQ program in applicable urbanized areas/transportation management areas, including:
  - Annual Hours of Peak Hour Excessive Delay (PHED) Per Capita
  - Percent of Non-Single Occupancy Vehicle (Non-SOV) Travel
  - Total Emissions Reductions (for each criteria pollutant)
- Part of the 2010 Philadelphia urbanized area extends into Lancaster County. To ensure compliance with PM-3, Lancaster County develops a CMAQ Performance Plan to assess baseline performance, set targets for CMAQ measures, and evaluate progress toward meeting those targets.
- Lancaster County is currently meeting and exceeding its targets for the PHED per capita measure and the percent non-SOV travel. In 2021, the county experienced 3.3 hours of PHED per capita with a target of 3.7 hours of PHED set for 2024 – 25. For non-SOV travel, the county has a nearly 25 percent non-SOV travel mode share with a target of 21.9 percent established for 2025.



Percentage of Interstate and Non-Interstate Reliable Person-Miles Traveled

Actual vs. Target Performance, 2017–2025

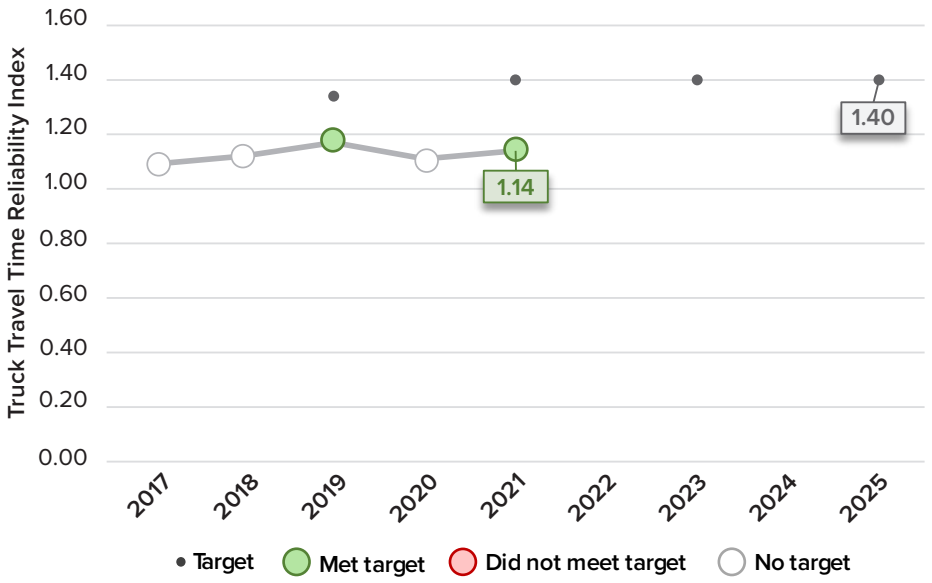
Lancaster County, Pennsylvania



Freight Performance Measure/Truck Travel Time Reliability

Actual vs. Target Performance, 2017–2025

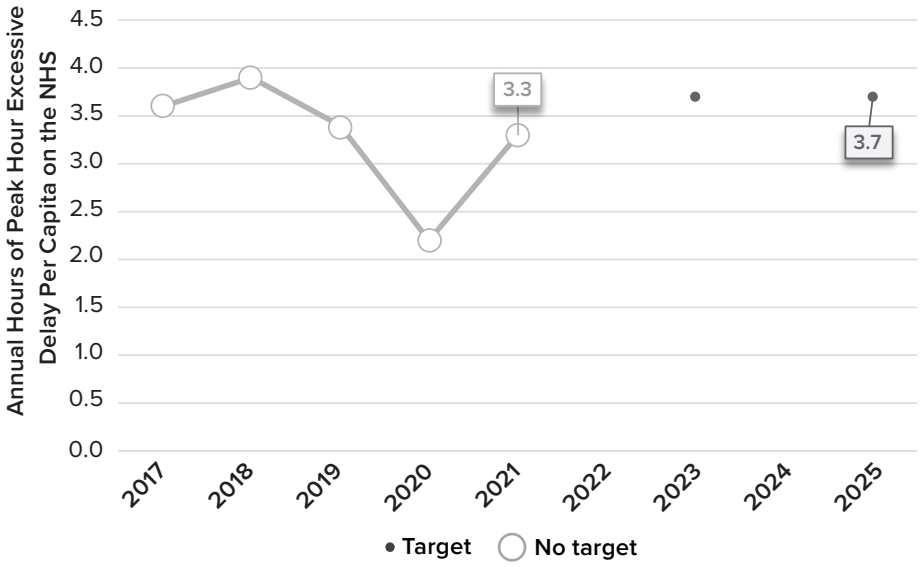
Lancaster County, Pennsylvania



Annual Hours of PHED Per Capita

Actual vs. Target Performance, 2017–2025

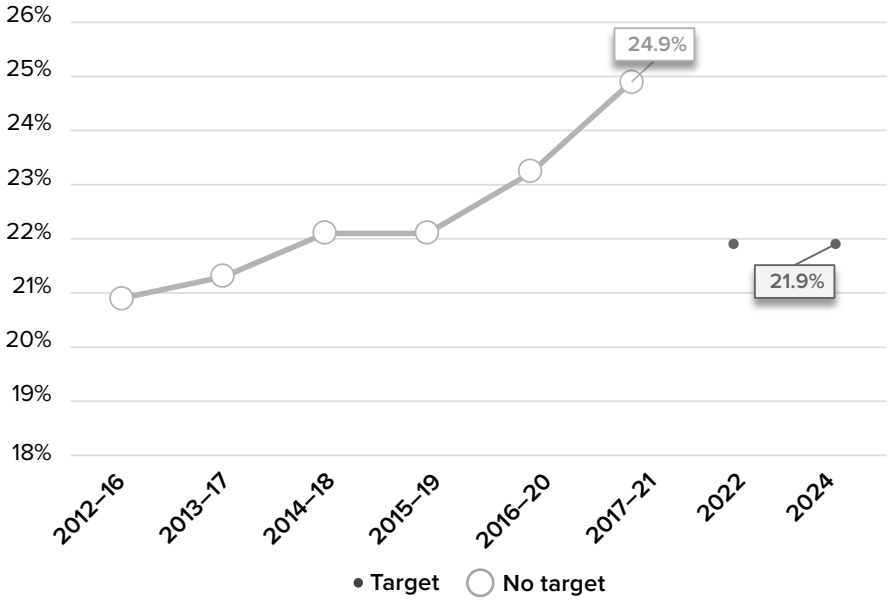
Lancaster County, Pennsylvania



Percent of Non-SOV Travel

Actual vs. Target Performance, 2017–2025

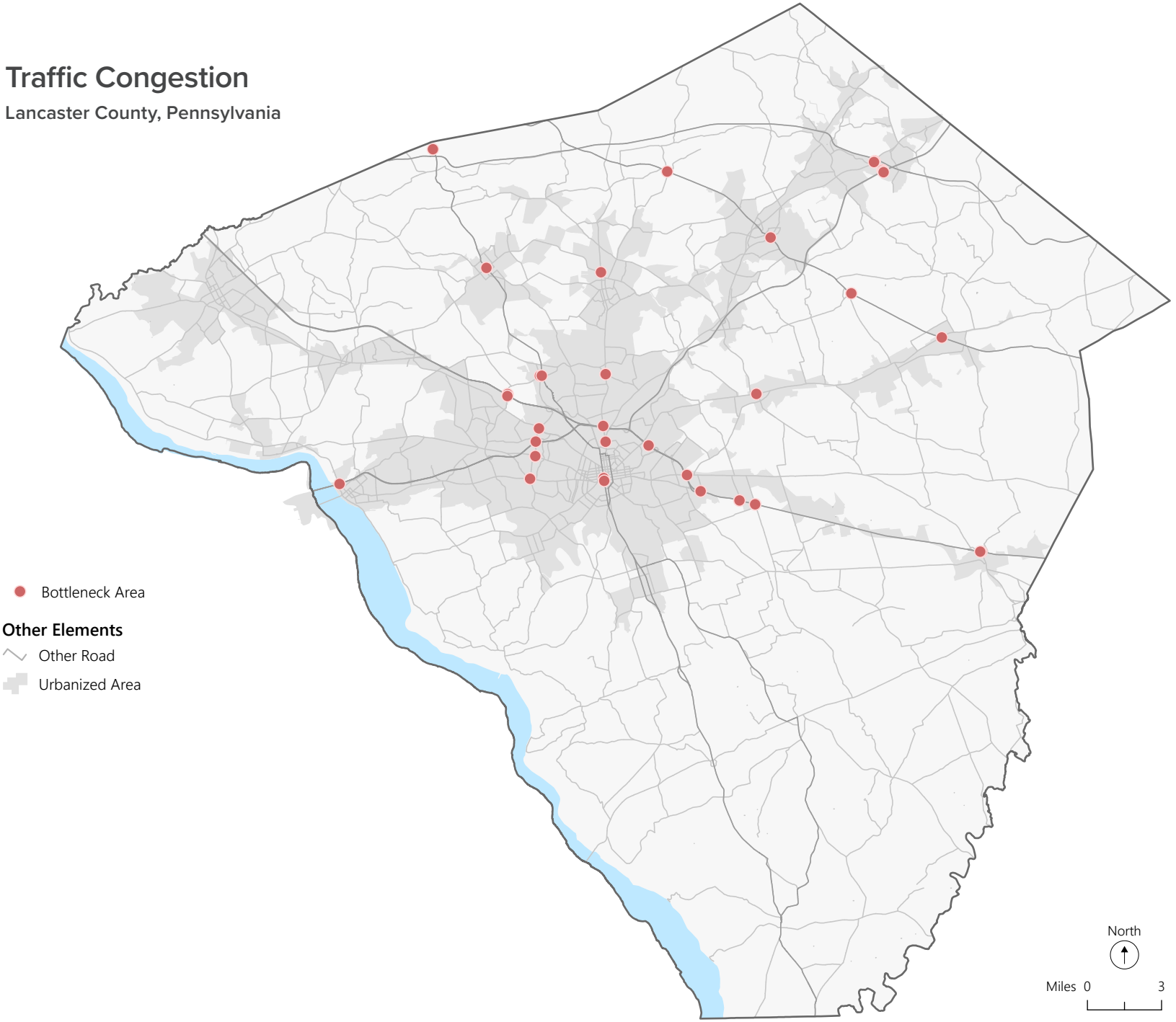
Lancaster County, Pennsylvania



- In terms of infrastructure, there are 509 traffic signals, 29 CCTV cameras, and 12 dynamic messaging signs located in Lancaster County. Nearly 23 percent of the county's traffic signals are located in the City of Lancaster. Traffic signals can improve the safety and efficiency of roadway networks for motorists as well as transit, cyclists, and pedestrians. However, poor signal timing and/or poor coordination between signalized intersections can negatively impact traffic flow and the effectiveness of the signals.
- Since the development of *connects2040* (the previous MTP), the Eastern Regional Operations Plan (ROP) was updated. This plan establishes a strategy for implementing TSMO strategies within PennDOT's Eastern Region, which includes Lancaster County as well as other MPO regions in PennDOT Districts 4-0, 5-0, and 8-0. The updated ROP identified several major arterials in Lancaster County as corridors with "significant recurring congestion" including US 30, PA 501, and PA 741 near the City of Lancaster. The Lancaster MPO and its municipalities were also identified as key stakeholders in several of the ROP's recommended projects and initiatives.
- In 2019, the Lancaster MPO updated its Congestion Management Process (CMP). As part of this process, top bottleneck locations by intensity and duration were identified. Many bottlenecks are located on the county's major arterial roadways, such as US 30, US 222, US 322, and the Pennsylvania Turnpike interchanges.

Traffic Congestion

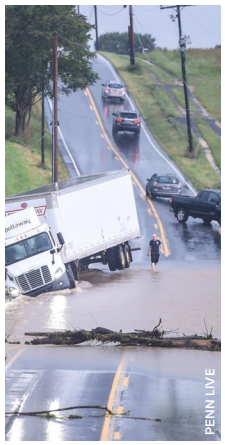
Lancaster County, Pennsylvania



What do these **operations** trends mean for transportation planning?

- Investments in traffic operations often yield a greater value per dollar spent versus capacity adding projects, making operations a key area of focus for the MPO.
- Most of Lancaster County's highly congested corridors and bottlenecks are also signalized corridors. This presents the opportunity to introduce new signal technologies—adaptive and connected signals—or revisit those technologies already implemented to ensure they are functioning properly.
- The Lancaster MPO should strive to keep its CMP updated on a regular basis to continually evaluate potential locations for operational improvements or opportunities to leverage CMAQ funds. The availability of new crowdsourced tools and data sources can help the MPO focus on the county's worst bottlenecks or "hot spot" locations. The MPO should continue to work with neighboring MPOs to develop a regional data hub to create a more streamlined CMP update process.
- Lancaster County's ongoing participation in Commute PA (formerly known as Commuter Services of Pennsylvania) will aid workers and others in finding alternatives to traveling via single occupancy vehicles.
- Through continued utilization of PennDOT's Local Technical Assistance Program (LTAP), Lancaster County can emphasize the importance of routine signal re-timings and provide its municipal partners the opportunity to gain expertise in maintaining their signal systems.
- Operations planning has the potential to improve the reliability and predictability of travel throughout the county—critical considerations for goods movement and winter maintenance.
- Reliability of the county's roadways is critically important to supply chains, as shippers and carriers require a reliable network for reducing shipping delays, and thus lowering costs to consumers. Winter conditions can create unsafe road conditions as well as alter driver behavior. Through the retiming of signals and timely road clearing procedures, reliability of travel can continue to be dependable while keeping travelers safe during and after these weather conditions.

Resiliency

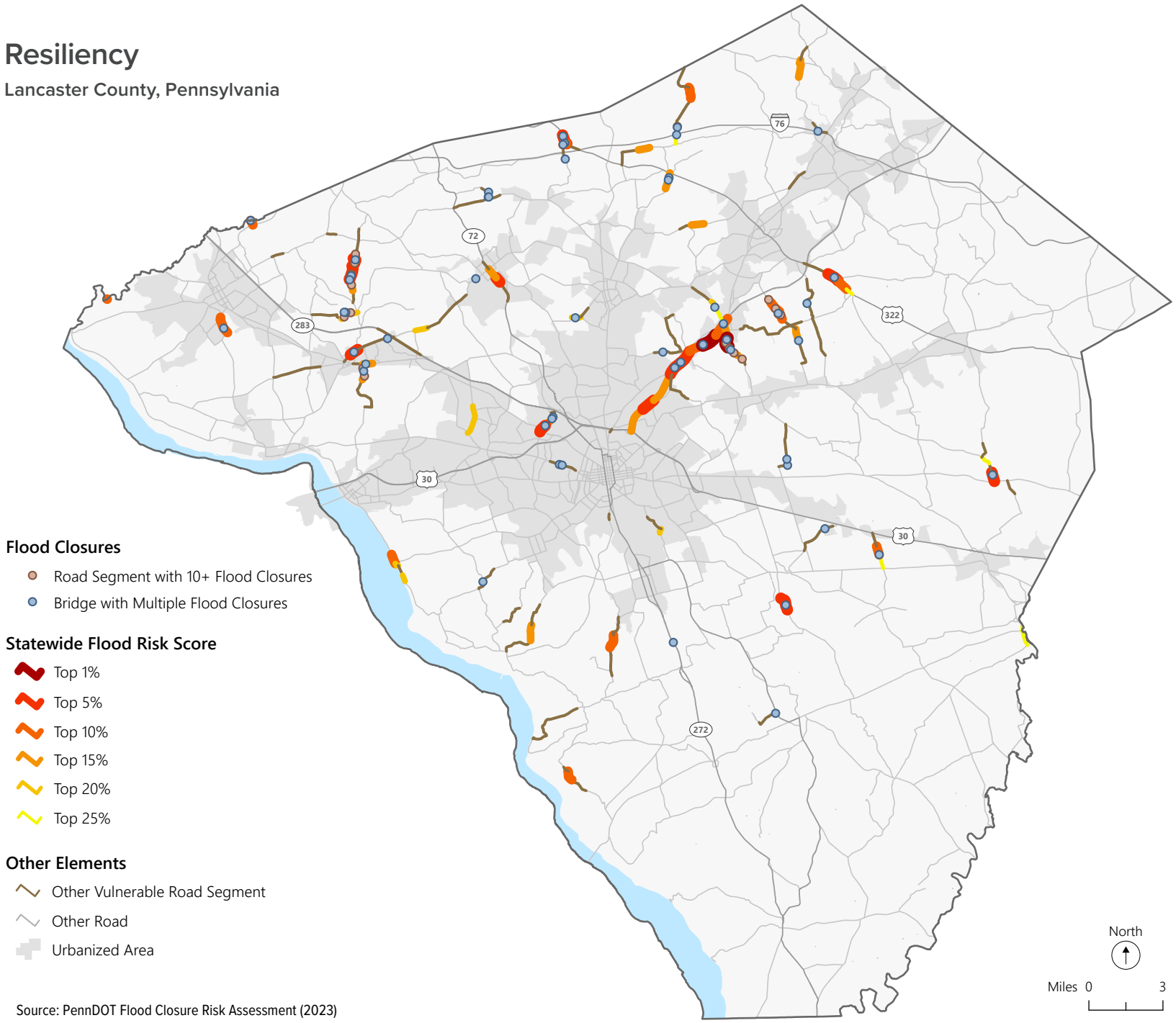


Overview

- As part of the FAST Act and subsequently under BIL/IIJA, states and MPOs are required to address resiliency—one of the federal planning factors. Resiliency is defined by FHWA as "the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions." FHWA continues to focus transportation infrastructure resiliency efforts on climate change and extreme weather.
- In 2017, PennDOT completed its Extreme Weather Vulnerability Study, which was the start of a multi-phase effort to anticipate potential impacts of extreme weather on the state's transportation infrastructure. Through this effort, PennDOT and its partners at the Turnpike Commission, FEMA, and MPO/RPO regions were able to identify roadways vulnerable to extreme weather events and climate change impacts through the development of a flood closure risk assessment process.
- In 2023, PennDOT revisited the flood closure risk assessment using updated data. The risk scoring process uses data on historic road closures due to flooding from PennDOT's Road Conditions Reporting System (RCRS) and include information dating back to 2006. Risk scores are calculated based on a series of criteria, including precipitation levels, floodplain presence, flooding frequency, pavement condition, traffic and truck volumes, and functional classification, among others.
- In Lancaster County, several major arterials and collectors have vulnerable roadway segments. Results from the assessment show that sections of US 222 and PA 772 in West Earl Township fall within the top 1 percent statewide for flood risk. Other notable high-risk segments have been identified on US 222 (Manheim Township), US 322 (Earl, Elizabeth, and Ephrata Townships), PA 741 (East Hempfield Township), PA 772 (Rapho, Mount Joy Townships), PA 72 (Manheim Borough, Penn Township), SR 2015/May Post Office Road (Strasburg Township), and SR 4033/Meadow View Road (Rapho Township).
- Resilience of the transportation system is a topic that has received greater emphasis in recent years. The passage of the Bipartisan Infrastructure Law (BIL/IIJA) established the Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Program, which provides $1.4 billion in discretionary funding over the life of the reauthorization to ensure resilience of the transportation system to natural hazards such as climate change, extreme weather events, flooding, and other natural disasters. Funds from the program are able to be used toward planning activities, resilience improvements, community resilience and evacuation routes, and at-risk coastal infrastructure projects.

Resiliency

Lancaster County, Pennsylvania



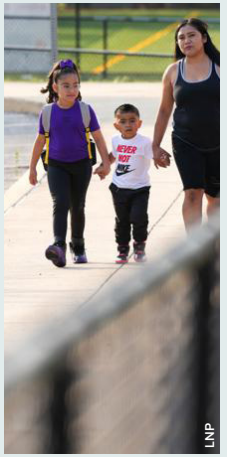
Source: PennDOT Flood Closure Risk Assessment (2023)

What do these **resiliency** trends mean for transportation planning?

- While resiliency is a designated federal planning factor, it is a topic that has come to the forefront with the passage of the Bipartisan Infrastructure Law in 2021. Other MPOs across the state have conducted their own resiliency planning efforts, including DVRPC, SPC, and neighboring York County. Lancaster County should consider pursuing similar planning efforts when updating the Unified Planning Work Program (UPWP) and exploring potential opportunities to implement resiliency-focused improvements, such as the federal PROTECT program.

- Lancaster County should consider incorporating resiliency into the MPO's project development process and PennDOT Connects. Ongoing coordination with federal, state, and local environmental agencies is critical in prioritizing improvements at locations that are vulnerable to natural hazards, including those identified through PennDOT's flood risk assessment.

- Lancaster County should partner with its municipalities and PennDOT to identify where stormwater infrastructure is lacking or could be improved on roadways with high levels of vulnerability in extreme rain and snow events. This reduces the need for emergency roadwork on critical highways and bridges and the need for emergency funds due to flood damage.



PUBLIC PARTICIPATION

Public Survey

Safety and reliable travel are the top transportation priorities of survey participants.

Note: Figures and tables in this section are numbered for ease of reference.

Overview

- The Lancaster County Planning Department launched a six-week public survey via MetroQuest. The survey window opened on January 15, 2024 and closed on March 9. The survey collected essential insights from the public regarding local transportation priorities, ongoing projects, and budget considerations. The data gathered serves as a crucial guide for updating the transportation plan.
- LCPD distributed a press release to announce the release of the survey, which also received significant coverage through social media and various media outlets.
- In addition to the online survey, paper copies were available in both English and Spanish for individuals who may not have access to a computer.
- In total, 385 people completed the survey. The most participation occurred during the first week of the survey window (321 responses). Three respondents submitted surveys using the alternative fillable PDF, and six follow-up comments were received by e-mail.
- Survey participants provided input by:
    - Ranking their top four transportation categories out of eight provided;
    - Rating various strategies to address those selected priorities; and
    - Distributing a hypothetical budget of $100 among eight transportation funding categories.

Demographics

- Several optional demographic questions were asked at the end of the survey. When considering survey responses by age group, most responses were from residents aged 65 and older, followed by those in the 35 to 44 age group. Survey responses by age group are shown in **Figure 1.**
- In terms of ethnic background, approximately 88 percent of the respondents self-identified as White, while 3 percent self-identified as Hispanic, Latino, or of Spanish origin. Additionally, 7 percent of the respondents did not provide information about their ethnic background. Responses by ethnic background are shown in **Figure 2.**
- Survey participation primarily involved county residents, with nine respondents representing non-profit organizations (1), public officials (4), or non-residents (4), as shown in **Figure 3.**

Figure 2:
Survey Respondents by Ethnic Background (Self-Identified)

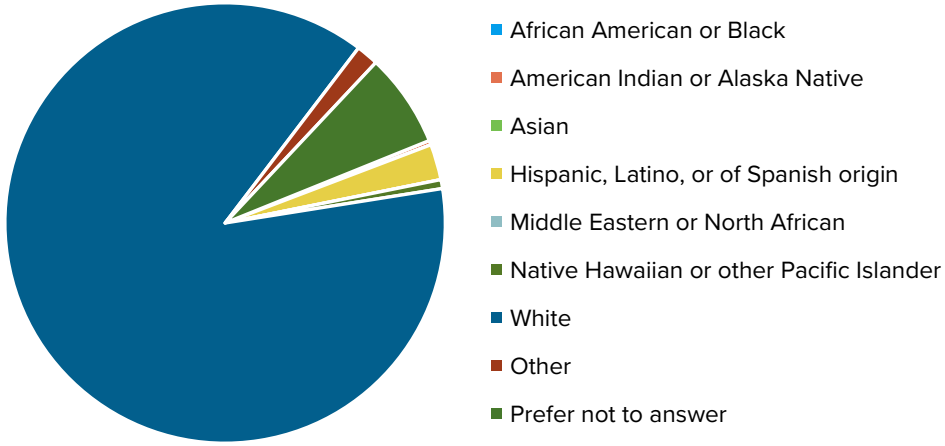


Figure 1:
Survey Respondents by Age Group

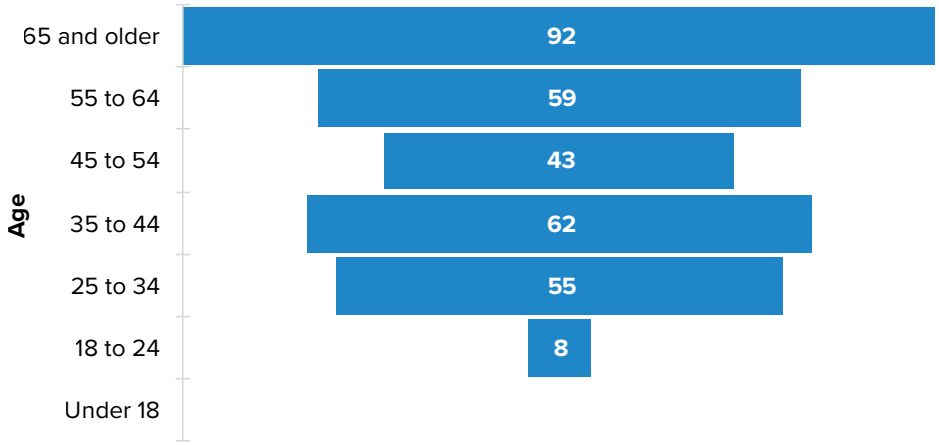
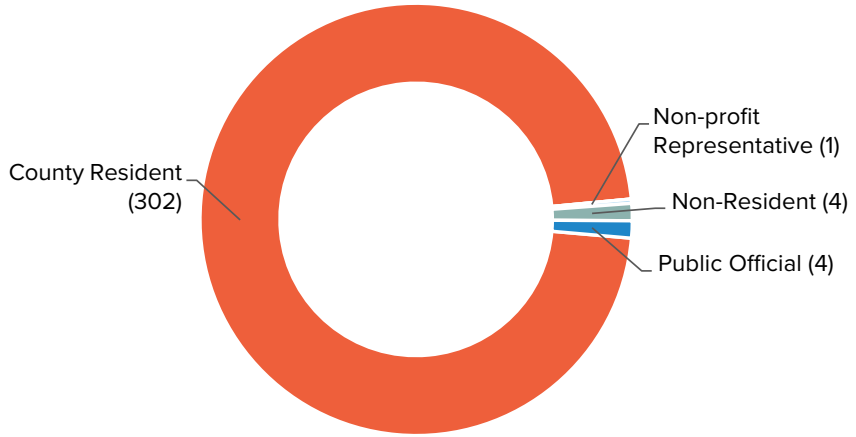


Figure 3:
Survey Respondents by Representation



Transportation Priorities

- As part of the survey, participants were asked to select their top four priorities out of the MTP's eight policy areas, with one representing a respondent's highest priority. While the distribution of priorities by **total number of times ranked** show a largely equal distribution across all eight areas, responses indicated Safety, System Maintenance, and Reliable Travel were areas of target emphasis. The Performance Goals priority area received the lowest number of priority ratings of all eight areas **(Figure 4)**.
- When analyzing the policy areas that were **rated with a "1" (indicating top priority)**, the three policy areas that received the most ratings were Safety, Reliable Travel, and Transportation Choices **(Figure 6)**.
- When compared to the results from the same survey completed for *connects2040* in 2020, the MPO's previous MTP, there are many similarities. The public's top three priorities (those given a rating of "1)—Safety, Reliable Travel, and Transportation Choices—remained the same. When considering the distribution based on total number of times ranked, there was a slight shift in the rankings. In the 2040 survey, top priorities by total number of times ranked were Reliable Travel, Safety, and System Maintenance **(Figure 5)**. The most recent MTP survey results show Safety, System Maintenance, and Reliable Travel as top priorities **(Figure 6)**.

Figure 4:
Priorities by Total Number of Ratings Received

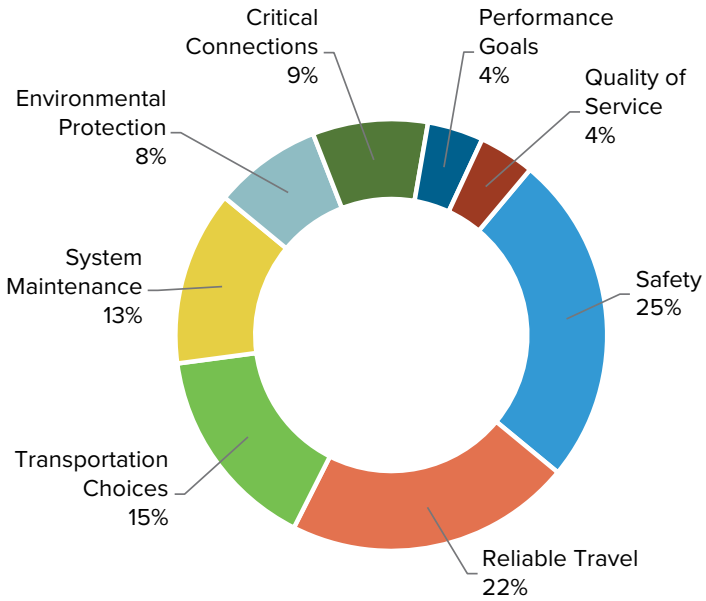


Figure 5:
2040 MTP Priorities by Rank (2019)

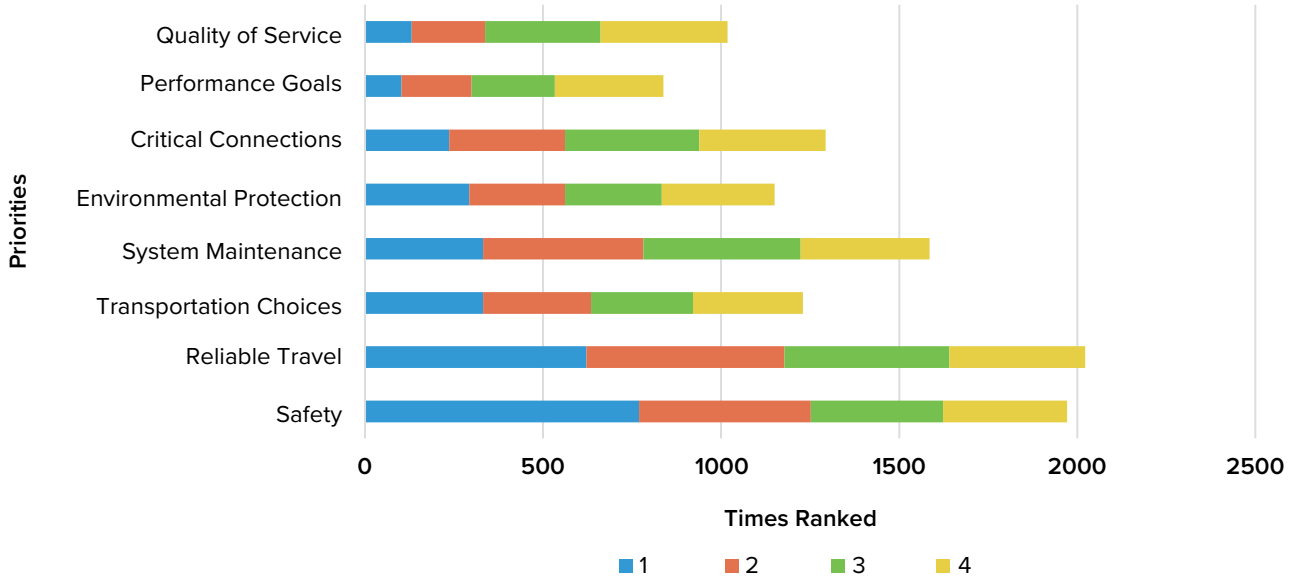
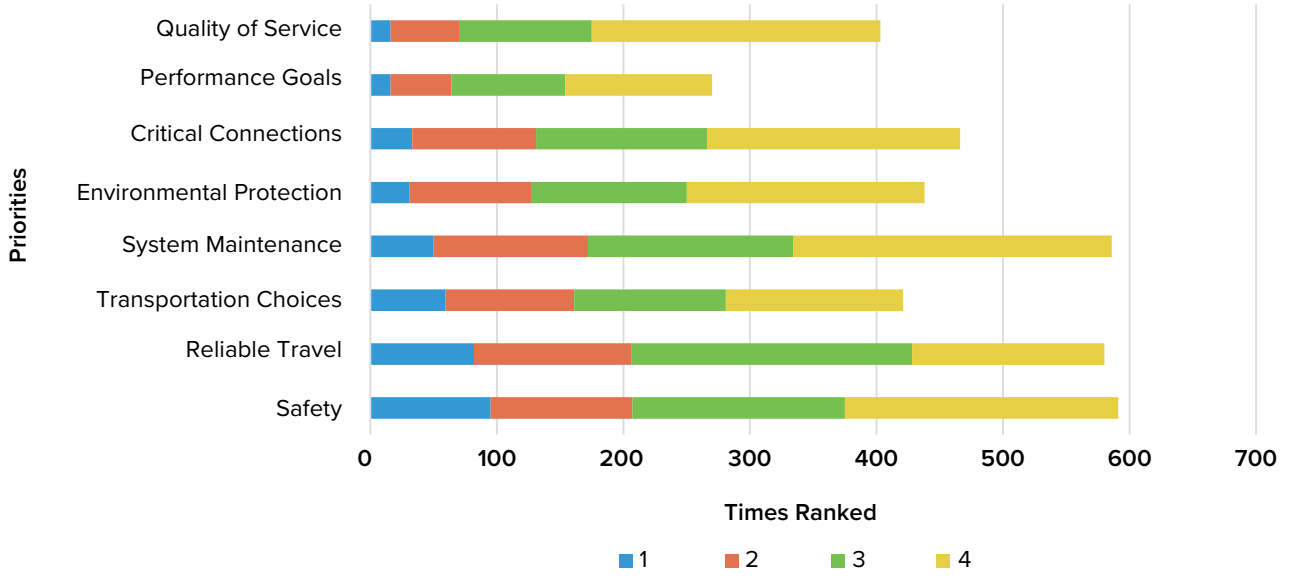


Figure 6:
2050 MTP Priorities by Rank (2024)



Strategy Favorability

- After rating their top four priorities, participants were asked to rate a series of strategies within each of these four priorities. Each priority included two to five focused action strategies that the MPO could pursue. Participants rated each strategy on a scale of one to five stars, with one star representing the least favorable strategy and five being a most favorable strategy.
- To manage the Safety priority area, most respondents favored investing in safety improvements over the implementation of new enforcement measures, educational initiatives, or awareness campaigns **(Figure 7)**. Safety improvements refer to targeted investments in things like roundabouts and high-visibility crosswalk treatments at locations with a high incidence of crashes. Favorability rankings in this priority area are the same as they were in the 2040 MTP survey.
- For the Transportation Choices priority area, expanding transit service and frequency were the most highly favored strategies, followed by expanding bicycle and pedestrian infrastructure, innovative public transit, and job access initiatives, respectively **(Figure 8)**. When compared to the previous survey, strategy favorability was largely the same; however, job access initiatives were favored more highly over innovative public transit.
- The System Maintenance strategies focused on bicycle and pedestrian, transit, and roadway/bridge assets. Of these options, respondents favored a focus on road pavements, followed by bridges. Maintenance of road pavements tends to involve routine work carried out by local municipalities and PennDOT to keep pavements in a state of good repair. Bridge maintenance could include preservation activities or improvements on posted and closed bridges **(Figure 9)**. Favorability ratings for these strategies were the same as the 2040 MTP survey.
- In the Reliable Travel priority area, roadway improvements continue to be the most highly favored strategy **(Figure 10)**. When compared to the 2040 MTP survey, the public expressed higher favorability for public transit over incident management.
- The strategies provided as part of the Environmental Protection priority area were all rated favorably. Of these four strategies, improving air quality and protecting environmental resources received the highest number of five-star ratings, respectively **(Figure 10).** Collectively, these strategies received the greatest share of five-star ratings when compared to other priority areas. The favorability ratings have not seen change since the 2040 survey.
- In the Critical Connections priority area, respondents favored the Road Access strategy most favorably out of the three strategies **(Figure 11)**. This is followed by enhancing transit service and pursuing public-private partnerships (P3). The ratings in the 2040 survey show P3s being favored higher than transit service.
- All strategies within the Performance Goals priority area were also rated favorably, with System Performance and Safety Performance receiving the most five-star ratings **(Figure 12)**. Compared to the previous MTP survey, system performance remains the most favorable strategy; however, safety performance is now favored second highest. This performance goal was ranked the least favorable in 2040.
- Of the two strategies posed under Quality of Service, more five-star ratings were given to investments in new technologies over communication tools **(Figure 13)**. These rankings were reversed in the 2040 survey results.

Figure 7:

Strategy Ratings: Safety

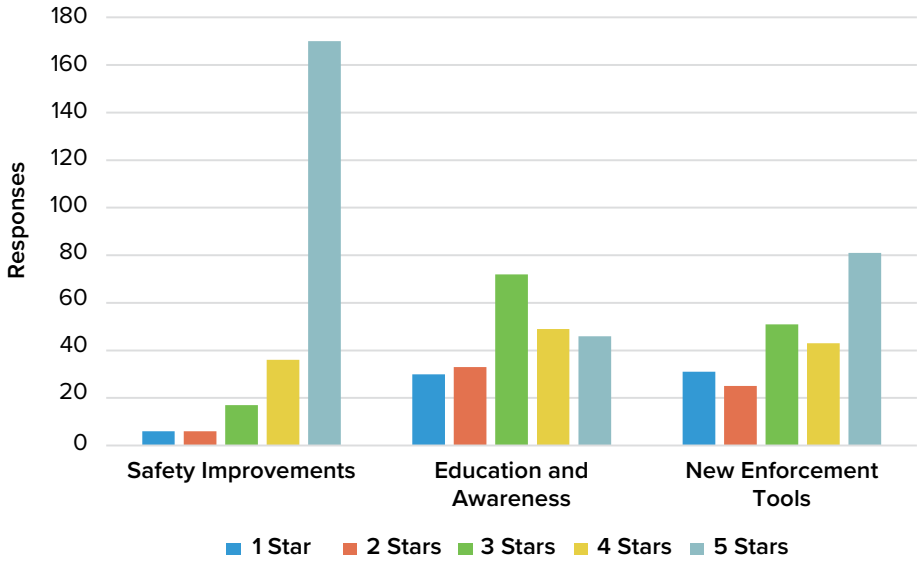


Figure 8:

Strategy Ratings: Transportation Choices

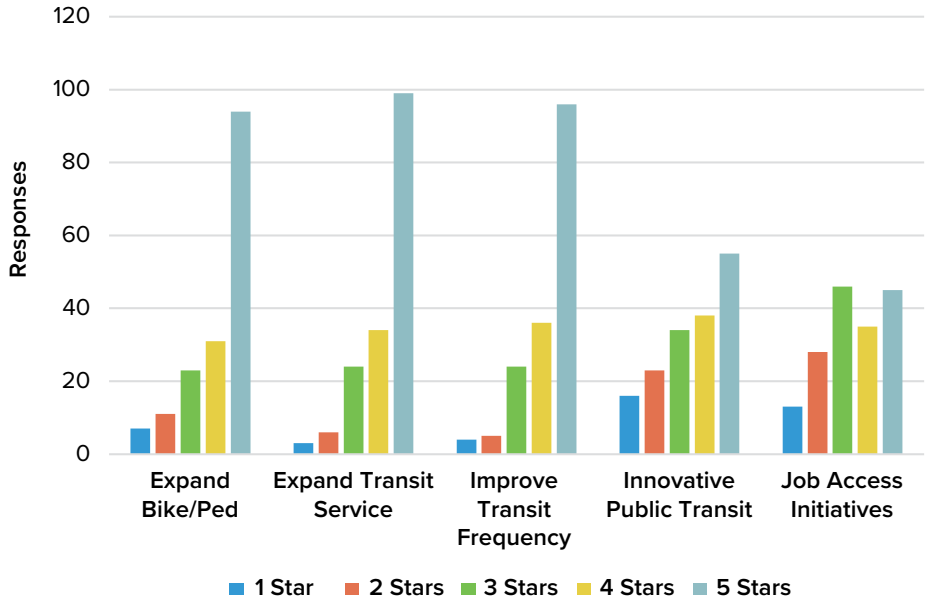


Figure 9:

Strategy Ratings: System Maintenance

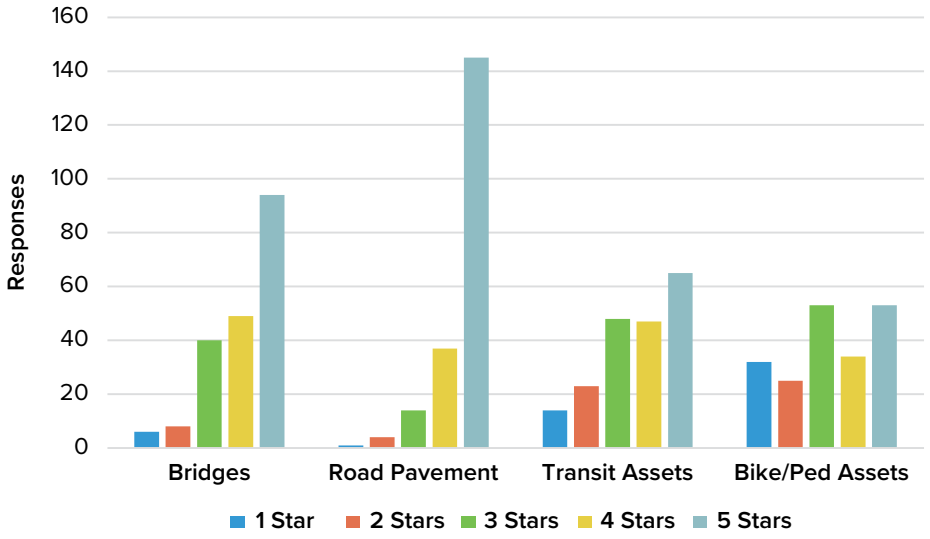


Figure 10:

Strategy Ratings: Critical Connections

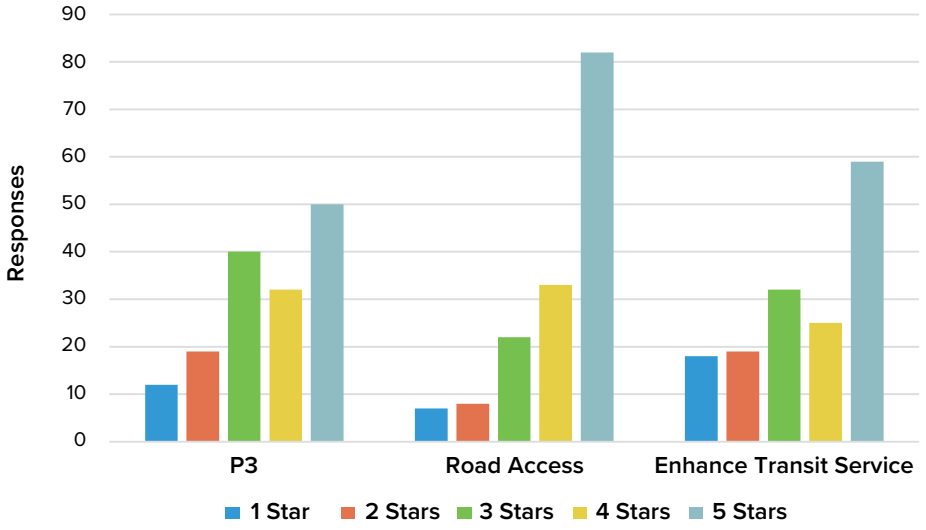


Figure 11:

Strategy Ratings: Reliable Travel

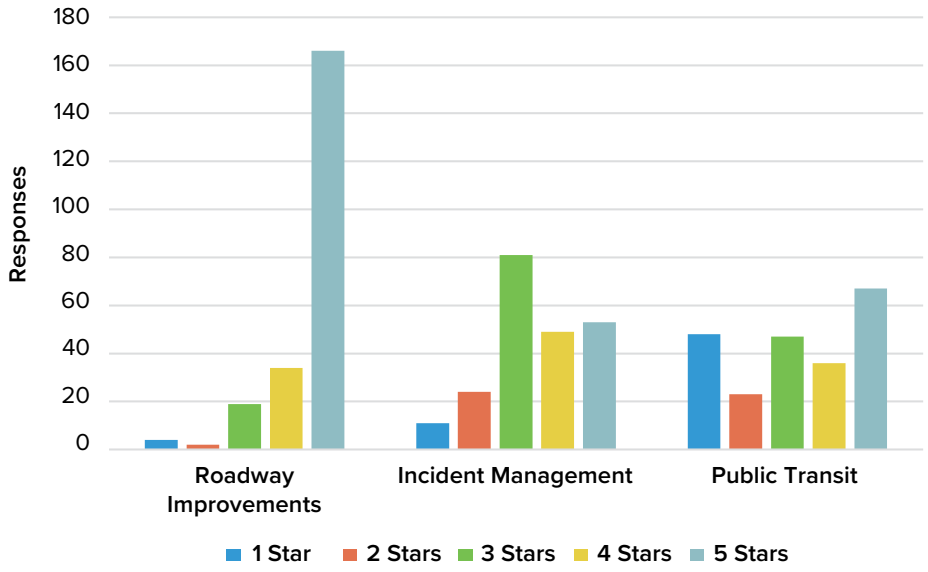


Figure 12:

Strategy Ratings: Environmental Protection

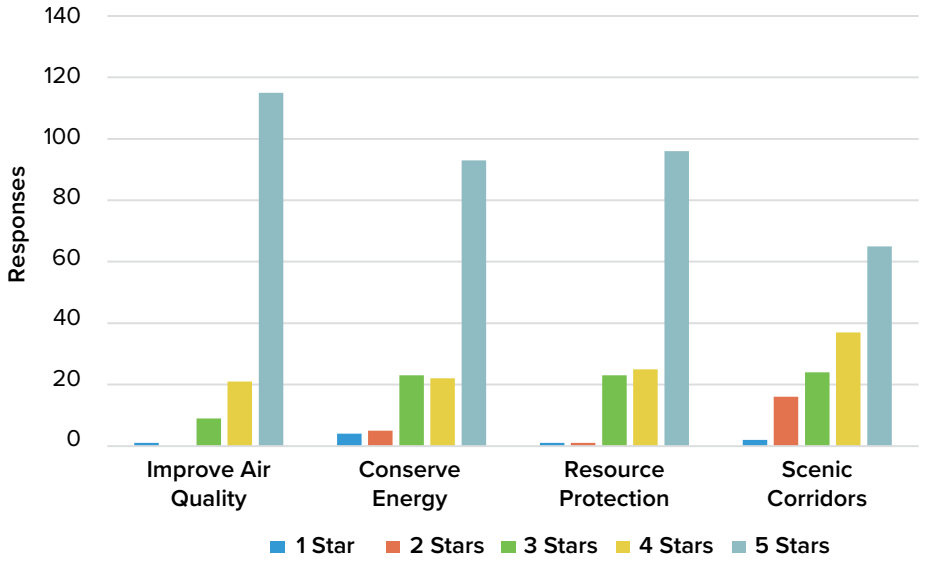


Figure 13:
Strategy Ratings: Performance Goals

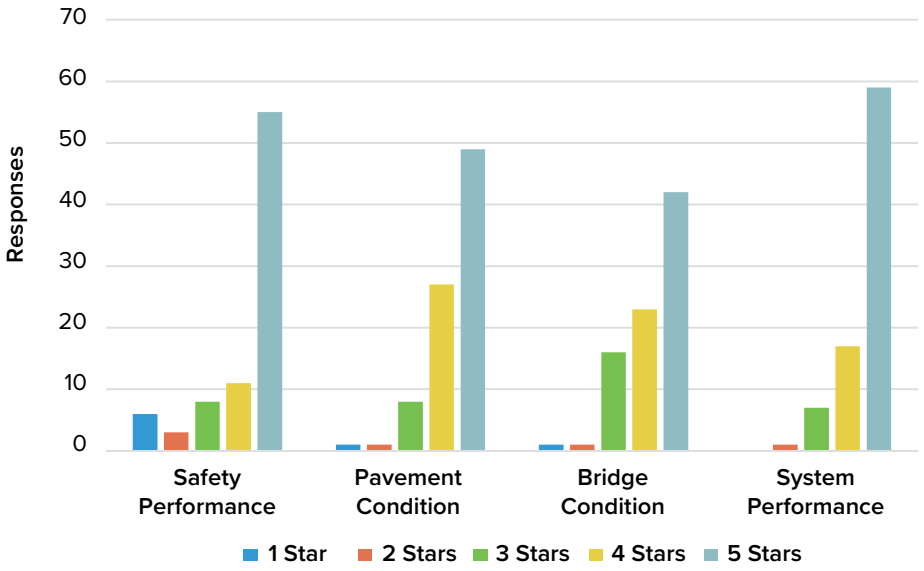


Figure 14:
Strategy Ratings: Quality of Service

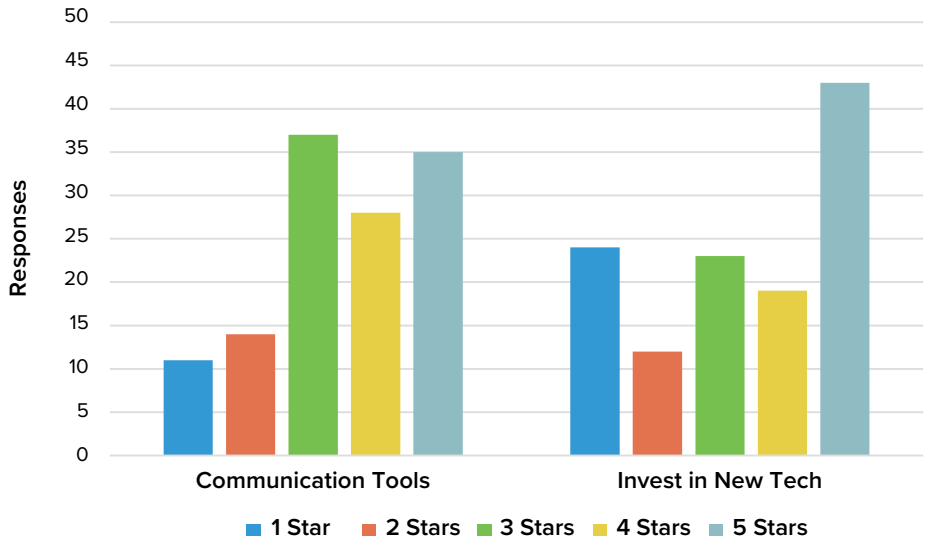


Table 1:
Comparison of 2040 MTP and 2050 MTP Strategies

Safety	
2040 MTP	**2050 MTP**
1. Safety improvements	1. Safety improvements
2. New enforcement tools	2. New enforcement tools
3. Education and awareness	3. Education and awareness
Transportation Choices	
2040 MTP	**2050 MTP**
1. Expand transit service	1. Expand transit services
2. Improve transit frequency	2. Improve transit frequency
3. Expand bike/ped	3. Expand bike/ped
4. Job access initiatives	4. Innovative public transit
5. Innovative public transit	5. Job access initiatives
Reliable Travel	
2040 MTP	**2050 MTP**
1. Roadway improvements	1. Roadway improvements
2. Incident management	2. Public transit
3. Public transit	3. Incident management
System Maintenance	
2040 MTP	**2050 MTP**
1. Road pavement	1. Road pavement
2. Bridges	2. Bridges
3. Transit assets	3. Transit assets
4. Bicycle and pedestrian assets	4. Bicycle and pedestrian assets

Critical Connections	
2040 MTP	**2050 MTP**
1. Road access	1. Road access
2. P3	2. Enhance transit service
3. Enhance transit service	3. P3
Environmental Protection	
2040 MTP	**2050 MTP**
1. Improve air quality	1. Improve air quality
2. Resource protection	2. Resource protection
3. Conserve energy	3. Conserve energy
4. Scenic corridors	4. Scenic corridors
Quality of Service	
2040 MTP	**2050 MTP**
1. Communication tools	1. Invest in new technologies
2. Invest in new technologies	2. Communication tools
Performance Goals	
2040 MTP	**2050 MTP**
1. System performance	1. System performance
2. Pavement condition	2. Safety performance
3. Bridge condition	3. Pavement condition
4. Safety performance	4. Bridge condition

Distribution of Budget

- Participants were asked how they would invest a $100 transportation budget within the county. Participants had the option to distribute an amount ranging from $1 to $100 across eight categories.
- The survey data indicates that 21 percent of all dollars allocated by respondents was allocated toward infrastructure repair efforts, followed by traffic management enhancements (17%) such as critical road connections, local land use regulations, traffic signal technology, and electronic messaging signs **(Figure 15)**. Approximately 14 percent was assigned to safety improvements for all users, which encompassed targeted safety measures, education and awareness campaigns, and enforcement tools.
- When considering the average amounts by category, "Fix What We Have" had the greatest allotment with an average of $21, followed by Traffic Management ($17), Improve Safety for All Users ($14), and Expand Bike/Ped Infrastructure ($12), respectively **(Figure 16)**. These results are the same as those gleaned from the survey conducted for the 2040 MTP.

Figure 15:
Percent of Dollars Budgeted by Category

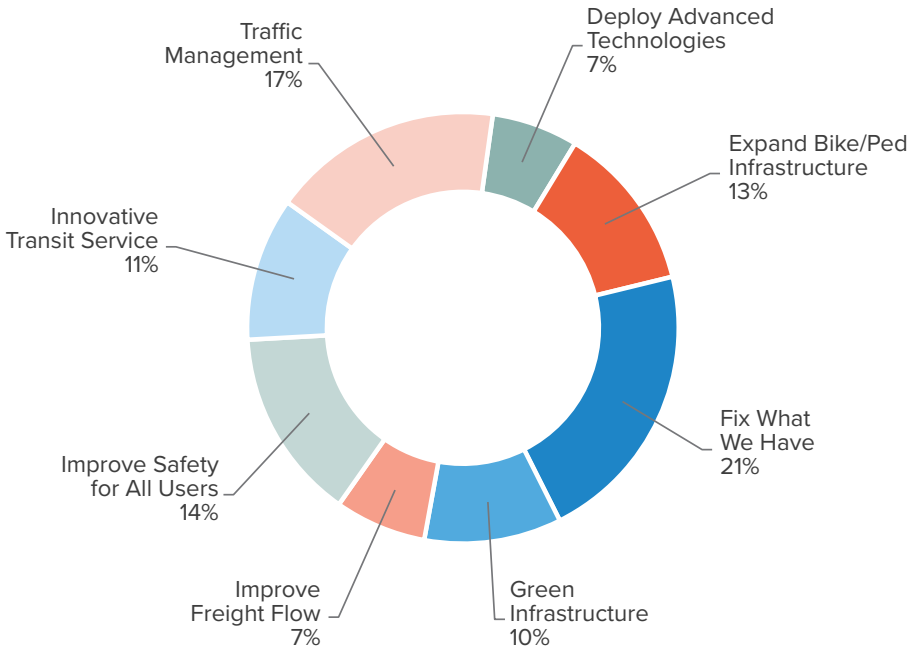
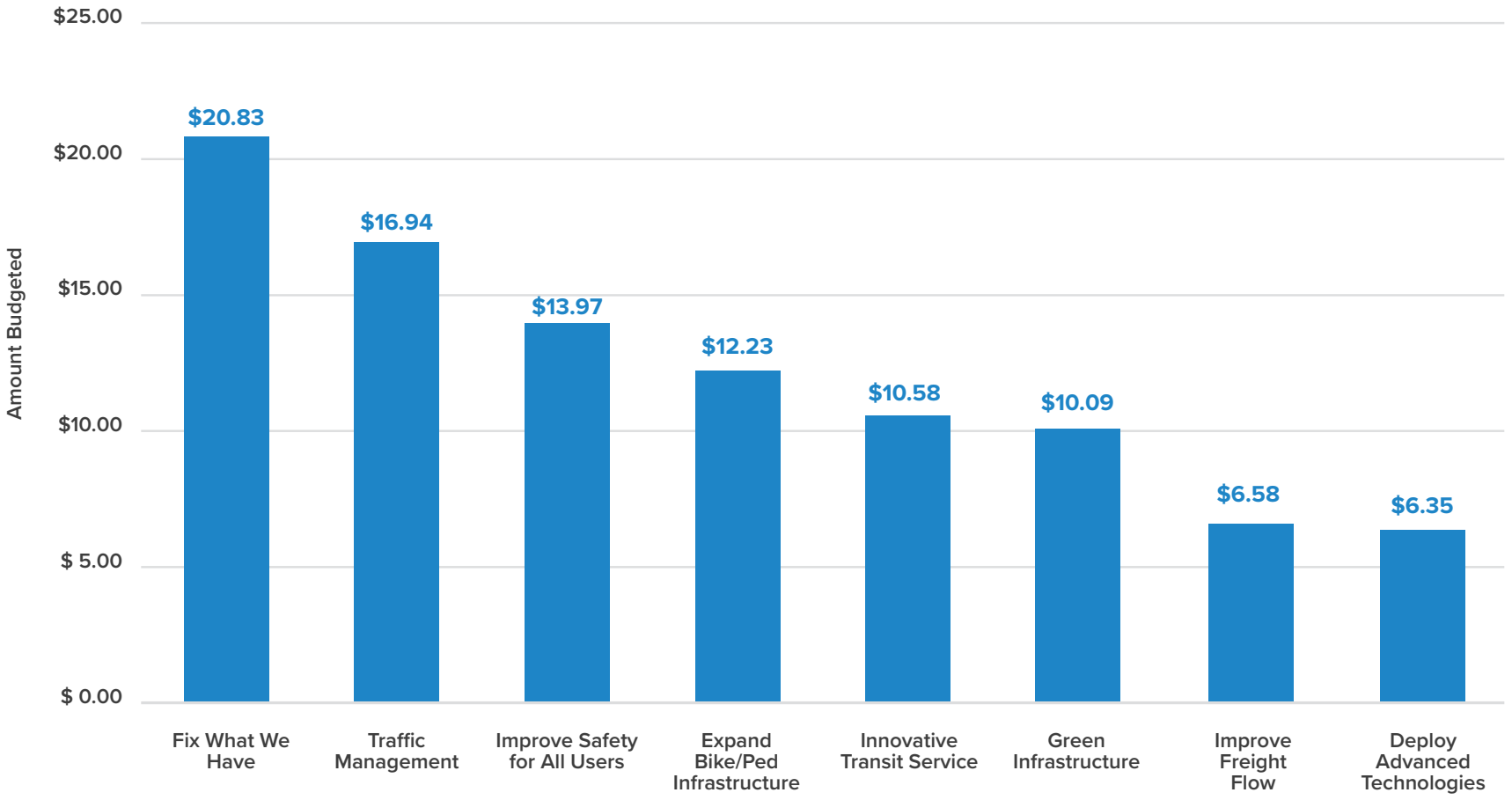


Figure 16:
Average Budget Allocations by Category



Comparison Summary

The following summarizes the survey results as compared with those from the 2040 MTP survey. These compare priorities and preferences based on total number of rankings for transportation priorities and strategies. Top results for budget allocation were based on average amount spent.

Table 2:
Comparison of 2040 MTP and 2050 MTP

Priorities	
2040 MTP	**2050 MTP**
1. Reliable Travel	1. Safety
2. Safety	2. System Maintenance
3. System Maintenance	3. Reliable Travel
Strategies	
2040 MTP	**2050 MTP**
1. Reliable Travel	1. Transportation Choices
2. Safety	2. System Maintenance
3. System Maintenance	3. Safety
Budget Allocation	
2040 MTP	**2050 MTP**
1. Fix what we have	1. Fix what we have
2. Traffic Management	2. Traffic Management
3. Safety	3. Safety

From the public outreach campaign to update the 12-Year Program for the 2023 State Transportation Commission and PennDOT, 24 percent of comments on transportation issues in Lancaster County were related to walkability and bicycle concerns.

12-YEAR PROGRAM UPDATE

Summary of Comments

The State Transportation Commission (STC) and PennDOT released the results from the statewide 2023 Public Outreach Campaign to update the 12-Year Program (TYP) in June 2023. In the survey, ninety-three public comments were specifically about transportation issues in Lancaster County. The comments fall into the general categories of traffic congestion and reliability, walkability and bicycle concerns, safety, and "other" comments about issues that do not fit into the previous categories.

Comments Received from PennDOT 12-Year Program Survey
Lancaster County, Pennsylvania

Category	*# of Comments*	*% of*
Traffic Congestion and Reliability	45	48
Walkability and Bicycle Concerns	22	24
Safety	16	17
Transit	5	5
Other	5	5
Total	**93**	**–**

Fourteen of the ninety-three issues (15%) identified in the comments are being addressed in the 2025 TIP. The largest, single location identified by participants was the US 30-US 222 interchange. This interchange and delays caused by traffic backups at the interchange were identified 13 times. The interchange is currently being widened and reconstructed as part of the 2025 TIP. Additionally, a safety concern was identified at the intersection of Manheim Pike and Lititz Road. This intersection is currently programmed on the 25 TIP for safety improvements.

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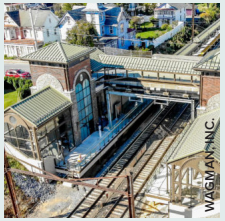
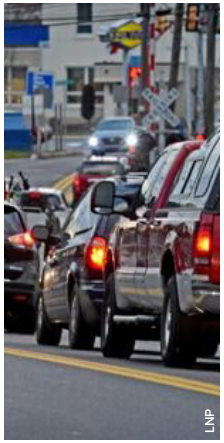


REVENUE FORECAST

Projected Funding

Overview

- Federal planning regulations (23CFR 450.324) require long-range transportation plans to include an estimate of the amount of revenue the MPO can reasonably expect to receive over the life of the plan – in this case, through 2050.
- Financial guidance released by PennDOT in April 2023 provides the best available estimate of projected highway and bridge revenue over the 25-year plan period.
- No new state funding acts or increases in current funding to the state's Motor License Fund are anticipated.
- As a conservative forecast, the MTP assumes that future federal surface transportation funding reauthorizations will provide no funding increases over the Infrastructure Investment and Jobs Act/Bipartisan Infrastructure Law (IIJA/BIL), which expires in 2026.
- Competitive PennDOT grant programs such as Green-Light-Go and the Multimodal Transportation Program were excluded from the revenue forecast.
- The MTP assumes an estimated $2.2 billion in total revenue over the 25-year life of the plan period. The 2025 12-year Program (TYP) represents $1 billion of this amount, leaving a balance of $1.15 billion that will be programmed with a mix of highway, bridge, and safety projects.

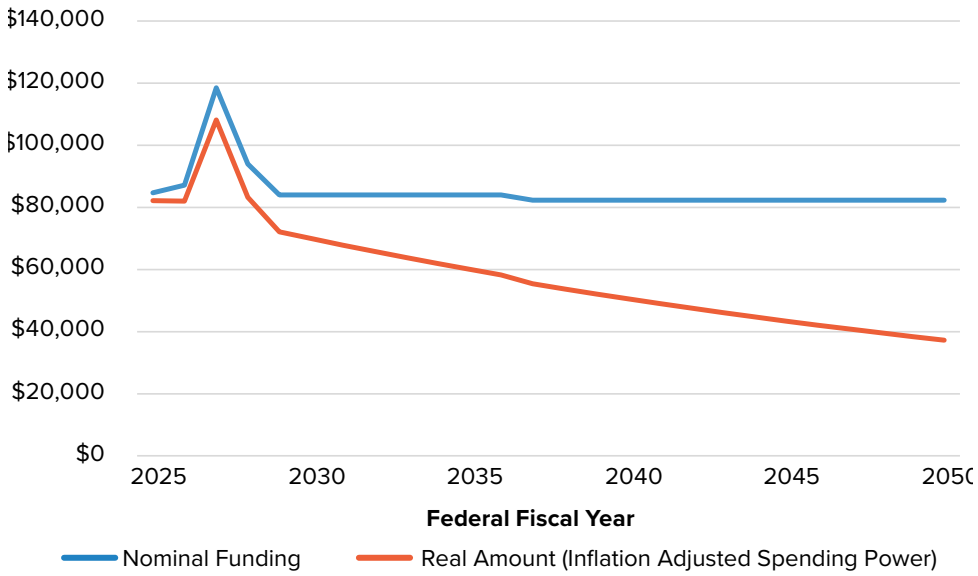


Our transportation funding is expected to stay relatively flat. But when you consider how inflation reduces purchasing power, we'll effectively have decreasing resources.

If our transportation funding were keeping up with inflation, it would track closely with the orange dashed line.

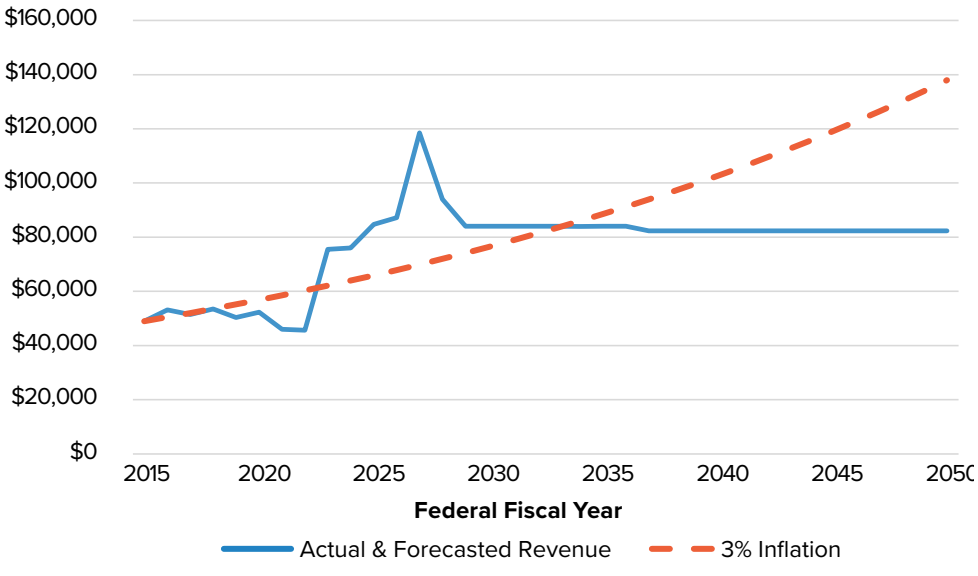
Projected Highway and Bridge Funding

Lancaster MPO



Highway and Bridge Funding Against 3% Inflation

Lancaster MPO



Source: PennDOT System Performance Reports (2022)

Projected Revenue, All Funding Streams

Lancaster County MPO

Period	Highway and Bridge	Transit	Total
2025 – 2028	$384,422	$78,181	$462,603
2029 – 2036	$672,051	-	$672,051
2037 – 2050	$1,152,410	-	$1,152,410

*SCTA does not provide revenue projections beyond the current 2025-2028 Transit TIP.

What do these **funding projections** mean for transportation planning?

- The Infrastructure Investment and Jobs Act/Bipartisan Infrastructure Law (IIJA/BIL) increased highway and bridge funding from an average of $60 million per year over the four years of the 2021 Transportation Improvement Program (TIP) to an average of $78 million per year in the 2023 TIP. The draft 2025 TIP averages $96 million per year. This amount includes $1.6 million per year in Rapid Bridge Replacement Funds that are administered by PennDOT and $13 million per year awarded through a variety of competitive funding programs. After 2036, funding levels off to $82 million per year and is projected to remain flat through 2050..

- Inflation will reduce the Lancaster MPO's buying power. The MTP is financially constrained to $2.2 billion in highway and bridge funding through 2050. After adjusting for inflation, its real value decreases to $1.5 billion.

- The projects that appear in Appendix A as part of the 2025 – 2036 Twelve Year Program (TYP) are considered funded projects, or within the MPO's financial capacity. Projects that appear in Appendix A as "illustrative" are not currently funded. The MPO will consider the candidates from the illustrative list as future programs are being developed.

- The 2025 – 2028 Transportation Improvement Program (TIP) Selection Process is a document that guides the selection and scoring process that the Lancaster MPO uses to evaluate projects for the inclusion on the TIP. Candidate projects are identified through monitoring the performance of the transportation system in the areas of safety, the physical condition of pavements and bridges, and the reliability of travel on the system. Then, candidate projects are evaluated with a system that scores projects in four areas: Safety and Security, Congestion Management, Multimodal Connectivity, and Economic Benefit. These scores are used by the MPO to make final selections for projects to program on the TIP.

STRATEGIC DIRECTIONS

Introduction

The MTP is more than a list of projects—it also contains the policies and action items needed to help the county achieve its vision. The implementation of *connects2050* will be guided by several overarching principles that provide a framework for plan implementation. These are listed below and directly mirror the policy areas that were used to gauge public opinion through the Lancaster MPO's surveys:

- **Safety**
- **Reliable Travel**
- **System Maintenance**
- **Transportation Options**
- **Environmental Protection**
- **Critical Connections**
- **Quality of Service**
- **Performance Goals**

The strategies presented within this section are consistent with *connects2040* and build upon policies previously adopted in other county plans, including *places2040*, the Active Transportation Plan (ATP), Congestion Management Process (CMP), South Central Transit Authority's Transit Development Plan, and public feedback. The MTP's implementation will guide the activities of the MPO, its partners at the local, county, state, and federal levels, and the public.

Public responses to the Lancaster MPO's MetroQuest survey for *connects2050* support the strategic directions of the plan by placing the most emphasis on safety, reliable travel, and system maintenance. When prioritizing program spending, the public's choices reflected the same three policy areas as priorities, but in a slightly different order: fixing the existing infrastructure (system maintenance), traffic management (reliable travel), and safety. Interestingly, the public's survey responses recognized the difficult choices the MPO faces in providing a balanced program—because no potential implementation strategy received less than three stars out of five. As a result, plan implementation addresses some needs in all the policy areas, while focusing more significant efforts on strategies to affect safety, reliable travel, and system maintenance, consistent with public sentiment. The Lancaster MPO will continue to work with stakeholders at the local, state, and federal levels and the public to make the plan's vision a reality

OUR TRANSPORTATION VISION

Equitably meet the mobility needs of residents, businesses, and visitors while strengthening the unique identity of Lancaster County through an environmentally responsible, safe, and reliable multimodal transportation system.

Safety

Safety is the highest priority of PennDOT and the Lancaster MPO. Overall, the average number of pedestrian crashes and fatalities has been decreasing over the past decade. Crashes involving bicyclists have, on average, also decreased but fatalities for bicyclists have remained relatively consistent over the past decade. While improvements to the system and vehicle safety have contributed to some positive trends, there remain concerns with the rise of distracted driving and crashes involving senior citizens. The Lancaster MPO will continue to work with PennDOT to reduce serious injuries and fatalities and will continue to collaborate with PennDOT District 8-0 on tools and methods to improve safety for all transportation users.

Work cooperatively with PennDOT to use safety tools.

PennDOT Central Office developed the Highway Safety Network Screening tool that identifies segments of highway corridors and intersections with high crash histories and identifies the most effective improvements to reduce the severity of or eliminate future crashes. This tool is used to prioritize locations for Highway Safety Improvement Program funding. The Lancaster MPO will continue to work cooperatively with PennDOT and use this tool and refine methods for prioritizing and implementing safety improvements effectively.

Improve Traffic Incident Management (TIM).

The county will seek to improve the emergency response capabilities of those who are responding to and clearing incidents from the county's roadways. Other efforts include improving ITS infrastructure, including weather information systems and dynamic messaging signs. New data and tools have provided valuable insight into incident management by understanding causes of non-recurring congestion. These include crashes, weather, and road construction. Within Lancaster County, most existing congestion occurs due to these non-recurring causes. The US 30, US 222, and PA 283 corridors experience the most non-recurring delay.

Advocate for comprehensive traffic safety messaging in local communities.

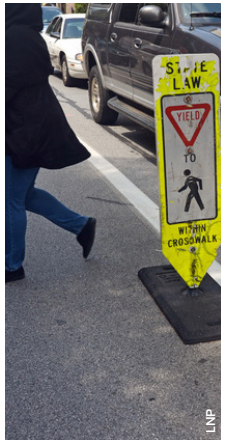
The Lancaster MPO will work with local stakeholders, other MPOs, and PennDOT to advance regional and statewide efforts to create traffic safety education marketing campaigns for all road users. The MPO will also coordinate with its municipalities on lowering speed limits where appropriate and feasible.

Provide safety improvements on roads most frequented by Plain Sect travelers.

Lancaster County has a notable Plain Sect population with distinct and unique transportation needs. This has long been recognized, as evidenced by the MPO's cooperation with the Amish Safety Committee several years ago to develop the Horse and Buggy Driver's Manual. There has been substantial growth in Amish travel, particularly in the county's eastern and western regions. Truck traffic has increased on county roads that are also heavily frequented by Plain Sect travelers using buggies and bicycles, and walking. The MPO will continue to work with Plain Sect communities to provide wider shoulders and safer intersection crossings on roads that they have identified as priorities.

Provide improvements that increase safety for non-motorized users.

The MPO will seek to improve conditions for non-motorized users by working with PennDOT to implement key recommendations from the county's ATP and important, low-cost opportunities to improve non-motorized safety and connectivity. Using the new Increasing Safe and Accessible Transportation Options (ISATO) federal planning funds, the MPO can create Complete Streets and ensure non-motorized safety is incorporated into priority programmed projects. The MPO's Active Transportation Advisory Committee will review upcoming resurfacing/maintenance projects to identify other systemic improvements.



Reliable Travel

Measuring and improving the reliability of travel is an activity that was recognized by the federal government with the passage of the FAST Act and continued by the passage of the Bipartisan Infrastructure Law (BIL) in 2021. The reliability of travel is particularly important for the county's shippers and carriers in an economy that features just-in-time delivery to a greater degree and increasingly shorter supply chains. Pennsylvania and Lancaster County's transportation funding picture also dictates that PennDOT and the MPO invest more heavily in system operations to extract the greatest amount of efficiency from existing system capacity without resorting to expensive capacity-adding projects.

Implement the results of the 2019 Congestion Management Process (CMP) as well as the results of future updates.

Work on the county's most recent Congestion Management Process was completed in 2019. The county will plan for the implementation of strategic safety and operational improvements at targeted locations, such as adaptive traffic signals on highly congested corridors.

Implement operational improvements to improve travel reliability.

The MPO should evaluate the applicability and ability to implement other Transportation System Management and Operations (TSMO) strategies to improve travel reliability. Some of these strategies may include, but are not limited to:

- Corridor preservation and management;
- Access management;
- Intermodal enhancements;
- Goods movement management;
- Managed lanes (examples include high occupancy vehicle lanes, reversible lanes, and hard shoulder running); and
- Strategic additions of capacity.

Implementation of these types of improvements should be coordinated with the Eastern ROP and previous countywide studies such as the Route 283/230 Corridor Study. They should be prioritized based on those improvements that will be most effective for Lancaster County.

Implement new technology to improve safety and reduce congestion.

The MPO should prioritize the corridors identified for future Dedicated Short-Range Communication (DSRC) implementation from a Lancaster County lens, consistent with the following statement from the DSRC report:

> *"Future efforts will integrate these corridors with the CMP and planned regional TIP/ MTP projects to refine and prioritize a list of corridors that exhibit the greatest opportunities for installation of this technology."*

Additionally, the MPO can coordinate with the Pennsylvania Turnpike Commission as it transitions to open-road tolling to address any potential impacts to adjacent roadway networks.

System Maintenance

Planning agencies and departments of transportation alike are moving away from addressing transportation assets merely from a "worst-first" approach to one that is oriented toward "lowest life-cycle cost." This entails timely maintenance in order to maintain transportation assets at a high performing level, as opposed to allowing them to deteriorate, when replacement would be much more expensive. PennDOT has developed new asset management tools in recent years that will allow PennDOT and MPOs to be able to be more strategic in programming maintenance dollars.

Invest in bridge maintenance.

The Lancaster MPO will continue to work with PennDOT District 8-0 to fund and plan for routine bridge maintenance activities on local and state owned bridges. A regular investment in maintenance will reduce the need for large, one-time investments in necessary rehabilitation or replacement projects. The goal is to extend the useful life of an asset and prevent costly emergency repair situations. A source of sustainable funding for bridge maintenance should be identified and programmed on future TIPs. PennDOT has developed a web-based asset management planning tool that is accessible by the MPO. It includes the county's unconstrained needs by each highway category on PennDOT's Business Plan Networks, consistent with asset management principles in the Pennsylvania Transportation Asset Management Plan (TAMP).

Invest in pavement preservation and maintenance.

The Lancaster MPO will continue to work with PennDOT District 8-0 to fund and plan for resurfacing and pavement preservation activities. A regular investment in maintaining roadway pavements will reduce the need for large investments in roadway reconstruction projects. It will also reduce the need for road closures and lengthy detours. As stated in the Bridge Maintenance item, PennDOT's forthcoming asset management planning tool will include the county's unconstrained needs by each highway category on PennDOT's Business Plan Networks.

Explore cooperative management of traffic signals.

The MPO will consider opportunities for regional cooperation to manage traffic signals along priority, multi-municipal corridors consistent with needs identified through the Congestion Management Process. This could be a more efficient and cost-effective way to install upgraded signal technology such as adaptive or coordinated signals for a regional impact on traffic operations.

Transportation Options

The county's comprehensive plan, *places2040*, emphasizes the importance of the form and density of development in expanding the range of transportation options. The Lancaster Active Transportation Plan provides specific actions needed to expand the options for pedestrians, bicyclists, and access to transit. This plan seeks to encourage mode choice and reduce reliance on the private automobile. The technical analysis conducted during *connects2040* identified corridors throughout the county where trip distances are shorter and could be accommodated by various modes of transportation.

Update the Coordinated Public Transit-Human Services Transportation Plan.

In April 2019, a group of community leaders came together to develop an asset inventory of existing community resources for people with special transportation needs. The aim of this effort was to identify the most pressing gaps in our county transportation system, and to recommend possible short-term and long-term solutions. As of this MTP update, this inventory is five years old and could be reviewed and updated as part of an overall Coordinated Public Transit-Human Services Transportation Plan update. This update would ensure accuracy of the asset inventory and also identify any additional transportation barriers for populations such as persons with disabilities, the elderly, and those who do not have access to a vehicle among others.

Work with the Lancaster County Active Transportation Advisory Committee (ATAC) to implement the Active Transportation Plan.

Active transportation has been identified as a critical component to achieving the county's *places2040* vision. The county will work with ATAC, municipalities, and other stakeholders to prioritize and implement the recommendations in the Lancaster Active Transportation Plan. These activities will include actions in the following priority areas identified in the plan:

- Connect the transportation network;
- Implement Complete Streets and consider all users in infrastructure design;
- Improve safety through education, awareness and enforcement;
- Encourage everyone to walk and bike; and
- Align resources and work collaboratively to implement active transportation priorities.

Additional information on the Active Transportation Plan can be found at https://lancastercountyplanning.org/DocumentCenter/View/1090/Chapter-7-Implementation.

CONNECTS2040 IMPLEMENTATION PROGRAM

Formerly the Smart Growth Transportation Program, the MPO's competitive funding program is now called the *connects2040* Implementation Program. It helps achieve the vision of the MTP by funding transportation projects or land use and transportation studies that provide a safer, more walkable, bikeable, and transit-friendly transportation system. Since 2020, there have been two rounds of funding. In fall 2022, one construction project and two trail feasibility studies were approved. In fall 2023, four construction projects were approved. The program guidelines should be updated to be consistent with this plan, *connects2050*.

Encourage and promote development that supports use of multimodal and active transportation options, including transit, walking, and bicycling.

The MPO will continue to ensure future development projects provide adequate bicycle and pedestrian accommodations and connectivity in support of the Active Transportation Plan. The MPO will also encourage the use of transit-oriented development within the county and ensure new developments coordinate with SCTA with regard to potential transit service.

Work with municipalities to implement park-and-ride lots in preferred locations.

Analysis of travel patterns in the county indicates several places that could serve as effective locations for park-and-ride lots, including current informal park-and-ride lots in Mount Joy and East Cocalico townships. *places2040*, the ATP, and the SCTA Transit Development Plan all include mobility hubs that could incorporate park-and-ride lots as one element of providing a comprehensive set of mobility options. The county should work with municipalities in these locations, and where determined appropriate, implement park-and-ride lots through the land development process and/or through partnership with the South Central Transit Authority (SCTA).

Continue support of Commute PA and other community ridesharing programs through planning coordination and funding. Promote the Commute PA "Emergency Ride Home" program.

Lancaster County is one of nine counties that support Commute PA in connecting workers with rides. The county provides a share of its CMAQ funding to help maintain the service. The MPO will also provide support by educating the county's public transit users and commuters about the "Emergency Ride Home" program provided by Commute PA.

Support PennDOT in improving passenger rail (Amtrak) throughout Lancaster County.

PennDOT and Amtrak have worked together for many years to improve passenger rail service to and from Lancaster County. More than 700,000 trips are made annually from the county's three Amtrak stations: Elizabethtown, Lancaster, and Mount Joy.

Coordinate with DCNR and other agencies to fund and close trail gaps.

Not only do trails provide an opportunity for outdoor recreation, they can also provide a means of transportation or a commuting connection. By promoting DCNR's grant programs, the MPO can assist the county and local municipalities in securing funding for trail gap closures.

Consistent with *places2040*, implement regional and local plans that reduce the transportation impacts of land use.

In urbanized areas, *places2040* encourages land use patterns that increase density and provide the opportunity for people to work, shop, dine, socialize, exercise, recreate, and worship in close proximity to where they live. Analysis discussed previously in the "Exploring the Impact" section shows that by implementing the "places" scenario, the positive effects on the transportation system will be cumulatively greater than trying to improve that system through physical infrastructure improvements alone. These effects reduce the number of vehicle trips, shorten the distance of trips, foster an increase in transit usage, and reduce travel delay on the existing highway system.

Through its efforts to develop planning-area implementation strategies, the county will work with public, private, and nonprofit partners to implement place-based approaches that can achieve these results. The county and its partners will also work to implement the seven catalytic tools and strategies in *places2040*. Two of these tools in particular, official maps and complete streets, are critical to the success of the *places2040* scenario. Official maps are helpful in creating interconnected street networks, and complete streets can ensure that our street system safely and efficiently accommodates all modes and all users.

Environmental Protection and Mitigation

Lancaster County possesses important community, historic, and natural resources that contribute to its quality of life and public health. The MTP considers the role that transportation plays not only in improving access and mobility, but also in how our infrastructure and transportation services interact with Lancaster County's environmental resources. As part of the MTP update, the MPO followed a robust process for engaging representatives of environmental resource agencies and determining the measure of direct and indirect impacts the MTP's projects would have. The following mitigation strategies will be pursued by the MPO and its partners.

Incorporate resiliency considerations into planning.

Consideration should be taken in incorporating resiliency into the MPO's project prioritization process. Ongoing coordination with federal, state, and local environmental agencies is critical in prioritizing improvements at locations that are vulnerable to natural hazards, including those identified through PennDOT's flood risk assessment. Lancaster County should partner with its municipalities and PennDOT to identify where stormwater infrastructure is lacking or could be improved on roadways with high levels of vulnerability in extreme rain and snow events. This reduces the need for emergency roadwork on critical highways and bridges and the need for emergency funds due to flood damage.

Formalize an environmental resource agency stakeholder group to incorporate best practices into transportation projects and planning.

The Lancaster MPO will outline a process to foster greater collaboration with federal, state, and local environmental resource stakeholder agencies. The goal for this effort is to develop and implement a long-term strategy that will inform future iterations of the Lancaster County Planning Commission's Metropolitan Transportation Plan by integrating environmental resource agencies' respective plans. Utilizing the Federal Highway Administration's (FHWA) Eco-Logical approach as a guide, ongoing communication with participating environmental stakeholders will identify environmental priority areas and potential impacts of TIP projects on the county's environmental resources. Information on FHWA's Eco-Logical approach can be found here: https://www.environment.fhwa.dot.gov/env_initiatives/eco-logical.aspx.

Some potential best practices or mitigation/minimization opportunities include coordination with local agencies and PennDOT on wetland banking opportunities and ensuring the protection of archaeological and historic sites/structures to the greatest extent practicable.

Conduct outreach to the Agricultural Preserve Board and the Lancaster Farmland Trust to gather their input on the impacts of the transportation system on farmland.

Lancaster County has a notable presence of farmland and take an active approach to prioritizing the preservation of agricultural assets in its planning work. The MPO recognizes that the transportation system could have impacts on these assets and vice versa. As the MPO develops its plans, programs, and projects, the MPO implements a variety of targeted outreach strategies to ensure all members of the community have an opportunity to provide their perspectives and feedback. In future updates to the MTP and other major planning efforts, the MPO will include engagement with organizations such as the Agricultural Preserve Board and the Lancaster Farmland Trust in its efforts to identify strategies that will minimize, avoid, or mitigate transportation's potential impacts to farmland.

Encourage MPO participation in the development of the stormwater management plan so that transportation considerations are included.

Lancaster County was a recipient of Act 54 funding from the Pennsylvania Department of Environmental Protection (PA DEP) to develop an Act 167 Stormwater Management Plan. Stormwater is a critical component in the development of transportation projects and programs and the MPO -should ensure that transportation-related considerations are included as part of plan development.

Encourage the development of green infrastructure as part of transportation projects.

Transportation's impact on the environment remains a critical policy issue for the MPO. In addition to ongoing coordination and collaboration with federal, state, and local environmental resource agencies, the MPO will promote and encourage the development of green infrastructure as part of transportation projects. Installing green infrastructure can complement and help reduce any excess burden on existing stormwater infrastructure and could help the county's transportation infrastructure become more resilient to climate change impacts.

Encourage the development of electric vehicle charging infrastructure.

Many states, including Pennsylvania, have developed National Electric Vehicle Infrastructure (NEVI) plans to guide the development of essential charging corridors to help spur electric vehicle adoption. PennDOT has identified and successfully designated US 30 through Lancaster County as an EV Alternative Fuel Corridor based on criteria established under FHWA's Alternative Fuels Corridor (AFC) program. While PennDOT implements its NEVI plan for statewide electric-vehicle infrastructure, the MPO can prepare for this infrastructure by evaluating its major corridors to identify ideal locations for electric vehicle charging infrastructure.

Promote opportunities for alternative and strategic CMAQ investments to improve air quality.

Historically, the MPO has strategically invested its CMAQ and STU funds into alternative modes of transportation to help improve air quality and encourage mode shifts. Through the implementation of the MTP, the Lancaster County Active Transportation Plan, and supporting the implementation of SCTA's Transit Development Plan (TDP), the MPO will continue to encourage the use of alternative modes of transportation and invest its transportation funds to enhance transit and active transportation infrastructure.

Critical Connections

The MPO used the MTP update process to gain an improved understanding of the regional connections throughout the county and surrounding areas. This includes areas of analysis related to tourism travel, active transportation, goods movement, long-distance connections, and commuting trips. More than half of Lancaster County's workers also reside in the county.

Evaluate corridors that have the highest potential for active transportation improvements.

connects2040 technical analysis uncovered many corridors where trip-making entailed a higher number of shorter trips (i.e., trips less than two miles in length). Corridors with a high number of these trip types show potential for bicycle and pedestrian infrastructure. Areas of the county where these corridors are more prevalent naturally include Lancaster City and East and West Lampeter townships. It will be important for the TIP development process to evaluate the need for and the potential to include bicycle, pedestrian, and transit-related improvements in project selection and development.

Implement the recommendations of the MPO Guide for Implementing Digital Short-Range Communication (DSRC) technology.

Lancaster County joined with its counterparts in South Central Pennsylvania to identify corridors for future DSRC implementation by evaluating roadways with traffic signals as well as crash rates at signalized intersections. Criteria will need to be developed to select the corridors for the implementation of this technology. Vehicle technologies and communication (V2X) will be an important precursor to the implementation of vehicle automation.

Review functional classification system.

Lancaster County and PennDOT work cooperatively to update the federal functional classification of roadway after every decennial census. The current functional classification should be reviewed before the next MTP update to better align with FHWA guidance and identify any associated opportunities for funding eligibility, particularly for National Highway Performance Program (NHPP)-eligible roadways.

Elevate Critical Urban and Critical Rural Freight Corridors as a focus of future freight planning.

During 2017, Lancaster County identified several candidate roadway segments for consideration as federally-certified Critical Rural and Critical Urban Freight Corridors. FHWA certified three segments of US 222 in 2019 for inclusion on the federal National Highway Freight Network (NHFN). Roadways comprising this network are eligible for federal freight funding and grants. Lancaster County segments that were not certified by FHWA are not eligible for National Highway Freight Program (NHFP) funding, but are priorities for freight movement planning, regardless of their federal status.

Quality of Service

In addition to MTP actions directed toward system improvement, other strategies deal more directly with the institutional aspects of improving the planning and programming process. These can include leveraging transportation funding made possible by Act 89 of 2013, for example, and improving the MPO's existing planning processes.

Work cooperatively with PennDOT District 8-0 on the development of new tools to improve the selection of projects that reduce congestion and improve air quality or enhance system maintenance and preservation.

Like the selection of safety projects, the selection of projects under the Congestion Mitigation and Air Quality Improvement (CMAQ) Program must meet certain program criteria to be funded from this category of funds. The MPO's federal certification review (2022) also recommended the development of a defined CMAQ project prioritization process, which can aid in the selection of projects that provide the greatest emissions benefit for the lowest cost. The MPO will work with PennDOT to develop tools to improve the prioritization and selection of projects for CMAQ funding. Several categories of funds can be used to pay for system maintenance and preservation projects. The MPO will work with PennDOT to develop tools or methods to improve the selection of system maintenance projects.

Increase input from the economic development community.

To better understand freight-related movement and its impact on the transportation network beyond Lancaster County, local stakeholders must be engaged with the Lancaster MPO. They provide important insight into the current and future transportation needs of the business community. When addressing system-wide issues such as congestion and safety, existing freight stakeholders as well as upcoming economic development opportunities should be considered.

Coordinate with new industrial and commercial developers on truck parking opportunities.

The availability and quality of truck parking is a national safety concern, and the trucking industry plays a vital role in the economy, especially with today's desire for speedy delivery. Drivers need easy access to a safe place to park and rest. In 2023, the State Transportation Advisory Committee (TAC) completed a statewide truck parking study to identify corridors in greatest need of truck parking capacity. While not a top-ranking corridor statewide, US 30 in the western part of the county was identified as a corridor with need for truck parking capacity. The MPO will collaborate with local municipalities near its major roadways to monitor areas where trucks may be parking along shoulder or lower-tier roadways, including local roads.

Undertake a freight plan.

Continued economic development in Lancaster County and beyond will only increase demand on and impacts to the county's infrastructure, particularly its highway and bridge system. In 2022, PennDOT developed the 2045 Freight Movement Plan. The MPO has prioritized a Freight Movement Plan for Lancaster County as part of its 2024–24 Unified Planning Work Program (UPWP). Developing a countywide freight plan is essential to understanding current and projected regional goods movement and planning for these freight transportation needs.

Identify additional funding opportunities.

The Lancaster MPO will work with stakeholders to identify new transportation funding opportunities, including but not limited to those available via federal initiatives such as the RAISE (Rebuilding American Infrastructure with Sustainability and Equity) discretionary grants or other Bipartisan Infrastructure Law (BIL), state initiatives such as Act 89, and PennDOT's public-private partnerships (P3) program.

Approximately 40 percent of transportation funds under the BIL are allocated through discretionary funding programs. The State Transportation Advisory Committee (TAC) recently completed a study on addressing municipal challenges in participating in competitive transportation grant programs, which included missing grant notices, constraints on local capacity to apply for and manage grants, and meeting match requirements among others. In addition to the identification of these funding opportunities, the MPO could help raise awareness of these funding opportunities with Lancaster County's municipalities and stakeholders and provide support in local grant pursuits.

Improve the TIP update process.

The Lancaster MPO and its subcommittees will work with PennDOT District 8-0 to refine the TIP Project Selection Process that was adopted in February 2023. Improvements could consist of improved data sources, clearer connections to the Performance Measures of Safety (PM1), Pavement and Bridge (PM2), and System Performance Measures (PM3). The selection criteria should be checked to ensure that any applicable criteria from the Bipartisan Infrastructure Law (BIL) are included in the process as well.

Performance Goals

The Lancaster County MPO incorporated federal transportation performance measures into the 2025–2028 Project Selection Process. The MPO will continue to evaluate each performance measure at the beginning of each TIP update cycle to determine investment focus areas.

The SCTA Transit Asset Management Plan (TAMP) can be viewed using this link: https://www.sctapa.com/what-were-about/about-us/transit-asset-management-plan and the Safety Plan can be viewed using this link: https://www.sctapa.com/what-were-about/about-us/safety-plan.

Plan Implementation in Action

The Lancaster MPO collaborates with PennDOT on the development of the Commonwealth's Twelve-Year Program (TYP). The project list that accompanies this plan represents the Lancaster MPO's portion of the statewide program. The first four years of the TYP are the MPO's Transportation Improvement Program (TIP) and provide the most direct means by which the MTP is implemented. The complete list of TYP projects for the Lancaster MPO, including the 2025–2028 TIP, is provided in Appendix A.

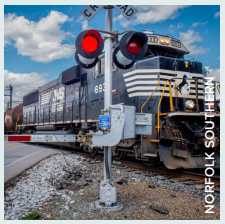

HIGH COMPANIES


LNP


FOX43 NEWS

WALNUT STREET EXTENSION AND LANCASTER HERITAGE PATHWAY

In 2023, the MPO completed a major transportation initiative—the Walnut Street Extension, which links Lancaster City with the Greenfield area in East Lampeter Township. This new 1.1-mile roadway, which was built along a section of uncompleted highway corridor known as the "goat path," includes a walking and biking trail and roundabout. This road was designed to minimize speeding and keep trail users safe. The pathway along the Walnut Street Extension is part of the larger Lancaster Heritage Pathway, a proposed 12-mile on-and-off road trail that crosses six municipalities in the heart of Lancaster County's metro area.



APPENDICES

Appendix A:

Project Listing

The PA 741 corridor was studied about ten years ago and the LRTP sets aside $5 million for safety, operations, and bicycle and pedestrian improvements along the corridor. An updated assessment of the corridor will provide a list of potential improvements to be programmed as part of a TIP project.

2025 – 2028 Lancaster TIP Projects

MPMS	*S.R.*	*Project Name*	*Description*	*Municipality*	*Phase**	*Cost***	*Project Class*
120870		Little Conestoga Blue/ Green Corridor	Construction of an ADA compliant, non-motorized paved trail segment along the Little Conestoga Creek from Shreiner Station Road to Swarr Run	East Hempfield Township	C	$554,057	Bike/Ped
114218		Strasburg Pk to S Oakview Rd Trail	Multi-use trail at Flory Park at Strasburg Pike East to Oakview Road	East Lampeter Township	C	$1,105,512	Bike/Ped
119202	462	Route 462 Eastern Corridor Transportation Enhance	Construction of a sidewalk system, expanded shoulder area, and a pedestrian and bicycle trail	East Lampeter Township, Lancaster City	C	$2,568,995	Bike/Ped
114216		Water Street Bike Ped Blvd 2	Intersection improvements which include street markings, signage, mid-block speed cushions, bike boxes, curb extension, Walnut Street pedestrian refuge island, Orange Street vegetated curb extensions and adjust signal timing	Lancaster City	C	$1,768,469	Bike/Ped
110552		Water Street Bicycle Blvd	Bicycle boulevard Improvements from Harrisburg Avenue to Conestoga Street, Conestoga Street to Hazel Street, Hazel Street to Seymour Street, Seymour Street to Fairview Avenue	Lancaster City	C	$5,099,175	Bike/Ped
118511	23	Conestoga Boardwalk	Pedestrian improvements adjacent to SR 23 (East Walnut Street) on the eastern edge of City of Lancaster	Lancaster City, Lancaster township, Manheim Township	C	$3,651,624	Bike/Ped
120872		Marshall Avenue Multimodal Corridor	Construction of 1-mile of proposed improvements, a separated two-lane bikeway, upgraded sidewalks and curbing, improved pavement conditions and crosswalks on Marshall Avenue and Keller Avenue to connect the north side of the Lancaster	Manheim Township	C	$1,264,499	Bike/Ped

* Phases: P=Preliminary Engineering, F=Final Design, U=Utilities, R=Right-of-Way, C=Construction, S=Study
** Cost estimates subject to change as a project progresses through phases

MPMS	S.R.	Project Name	Description	Municipality	Phase*	Cost**	Project Class
120871		School Lane Active Transportation Project	Construction of ADA-compliant curb ramps, bicycle sharrows, and crosswalks along School Lane, Rose Pearl Lane, and Arbor Rose Avenue as part of the Boroughs Emerald Necklace trail network	Mount Joy Borough	C	$466,284	Bike/Ped
110556	23	Main Street Sidewalk Impr	Sidewalk improvements on PA 23 (Main Street)	Upper Leacock Township	C	$1,130,404	Bike/Ped
					Total Bike/Ped	**$17,609,019**	
101022	1046	Fivepointville Rd over Little Muddy Ck	Bridge replacement at SR 1046 (Fivepointville Road) over Little Muddy Creek	Brecknock Township	FC	$2,551,369	Bridge
79025	1019	California Rd Bridge #1	Bridge replacement at SR 1019 over Tributary of Conestoga River	Caernarvon Township	C	$1,042,360	Bridge
101018	1044	N Churchtown Rd over Little Conestoga Ck	Bridge replacement at SR 1044 (North Churchtown Road) over Little Conestoga Creek	Caernarvon Township	FC	$2,480,552	Bridge
91327	2014	Maple Shade Rd over E Br of Bells Run	Bridge replacement at SR 2014 (Maple Shade Road) over the East Branch of Bells Run	Colerain Township	FC	$735,018	Bridge
91395	2015	Pumping Station Rd over Bowery Run	Bridge replacement at SR 2015 (Pumping Station Road) over Bowery Run	Colerain Township	FC	$2,369,954	Bridge
79020	462	Veteran's Mem Br - Susq Rv	Bridge rehabilitation at SR 0462 over Susquehanna River	Columbia Borough, West Hempfield Township, Wrightsville Borough	FURC	$85,111,133	Bridge
110475	7405	Weaver Rd Bridge	Bridge replacement at Weaver Road Bridge (T-855) over Cocalico Creek	Denver Borough	C	$6,395,222	Bridge
100530	1044	Red Run Rd over Muddy Cr	Bridge preservation at SR 1044 (Red Run Road) over Muddy Creek	Earl Township	FC	$1,844,670	Bridge
118297	7212	T-470 Black Bear Rd over Conowingo Ck	Bridge replacement at T-470 (Black Bear Road) over the Conowingo Creek	East Drumore Township	C	$694,053	Bridge
100592	1003	Horseshoe Rd over Amtrak	Bridge preservation on SR 1003 (Horseshoe Road) over Amtrak Railroad	East Lampeter Township	FC	$1,687,500	Bridge
79102	7218	Mohler Church Rd over Cocalico Creek	Bridge replacement at Mohler Church Road (T-668) over Cocalico Creek	Ephrata Township	FRC	$1,193,147	Bridge
84016	3028	Pitney Rd over Amtrak Br	Bridge rehabilitation on SR 3028 Pitney Rd over Amtrak Bridge	Lancaster City, East Lampeter Township	C	$3,278,181	Bridge
119211		Lancaster MPO TIP Funded Bridge Maint Contract	Bridge maintenance	Lancaster County	PC	$10,750,000	Bridge

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** Cost estimates subject to change as a project progresses through phases

MPMS	S.R.	Project Name	Description	Municipality	Phase*	Cost**	Project Class
100543	741	Millersville Rd Bridge	Bridge improvements at PA 741 (Millersville Road) over Conestoga River	Lancaster Township	C	$3,584,000	Bridge
101300	72	PA 72 over Chiques Creek	Bridge rehabilitation at PA 72 (Lancaster Road) over Chiques Creek	Manheim Borough, Penn Township	C	$4,077,970	Bridge
94924	30	Fruitville Pike Bridge PM	Bridge preservation at US 30 bridge over SR 4011 (Fruitville Pike)	Manheim Township	FU	$325,000	Bridge
116897	7101	Plaza Boulevard over Amtrak	Bridge rehabilitation at Plaza Boulevard over Amtrak	Manheim Township	FC	$1,027,267	Bridge
120649	1003	Quarry Rd Bridge Repairs	Bridge repairs on SR 1003 (Quarry Road) over Conestoga River	Manheim Township	C	$296,125	Bridge
118298	7101	T-713 Pinetown Rd over Lititz Run	Bridge replacement at T-713 (Pinetown Road) over Lititz Run	Manheim Township	C	$811,971	Bridge
101077	3017	River Rd over Trib to Conestoga River	Bridge preservation on SR 3017 (River Road) over Tributary to Conestoga River	Manor Township	FC	$1,044,132	Bridge
101281	3017	Safe Harbor Rd over Indian Run	Bridge preservation on SR 3017 (Safe Harbor Road) over Indian Run	Manor Township	PFC	$1,283,228	Bridge
91338	3038	Bridge Valley Road Bridge	Bridge replacement on SR 3038 (Bridge Valley Road) over a branch of Pequea Creek	Martic Township	C	$1,930,533	Bridge
91336	3018	Martic Heights Drive Bridge	Bridge replacement on SR 3018 (Martic Heights Drive) over a tributary of Tucquan Creek	Martic Township	C	$1,294,664	Bridge
101302	4037	Bellaire Rd over Conewago Cr	Bridge restoration at SR 4037 (Bellaire Road) over Conewago Creek	Mount Joy Township	C	$942,477	Bridge
101038	2007	Lloyd Rd over McCreary Run	Bridge replacement at SR 2007 (Lloyd Road) over McCreary Run	Little Britain Township	FC	$780,242	Bridge
101044	2007	Spruce Grove Rd over W Br Octoraro Ck	Bridge rehabilitation at SR 2007 (Spruce Grove Road) over West Branch of Octoraro Creek	Little Britain Township	FC	$2,676,416	Bridge
117415	372	Norman Wood Br Rehab	Bridge rehabilitation at PA 372- Norman Wood Bridge intersecting the Susquehanna River and Norfolk Southern Railroad	Lower Chanceford Township, Martic Township	P	$1,000,000	Bridge
101136	3040	Smithville Road Bridge PM	Bridge preservation on State Route 3040 (Smithville Road) over Beaver Creek	Providence Township, Strasburg Township	P	$150,000	Bridge
101152	4008	Elizabethtown Rd over Brubaker Run	Bridge preservation at SR 4008 (Elizabethtown Road) over Brubaker Run	Rapho Township	FC	$697,168	Bridge
117456	4033	Milton Grove Rd over Back Run	Bridge replacement at SR 4033 (Milton Grove Road) over Back Run	Rapho Township	FUC	$1,340,309	Bridge

* Phases: P=Preliminary Engineering, F=Final Design, U=Utilities, R=Right-of-Way, C=Construction, S=Study

** Cost estimates subject to change as a project progresses through phases

MPMS	S.R.	Project Name	Description	Municipality	Phase*	Cost**	Project Class
101061	2029	Bunker Hill Rd over Beaver Creek	Bridge preservation at SR 2029 (Bunker Hill Road) over Beaver Creek	Strasburg Township	FC	$744,321	Bridge
117414	2015	May Post Office Rd ov Trib to Calamus Run	Bridge replacement at SR 2015 (May Post Office Road) over tributary to Calamus Run	Strasburg Township	FC	$778,318	Bridge
19763	2029	Strasburg Pk over Pequea Creek	Bridge replacement over SR 2029 (Strasburg Pike) over Pequea Creek	Strasburg Township, West Lampeter Township	FC	$3,420,520	Bridge
91264	1007	Centerville Rd over Mill Creek	Bridge preservation on SR 1007 (Centerville Road) over Mill Creek	Upper Leacock Township	FC	$1,235,468	Bridge
63227	1053	Greenville Road Bridge-B	Bridge replacement at SR 1053 (Greenville Road) over Cocalico Creek	West Cocalico Township	C	$3,845,440	Bridge
101290	3036	Franklin Rd over Strickler Run	Bridge preservation on SR 3036 (Franklin Road) over Strickler Run	West Hempfield Township	FC	$878,000	Bridge
					Total Bridge	**$130,021,880**	
121060		ITS - Lancaster TSMO 2025–2026	Install ITS equipment. Upgrade three signal systems to connect to PennDOT's UCC system. Add six ITS signal CCTV and one DMS with a CCTV to help manage traffic within the US 30 system.	East Lampeter Township	FC	$588,268	Congestion Reduction
114324	72	Main St Traffic Signal Upgrades	Traffic signal upgrades at Intersection of Main Street (SR 72) and Graystone Road (SR 4013)	East Petersburg Borough	C	$963,523	Congestion Reduction
121049		Transit Development Plan Implementation	Implementation of the Transit Development Plan, including possible Micro-Transit Service Areas. SCTA, through RRTA, is considering implementing micro-transit options to increase user flexibility	Elizabethtown, Columbia, Manheim, Lititz, Ephrata, Akron, New Holland Boroughs, and Lancaster City	C	$1,800,000	Congestion Reduction
121050		SCTA Bus Replacement	Requesting funds to replace RRTA buses	Lancaster City, Manheim, Warwick, West Earl, Ephrata Townships, Ephrata, Akron, Boroughs	C	$882,706	Congestion Reduction
					Total Congestion Reduction	**$588,268**	

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** Cost estimates subject to change as a project progresses through phases

MPMS	S.R.	Project Name	Description	Municipality	Phase*	Cost**	Project Class
121064		UPS for Existing Sites - Lancaster TSMO 2025–2026	Installation of 22 new UPS's, remote power strips, and network switches in existing CCTV and DMS sites	Various Locations	FC	$129,947	Intelligent Transportation System
					Total Intelligent Transportation Systems	**$129,947**	
118767	4022	SR 4022 Lititz Road Realignment	Realignment at SR 4022 (Lititz Road) between Fruitville Pike (SR 4011) and Erbs Quarry Road	Penn Township, Warwick Township	C	$4,000,000	Realignment
					Total Realignment	**$4,000,000**	
87823		TAP Line Item	ENH line item	Lancaster County	C	$43,083	Reserve Line Item
87826		Bridge Reserve	Lancaster County bridge restoration	Lancaster County	C	$1,711,381	Reserve Line Item
87827		Highway Reserve	Lancaster County highway restoration	Lancaster County	C	$551,242	Reserve Line Item
87827		Highway Reserve	Lancaster County highway restoration	Lancaster County	C	$2,322,972	Reserve Line Item
87832		CMAQ Line Item	CMAQ line item	Lancaster County	C	$4,270,199	Reserve Line Item
87848		Delivery/ Consult Assist	Lancaster Delivery/Consult Assist	Lancaster County	P	$3,200,000	Reserve Line Item
87848		Delivery/ Consult Assist	Lancaster Delivery/Consult Assist	Lancaster County	C	$1,600,000	Reserve Line Item
88067		STU Line Item	STU Line Items	Lancaster County	C	$2,069,000	Reserve Line Item
93151		Smart Growth Program	Smart Growth Transportation Program Line Item	Lancaster County	C	$1,054,804	Reserve Line Item
94572		SRTP Rideshare Program	Ridesharing, Vanpooling Programs, and Transit Coordination	Lancaster County	P	$1,495,411	Reserve Line Item
119284		Carbon Reduction Program (CRP) Lancaster MPO RSL	Carbon Reduction Program (CRP) Lancaster MPO Reserve Line Item	Lancaster County	C	$2,657,787	Reserve Line Item
					Total Reserve Line	**$20,975,879**	

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** Cost estimates subject to change as a project progresses through phases

MPMS	S.R.	Project Name	Description	Municipality	Phase*	Cost**	Project Class
121046	1018	Rothsville Road Resurface	Resurfacting from Rothsville Road (PA 1018) from Main Street to S. State Street	Akron Township, Ephrata Township, Warwick Township	PC	$2,952,250	Roadway Restoration
116658	222	Church Street Resurface	Resurfacting at US 222 North (Church Street) from PA 72 Queen Street to Vine Street	Lancaster City	FURC	$1,909,090	Roadway Restoration
121045	772	PA 772 Resurfacing	Resurfacing from PA 772 from Carriage Drive to US 30	Leacock Township, Salisbury Township	FC	$6,665,400	Roadway Restoration
109618	222	US 222 Reconstruction	Roadway Reconstruction and Conversion to 6-lanes	Manheim Township	FURC	$41,754,010	Roadway Reconstruction
97013	222	US 222 /US 30 Interchange Improvements	US 222/US 30 Interchange Improvements, US 222 conversion to 6-lanes, and Bridge Rehabilitation of Eden Road over US 222	Manheim Township	C	$25,506,250	Roadway Reconstruction
121042	272	PA 272 NB Resurfacing	Resurfacing at PA 272 NB from Herrville Road to US 222	Pequea Township, Providence Township, West Lampeter Township	PC	$4,013,150	Roadway Restoration
121047	272	PA 272 SB Resurfacing	Resurfacing at PA 272 NB from Herrville Road to US 222	Pequea Township, Providence Township, West Lampeter Township	PC	$3,182,594	Roadway Restoration
117362	772	Rothsville Road Resurface	Resurfacing from PA 772 (Rothsville Road) from Lititz Borough line to just east of Millwyck Road	Warwick Township	C	$1,390,713	Roadway Restoration
					Total Roadway	**$82,982,744**	
119670	462	Columbia Ave Safety Improvements	Safety Improvements from SR 0462 (Columbia Avenue) from Malibou Drive to West End Boulevard	East Hempfield Township, Lancaster City, Lancaster Township, Manor Township	PFC	$1,047,016	Safety Improvement
118260	72	PA 72 and Lititz Road Intersection	Safety Improvements at Intersection of PA 72 (Lancaster Road) and Lititz Road	East Hempfield Township, Penn Township	URC	$2,785,454	Safety Improvement
121044	741	PA 741 Improvements	Safety Improvements at PA 741 corridor between PA 462 (Columbia Avenue) north to SR 4020 (Harrisburg Pike)	East Hempfield Township, Manor Township	P	$800,000	Safety Improvement
121048	462	Pitney Road & PA 462 Intersection	Intersection Improvements at PA 462 (King Street) intersections with PA 340 (Old Philadelphia Pike) and SR 3028 (Pitney Road)	East Lampeter Township	P	$1,000,000	Safety Improvement

* Phases: P=Preliminary Engineering, F=Final Design, U=Utilities, R=Right-of-Way, C=Construction, S=Study

** Cost estimates subject to change as a project progresses through phases

MPMS	S.R.	Project Name	Description	Municipality	Phase*	Cost**	Project Class
110502	30	US30/PA 462 Improvements	Interchange/Intersection Improvements & Ped Improvements at Interchange with US 30 and PA 462 (E. Lincoln Hwy)	East Lampeter Township	C	$18,819,130	Safety Improvement
110557	772	Intercourse Village Safety Imp	Safety Improvements and Mobility Improvements	Intercourse Village, Leacock Township	C	$2,000,000	Safety Improvement
119671	462	King Street Safety Improvements	Safety Improvements at intersections with Ann Street, Franklin Street, and Marshall Street	Lancaster City	PFUC	$1,053,062	Safety Improvement
119206	772	Market Square Improvement	Safety Improvement on SR 772 (Newport Road) from Charlotte Street to SR 72 (Main Street): Reconfigure parking, crosswalks, curb bump-outs and widening island to provide pedestrian walkway	Manheim Borough	C	$1,004,804	Safety Improvement
119672	501	Lititz Pike Safety Improvements	Safety Improvements at SR 0501 (Lititz Pike) from Belmont Avenue to Golf Drive	Manheim Township	PFURC	$810,739	Safety Improvement
114206	741	McGovernville Rd Improvements	Safety Improvements at intersection of McGovernville Rd (PA 741) and the on/off ramp of PA 283	Manheim Township	FURC	$5,720,474	Safety Improvement
20119		Brunnerville Rd and Newport Rd Int	Intersection Improvements, widening for turn lanes, signal upgrade, or roundabout option	Warwick Township	C	$1,037,030	Safety Improvement
119673	4001	Prospect Rd and Fairview Rd Int Safety Imp	Safety Improvements at SR 4001 (Prospect Road) at the intersection of Fairview Road	West Hempfield Township	PFURC	$991,806	Safety Improvement
114205	2029	Strasburg Pk Improvements	Safety Improvement Project potentially installing a roundabout at Intersection of Srasburg Pk (SR 2029) and Rockvale Rd	West Lampeter Township	FURC	$3,325,237	Safety Improvement
				Total Safety Improvement		**$34,552,918**	
119474		Enola Low Grade Trail East 2	Rail trail improvements from Hollow Road to the Chester County line	Bart Township, Sadsbury, Township	C	$1,060,900	Transportation Enhancement
114217		Riverfront to Downtown Connections Streetscape	Mill and overlay, sidewalk removed and replaced, ADA ramp work and trees on Third Street	Columbia Borough	C	$1,383,315	Transportation Enhancement
121062		PA 741 Signals - Lancaster TSMO 2025–2026	Upgrade nine signalized intersections to connect to PennDOT's UCC system.	East Hempfield Township	FC	$155,117	Transportation Enhancement
112615		Enola Low Grade Trail East	Rail trail improvements from the western Eden Twp line to Hollow Road	Eden Township, Bart Township	C	$1,005,875	Transportation Enhancement

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** Cost estimates subject to change as a project progresses through phases

MPMS	S.R.	Project Name	Description	Municipality	Phase*	Cost**	Project Class
121063		New Holland Pk Signals - Lancaster TSMO 2025 – 2026	This project will update the New Holland Pike traffic signal system to connect to PennDOT's universal command and control system. Seven signalized intersections: five in Lancaster City and two in Manheim Township.	Lancaster City, Manheim Township	FC	$145,291	Transportation Enhancement
121061		Lititz Pk and Oregon Pk - Lancaster TSMO 2025 – 2026	Upgrade seven signalized intersections to connect to PennDOT's UCC system.	Manheim Township	FC	$162,014	Transportation Enhancement
					Total Transportation Enhancement	**$1,845,737**	
					Total 2025 – 2028 TIP	**$332,926,791**	

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** Cost estimates subject to change as a project progresses through phases

These tables represent the TIP as of April 15, 2024. For the most current version of the TIP, please see https://www.lancompo.org/tip

2029 – 2032 Second Four Years of Twelve-Year Program

MPMS	S. R.	Project Name	Description	Municipality	Phase*	Cost**	Project Class
119202	462	Route 462 Eastern Corridor Transportation Enhance	Construction of a sidewalk system, expanded shoulder area, and a pedestrian and bicycle trail	East Lampeter Township, Lancaster City	C	$60,607	Bike/Ped
					Total Bike/Ped	**$60,607**	
117415	372	Norman Wood Bridge Improvement	Bridge Rehabilitation at SR 372 over Susquehanna River	Martic Township, Lower Chanceford Township	C	$16,970,566	Bridge
79020	462	Veteran's Mem Bridge - Susq Rv	Bridge Rehabilitation at SR 0462 over Susquehanna River	Columbia Borough, West Hempfield Township, Wrightsville Borough	C	$139,290,755	Bridge

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** Cost estimates subject to change as a project progresses through phases

MPMS	S. R.	Project Name	Description	Municipality	Phase*	Cost**	Project Class
101038	2007	Lloyd Rd over McCreary Run	Bridge Replacement at SR 2007 (Lloyd Road) over McCreary Run	Little Britain Township	C	$831,385	Bridge
101061	2029	Bunker Hill Rd over Beaver Creek	Bridge Preservation at SR 2029 (Bunker Hill Road) over Beaver Creek	Strasburg Township	C	$500,000	Bridge
100436	3016	Fairview Rd/Beaver Cr	State Route 3016 (Fairview Church Road) over Little Beaver Creek	Providence Township	P	$200,000	Bridge
87707	3017	Safe Harbor Rd Br	Safe Harbor Road (SR 3017) over Witmer Run	Manor Township	P	$200,000	Bridge
87540	3017	River Road Bridge	State Route 3017 (River Road) over branch of Pequea Creek	Martic Township	P	$200,000	Bridge
101290	3036	Franklin Rd over Strickler Run	Bridge Preservation on SR 3036 (Franklin Road) over Strickler Run	West Hempfield Township	C	$200,442	Bridge
101136	3040	Smithville Road Bridge PM	Bridge Preservation on State Route 3040 (Smithville Road) over Beaver Creek	Providence Township, Strasburg Township	C	$839,314	Bridge
101144	4001	Spooky Nook Rd over Amtrak	State Route 4001 (Spooky Nook Road) over Amtrak Railroad	West Hempfield and East Hempfield Townships	C	$1,468,534	Bridge
101152	4008	Elizabethtown Rd over Brubaker Run	Bridge Improvement	West Hempfield and East Hempfield Townships	C	$100,000	Bridge
116897	7101	Plaza Boulevard over Amtrak	Bridge Improvement	Manheim Township	C	$700,000	Bridge
118298	7101	T-713 Pinetown Rd over Lititz Run	Bridge Replacement at T-713 (Pinetown Road) over Lititz Run	Manheim Township	C	$800,000	Bridge
118297	7212	T-470 Black Bear Rd over Conowingo Ck	Bridge Replacement at T-470 (Black Bear Road) over the Conowingo Creek	East Drumore Township	C	$500,000	Bridge
				Total Bridge		**$162,800,996**	
109618	222	US 222 Reconstruction	Roadway Reconstruction and Conversion to 6-lanes	Manheim Township	C	$39,242,197	Roadway Reconstruction
				Total Roadway Reconstruction		**$39,242,197**	
110507	222	PA324/US222/Fairview Ave	Intersection improvements/roundabout at the intersection of S. Prince St. and New Danville Pk and Fairview Ave	City of Lancaster, Lancaster Twp, and West Lampeter Twp	C	$3,382,154	Safety
119671	462	King Street Safety Improvements	Safety Improvements at intersections with Ann Street, Franklin Street, and Marshall Street	City of Lancaster	C	$300,000	Safety

* Phases: P=Preliminary Engineering, F=Final Design, U=Utilities, R=Right-of-Way, C=Construction, S=Study

** Cost estimates subject to change as a project progresses through phases

MPMS	S. R.	Project Name	Description	Municipality	Phase*	Cost**	Project Class
121048	462	Pitney Rd and PA 340 Intersection with PA 462	Intersection Improvements at PA 462 (King Street) intersections with PA 340 (Old Philadelphia Pike) and SR 3028 (Pitney Road)	East Lampeter Township	C	$8,000,000	Safety
121044	741	PA 741 Improvements	Safety Improvements at PA 741 corridor between PA 462 (Columbia Avenue) north to SR 4020 (Harrisburg Pike)	East Hempfield Township, Manor Township	C	$8,000,000	Safety
					Total Safety	**$19,682,154**	
87823		TAP Line Item	Transportation Alternatives Program (TAP) Reserve	Lancaster County	C	$3,460,000	Reserve Line Item
87825		HSIP Line Item	Highway Safety Improvement Program Reserve Line Item	Lancaster County	C	$14,440,000	Reserve Line Item
87826		Bridge Reserve	Bridge Reserve	Lancaster County	C	$29,082,749	Reserve Line Item
87827		Highway Reserve	Highway Reserve	Lancaster County	C	$21,175,044	Reserve Line Item
87832		CMAQ Line Item	Congestion Mitigation and Air Quality Reserve	Lancaster County	C	$11,185,846	Reserve Line Item
88067		STU Line Item	Surface Transportation Urban Reserve	Lancaster County	C	$22,136,849	Reserve Line Item
119284		Carbon Reduction Program (CRP) Lancaster MPO RSL	Carbon Reduction Program	Lancaster County	C	$6,324,000	Reserve Line Item
					Total Reserve Line Item	**$127,486,642**	

* Phases: P=Preliminary Engineering, F=Final Design, U=Utilities, R=Right-of-Way, C=Construction, S=Study
** Cost estimates subject to change as a project progresses through phases

These tables represent the TIP as of April 15, 2024. For the most current version of the TIP, please see https://www.lancompo.org/tip

2033 – 2036 Third Four Years of Twelve-Year Program

S.R.	MPMS	Project Name	Phase*	Cost**	Project Type
10	78833	Twin County Road Bridge	PC	$6,200,000	Bridge
23	101282	Marietta Avenue Bridge PM	PC	$650,000	Bridge
23	101295	New Holland Pk Bridge PM	PC	$582,000	Bridge
23	101318	New Holland Pike/US 30	PC	$2,572,000	Bridge
30	101307	US 30 over Lititz Pike	PC	$3,270,000	Bridge
30	101316	US 30/Little Conestoga	PC	$2,678,000	Bridge
222	100439	US 222/Conowingo Creek	PC	$962,750	Bridge
222	100458	US 222/Beaver Creek	PC	$604,000	Bridge
222	101328	US 222 SB Bridge PM	PC	$552,000	Bridge
222	100536	US 222 over US 30	C	$1,004,000	Bridge
222	100598	US 222 S/Muddy CR	C	$751,000	Bridge
222	101020	US 222 N/Muddy Creek	C	$751,000	Bridge
222	101034	US 222 N/Little Muddy Crk	C	$403,000	Bridge
272	97263	N Reading over Muddy Crk	C	$2,077,000	Bridge
322	101105	US 322/Trib to Conestoga	PC	$682,000	Bridge
322	101103	US 322 over Cocalico Crk	PC	$997,000	Bridge
340	101279	Old Phila Pike over US30	PC	$1,775,000	Bridge
340	101106	Old Phila Pike/Mill Creek	PC	$981,000	Bridge
372	101120	East State Street Bridge	PC	$2,040,000	Bridge
372	117415	Norman Wood Bridge Improvement	C	$70,383,999	Bridge
441	101122	Water Street/Stamens Run	FC	$1,185,000	Bridge
462	93581	PA 462 Little Conestoga	PC	$998,000	Bridge
741	101125	Bridge Street over AMTRAK	C	$900,000	Bridge
743	101128	Maytown Road over AMTRAK	PC	$898,000	Bridge
772	101305	State Street over Groffs	C	$681,000	Bridge
772	100570	Newport Rd over SR 6023 Br PM	PC	$3,371,000	Bridge
772	100567	Mount Joy Road Bridge PM	PC	$377,000	Bridge
772	101129	Mt Joy Rd/Little Chiques	PC	$1,170,000	Bridge
772	101132	Mount Joy Road/PA 283	PC	$1,761,000	Bridge
772	101135	Newport Road/Cocalico Crk	PC	$1,067,000	Bridge

* Phases: P=Preliminary Engineering, F=Final Design, U=Utilities, R=Right-of-Way, C=Construction, S=Study

** Cost estimates subject to change as a project progresses through phases

S.R.	MPMS	Project Name	Phase*	Cost**	Project Type
896	101140	Georgetown Rd over AMTRAK	PC	$683,000	Bridge
897	101141	W Main St/Cocalico Crk	PC	$442,000	Bridge
1001	101272	Greenfield Rd over US 30	PC	$1,475,000	Bridge
1003	100595	Quarry Road Bridge PM	PC	$1,434,000	Bridge
1010	87541	East Main Street Bridge	PC	$1,035,000	Bridge
1013	101145	Peters Road over Mill Crk	PC	$2,192,000	Bridge
1013	101148	Cider Mill Rd/Conestoga	PC	$275,000	Bridge
1020	78890	Br Rpl SR 1020-Middle Crk	PC	$3,888,000	Bridge
1024	87701	Lincoln Road Bridge	PC	$1,875,000	Bridge
1035	101151	SR 1035 over Middle Crk	PC	$1,073,000	Bridge
1037	91269	Speedwell Forge Road BR	PC	$682,000	Bridge
1037	101153	SR 1037 over Hammer Crk	PC	$454,000	Bridge
1046	101033	Maple Grove Rd Bridge PM	PC	$454,000	Bridge
1047	101155	Church Street/Cocalico Crk	PC	$829,000	Bridge
1051	94765	1051 over Stony Run Crk	C	$909,000	Bridge
1061	87524	Willow Street Bridge	C	$1,955,000	Bridge
1090	101158	Willow Road Bridge PM	C	$1,730,000	Bridge
1092	101159	Hartman Station Br. PM	C	$2,547,000	Bridge
2011	78978	BrRpl SR2011-TBWBOctor.Crk	PC	$917,000	Bridge
2015	101161	May Post Office Road Bridge	PC	$529,000	Bridge
2019	101263	Main Street/ Groff Run	PC	$462,000	Bridge
2019	101055	North Church St Bridge PM	PC	$604,000	Bridge
2029	87555	Bunker Hill Bridge	PC	$620,000	Bridge
2031	101267	Walnut Run Road Bridge	PC	$368,000	Bridge
2035	101271	Queen Road over Pequea Crk	PC	$718,000	Bridge
2039	101063	Gypsy Hill Road Bridge PM	PC	$907,000	Bridge
3008	101069	Cardinal Road Bridge PM	PC	$491,000	Bridge
3015	101273	Cinder Road Bridge	PC	$880,000	Bridge
3016	100436	Fairview Rd/Beaver Crk	C	$450,000	Bridge
3017	87707	Safe Harbor Rd Br	C	$700,000	Bridge
3017	101275	Safe Harbor Road Bridge	PC	$300,000	Bridge

* Phases: P=Preliminary Engineering, F=Final Design, U=Utilities, R=Right-of-Way, C=Construction, S=Study

** Cost estimates subject to change as a project progresses through phases

S.R.	MPMS	Project Name	Phase*	Cost**	Project Type
3017	101280	Safe Harbor Road Bridge	P	$150,000	Bridge
3017	87540	River Road Bridge	C	$500,000	Bridge
3018	101284	Truce Road Bridge	PC	$663,000	Bridge
3027	87542	Walnut Hill Bridge	PC	$676,000	Bridge
3027	101127	Walnut Hill Rd Bridge PM	PC	$672,000	Bridge
3028	101287	Lampeter Road/Mill Crk	PC	$853,000	Bridge
3030	101130	Long Ln over Stehman Run	PC	$391,000	Bridge
4002	87537	Donegal Springs Rd Bridge	C	$981,000	Bridge
4002	101294	Donegal Springs Road Bridge	P	$150,000	Bridge
4004	101150	Stackstown Road Bridge PM	PC	$592,000	Bridge
4004	87559	Stackstown Road Bridge	PC	$680,000	Bridge
4008	101157	Elizabethtown Rd Bridge 2	P	$150,000	Bridge
4008	101296	East High St over PA 283	PC	$961,000	Bridge
4018	87508	West Harrisburg Avenue Br	PC	$3,187,000	Bridge
4019	101162	Bossler Rd over Conoy Crk	PC	$425,000	Bridge
4020	91107	Chickies Creek Bridge	C	$6,281,000	Bridge
4020	101264	Harrisburg Pike Bridge PM	PC	$2,041,000	Bridge
4025	101298	Colebrook Rd over Amtrak	PC	$2,419,000	Bridge
4026	101301	Old Line Rd over Rife Run	PC	$907,000	Bridge
4041	101039	Ridge Road over PA 283	PC	$1,354,000	Bridge
7410	110483	S. Oak St Bridge	P	$350,000	Bridge
			Total Bridge	**$168,584,749**	
0	87823	TAP Line Item	C	$3,460,000	Reserve Line Item
0	87825	HSIP Line Item	C	$14,742,000	Reserve Line Item
0	87826	Bridge Reserve	C	$27,386,251	Reserve Line Item
0	87827	Highway Reserve	C	$73,179,000	Reserve Line Item
0	87832	CMAQ Line Item	C	$17,442,000	Reserve Line Item
0	88067	STU Line Item	C	$16,518,000	Reserve Line Item
0	119284	Carbon Reduction Program (CRP) Lancaster MPO RSL	C	$6,325,000	Reserve Line Item

* Phases: P=Preliminary Engineering, F=Final Design, U=Utilities, R=Right-of-Way, C=Construction, S=Study

** Cost estimates subject to change as a project progresses through phases

S.R.	MPMS	Project Name	Phase*	Cost**	Project Type
		Total Reserve Line Item		**$159,052,251**	
4020	80930	US30/Hbg Pike Interchange	C	$2,340,000	Roadway Reconstruction
4020	80931	Hbg. Pike Corridor Improv	P	$150,000	Roadway Reconstruction
272	100383	Nottingham Rd Rsf 2	P	$50,000	Roadway Restoration
		Total Roadway		**$2,540,000**	
23	94912	PA 23/PA 741 Int. Imp	C	$3,026,000	Safety
1040	97251	Colonel Howard Blvd Imp	PFUR	$2,100,000	Safety
		Total Safety		**$5,126,000**	
		Total 2033 – 2036 TYP		**$335,303,000**	

* Phases: P=Preliminary Engineering, F=Final Design, U=Utilities, R=Right-of-Way, C=Construction, S=Study
** Cost estimates subject to change as a project progresses through phases

These tables represent the TIP as of April 15, 2024. For the most current version of the TIP, please see https://www.lancompo.org/tip

2037 – 2050 Illustrative List of Additional Needs

The table below contains a list of proposed projects that are not currently funded, but might be funded or added to the TIP or Twelve-Year Plan if funding becomes available. The projects included on this list were identified through studies or by municipalities and have been scored using the Lancaster MPO 2025 – 2028 Transportation Improvement Program selection process adopted in February 2023.

Title	Municipality	Need Identified By	Score
US 222 Resurfacing	Manheim Twp, Warwick Twp, West Earl Twp	PennDOT	62.58
New Holland Avenue Signal Improvements	Lancaster City, Manheim Township	ROP	62.03
US 30 bypass Westbound	East Lampeter Twp	Municipal Needs Submission	60.98
PA 501 Signal Improvements	Lititz Borough, Warwick Township	ROP	58.69
PA 72 Signal Improvements	Lancaster City, Manheim Township, East Hempfield Township, East Petersburg Borough	ROP	57.76

CMP= Congestion Management Process, HSNS=Highway Safety Network Screening, ROP=Regional Operations Plan

Title	*Municipality*	*Need Identified By*	*Score*
Columbia Borough CCTV Cameras	Columbia Borough	ROP	57.39
Columbia Borough Emergency Vehicle Preemption	Columbia Borough	ROP	57.39
PA 340 Old Philadelphia Pike CMP Corridor	East Lampeter Twp	CMP/Systemic	57.20
Elizabethtown Signal Improvements	Elizabethtown Borough	ROP	56.62
Harrisburg Pike Safety	Lancaster City, Manheim Township	HSNS/Systemic	56.08
Bridgeport Area Conestoga River Trail Improvements	Lancaster City, East Lampeter Twp, West Lampeter Twp	Study	52.64
S. Queen St improvements	Lancaster City	Municipal Needs Submission	49.25
PA 230 improvements	Elizabethtown Borough	Municipal Needs Submission	48.90
Fruitville Pike Signal Improvements	Lancaster City, Manheim Township	ROP	48.71
Cloverleaf Road Interchange Improvements	Mount Joy Twp	Municipal Needs Submission	48.38
Good Drive Safety and Capacity Upgrades	East Hempfield Twp	Study	47.81
PA 741 N at PA 462 Intersection	East Hempfield Twp	CMP/Systemic	46.94
PA 41 with US 30 Intersection	Salisbury Twp	CMP/Systemic	45.84
PA 772 Rerouting Study Implementation	Lititz Borough	Municipal Needs Submission	45.66
Mount Joy Signal Improvements	Mount Joy Borough, Rapho Township	ROP	45.57
PA 896 Bike Route	East Lampeter Township	ROP	45.24
PA 230 and Esbenshade Road Intersection	Rapho Twp	Municipal Needs Submission	43.94
Emerald Necklace Trail Connection	Mount Joy Boro	Municipal Needs Submission	43.85
Lincoln Highway east of PA 41	Salisbury Twp	HSNS/Systemic	42.89
PA 272 SB Resurfacing	West Lampeter Twp, Pequea Twp, Providence Twp	PennDOT	42.17
Mount Joy PA 772 Rerouting	Mount Joy Boro	Municipal Needs Submission	41.52
PA 501 and PA 772 Signal Coordination	Lititz Borough	Municipal Needs Submission	40.61
PA 501 and PA 772 Signal Coordination	Manheim Township	ROP	37.95
Oakview Road Bike Route	East Lampeter Township	ROP	37.53
PA 741 S @ PA 23/Marietta Pike/Marietta Ave (CMP Intersection)	East Hempfield Twp	CMP/Systemic	37.16
Marietta over US 30	East Hempfield Township	PennDOT	32.60
Dillerville Road Flashing Yellow Arrows	Lancaster City, Manheim Township	ROP	30.32
Good Drive Signal Improvements	East Hempfield Township	ROP	25.06
US 30 over 9th Street	Columbia Borough	PennDOT	24.81
PA 741 over Little Conestoga Creek	East Hempfield Township/Manheim Township	PennDOT	23.47
US 30/Greenfield Road Ramp Meter	Lancaster City	ROP	21.54
US 30 over Ironville Pike	Columbia Borough	PennDOT	17.31
US 222 over Tributary to Beaver Creek	Strasburg Township	PennDOT	12.63

CMP= Congestion Management Process, HSNS=Highway Safety Network Screening, ROP=Regional Operations Plan

Appendix B:

2025 Transit TIP

Lancaster County Transportation Coordinating Committee (LCTCC)
Red Rose Transit Authority (RRTA)
FFY 2025 – 2028 TIP - Transit Element

MPMS	*Project Title*	*Project Description*	*Cost*	*Project Type*
FFY 2025				
102410	Operating Assistance	Non-federal funding.	$10,028,084	Operating Assistance
102417	ADA Services	10% of 5307 allocation for ADA transportation services.	$642,800	ADA Services
113395	Access to Jobs Program	Funds shared ride service for qualified employees for home-to-work or work-to-home trips when fixed route bus service is not operating.	$300,000	Access to Jobs
114355	Computer Hardware/Software and Communications/Security	Upgrade and replace hardware and software and communications/ security equipment exceeding useful life.	$75,263	IT/Communications/ Security
114362	Purchase paratransit buses	Partial funding to replace thirteen (13) 2021 paratransit buses exceeding useful life with 2026 paratransit buses.	$616,250	Paratransit Vehicles
114362	Purchase paratransit buses	Partial funding to replace thirteen (13) 2021 paratransit buses exceeding useful life with 2026 paratransit buses.	$658,750	Paratransit Vehicles
117699	Purchase Maintenance Equipment	Upgrade/replace maintenance equipment exceeding useful life, i.e. forklift-tow motor.	$80,000	Operations and Support Equipment
117812	Operations Center Rehabilitation/ Upgrades	Rehabilitate and upgrades to the Erick Road Operations Center rehabilitated in 2010.	$1,433,187	Facility Construction/ Upgrades
121143	Shared Ride Facility Construction	Construct a shared ride facility to house the buses and maintenance and a dispatch office.	$5,000,000	Facility Construction/ Upgrades
		TOTAL	**$18,834,334**	

MPMS	Project Title	Project Description	Cost	Project Type
FFY 2026				
102410	Operating Assistance	Non-federal funding.	$10,053,948	Operating Assistance
102417	ADA Services	10% of 5307 allocation for ADA transportation services.	$642,800	ADA Services
113395	Access to Jobs Program	Funds shared ride service for qualified employees for home-to-work or work-to-home trips when fixed route bus service is not operating.	$300,000	Access to Jobs
114355	Computer Hardware/Software and Communications/Security	Upgrade/replace computer hardware and software and communications/security equipment exceeding useful life.	$75,000	IT/Communications/ Security
117699	Purchase Maintenance Equipment	Upgrade/replace maintenance equipment exceeding useful life, i.e. 2015 portable lifts.	$50,000	Operations and Support Equipment
117812	Operations Center Rehabilitation/ Upgrades	Rehabilitate and upgrades to the Erick Road Operations Center rehabilitated in 2010.	$1,559,511	Facility Construction/ Upgrades
121139	Partially Purchase one (1) Bus	Partially replace one (1) 2015 fixed route electric hybrid bus w/2027 electric hybrid bus.	$658,750	Fixed Route Buses
121138	Purchase Seven (7) Buses	Partially replace seven (7) 2015 fixed route electric hybrid buses w/2027 electric hybrid buses.	$5,520,189	Fixed Route Buses
NEW	Purchase one (1) FR Bus	Purchase one fixed route electric hybrid bus to replace 2015 fixed route Bus.	$882,706	Fixed Route Buses
		TOTAL	**$19,742,904**	
FFY 2027				
102410	Operating Assistance	Non-federal funding.	$10,081,104	Operating Assistance
102417	ADA Services	10% of 5307 allocation for ADA transportation services.	$642,800	ADA Services
113395	Access to Jobs Program	Funds shared ride service for qualified employees for home-to-work or work-to-home trips when fixed route bus service is not operating.	$300,000	Access to Jobs
114355	Computer Hardware/Software and Communications/Security	Upgrade and replace hardware and software and communications/ security equipment exceeding useful life.	$120,000	IT/Communications/ Security
114362	Purchase paratransit buses	Replace eighteen (18) 2022 paratransit buses exceeding useful life with 2027 paratransit buses.	$2,571,671	Paratransit Vehicles
117699	Purchase Maintenance Equipment	Upgrade/replace maintenance equipment exceeding useful life, i.e. portable lifts.	$60,000	Operations and Support Equipment
117812	Operations Center Rehabilitation/ Upgrades	Rehabilitate and upgrades to the Erick Road Operations Center rehabilitated in 2010.	$252,500	Facility Construction/ Upgrades
121139	Purchase Five (5) Bus	Provide partial funding to replace three (3) 2015 fixed route buses and two (2) 2016 fixed route electric hybrid bus w/2025 electric hybrid bus.	$658,750	Fixed Route Buses
121138	Purchase Five (5) Bus	Provide partial funding to replace three (3) 2015 fixed route buses and two (2) 2016 fixed route electric hybrid bus w/2025 electric hybrid bus.	$3,975,454	Fixed Route Buses

MPMS	Project Title	Project Description	Cost	Project Type
121140	Replace highlift	Replace maintenance high lift that has met its useful life.	$200,000	Operations and Support Equipment
121146	Replace Copier	Replace 2021 copier that has met its useful life.	$25,075	Operations and Support Equipment
121142	Transit Development Implementation	Implement changes from the 2023 TDP.	$800,000	Planning
		TOTAL	**$19,687,354**	
FFY 2028				
102410	Operating Assistance	Non-federal funding.	$10,109,618	Operating Assistance
102414	Queen Street Station Upgrade	Rehabilitate and upgrades to the Queen Street Station Parking Garage.	$124,277	Facility Construction/ Upgrades
102417	ADA Services	10% of 5307 allocation for ADA transportation services.	$642,800	ADA Services
113395	Access to Jobs Program	Funds shared ride service for qualified employees for home-to-work or work-to-home trips when fixed route bus service is not operating.	$300,000	Access to Jobs
114355	Computer Hardware/Software and Communications/Security	Upgrade and replace hardware and software and communications/ security equipment exceeding useful life and a copier.	$135,075	IT/Communications/ Security
114362	Purchase paratransit buses	Replace nine (9) 2023 paratransit buses exceeding useful life with 2028 paratransit buses.	$1,350,001	Paratransit Vehicles
117699	Purchase Maintenance Equipment	Upgrade/replace maintenance equipment exceeding useful life, i.e. 2016 Ventrac and maintenance truck.	$140,000	Operations and Support Equipment
121142	Transit Development Plan Update	Update the TDP with current data.	$175,000	Planning
121133	Purchase 2 Service Vehicles	Replace two 2017 service vehicles.	$100,675	Service Vehicles
121138	Purchase Six (6) Bus	Provide funding to replace two (2) 2016 and four (4) 2017 fixed route electric hybrid bus w/2029 electric hybrid bus.	$658,750	Fixed Route Buses
121139	Purchase Six (6) Bus	Provide funding to replace two (2) 2016 and four (4) 2017 fixed route electric hybrid bus w/2029 electric hybrid bus.	$5,180,347	Fixed Route Buses
NEW	Transit Development Implementation	Implement changes from the 2023 TDP.	$1,000,000	Planning
		TOTAL	**$19,916,543**	
		TOTAL PROGRAMMED AMOUNT	**$78,181,135**	

Red Rose Transit Authority (RRTA) State of Good Repair Capital Improvement Program (CIP)

Fiscal Year	*Capital Needs*	*Federal*	*State*	*Local*	*Total*	*Projected Federal Funding*	*Federal Shortfall*	*Buses/Vans*
		80.00%	**19.36%**	**0.65%**		**$7,307,843**	**(Carryover)**	
2024	REPLACE (20) PARATRANSIT BUSES (2018)	$1,371,399	$331,878	$11,057	$1,714,248			$85,712
	REPLACE (3) BUSES HYBRIDS (2012)	$1,620,783	$392,229	$13,068	$2,025,978			$675,326
	REPLACE PARKING CONTROL SYSTEMS	$64,000	$15,488	$516	$80,000			
	REPLACE FAREBOX SYSTEM	$800,000	$193,600	$6,450	$1,000,000			
	REPLACE COMMUNICATIONS EQUIP.	$200,000	$48,400	$1,613	$250,000			
	REPLACE BUS VACUUM SYSTEM-2009	$80,000	$19,360	$645	$100,000			
	REPLACE SCISSOR LIFT QSS (2012)	$12,000	$2,904	$97	$15,000			
	SECURITY CAMERA UPGRADES QSS	$40,000	$9,680	$323	$50,000			
	REPLACE GARAGE SWEEPER QSS (2012)	$44,000	$10,648	$355	$55,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$4,596,896**	**$1,112,449**	**$37,062**	**$5,746,120**	**$5,247,715**	**-$3,898,539**	
2025								$88,284
	REPLACE (2) BUSES HYBRIDS (2013)	$1,112,937	$269,331	$8,973	$1,391,172			$695,586
	REPLACE/UPGRADE AUTOMATIC VEHICLE LOCATION (AVL) SYSTEM	$800,000	$193,600	$6,450	$1,000,000			
	REPLACE RADIO TOWER (2000)	$400,000	$96,800	$3,225	$500,000			
	REPLACE EMERGENCY GENERATOR-OPS	$100,000	$24,200	$806	$125,000			
	REPLACE TOW TRUCK (2005)	$240,000	$58,080	$1,935	$300,000			
	REPLACE DISPLAY PANELS QSS	$40,000	$9,680	$323	$50,000			
	TELEPHONE SYSTEM UPGRADES	$40,000	$9,680	$323	$50,000			
	MAINTENANCE SOFTWARE UPGRADES	$40,000	$9,680	$323	$50,000			
	FINANCE SYSTEM SOFTWARE UPGRADES	$40,000	$9,680	$323	$50,000			
	COMPUTER HARDWARE/SOFTWARE	$32,000	$7,744	$258	$40,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$3,209,653**	**$776,736**	**$25,878**	**$4,012,066**	**$5,247,715**	**-$1,860,476**	

Fiscal Year	Capital Needs	Federal	State	Local	Total	Projected Federal Funding	Federal Shortfall	Buses/Vans
2026	REPLACE (23) PARATRANSIT BUSES (2021)	$1,673,154	$404,903	$13,490	$2,091,443			$90,932
	COMPUTER HARDWARE/SOFTWARE	$32,000	$7,744	$258	$40,000			$716,453
	REPLACE FORKLIFT-TOW MOTOR	$16,000	$3,872	$129	$20,000			
	MOBILE TICKETING UPGRADES	$320,000	$77,440	$2,580	$400,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$2,405,870**	**$582,220**	**$19,397**	**$3,007,337**	**$5,247,715**	**$981,369**	
2027	REPLACE (9) PARATRANSIT BUSES (2022)	$674,354	$163,194	$5,437	$842,942			$93,660
	REPLACEMENT (10) BUSES HYBRIDS (2015)	$5,903,576	$1,428,665	$47,598	$7,379,470			$737,947
	COMPUTER HARDWARE/SOFTWARE	$32,000	$7,744	$258	$40,000			
	REPLACE EMERGENCY GEN - QSSII	$160,000	$38,720	$1,290	$200,000			
	REPLACE PORTABLE LIFTS (2015)	$40,000	$9,680	$323	$50,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$7,174,645**	**$1,736,264**	**$57,846**	**$8,968,306**	**$5,247,715**	**-$945,561**	
2028	REPLACE (17) PARATRANSIT BUSES (2023)	$1,311,993	$317,502	$10,578	$1,639,991			$96,470
	REPLACEMENT (4) BUSES HYBRIDS (2016)	$2,432,273	$588,610	$19,610	$3,040,342			$760,085
	REPLACE (1) MAINTENANCE VEHICLE (2018)	$72,000	$17,424	$581	$90,000			
	REPLACE COPIER (2021)	$32,000	$7,744	$258	$40,000			
	REPLACE (2) SETS PORTABLE LIFTS (2016)	$80,000	$19,360	$645	$100,000			
	REPLACE VENTRAC SNOW BLOWER (2016)	$32,000	$7,744	$258	$40,000			
	TDP UPDATE	$100,000	$24,200	$806	$125,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$4,424,982**	**$1,070,846**	**$35,676**	**$5,531,227**	**$5,247,715**	**-$122,828**	
2029	REPLACE (20) PARATRANSIT BUSES (2024)	$1,589,827	$384,738	$12,818	$1,987,284			$99,364
	REPLACE (8) BUSES HYBRID (2017)	$5,010,483	$1,212,537	$40,397	$6,263,104			$782,888
	REPLACE (3) SUPERVISORY VEHICLES (2019)	$96,000	$23,232	$774	$120,000			
	REPLACE (1) MAINTENANCE VEHICLE (2019)	$64,000	$15,488	$516	$80,000			
	COMPUTER HARDWARE/SOFTWARE	$32,000	$7,744	$258	$40,000			
	UPGRADES SOLAR PANELS	$800,000	$193,600	$6,450	$1,000,000			

Fiscal Year	Capital Needs	Federal	State	Local	Total	Projected Federal Funding	Federal Shortfall	Buses/Vans
	QSS I UPGRADES	$800,000	$193,600	$6,450	$1,000,000			
	REPLACE COPIER (2022)	$32,000	$7,744	$258	$40,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$8,789,025**	**$2,126,944**	**$70,862**	**$10,986,281**	**$5,247,715**	**-$3,664,138**	
2030								$102,345
	REPLACE (5) BUSES HYBRIDS (2018)	$3,225,498	$780,571	$26,006	$4,031,873			$806,375
	REPLACE (1) SUPERVISORY VEHICLES (2020)	$40,000	$9,680	$323	$50,000			
	OPS FACILITY UPGRADES	$800,000	$193,600	$6,450	$1,000,000			
	UPGRADE/REPLACE HYDRAULIC ELEV - QSS	$120,000	$29,040	$968	$150,000			
	REPLACE DISPLAY PANELS QSS	$40,000	$9,680	$323	$50,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$4,590,214**	**$1,110,832**	**$37,009**	**$5,737,767**	**$5,247,715**	**-$3,006,636**	
2031	REPLACE (23) PARATRANSIT BUSES (2026)	$1,939,644	$469,394	$15,638	$2,424,556			$105,415
	REPLACE (6) BUSES HYBRIDS (2019)	$3,986,716	$964,785	$32,143	$4,983,395			$830,566
	QSS PHASE II - UPGRADES	$800,000	$193,600	$6,450	$1,000,000			
	REPLACE AIR DRYER QSSII	$12,000	$2,904	$97	$15,000			
	COMPUTER HARDWARE/SOFTWARE	$32,000	$7,744	$258	$40,000			
	MOBILE TICKETING UPGRADES	$400,000	$96,800	$3,225	$500,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$7,535,076**	**$1,823,488**	**$60,752**	**$9,418,845**	**$5,247,715**	**-$5,293,997**	
2032	REPLACE (9) PARATRANSIT BUSES (2027)	$781,761	$189,186	$6,303	$977,201			$108,578
	PURCHASE (20) BUS SHELTERS	$240,000	$58,080	$1,935	$300,000			$855,483
	REPLACE SHOP SWEEPER (2020)	$20,000	$4,840	$161	$25,000			
	REPLACE BUS SHELTERS	$240,000	$58,080	$1,935	$300,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$1,646,476**	**$398,447**	**$13,275**	**$2,058,095**	**$5,247,715**	**-$1,692,758**	

Fiscal Year	Capital Needs	Federal	State	Local	Total	Projected Federal Funding	Federal Shortfall	Buses/Vans
2033	REPLACE (17) PARATRANSIT BUSES (2028)	$1,520,960	$368,072	$12,263	$1,901,199			$111,835
	REPLACE (3) BUSES HYBRIDS (2021)	$2,114,754	$511,770	$17,050	$2,643,442			$881,147
	COMPUTER HARDWARE/SOFTWARE	$40,000	$9,680	$323	$50,000			
	REPLACE AIR COMPRESSOR/DRYER (2021)	$24,000	$5,808	$194	$30,000			
	SR FACILITY UPGRADES	$400,000	$96,800	$3,225	$500,000			
	TDP UPDATE	$108,000	$26,136	$871	$135,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$4,572,428**	**$1,106,528**	**$36,865**	**$5,715,535**	**$5,247,715**	**-$1,017,472**	
2034	REPLACE (20) PARATRANSIT BUSES (2029)	$1,843,045	$446,017	$14,860	$2,303,806			$115,190
	REPLACE (1) BUS HYBRID (2022)	$726,065	$175,708	$5,854	$907,582			$907,582
	REPLACE PORTABLE LIFTS (2022)	$44,000	$10,648	$355	$55,000			
	REPLACE BOBCAT (2022)	$32,000	$7,744	$258	$40,000			
	REPLACE 4-POST LIFT (2022)	$120,000	$29,040	$968	$150,000			
	REPLACE FIRE ALARM SYSTEM QSS	$80,000	$19,360	$645	$100,000			
	REPLACE EMERGENCY GEN - QSS	$80,000	$19,360	$645	$100,000			
	REPLACE REVENUE EQUIP QSS II	$28,000	$6,776	$226	$35,000			
	REPLACE SHOP SCRUBBER (2022)	$28,000	$6,776	$226	$35,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$3,345,826**	**$809,690**	**$26,976**	**$4,182,282**	**$5,247,715**	**$884,418**	
2035								$118,646
	COMPUTER HARDWARE/SOFTWARE	$40,000	$9,680	$323	$50,000			$934,809
	REPLACE FORKLIFT (2023)	$36,000	$8,712	$290	$45,000			
	REPLACE/UPGRADE AVL SYSTEM	$800,000	$193,600	$6,450	$1,000,000			
	REPLACE (4) WASTE OIL BURNERS (2023)	$80,000	$19,360	$645	$100,000			
	REPLACE DISPLAY PANELS QSS	$48,000	$11,616	$387	$60,000			
	UPGRADE TELEPHONE SYSTEM	$40,000	$9,680	$323	$50,000			
	UPGRADES MAINTENANCE SOFTWARE	$40,000	$9,680	$323	$50,000			

Fiscal Year	Capital Needs	Federal	State	Local	Total	Projected Federal Funding	Federal Shortfall	Buses/Vans
	UPGRADES FINANCE SOFTWARE	$40,000	$9,680	$323	$50,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$1,488,715**	**$360,269**	**$12,003**	**$1,860,894**	**$5,247,715**	**$4,643,417**	
2036	REPLACE (23) PARATRANSIT BUSES (2031)	$2,248,579	$544,156	$18,129	$2,810,724			$122,205
	REPLACE (3) BUSES HYBRIDS (2024)	$2,310,848	$559,225	$18,631	$2,888,560			$962,853
	REPLACE SCISSOR LIFT QSS (2024)	$16,000	$3,872	$129	$20,000			
	REPLACE/UPGRADE FIRE ALARM - OPS	$100,000	$24,200	$806	$125,000			
	REPLACE FAREBOX SYSTEM	$800,000	$193,600	$6,450	$1,000,000			
	REPLACE GARAGE SWEEPER QSS (2024)	$56,000	$13,552	$452	$70,000			
	REPLACE COMMUNICATIONS EQUIP.	$200,000	$48,400	$1,613	$250,000			
	MOBILETICKETING UPGRADES	$480,000	$116,160	$3,870	$600,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$6,576,143**	**$1,591,427**	**$53,020**	**$8,220,179**	**$5,247,715**	**$3,314,989**	
2037	REPLACE (9) PARATRANSIT BUSES (2032)	$906,275	$219,319	$7,307	$1,132,844			$125,872
	REPLACE (2) BUSES HYBRIDS (2025)	$1,586,783	$384,001	$12,793	$1,983,478			$991,739
	REPLACE UPGRADE ELEVATORS QSSII	$280,000	$67,760	$2,258	$350,000			
	COMPUTER HARDWARE/SOFTWARE	$32,000	$7,744	$258	$40,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$3,169,773**	**$767,085**	**$25,556**	**$3,962,216**	**$5,247,715**	**$5,392,931**	
2038	REPLACE (17) PARATRANSIT BUSES (2033)	$1,763,209	$426,697	$14,216	$2,204,011			$129,648
	REPLACE (1) MAINTENANCE VEHICLE (2028)	$72,000	$17,424	$581	$90,000			$1,021,491
	REPLACE (2) SUPERVISORY VEHICLES (2028)	$64,000	$15,488	$516	$80,000			
	REPLACE BUS WASH (2023)	$180,000	$43,560	$1,451	$225,000			
	REPLACE FUEL SYSTEM TRACKING (2026)	$100,000	$24,200	$806	$125,000			
	TDP UPDATE	$112,000	$27,104	$903	$140,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$2,655,924**	**$642,734**	**$21,413**	**$3,319,905**	**$5,247,715**	**$7,984,722**	

Fiscal Year	Capital Needs	Federal	State	Local	Total	Projected Federal Funding	Federal Shortfall	Buses/Vans
2039	REPLACE (20) PARATRANSIT BUSES (2034)	$2,136,594	$517,056	$17,226	$2,670,743			$133,537
	REPLACEMENT (10) BUSES HYBRIDS (2027)	$8,417,088	$2,036,935	$67,863	$10,521,360			$1,052,136
	QSS I UPGRADES	$800,000	$193,600	$6,450	$1,000,000			
	REPLACE (1) MAINTENANCE VEHICLE (2029)	$72,000	$17,424	$581	$90,000			
	REPLACE (2) SUPERVISORY VEHICLES (2029)	$64,000	$15,488	$516	$80,000			
	REPLACE PORTABLE LIFTS (2027)	$48,000	$11,616	$387	$60,000			
	REPLACE BUS VACUUM SYSTEM (2024)	$120,000	$29,040	$968	$150,000			
	COMPUTER HARDWARE/SOFTWARE	$32,000	$7,744	$258	$40,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$12,054,397**	**$2,917,164**	**$97,189**	**$15,067,997**	**$5,247,715**	**$1,178,040**	
2040								$137,543
	REPLACEMENT (4) BUSES HYBRIDS (2028)	$8,669,600	$2,098,043	$69,899	$10,837,001			$1,083,700
	OPS CENTER UPGRADES	$800,000	$193,600	$6,450	$1,000,000			
	REPLACE/UPGRADE TELEPHONE SYSTEM	$40,000	$9,680	$323	$50,000			
	COMPUTER HARDWARE/SOFTWARE	$32,000	$7,744	$258	$40,000			
	REPLACE/UPGRADE MAINT SOFTWARE	$40,000	$9,680	$323	$50,000			
	REPLACE/UPGRADE FINANCE SOFTWARE	$40,000	$9,680	$323	$50,000			
	REPLACE (2) SETS PORTABLE LIFTS (2028)	$96,000	$23,232	$774	$120,000			
	REPLACE VENTRAC SNOW BLOWER (2028)	$40,000	$9,680	$323	$50,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$10,122,316**	**$2,449,600**	**$81,611**	**$12,652,895**	**$5,247,715**	**-$3,696,561**	
2041	REPLACE (23) PARATRANSIT BUSES (2036)	$2,606,720	$630,826	$21,017	$3,258,400			$141,670
	REPLACEMENT (8) BUSES HYBRIDS (2029)	$7,143,751	$1,728,788	$57,596	$8,929,688			$1,116,211
	QSS II UPGRADES	$800,000	$193,600	$6,450	$1,000,000			
	REPLACE COPIER (2029)	$32,000	$7,744	$258	$40,000			
	REPLACE (1) SETS PORTABLE LIFTS (2027)	$52,000	$12,584	$419	$65,000			
	REPLACE AIR COMPRESSOR OPS	$20,000	$4,840	$161	$25,000			
	REPLACE AIR DRYER OPS	$12,000	$2,904	$97	$15,000			

Fiscal Year	Capital Needs	Federal	State	Local	Total	Projected Federal Funding	Federal Shortfall	Buses/Vans
	MOBILE TICKETING UPGRADES	$520,000	$125,840	$4,193	$650,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$11,551,186**	**$2,795,387**	**$93,131**	**$14,438,982**	**$5,247,715**	**-$10,000,032**	
2042	REPLACE (9) PARATRANSIT BUSES (2037)	$1,050,621	$254,250	$8,471	$1,313,277			$145,920
	REPLACE (5) BUSES HYBRID (2030)	$4,598,790	$1,112,907	$37,078	$5,748,487			$1,149,697
	COMPUTER HARDWARE/SOFTWARE	$32,000	$7,744	$258	$40,000			
	REPLACE COPIER (2032)	$32,000	$7,744	$258	$40,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$6,078,126**	**$1,470,907**	**$49,005**	**$7,597,658**	**$5,247,715**	**-$10,830,443**	
2043	REPLACE (17) PARATRANSIT BUSES (2038)	$2,044,042	$494,658	$16,480	$2,555,053			$150,297
	REPLACE (6) BUSES HYBRIDS (2031)	$5,684,104	$1,375,553	$45,828	$7,105,130			$1,184,188
	SR FACILITY UPGRADES	$800,000	$193,600	$6,450	$1,000,000			
	TDP UPDATES	$116,000	$28,072	$935	$145,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$9,008,862**	**$2,180,144**	**$72,634**	**$11,261,077**	**$5,247,715**	**-$14,591,589**	
2044	REPLACE (20) PARATRANSIT BUSES (2039)	$2,476,898	$599,409	$19,970	$3,096,123			$154,806
	COMPUTER HARDWARE/SOFTWARE	$32,000	$7,744	$258	$40,000			$1,219,714
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$2,873,614**	**$695,415**	**$23,169**	**$3,592,017**	**$5,247,715**	**-$12,217,488**	
2045								$159,450
	REPLACE (3) BUSES HYBRIDS (2031)	$3,015,133	$729,662	$24,310	$3,768,916			$1,256,305
	REPLACE/UPGRADE AVL SYSTEM	$800,000	$193,600	$6,450	$1,000,000			
	REPLACE DISPLAY PANELS QSS	$56,000	$13,552	$452	$70,000			
	REPLACE SHOP SWEEPER (2020)	$24,000	$5,808	$194	$30,000			
	UPGRADE TELEPHONE SYSTEM	$40,000	$9,680	$323	$50,000			
	UPGRADE MAINTENANCE SOFTWARE	$40,000	$9,680	$323	$50,000			

Fiscal Year	Capital Needs	Federal	State	Local	Total	Projected Federal Funding	Federal Shortfall	Buses/Vans
	UPGRADE FINANCE SOFTWARE	$40,000	$9,680	$323	$50,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$4,379,848**	**$1,059,923**	**$35,313**	**$5,474,810**	**$5,247,715**	**-$11,349,621**	
2046	REPLACE (23) PARATRANSIT BUSES (2041)	$3,021,903	$731,300	$24,364	$3,777,378			$164,234
	REPLACE (1) BUS HYBRID (2034)	$1,035,196	$250,517	$8,346	$1,293,995			$1,293,995
	REPLACE BOBCAT (2034)	$40,000	$9,680	$323	$50,000			
	REPLACE 4-POST LIFT (2034)	$140,000	$33,880	$1,129	$175,000			
	REPLACE PARKING VALIDATOR (2034)	$36,000	$8,712	$290	$45,000			
	REPLACE SHOP SCRUBBER (2034)	$32,000	$7,744	$258	$40,000			
	MOBILE TICKETING UPGRADES	$560,000	$135,520	$4,515	$700,000			
	ADA SERVICE	$364,715	$88,261	$2,941	$455,894			
	TOTAL	**$5,229,814**	**$1,265,615**	**$42,165**	**$6,537,267**	**$5,247,715**	**-$11,331,720**	
	GRAND TOTAL	**$5,229,814**	**$1,265,615**	**$42,165**	**$6,537,267**	**$5,247,715**	**-$11,331,720**	

Appendix C:

Air Quality Conformity Analysis

May 2024

Air Quality Conformity Analysis Report

Lancaster MPO 2025-2028 TIP and 2050 MTP

National Ambient Air Quality Standards (NAAQS) Addressed:

- The Lancaster, PA 2008 8-Hour Ozone Nonattainment Area
- The Lancaster, PA 2006 24-Hour $PM_{2.5}$ Maintenance Area

Prepared By:

The Lancaster County Planning Commission and
Pennsylvania Department of Transportation

for the
The Lancaster County Transportation Coordinating Committee

Lancaster County Transportation Conformity Analysis
2025-2028 TIP and 2050 MTP

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Table of Exhibits

Summary of Attachments

Attachment A: Project List
Attachment B: Detailed Emission Results
Attachment C: Sample MOVES Input Files

Overview

This report provides an analysis of the air quality implications of the Lancaster County Transportation Coordinating Committee (LCTCC) MPO 2025-2028 Transportation Improvement Program (TIP) and 2050 Metropolitan Transportation Plan (MTP). The analysis demonstrates transportation conformity under the 2008 8-hour ozone National Ambient Air Quality Standard (NAAQS) and the 2006 24-hour $PM_{2.5}$ NAAQS. The air quality conformity analysis reflects an assessment of the regionally significant, non-exempt transportation projects included in both the TIP and the MTP.

This document replaces the previously approved conformity demonstration of the TIP and MTP, and ensures that the findings meet all current criteria established by the U.S. Environmental Protection Agency (EPA) for the applicable NAAQS.

Background on Transportation Conformity

Transportation conformity is a way to ensure that federal funding and approval are awarded to transportation activities that are consistent with air quality goals. Under the Clean Air Act (CAA), transportation and air quality modeling procedures must be coordinated to ensure that the TIP and the MTP are consistent with the area's applicable State Implementation Plan (SIP). The SIP is a federally approved and enforceable plan by which each area identifies how it will attain and/or maintain the health-related primary and welfare-related secondary NAAQS.

In order to receive transportation funding and approvals from the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA), state and local transportation agencies must demonstrate that the plans, programs, or projects meet the transportation conformity requirements of the CAA as set forth in the transportation conformity rule. Under the transportation conformity rule, transportation plans are expected to conform to the applicable SIP in nonattainment or maintenance areas. The integration of transportation and air quality planning is intended to ensure that transportation plans, programs, and projects will not:

- Cause or contribute to any new violation of any applicable NAAQS.
- Increase the frequency or severity of any existing violation of any applicable NAAQS.
- Delay timely attainment of any applicable NAAQS, any required interim emissions reductions, or other NAAQS milestones.

The transportation conformity determination includes an assessment of future highway emissions for defined analysis years, including the end year of the MTP. Emissions are estimated using the latest available planning assumptions and available analytical tools, including EPA's latest approved on-highway mobile sources emissions model, the Motor Vehicle Emission Simulator (MOVES). The conformity determination provides a tabulation of the analysis results for applicable precursor pollutants, showing that the required conformity test was met for each analysis year.

Report Contents

This document includes a summary of the methodology and data assumptions used for the conformity analysis. As shown in **Exhibit 1**, attachments containing additional detail have been provided with the document. In addition, modeling input and output files have been reviewed by the Environmental Protection Agency (EPA) Region III and the Pennsylvania Department of Environmental Protection (DEP).

EXHIBIT 1: SUMMARY OF ATTACHMENTS

Attachment	Title	Description
A	Project List	Provides a list of regionally significant highway projects that have been updated or added to the TIP and MTP.
B	Detailed Emission Results	Provides a detailed summary of emissions by roadway type.
C	MOVES Sample Run Specification	Provides example MOVES data importer (XML) and run specification (MRS) files.

National Ambient Air Quality Standard Designations

The CAA requires the EPA to set NAAQS for pollutants considered harmful to public health and the environment. A nonattainment area is any area that does not meet the primary or secondary NAAQS. Once a nonattainment area meets the standards and additional redesignation requirements in the CAA [Section 107(d)(3)(E)], EPA will designate the area as a maintenance area.

Lancaster County is designated as a nonattainment area under the 2008 8-hour ozone NAAQS and a maintenance area under the 2006 24-hour $PM_{2.5}$ NAAQS. The county is in attainment for all other current ozone and $PM_{2.5}$ NAAQS. Transportation conformity requires nonattainment and maintenance areas to demonstrate that all future transportation projects will not prevent an area from reaching its air quality attainment goals.

Final Particulate Matter

Fine particulate matter ($PM_{2.5}$) can be emitted directly into the atmosphere (sources include exhaust and dust from brake and tire wear) or formed in the atmosphere by combinations of precursor pollutants (secondary formation). Sulfates and nitrates are two types of pollutants that contribute to secondary formation. Sulfate emissions are a result of power plant and industry emissions, while nitrate emissions result from automobiles, power plants, and other combustion sources. Scientific studies have shown a significant correlation between exposure to fine particulates and severe health issues such as heart disease, lung disease, and premature death.

The pollutants that could be analyzed in the conformity analysis are: [1] direct $PM_{2.5}$ emissions (tail pipe emissions, brake and tire wear), [2] re-entrained road dust, and [3] precursors nitrogen oxides (NO_X), volatile organic compounds (VOC), sulfur oxides (SO_X) and ammonia (NH_3). The EPA has ruled that until

the EPA or DEP find that other precursor pollutants are significant contributors, and a SIP revision is approved stating such findings, direct $PM_{2.5}$ emissions and NOx are the only pollutants that must be analyzed for transportation conformity (40 CFR 93.119(f)(8)–(10)).

1997 Annual $PM_{2.5}$ and 2006 24-hour $PM_{2.5}$ Standards

The EPA published the 1997 annual $PM_{2.5}$ NAAQS on July 18, 1997, (62 FR 38652), with an effective date of September 16, 1997. An area is in nonattainment of this standard if the 3-year average of the annual mean $PM_{2.5}$ concentrations (for designated monitoring sites within an area) exceed 15.0 micrograms per cubic meter ($\mu g/m^3$). Lancaster County was designated as a nonattainment area under the 1997 annual $PM_{2.5}$ NAAQS, effective April 5, 2005 (70 FR 944).

The EPA published the 2006 24-hour $PM_{2.5}$ NAAQS on October 17, 2006, (71 FR 61144), with an effective date of December 18, 2006. The rulemaking strengthened the 1997 24-hour standard of 65 $\mu g/m^3$ (62 FR 38652) to 35 $\mu g/m^3$ and retained the 1997 annual $PM_{2.5}$ NAAQS of 15 $\mu g/m^3$. An area is in nonattainment of the 2006 24-hour $PM_{2.5}$ NAAQS if the 98th percentile of the annual 24-hour concentrations, averaged over three years, is greater than 35 $\mu g/m^3$. Lancaster County was designated as a nonattainment area under the 2006 24-hour $PM_{2.5}$ NAAQS, effective December 14, 2009 (74 FR 58688).

A redesignation request and maintenance plan applicable to both the 1997 annual and 2006 24-hour $PM_{2.5}$ NAAQS was approved by EPA and effective July 16, 2015 (80 FR 42050). The maintenance plan includes 2017 and 2025 $PM_{2.5}$ and NOx mobile vehicle emission budgets (MVEBs) for transportation conformity purposes. EPA took final action on the "*Fine Particulate Matter National Ambient Air Quality Standards: State Implementation Plan Requirements*" rule on August 24, 2016 (81 FR 58010 effective on October 24, 2016). In that rulemaking, EPA finalized the option that revokes the 1997 primary annual $PM_{2.5}$ NAAQS in areas that are in attainment or maintenance of that NAAQS. After revocation, areas no longer have to expend resources on CAA air quality planning and conformity determination requirements associated with the 1997 annual $PM_{2.5}$ NAAQS.

2012 Annual $PM_{2.5}$ Standard

The EPA published the 2012 annual $PM_{2.5}$ NAAQS on January 15, 2013, (78 FR 3086), with an effective date of March 18, 2013. The EPA revised the annual $PM_{2.5}$ NAAQS by strengthening the standard from 15 $\mu g/m^3$ to 12 $\mu g/m^3$. An area is in nonattainment of this standard if the 3-year average of the annual mean $PM_{2.5}$ concentrations for designated monitoring sites in an area is greater than 12.0 $\mu g/m^3$. On December 18, 2014, EPA issued final designations for the standard that were revised on April 7, 2015 (80 FR 18535). Lancaster County is designated in attainment of the standard.

2024 Annual $PM_{2.5}$ Standard

On February 7, 2024, EPA strengthened the annual $PM_{2.5}$ standard at 9.0 µg/m3 to provide increased public health protection, consistent with the available health science. The nonattainment areas have not been designated yet for this new standard.

Ozone

Ozone is formed by chemical reactions occurring under specific atmospheric conditions. Precursor pollutants that contribute to the formation of ozone include VOC and NO_X, both of which are components of vehicle exhaust. VOCs may also be produced through the evaporation of vehicle fuel, as well as by displacement of vapors in the gas tank during refueling. By controlling VOC and NO_X emissions, ozone formation can be mitigated.

1997 and 2008 8-hour Ozone NAAQS

The EPA published the 1997 8-hour ozone NAAQS on July 18, 1997, (62 FR 38856), with an effective date of September 16, 1997. An area was in nonattainment of the 1997 8-hour ozone NAAQS if the 3-year average of the individual fourth highest air quality monitor readings, averaged over 8 hours throughout the day, exceeded the NAAQS of 0.08 parts per million (ppm). On May 21, 2013, the EPA published a rule revoking the 1997 8-hour ozone NAAQS, for the purposes of transportation conformity, effective one year after the effective date of the 2008 8-hour ozone NAAQS area designations (77 FR 30160). As of July 20, 2013, Lancaster County no longer needs to demonstrate conformity to the 1997 8-hour ozone NAAQS. However, future SIP revisions must address EPA's anti-backsliding requirements.

The EPA published the 2008 8-hour Ozone NAAQS on March 27, 2008, (73 FR 16436), with an effective date of May 27, 2008. EPA revised the ozone NAAQS by strengthening the standard to 0.075 ppm. Thus, an area is in nonattainment of the 2008 8-hour ozone NAAQS if the 3-year average of the individual fourth highest air quality monitor readings, averaged over 8 hours throughout the day, exceeds the NAAQS of 0.075 ppm. Lancaster County was designated as a nonattainment area under the 2008 8-hour ozone NAAQS, effective July 20, 2012 (77 FR 30088). Effective June 3, 2016, EPA determined that Lancaster County has attained the 2008 ozone NAAQS by the applicable attainment date. This determination of attainment does not constitute a redesignation to attainment. Redesignations require states to meet a number of additional statutory criteria, including the EPA approval of a state plan demonstrating maintenance of the air quality standard for 10 years after redesignation.

2015 8-hour Ozone NAAQS

In October 2015, based on its review of the air quality criteria for ozone and related photochemical oxidants, the EPA revised the primary and secondary NAAQS for ozone to provide requisite protection of public health and welfare, respectively (80 FR 65292). The EPA revised the levels of both standards to 0.070 ppm, and retained their indicators, forms (fourth-highest daily maximum, averaged across three consecutive years) and averaging times (eight hours). On October 16, 2018 (83 FR 52163), EPA established designations for the 2015 8-hour ozone NAAQS. Lancaster County was designated in attainment of the standard.

Interagency Consultation

As required by the federal transportation conformity rule, the conformity process includes a significant level of cooperative interaction among federal, state, and local agencies. For this air quality conformity analysis, interagency consultation was conducted as required by the Pennsylvania Conformity SIP. This included conference call(s) or meeting(s) of the Pennsylvania Transportation-Air Quality Work Group (including the Pennsylvania Department of Transportation (PennDOT), DEP, EPA, FHWA, FTA and representatives from larger MPOs within the state). Meeting and conference calls are conducted quarterly and included the review of all input planning assumptions, methodologies and analysis years. A meeting was conducted on February 7, 2024 to review all planning assumptions and to discuss the template and content for transportation conformity analyses.

Analysis Methodology and Data

This transportation conformity analysis was conducted using EPA's MOVES model, which is the official model for estimating emissions from highway vehicles for SIP emission inventories and transportation conformity. MOVES3 has been used for this conformity determination and is (in addition to MOVES4) currently considered one of the latest approved model versions for SIP and transportation conformity purposes (86 FR 1106). After September 12, 2025, MOVES4 must be used for conformity determinations (88 FR 62567).

Planning assumptions are updated following EPA and FHWA joint guidance (EPA420-B-08-901) that clarifies the implementation of the latest planning assumption requirements in 40 CFR 93.110. This analysis utilizes the best available available traffic, vehicle fleet and environmental data to estimate regional highway emissions. PennDOT updates many of the key planning assumptions on a triennial basis to support EPA's National Emissions Inventory (NEI) and FHWA's latest planning assumption requirements for transportation conformity. The PennDOT triennial data update is typically used to inform the planning assumptions for the future analysis years used for transportation conformity.

Due to the impacts that COVID has had on the vehicle fleet turnover, PennDOT, in coordination with the Pennsylvania Air Quality Workgroup, has determined that the estimates of the vehicle fleet age for the most recent available data (2020-2022) may not be reflective of future conditions or longer term trends. Thus, the vehicle age assumption relied on previous planning assumptions used for past conformity analyses.

All other data assumptions for the conformity analysis relied on the latest available planning assumptions or national/local defaults consistent with methods used for past conformity analyses and EPA's technical guidance. This includes information and characteristics related to fuels, inspection maintenance (I/M) program parameters, heavy-truck long duration idling, and environmental data (e.g. temperatures and humidity). The analysis methodology and data inputs for this analysis were developed through interagency consultation and used available EPA guidance documents that included:

- *Policy Guidance on the Use of MOVES3 for State Implementation Plan Development, Transportation Conformity, General Conformity, and Other Purposes,* US EPA Office of Transportation and Air Quality, EPA-420-B-20-044, November 2020.
- *MOVES3 Technical Guidance: Using MOVES to Prepare Emission Inventories for State Implementation Plans and Transportation Conformity,* US EPA Office of Transportation and Air Quality, EPA-420-B-20-052, November 2020.

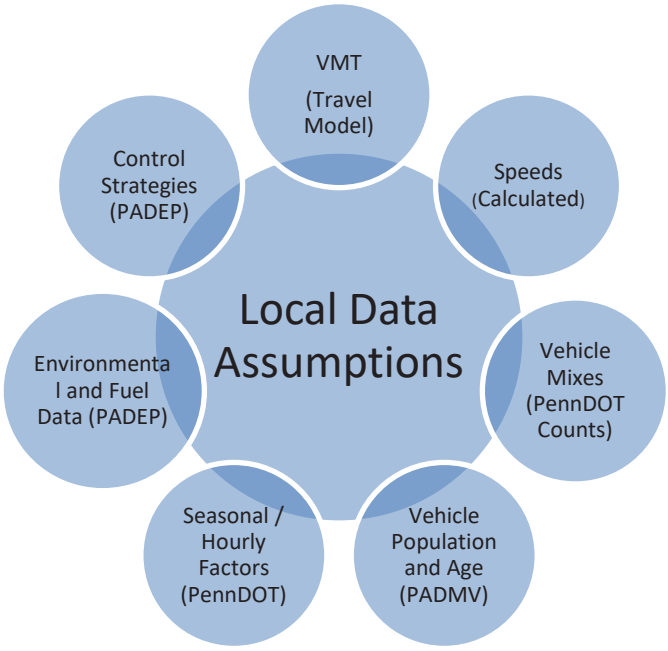
A mix of local and national default (internal to MOVES) data are used in the analysis. As illustrated in **Exhibit 2**, local data has been used for data items that have a significant impact on emissions, including: vehicle miles of travel (VMT), vehicle population, congested speeds, and vehicle type mix, as well as environmental and fuel assumptions. Local data inputs to the analysis process reflect the latest available planning assumptions using information obtained from PennDOT, DEP and other local/national sources.

The methodology used for this analysis is consistent with the methodology used to develop SIP inventories. This includes the use of custom post-processing software (PPSUITE) to calculate hourly speeds and prepare key traffic input files to the MOVES emission model. PPSUITE consists of a set of programs that perform the following functions:

PPSUITE consists of a set of programs that perform the following functions:

- Analyzes highway operating conditions.
- Calculates highway speeds.
- Compiles VMT and vehicle type mix data.
- Prepares MOVES runs and processes MOVES outputs.

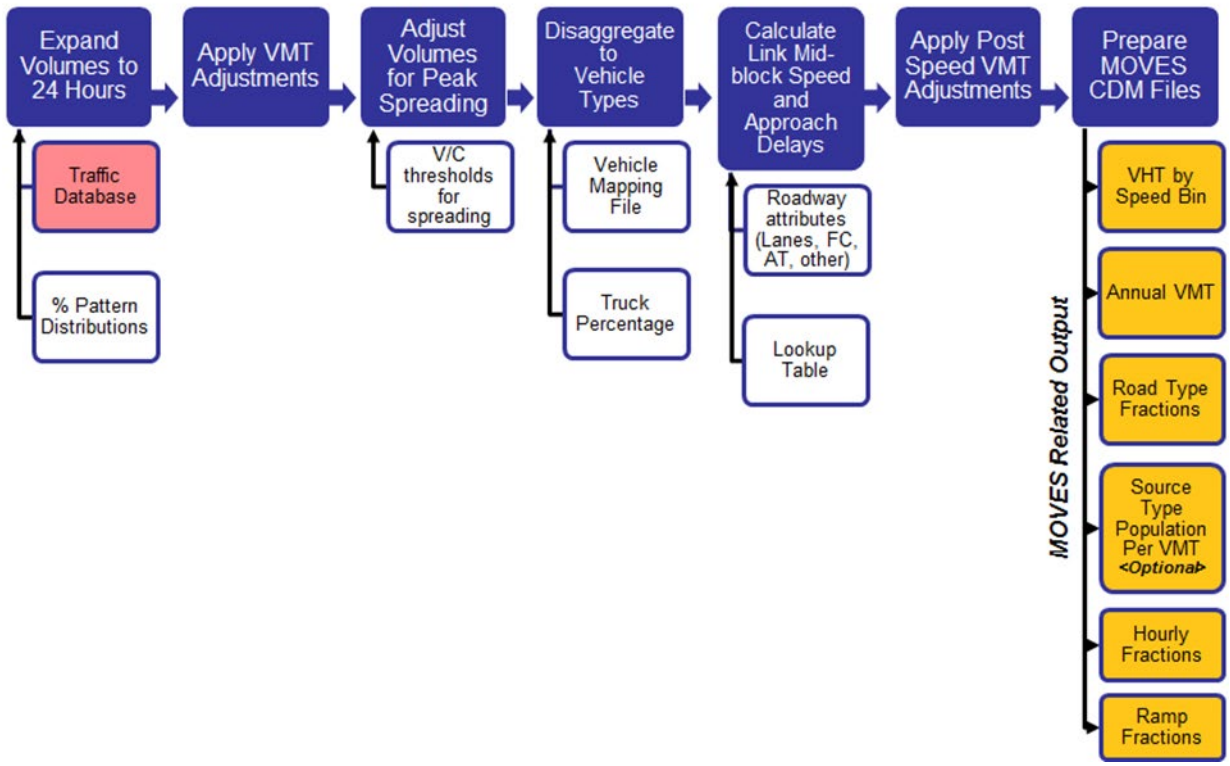
EXHIBIT 2: LOCAL DATA INPUTS USED FOR CONFORMITY RUNS



PPSUITE is a widely used and accepted tool for estimating speeds and processing emissions rates. The PPSUITE tool has been used for developing on-highway mobile source inventories in SIP revisions, control strategy analyses, and conformity analyses in other states. The software was developed to utilize accepted transportation engineering methodologies. The PPSUITE process is integral to producing traffic-related input files to the MOVES emission model. **Exhibit 3** summarizes the key functions of PPSUITE within the emission calculation process. Other MOVES input files are prepared externally to the PPSUITE software, including vehicle population, vehicle age, environmental and fuel input files.

The CENTRAL software is also used in this analysis. CENTRAL is a menu-driven software platform that executes the PPSUITE and MOVES processes in batch mode. The CENTRAL software allows users to execute runs for a variety of input options and integrates custom SQL steps into the process. CENTRAL provides important quality control and assurance steps, including file naming and storage automation.

EXHIBIT 3: EMISSION CALCULATION PROCESS



Key MOVES Input Data

A large number of inputs to MOVES are needed to fully account for the numerous vehicle and environmental parameters that affect emissions. These inputs include traffic flow characteristics, vehicle descriptions, fuel parameters, I/M program parameters and environmental variables. MOVES includes a default national database of meteorology, vehicle fleet, vehicle activity, fuel and emission control program data for every county; EPA, however, cannot certify that the default data is the most current or best

available information for any specific area. As a result, local data, where available, is recommended for use when conducting a regional conformity analysis. A mix of local and default data is used for this analysis. These data items are discussed in the following sections.

Travel Demand Model

The roadway data input to emissions calculations for this conformity analysis is based on information from the region's travel demand forecasting model. The travel demand model estimates roadway volumes based on input demographic forecasts and expected changes to the transportation roadway network.

The travel demand model follows the basic "four-step" travel demand forecasting process and utilizes the Cube Voyager (TP+) software platform. The model was recently updated in 2020 to include the Lancaster, Harrisburg, York, Franklin, Adams and Lebanon MPO areas in the south-central region. The network contains attributes such as distance, number of lanes, area type, facility type, free flow speed, capacity of the lane, and location of traffic signals. The model updates included a revalidation of the travel model to 2018-2019 traffic conditions. Using the projected traffic volume data from the model, conditions were evaluated for all applicable future analysis years. All significant air quality projects from the TIP and MTP were coded into the travel demand model. Transit data was also generated as part of the travel demand model. Existing fixed transit routes and their associated attributes (i.e., stops, headways, fares, and speeds) are included within a transit subroutine. Ridership estimates generated by this subroutine are fed back into the model stream as part of the overall network processing.

Traffic forecasts were projected based on the socioeconomic and land use data projections developed by Lancaster County Planning Commission. This data includes total population, households, and employment. **Exhibit 4** summarizes the socioeconomic data for the base year and horizon years of the MTP. Socioeconomic data for other analysis years were forecasted using interpolation.

EXHIBIT 4: SOCIOECONOMIC GROWTH ASSUMPTIONS TO THE TRAVEL MODEL

County	Year	Population	Household	Total Employment
Lancaster	2018	539,687	201,312	245,114
	2025	588,888	221,620	252,876
	2035	636,674	240,644	263,957
	2045	681,986	260,492	275,006
	2050	708,347	271,435	280,519

The travel model network and assigned traffic volumes are processed by PPSUITE to prepare the traffic inputs needed to run the MOVES emission model. The following information is extracted from the model for emission calculations:

- Lanes
- Roadway capacity
- Distance
- Daily traffic volume
- Type of area abutting the roadway (e.g. urban, suburban, rural, etc.)
- Type of roadway facility (e.g. interstate, arterial, collector, local, etc.)

Other Supporting Traffic Data

Other traffic data is used to adjust and disaggregate traffic volumes. Key sources used in these processes include the following:

- *Highway Performance Monitoring System (HPMS VMT)*: According to EPA guidance, baseline inventory VMT computed from the regional travel model must be adjusted to be consistent with HPMS VMT totals. The VMT contained in the HPMS reports are considered to represent average annual daily traffic (AADT), an average of all days in the year, including weekends and holidays. Adjustment factors were calculated as part of the model's validation process. These factors are used to adjust locally modeled roadway data VMT to be consistent with the reported HPMS totals, and are applied to all county and facility group combinations within the region. These adjustments are important to account for local roadway VMT not represented within the regional travel demand model.
- *Seasonal Factors*: The traffic volumes estimated from the regional travel demand model are adjusted to summer or average monthly conditions (as needed for annual processing), using seasonal adjustment factors prepared by PennDOT's Bureau of Planning and Research (BPR) in their annual traffic data report published on the BPR website (http://www.dot.state.pa.us/ Search: Research and Planning). The seasonal factors are also used to develop MOVES daily and monthly VMT fraction files, allowing MOVES to determine the portion of annual VMT that occurs in each month of the year.
- *Hourly Patterns*: Speeds and emissions vary considerably depending on the time of day. In order to produce accurate emission estimates, it is important to estimate the pattern by which roadway volume varies by breaking the data down into hourly increments. Pattern data is in the form of a percentage of the daily volumes for each hour. Distributions are provided for all the counties within the region and by each facility type grouping. The hourly pattern data has been developed from 24-hour vehicle count data compiled by PennDOT's BPR, using the process identified in PennDOT's annual traffic data report. The same factors are also used to develop the MOVES hourly fraction file.

Vehicle Class

Emission rates within MOVES also vary significantly by vehicle type. MOVES produces emission rates for thirteen MOVES vehicle source input types. VMT, however, is input to MOVES by five HPMS vehicle groups (note that passenger cars and light trucks are grouped for input to MOVES). **Exhibit 5** summarizes the distinction between each classification scheme.

EXHIBIT 5: MOVES SOURCE TYPES AND HPMS VEHICLE GROUPS

SOURCE TYPES		HPMS Class Groups	
11	Motorcycle	10	Motorcycle
21	Passenger Car	25	Passenger Car
31	Passenger Truck	25	Passenger/Light Truck
32	Light Commercial Truck	40	Buses
41	Other Buses	50	Single Unit Trucks
42	Transit Bus	60	Combination Trucks
43	School bus		
51	Refuse Truck		
52	Single Unit Short-haul Truck		
53	Single Unit Long-haul Truck		
54	Motor Home		
61	Combination Short-haul Truck		
62	Combination Long-haul Truck		

The emissions estimation process includes a method to disaggregate the traffic volumes to the thirteen source types and then to recombine the estimates to the five HPMS vehicle classes. Vehicle type pattern data is used by PPSUITE to distribute the hourly roadway segment volumes among the thirteen MOVES source types. Similar to the 24-hour pattern data, this data contains percentage splits to each source type for every hour of the day. The vehicle type pattern data is developed from several sources of information:

- PennDOT truck percentages from the Roadway Mangement System (RMS) database.
- Hourly distributions for trucks and total traffic compiled by PennDOT's BPR.
- School bus registration data from PennDOT's Bureau of Motor Vehicles Registration Database.

Vehicle type percentages are also input into the capacity analysis section of PPSUITE to adjust the speeds in response to truck volume. Larger trucks take up more roadway space compared to an equal number of cars and light trucks, which is accounted for in the speed estimation process by adjusting capacity using information from the Transportation Research Board's fifth edition of the *Highway Capacity Manual*. (http://hcm.trb.org/).

Vehicle Ages

Vehicle age distributions are input to MOVES for each of the thirteen source types. These distributions reflect the percentage of the vehicle fleet falling under each vehicle model year (MY), to a maximum age of 31 years. The vehicle age distributions were prepared from the most recently available registration download from PennDOT's Bureau of Motor Vehicles Registration Database. Due to data limitations, information for light duty vehicles, intercit bus and motor home (including source types 11, 21, 31, 32, 41 and 54) was used as local data for MOVES inputs, while the rest of heavy-duty vehicles (including source types 42, 43, 51, 52, 53, 61, and 62) used the MOVES national default age distribution data. The registration data download is based on MOBILE6.2 vehicle categories. The data was converted to source types using the EPA convertor spreadsheets provided with the MOVES emission model.

Vehicle Population

The vehicle population information, including the number and age of vehicles, impacts forecasted start and evaporative emissions within MOVES. Similar to vehicle ages, MOVES requires vehicle populations for each of the thirteen source type categories. County vehicle registration data was used to estimate vehicle population for light-duty vehicles, transit buses, and school buses. Other heavy-duty vehicle population values were based on VMT for each source type using the vehicle mix and pattern data discussed previously. PPSUITE automatically applies MOVES default ratios of VMT and source type population (e.g. the number of miles per vehicle by source type) to the local VMT estimates to produce vehicle population.

For the preparation of source type population for other required conformity analysis years, base values were adjusted using forecast population and household data for the area. Growth rates were limited so as to not exceed the VMT growth assumptions.

Meteorology Data

Average monthly minimum temperatures, maximum temperatures, and humidity values are consistent with the regional State Implementation Plan (SIP) modeling conducted by DEP. The data was obtained from WeatherBank, Inc. EPA's MOBILE6.2-MOVES meteorological data convertor spreadsheet (http://www.epa.gov/oms/models/moves/tools.htm) was used to prepare the hourly temperature inputs needed for the MOVES model, based on the available data.

Fuel Parameters

The MOVES3 default data assumptions have been reviewed and determined adequate to be used as inputs to the MOVES emissions modeling. Key assumptions include:

- 10.0 RVP used for summer months.
- 100% market share of 10% ethanol throughout the year for analysis years 2025, 2035, 2045 and 2050 (based on MOVES3 defaults).

I/M Program Parameters

The inspection maintenance (I/M) program inputs to the MOVES model are based on previous and current programs within each county (all PA I/M programs are based on county boundaries). All analysis years include Pennsylvania's statewide I/M program. The default I/M program parameters included in MOVES were examined for each county and necessary changes were made to the default parameters to match the 2021 I/M program performance.

In order to assure that emission controls are working properly, vehicle inspection and maintenance (I/M) programs have been adopted in some nonattainment areas. These programs have the added benefit of improving the fuel efficiency of vehicles. The Pennsylvania inspection and maintenance (I/M) program was upgraded and expanded throughout the state with a phase-in period starting in September 2003 and fully implemented by June 2004.

The I/M program requirements vary by region (five regions) and include on-board diagnostics (OBD) technology that uses the vehicle's computer for model years 1996 and newer to identify potential engine and exhaust system problems that could affect emissions. The program, named PAOBDII, is implemented by region as follows:

- *Philadelphia Region* - Bucks, Chester, Delaware, Montgomery and Philadelphia Counties
  [Includes tailpipe exhaust testing using ASM2015 or equipment for pre-1996 vehicles up to 25 years old]
- *Pittsburgh Region* - Allegheny, Beaver, Washington and Westmoreland Counties.
  [Includes tailpipe exhaust testing using PA 97 equipment for pre-1996 vehicles up to 25 years old]
- *South Central and Lehigh Valley Region* - Berks, Cumberland, Dauphin, Lancaster, Lebanon, Lehigh, Northampton and York Counties.
  [Includes gas cap and visual inspection only for 1975 through 1995 model years]
- *North Region* - Blair, Cambria, Centre, Erie, Lackawanna, Luzerne, Lycoming, and Mercer Counties.
  [Gas cap and visual inspection only – No OBD]
- *Other 42 Counties* – Includes the remaining 42 counties not included above.
  [Visual inspection only – No OBD]

The OBDII program is implemented in Philadelphia and Pittsburgh along with tailpipe (idle in Pittsburgh and idle and ASM in Philadelphia) and gas cap tests. Tests in other regions include:

- *Subject vehicles registered in the South Central and Lehigh Valley counties receive the visual, OBD and gas cap tests.*
- *Subject vehicles registered in the North region receive a gas cap test and visual inspection.*
- *Subject vehicles registered in the other 42 counties (67 total counties) receive a visual inspection as part of the annual safety inspection.*

Vehicle Technology Programs

Federal Programs

Current federal vehicle emissions control and fuel programs are incorporated into the MOVES3 software. The MOVES3 model includes the National Program standards covering light duty vehicles through model year 2026, heavy duty greenhouse gas standards for model year 2014-2018 vehicles, and the Tier 3 vehicle

standards. Modifications of default emission rates are required to reflect the early implementation of the National Low Emission Vehicle (NLEV) program in Pennsylvania. To reflect these impacts, EPA has released instructions and input files that can be used to model these impacts. The NLEV input database was created for Pennsylvania per EPA's instructions and was used for this inventory.

MOVES3 also incorporates the following new federal emission standard rules:

- *Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles – Phase 2 (HD GHG2) Rule*: MOVES3 accounts for the HD GHG2 rule published in 2016. The rule set stricter fuel economy standards for HD vehicles which reduce CO2 emissions, but also impact other pollutants through changes in glider sales, hoteling activity, vehicle mass and road load coefficients.

- *Safe Affordable Fuel Efficient (SAFE) Vehicles Rule*: MOVES3 also accounts for the March 2020 SAFE standards for light-duty vehicles. These standards were less stringent than the preceding fuel economy standards, and thus increased fuel consumption and CO2 emissions.

State Programs

The Pennsylvania Clean Vehicles (PCV) Program, adopted in 1998, incorporated the California Low Emission Vehicle Regulations (CA LEV) by reference. The PCV Program allowed automakers to comply with the NLEV program as an alternative to this Pennsylvania program until MY2006. Beginning with MY2008, all "new" passenger cars and light-duty trucks with a gross vehicle weight rating (GVWR) of 8,500 pounds or less sold/leased and titled in Pennsylvania must be certified by the California Air Resources Board (CARB) or be certified for sale in all 50 states. For this program, a "new" vehicle is a qualified vehicle with an odometer reading less than 7,500 miles. DEP and PennDOT both work with the public, including manufacturers, vehicle dealers and consumers, to ensure that vehicles sold and purchased in Pennsylvania or vehicles purchased from other states by Pennsylvania residents comply with the requirements of the PCV Program, in order to be titled in Pennsylvania. Additionally, PennDOT ensures that paperwork for title and registration includes proof of CARB- or 50-state emission certification or that the vehicle owner qualifies for an exemption to the requirements, as listed on PennDOT's MV-9 form and in the PCV Program regulation. When necessary, information from PennDOT's title and registration process may be used to audit vehicle title transactions to determine program compliance.

The impacts of this program are modeled for all analysis years beyond 2008 using the same instructions and tools downloaded for the early NLEV analysis. EPA provided input files to reflect state programs similar to the CAL LEV program. Modifications to those files were made to reflect a 2008 program start date for Pennsylvania.

Analysis Process Details

The previous sections have summarized the input data used for computing speeds and emission rates for this conformity analysis. This section explains how PPSUITE and MOVES use that input data to produce emission estimates. **Exhibit 6** provides a more detailed overview of the PPSUITE analysis procedure using the available traffic data information described in the previous sections.

VMT Preparation

Producing an emissions inventory with PPSUITE requires a process of disaggregation and aggregation. Data is available and used on a very detailed scale – individual roadway segments for each of the 24 hours of the day. This data needs to be processed individually to determine the distribution of vehicle hours of travel (VHT) by speed and then aggregated by vehicle class to determine the input VMT to the MOVES emission model. Key steps in the preparation of VMT include:

- *Assemble VMT* - The regional travel demand model contains the roadway segments, distances and travel volumes needed to estimate VMT. PPSUITE processes each segment by simply multiplying the assigned travel volume by the distance to obtain VMT.
- *Apply Seasonal Adjustments* – PPSUITE adjusts the traffic volumes to the appropriate analysis season. These traffic volumes are assembled by PPSUITE and extrapolated over the course of a year to produce the annual VMT file input to MOVES.
- *Disaggregate to Hours* - After seasonal adjustments are applied, the traffic volumes are distributed to each hour of the day. This allows for more accurate speed calculations (effects of congested hours) and allows PPSUITE to prepare the hourly VMT and speeds for input to MOVES.
- *Peak Spreading* - After distributing the daily volumes to each hour of the day, PPSUITE identifies hours that are unreasonably congested. For those hours, PPSUITE then spreads a portion of the volume to other hours within the same peak period, thereby approximating the "peak spreading" that normally occurs in such over-capacity conditions. This process also helps prevent hours with unreasonably congested speeds from disproportionately impacting emission calculations.
- *Disaggregation to Vehicle Types* - EPA requires VMT estimates to be prepared by the five HPMS vehicle groups, reflecting specific local characteristics. As described in the previous section, the hourly volumes are disaggregated into thirteen MOVES source types based on data from PennDOT, in combination with MOVES defaults. The thirteen MOVES source types are then recombined into five HPMS vehicle classes.
- *Apply HPMS VMT Adjustments* - Volumes must also be adjusted to account for differences with the HPMS VMT totals, as described in previous sections. VMT adjustments are provided as inputs to PPSUITE and are applied to each of the roadway segment volumes. VMT adjustments are also applied to runs for future years.

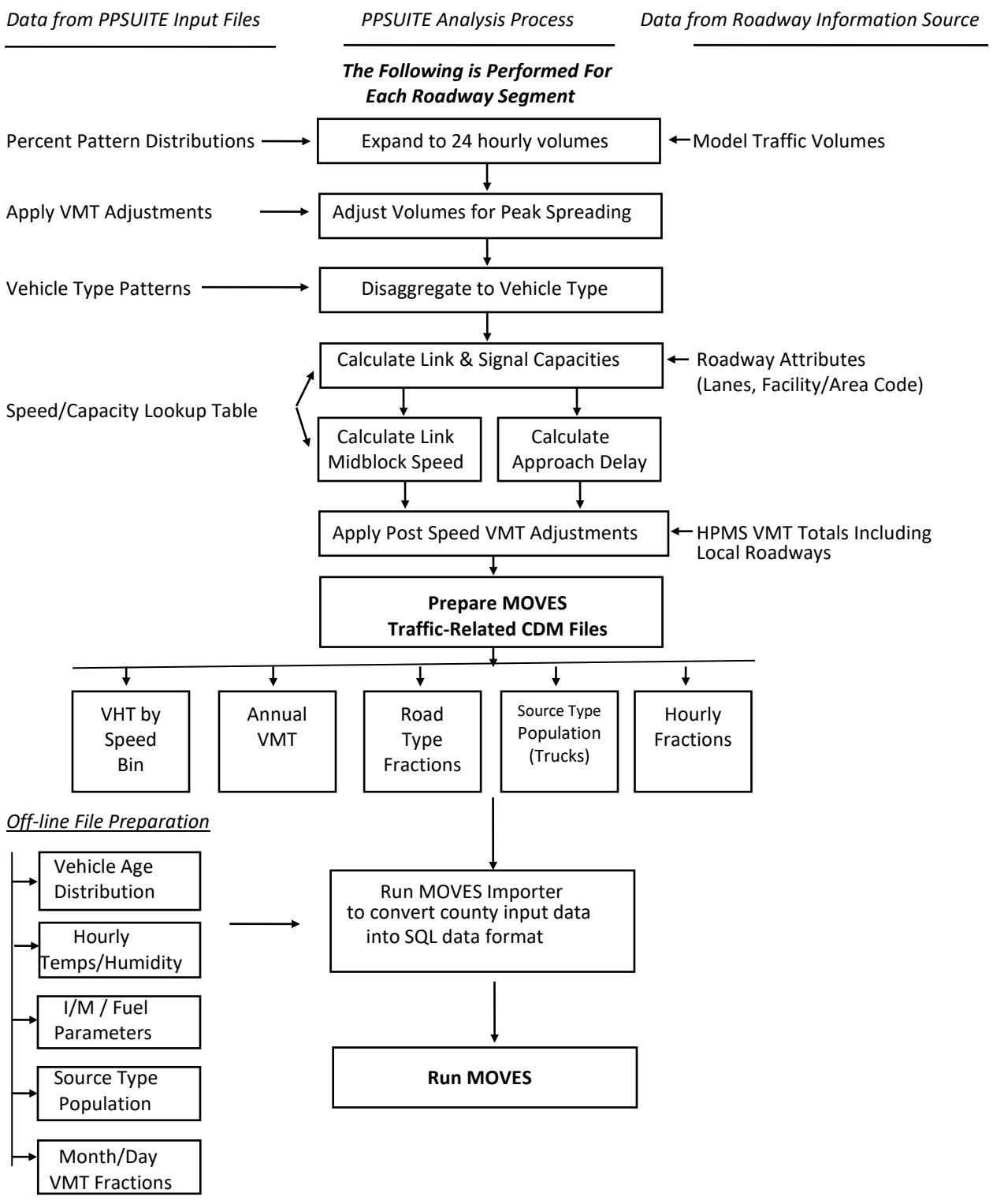
Speed Estimation

Emissions for many pollutants (including VOC and NOx) vary significantly with travel speed. VOC emissions generally decrease as speed increases, while NO_X emissions decrease at low speeds and increase at higher speeds. Because emissions are so sensitive to speed changes, EPA recommends special attention be given to developing reasonable and consistent speed estimates. EPA also recommends that VMT be disaggregated into subsets that have roughly equal speeds, with separate emission factors for each subset. At a minimum, speeds should be estimated separately by road type.

The computational framework used for this analysis meets and exceeds the recommendation above relating to speed estimates. Speeds are individually calculated for each roadway segment and hour. Rather than accumulating the roadway segments into a particular road type and calculating an average speed, each individual link hourly speed is represented in the MOVES vehicle hours of travel (VHT) by a speed bin file. This MOVES input file allows the specification of a distribution of hourly speeds. For example, if 5% of a county's arterial VHT operates at 5 mph during the AM peak hour and the remaining 95% operates at 65 mph, this can be represented in the MOVES speed input file. For the roadway vehicle emissions calculations, speed distributions are input to MOVES by road type and source type for each hour of the day.

To calculate speeds, PPSUITE first obtains initial capacities (i.e., how much volume the roadway can serve before heavy congestion) and free-flow speeds (speeds assuming no congestion) from a speed/capacity lookup table. As described previously, this data contains default roadway information indexed by the area and facility type codes. For areas with known characteristics, values can be directly coded to the database and the speed/capacity default values can be overridden. For most areas where known information is unavailable, the speed/capacity lookup tables provide valuable default information regarding speeds, capacities, signal characteristics, and other capacity adjustment information used for calculating congested delays and speeds. The result of this process is an estimated average travel time for each hour of the day for each highway segment. The average travel time multiplied by traffic volume produces vehicle hours of travel (VHT).

EXHIBIT 6: PPSUITE SPEED/EMISSION ESTIMATION PROCEDURE



Developing the MOVES Traffic Input Files

The PPSUITE software is responsible for producing the following MOVES input files during any analysis run:

- VMT by HPMS vehicle class.
- VHT by speed bin.
- Road type distributions.
- Hourly VMT fractions.

These files are text formatted files with a *.csv extension. The files are provided as inputs within the MOVES County Data Manager (CDM) and are described below:

- *VMT Input File*: VMT is the primary traffic input affecting emission results. The roadway segment distances and traffic volumes are used to prepare estimates of VMT. PPSUITE performs these calculations and outputs the MOVES annual VMT input file to the County Data Manager (CDM). The annual VMT is computed by multiplying the RMS or travel model roadway adjusted VMT by 365 days (366 days in a leap year).
- *VHT by Speed Bin File*: As described in the previous section, the PPSUITE software prepares the MOVES VHT by speed bin file, which summarizes the distribution of speeds across all links into each of the 16 MOVES speed bins for each hour of the day by road type. This robust process is consistent with the methods and recommendations provided in EPA's technical guidance for the MOVES2014 model (http://www.epa.gov/otaq/models/moves/) and ensures that MOVES emission rates are used to the fullest extent.
- *Road Type Distributions*: Within MOVES, typical drive cycles and associated operating conditions vary by roadway type. MOVES defines five different roadway types as follows:

  1 Off-Network.
  2 Rural Restricted Access.
  3 Rural Unrestricted Access.
  4 Urban Restricted Access.
  5 Urban Unrestricted Access.

  For this analysis, the MOVES road type distribution file is automatically generated by PPSUITE using defined equivalencies. The off-network road type includes emissions from vehicle starts, extended idling, and evaporative emissions. Off-network activity in MOVES is primarily determined by the Source Type Population input.

MOVES Runs

After computing speeds and aggregating VMT and VHT, PPSUITE prepares traffic-related inputs needed to run EPA's MOVES software. Additional required MOVES inputs are prepared externally from the processing software and include temperatures, I/M program parameters, fuel characteristics, vehicle fleet

age distributions, and source type population. The MOVES county importer is run in batch mode. This program converts all data files into the SQL format used by the MOVES model. At that point, a MOVES run specification file (*.mrs) is created which specifies options and key data locations for the run. The MOVES run is then executed in batch mode. A summary of key MOVES run specification settings is shown in **Exhibit 7**. MOVES can be executed using either an inventory or rate-based approach. For this analysis, MOVES is applied using the *inventory-based* approach. Using this approach, actual VMT and population are provided as inputs to the model; MOVES is responsible for producing the total emissions for the region.

EXHIBIT 7: MOVES RUN SPECIFICATION FILE PARAMETER SETTINGS

Parameter	Setting
MOVES Version	MOVES3
MOVES Default Database Version	MOVESDB20221007
Scale	COUNTY
Analysis Mode	Inventory
Time Span	**Annual Runs:** Single MOVES run with 12-month inputs including all days and hours **July Weekday Runs:** July month, Weekday, 24 hours
Time Aggregation	Hour
Geographic Selection	County [FIPS]
Vehicle Selection	All source types Gasoline, Diesel, CNG, E85, Electricity
Road Type	All road types including off-network
Pollutants and Processes	All $PM_{2.5}$ categories, VOC, NO_X
Database selection	Early NLEV database PA-Specific CA LEV database
General Output	Units: Emission = grams; Distance = miles; Time = hours; Energy = Million BTU
Output Emissions	Time = Month, Emissions by Process ID, Source Type and Road Type

Conformity Analysis Results

Transportation conformity analyses of the current TIP and MTP have been completed for Lancaster County. The analyses were performed according to the requirements of the Federal transportation conformity rule at 40 CFR Part 93, Subpart A. The analyses utilized the methodologies, assumptions and data as presented in previous sections. Interagency consultation has been used to determine applicable emission models, analysis years and emission tests.

Emission Tests

There are currently no approved SIP MVEBs for the Lancaster MPO Area under 2008 8-hour Ozone NAAQS. However, the Lancaster MPO Area has an approved SIP revision establishing MVEBs under the 1997 8-hour ozone NAAQS using MOVES (78 FR 78263). As required, the approved budgets are used for the ozone conformity test. The ozone conformity analysis has been conducted to evaluate emissions in comparison to the applicable ozone MVEBs summarized in **Exhibit 8**.

EXHIBIT 8: 8-HOUR OZONE MOTOR VEHICLE EMISSION BUDGETS

County / Pollutant	2009 Budget (tons/day)	2018 Budget (tons/day)
VOC	14.29	10.14
NOx	35.18	20.57

On July 16, 2015, EPA approved the Commonwealth of Pennsylvania's request to redesignate Lancaster County to attainment for the 1997 annual and 2006 24-hour $PM_{2.5}$ NAAQS (80 FR 42050). The MVEBs provided in the maintenance plans for the county are summarized in **Exhibit 9**.

EXHIBIT 9: ANNUAL $PM_{2.5}$ MOTOR VEHICLE EMISSION BUDGETS

County / Pollutant	2017 Budget (tons/year)	2025 Budget (tons/year)
$PM_{2.5}$	249	185
NOx	6,916	4,447

Analysis Years

Section 93.119(g) of the Federal Transportation Conformity Regulations requires that emissions analyses be conducted for specific analysis years as follows:

- A near-term year, one to five years in the future.
- The last year of the MTP's forecast period.
- Attainment year of the standard if within timeframe of TIP and MTP.

- An intermediate year or years such that if there are two years in which analysis is performed, the two analysis years are no more than ten years apart.

All analysis years were determined through the interagency consultation process. **Exhibit 10** provides the analysis years used for this conformity analysis.

EXHIBIT 10: TRANSPORTATION CONFORMITY ANALYSIS YEARS

Analysis Year	Description
2025	Budget Year
2035	Interim Year
2045	Interim Year
2050	Horizon Year of MTP

Components of the $PM_{2.5}$ Regional Emissions Analysis

$PM_{2.5}$ can be the result of either direct or indirect emissions. Direct transportation emissions can be the result of brake or tire-wear, particulates in exhaust emissions, or dust raised by on-road vehicles or construction equipment. Possible indirect transportation related emissions of $PM_{2.5}$ include: NH_3, NO_X, SO_X, and VOC.

The EPA has ruled that regional analysis of direct $PM_{2.5}$ emissions must include both exhaust and brake/tire-wear emissions. EPA's current regulations specify that road dust should be included in the regional analysis of direct $PM_{2.5}$ emissions only if the EPA or the state air agency have found it to be a significant contributor to the region's nonattainment. Neither the EPA nor the state air agency have determined road dust to be a significant contributor in the nonattainment area for this conformity determination.

Until a SIP revision is approved proving that NO_X is insignificant, EPA's current regulations state that indirect $PM_{2.5}$ emissions must be analyzed for NO_X. Conversely, VOC, SO_X and NH_3 must be analyzed only if the state(s) or the EPA determines one or more of these pollutants significant. Therefore, NO_X is the only indirect $PM_{2.5}$ component analyzed for the nonattainment area in this conformity determination.

Regionally Significant Highway Projects

For the purposes of conformity analysis, model highway networks are created for each analysis year. For the horizon years, regionally significant projects from the MTP were coded onto the networks. Detailed assessments were only performed for those new projects which may have a significant effect on emissions in accordance with 40 CFR Parts 51 and 93. Only those projects which would increase capacity or significantly impact vehicular speeds were considered. Projects such as bridge replacements and roadway restoration projects, which constitute the majority of the TIP and MTP list, have been excluded from consideration since they are considered exempt under 40 CFR 93.126-127. A list of highway projects is shown in **Attachment A**.

Analysis Results

An emissions analysis has been completed for the 2008 8-hour ozone NAAQS and the 2006 24-hour $PM_{2.5}$ NAAQS. The results of the analysis are summarized in the tables below. Forecast years have been estimated using the procedures and assumptions provide in this conformity report. A detailed emission summary is also provided in **Attachment B**. Example MOVES importer (XML) and run specification (MRS) files are provided in **Attachment C**.

2008 Ozone NAAQS

Exhibit 11 summarizes the Lancaster County ozone emission results for a summer weekday in each analysis year. The analysis year emission results are compared to the 2018 emission budgets in **Exhibit 8**. All years satisfy the conformity budget test for ozone since the analysis results are below the budgets established in the regional maintenance plan.

EXHIBIT 11: OZONE EMISSION ANALYSIS RESULTS AND CONFORMITY TEST
(Summer Weekday)

Pollutant	*2018 BUDGET (tons/day)*	*2025 (tons/day)*	*2035 (tons/day)*	*2045 (tons/day)*	*2050 (tons/day)*
VOC	***10.14***	*3.64*	*2.60*	*2.17*	*2.18*
NO_X	***20.57***	*8.27*	*5.19*	*5.30*	*5.57*
Conformity Result		**Pass**	**Pass**	**Pass**	**Pass**

2006 24-hour $PM_{2.5}$ NAAQS

Exhibit 12 summarizes the Lancaster County annual $PM_{2.5}$ and NO_X emissions. Emissions are compared against the available 2025 SIP MVEBs listed in **Exhibit 9**. The results illustrate that projected emissions are below the applicable MVEBs.

Exhibit 12: ANNUAL $PM_{2.5}$ EMISSION ANALYSIS RESULTS AND CONFORMITY TEST
(Annual)

Pollutant	*2025 (tons/year)*	*2035 (tons/year)*	*2045 (tons/year)*	*2050 (tons/year)*
$PM_{2.5}$	*104*	*71*	*67*	*68*
NO_X	*2,805*	*1,795*	*1,835*	*1,930*
MVEB - $PM_{2.5}$	***185***	***185***	***185***	***185***
MVEB - NO_X	***4,447***	***4,447***	***4,447***	***4,447***
Conformity Result	**Pass**	**Pass**	**Pass**	**Pass**

Conformity Determination

Financial Constraint

The planning regulations, Sections 450.324(f)(11) and 450.326(j), requires the transportation plan and TIP to be financially constrained while the existing transportation system is being adequately operated and maintained. Only projects for which construction and operating funds are reasonably expected to be available are included. The LCTCC MPO, in conjunction with PennDOT, FHWA and FTA, has developed an estimate of the cost to maintain and operate existing roads, bridges and transit systems in the Lancaster MPO Area and have compared the cost with the estimated revenues and maintenance needs of the new roads over the same period. The TIP and MTP have been determined to be financially constrained.

Public Participation

The TIP and MTP have undergone the public participation requirements as well as the comment and response requirements according to the procedures established in compliance with 23 CFR Part 450, LCTCC Public Participation Plan, and Pennsylvania's Conformity SIP. The draft document was made available for a 30-day public review and comment period starting May 13th, which included a public meeting.

Conformity Statement

The conformity rule requires that the TIP and MTP conform to the applicable SIP(s) and be adopted by the MPO/RPO before any federal agency may approve, accept, or fund projects. Conformity is determined by applying criteria outlined in the transportation conformity regulations to the analysis.

The TIP and MTP for the Lancaster MPO are found to conform to the applicable air quality SIP(s) or EPA conformity requirements. This finding of conformity positively reflects on the efforts of the LCTCC and its partners in meeting the regional air quality goals, while maintaining and building an effective transportation system.

Resources

MOVES Model

Modeling Page within EPA's Office of Mobile Sources Website contains a downloadable model, MOVES users guide and other information. See (http://www.epa.gov/omswww/models.htm)

Policy Guidance on the Use of MOVES3 for State Implementation Plan Development, Transportation Conformity, General Conformity, and Other Purposes, US EPA Office of Transportation and Air Quality, EPA-420-B-20-044, November 2020.

MOVES3 Technical Guidance: Using MOVES to Prepare Emission Inventories for State Implementation Plans and Transportation Conformity, US EPA Office of Transportation and Air Quality, EPA-420-B-20-052, November 2020.

Traffic Engineering

Highway Capacity Manual, fifth edition (HCM2010), Transportation Research Board, presents current knowledge and techniques for analyzing the transportation system.

Traffic Data Collection and Factor Development Report, 2020 Data, Pennsylvania Department of Transportation, Bureau of Planning and Research.

Highway Vehicle Emissions Analysis Glossary

AADT: Average Annual Daily Traffic, average of ALL days

CAA: Clean Air Act as amended

CARB: California Air Resources Board

CFR: Code of Federal Regulations

County Data Manager (CDM): User interface developed to simplify importing specific local data for a single county or a user-defined custom domain without requiring direct interaction with the underlying SQL database in the MOVES emission model

DEP: Department of Environmental Protection.

Emission rate or factor: Expresses the amount of pollution emitted per unit of activity. For highway vehicles, this is usually expressed in grams of pollutant emitted per mile driven

EPA: Environmental Protection Agency.

FC: Functional code. Applied to road segments to identify their type (freeway, local, etc.)

FHWA: Federal Highway Administration

FR: Federal Register

FTA: Federal Transit Administration

Growth factor: Factor used to convert volumes to future years

HPMS: Highway Performance Monitoring System

I/M: Vehicle emissions inspection/maintenance programs are required in certain areas of the country. The programs ensure that vehicle emission controls are in good working order throughout the life of the vehicle. The programs require vehicles to be tested for emissions. Most vehicles that do not pass must be repaired.

MTP: Metropolitan Transportation Plan

MOVES: Motor Vehicle Emission Simulator. The latest model EPA has developed to estimate emissions from highway vehicles

MVEB: motor vehicle emissions budget

NAAQS: National Ambient Air Quality Standard

NTD: National Transit Database

Pattern data: Extrapolations of traffic patterns (such as how traffic volume on road segment types varies by time of day, or what kinds of vehicles tend to use a road segment type) from segments with observed data to similar segments

PPSUITE: Post-Processor for Air Quality. A set of programs that estimate speeds and prepares MOVES inputs and processes MOVES outputs

Road Type: Functional code, applied in data management to road segments to identify their type (rural/urban highways, rural/urban arterials, etc.)

RMS: Roadway Management System

SIP: State Implementation Plan

Source Type: One of thirteen vehicle types used in MOVES modeling

TAZ: Traffic Analysis Zone System

TIP: Transportation Improvement Program

VHT: Vehicle hours traveled

VMT: Vehicle miles traveled. In modeling terms, it is the simulated traffic volumes multiplied by link length

VOC: volatile organic compound emissions

ATTACHMENT A

Project List

The following TIP and MTP air quality significant highway projects are included in this analysis:

MPMS	Name	Description
2025-2028 Transportation Improvement Program		
97013	US 222/US 30 Interchange Improvements	This project consists of interchange improvements which involve US30 interchange ramp widening and reconstruction to accommodate two lane ramps from US 222 South to US30 West and from US30 East to US 222 North. US 30 Westbound will be widened between PA23 and PA 272 for improved weaving and US 30 Eastbound will include minor reconstruction to the outside thru-lane for the conversion to an optional exit lane to the US 222 Northbound ramp. The US 222 ramp bridge over US 30 will be replaced and Eden Road overhead bridge will be rehabilitated and US 222 lowered to provide additional vertical clearance. This project is in Manheim Township, Lancaster County.
109618	US 222 Reconstruction	This project may consist of a Roadway Reconstruction and Conversion to 6-lanes on US 222 from one-mile north of US 30 to north of Jake Landis Interchange (SR 8030) in Manheim Township, Lancaster County. 2.9 miles on US 222.
110502	US30/PA 462 Improvements	The project consists of interchange improvements at US 30 and PA 462 (E. Lincoln Hwy) in East Lampeter Township, Lancaster County, PA. There are a large number of crashes that occur at the intersection of SR 462 EB / SR 30 EB off-ramp and Oakview Road. This is due to the separate lanes of SR 462 and the SR 30 off-ramp converging into one intersection approach. Left turns are not allowed from the SR 30 off-ramp to Oakview Road, because this movement crosses the adjacent eastbound through lanes from SR 462. Drivers attempting to make this turn illegally have caused many crashes. The proposed project will combine both SR 462 EB and the SR 30 EB off-ramp into a single approach and will eliminate the potential for illegal turns across adjacent through lanes and the resulting crashes.
114217	Riverfront to Downtown Connections Streetscape	This project may consist of comprehensive streetscaping. Columbia Borough is proposing to utilize Smart Growth Transportation funding to support the implementation of a comprehensive streetscape program with the goal of providing safe, accessible connections for residents as well as visitors as they travel by foot, bicycle, and car between the Riverfront (featuring Columbia River Park / Northwest Lancaster County River Trail), our emerging downtown commercial core and rich Historic District, and the surrounding neighborhoods. Potential Improvements will include the following: multi-modal accommodations; travel and turning lanes; curbs and sidewalks; intersections, crosswalks, and traffic calming improvements; parking improvements; traffic and wayfinding signage; green infrastructure and landscaping to improve stormwater management; street trees and furnishings (benches / trash receptacles); public art.

121048	Pitney Rd and PA 340 Intersection with PA 462	This project may consist of intersection improvements on PA 462 (King Street) intersections with PA 340 (Old Philadelphia Pike) and SR 3028 (Pitney Road) in East Lampeter, West Lampeter, Lancaster Townships and Lancaster City, Lancaster County. Possible work includes: Redevelop the Bridgeport Crossroads area with dual southbound through lanes along Pitney Road, eliminate the eastbound and westbound left turn lanes along Lincoln Highway at Pitney Road/ Lampeter Road, and remove the signal at Old Philadelphia Pike. New dual eastbound left lanes onto the relocated Old Philadelphia Pike and shift the alignment slightly to provide a potential roundabout to the north of Lincoln Highway.
121061	Lititz Pk and Oregon Pk - Lancaster TSMO 2025-2026	This project may consist of upgrading seven signalized intersections to connect to PennDOT's UCC system at seven intersections on Lititz Pike (PA 501) and Oregon Pike (PA 272) in Lancaster County.
121062	PA 741 Signals - Lancaster TSMO 2025-2026	This project may consist of upgrading nine signalized intersections to connect to PennDOT's UCC system on PA 741 in East Hempfield Township, Lancaster County.
121060	ITS - Lancaster TSMO 2025-2026	This project may consist of upgrading three signal systems to connect to PennDOT's UCC system. Also, adding six ITS signal CCTV and one DMS with a CCTV to help manage traffic within the US 30 system in East Lampeter Township, Lancaster County.
20119	Brunnerville Rd and Newport Rd Int	This project may consist of intersection improvements which include, widening for turn lanes and signal upgrade or roundabout at the intersection of Brunnerville and Newport Road in Warwick Township, Lancaster County.
110557	Intercourse Village Safety Imp	This project may consist of safety improvements and mobility improvements in Intercourse Village in Leacock Township, Lancaster County and will improve facility deficiencies through realigning the Y intersection of SR 0772 and SR 0340. The realignment of this intersection may require a traffic signal at the intersection of SR 0340 and Queen Street. Traffic will change from two-way to one-way on SR 0772 from the intersection of SR 0340 to Queen Street. Queen Street will be widened to include two-way traffic.

2050 Metropolitan Transportation Plan (MTP) Incorporates Projects from PennDOT's 12-Year Program (TYP)		
80931	Harrisburg Pike Corridor Improvements	This project may consist of widening to add capacity, resurfacing and additional signals with signal coordination on Harrisburg Pike (SR 4020) Corridor in the City of Lancaster and Manheim Township, Lancaster County.
94912	PA 23 / PA 741 Intersection Improvements	This project may consist of intersection improvements, including adding turn lanes and improving signalization, on PA-23 (Marietta Avenue) from Good Drive to PA-741 in East Hempfield Township, Lancaster County.
110507	PA324/US222/Fairview Ave	This project consists of an intersection improvement / realignment at the intersection of US 222 (S. Prince St.) and PA 324 (New Danville Pk / S. Queen St) and Fairview Ave. in Lancaster Township, West Lampeter Township and City of Lancaster, Lancaster County.
97251	Colonel Howard Blvd Improvement	This project may consist of intersection improvements on State Route 1040 (Colonel Howard Boulevard) from PA 272 (Reading Road) to Lesher Road in East Cocalico Township, Lancaster County. Potential option included is a diverging diamond interchange.
119474	Enola Low Grade Trail East 2	This project may consist of constructing a 3-mile segment of the Enola Low-Grade Trail on an abandoned rail corridor between Bart Township and the Chester County line, Lancaster County. Includes grading and surfacing for a 10-foot wide stone/paved trail with 2-foot shoulders. Existing drainage facilities will be cleaned and replaced as needed, and there will be three at-grade road crossings of low-volume local roads and one trailhead.
121049	Transit Development Plan Implementation	Proposal Implementation of the Transit Development Plan, including possible Micro-Transit Service Areas. SCTA, through RRTA, is considering implementing micro-transit option tions to increase user flexibility. They are currently working on a Transit Development Plan. Project Location Micro-Transit Service Areas: Elizabethtown, Columbia, Manheim, Lititz, Lancaster City, Ephrata/Akron, New Holland.

ATTACHMENT B

Detailed Emission Results

Detailed Emission Results for Ozone Analysis

2025 Ozone by Road Type

County	Road Type	Summer Day VMT	Speed (mph)	Emissions (Tons/Day)	
				VOC	NOx
Lancaster	Off-Network	N/A	N/A	2.419	1.416
	Rural Restricted	1,237,562	62.8	0.068	0.726
	Rural UnRestricted	2,907,077	40.5	0.199	1.194
	Urban Restricted	3,915,146	58.2	0.214	1.856
	Urban UnRestricted	7,977,700	26.6	0.737	3.073
	Subtotal	*16,037,486*		*3.638*	*8.265*
Off-Model Project Emission Benefits				0.000	0.000
Region Total		**16,037,486**		**3.638**	**8.265**
			(Kg/Day)	**3,300**	**7,498**

2025 Ozone by Source Type

County	Source Type	Summer Day VMT	Emissions (Tons/Day)	
			VOC	NOx
Lancaster	Motorcycle	98,798	0.255	0.062
	Passenger Car	6,468,306	0.956	0.356
	Passenger Truck	6,825,192	1.826	1.739
	Light Commercial Truck	808,961	0.248	0.359
	Intercity Bus	31,658	0.010	0.128
	Transit Bus	40,326	0.015	0.154
	School Bus	11,860	0.003	0.032
	Refuse Truck	5,820	0.002	0.018
	Single Unit Short-haul Truck	593,412	0.111	0.742
	Single Unit Long-haul Truck	39,912	0.005	0.040
	Motor Home	18,624	0.014	0.043
	Combination Short-haul Truck	216,223	0.033	0.768
	Combination Long-haul Truck	878,393	0.159	3.826
	Subtotal	*16,037,486*	*3.638*	*8.265*
Off-Model Project Emission Benefits			0.000	0.000
Region Total		**16,037,486**	**3.638**	**8.265**
		(Kg/Day)	**3,300**	**7,498**

2025 Ozone by Emission Process

County	Emission Process	Emissions (Tons/Day)	
		VOC	NOx
Lancaster	Running Exhaust	0.676	7.262
	Start Exhaust	0.577	0.807
	Brakewear	0.000	0.000
	Tirewear	0.000	0.000
	Evap Permeation	0.310	0.000
	Evap Fuel Vapor Venting	0.793	0.000
	Evap Fuel Leaks	1.220	0.000
	Crankcase Running Exhaust	0.039	0.056
	Crankcase Start Exhaust	0.008	0.000
	Crankcase Extended Idle Exhaust	0.002	0.001
	Extended Idle Exhaust	0.012	0.130
	Auxiliary Power Exhaust	0.001	0.009
	Subtotal	*3.638*	*8.265*
Off-Model Project Emission Benefits		0.000	0.000
Region Total		**3.638**	**8.265**
	(Kg/Year)	**3,300**	**7,498**

2035 Ozone by Road Type

County	Road Type	Summer Day VMT	Speed (mph)	Emissions (Tons/Day)	
				VOC	NOx
Lancaster	Off-Network	N/A	N/A	1.740	1.002
	Rural Restricted	1,492,775	63.8	0.047	0.432
	Rural UnRestricted	3,121,344	39.7	0.134	0.735
	Urban Restricted	4,333,981	57.9	0.141	1.023
	Urban UnRestricted	8,571,581	25.1	0.533	2.003
	Subtotal	*17,519,680*		*2.596*	*5.195*
Off-Model Project Emission Benefits				0.000	0.000
Region Total		**17,519,680**		**2.596**	**5.195**
			(Kg/Day)	**2,355**	**4,712**

2035 Ozone by Source Type

County	Source Type	Summer Day VMT	Emissions (Tons/Day)	
			VOC	NOx
Lancaster	Motorcycle	107,690	0.254	0.067
	Passenger Car	7,050,453	0.639	0.144
	Passenger Truck	7,439,447	1.335	0.468
	Light Commercial Truck	881,743	0.162	0.077
	Intercity Bus	34,778	0.007	0.086
	Transit Bus	45,057	0.008	0.093
	School Bus	13,267	0.001	0.020
	Refuse Truck	6,006	0.001	0.014
	Single Unit Short-haul Truck	662,072	0.075	0.629
	Single Unit Long-haul Truck	44,108	0.003	0.033
	Motor Home	18,725	0.008	0.023
	Combination Short-haul Truck	233,988	0.025	0.664
	Combination Long-haul Truck	982,346	0.081	2.875
	Subtotal	*17,519,680*	*2.596*	*5.195*
Off-Model Project Emission Benefits			0.000	0.000
Region Total		**17,519,680**	**2.596**	**5.195**
		(Kg/Day)	**2,355**	**4,712**

2035 Ozone by Emission Process

County	Emission Process	Emissions (Tons/Day)	
		VOC	NOx
Lancaster	Running Exhaust	0.328	4.522
	Start Exhaust	0.331	0.514
	Brakewear	0.000	0.000
	Tirewear	0.000	0.000
	Evap Permeation	0.153	0.000
	Evap Fuel Vapor Venting	0.513	0.000
	Evap Fuel Leaks	1.231	0.000
	Crankcase Running Exhaust	0.031	0.062
	Crankcase Start Exhaust	0.004	0.000
	Crankcase Extended Idle Exhaust	0.001	0.001
	Extended Idle Exhaust	0.004	0.077
	Auxiliary Power Exhaust	0.001	0.018
	Subtotal	*2.596*	*5.195*
Off-Model Project Emission Benefits		0.000	0.000
Region Total		**2.596**	**5.195**
	(Kg/Year)	**2,355**	**4,712**

2045 Ozone by Road Type

County	Road Type	Summer Day VMT	Speed (mph)	Emissions (Tons/Day)	
				VOC	NOx
Lancaster	Off-Network	N/A	N/A	1.358	0.994
	Rural Restricted	1,796,791	63.6	0.049	0.458
	Rural UnRestricted	3,299,135	38.9	0.122	0.728
	Urban Restricted	4,830,314	57.7	0.134	1.021
	Urban UnRestricted	9,309,955	23.7	0.512	2.095
	Subtotal	*19,236,194*		*2.174*	*5.295*
Off-Model Project Emission Benefits				0.000	0.000
Region Total		**19,236,194**		**2.174**	**5.295**
			(Kg/Day)	**1,972**	**4,804**

2045 Ozone by Source Type

County	Source Type	Summer Day VMT	Emissions (Tons/Day)	
			VOC	NOx
Lancaster	Motorcycle	117,967	0.269	0.073
	Passenger Car	7,723,292	0.550	0.105
	Passenger Truck	8,149,418	1.018	0.330
	Light Commercial Truck	965,922	0.128	0.050
	Intercity Bus	40,400	0.007	0.092
	Transit Bus	49,042	0.008	0.097
	School Bus	14,456	0.001	0.020
	Refuse Truck	6,817	0.002	0.016
	Single Unit Short-haul Truck	739,796	0.079	0.693
	Single Unit Long-haul Truck	49,081	0.003	0.037
	Motor Home	20,967	0.008	0.019
	Combination Short-haul Truck	259,739	0.026	0.716
	Combination Long-haul Truck	1,099,296	0.079	3.046
	Subtotal	*19,236,194*	*2.174*	*5.295*
Off-Model Project Emission Benefits			0.000	0.000
Region Total		**19,236,194**	**2.174**	**5.295**
		(Kg/Day)	**1,972**	**4,804**

2045 Ozone by Emission Process

County	Emission Process	Emissions (Tons/Day)	
		VOC	NOx
Lancaster	Running Exhaust	0.313	4.647
	Start Exhaust	0.265	0.481
	Brakewear	0.000	0.000
	Tirewear	0.000	0.000
	Evap Permeation	0.098	0.000
	Evap Fuel Vapor Venting	0.365	0.000
	Evap Fuel Leaks	1.094	0.000
	Crankcase Running Exhaust	0.031	0.068
	Crankcase Start Exhaust	0.003	0.000
	Crankcase Extended Idle Exhaust	0.001	0.001
	Extended Idle Exhaust	0.003	0.076
	Auxiliary Power Exhaust	0.001	0.023
	Subtotal	*2.174*	*5.295*
Off-Model Project Emission Benefits		0.000	0.000
Region Total		**2.174**	**5.295**
	(Kg/Year)	**1,972**	**4,804**

2050 Ozone by Road Type

County	Road Type	Summer Day VMT	Speed (mph)	Emissions (Tons/Day)	
				VOC	NOx
Lancaster	Off-Network	N/A	N/A	1.323	1.024
	Rural Restricted	1,956,254	63.4	0.052	0.487
	Rural UnRestricted	3,455,280	38.4	0.126	0.762
	Urban Restricted	5,150,019	57.6	0.139	1.077
	Urban UnRestricted	9,697,906	22.8	0.537	2.219
	Subtotal	*20,259,458*		*2.177*	*5.570*
Off-Model Project Emission Benefits				0.000	0.000
Region Total		**20,259,458**		**2.177**	**5.570**
			(Kg/Day)	**1,975**	**5,053**

2050 Ozone by Source Type

County	Source Type	Summer Day VMT	Emissions (Tons/Day)	
			VOC	NOx
Lancaster	Motorcycle	124,077	0.279	0.077
	Passenger Car	8,123,357	0.554	0.106
	Passenger Truck	8,571,520	0.998	0.315
	Light Commercial Truck	1,015,916	0.126	0.048
	Intercity Bus	44,075	0.007	0.101
	Transit Bus	51,251	0.008	0.102
	School Bus	15,103	0.001	0.021
	Refuse Truck	7,249	0.002	0.017
	Single Unit Short-haul Truck	786,845	0.083	0.739
	Single Unit Long-haul Truck	52,241	0.003	0.039
	Motor Home	22,299	0.008	0.020
	Combination Short-haul Truck	277,784	0.027	0.764
	Combination Long-haul Truck	1,167,740	0.081	3.221
	Subtotal	*20,259,458*	*2.177*	*5.570*
Off-Model Project Emission Benefits			0.000	0.000
Region Total		**20,259,458**	**2.177**	**5.570**
		(Kg/Day)	**1,975**	**5,053**

2050 Ozone by Emission Process

County	Emission Process	Emissions (Tons/Day)	
		VOC	NOx
Lancaster	Running Exhaust	0.324	4.903
	Start Exhaust	0.261	0.489
	Brakewear	0.000	0.000
	Tirewear	0.000	0.000
	Evap Permeation	0.093	0.000
	Evap Fuel Vapor Venting	0.354	0.000
	Evap Fuel Leaks	1.103	0.000
	Crankcase Running Exhaust	0.032	0.072
	Crankcase Start Exhaust	0.003	0.000
	Crankcase Extended Idle Exhaust	0.001	0.001
	Extended Idle Exhaust	0.003	0.080
	Auxiliary Power Exhaust	0.001	0.025
	Subtotal	*2.177*	*5.570*
Off-Model Project Emission Benefits		0.000	0.000
Region Total		**2.177**	**5.570**
	(Kg/Year)	**1,975**	**5,053**

Detailed Emission Results for Annual $PM_{2.5}$ Analysis

2025 Annual $PM_{2.5}$ by Road Type

County	Road Type	Annual VMT	Speed (mph)	Emissions (Tons/Year)	
				NOx	$PM_{2.5}$
Lancaster	Off-Network	N/A	N/A	482.11	18.10
	Rural Restricted	379,331,311	62.8	251.44	6.41
	Rural UnRestricted	865,416,162	40.5	400.44	15.03
	Urban Restricted	1,251,201,408	58.2	668.47	18.56
	Urban UnRestricted	2,351,963,484	26.6	1,002.92	45.80
	Subtotal	*4,847,912,365*		*2,805.39*	*103.89*
Off-Model Project Emission Benefits				0.00	0.00
Region Total		**4,847,912,365**		**2,805.39**	**103.89**
			(Kg/Year)	**2,545,003**	**94,249**

2025 Annual $PM_{2.5}$ by Source Type

County	Source Type	Annual VMT	Emissions (Tons/Year)	
			NOx	$PM_{2.5}$
Lancaster	Motorcycle	29,806,139	22.58	0.73
	Passenger Car	1,951,408,080	134.18	16.99
	Passenger Truck	2,059,076,456	563.93	31.31
	Light Commercial Truck	244,053,820	112.22	5.13
	Intercity Bus	8,679,508	38.97	0.97
	Transit Bus	13,153,008	55.69	1.04
	School Bus	3,868,258	11.27	0.44
	Refuse Truck	1,779,830	6.17	0.12
	Single Unit Short-haul Truck	182,144,340	244.25	6.29
	Single Unit Long-haul Truck	12,249,689	14.11	0.38
	Motor Home	5,718,000	16.41	0.60
	Combination Short-haul Truck	66,392,008	263.27	5.55
	Combination Long-haul Truck	269,583,230	1,322.34	34.34
	Subtotal	*4,847,912,365*	*2,805.39*	*103.89*
Off-Model Project Emission Benefits			0.00	0.00
Region Total		**4,847,912,365**	**2,805.39**	**103.89**
		(Kg/Year)	**2,545,003**	**94,249**

2025 Annual $PM_{2.5}$ by Emission Process

County	Emission Process	Emissions (Tons/Year)	
		NOx	$PM_{2.5}$
Lancaster	Running Exhaust	2,451.92	51.33
	Start Exhaust	283.98	13.80
	Brakewear	0.00	21.81
	Tirewear	0.00	8.77
	Evap Permeation	0.00	0.00
	Evap Fuel Vapor Venting	0.00	0.00
	Evap Fuel Leaks	0.00	0.00
	Crankcase Running Exhaust	19.35	7.15
	Crankcase Start Exhaust	0.01	0.12
	Crankcase Extended Idle Exhaust	0.36	0.28
	Extended Idle Exhaust	46.62	0.58
	Auxiliary Power Exhaust	3.13	0.06
	Subtotal	*2,805.39*	*103.89*
Off-Model Project Emission Benefits		0.00	0.00
Region Total		**2,805.39**	**103.89**
	(Kg/Year)	**2,545,003**	**94,249**

2035 Annual $PM_{2.5}$ by Road Type

County	Road Type	Annual VMT	Speed (mph)	Emissions (Tons/Year)	
				NOx	$PM_{2.5}$
Lancaster	Off-Network	N/A	N/A	361.60	15.98
	Rural Restricted	457,557,731	63.8	150.41	3.21
	Rural UnRestricted	928,424,079	39.7	248.78	9.25
	Urban Restricted	1,385,053,550	57.9	370.39	9.46
	Urban UnRestricted	2,527,207,885	25.1	664.14	32.76
	Subtotal	*5,298,243,246*		*1,795.31*	*70.66*
Off-Model Project Emission Benefits				0.00	0.00
Region Total		**5,298,243,246**		**1,795.31**	**70.66**
			(Kg/Year)	**1,628,679**	**64,104**

2035 Annual $PM_{2.5}$ by Source Type

County	Source Type	Annual VMT	Emissions (Tons/Year)	
			NOx	$PM_{2.5}$
Lancaster	Motorcycle	32,501,328	24.22	0.80
	Passenger Car	2,127,865,988	66.70	17.26
	Passenger Truck	2,245,268,000	165.62	25.22
	Light Commercial Truck	266,114,970	26.13	3.20
	Intercity Bus	9,547,290	26.15	0.40
	Transit Bus	14,681,652	33.36	0.34
	School Bus	4,322,919	6.76	0.12
	Refuse Truck	1,843,777	4.86	0.04
	Single Unit Short-haul Truck	203,310,670	205.33	3.77
	Single Unit Long-haul Truck	13,538,320	11.75	0.23
	Motor Home	5,748,079	8.96	0.35
	Combination Short-haul Truck	71,867,493	226.72	3.51
	Combination Long-haul Truck	301,632,760	988.75	15.43
	Subtotal	*5,298,243,246*	*1,795.31*	*70.66*
Off-Model Project Emission Benefits			0.00	0.00
Region Total		**5,298,243,246**	**1,795.31**	**70.66**
		(Kg/Year)	**1,628,679**	**64,104**

2035 Annual $PM_{2.5}$ by Emission Process

County	Emission Process	Emissions (Tons/Year)	
		NOx	$PM_{2.5}$
Lancaster	Running Exhaust	1,545.31	18.75
	Start Exhaust	194.10	14.77
	Brakewear	0.00	24.88
	Tirewear	0.00	9.62
	Evap Permeation	0.00	0.00
	Evap Fuel Vapor Venting	0.00	0.00
	Evap Fuel Leaks	0.00	0.00
	Crankcase Running Exhaust	21.27	2.24
	Crankcase Start Exhaust	0.01	0.12
	Crankcase Extended Idle Exhaust	0.30	0.13
	Extended Idle Exhaust	27.76	0.13
	Auxiliary Power Exhaust	6.56	0.02
	Subtotal	*1,795.31*	*70.66*
Off-Model Project Emission Benefits		0.00	0.00
Region Total		**1,795.31**	**70.66**
	(Kg/Year)	**1,628,679**	**64,104**

2045 Annual $PM_{2.5}$ by Road Type

County	Road Type	Annual VMT	Speed (mph)	Emissions (Tons/Year)	
				NOx	$PM_{2.5}$
Lancaster	Off-Network	N/A	N/A	362.36	11.79
	Rural Restricted	550,743,363	63.6	159.18	3.18
	Rural UnRestricted	982,293,693	38.9	246.95	8.93
	Urban Restricted	1,543,671,523	57.7	370.11	8.99
	Urban UnRestricted	2,744,187,589	23.7	696.31	33.99
	Subtotal	*5,820,896,169*		*1,834.90*	*66.89*
Off-Model Project Emission Benefits				0.00	0.00
Region Total		**5,820,896,169**		**1,834.90**	**66.89**
			(Kg/Year)	**1,664,591**	**60,680**

2045 Annual $PM_{2.5}$ by Source Type

County	Source Type	Annual VMT	Emissions (Tons/Year)	
			NOx	$PM_{2.5}$
Lancaster	Motorcycle	35,622,640	26.50	0.89
	Passenger Car	2,332,212,608	54.89	16.65
	Passenger Truck	2,460,889,208	123.01	22.49
	Light Commercial Truck	291,680,560	17.79	2.85
	Intercity Bus	11,118,007	27.89	0.29
	Transit Bus	16,041,197	34.86	0.32
	School Bus	4,728,578	6.88	0.11
	Refuse Truck	2,084,414	5.43	0.05
	Single Unit Short-haul Truck	227,354,930	226.76	4.17
	Single Unit Long-haul Truck	15,079,090	12.97	0.25
	Motor Home	6,446,018	6.50	0.18
	Combination Short-haul Truck	79,837,199	244.60	3.57
	Combination Long-haul Truck	337,801,720	1,046.82	15.08
	Subtotal	*5,820,896,169*	*1,834.90*	*66.89*
Off-Model Project Emission Benefits			0.00	0.00
Region Total		**5,820,896,169**	**1,834.90**	**66.89**
		(Kg/Year)	**1,664,591**	**60,680**

2045 Annual $PM_{2.5}$ by Emission Process

County	Emission Process	Emissions (Tons/Year)	
		NOx	$PM_{2.5}$
Lancaster	Running Exhaust	1,591.37	14.71
	Start Exhaust	184.47	10.92
	Brakewear	0.00	28.37
	Tirewear	0.00	10.62
	Evap Permeation	0.00	0.00
	Evap Fuel Vapor Venting	0.00	0.00
	Evap Fuel Leaks	0.00	0.00
	Crankcase Running Exhaust	23.36	1.95
	Crankcase Start Exhaust	0.01	0.09
	Crankcase Extended Idle Exhaust	0.30	0.11
	Extended Idle Exhaust	27.18	0.09
	Auxiliary Power Exhaust	8.21	0.01
	Subtotal	*1,834.90*	*66.89*
Off-Model Project Emission Benefits		0.00	0.00
Region Total		**1,834.90**	**66.89**
	(Kg/Year)	**1,664,591**	**60,680**

2050 Annual $PM_{2.5}$ by Road Type

County	Road Type	Annual VMT	Speed (mph)	Emissions (Tons/Year)	
				NOx	$PM_{2.5}$
Lancaster	Off-Network	N/A	N/A	373.72	10.63
	Rural Restricted	599,621,067	63.4	169.55	3.35
	Rural UnRestricted	1,028,356,291	38.4	258.59	9.29
	Urban Restricted	1,645,840,843	57.6	390.55	9.34
	Urban UnRestricted	2,858,652,340	22.8	737.51	35.88
	Subtotal	*6,132,470,541*		*1,929.92*	*68.49*
Off-Model Project Emission Benefits				0.00	0.00
Region Total		**6,132,470,541**		**1,929.92**	**68.49**
			(Kg/Year)	**1,750,793**	**62,132**

2050 Annual $PM_{2.5}$ by Source Type

County	Source Type	Annual VMT	Emissions (Tons/Year)	
			NOx	$PM_{2.5}$
Lancaster	Motorcycle	37,478,290	27.88	0.94
	Passenger Car	2,453,715,800	55.55	17.34
	Passenger Truck	2,589,084,600	118.45	22.26
	Light Commercial Truck	306,864,340	17.38	2.85
	Intercity Bus	12,167,599	30.54	0.32
	Transit Bus	16,789,896	36.69	0.33
	School Bus	4,947,766	7.23	0.11
	Refuse Truck	2,237,028	5.84	0.05
	Single Unit Short-haul Truck	241,881,950	242.15	4.46
	Single Unit Long-haul Truck	16,062,693	13.89	0.27
	Motor Home	6,855,132	6.87	0.20
	Combination Short-haul Truck	85,379,857	260.60	3.72
	Combination Long-haul Truck	359,005,590	1,106.86	15.64
	Subtotal	*6,132,470,541*	*1,929.92*	*68.49*
Off-Model Project Emission Benefits			0.00	0.00
Region Total		**6,132,470,541**	**1,929.92**	**68.49**
		(Kg/Year)	**1,750,793**	**62,132**

2050 Annual $PM_{2.5}$ by Emission Process

County	Emission Process	Emissions (Tons/Year)	
		NOx	$PM_{2.5}$
Lancaster	Running Exhaust	1,679.71	14.59
	Start Exhaust	187.39	9.78
	Brakewear	0.00	30.62
	Tirewear	0.00	11.22
	Evap Permeation	0.00	0.00
	Evap Fuel Vapor Venting	0.00	0.00
	Evap Fuel Leaks	0.00	0.00
	Crankcase Running Exhaust	24.77	1.98
	Crankcase Start Exhaust	0.01	0.08
	Crankcase Extended Idle Exhaust	0.32	0.12
	Extended Idle Exhaust	28.83	0.09
	Auxiliary Power Exhaust	8.91	0.01
	Subtotal	*1,929.92*	*68.49*
Off-Model Project Emission Benefits		0.00	0.00
Region Total		**1,929.92**	**68.49**
	(Kg/Year)	**1,750,793**	**62,132**

ATTACHMENT C

Sample MOVES Data Importer (XML) Input File
and
Run Specification (MRS) Input File

(Sample for 2025 July Weekday and Annual Runs)

MOVES County Data Manager Importer File – July Weekday Run (MOVESIMPORTER.XML)

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MOVES Run Specification File – July Weekday Run (MOVESRUN.MRS)

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MOVES County Data Manager Importer File – Annual Run (MOVESIMPORTER.XML)

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Appendix D:

Environmental Justice Benefits and Burdens Analysis

Note: Figures and tables in this section are numbered for ease of reference.

Introduction

Environmental Justice (EJ) refers to the implementation of Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, which directs procedures to be put in place to identify and address any disproportionately high and adverse human health or environmental effects on minority and low-income population groups. The fundamental principles of EJ can be defined as:

- To avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority and low-income populations.
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

Title VI of the Civil Rights Act prohibits discrimination on the basis of race, color, or national origin. More importantly for this analysis, Executive Order (EO) 12898 requires Federal agencies to achieve environmental justice by identifying and addressing disproportionately high and adverse human health or environmental effects, including the interrelated social and economic effects of their programs, policies, and activities, on minority populations and low-income populations in the United States. This requirement applies to the Lancaster County MPO as a recipient of federal funding, and recognizes the importance given to addressing the needs of low-income and minority populations as outlined in the Metropolitan Transportation Planning regulations (23 CFR 450).

Based on the Office of Management and Budget (OMB) Policy Directive 15, *Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity*, issued in 1997, five minimum categories were established to address data on race. They are:

Black—a person having origins in any of the black racial groups of Africa.
Hispanic—a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.
Asian—a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent.
American Indian and Alaskan Native—a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition.
Native Hawaiian or Other Pacific Islander—a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

In addition, low-income persons are defined as follows:

Low-Income—a person whose household income (or in the case of a community or group, whose median household income) is at or below the U.S. Department of Health and Human Services poverty guidelines.

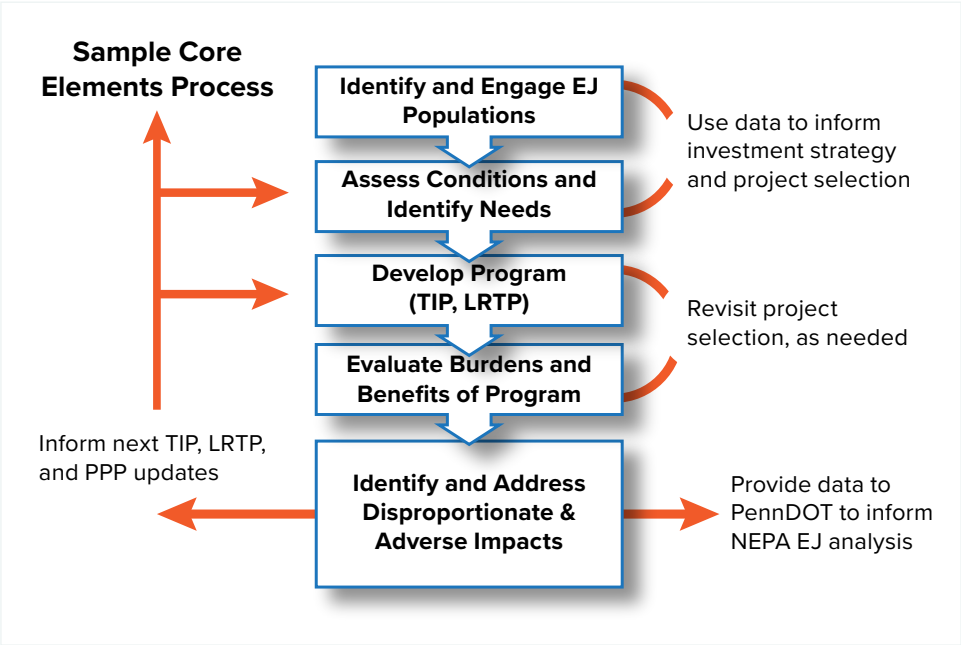
EO 12898, and the Department of Transportation (DOT) and Federal Highway Administration (FHWA) Orders on Environmental Justice address persons belonging to any of these groups, and these groups as they apply to Lancaster County are the basis for this analysis.

Core Elements Process

In the development of the 2025–2028 Transportation Improvement Program, the Lancaster County MPO conducted an Environmental Justice Benefits and Burdens analysis using the Core Elements Methodology **(Figure 1)** that has been recommended by FHWA and the Federal Transit Administration (FTA):

1. Identify environmental justice populations.
2. Assess conditions and identify needs.
3. Evaluate relative burdens and benefits.
4. Identify and address disproportionate and adverse impacts and inform future planning efforts.

Figure 1:
Core Elements Process Steps



The identification of these populations is essential to establishing effective strategies for engaging them in the transportation planning process. When meaningful opportunities for interaction are established, the transportation planning process can effectively draw upon the perspectives of communities to identify existing transportation needs, localized deficiencies, and the demand for transportation services. Mapping of these populations not only provides a baseline for assessing impacts of the transportation improvement program, but also aids in the development of an effective public involvement program.

Fundamentally, the principles of Environmental Justice are aimed at preventing the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations. The establishment of transportation funding as a performance measure is consistent with this principle by supporting the evaluation of funding priorities considered for *connects2040*, including the four-year TIP. Mapping and analyzing transportation funding can assist in making the prioritization process more open, transparent, and accountable to the public. In developing this funding performance measure, the core issue is whether the types of projects and the total project investment are equitably distributed throughout Lancaster County.

Identifying Minority and Low-Income Populations

A statistical analysis of Lancaster County was performed to determine population averages, minority population, and low-income population. If necessary, project alternatives will be developed to prevent disproportionately high or adverse effects on any identified minority or low-income populations.

Minority population is defined as any readily identifiable group of Black, Hispanic, Asian American, American Indian/Alaskan Native, and Native Hawaiian or Other Pacific Islander who lives in geographic proximity and whose members would be similarly affected by any proposed FHWA program, policy, or activity. Based on 2021 American Community Survey (ACS) Data, the average minority population rate in Lancaster County is 19.25 percent as shown in **Table 1**.

The low-income population is defined as any readily identifiable group of persons at or below the Department of Health and Human Services poverty guidelines who lives in geographic proximity and whose members would be similarly affected by any proposed FHWA program, policy, or activity. The average low-income rate based on the status of all ages in the 2021 ACS Data for Lancaster County is 8.60 percent as shown in **Table 2**.

Please refer to **Appendix A** on p. D-206 for an explanation of differences between total county population for minority and low-income populations.

The maps on the following pages depict the locations of environmental justice populations and households in Lancaster County. **Figure 2** shows the concentrations of minority populations by census block groups based on 2017–2021 ACS data. **Figure 3** shows the concentrations of households below the county average for low-income by census block groups, also based on 2017–2021 ACS data. **Figure 4** shows concentrations of minority populations by the density of those populations throughout the county. **Figure 5** shows concentrations of low-income populations by the density of those populations throughout the county.

Table 1:

Profile of Minority Populations, 2021

Demographic Indicator	*Lancaster County, Pennsylvania*	
	County Population	*County Percentage*
Total	**550,480**	
White, Non-Hispanic	444,487	80.72%
Minority	**105,993**	**19.25%**
Black or African American, Non-Hispanic	18,244	3.31%
American Indian and Alaska Native, Non-Hispanic	246	0.00%
Asian alone, Non-Hispanic	12,846	2.33%
Native Hawaiian and Other Pacific Islander, Non-Hispanic	98	0.00%
Some other race, Non-Hispanic	1,641	0.03%
Two or more races, Non-Hispanic	12,059	2.19%
Hispanic	60,859	11.06%

Source: 2017–2021 ACS.

Table 2:

Profile of Low-Income Populations, 2021

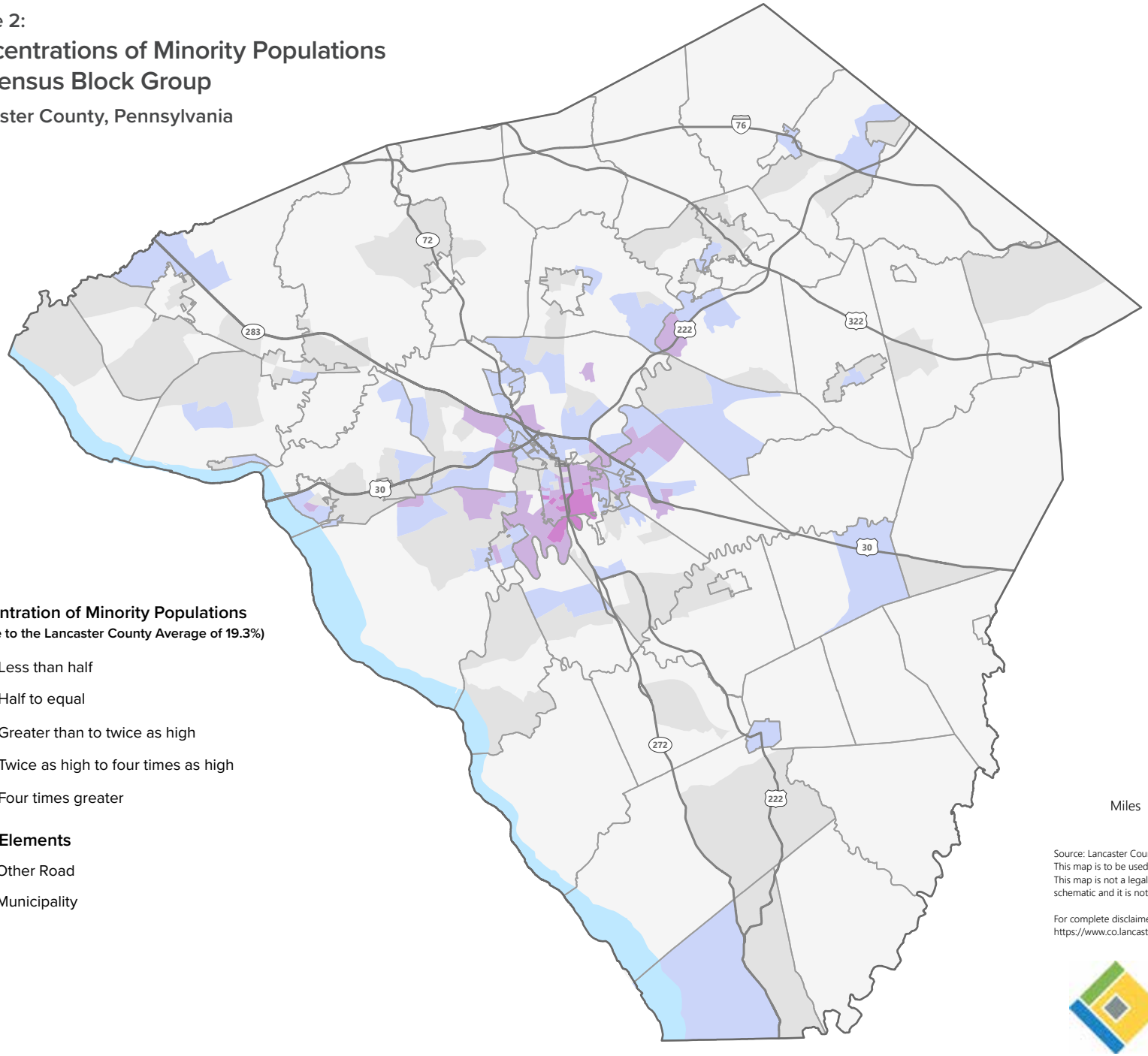
Demographic Indicator	*Lancaster County, Pennsylvania*	
	County Population	*County Percentage*
Total	**538,672**	
Low-Income Population	**46,315**	**8.60%**

Source: 2017–2021 ACS.

Figure 2:

Concentrations of Minority Populations by Census Block Group

Lancaster County, Pennsylvania



Source: Lancaster County GIS, Copyright (c) 2024.
This map is to be used for reference or illustrative purposes only. This map is not a legally recorded plan, survey, or engineering schematic and it is not intended to be used as such.

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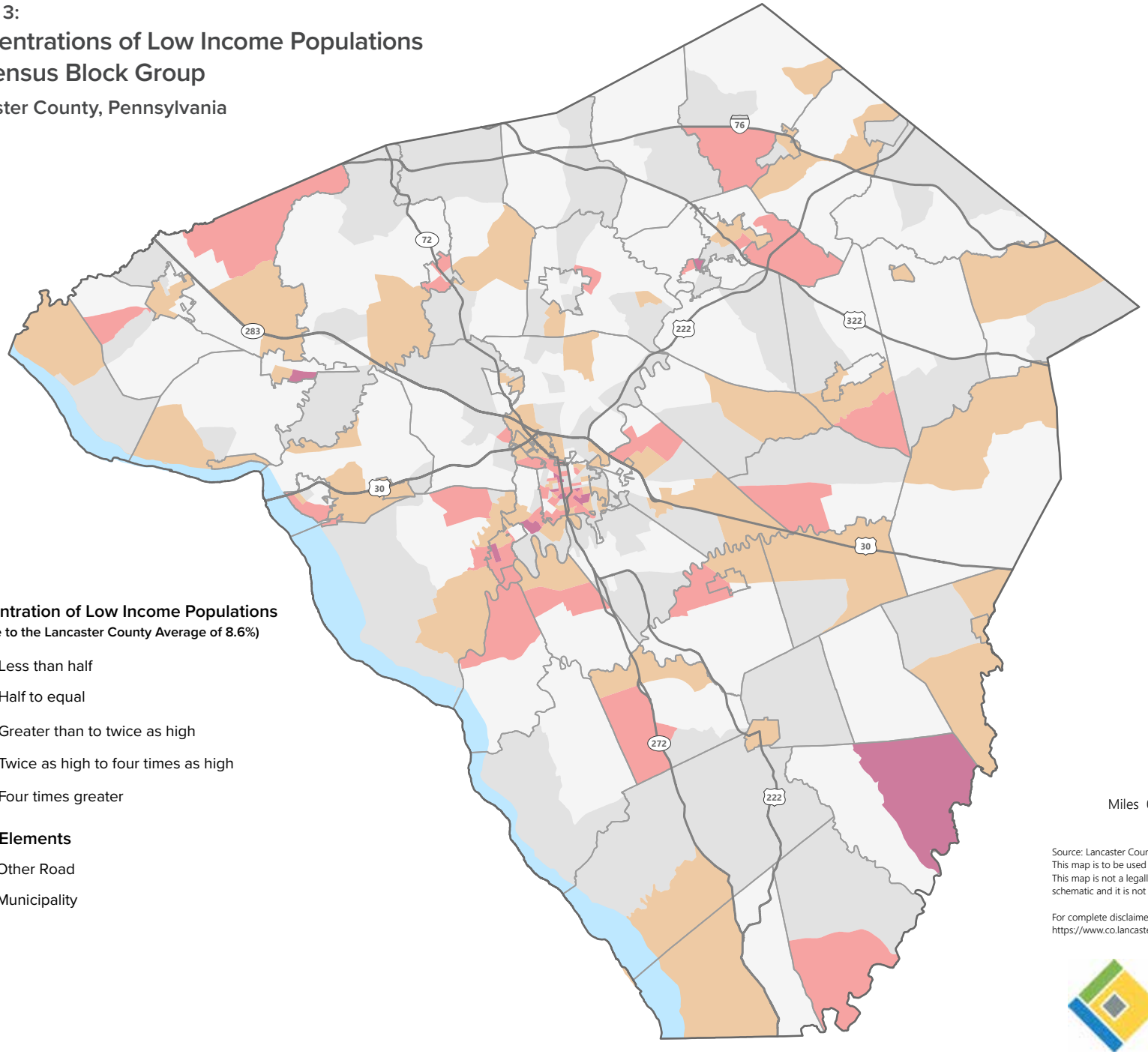
LANCASTER COUNTY PLANNING

Figure 3:

Concentrations of Low Income Populations by Census Block Group

Lancaster County, Pennsylvania



Concentration of Low Income Populations
(Relative to the Lancaster County Average of 8.6%)

- Less than half
- Half to equal
- Greater than to twice as high
- Twice as high to four times as high
- Four times greater

Other Elements

- Other Road
- Municipality

North

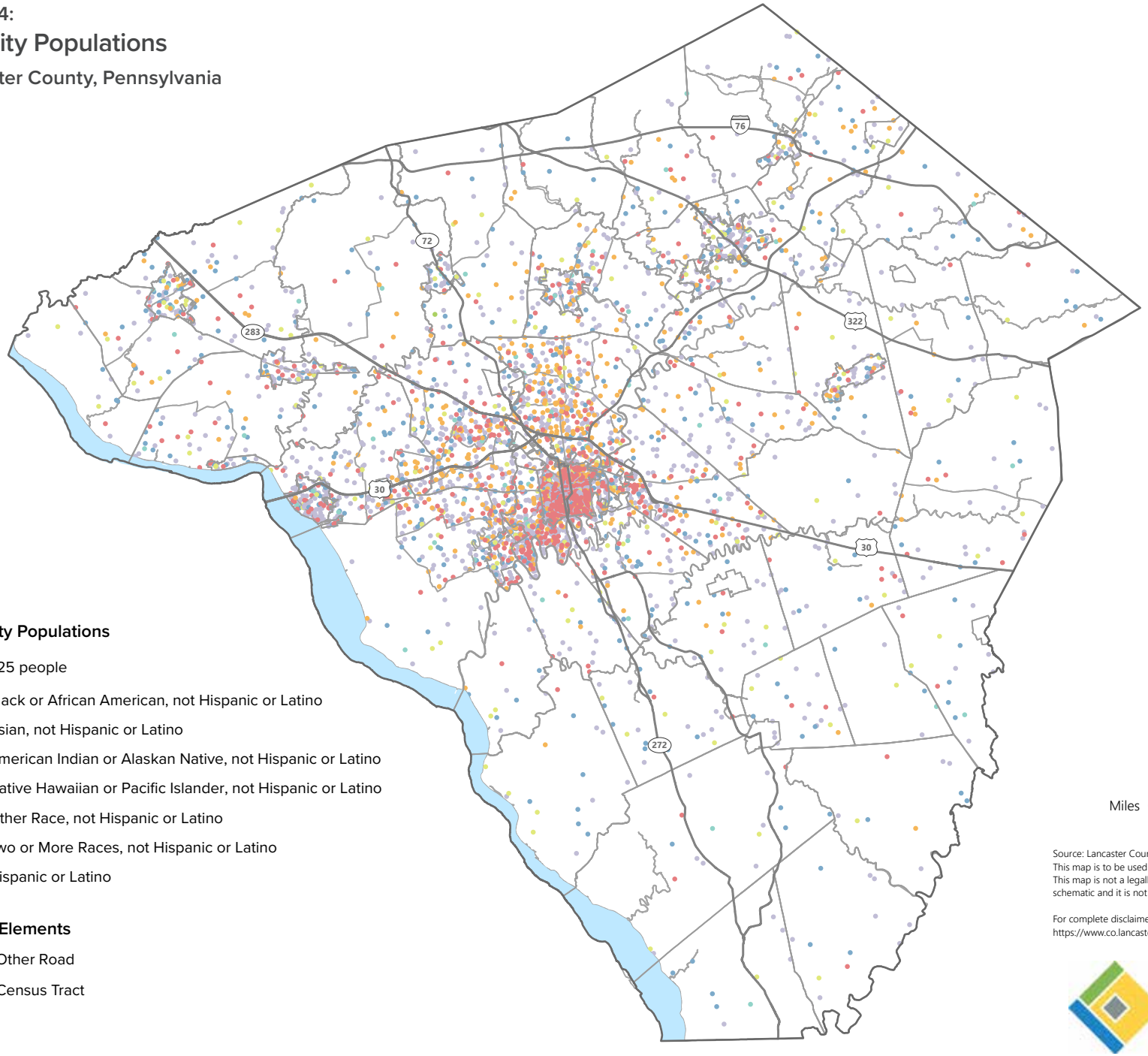
Miles 0 3

LANCASTER COUNTY PLANNING

Figure 4:

Minority Populations

Lancaster County, Pennsylvania



Minority Populations

1 dot = 25 people

- Black or African American, not Hispanic or Latino
- Asian, not Hispanic or Latino
- American Indian or Alaskan Native, not Hispanic or Latino
- Native Hawaiian or Pacific Islander, not Hispanic or Latino
- Other Race, not Hispanic or Latino
- Two or More Races, not Hispanic or Latino
- Hispanic or Latino

Other Elements

- Other Road
- Census Tract

North

Miles 0 3

Source: Lancaster County GIS, Copyright (c) 2024.
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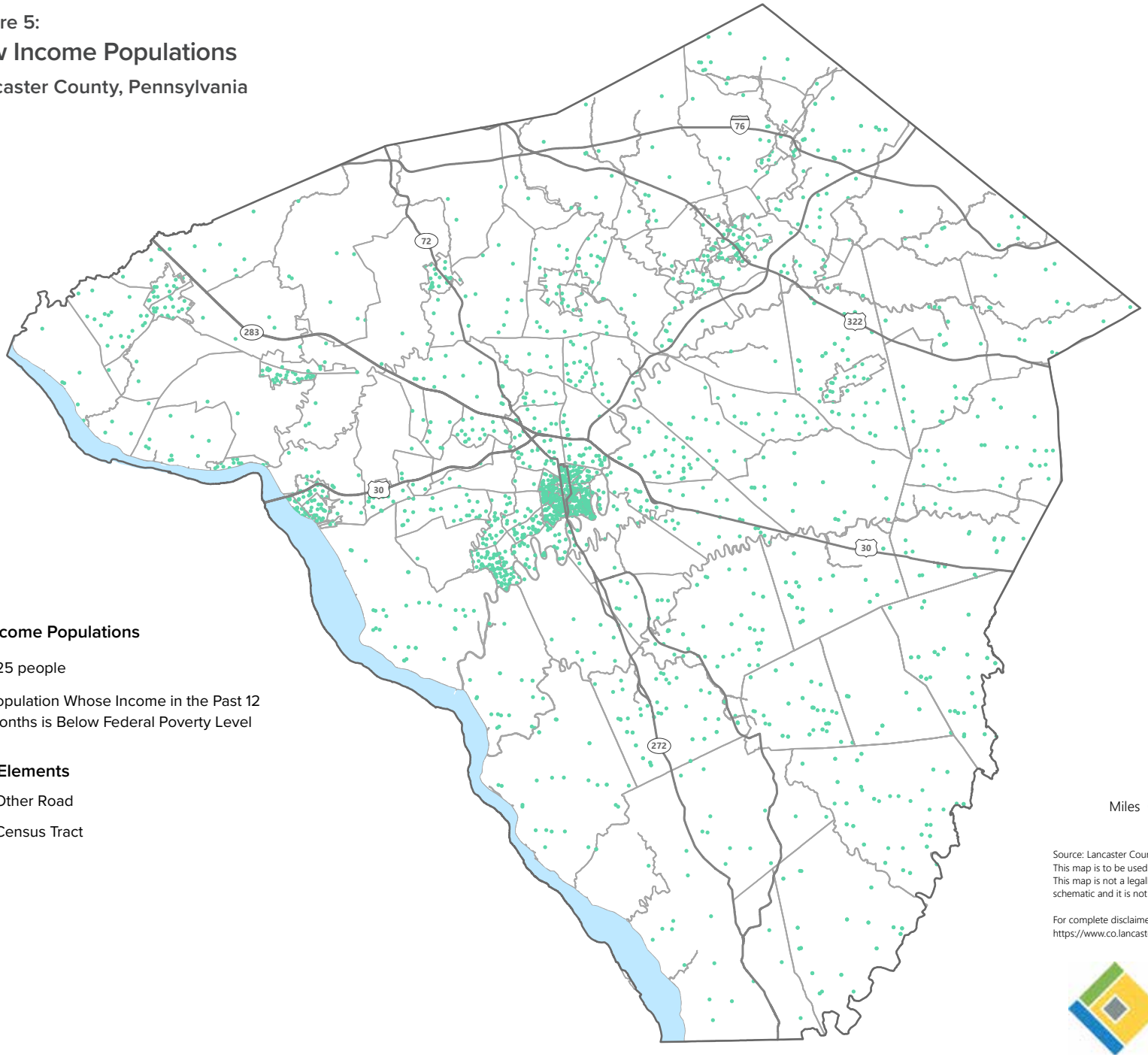
LANCASTER COUNTY PLANNING

Figure 5:

Low Income Populations

Lancaster County, Pennsylvania



Low Income Populations

1 dot = 25 people

- Population Whose Income in the Past 12 Months is Below Federal Poverty Level

Other Elements

- Other Road
- Census Tract

North

Miles 0 3

LANCASTER COUNTY PLANNING

Existing Conditions Prior to 2025 – 2028 TIP

In order to analyze benefits and adverse effects of transportation system changes, the MPO examined existing conditions of transportation assets throughout the county and safety performance relative to the minority and low-income populations. The use of the tables below will allow the MPO to track performance relative to the number of poor condition bridges, mileage of poor condition pavement in the federal aid: primary category, and the number of non-motorized crashes in the county, and then identify performance disparities between minority and low-income populations and populations that are not minority or low-income.

Please refer to **Appendix A** on p. D-206 for an explanation of differences between total poor condition bridge counts, poor pavement mileage, and bicyclist-and pedestrian-related crash counts for minority population intervals and low-income population intervals.

Table 3:
Population Totals by Minority Population Intervals

POPULATION	*Minority Population Intervals (Relative to Lancaster County Average of 19.25%)*					*Total*
	Less than Half	*Half to Equal*	*Greater than to Twice as High*	*Twice as High to 4 Times as High*	*4 Times Greater*	
Total Population	246,131	117,059	103,276	64,818	19,196	550,480
Total Population (%)	45%	21%	19%	12%	3%	100%
Minority Population	10,276	16,266	27,842	34,911	16,698	105,993
Minority Population (%)	10%	15%	26%	33%	16%	100%

Source: 2017 – 2021 ACS.

Lancaster County currently has 21 bridges in poor condition located within or adjacent to high minority block groups, which consists of 11% of total bridges in poor condition across the county. These block groups are accounted for in the third, fourth, and fifth columns in the table below under the headings “Greater than to Twice as High,” “Twice as High to 4 Times as High,” and “4 Times Greater,” respectively. This demonstrates that there is not a disproportionate number of poor bridges in high minority block groups within the county. Note that minority population interval boundaries do not correspond with the boundaries for low-income population intervals, so there is a discrepancy in total counts between the two.

Table 4:

Distribution of Total Bridges and Poor Condition Bridges by Minority Population Intervals

BRIDGES	*Minority Population Intervals (Relative to Lancaster County Average of 19.25%)*					*Total*
	Less than Half	*Half to Equal*	*Greater than to Twice as High*	*Twice as High to 4 Times as High*	*4 Times Greater*	
Total Bridge Count	839	605	580	142	2	2,168
Percentage	39%	28%	27%	7%	0%	100%
Poor Condition Bridge Count	89	52	59	13	0	213
Percentage of Poor Bridges	42%	24%	28%	6%	0%	100%
Total Bridge Deck Area (sq. ft.)	4,115,941.13	2,666,932.67	2,319,052.55	733,119.02	6,192.20	9,841,237.58
Percentage	42%	27%	24%	7%	0%	100%

Source: PennDOT.

2025 – 2028 TIP Goal

After the implementation of the 2025 – 2028 TIP program, Lancaster County will have 21 bridges in poor condition located within or adjacent to high minority block groups, which consists of 14% of total bridges in poor condition across the county. This demonstrates that there will not be a disproportionate number of poor bridges in high minority block groups in the county.

Table 5:
Distribution of Poor Condition Bridges and Total Bridge Deck Area by Minority Population Intervals

BRIDGES	*Minority Population Intervals (Relative to Lancaster County Average of 19.25%)*					*Total*
	Less than Half	*Half to Equal*	*Greater than to Twice as High*	*Twice as High to 4 Times as High*	*4 Times Greater*	
Poor Condition Bridge Count	89	52	59	13	0	213
Percentage	42%	24%	28%	6%	0%	100%
Total Bridge Deck Area (sq. ft.)	4,115,941.13	2,666,932.67	2,319,052.55	733,119.02	6,192.20	9,841,237.58
Percentage	42%	27%	24%	7%	0%	100%

Source: PennDOT.

The pavement condition chart below indicates that 62% of poor federal aid: primary pavement mileage in Lancaster County occurs in or adjacent to high minority block groups. This demonstrates that a disproportionately high percentage of poor pavement mileage is present in block groups with higher concentrations of minority interval populations. This is particularly true in the interval where the minority population is greater than to twice as high as the average county minority population rate of 19.25%.

Table 6:

Distribution of Total Federal Aid: Primary Pavement Mileage and Poor Pavement Mileage by Minority Population Intervals

PAVEMENT	*Minority Population Intervals (Relative to Lancaster County Average of 19.25%)*					*Total*
	Less than Half	*Half to Equal*	*Greater than to Twice as High*	*Twice as High to 4 Times as High*	*4 Times Greater*	
Federal Aid Segment Mileage	472.39	301.27	281.40	115.44	9.19	1,179.68
Percentage	40%	26%	24%	10%	1%	100%
Poor Pavement Mileage	8.91	16.58	21.95	16.06	4.87	68.37
Percentage of Poor Pavement	13%	24%	32%	23%	7%	100%

Source: PennDOT.

Carryover Projects

In addition to the projects selected for this TIP cycle, some projects from the implementation of the 2023–2026 TIP program were not completed prior to the planning of the 2025–2028 TIP program. Mileage for these planned projects was clipped to each interval group so that the impacts upon each interval could be calculated.

Table 7:
Distribution of Total Federal Aid: Primary Pavement Project Mileage by Minority Population Intervals

PAVEMENT *(Planned Projects)*	*Minority Population Intervals (Relative to Lancaster County Average of 19.25%)*					*Total*
	Less than Half	*Half to Equal*	*Greater than to Twice as High*	*Twice as High to 4 Times as High*	*4 Times Greater*	
Federal Aid Segment Mileage	472.39	301.27	281.40	115.44	9.19	1,179.68
Percentage	40%	26%	24%	10%	1%	100%
Current Poor Pavement Mileage	8.91	16.58	21.95	16.06	4.87	68.37
Percentage of Poor Pavement	13%	24%	32%	23%	7%	100%
Planned Project Mileage	3.48	0.35	0.00	0.00	0.38	4.21
Percentage of Project Mileage	83%	8%	0%	0%	9%	100%

Source: PennDOT.

2025–2028 TIP Goal

After the implementation of the 2025–2028 TIP program and the completion of carryover projects from the 2023–2026 TIP program, 65% of poor federal aid: primary pavement mileage in Lancaster County will be located within or adjacent to high minority block groups. This demonstrates that a disproportionately high percentage of poor pavement mileage will be present in block groups with higher concentrations of minority interval populations. This will be the case in particular in the interval where the minority population is greater than to twice as high as the average county minority population rate of 19.25%. This demonstrates that a disproportionate percentage of poor pavement repair projects that were selected for the 2023–2026 and 2025–2028 TIP programs were located outside of minority intervals.

Table 8:
Distribution of Total Pavement Mileage and Poor Federal Aid: Primary Pavement Mileage by Minority Population Intervals

PAVEMENT	*Minority Population Intervals (Relative to Lancaster County Average of 19.25%)*					*Total*
	Less than Half	*Half to Equal*	*Greater than to Twice as High*	*Twice as High to 4 Times as High*	*4 Times Greater*	
Federal Aid Segment Mileage	472.39	301.27	281.40	115.44	9.19	1,179.68
Percentage	40%	26%	24%	10%	1%	100%
Poor Pavement Mileage	5.43	16.23	21.95	16.06	4.49	64.16
Percentage of Poor Pavement	8%	25%	34%	25%	7%	100%

Source: PennDOT.

40% of bicyclist-related crashes with fatalities and suspected serious injuries in the county occur within or adjacent to high minority block groups, demonstrating that there is not a disproportionately high percentage of this type of crash in high minority block groups within the county. It should be noted that all crash data in the three tables below specifically refers to fatal crashes or crashes with suspected serious injuries (SSI). This includes bicyclist-related crashes, pedestrian-related crashes, and combined bicyclist- and pedestrian-related crashes.

Table 9:
Distribution of Bicyclist-Related Crashes by Minority Population Intervals

BICYCLE SAFETY	*Minority Population Intervals (Relative to Lancaster County Average of 19.25%)*					*Total*
	Less than Half	*Half to Equal*	*Greater than to Twice as High*	*Twice as High to 4 Times as High*	*4 Times Greater*	
Total Crashes (Fatalities/SSI)	1,024	566	505	314	49	2,458
Percentage	42%	23%	21%	13%	2%	100%
Bicycle Crashes (Fatalities/SSI)	30	17	16	13	3	79
Percentage of Bike Crashes	38%	22%	20%	16%	4%	100%

Source: PennDOT Statewide Crash Data, 2017 – 2021.

43% of pedestrian-related crashes in the county occur within or adjacent to high minority block groups, demonstrating that there is not a disproportionately high percentage of this type of crash in high minority block groups within the county. The distribution of these crashes is shown in **Table 10**.

Table 10:
Distribution of Pedestrian-Related Crashes by Minority Population Intervals

PEDESTRIAN SAFETY	Minority Population Intervals (Relative to Lancaster County Average of 19.25%)					Total
	Less than Half	*Half to Equal*	*Greater than to Twice as High*	*Twice as High to 4 Times as High*	*4 Times Greater*	
Total Crashes (Fatalities/SSI)	1,024	566	505	314	49	2,458
Percentage	42%	23%	21%	13%	2%	100%
Pedestrian Crashes (Fatalities/SSI)	93	57	70	26	19	265
Percentage of Ped Crashes	35%	22%	26%	10%	7%	100%

Source: PennDOT Statewide Crash Data, 2017 – 2021.

42% of bicyclist- and pedestrian-related crashes in the county occur within or adjacent to high minority block groups, demonstrating that there is not a disproportionately high percentage of this type of crash in high minority block groups within the county. The distribution of these crashes is shown in **Table 11**.

Table 11:
Distribution of Bicyclist- and Pedestrian-Related Crashes by Minority Population Intervals

BIKE/PED SAFETY	Minority Population Intervals (Relative to Lancaster County Average of 19.25%)					Total
	Less than Half	*Half to Equal*	*Greater than to Twice as High*	*Twice as High to 4 Times as High*	*4 Times Greater*	
Total Crashes (Fatalities/SSI)	1,024	566	505	314	49	2,458
Percentage	42%	23%	21%	13%	2%	100%
Bike+Ped Crashes (Fatalities/SSI)	123	74	86	39	22	344
Percentage of Bike-Ped Crashes	36%	22%	25%	11%	6%	100%

Source: PennDOT Statewide Crash Data, 2017 – 2021.

Safety projects do not have an **after implementation of the 2025 – 2028 TIP program** because there are too many variables associated with projected safety benefits of projects to calculate this factor.

Figure 6:

2025 – 2028 TIP Project Locations and Concentrations of Minority Populations by Census Block Group

Lancaster County, Pennsylvania

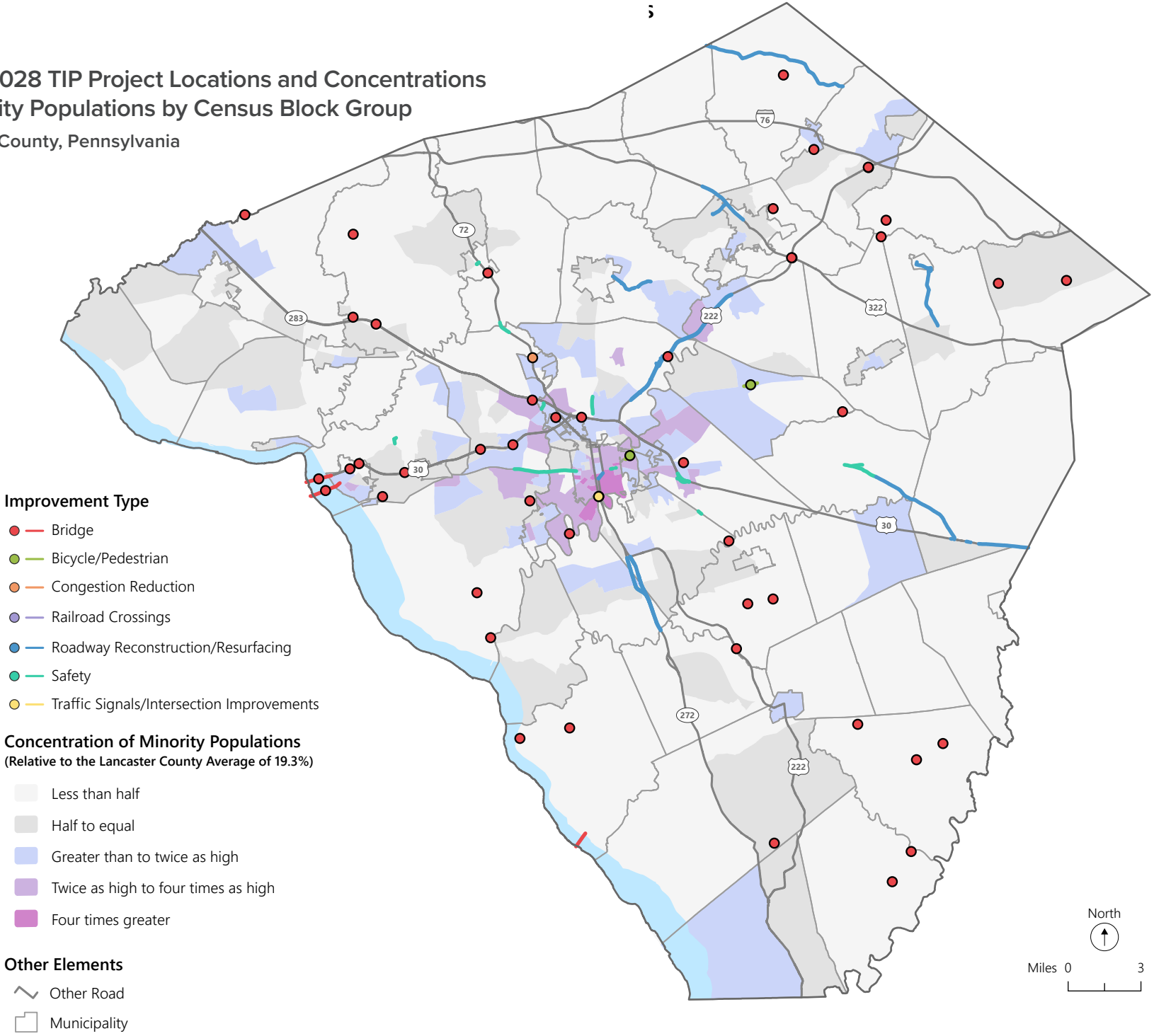


Table 12:
Population Totals by Low-Income Population Intervals

POPULATION	Low-Income Population Intervals (Relative to Lancaster County Average of 8.60%)					Total
	Less than Half	Half to Equal	Greater than to Twice as High	Twice as High to 4 Times as High	4 Times Greater	
Total Population	230,765	124,147	113,468	70,554	11,546	550,480
Total Population (%)	42%	23%	21%	13%	2%	100%
Low-Income Population	4,379	7,440	13,891	15,726	4,879	46,315
Low-Income Population (%)	9%	16%	30%	34%	11%	100%

Source: 2017 – 2021 ACS.

Lancaster County currently has 91 bridges in poor condition located within or adjacent to low-income block groups, which consists of 36% of total bridges in poor condition across the county. These block groups are accounted for in the third, fourth, and fifth columns in the table below under the headings "Greater than to Twice as High," "Twice as High to 4 Times as High," and "4 Times Greater," respectively. This demonstrates that there is not an imbalanced number of poor bridges within block groups with a higher concentration of low-income populations in the county. Note that low-income population interval boundaries do not correspond with the boundaries for minority intervals, so there is a discrepancy in total counts between the two.

Table 13:
Distribution of Total Bridges and Poor Condition Bridges by Low-Income Population Intervals

BRIDGES	Low-Income Population Intervals (Relative to Lancaster County Average of 8.60%)					Total
	Less than Half	Half to Equal	Greater than to Twice as High	Twice as High to 4 Times as High	4 Times Greater	
Total Bridge Count	839	605	580	142	2	2.168
Percentage	39%	28%	27%	7%	0%	100%
Poor Condition Bridge Count	89	52	59	13	0	213
Percentage of Poor Bridges	42%	24%	28%	6%	0%	100%
Total Bridge Deck Area (sq. ft.)	4,115,941.13	2,666,932.67	2,319,052.55	733,119.02	6,192.20	9,841,237.58
Percentage	42%	27%	24%	7%	0%	100%

Source: PennDOT.

2025 – 2028 TIP Goal

After the implementation of the 2025 – 2028 TIP program, Lancaster County will have 44 bridges in poor condition located within or adjacent to low-income block groups, which consists of 28% of total bridges in poor condition across the county. This demonstrates that there will not be an imbalanced number of poor bridges within block groups with a higher concentration of low-income populations in the county.

Table 14:
Distribution of Poor Condition Bridges and Total Bridge Deck Area by Low-Income Population Intervals

BRIDGES	*Low-Income Population Intervals (Relative to Lancaster County Average of 8.60%)*					*Total*
	Less than Half	*Half to Equal*	*Greater than to Twice as High*	*Twice as High to 4 Times as High*	*4 Times Greater*	
Poor Condition Bridge Count	89	52	59	13	0	213
Percentage of Poor Bridges	42%	24%	28%	6%	0%	100%
Total Bridge Deck Area (sq. ft.)	4,115,941.13	2,666,932.67	2,319,052.55	733,119.02	6,192.20	9,841,237.58
Percentage	42%	27%	24%	7%	0%	100%

Source: PennDOT.

The pavement condition chart below indicates 52% of poor federal aid: primary pavement mileage in Lancaster County occurs within or adjacent to low-income block groups. This demonstrates that a disproportionately high percentage of poor federal aid: primary pavement mileage is present in block groups with higher concentrations of low-income interval populations. This is particularly true in the interval where the low-income population is twice as high to 4 times as high as the average county low-income population rate of 8.60%.

Table 15:
Distribution of Total Pavement Mileage and Poor Federal Aid: Primary Pavement Mileage by Low-Income Population Intervals

PAVEMENT	Low-Income Population Intervals (Relative to Lancaster County Average of 8.60%)					Total
	Less than Half	Half to Equal	Greater than to Twice as High	Twice as High to 4 Times as High	4 Times Greater	
Federal Aid Segment Mileage	487.05	409.58	331.17	146.69	19.34	1,387.82
Percentage	35%	30%	24%	10%	1%	100%
Poor Pavement Mileage	15.79	26.00	10.95	22.76	10.90	86.40
Percentage of Poor Pavement	18%	30%	13%	26%	13%	100%

Source: PennDOT.

Carryover Projects

In addition to the projects selected for this TIP cycle, some projects from the implementation of the 2023–2026 TIP program were not completed prior to the planning of the 2025–2028 TIP program. Mileage for these planned projects was clipped to each interval group so that the impacts upon each interval could be calculated.

Table 16:
Distribution of Total Federal Aid: Primary Pavement Project Mileage by Low-Income Population Intervals

PAVEMENT (Planned Projects)	Low-Income Population Intervals (Relative to Lancaster County Average of 8.60%)					Total
	Less than Half	Half to Equal	Greater than to Twice as High	Twice as High to 4 Times as High	4 Times Greater	
Federal Aid Segment Mileage	487.05	409.58	331.17	146.69	19.34	1,387.82
Percentage	35%	30%	24%	10%	1%	100%
Current Poor Pavement Mileage	15.79	26.00	10.95	22.76	10.90	86.40
Percentage of Poor Pavement	18%	30%	13%	26%	13%	100%
Planned Project Mileage	1.32	0.02	0.73	0.30	0.01	2.37
Percentage of Project Mileage	56%	1%	31%	13%	1%	100%

Source: PennDOT.

2025 – 2028 TIP Goal

After the implementation of the 2025 – 2028 TIP program and the completion of carryover projects from the 2023 – 2026 TIP program, 52% of poor federal aid: primary pavement mileage in Lancaster County will be located within or adjacent to high low-income block groups. This demonstrates that a disproportionately high percentage of poor pavement mileage will be present in block groups with higher concentrations of low-income interval populations. This will be the case in particular in the interval where the low-income population is twice as high to 4 times as high as the average county low-income population rate of 8.60%.

Table 17:
Distribution of Total Federal Aid: Primary Pavement Mileage and Poor Pavement Mileage by Low-Income Population Intervals

PAVEMENT	*Low-Income Population Intervals (Relative to Lancaster County Average of 8.60%)*					*Total*
	Less than Half	*Half to Equal*	*Greater than to Twice as High*	*Twice as High to 4 Times as High*	*4 Times Greater*	
Federal Aid Segment Mileage	487.05	409.58	331.17	146.69	19.34	1,387.82
Percentage	35%	30%	24%	10%	1%	100%
Poor Pavement Mileage	14.47	25.98	10.22	22.46	10.89	84.03
Percentage of Poor Pavement	17%	31%	12%	27%	13%	100%

Source: PennDOT.

37% of bicyclist-related crashes occur within or adjacent to low-income block groups, which demonstrates that there is not an imbalanced number of this type of crash within block groups with a higher concentration of low-income populations in the county. It should be noted that all crash data in the three tables below specifically refers to fatal crashes or crashes with suspected serious injuries (SSI). The distribution of these crashes is shown in **Table 18.**

Table 18:
Distribution of Bicyclist-Related Crashes by Low-Income Population Intervals

BICYCLE SAFETY	Low-Income Population Intervals (Relative to Lancaster County Average of 8.60%)					Total
	Less than Half	Half to Equal	Greater than to Twice as High	Twice as High to 4 Times as High	4 Times Greater	
Total Crashes (Fatalities/SSI)	1,244	692	633	313	79	2,961
Percentage	42%	23%	21%	11%	3%	100%
Bicyclist Crashes (Fatalities/SSI)	36	36	12	19	3	90
Percentage of Bike Crashes	40%	22%	13%	21%	3%	100%

Source: PennDOT Statewide Crash Data, 2017 – 2021.

48% of pedestrian-related crashes occur within or adjacent to low-income block groups. This indicates that a higher percentage of this type of crash occurs in block groups with higher concentrations of low-income interval populations in the county. The distribution of these crashes is shown in **Table 19**.

Table 19:
Distribution of Bicyclist-Related Crashes by Low-Income Population Intervals

PEDESTRIAN SAFETY	Low-Income Population Intervals (Relative to Lancaster County Average of 8.60%)					Total
	Less than Half	Half to Equal	Greater than to Twice as High	Twice as High to 4 Times as High	4 Times Greater	
Total Crashes (Fatalities/SSI)	1,244	692	633	313	79	2,961
Percentage	42%	23%	21%	11%	3%	100%
Pedestrian Crashes (Fatalities/SSI)	87	104	75	82	24	372
Percentage of Ped Crashes	23%	28%	20%	22%	6%	100%

Source: PennDOT Statewide Crash Data, 2017 – 2021.

47% of bicyclist- and pedestrian-related crashes occur within or adjacent to low-income block groups. This demonstrates that, collectively, a slightly higher percentage of this type of crash occurs in block groups with higher concentrations of low-income interval populations in the county. The distribution of these crashes is shown in **Table 20.**

Table 20:

Distribution of Bicyclist- and Pedestrian-Related Crashes by Low-Income Population Intervals

BIKE/PED SAFETY	*Low-Income Population Intervals (Relative to Lancaster County Average of 8.60%)*					*Total*
	Less than Half	*Half to Equal*	*Greater than to Twice as High*	*Twice as High to 4 Times as High*	*4 Times Greater*	
Total Crashes (Fatalities/SSI)	1,244	692	633	313	79	2,961
Percentage	42%	23%	21%	11%	3%	100%
Bike+Ped Crashes (Fatalities/SSI)	123	124	87	101	27	462
Percentage of Bike-Ped Crashes	27%	27%	19%	22%	6%	100%

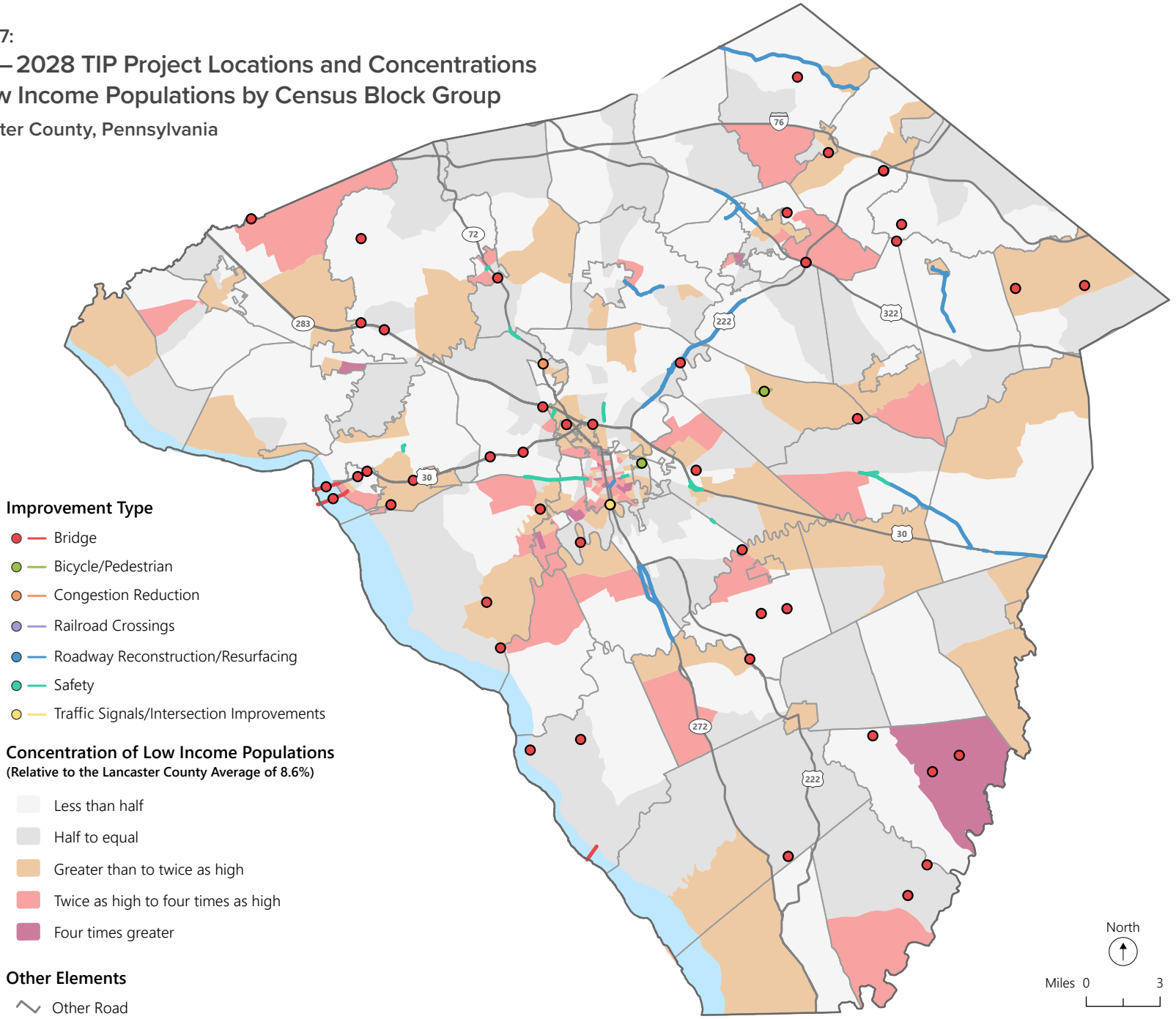
Source: PennDOT Statewide Crash Data, 2017 – 2021.

Safety projects do not have an **after implementation of the 2025 – 2028 TIP program** because there are too many variables associated with projected safety benefits of projects to calculate this factor.

Figure 7:

2025 – 2028 TIP Project Locations and Concentrations of Low Income Populations by Census Block Group

Lancaster County, Pennsylvania



Appendix A

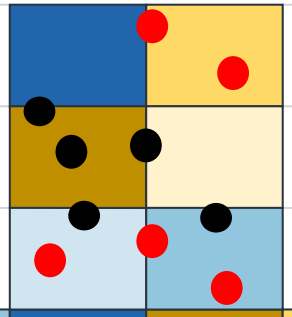
Difference between total county population counts for minority and low-income population intervals:
The total population for Lancaster County appears differently for minority population intervals and low-income population intervals in this environmental justice benefits and burdens analysis. The data set for both is the U.S. Census Bureau's 2017–2021 American Community Survey 5-Year Estimates, but the total County population figure for minority population intervals is derived from Table B03002: Hispanic or Latino Origin by Race and the figure for the low-income population intervals is derived from Table S1701: Poverty Status in the Past 12 Months. Table B03002 lists the total Lancaster County population as 550,480. Table S1701 lists the total population as 538,672 and indicates that this is the "population for whom poverty status is determined". Poverty status cannot be determined for people in institutional group quarters (such as prisons or nursing homes), college dormitories, military barracks, and living situations without conventional housing (and who are not in shelters).

Differences in total transportation assets and bicyclist- and pedestrian-related crash counts between high minority and low-income block groups:
The data process document titled *Methodology Statewide Environmental Justice Analysis Methodology: 2023–2026 Pennsylvania Transportation Improvement Program* notes that "a map layer was created from dissolving together block groups of the same interval classification within each county and region for low-income and minority concentration. These 'interval areas' describe the contiguous areas within a county that fall within the same classification. Transportation assets and crash locations were considered in the analysis of an interval area if located within 50 meters of the boundary of the dissolved interval area. In other words, the dissolved interval areas were buffered 50 meters for the analysis. This would allow the capture of features on the border of block groups or providing access to them." The data process document titled *FY 2025–2028 TIP Statewide Environmental Justice Analysis Methodology* states that it was "built upon the substantial work and documentation previously developed" for the FY 2023–2026 analysis." As well, the boundaries of block groups previously used for the 2023–2026 analysis were updated for the 2025–2028 analysis using information from the 2020 Census.

Figure 8 is a graphic representation of how the data process described above can result in differing counts for transportation assets. While the example applies to counts for total bridges and poor condition bridges, it is also applicable to pavement mileage, and bicyclist- and pedestrian-related crash counts. In the example, there are ten bridges total. However, due to the buffering methodology described above, the total count is 16 for the high minority intervals and 13 for the low-income intervals. This difference is due to the geography of where block groups that fall within the same classification are located. The "strict" count does not rely on the dissolving block group methodology, and therefore there is no overlap in counts between neighboring block groups that fall within the same classification.

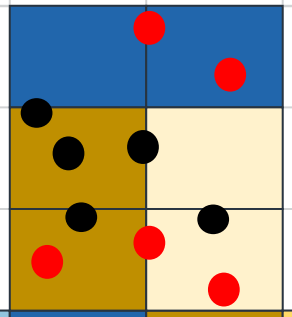
Figure 8:
Hypothetical Bridge Counts in High Minority and Low-Income Block Groups

High Minority Block Groups



		75%+	60-74%	51-59%	35-50%	20-34%	0-20%	
Strict	Total	2	3	0	3	2	0	10
	Poor	1	2	0	0	2	0	5
Buffer	Total	3	3	2	4	2	2	16
	Poor	2	2	1	0	2	0	7

Low Income Block Groups



		75%+	60-74%	51-59%	35-50%	20-34%	0-20%	
Strict	Total	0	0	2	5	0	3	10
	Poor	0	0	2	1	0	2	5
Buffer	Total	0	0	3	6	0	4	13
	Poor	0	0	2	2	0	2	6

Appendix E:

Community Health Overview

Background

Parks and trails give us places to stay active. Sidewalks gives us space to safely walk and roll. Highways full of cars and trucks pollute the air we breathe. What we do as a community affects our individual health. The health of Lancaster County is part of the conversation when creating policies, plans, and projects. In this way, Lancaster County community embraces a "health in all policies" approach.

Transportation affects health in four major ways: active transportation, safety, air quality, and connections to resources. When designed well, transportation systems can improve the health and well-being of our community. However, negative health effects related to the transportation system often hurt the most vulnerable members of the community, such as people living in poverty, children, older adults, and those with disabilities.(1)

Active Transportation and Physical Activity

Physical activity and active transportation have declined compared to previous generations, according to the Centers for Disease Control and Prevention (CDC). The lack of physical activity is a major contributor to the steady rise in rates of obesity, diabetes, heart disease, stroke and other chronic health conditions.

In Lancaster County, 69% of adults, 34% of teens, and 30% of children K-6 are overweight or obese.(2) Obesity is one of the most important contributors to preventable chronic diseases in the United States, including diabetes and heart disease. Overall, 11% of adults and 25% of Medicare beneficiaries in Lancaster County have diabetes, a leading cause of death in the United States.(3) Heart disease and stroke are in the top four leading causes of death in Pennsylvania. (4) In Lancaster County, 12% of adults over age 35 have experienced a heart attack, coronary heart disease, or stroke. (5)

The cost estimate of health care expenses for obesity related diseases ranges between $147 billion and $210 billion per year. In addition, obesity contributes to absenteeism and lower productivity at work, costing employers $506 per obese worker per year. (6)

Currently, the transportation infrastructure across the United States focuses on motor vehicle travel. Many Americans feel that it is unsafe to walk and bicycle in their neighborhoods because of traffic and the lack of sidewalks, crosswalks,

and bicycle facilities. Most Lancaster County residents have limited access to other transportation options. The percentage of commuters who walk and bike to work is very low: 77.9% of commuters drive alone to work, while only 3.8% of commuters walk to work and 0.7% bicycle to work. (7)

Transportation planning can help people lead more active lifestyles by increasing the number of opportunities for them to move between places without driving. The CDC recommends that active transportation systems connect the places where people live, learn, work, shop, and play by providing safe and convenient walking and bicycling facilities. Using smart growth design principles can also reduce the distance between destinations people need to travel during their daily activities.

The following strategies are recommended by the CDC for supporting active transportation through transportation policies and practices:

- Promote safe and convenient opportunities for physical activity by improving infrastructure such as well-lit sidewalks and paths, safe roadway crossings, and bicycle infrastructure.
- Provide incentives for municipalities or regions that reduce vehicle miles traveled per capita and increase walking, bicycling, and use of public transit.
- Provide local officials with tools to implement Complete Streets, which provide safe and convenient options for all street users.
- Bring health, transportation and community planners together to develop pedestrian and bicycle master plans.
- Work with state and local officials to integrate and enforce use of pedestrian and bicycle design guidelines and evidence- based safety standards.
- Explore opportunities for increasing availability of funds for establishing active transportation initiatives.
- Develop and implement policies that encourage transit-oriented and mixed-use developments.

Safety and Injury Prevention

Motor vehicle crashes are a leading cause of serious and fatal injuries for many age groups. Pedestrians and bicyclists are even more likely to die in crashes compared with those who travel by motor vehicle. Public transportation has historically been safer than highway travel in light duty vehicles, but highway travel is growing more quickly than other modes of travel across the country. (8)

By providing other transportation options and improving roadway facilities, transportation agencies can reduce the incidence of motor vehicle crashes. This includes:

- Protect pedestrians and bicyclists from motor vehicle crashes by implementing traffic calming measures and designing streets to reduce motor vehicle speeds.
- Implement multimodal level of service indicators as performance measures for roadways that include measurements of pedestrian, bicyclists, and public transportation operability.
- Correct existing hazards and enhance infrastructure for pedestrians and bicyclists.
- Coordinate with health officials to consider health impacts as part of transportation planning using health impact assessments (HIAs) and safety audits.

Cleaner Air

Motor vehicle emissions have decreased significantly over the past 30 years. However, air pollution from motor vehicles continues to harm the environment and contributes to health problems such as asthma and heart disease. Air pollution from the transportation system is one of the largest contributors to unhealthy air quality in the United States. (9) In Lancaster County, 11% of adults and 12% of children have asthma. (10, 11) Asthma in young children is a serious public health problem and leads to missed days of school, limited activities, emergency department visits, and hospitalizations.

Improving the efficiency of the transportation system and supporting cleaner vehicles and fuels can improve air quality. National and state-level policies can encourage retrofitting of high-emissions vehicles, strengthen vehicle inspections standards, and incentivize consumers to buy more efficient vehicles. (12)

The following local and community strategies are recommended to improve air quality:

- Improve active transportation and public transportation modes and encourage consumers to use these modes.
- Set specific goals to reduce vehicle miles traveled per capita.
- Promote cross-sector data collection and data sharing between the transportation and health sectors.
- Build staff capacity to evaluate the health implications of policy decisions and conduct health impact assessments on proposed policies and projects.
- Provide training on the intersection of health and transportation for local officials, key staff, and community members.
- Collaborate with other sectors to collect public input on decisions that affect health and well-being.

Recommended Performance Measures

The Transportation and Health Tool (THT) was developed by the U.S. Department of Transportation and the Centers for Disease Control and Prevention to enable practitioners to easily measure the health impacts of transportation systems. This tool provides data for Lancaster County and other municipal statistical areas about the transportation environment and safety, active transportation, air quality, and connectivity to destinations. In addition to the indicators in the THT, local data is available for important measures of progress, such as miles of pedestrian and bicycle facilities.

In total, there are 8 recommended health indicators to measure the health impact of the Lancaster County transportation system:

- Percentage of commuters using various modes, including bicycling, walking, and use of public transportation;
- Vehicle miles traveled (VMT) per capita;
- Public transportation trips per capita;
- Land use mix index score;
- Road traffic fatalities (motor vehicle, bicycle, and pedestrian) per 100,000 residents;
- Miles of bicycle lanes, sidewalks, and shared use paths;
- Presence of complete streets policies; and
- Use of funds for bicycle and pedestrian improvements.

See the link below to find health indicator values for the Lancaster, PA metropolitan statistical area. https://www.transportation.gov/transportation-health-tool/indicators

References

1. US Department of Transportation. Transportation and Health https://www.transportation.gov/mission/health/literature-and- resources

2. Pennsylvania Behavioral Risk Factor Surveillance System, 2016–2018; Pennsylvania Department of Health, Bureau of Community Health Systems, Division of School Health, 2017–2018.

3. Pennsylvania Behavioral Risk Factor Surveillance System, 2016–2018.

4. Centers for Disease Control and Prevention. Stats for the State of PA, 2017.

5. Pennsylvania Behavioral Risk Factor Surveillance System, 2016–2018.

6. Trust for America's Health and the Robert Wood Johnson Foundation. The State of Obesity. 2016.

7. American Community Survey 5-year Estimates, 2014–2018.

8. Centers for Disease Control and Prevention. CDC Recommendations for Improving Health Through Transportation Policy, 2015.

9. Centers for Disease Control and Prevention. CDC Recommendations for Improving Health Through Transportation Policy, 2015.

10. Pennsylvania Behavioral Risk Factor Surveillance System, 2015–2017.

11. Pennsylvania Department of Health, Bureau of Community Health Systems, Division of School Health, 2017–2018.

12. Centers for Disease Control and Prevention. CDC Recommendations for Improving Health Through Transportation Policy, 2015.

13. Ibid.

14. Perspectives on Psychological Science. "Loneliness and Social Isolation as Risk Factors for Mortality: A Meta-Analytic Review." 2015.

15. U.S. Department of Transportation. Transportation and Health. 2016.

16. Association of State and Territorial Health Officials. Health in All Policies Implementation Strategies. http://www.astho.org/Programs/Health-in-All-Policies/Environmental-Health-in-All-Policies/HiAP-Implementation- Strategies/.

Appendix F:

Public Comments

MetroQuest Survey

In addition to the survey results beginning on p. 67, we received six written comments. These comments mentioned a variety of topics, including:

- Developing light rail public transportation in Lancaster County;
- Creating better connections to mass transit;
- Improving traffic flow;
- Increasing driver penalties related to pedestrian safety in downtown Lancaster; and
- Increasing driver penalties related to the safety of horse-drawn vehicles in rural areas.

Draft Document Comment Period

FHWA Comments

1. **Comment:** Page 3, Funding statement - *If FTA planning funds were also used, then please add FTA too.*
   Response: The statement has been modified to reflect the FTA funding.
2. **Comment:** Page 3, Title VI Policy Statement - *Also should include ADA statement*
   Response: ADA Statement has been added.
3. **Comment:** Page15, Socioeconomics section - *Identify sources for all tables and maps.*
   Response: Sources are now identified.
4. **Comment:** Page15, Socioeconomics section, “Based on the July 2022 Census…” - *Typo?*
   Response: Text revised to “Based on the Census 2022 ACS 1-Year Estimates…”
5. **Comment:** Page 83, Project Funding - *How are transit funds being captured in the revenue forecast?*
   Response: A revenue forecast for FTA based transit funds will be added to the project funding table.
6. **Comment:** Page 83, 1st bullet - *I would revise this to say: “The federal planning regulations (23 CFR 450.324) requires…”*
   Response: Text revised accordingly.

7. **Comment:** Page 83, 6th bullet - *Although there aren't specified LRTP projects after 2036, how does the MPO foresee spending the 1.15B for highway, bridge, and safety projects? This can be shown through a "line item" approach to indicate how much of the funds will be programmed for each of the three types. (23 CFR 450.324 (f)(11)(i)(v))*
   Response: The 2020 connects2040 plan did not include line items, therefore the 2024 update to connects2050 did not address a line-item concept for the future. Although there has been no formal policy adopted by the MPO, the status of the Performance Measures will direct the allocation of resources in the 2036+ timeframe.

8. **Comment:** Page 85, Projected Revenue - *The forecast should also include the funding sources (23 CFR 450.324 (f)(11)(i)). An easy way to do this is to use the PennDOT 2025 Financial Guidance tables for Lancaster that state the allocation for each funding source and place that in this chapter. Also be sure to capture the regional share of Rapid Bridge Replacement Program funds in the revenue forecast (the RBR funds were included separately from the State Bridge regional distribution in Appendix 2 of the Guidance).*
   Response: The inclusion of the Rapid Bridge Replacement Program has been added to the forecast. However, the individual funding sources will be added to a new appendix. The details of the individual funding programs change with each new piece of legislation. The mix changes every 5 or 6 years, so we included that detail for the current bill in the appendix.

9. **Comment:** Page 85, Projected Revenue, Amount: $325,810 - *For fiscal constraint, the projections should be less than the project list. This amount is greater than the 2025–2028 TIP project listing in Appendix A. Could this be because there are funding sources above and beyond fiscal constraint that are added to projects? If so, please indicate that in the revenue forecast (23 CFR 450.324 (f)(11)(ii)*
   Response: Corrected based on the TIP submission documentation for the additional funding.

10. **Comment:** Page 85, Projected Revenue Total - *The grand total I calculated was 2,136,890.*
    Response: Text revised accordingly.

11. **Comment:** Page 85 - *What do these funding projections mean for transportation planning? 3rd bullet, Appendix A as part of the 2025–2036 Twelve Year Program (TYP) - This draft doesn't seem to have the TYP or Illustrative Projects in the Appendix. I only see the 2025 TIP.*
    Response: The updated version of the plan has the projects listed; they were not included in an earlier draft distributed. The link to the list is below. https://lancastercountyplanning.org/DocumentCenter/View/5598/connects2050-Metropolitan-Transportation-Plan-Draft-April-2024-v3

12. **Comment:** Page 85, *What do these funding projections mean for transportation planning? 3rd bullet, The MPO will consider the candidates from the illustrative list as future programs are being developed. - Is there further discussion about any recommendations on additional funding strategies when new funding will become available? (23 CFR 450.324 (f)(11)(iii)*
    Response: Page 85, added as a fourth 3rd bullet - Transportation Improvement Program Selection Process The 2025–2028 Transportation Improvement Program (TIP) Selection Process is a document that guides the selection and scoring process that the Lancaster MPO uses to evaluate projects for the inclusion on the TIP. Candidate projects are identified through monitoring the performance of the transportation system in the areas of safety, the physical condition of pavements and bridges, and the reliability of travel on the system. Then, candidate projects are evaluated with a system that scores projects in four areas: Safety and Security, Congestion Management, Multimodal Connectivity, and Economic Benefit. These scores are used by the MPO to make final selections for projects to program on the TIP

13. **Comment:** Page 98, Performance Goals, The Lancaster County MPO incorporated federal transportation performance measures into the 2025–2028 Project Selection Process. The MPO will continue to evaluate each performance measure at the beginning of each TIP update cycle to determine investment focus areas. - *This is great. Will the final plan have more discussion on this? Or where within the document can readers go back to learn more about the incorporation of the PMs? Will the systems performance report be an Appendix? What about the transit performance measures? (23 CFR 450.324(f)(3)(4))*
    Response: A brief overview of the Transportation Improvement Program Selection Process is provided in the "What's New" section of the Draft connects2050 document. A hyperlink in the document provides details about how the selection process operates and the criteria used in the selection of projects. Performance measures are included in the Trends, Issues, and Performance Measures section of the document. Transit Performance Measures were not included in connects2040; therefore, they were not updated in the 2024 version of connects 2050.

Citizen Comments

14. **Comment:** Page 88, Provide safety on roads most frequented by Plain Sect travelers. - *Milling out steep parts of hills, widening the shoulders in blind spot areas... also hill mirrors and possibly a new sign put up in areas where most problematic. You can take previous safety data of accidents reported, find out what the commonality of those problematic spots and then use those weak spots as templates to improve in other areas that are similar.*
    Response: Although specific strategies to improve safety for Plain Sect road-users are not detailed in the plan, these suggestions will be taken into consideration for future action.

15. **Comment:** General Comment - *Please keep supporting and building more mobility options for car-free transportation, such as sidewalks and bike lanes. Off-road bike paths are especially appreciated. We also need more bike parking downtown! It is exciting to see the plans for the Lancaster train station, and I hope they move forward soon.*
    Response: Comment noted.

16. **Comment:** Project Specific Comment - *I don't want the MPMS #118767 project to go through as it is currently planned. The project impacts a multi generational farm at 114 Lititz Road, Lititz Pa 17543 in a negative way. The farm is preserved permanently by The Lancaster Farmland Trust with a perpetual easement. I think our voices need to be heard and considered too, not just the beneficiary's of the relocation of Lititz Road. Thank You*
    Response: Comment noted.

17. **Comment:** General Comment - *I'd like to see more clearly defined bike lanes. Other countries use color to indicate bike lanes. Some places have bike lanes between curbs & street parking spaces. Also, more roundabouts, less stop signs. These make so much more sense and are much safer. Make streets more narrow to slow down traffic.*
    Response: Comment noted.

18. **Comment:** General Comment – *Improve road safety for horse and buggy traffic, also for scooter traffic (Amish) on Valley Rd. in Eden Township. There have been numerous accidents involving horse and buggies which included fatalities.*
    Response: Comment noted.

19. **Comment:** General Comment – *You need to add bus shelters.*
    Response: Comment noted.

20. **Comment:** General Comment – *Would like to see Goat Trail completed.*
    Response: Comment noted.

21. **Comment:** General Comment – Great Effort – Thank you! Suggestions:
    1) *Make DT Lancaster City a vehicle-free zone as done in the EU.*
    2) *More traffic circles vs. traffic control lights*
    3) *Promote vehicle exterior airbag for pedestrian collisions (e.g. Volvo)*

    Response: Comments noted.

22. **Comment:** General Comment – *Thank you for improvements to mass transit facilities (e.g. Mount Joy Amtrak Station); Thank you for rain garden bump outs in Lancaster City – slows traffic and reduces SW runoff.*
    Response: Comment noted.

23. **Comment:** General Comment - *I commute via bicycle from Lancaster township east side - to New Holland - for work. Crossing the conestoga river is one of the biggest challenges, and needs to be focused on. The 462 bridge is not a safe option Need a dedicated bike bridge or bike lane to get across the conestoga river on the east side of lancaster city - to connect to goat path.*
    Thank you.
    Response: The City of Lancaster, with funding assistance from the Lancaster MPO, will be constructing a boardwalk underpass along the west bank of the Conestoga River under the stone arch railroad tunnel and connecting it to the existing bridge over the Conestoga River at the water treatment plant, south of Conestoga Pines Park.

New Comments Received After TTAC Meeting on May 28, 2024

24. **Comment:** General comments (received during Lancaster City Open Streets Event on May 19, 2024):
    - *Safety around schools for walking and biking to city schools.*
    - *Lanes are too narrow in city for all that you are trying to do. Turning is sometimes difficult even for me in a Honda Civic.*
    - *Visibility at intersections is important.*
    - *Designated bike lanes (especially with all the road widenings)*
    - *Encourage safe speeds leaving the city on east chestnut.*
    - *Cross walks.*
    - *Bike Lanes In Columbia for the new THE COMMON WHEEL LOCATION!*
    - *A sidewalk route to Park City would be great!*
    - *Bike infrastructure Manheim Township + Lancaster City and all bridges please*
    - *Law Enforcement on Rule Breakers – I have seen where a rule was being ignored while a policeman was sitting at the same light and did nothing.*
    - *Drop the Decibels Noise is Bad Sound Hurts my Brain (TBI) Rent Readers - Get results Give tickets for Motorcycles and Sports Cars.*
    - *Later trains to Philly during weekends*
    - *Sharing the Road:*
        - *More bike lanes + more sidewalk space.*
        - *Sharing the Road: divided bike lanes (bollards)*
        - *College Ave and Race Streets are drag strips for cars. What can be done by design to further De-incentivize speeding?*
        - *PLEASE! De-incentivize driving and keep peds & bikers away from cars (it's scary)*
        - *City to Belmont/Fruitville Pike, City to Park City. Please! To Long's Park to Belmont.*
        - *Need to promote complete streets concept. Drivers need to share with others*
        - *So many city roads need repair!*
        - *Need more bike lanes*
        - *Many of the current bike lanes behind parked cars add danger due to pedestrians, bad roads, and car doors suddenly opening into the lane.*
        - *Yes! More bike visibility away from curbs*
        - *All the way to Park City*
        - *More adequate bike lanes. Keep sidewalks safer for walking.*
        - *Slower, more walkable/bikeable rds connecting Downtown Lanc to County Park, Park City, Mountville, Manheim, etc.*
        - *Make sure these paths are actually pedestrian friendly. Increase shade & seating + trash cans*
        - *Everyone deserves access to explore Lancaster!*

- *Air Quality:*
  - *Planting more native trees on the sidewalk, across the city and not just select areas.*
  - *Promoting plant-based food, as well as ecofriendly transit*
  - *Better way to clean & filter air & options for peoples houses to filter*
  - *Electric school buses*
  - *What is the status now?, 2) How can I (we) affect (arrow point to electric school buses), 3) Address habits first, $ later*
- *Land Use and Transportation:*
  - *Build communities that provide live, work, and play options. Encourage more walking to destinations.*
  - *Please have more ADA accessibility for the disabled.*
  - *Mitigate the sprawl, congestion + use smart growth*
  - *Principles*
  - *More walkable cities/towns, less car infra/parking*
  - *Love this! Mixed zoning makes a huge difference. Also we need to keep sidewalks clear*
  - *Yes! (Depending on kind of destination)*
  - *In favor of reducing parking use minimums*
  - *Make Lancaster a walking zone – cars on outskirts*
  - *Depends on the destination*
  - *Thicker places are more desirable in the long run. Good thinking!*
  - *No new roads, more infill housing*
  - *Yes! This is great*
  - *I'd love to stop in at fewer places and get more done w/less gas spent.*
- *Plain Sect Travel:*
  - *Ask property owners if they'd cooperate if providing protected buggy lanes.*
  - *Separated or protected lanes, good for Amish and bikers*
  - *Protected shared paths*
  - *Sidewalks/walkways/bike & ped ways*
- *Transportation Funding Gap:*
  - *We need to fund public transport at the level of other countries!*
  - *This. Maybe spend all that road money on high speed rail loop.*
  - *Agree!*
  - *Light rail pleeease!!! B/t Lanc + Lititz, Lanc + the river*
  - *Make changes that have the greatest impact.*
  - *More options encourages more riders. Make it easier to take public transit.*
  - *Reallocate funding from roads to more sustainable transportation (and multimodal)*
  - *Taking up grass roots/community driven/informed initiatives.*
- *Specific Road Safety Issues:*
  - *The East Walnut strip from the city is obscenely treacherous for two-wheelers*
  - *Columbia Ave, Harrisburg Pike, Fruitville Pike*
  - *+1*

Response: Comments noted.

25. **Comment:** Public Transit, Active Transportation, General Comment - *Please improve the rail options within our communities. This used to be an area with a thriving railway presence, but many lines are now decommissioned. It's a shame, as we are such a central location to many big cities like Baltimore and Philadelphia. Our county could set an example to be followed nationwide if we improved our public transit services in favor of cleaner, community managed services.*

    Additionally, we need to continue investing in the creation of more walkable communities. Bring more sidewalks to towns like Millersville, where teenagers are expected to walk to school on road that sometimes don't have sidewalks for them to utilize. Bring wider, more accessible sidewalks with green spaces built into them to our community.
    Response: Comment noted.

26. **Comment:** Active Transportation, General Comment - *Lancaster is a bicycle island at this time. The infrastructure is just in tiny sections. It would be awesome to start attaching it to things like grocery stores, schools and outdoor recreation areas to make it more of a daily life. A way to get to Park City safety, longs park, giant on Columbia Ave, wegmens. This would also help walkers/runners as well. Schools need bike routes to them as well.*
    Response: Comment noted.

27. **Comment:** General Comment - *Please, put enforcement of the great ideas as a major priority for all the 60 municipalities in the county. Safety of walkers, bikers, animals and drivers is critical. The wildlife get no recognition or protection from planners. Pollution of air, water and land are critical to health and get minimal or no attention. The future of life and the earth are subsumed by business, profit and greed. Your document is well done. Thanks. I have hope.*
    Response: Page 30 of the Draft MTP, the last bullet includes references to the preparation of a Safety Action Plan by the Lancaster County Planning Department in conjunction with the MPO. The plan seeks to significantly reduce or eliminate roadway fatalities and serious injuries. Enforcement will be one of the key tools to accomplish this goal.

28. **Comment:** Safety, General Comment - *Transportation infrastructure and safety are at a critical juncture in Lancaster County as a result of increased traffic and increasing population density. Our roads are not able to SAFELY support the daily traffic demands for cars, trucks, pedestrians and cyclists. After viewing the connects2050 summary, I am impressed by the detailed analysis, targets and recommendations but am exptremely concerned about the implementation of the recommendations. Unless there is oversight and enforcement, I fear that the forces for development will overcome/override your comprehensive efforts. Safety for pedestrians and cyclists, traffic management especially on the north/south corridors, impact of heavy traffic on air quality, need for more pedestrian/bike pathways to connect people safely to destinations as well as an urgent need for increased attention to speeding, drving through red lights and stop signs using technolgy are my big targeted concerns. Thank you for your efforts.*
    Response: Comment noted.

29. **Comment:** Comment regarding corridors for high potential for active transportation improvements:
    - **Comment:** *People need ways to walk/bike safely to shopping centers along Lititz Pike and Oregon Pike. Same goes for Manheim Pike. If anyone tries to walk from the city to the Giant on Lititz Pike, for example, they'll feel like they're risking their life.*
      Response: Comment noted.
    - **Comment:** *true. You literally are forbidden to cross Lititz Pike at the Golden Triangle. An entire neighborhood should easily be able to take Hannah's off the shopping, restaurants, hair salon and gym.*
      Response: Comment noted.

- **Comment:** *Angled parking is good, but I would hate to live or work where the cars back in to park. I would avoid walking there, also. Or doing any exercise. Better to have the front of the car at the curb. Also, if you need to look under the hood, it is at the curb.*
  Response: Comment noted.
- **Comment:** *Yes! I definitely support this. It would be great to comfortably go from Lancaster City to say Wegman's down Harrisburg Pike or the Target on Fruitville Pike.*
  Response: Comment noted.
- **Comment:** *Safely going from the City to Wegman's and other destinations along Harrisburg Pike is exactly one of the goals of The Little Conestoga Creek Blue-Green Corridor Project! Check out this link for more info: https://lccbgc.org/the-green-corridor/.*
  Response: Comment noted.

30. **Comment:** *PENDOT recommends I contact your organization. Request: fund and install new on and off ramps on Pa 283 at East High Street (Elizabethtown Rd) both eastbound and westbound pa283. Since 283 was built done 40+ years ago, traffic in Elizabethtown has increased, with only 2 exits, Hershey and Reams. More houses in the last 40 years, plus 1200 more houses proposed on Cloverleaf Rd.*
    Response: Pg 4 of the 2025–2028 TIP Selection process has the following statement - Projects are included on the TIP based on feedback from system owners. System owners are organizations that are responsible for maintaining the transportation infrastructure of a particular area. In Lancaster County, the system owners include the county itself, individual municipalities, RRTA and PennDOT. Each of these organizations own a portion of the transportation network and are therefore responsible for maintaining the system.

New interchanges along 283 were included in a study effort conducted in 2018 along the 283 and Route 230 corridor, a listing of needs analyzed is below. High Street/Elizabethtown Road was not one of the locations included for evaluation. This is an improvement that would normally come from the community where the project is located. We suggest, you reach out to Elizabethtown Borough and Mount Joy Township to discuss this problem and request for them to evaluate, discuss and submit this proposal to the Lancaster County Planning Department for future consideration.

https://lancastercountyplanning.org/DocumentCenter/View/1046/SR-283230-Corridor-Study-2018?bidId=

Exhibit 24 – Conceptual Transportation Needs Analyzed

Need ID	Name/Description
CAP_01	Snyder Road improvement to potential new SR 283 interchange
CAP_02	Risser Mill Road improvements to potential new SR 283 interchange
CAP_03	Internal shared driveway for industrial sites between Cloverleaf Road and Main Street
CAP_04	Access road along SR 230 for industrial cluster driveway sharing
CAP_05	Shreiner Station Road new bridge alongside preserved covered bridge
CAP_06	Construct rear/alternative access to Spooky Nook Sports Complex from Landisville Road
CAP_11	New Snyder Road interchange with SR 283
CAP_12	New Risser Mill interchange with SR 283
CAP_13	Improved access management to industrial sites via driveway sharing
CAP_14	Industrial site near Cloverleaf Road /Main Street - Access management driveway - Right in, right out
CAP_16	Potential signal on E Main Street to consolidate entrance points between Elmcrest Boulevard and Cornerstone Drive in Mt. Joy Borough
CAP_17	Shreiner Station Road maintain covered bridge as pedestrian pathway
CAP_18	Maintain covered bridge at Erisman Road
CAP_19	Widen SR 283 to 3 lanes in each direction
CAP_20	Traffic signal upgrades and retiming on SR 230 from Linden Avenue in Elizabethtown Borough to Cloverleaf Road in Mt Joy Township

31. **Comment:** General Comment - *Better communication with companies that use tractor trailers. GPS is leading truck drivers down roads which were not meant for large vehicles (see N Lime St. issue this week). In East and West Hempfield township, warehouses were built with minimal changes to road width. We need to improve the communication with these companies to make sure the trucks they are using travel on roads which can accommodate their size and safety needs.*
Response: Comment noted.

32. **Comment:** General Comment - *Respect Farmland, the citizens' farmland preservation group, strongly supports the proposed bike/pedestrian trail construction projects listed in Appendix A, especially the Conestoga Boardwalk project (118511) in Lancaster City, Lancaster Township and Manheim Township. We also believe the expenditure on funds on bridges is a smart use of limited dollars.*
Response: Comment noted.

Comments from SCTA

33. **Comment:** Public Transit section
    - **Comment:** *There are three main types of transit available to the public within Lancaster County– fixed-route bus service, shared-ride service, and passenger rail. Approximately 21,927 county residents live within ¾ miles of a passenger train station and 342,521 residents live within ¾ miles of a bus route ~~or train station~~.*
      Response: "...or train station" will be removed."
    - **Comment:** *Second bullet in the Public Transit, Overview section South Central Transit Authority (SCTA) provides fixed-route bus service along 18 routes across Lancaster County under the operating name Red Rose Transit. In Fiscal Year (FY) 2019, ridership totaled 1.8 million trips. In 2023, Red Rose Transit ridership totaled 1.2 million trips. This is a 66.7% decrease in ridership, mainly due to the pandemic.*
      Response: Bullet will be rewritten and amended as suggested and the following will be added: "This is a 66.7% decrease in ridership, mainly due to the pandemic."
    - **Comment:** *Fourth bullet in the Public Transit, Overview section ~~Red Rose Transit~~ SCTA also provides shared-ride, door-to-door services for Lancaster County through Red Rose Access, transporting seniors, individuals with disabilities, or persons unable to use the fixed-route bus within the county. Between FY 2019 and 2023, ~~the~~ Red Rose Access ridership decreased from 292,000 to 185,742. This is a 63.6% reduction in ridership, mainly due to the pandemic.*
      Response: Bullet will be revised to state: SCTA also provides shared-ride, door-to-door services for Lancaster County through Red Rose Access, transporting seniors, individuals with disabilities, or persons unable to use the fixed-route bus within the county. Between FY 2019 and 2023, Red Rose Access ridership decreased from 292,000 to 185,742. This is a 63.6% reduction in ridership, mainly due to the pandemic.
    - **Comment:** *Third bullet in the Public Transit, Overview section rabbittransit from York County and Lebanon Transit (LT) from Lebanon County also operate one fixed route each for trips into Lancaster. rabbittransit's Route 12 links York to Columbia. LT's Saturday Special makes stops in Manheim, East Petersburg, and the Park*
      City Center mall.
      ADD a sentence about Amtrak
      Response: Bullet is included in the Amtrak section that follows.
    - **Comment: Public Transit section,** *RRTA charts*
      Rearrange charts on p. 44 so that RRTA chart is on the top
      Response: Charts will be flipped.
    - **Comment:** *Residents Within ¾ Mile of a Bus Line Map*
      On the map, can you highlight the train stations in yellow so they stand out?
      Response: Would require map to be remade with small benefit.
    - **Comment:** *P. 46*
      ADD rows for Lancaster County and % of County like the transit chart. This can be for the train station totals, not each individual station.
      Response: Rows with percentage have been added.

- **Comment:** *P.47*
  ADD a sentence about Amtrak
  Response: Bullet will be added: While Amtrak's ridership numbers are below what it was before the COVID-19 pandemic, they are rebounding strongly.
- **Comment:** *P. 47*
  this page should be moved to page 48 so the trends summary is at the end of section
  Response: Pages will be swapped.

34. **Comment:** General Comment - *In addition to the many excellent points included in the plan I would like to advocate for better walking and biking transportation from Lancaster City to Longs Park. The most direct route is Harrisburg pike. I have biked this route myself and found it to be tight quarters with congested vehicle traffic. It is certainly nerve-racking and risky. I think Lancaster residents would benefit from a simple extension of bike acces directly to the park. Having to drive only 2 miles, or take route 30, to our beautiful 70 acre park is regrettable. Please consider implementing pedestrian and cycling access along this corridor. Thank you.*
    Response: Comment noted.

35. **Comment:** General Comment - *I appreciate the detailed research on the social, environmental, and other benefits of bike/pedestrian/public transit transportation modes.*
    Response: Comment noted.

36. **Comment:** General Comment - *Very good plan with improvement on Connects2040 and coordination with Places2040. As an executive of a freight generating company I would like to provide any assistance with analysis and completion of the Freight Plan. Please let me know how I can assist.*
    Response: Comment noted.

Appendix G:

PennDOT Agency Coordination Meeting

Lancaster County MPO
Metropolitan Transportation Plan Update

Agency Coordination Meeting (ACM) Presentation
March 27, 2024

Ms. Nicole Auker (PennDOT) invited **Mr. Will Clark (Lancaster County)** and **Ms. Casey Bottiger (Michael Baker International)** to present the Metropolitan Transportation Plan (MTP) update for the Lancaster County MPO, also known as *connects2050*.

Mr. Clark (Lancaster County) provided background on Lancaster County and its planning activities. Some current environmental efforts being undertaken by the county include:

- Lancaster County was a recent recipient of Act 54 funding from the Pennsylvania Department of Environmental Protection to develop a countywide Act 167 Stormwater Management Plan.
- The county and its municipalities have kept approximately 85 percent of new development within its urban growth areas in efforts to preserve farmland and protect natural resources.
- The county has identified existing and future priority areas for natural lands and agricultural preservation.
- The MPO has invested CMAQ and STU funding into alternative modes to improve air quality.

Ms. Bottiger (Michael Baker) discussed how the plan assessed potential direct and indirect environmental impacts. She noted that work involved digitizing a sample of LRTP projects (the 2025 draft TIP) and completing a buffer analysis to determine where projects intersect with environmental resources. The results of the analysis found farmland soils, karst geology features, storage tanks, floodplains, and wetlands were among the most "impacted" resources based on the number of times they intersected with project buffers. **Mr. Ames (PennDOT)** asked about the y-axis on the chart showing the results of the buffer analysis. **Ms. Bottiger (Michael Baker)** stated that the scale represents the number of times resources intersected with a project buffer.

Ms. Bottiger (Michael Baker) also provided an overview of the plan's eight policy areas, which are all supported by action strategies. She reviewed the eight draft action strategies included under the Environmental Protection policy area:

- Incorporate resiliency considerations into transportation planning.
- Formalize an environmental resource agency stakeholder group to incorporate best practices into transportation projects and planning.
- Support the upcoming development of PennDOT's Wildlife Crossing Strategic Plan and future implementation of crossings along identified corridors in Lancaster County.
- Conduct outreach with the Agricultural Preserve Board and the Lancaster Farmland Trust to gather their input on the impacts of the transportation system on farmland.

- Ensure MPO participation and transportation considerations are included in stormwater management plan development.
- Encourage the development of green infrastructure as part of transportation projects.
- Encourage the development of electric vehicle charging infrastructure.
- Promote opportunities for alternative modes through the implementation of the MPO's Active Transportation Plan and SCTA's Transit Development Plan and promote strategic CMAQ investments to improve air quality.

After presenting these action strategies, **Ms. Bottiger (Michael Baker)** opened the floor for feedback and questions regarding the draft action strategies.

Mr. Drew Ames (PennDOT) mentioned that he met with a state legislator from Lancaster County who is looking to connect the development of riparian buffers with parks. He noted that these buffers could serve as opportunities for trail connections for cyclists and pedestrians while also reducing nitrogen and sedimentation loading from farmland. **Mr. Ames (PennDOT)** stated he will follow up with the MPO staff and provide additional information.

Mr. Ames (PennDOT) also asked if PNDI runs were completed on larger MTP projects for any potential conflicts. **Ms. Bottiger (Michael Baker)** stated that while formal runs were not completed, PNDI-designated buffer widths were used in the GIS analysis and were based on the type of project. Larger scale projects (e.g., roadway capacity, roadway/intersection realignments) had larger buffer widths compared to other types of projects.

Mr. Ames (PennDOT) also noted that collaboration on electric vehicles and charging infrastructure is ongoing. Aside from the NEVI program, there may be opportunities for EV infrastructure projects through the TIP and other funding types. He noted that these projects are categorized as a Categorical Exclusion (CE1A).

Ms. Sze Wing Yu (USFWS) noted that peregrine falcons are nesting on the Columbia-Wrightsville Bridge (PA 462) over the Susquehanna River. She also noted there are several bat species in the area to be mindful of. She stated she will follow up with Lancaster County and Michael Baker with a list of federally listed species.

Ms. Stephanie Seymour (PA DCNR) stated there are certain plant species in Lancaster County that are state designated and/or threatened. She noted that while they are addressed on a case-by-case basis, it is important to run PNDIs before implementing a project to check the overall limit of disturbance.

Ms. Auker (PennDOT) asked if Stafford Act properties were included in the analysis, noting that these properties were purchased through FEMA after flooding events. **Mr. Clark (Lancaster County)** stated that these properties were included as part of the buffer analysis.

Mr. Bryon Ruhl (PennDOT) commended the team for including wildlife crossings in the plan. He noted that the US 322 corridor in Lancaster County is an area of concern for deer crossings and encouraged that all PennDOT projects do a wildlife crossing analysis to account for any funding that may be needed. **Mr. Ruhl (PennDOT)** also stated that PennDOT would like to develop an analysis tool using GIS and other technology to help assess. **Mr. Corey Brown (PennDOT)** asked if it would be helpful to look at habitat connectivity analyses from DCNR as part of the development of this tool. **Mr. Ruhl (PennDOT)** stated that it could be a helpful resource and coordination with PennDOT's GIS staff is underway.

Appendix H:

Stakeholder Focus Group Summary

Overview

The Lancaster County MPO hosted a series of focus group meetings during the week of September 23, 2019. Each focus group was oriented to a specific transportation topic or stakeholder group. These topics included: active transportation; emergency response; the Plain Sect community; municipal officials; underserved populations; shippers and businesses; and transit and human services. All groups provided thorough and valuable input, which guided the development of policies, programs, and projects included in *connects2040*, the Lancaster County 2040 Metropolitan Transportation Plan.

Key Themes

- A desired focus on all travel modes with less reliability on the automobile – promoting public transportation and ridesharing, bicycles, walkability, etc.
- Attendees expressed concerns over congestion and the role of interchange conditions and improper timing of signals.
- Freight movement in downtown areas (such as the boroughs and the City) and obstacles for efficient deliveries.
- Innovative solutions, such as new technologies and modernization, should be explored.
- Land use, population growth, and transportation linkages.
- There should be collaboration and transparency between the MPO, PennDOT, local governments, and stakeholders throughout the transportation planning and decision-making process, including decisions on how funds are spent.
- Attendees expressed concerns over the safety of Plain Sect buggies and their co-existence with other transportation modes.

What Did They "Love"?

- Increased emphasis on alternative modes of transportation including:
  - New bicycle and pedestrian lanes and facilities
  - Improvements to Amtrak's Keystone Corridor
  - Transit, which has a solid foundation in the county
  - Commute PA and the education the program provides
  - Walkability, particularly in downtown areas
  - Increased ADA and curb cut improvements throughout the county
- Congestion-reducing projects have been implemented successfully:
  - Construction of the Columbia and Strasburg bypasses; Gap reconfiguration
  - Improved signal timings along Route 501; Route 30 from Greenfield Road to Route 896
- Transportation considerations are made with new land developments:
  - Accessibility (e.g. access management, connectivity, roadway geometry)
  - Improved pedestrian accommodations (e.g. crosswalks, sidewalks, etc.)
- Major developments are being concentrated along major routes.

What Do They Want To "Change"?

- Improve, modernize public transportation access for jobs and services where needs are present: e.g., areas with carless households during non-peak hours, rural areas, and direct routes to employment centers.
- Construct more sidewalks around the county to improve pedestrian connectivity, improve the visibility of bicycle/pedestrian infrastructure to motorists, and close trail gaps.
- Congestion is a growing concern on all major arteries as well as interchanges:
  - The short distance to merge onto highways is a challenge for safe, efficient traffic movements at interchanges across Lancaster County.
  - Route 30 was the most frequently mentioned as a congested route in group discussions.
  - Roherstown Road (SR 741), Centerville Road, and Good Drive experience congestion since they are detours for traffic on the major routes. SR 741 also experiences conflicts with rail traffic.
- Lane reconfiguration, interchange design, and signal retiming are desired to improve congestion in some areas. York Road at Route 401 was highlighted as an area where signal retiming is desired.
- Freight planning efforts should be prioritized for the county. Trucks are being routed through downtowns of boroughs. Congestion on some major routes and local roadway restrictions delay or negatively impact deliveries.
- Coordinate with land developers and determine traffic impacts of new land developments prior to construction. There is a recent trend of developments being constructed with not a lot of regard for transportation needs of all modes.

- Long term parking strategies are desired for Downtown Lancaster City. Attendees expressed concerns about poor wayfinding signage for parking facilities as well as motorists "circling the Downtown" to access parking facilities. Suggestions included additional garages, replace aging garages, shuttle services in and out of downtown job centers. Off street parking is too close to intersections, posing safety concerns.
- Plain Sect buggies are not able to operate well and conflict with other modes on the road. Shoulders are insufficient and rumble strips are an obstacle for them. Specific corridors identified with this issue include Routes 30, 741, 772, and 896. The upcoming Radcliff Bridge replacement will cause a significant detour for the Plain Sect community.
- There is a need for improved consideration of the Plain Sect community in county transportation planning. Some of these considerations include travel concerns and horse/buggy safety.
- There was an expressed desire by the Municipal Officials focus group for further coordination, collaboration and transparency throughout the planning process and decisions on how transportation dollars are spent. The relationship between PennDOT and municipalities need to be improved as some municipal officials still think that PennDOT does not care about their input.

Top Challenges and Trends with Influences on Lancaster County's Transportation System

- Equal focus on all modes of transportation (e.g. bicycles, pedestrians, Plain Sect buggies, trucks, etc.) and shifting away from the heavy focus on automobiles.
- Innovation and innovative solutions such as planning for and the use of emerging technologies when addressing transportation related needs and concerns.
- One of the challenges expressed was not having as many major thoroughfares across the county going in the East-West direction, causing impacts to the surrounding roads and posing a challenge for freight movement in that direction.
- Attendees from several groups mentioned fiscal constraint regulations and funding availability at the state and Federal levels as a major challenge. All MPO long-range transportation plans must meet Federal fiscal constraint guidelines. Attendees were concerned about a new Federal infrastructure bill being passed to follow the current one, expiring in 2020 and the impacts it has on both Federal and state transportation dollars.
- Continued population growth and an aging population.
- Autonomous vehicles, ridesharing services like Uber and Lyft, emerging technologies.
- Attendees applauded the positive trend of using stormwater practices along highways. One of these practices noted by the Underserved Populations focus group was "green infrastructure"—an approach to stormwater management (e.g. tree planting, rain gardens) that harvests stormwater runoff, improves water quality, and reduces the need of surface materials that are water resistant such as asphalt and concrete and stone.
- Improvement of coordination between the MPO, PennDOT, local government agencies, stakeholders, and special interest groups through the transportation planning process.

Appendix I:

Pennsylvania 2025 Transportation Program Financial Guidance

Appendix I revenue forecast with competitive funding awards and rapid bridge replacement program 2025–2028. Rapid Bridge Replacement Funds are administered by PennDOT Transportation Improvement Program (TIP).

Table 1

Compare the amount of funds programmed in each year of the TIP against Financial Guidance (FG) allocation, and explain any differences.

Fund Type	FFY 2025		FFY 2026		FFY 2027		FFY 2028		Comments
	Financial Guidance	Programmed	Financial Guidance	Programmed	Financial Guidance	Programmed	Financial Guidance	Programmed	
NHPP	13,475,000	$13,475,000	12,728,000	$12,728,000	11,269,000	$21,269,000	10,182,000	$20,182,000	SPIKE funds for MPMS 109618
STP	8,862,000	$8,862,000	9,122,000	$9,122,000	9,119,000	$34,119,000	9,116,000	$9,116,000	Spike funds for MPMS 79020
State Highway (581)	12,889,000	$14,889,000	14,481,000	$16,481,000	16,370,000	$16,370,000	17,960,000	$17,960,000	Economic Development funding for MPMS 118767
State Bridge (185/183)	8,941,000	$8,941,000	8,938,000	$8,938,000	8,781,000	$8,781,000	8,778,000	$8,778,000	
Off System Bridges (BOF)	6,808,000	$6,808,000	6,808,000	$6,808,000	6,808,000	$6,808,000	6,808,000	$6,808,000	
Safety (HSIP)	3,563,000	$3,563,000	3,685,000	$3,685,000	3,685,000	$3,685,000	3,685,000	$3,685,000	
Rail Hwy Safety	7,500	$7,500			0		0		
CMAQ	5,505,000	$5,505,000	5,642,000	$5,642,000	5,642,000	$5,642,000	5,642,000	$5,642,000	

Fund Type	FFY 2025		FFY 2026		FFY 2027		FFY 2028		Comments
	Financial Guidance	Programmed	Financial Guidance	Programmed	Financial Guidance	Programmed	Financial Guidance	Programmed	
STP TAP Set-Aside (TAU)	847,000	$1,847,000	865,000	$2,365,000	865,000	$865,000	865,000	$865,000	MPMS 119474 and 118511 Additional TAP funds from 2022 Statewide TASA Award
STP Urban (STU)	9,083,000	$9,083,000	9,264,000	$9,264,000	9,264,000	$9,264,000	9,264,000	$9,264,000	
Carbon Reduction	477,000	$598,941	495,000	$937,343	495,000	$495,000	495,000	$495,000	Additional Carbon Reduction funds TSMO Award for MPMS 121060, 121062, 121063, and 121064
Carbon Reduction-Urban	1,065,000	$1,065,000	1,086,000	$1,086,000	1,086,000	$1,086,000	1,086,000	$1,086,000	
Rapid Bridge Replacement Program	1,626,380	1,626,380	1,632,620	1,632,620	1,637,820	1,637,820	1,644,040	1,644,040	
Bridge Formula Project (BRIP)	8,479,000	$8,479,000	8,479,000	$8,479,000	8,479,000	$8,479,000	8,479,000	$8,479,000	
Total	**$81,627,880**	**$84,749,821**	**$83,225,620**	**$87,167,963**	**$83,500,820**	**$118,500,820**	**$84,004,040**	**$94,004,040**	

Table 2

Identify the TOTAL amount and TYPES of additional funds programmed above FG allocations (i.e. Spike funds, Earmarks, Local, Other, etc.) by year:

Additional Funding Type	FFY 2025	FFY 2026	FFY 2027	FFY 2028	Comments
NHPP			$10,000,000	$10,000,000	Additional NHPP SPIKE funds for MPMS 109618
STP			$25,000,000		Additional STP SPIKE funds for MPMS 79020
Carbon Reduction	$121,941	$442,343			Additional funds TSMO Award for MPMS 121060, 121062, 121063, and 121064
Hwy-Econ Dev State 581	$2,000,000	$2,000,000			MPMS 118767 SR 4022 Lititz Road Realignment
TAP	$1,000,000	$1,500,000			MPMS 119474 and 118511 Additional TAP funds from 2022 Statewide TASA Award
Total	**$3,121,941**	**$3,942,343**	**$35,000,000**	**$10,000,000**	

Appendix I Revenue Forcast 2025–2036 with Rapid Bridge Replacement funds and without competative funding awards (1000s)

Table 3

First four years of twelve-year program with Rapid Bridge Replacement Funds

Year	NHPP	STP	State Highway (Capital)	State Bridge	Off System Bridges (BOF)	HSIP	CMAQ	STP TAP Set-Aside	STP-Urban	Carbon Reduction	Carbon Reduction -- Urban	Bridge Formula Program (BRIP)	Rapid Bridge Replacement Program	Total
2025	13,475	8,862	12,889	8,941	6,808	3,563	5,505	847	9,083	477	1,065	8,479	1,626	**81,620**
2026	12,728	9,122	14,481	8,938	6,808	3,685	5,642	865	9,264	495	1,086	8,479	1,633	**83,226**
2027	11,269	9,119	16,370	8,781	6,808	3,685	5,642	865	9,264	495	1,086	8,479	1,638	**83,501**
2028	10,182	9,116	17,960	8,778	6,808	3,685	5,642	865	9,264	495	1,086	8,479	1,644	**84,004**
Total	**47,653**	**36,221**	**61,700**	**35,439**	**27,234**	**14,619**	**22,431**	**3,442**	**36,876**	**1,961**	**4,325**	**33,918**	**6,541**	**332,360**

Table 4

Second four years of twelve-year program with Rapid Bridge Replacement Funds

Year	NHPP	STP	State Highway (Capital)	State Bridge	Off System Bridges (BOF)	HSIP	CMAQ	STP TAP Set-Aside	STP-Urban	Carbon Reduction	Carbon Reduction -- Urban	Bridge Formula Program (BRIP)	Rapid Bridge Replacement Program	Total
2029	10,182	9,116	17,958	8,777	6,808	3,685	5,642	865	9,264	495	1,086	8,479	1,647	**84,004**
2030	10,182	9,116	17,955	8,773	6,808	3,685	5,642	865	9,264	495	1,086	8,479	1,654	**84,004**
2031	10,182	9,116	17,952	8,771	6,808	3,685	5,642	865	9,264	495	1,086	8,479	1,660	**84,005**
2032	10,182	9,116	17,949	8,767	6,808	3,685	5,642	865	9,264	495	1,086	8,479	1,667	**84,005**
Total	**40,728**	**36,466**	**71,814**	**35,088**	**27,234**	**14,742**	**22,568**	**3,460**	**37,058**	**1,979**	**4,346**	**33,918**	**6,628**	**336,029**

Table 5

Third four years of twelve-year program with Rapid Bridge Replacement Funds

Year	*NHPP*	*STP*	*State Highway (Capital)*	*State Bridge*	*Off System Bridges (BOF)*	*HSIP*	*CMAQ*	*STP TAP Set-Aside*	*STP-Urban*	*Carbon Reduction*	*Carbon Reduction -- Urban*	*Bridge Formula Program (BRIP)*	*Rapid Bridge Replacement Program*	*Total*
2033	10,182	9,116	17,947	8,765	6,808	3,685	5,642	865	9,264	495	1,086	8,479	1,671	**84,005**
2034	10,182	9,116	17,943	8,761	6,808	3,685	5,642	865	9,264	495	1,086	8,479	1,678	**84,004**
2035	10,182	9,116	17,940	8,758	6,808	3,685	5,642	865	9,264	495	1,086	8,479	1,684	**84,004**
2036	10,182	9,116	17,936	8,755	6,808	3,685	5,642	865	9,264	495	1,086	8,479	1,692	**84,005**
Total	**40,728**	**36,466**	**71,765**	**35,039**	**27,234**	**14,742**	**22,568**	**3,460**	**37,058**	**1,979**	**4,346**	**33,918**	**6,724**	**336,027**
12-year Total	**129,109**	**109,153**	**205,279**	**105,566**	**81,702**	**44,103**	**67,567**	**10,362**	**110,992**	**5,919**	**13,017**	**101,754**	**19,893**	**1,004,416**

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CONNECTS2050 – LANCASTER COUNTY, PA METROPOLITAN TRANSPORTATION PLAN

JUNE 2024