



# VISION



# ZERO

SAFE STREETS IN NASHVILLE

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# FIVE-YEAR IMPLEMENTATION PLAN

## FY2023 - FY2027

June 2022

**DRAFT pending approval by Metro Council**

**NDOT**



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## Glossary

- AADT* – Average annual daily traffic
- ADA* – Americans with Disabilities Act
- AT* – Active Transportation
- CIB* – Capital Improvements Budget
- CMAQ* – Congestion Mitigation and Air Quality
- ETRIMS* – Enhanced Tennessee Roadway Information Management System
- FHWA* – Federal Highway Administration
- FTA* – Federal Transit Administration
- FY* – Fiscal Year
- GNRC* – Greater Nashville Regional Council
- HIN* – High Injury Network
- HSIP* – Highway Safety Improvement Program
- IJA* – Infrastructure Investment and Jobs Act
- KSI* – Killed or severely injured (crash type)
- LOS* – Level of Service
- LPI* – Leading Pedestrian Interval
- MPD* – Metropolitan Police Department
- MPO* – Metropolitan Planning Organization
- MUTCD* – Manual on Uniform Traffic Control Devices
- NDOT* – Nashville Department of Transportation
- NEPA* – National Environmental Policy Act
- NOFO* – Notice of Funding Opportunity
- PHB* – Pedestrian Hybrid Beacon
- PSRI* – Pedestrian Road Safety Initiative
- ROW* – Right-of-Way
- RRFB* – Rectangular Rapid Flashing Beacon
- RSA* – Road Safety Audits
- RTOR* – Right Turn on Red
- SRTS* – Safe Routes to School
- SS4A* – Safe Streets for All
- STBG* – Surface Transportation Block Grant
- STID* – Strategic Transportation Investment Division
- STIP* – State Transportation Improvement Program
- STP* – Surface Transportation Program
- TAP* – Transportation Alternatives Program
- TDOT* – Tennessee Department of Transportation
- THSO* – Tennessee Highway Safety Office
- TPG* – Transportation Planning Grant
- TSE* – Traffic Safety Engineering
- TSM&O* – Transportation Systems Management & Operations
- USDOT* – United States Department of Transportation
- VSL* – Variable Speed Limit



# 1

## Introduction

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This chapter highlights the key directives from the Vision Zero Action Plan and explains how this Implementation Plan will be used over the next five years.

## Our Commitment to Zero

The goal of the Metro Vision Zero program is to reach **zero roadway deaths by 2050**, in conjunction with the Metro Carbon Neutral goal. Achieving Vision Zero will require the commitment of Metro and its partners that will be tracked and monitored annually.

# Action Plan to Implementation Plan

The Nashville Vision Zero Action Plan set the foundation for achieving zero traffic deaths in Metro Nashville through safer systems and streets. In line with Vision Zero’s pillar of creating a data-driven actionable plan, the Nashville Vision Zero Action Plan included an in-depth review and analysis of Nashville’s historical crash records to develop the High Injury Network (HIN). This was followed by identifying the common crash causes in the Metro area, deploying a robust and diverse community engagement process, and developing a targeted set of strategies and action items to address the five key themes that emerged from the Action Plan development process.

The five themes from the Action Plan include:

- Create Safe Streets for Everyone
- Prioritize Equity
- Increase Collaboration and Transparency
- Promote a Culture of Safety
- Improve Data Quality

This Nashville Vision Zero Implementation Plan builds upon the Action Plan and further advances the strategies and action items to develop specific, measurable actions over the next five years. This document outlines the action items and resources needed to address the crash issues on the HIN, through the lens of the Five E’s (Engineering, Evaluation, Encouragement, Education, and Enforcement). In addition, equity will be a priority focus of each of the Five E’s.

Additional information, including project lists and updates, can be found on the Nashville Vision Zero website: <http://visionzero.nashville.gov/>

## The Five E's Framework

### ENGINEERING



Creating safe, connected, and comfortable physical infrastructure for all modes of transportation.

### EVALUATION



Determining feasibility of quick build and countermeasure implementation of the High Injury Network as well as monitoring overall program progress and effectiveness of strategies and actions.

### ENCOURAGEMENT



Fostering a culture that supports and encourages all modes of transportation through opportunities, programs, and incentives.

### EDUCATION



Equipping people of all ages and abilities with the knowledge, skills, and confidence to safely move around.

### ENFORCEMENT



Building safe and responsible behaviors on the road and building respect among road users through partnerships with community groups and law enforcement.

## Prioritizing Engineering

At the core of Vision Zero is the need to design a system that manages speed and is forgiving of human error. Crashes will happen; however, they should not lead to death or severe injury. As such, and given the context of the Nashville built environment, it is critical that the Implementation Plan is front-loaded with design interventions specifically aimed at reducing vehicular speeds so that crashes involving vulnerable road users are not deadly. Engineering is prioritized because today’s transportation system in Nashville is not designed to reward or encourage safe behavior. Because of this, people drive in ways that increase risk, especially for people who walk or bike.

Another reason to start with the Engineering “E” is the amount of documented and measurable effective design countermeasures that are available for implementation. The Federal Highway Administration (FHWA) has been providing invaluable resources in [effective countermeasures](#) that have proven to significantly reduce crashes and their severity. Additionally, the [Crash Modification Factors Clearinghouse](#) is a comprehensive database that includes an “encyclopedia” of specific design treatments with studied and proven percentage reductions of crashes within different contexts. Therefore, implementing physical improvements to the street environment presents an opportunity to get faster results and higher return on investment, a much needed element when starting a Vision Zero effort. It is also an opportunity to get additional feedback from the community as a continuum to the Vision Zero Action Plan engagement efforts, which can then be used to assess action items in future years.

Additionally, the current US DOT Administration has placed an explicit focus on safety and

achieving Zero traffic deaths, and consequently allocated many diverse opportunities to obtain federal grant funding assistance to implement safety improvements. Therefore, planning, designing, and implementing proven countermeasures early on positions Nashville to seek and secure funding to maximize funding for addressing safety issues on the HIN.

Finally, with the Evaluation “E” serving as a critical element of a “living” Vision Zero Action Plan and associated Implementation Plan, design safety treatments present adequate opportunity for measuring success within the specific context.

**“If we just keep doing what we’ve been doing, it’s not going to get us to where we want to be,”**

-FHWA’s Mark Doctor



In 2022, NDOT unveiled plans to upgrade 12th Ave South into a complete street that incorporates safety and green infrastructure elements. Image source: LDA Engineering/CDM Smith



# Vision Zero Program Overview

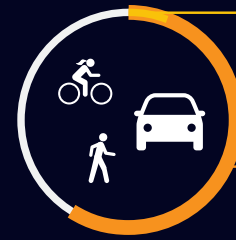
The actions outlined in this implementation plan are intended to be a schedule of activities NDOT will prioritize over the next five years. This is a living document that will be evaluated and updated annually in order to respond to new safety challenges and opportunities. To set the framework for the implementation, the following assumptions were made:

- Staffing:** The new Traffic Safety Engineering (TSE) team at NDOT will be responsible for tracking implementation of Metro's Vision Zero program. The TSE team is comprised of the following staff and vacant positions:
  - » Traffic Safety Engineer
  - » Vision Zero Coordinator, *Vacant*
  - » Traffic Safety Engineer-in-Training, *Vacant*
  - » Data Analyst, *Vacant and Unfunded*
- Focus Areas:** The High-Injury Network (HIN) highlighted on page 9 identifies the most dangerous roads to guide Nashville's investments in infrastructure and programs, and ensures that Vision Zero projects support those most in need. The High Injury Network will be the priority for implementation and evaluation. Safety improvements will still move forward on roadway segments outside of the HIN as part of Metro's commitment to integrating safety into all of its projects and actions.
  - » As evaluation strategies are implemented and more advanced data becomes available, NDOT will use a predictive crash analysis to ensure that the Vision Zero program not only addresses where crashes have occurred, but will also improve streets before a crash occurs.

## Coordination with TDOT

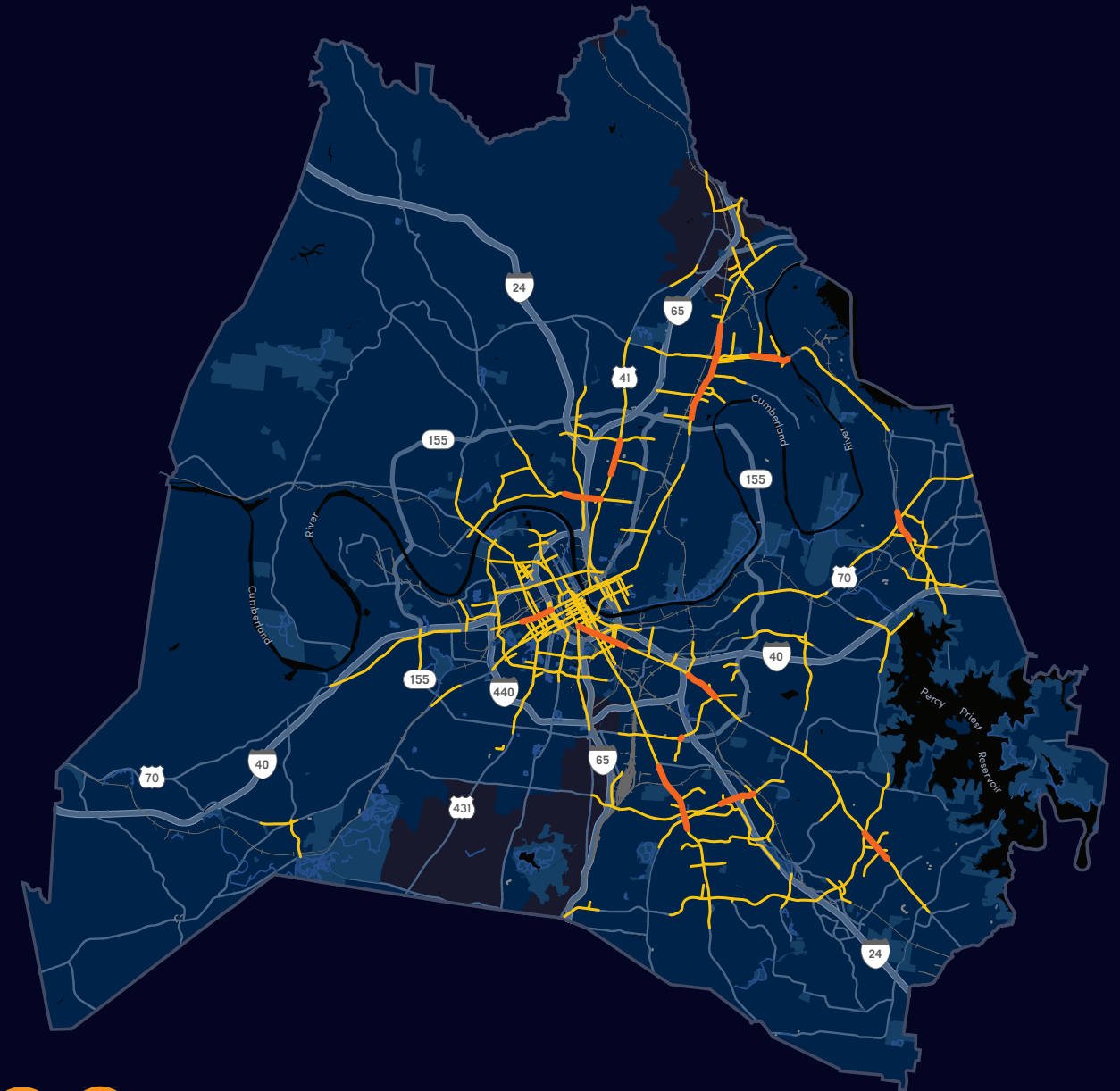
Since TDOT owns 46% of the HIN, some actions will focus solely on NDOT roadways while others will include all roads in the HIN. TDOT roadways in the HIN will not go ignored; rather, they will follow a different implementation track in order to allow for appropriate coordination with TDOT.

## Implementation Timeline (by Fiscal Year)



**6%**  
OF STREETS  
account for

**59%** of all  
**FATAL AND  
SERIOUS INJURIES**  
for all modes



### HIGH INJURY NETWORK - ALL MODES

- PRIORITY HIGH INJURY STREETS
- HIGH INJURY STREETS



**46%**  
OF NASHVILLE'S HIGH  
INJURY NETWORK IS  
OWNED BY TDOT

# Vision Zero Program Funding

It has been requested to fund the Vision Zero program in the amount of \$25,000,000 in FY22-FY23. The program funding will be split between the 5 Es with:

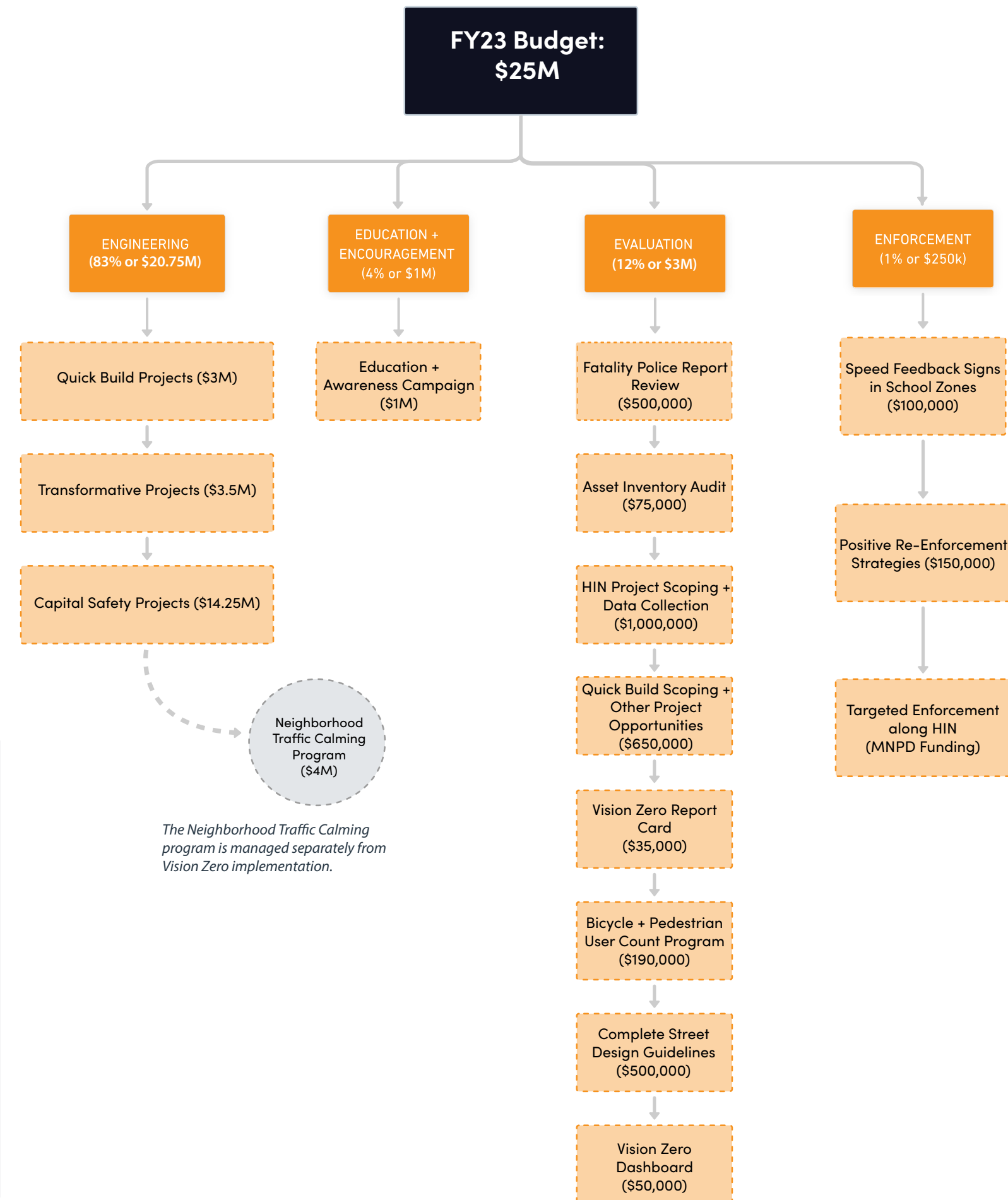
- 83% or \$20,750,000 for Engineering
- 4% or \$1,000,000 for Education + Encouragement
- 12% or \$3,000,000 for Evaluation
- 1% or \$250,000 for Enforcement

The flow chart on page 11 highlights how NDOT anticipates allocating funding for Vision Zero implementation in Year 1.

While this implementation plan focuses on Year 1 funding (FY23), NDOT also has funding from previous fiscal years that will be applied to Vision Zero implementation.

Previous funding includes the following Vision Zero implementation strategies:

- \$6,214,500 for Nolensville Pike Safety Improvements
- \$8,000,000 for Neighborhood Traffic Calming Program
- \$2,000,000 for traffic operations, speed trailers, and pedestrian crossing improvements
- \$1,000,000 for education and safety awareness campaign and promotion
- \$500,000 to update design standards and construction details and develop a pedestrian crossing policy
- \$500,000 for data collection and website management
- \$14,000,000 held as contingency for Year 1 (FY23) Vision Zero engineering implementation strategies. Funds will be used to account for supply chain issues, rising labor and construction costs, and to be matched against safety related federal and state grant programs.



**This Vision Zero Implementation Plan is intended to be a living document that will be evaluated and updated annually in order to respond to fiscal changes, implementation opportunities and challenges, and stakeholder feedback. NDOT will provide updates and full transparency by publishing an annual Vision Zero report card.**



# 2

# Engineering Actions

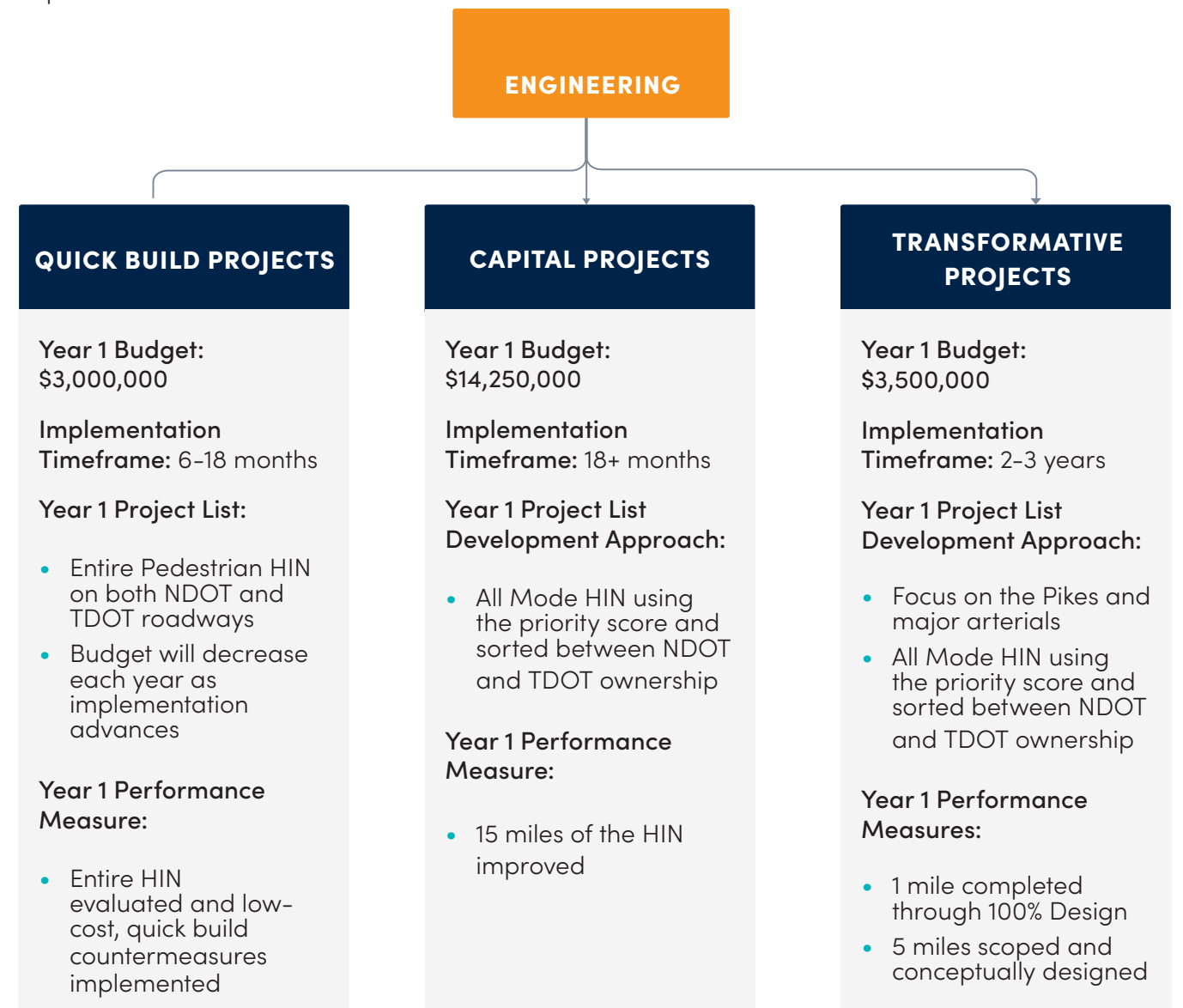
This chapter details how NDOT will advance the Vision Zero Action Plan strategies to "Create Safe Streets for Everyone".

## Introduction

Engineering is the core component to NDOTs Vision Zero strategy as design impacts behaviors and safety. It is also the most labor-intensive and costly, requiring significant financial and staff resources. In large transformative projects, multiple steps are needed including audit/analysis, concept design, full design, and construction. In other cases, Quick-build projects are ones that can be addressed more quickly and easily, making small but important impacts across Nashville.

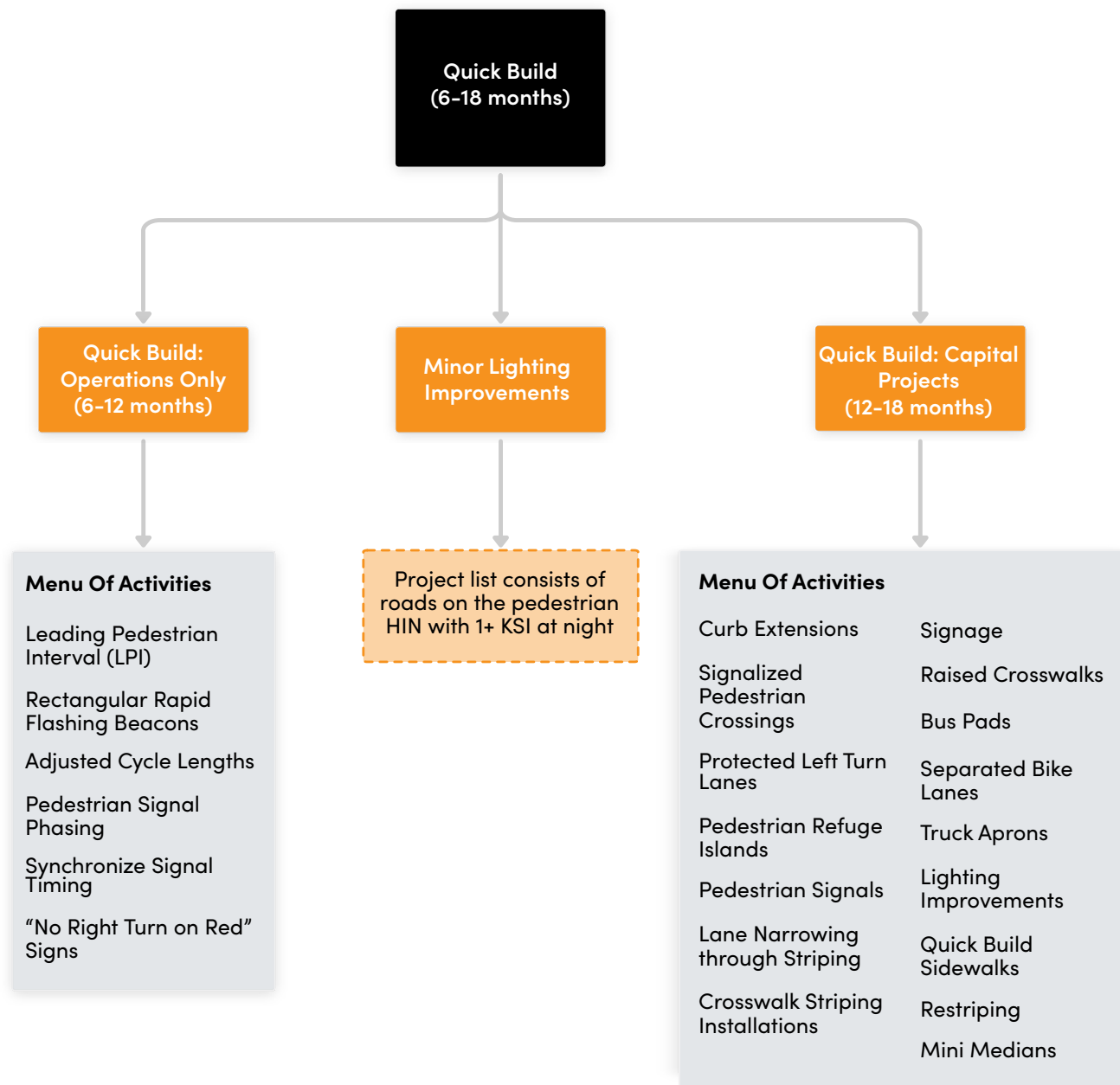
Several key evaluation strategies, such as project scoping and asset inventory, are essential steps to be taken before engineering actions can be implemented.

Because there is a universe of potential projects and limited resources, a strategic, phased approach is needed. Projects were organized into three categories based on cost and speed of delivery. HIN project scoring and ranking results by category can be found on the Nashville Vision Zero website: <http://visionzero.nashville.gov/>



# Quick Build Projects

These projects can be implemented at a more rapid pace and at a lower cost. They typically include spot improvements such as signalization (lead pedestrian interval countdown signals, rectangular rapid flashing beacons) and intersection enhancements such as curb extensions, high-visibility marked crosswalks, etc. They may occur on any portion of Nashville’s roadway network and particularly where they will have a positive impact on safety based on their associated crash modification factors.



The minor lighting improvements project list & map is located on the Vision Zero website: <http://visionzero.nashville.gov/>

## Considerations for Quick Build Projects

Quick build improvements should offer interim, semi-permanent solutions to improve safety. For bike and pedestrian improvements, quick build projects should also offer comfort and convenience. For example, a good option for a quick build bicycle facility is a separated bike lane that is implemented through durable yet removable materials. Starting with a list of safety projects, elements to consider in selecting quick build improvements include:

- The project should prioritize communities in high need areas - as defined in the equity analysis from the Vision Zero Action Plan.
- There are available materials to build the project, or the materials can be acquired fairly quickly.
- The improvement does not require a design variance and is in accordance with AASHTO and MUTCD guidelines and standards. NACTO should be used as a resource for national best practice.
- If analysis is needed, it has already been conducted or can be quickly addressed.
- The quick build project is near transit.
- The quick build project is near a school, park, library or senior center.
- The location is already a high demand destination for bicyclists, pedestrians, or other intended users.
- There is an ability to conduct a before and after study for the quick build project.
- The quick build project installation will not be high maintenance.
- The project approval process does not require multiple layers of agency review.
- No reconstruction, curb, or drainage impacts are involved.
- The projects does not require significant traffic detours.

### SCOPING QUICK BUILD PROJECTS

NDOT will use the HIN as a base project list to determine the exact locations and treatments for quick build projects. The HIN is prioritized in terms of crash severity, the number of crashes involving a bicyclist or pedestrian, and whether the crashes occurred in a highly vulnerable area.

However, quick build projects can be especially successful when combined with complementary efforts, such as re-paving. Additionally, certain roads are more suitable for quick build treatments. NDOT will evaluate the following feasibility and opportunistic factors to scope and prepare concept design recommendations for the planned quick build projects in Year 1.

#### Feasibility Considerations:

- Roadway has sufficient ROW
- Project maintains existing traffic capacity
- Project maintains existing drainage
- Project maintains existing signal infrastructure

#### Opportunistic Considerations:

- WalkNBike priority project
- WeGo service changes & bus stop improvements
- NDOT re-striping/re-paving
- Public request



# Quick Build Safety Improvements

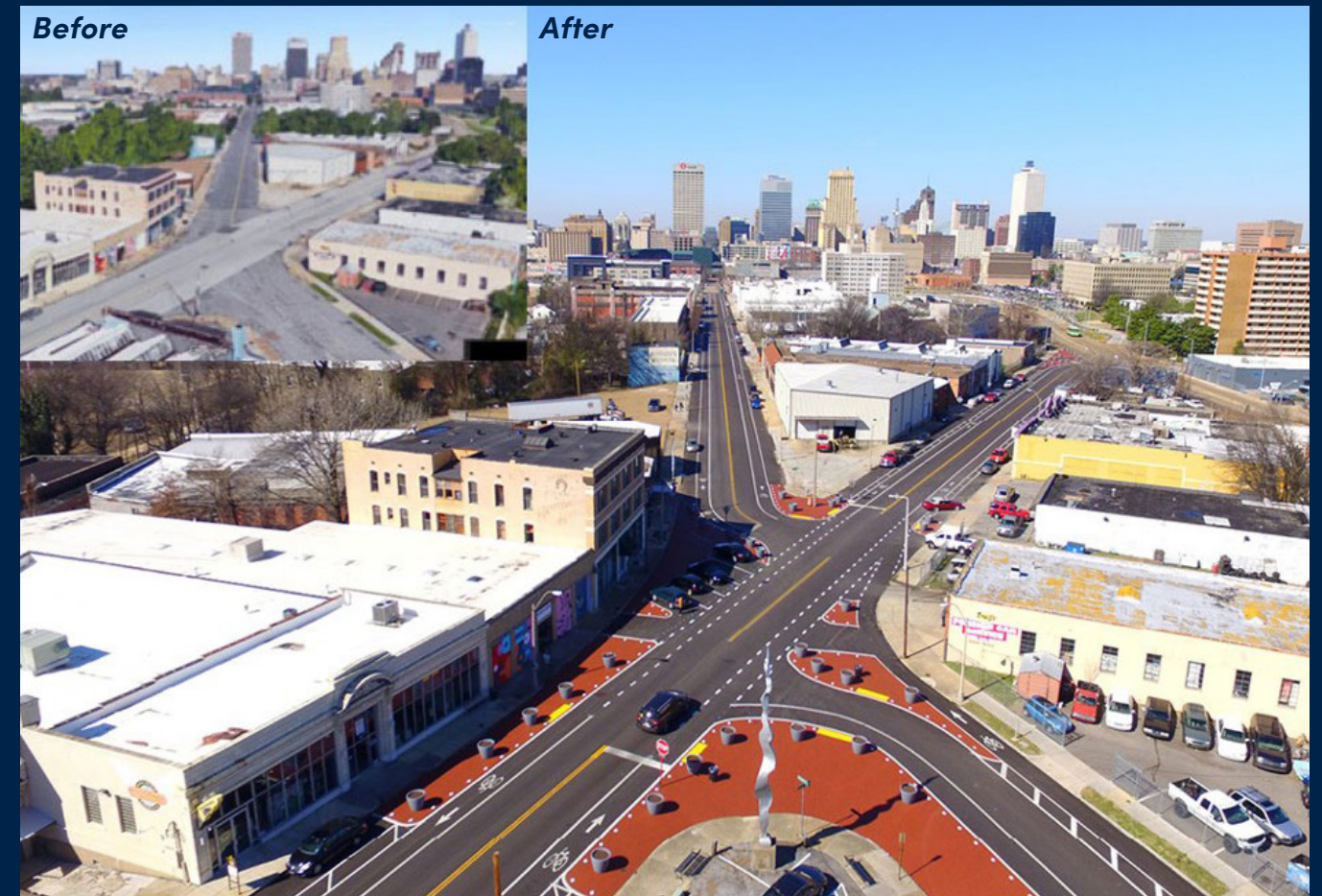
Quick-build designs, pilot projects, and demonstration installations can be utilized to implement and realize “safety wins” quicker. These types of flexible and nimble design improvements have the following key benefits:

- They **accelerate safety improvements** at High Injury locations until more permanent and larger-scale safety improvements are constructed.
- They are a **public input tool** to gather additional feedback on specific improvements, and they can simultaneously serve as an educational tool to inform the community on non-traditional or safer design elements.
- They present a venue for **testing new design ideas** and innovations within the specific context of a high crash location.

- If implemented as part of or through a public event, demonstration projects provide a great opportunity to **engage and empower the community** in implementing the Vision Zero Action Plan, which not only further builds community consensus, but also encourages a positive shift in safety culture.
- These types of projects are **adaptable**, and so they can be applied in a wide range of scenarios, including near schools where the street network is more localized and necessitates more traffic calming measures, or along arterials which typically define a major portion of the HIN.
- Since multi-agency collaboration is critical for the success of a Vision Zero Action Plan, NDOT can partner with TDOT to **test innovative design treatments using quick build and demonstration projects** provide an opportunity to implement designs before implementing the specific improvement as a permanent construction project.



In 2021, the Civic Design Center, in partnership with the Nashville Youth Design Team and Walk Bike Nashville, implemented a temporary Glow in the Dark crosswalk at Dickerson Pike and Hart Lane. The project has since been upgraded with green, reflective paint to alert vehicles of pedestrians walking at night.

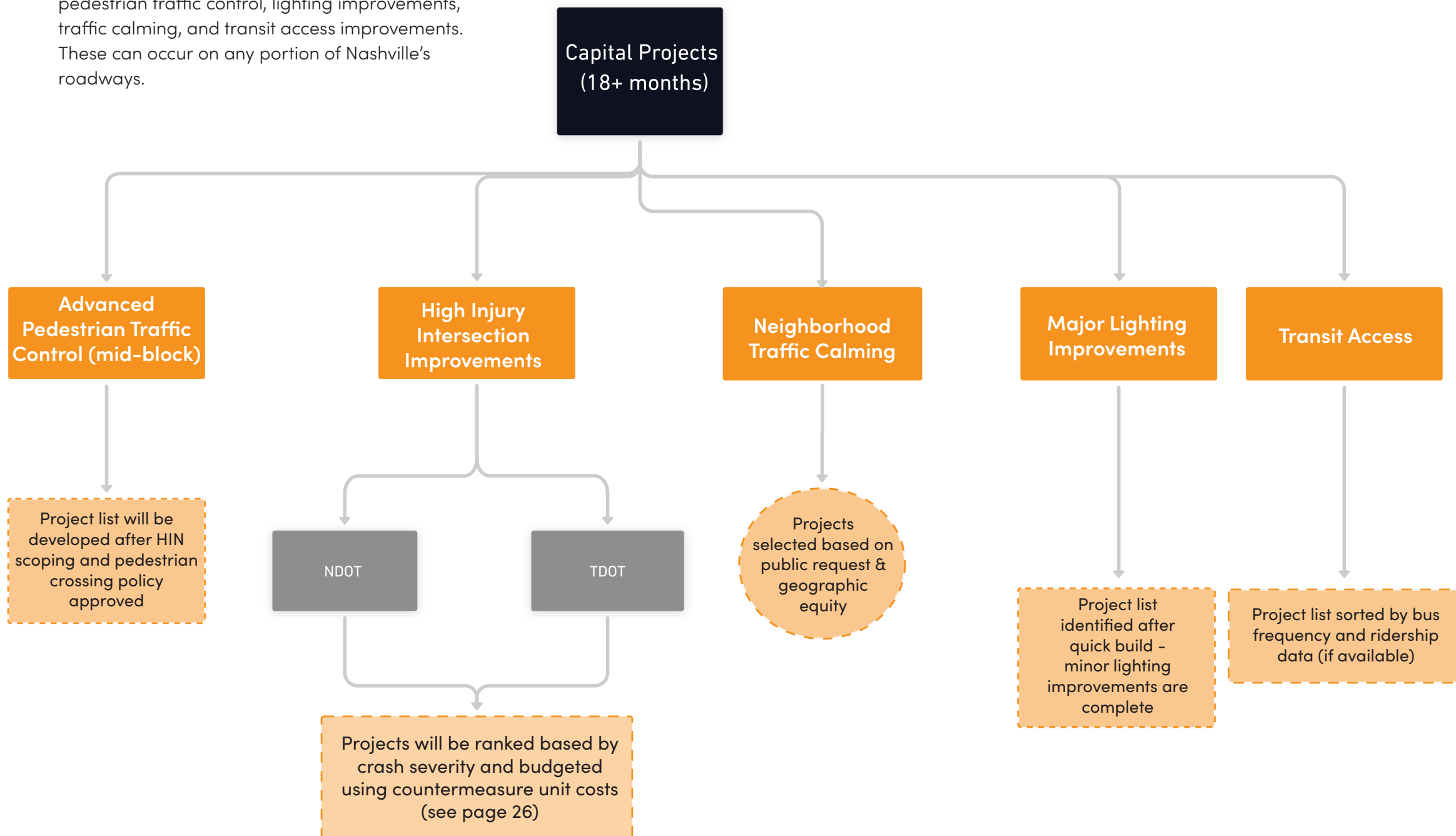


**CASE STUDY:** The Memphis Medical Center Streetscapes is an award-winning design project that was completed as an interim phase in a tactical urbanism process. The project sought to re-balance the existing street space by providing better accommodations for pedestrians and bicyclists with innovative and cost-effective methods rather than costly infrastructure changes. The project began with a conceptual planning playbook for more than 40 intersections developed from a series of public meetings and charrettes. In the subsequent phases of the project, construction documents were developed for striping, on-street epoxy gravel bump-out areas, landscaped planters, separated bikeways and site furnishings. Memphis City Engineering Division coordinated with the City’s paving schedule to provide a streamlined process for construction document approval.



# Capital Projects

These are typically larger projects that require advanced design, engagement, coordination, and permitting. These take longer to complete than Quick-build projects and have higher price tags associated with them. These include intersection improvements, advanced pedestrian traffic control, lighting improvements, traffic calming, and transit access improvements. These can occur on any portion of Nashville's roadways.



The intersection improvements project lists & maps are located on the Vision Zero website: <http://visionzero.nashville.gov/>

## SCOPING CAPITAL PROJECTS

### Mid-block Pedestrian Crossing:

- Asset management data will be used to scope and evaluate opportunities for mid-block crossing improvements. Detailed criteria will be developed in the upcoming Pedestrian Crossing Policy but in general, will vary depending on roadway type, speed, traffic volume, lighting conditions, pedestrian desire lines, and ADA accessibility needs.
- Field review and identified behavior (such as detailed crash narrative reviews, observed crossing against traffic, the presence of desire lines, and community feedback) will guide the locations where mid-block treatments will be most successful.

### Intersection Improvements:

- NDOT intersections only consist of roads entirely controlled by NDOT.
- TDOT intersections include intersections that feature a mix of NDOT and TDOT roadways.

### Traffic Calming:

- Traffic calming projects are currently based on public request and are limited to local and some neighborhood collector roadways.

### Major Lighting Improvements:

- The project list will be developed after the quick-build minor lighting improvements are complete and outstanding lighting needs are determined.

### Transit Access:

- The HIN was evaluated for segments within 100 feet of a frequent transit bus stop.
- Additional assessment of opportunities through collaboration with WeGo is needed.



# Transformative Projects

These will occur on major arterials/piques and will address significant corridor transformations or reconstructions targeting the most unsafe roadways in Metro Nashville. Due to the significant impact and cost, these projects will require increased agency coordination (depending on items such as roadway ownership and utilities), time for design, engagement, permitting, ROW, and construction. These projects may provide the best opportunity to leverage federal funding.

The NDOT transformative project list in the table below highlights the priority corridors that will advance to project scoping and evaluation in

Year 1 (FY23). NDOT will collaborate with TDOT to discuss potential implementation strategies for the priority list of TDOT-owned corridors.

One potential funding strategy is to use Metro dollars as leverage and match for federal grants such as Safe Streets for All (funding program opportunities described in Chapter 5). This will require an early effort on the design, permitting, and acquisition activities that will make a large grant application more competitive. In addition, to continue advancing Vision Zero, an increase in funding is recommended so that the engineering portion of the annual Vision Zero budget increases by at least 3% annually.

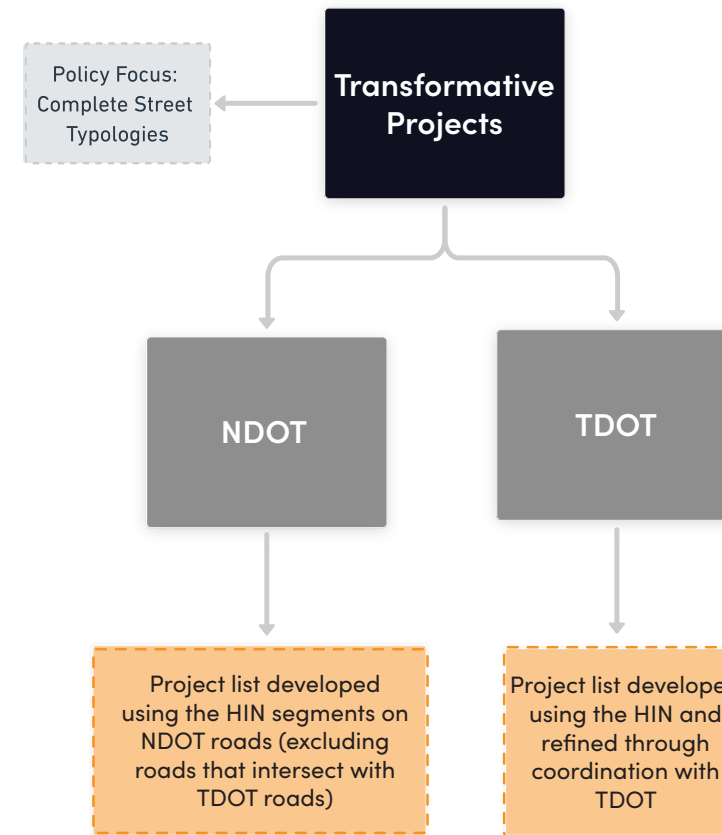
## How will Projects be Identified and Implemented?

**Step 1:** Projects are ranked using their HIN priority score that considers crash severity, if the crash was located in an area of high need, and if the crash involved a vulnerable road user.

**Step 2:** Projects advance, regardless of Step 1 ranking, if they have some level of previous planning associated (example: Nashville Next, nMotion, Plan2Play, etc.) Projects may be removed if implementation can be consolidated or combined with other program priorities (example: WalknBike or WeGo Stop Improvement Priority List).

**Step 3:** Projects are evaluated to determine feasibility and conceptual design is completed. This step can bundle multiple projects together to quickly scope improvements and estimate implementation costs.

**Step 4:** Minor transformative projects advance to implementation as Vision Zero Program funding allows and at least one major transformative project advances through design each fiscal year. Due to the scope of major transformative projects, additional funding outside of the Vision Zero Program will be needed for full implementation.



## Typical Timeline of a Major Transformative Project

- Year 1\*** Project Scoped + Conceptually Designed
- Year 2** Final Design Complete + Right-of-Way Acquisition Started
- Year 3-4** Right-of-Way Acquisition + Environmental Documentation Complete
- Year 4-6** Construction

*\*Vision Zero Program Funds will be allocated for this task but the rest of a Major Transformative Project cost will need to be funded outside of the Vision Zero Program using either capital, state or federal funds.*

### SCOPING NDOT TRANSFORMATIVE PROJECTS

- The project list was developed by starting with the HIN priority score and then selecting NDOT roads where the majority of crashes occur on NDOT controlled segments and have an ADT greater than 15,000.
- After the asset management audit of the entire HIN is complete, priority transformative projects will be sorted into two categories:
  - » **Minor:** These projects don't require ROW and can move forward with limited engagement necessary in order to quickly address safety concerns. Example projects include adding spot medians and pedestrian refuge islands.
  - » **Major:** These projects will require ROW in order to address sidewalk gaps and safety concerns and/or will require significant engagement with property owners and stakeholders. These projects will take much longer to complete and may be excellent candidates for federal funding.

The transformative projects lists & maps are located on the Vision Zero website: <http://visionzero.nashville.gov/>

# Countermeasure Toolbox

USDOT [encourages](#) the widespread implementation of proven safety countermeasures to accelerate safety goals. To maximize return on investment, implementing countermeasures with proven success enables Metro to begin reaping safety benefits early and effectively; thereby gaining additional public support and momentum. The implementation of countermeasures can occur through different delivery, material, and installation methods. This allows some of the countermeasures to be installed as a quick build or more permanent implementation.

The countermeasures in this section are broken down into operational and design safety improvements. They are intended to serve as a menu of options that Metro can tap into to reduce and ultimately eliminate severe crashes. Additional audits and analysis may be needed to identify the appropriate locations for installing some of these improvements. Nonetheless, a systemic, widespread application of these improvements is recommended to create a consistent and systemwide safer environment. Lastly, while this menu of options is not an exhaustive list, it represents the recommended improvements that best address the specific needs of Nashville.

## Operational Safety Countermeasures

- **Leading Pedestrian Interval (LPI)** gives pedestrians a 3-7 second head start to enter an intersection before any vehicles get the green light. LPIs have shown to reduce pedestrian-involved crashes by up to [60%](#) at intersections. They are most suitable at intersections with both high pedestrian and

bicyclist demand, and heavy right and/or left turning vehicle movements.



- **Pedestrian Phasing and Cycle Lengths:** Every new traffic signal installation and upgrade should include pedestrian phasing and signal head components. Additionally, in urban areas, traffic signal full cycle lengths should ideally be limited to [60-90 seconds](#) to accommodate pedestrian crossing demand. This reduces pedestrian wait times and side street delay. On wider streets with medians and pedestrian refuge areas, consider two-stage pedestrian phasing. In some cases, signal cycles may be adjusted throughout the day based on pedestrian demand and vehicular peak travel times.
- **Coordinated Signal Timing:** Synchronizing traffic signal timing across closely spaced traffic signals (0.25 miles or less) facilitates vehicular traffic flow during peak times. However, it can also be optimized to control vehicular speeds and facilitate bicycle travel along bike routes, as well as along transit routes to maximize transit efficiency.
- **Transportation Systems Management & Operations (TSM&O)** is a set of operational strategies that improve the transportation system's performance, ideally for all road users, through operational improvements rather than physical capacity. TSM&O can be integrated systemwide to manage traffic congestion and competing demands, or it can be dedicated to specific traffic incidents and circumstances such as work zones, special events, and road incident management. TSM&O should also be utilized to enhance transit and freight operations through techniques such as transit signal priority and traffic signal preemption at railroad crossings.

- **No Right Turn On Red (RTOR) Signs:** Permitting vehicles to turn right when the corresponding traffic light is red can have [significantly adverse impacts](#) on pedestrians and cyclists attempting to cross - the practice, which was introduced in the 1970s as a way to save fuel, has shown to directly conflict with pedestrian and bicycle safety. Prohibiting RTORs is a low-cost treatment with significant benefits, and can be implemented in a number of different ways: post-mounted sign, overhead sign, or a variable blank out sign. If needed, No RTOR treatments can be implemented on a part-time basis during the day.
- **Rectangular Rapid Flashing Beacon (RRFB)** is an effective pedestrian crossing traffic control treatment if applied in the right context. This cost-effective



countermeasure aims to improve pedestrian visibility at uncontrolled crosswalks, and has shown to [reduce pedestrian crashes by 47%](#). Another advantage of installing RRFBs is that they do not require meeting traffic warrants, therefore expediting their implementation where appropriate. It is important to note, however, that the application of RRFBs is contingent upon vehicular speed, volumes, and number of lanes.

- **Variable Speed Limit (VSL) Signs:** VSLs have been shown to reduce severe crashes [by over 50%](#), especially on high-speed roadways (>40 mph) such as Nashville's arterials and Pikes. They are relatively inexpensive, and can be applied at either particular locations or along a corridor, in either an advisory or a regulatory capacity.



| Roadway Configuration  | Posted Speed Limit and AADT |              |            |                           |            |            |                      |              |            |
|--|-----------------------------|--------------|------------|---------------------------|------------|------------|----------------------|--------------|------------|
|  | Vehicle AADT <9,000         |              |            | Vehicle AADT 9,000-15,000 |            |            | Vehicle AADT >15,000 |              |            |
|  | ≤30 mph                     | 35 mph       | ≥40 mph    | ≤30 mph                   | 35 mph     | ≥40 mph    | ≤30 mph              | 35 mph       | ≥40 mph    |
| <b>2 lanes</b><br>(1 lane in each direction)   | 1 2<br>4 5 6                | 1<br>7 9     | 1<br>5 6   | 1<br>4 5 6                | 1<br>5 6   | 1<br>5 6   | 1<br>4 5 6           | 1<br>7 9     | 1<br>5 6   |
| <b>3 lanes with raised median</b><br>(1 lane in each direction)                              | 1 2 3<br>4 5                | 1 3<br>7 9   | 1 3<br>5 6 | 1 3<br>4 5                | 1 3<br>5 6 | 1 3<br>5 6 | 1 3<br>4 5           | 1 3<br>7 9   | 1 3<br>5 6 |
| <b>3 lanes w/o raised median</b><br>(1 lane in each direction with a two-way left-turn lane) | 1 2 3<br>4 5 6              | 1 3<br>7 9   | 1 3<br>5 6 | 1 3<br>4 5 6              | 1 3<br>5 6 | 1 3<br>5 6 | 1 3<br>4 5 6         | 1 3<br>7 9   | 1 3<br>5 6 |
| <b>4+ lanes with raised median</b><br>(2 or more lanes in each direction)                    | 1 3<br>5                    | 1 3<br>7 8 9 | 1 3<br>5   | 1 3<br>5                  | 1 3<br>5   | 1 3<br>5   | 1 3<br>5             | 1 3<br>7 8 9 | 1 3<br>5   |
| <b>4+ lanes w/o raised median</b><br>(2 or more lanes in each direction)                     | 1 3<br>5 6                  | 1 3<br>7 8 9 | 1 3<br>5 6 | 1 3<br>5 6                | 1 3<br>5 6 | 1 3<br>5 6 | 1 3<br>5 6           | 1 3<br>7 8 9 | 1 3<br>5 6 |

Given the set of conditions in a cell,

- # Signifies that the countermeasure is a candidate treatment at a marked uncontrolled crossing location.
- Signifies that the countermeasure should always be considered, but not mandated or required, based upon engineering judgment at a marked uncontrolled crossing location.
- Signifies that crosswalk visibility enhancements should always occur in conjunction with other identified countermeasures.\*

The absence of a number signifies that the countermeasure is generally not an appropriate treatment, but exceptions may be considered following engineering judgment.

- 1 High-visibility crosswalk markings, parking restrictions on crosswalk approach, adequate nighttime lighting levels, and crossing warning signs
- 2 Raised crosswalk
- 3 Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line
- 4 In-Street Pedestrian Crossing sign
- 5 Curb extension
- 6 Pedestrian refuge island
- 7 Rectangular Rapid-Flashing Beacon (RRFB)\*\*
- 8 Road Diet
- 9 Pedestrian Hybrid Beacon (PHB)\*\*

A table from [FHWA's Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations](#) demonstrates the application of RRFBs relative to other pedestrian traffic control treatments based upon roadway features.



## Design Safety Countermeasures

- **Curb extensions** are often installed at intersections or midblock locations to increase pedestrian visibility. They are also sometimes installed with LPs to improve their effectiveness.



They are especially useful when there is on-street parking. Installed to provide either just a visual (through colored pavement) or physical intrusion into the vehicular path, curb extensions are also effective in reducing vehicle turning speeds. If curb extensions pose drainage issues, they can be installed as a “floating” island, with a 1-2 foot gap from the original curb or drainage structure.

- **Truck Aprons:** As an expansion of the curb extension countermeasure, evaluating intersection corners for all users involves also considering freight turning movements along arterials and Pikes. Truck aprons [present a solution](#) where large trucks have a little more space than other vehicles to turn, without allowing them to turn at high speeds. To further protect pedestrians at those installations, truck aprons are often accompanied by bollards at the intersection corner. Truck aprons are also common at roundabouts.
- **Signalized Pedestrian Crossings:** Pedestrian crossings at midblock and uncontrolled crossings present a high percentage of the locations where pedestrian fatalities and severe injuries are occurring in Nashville. Therefore, a systemic safety approach is needed to deploy additional protection for pedestrians crossing at these locations, especially along



high-speed roadways. While RRFBs do not require a traffic warrant analysis, they are most effective at two-lane, lower speed and volume roadways. At higher speed multilane roadways, additional signalized control is needed. The MUTCD includes specific warrants that must be applied to determine the type of signalization control. These signalization options include Pedestrian Hybrid Beacons (PHB), pedestrian signals, and full traffic signals. PHBs have been shown to reduce pedestrian crashes by [more than 55%](#), and offer an option when a full traffic signal is not warranted if vehicular volumes are not high enough. A practice highly supported by FHWA, widespread implementation of PHBs should be accompanied with public education since they are considered a relatively new technology.

- **Protected Left Turning Movements:** Intersections often pose a conflict point for pedestrians and cyclists. Vehicular left-turning movements pose a particular threat, as left-turning vehicles are usually focused on oncoming vehicles to try to find a gap to turn, and may not pay attention to pedestrians crossing the intersection. A countermeasure that requires analysis but one that has been often used to regulate left-turning vehicles is a protected left turn, which means that vehicles turning left turn only when the green arrow appears. While providing left turning cars a separate traffic signal phase may impact other vehicular movements, it is important to weigh the benefits of installing it to pedestrians and cyclists.
- **Mini Medians, Medians, and Pedestrian Refuge Islands:** Pedestrian fatalities and severe injuries in Nashville are most prevalent along the Pikes - the multilane, high-speed roadways. Installing hardscape medians provides an opportunity for pedestrians and cyclists to cross wide roadways more safely, and in stages if needed. Medians with marked crosswalks, have been

shown to [reduce pedestrian crashes by 46%](#). Additionally, if a pedestrian refuge island with ADA-compliant ramps is installed in the median, pedestrian crashes have been reduced by 56%. For quick build or location-based applications, a mini median may be installed to break up a two-way left turn lane, managing vehicular access and furnishing a crossing opportunity for pedestrians.



- **Raised crosswalks:** Raised crosswalks can reduce pedestrian crashes by 45%. They are most effective on local and collector streets, where the roadway cross section is typically 2 to 3 lanes wide, speed limits are 30 mph or less, and AADT is below 9,000.
- **Lighting:** Many of the pedestrian fatality and severe injury crashes along Nashville’s roadways occurred during the night. Adequate lighting that meets or exceeds minimum acceptable standards [reduces nighttime injury crashes on both rural and urban roadways by 28%](#).



- **Roundabouts** are a [proven safety countermeasure](#) that could significantly reduce the severity of crashes compared to a traditional four-legged intersection. Studies have shown that converting an intersection into a



roundabout can [reduce crashes by over 50%](#). It is important, however, to approach roundabout design from a context-sensitive and multimodal perspective. Bike facility transitions through a roundabout, pedestrian refuge islands, and crossing opportunities are all critical elements that should be considered.

- **“Multimodal” Speed Limits:** Speed management is one of the key tenets of Vision Zero. It has been proven that higher speeds result in more severe crashes; therefore, setting speed limits based on context rather than vehicular 85th percentile, especially when combined with design safety countermeasures, reduces fatalities and severe injuries on both urban and rural roads. Lower speed limits can be applied along a corridor segment or areawide, such as within the urban core. The City of Seattle saw [a 26% decrease](#) in traffic-related fatalities when the City implemented a set of Vision Zero safety strategies, including setting posted speed limits at 20 mph on non-arterial roadways.



Other treatments that should be considered in conjunction with the above operational and design treatments include lane narrowing through striping or rumble strips, high-visibility crosswalks, enhanced/flashing signage, ADA-compliant ramps and sidewalk slopes, and physically separated bike lanes.

# Countermeasure Costs

The costs presented below are an estimation of expected costs to procure and install devices to improve safety. These costs will be used in planning and allocating the NDOT safety budget.

| SAFETY COUNTERMEASURE   | UNIT | COST PER UNIT | TIMELINE FROM PURCHASE TO IMPLEMENTATION (MONTHS) |
|---|------|---------------|---|
| Advanced Warning Flashing Beacons   | Ea   | \$4,800       | 4   |
| Armadillo Traffic Separators  | Ea   | \$60          | varies  |
| Bike Signals (per assembly with two signal heads)                         | Ea   | \$2,400       | 3   |
| Bollards (fixed/concrete)   | Ea   | \$2,494       | varies  |
| Bollards (flexible posts)   | Ea   | \$121         | varies  |
| Curb Extension (all inclusive of curb + concrete)                         | Ea   | \$24,000      | varies  |
| Curb Extension (Temp) (all inclusive of asphalt paint, flexible bollards) | Ea   | \$2,400       | varies  |
| Flashing LED lights addition to Warning Signs                             | Ea   | \$3,000       | 3   |
| Full Pedestrian Signal HAWK (no ROW)                                      | Ea   | \$180,000     | 10  |
| Full Traffic Signal Two Lane - 4 approach typical                         | Ea   | \$360,000     | 24  |
| Full Traffic Signal Four Lane - 4 approach typical                        | Ea   | \$480,000     | 24  |
| Full Traffic Signal T type typical  | Ea   | \$360,000     | varies  |
| Full Traffic Signal Four Lane - 4 approach w right of way needed          | Ea   | \$540,000     | 36  |
| Green Paint for bike facility conflict areas                              | SY   | \$120         | 2   |
| High Visibility Crosswalk   | SF   | \$18          | 2   |
| In-Street Pedestrian Crossing MUTCD R1-6 Sign                             | Ea   | \$960         | 2   |
| Roadway or pedestrian lighting (new)                                      | Ea   | \$12,000      | 8   |
| Roadway or pedestrian lighting (signal modification)                      | Ea   | \$2,400       | 3   |
| Modify existing traffic signal adding ped crossing features (typical)     | Ea   | \$12,000      | 6   |
| Pedestrian Signal Head with Push Button (mounted on existing pole)        | Ea   | \$1,320       | 3   |
| Pedestrian Signal Head with Push Button (standalone assembly)             | Ea   | \$8,400       | 6   |
| Raised Pedestrian Crosswalk   | Ea   | \$10,000      | 6   |
| RRFB (per assembly)   | Ea   | \$6,000       | 6   |
| Rumble Strips   | LF   | \$180         | 3   |
| Traffic Signal Head Back Plates   | Ea   | \$240         | 2   |
| Traffic Signal Head Back Plates with Retroreflective Borders              | Ea   | \$300         | 2   |
| Variable Speed Limit Signs  | Ea   | \$7,800       | 9   |

# Challenges to Implementation

Changing the status quo of roadway design and implementation is not easy. NDOT is proactively thinking about strategies to address challenges and barriers faced in the past to implement safer transportation systems.

| CHALLENGE                                    | HOW WILL NDOT ADDRESS THE CHALLENGE?   |
|--|--|
| NDOT is a young organization                 | <ul style="list-style-type: none"> <li>• NDOT will evaluate process and progress year to year and make adjustments as needed.</li> </ul>   |
| Supply chain issues                          | <ul style="list-style-type: none"> <li>• NDOT will maintain and track an inventory of critical safety infrastructure. This includes developing an inventory database where equipment is logged into the system, accounted for, and reported on when taken from the shop for installation. For temporary material installations that can be refurbished, a “check out” system may be established.</li> <li>• Design, cost estimate, and construction timelines will account for supply chain delays to prevent reactive equipment issues.</li> <li>• NDOT will have contingency plans when possible.</li> <li>• NDOT will communicate to the public when this impacts project deadlines.</li> </ul> |
| Metro procurement process can cause delays   | <ul style="list-style-type: none"> <li>• NDOT will use its tools such as an on-call list of consultants and streamline where possible.</li> <li>• Project delivery timelines will account for the procurement process timeline.</li> </ul>   |
| Crash data has limitations                   | <ul style="list-style-type: none"> <li>• NDOT will work closely to improve the quality of new data collected going forward, and in the meantime will conduct a set of audits on the street network as a stop gap measure.</li> <li>• Data reporting training will be organized for law enforcement, EMS, and other personnel involved in crash data collection and reporting.</li> </ul>   |
| TDOT traffic capacity concerns               | <ul style="list-style-type: none"> <li>• NDOT will build relationships with TDOT and work together with TDOT engineers to evaluate LOS impacts from a multimodal perspective</li> <li>• NDOT will work with TDOT staff on developing safety treatment options that are suitable for the different contexts. For example, if a protected left turning movement will have detrimental impacts to vehicular LOS, a flashing yellow arrow may help reduce delay while providing additional protection to pedestrians from oncoming traffic.</li> </ul>   |
| Training needs                               | <ul style="list-style-type: none"> <li>• NDOT leadership will provide guidance and training for planning and engineering staff.</li> <li>• Training topics should focus on innovative speed management tactics, complete street design, crash reduction factors, etc.</li> </ul>   |
| Coordinating with multiple agencies          | <ul style="list-style-type: none"> <li>• NDOT will hold regular meetings with key partner agencies to ensure consistent and transparent communication.</li> </ul>  |
| Improvements along the Pikes are challenging | <ul style="list-style-type: none"> <li>• NDOT will place a primary focus on the pikes by committing resources to project improvements and request federal dollars (through grants and other) to assist in reconstruction costs.</li> <li>• In the interim, NDOT will also explore quick build opportunities along the Pikes.</li> </ul>  |



# 3

## Programmatic Actions

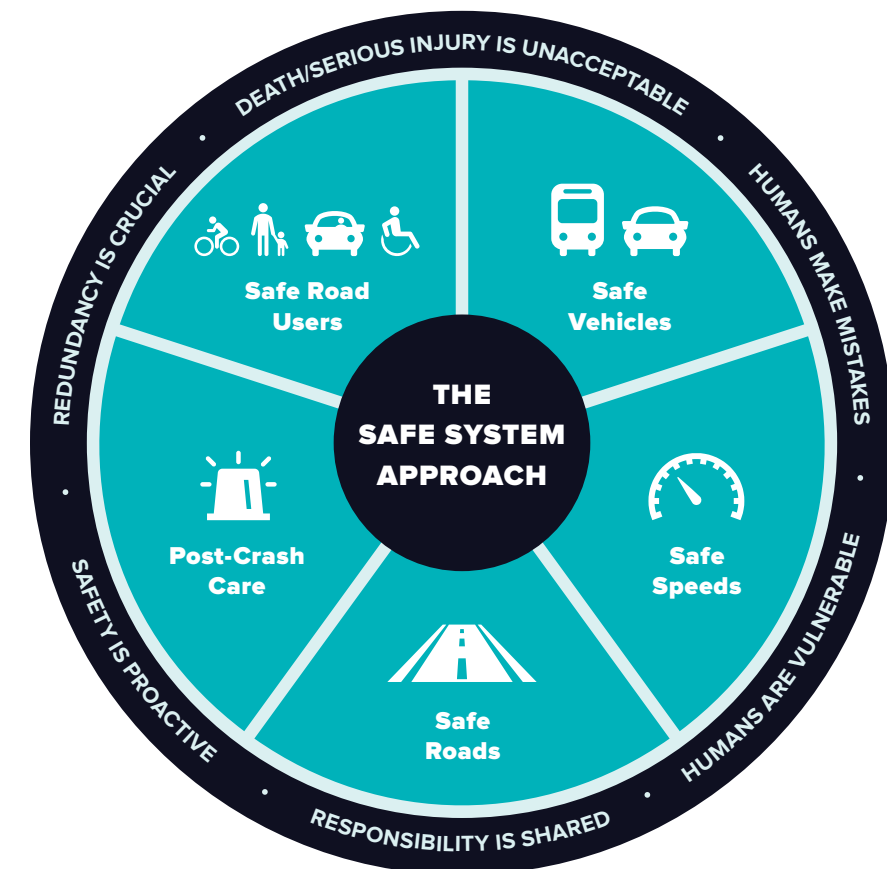
This chapter details how NDOT will advance the Vision Zero Action Plan strategies to address Evaluation, Education/Encouragement and Enforcement.

### Introduction

While engineering is the most critical E in Vision Zero, the remaining 4 E's (Evaluation, Education, Encouragement, and Enforcement) play a role in a comprehensive systems approach to safety. Evaluation will allow Metro Nashville and its residents to monitor progress and adjust to ensure that the recommendations of the Vision Zero Action Plan are implemented. The remaining E's each play an important role in addressing behavior change on roadways. Given constraints on staff capacity, this chapter only highlights the actions from the Vision Zero Action Plan that are priority steps needed to create positive impact and behavior change that can save lives.

When combined with Engineering, the 4 E's, described below, are intended to create a safe system approach to Vision Zero implementation.

- **Evaluation** - Monitoring and assessing progress towards safety goals and effectiveness of strategies and actions
- **Education** - Equipping people of all ages and abilities with the knowledge, skills, and confidence to safely move around
- **Encouragement** - Fostering a culture that supports and encourages all modes of transportation through opportunities, programs, and incentives
- **Enforcement** - Building safe and responsible behaviors on the road and building respect among road users through partnerships with local community groups and law enforcement



FHWA Safe System Approach, [https://safety.fhwa.dot.gov/zerodeaths/zero\\_deaths\\_vision.cfm](https://safety.fhwa.dot.gov/zerodeaths/zero_deaths_vision.cfm)



# Evaluation

Evaluation is a critical component of Vision Zero. Vision Zero is data driven. The planning process for the Vision Zero Action Plan revealed opportunities for better data collection and management. Additionally, transparency with data is a priority for NDOT. Finally, it is important to continue to collect data to evaluate program performance. The actions identified in this section will be led by the new recommended staff position, the NDOT data analyst.

## Vision Zero Advisory Committee

**Action Plan Strategies:** Increase collaboration between agencies responsible for traffic safety; and foster collaboration within Metro and the newly formed NDOT.

**Overview:** Equitable, effective implementation of Vision Zero plans require commitment from a core coalition or advisory committee who meets regularly, maintains close coordination and supports implementation efforts. This advisory committee should have representation from a variety of community sectors, including public health, law enforcement, planning, schools, healthcare, industry, mode-specific advocacy organizations, developers, and community members, among others.

In 2020, a Nashville Vision Zero Task Force was established to support the development of the Action Plan. The action plan recommended establishing a permanent advisory committee to oversee implementation and ensure collaboration. The advisory committee will meet quarterly, with additional meetings to be scheduled as-needed.

While advisory committee directives will ultimately be established based on member feedback, potential activities could include:

- Review updated crash/safety data to discuss new crash profiles or potential changes to the HIN
- Identify ongoing efforts and opportunities for coordination
- Provide feedback on equitable engagement strategies for different types of safety projects
- Serve in an advisory capacity on implementation actions and progress

|                                 |   |
|---------------------------------|---|
| <b>Equity Focus</b>             | <ul style="list-style-type: none"> <li>• Ensure representatives on the advisory committee represent the diversity of Nashville</li> <li>• Organizations should represent a diversity of voices in Nashville that are not typically involved in transportation planning</li> </ul> |
| <b>Lead Staff</b>               | Vision Zero Coordinator   |
| <b>Performance Measure</b>      | <ul style="list-style-type: none"> <li>• Build initiative towards action plan goals and strategies</li> <li>• Define the advisory committee mission</li> </ul>  |
| <b>Resources / Case Studies</b> | <ul style="list-style-type: none"> <li>• <a href="#">Vision Zero Network - Collaboration Resources</a></li> </ul>   |

## Fatal Crash Investigation Team

**Action Plan Strategy:** Increase collaboration between agencies responsible for traffic safety.

**Overview:** The fatal crash investigation team is a newly established group working to understand the engineering and design failures at play when a fatal crash occurs. This is separate and distinct from the Metro Nashville Police Department (MNPd) fatal crash investigation committee, which is more focused on the legal and behavioral aspects of the crash. By responding to a fatal crash through a field survey by NDOT traffic safety engineering staff, quick action and recommendations can be made to lessen the likelihood of a future crash occurring. The crash investigation team will meet monthly to review police report details, observe behavior at the site, and document the current conditions at the scene of the crash.

Members of the fatal crash investigation team can also serve as a Vision Zero technical advisory group to facilitate coordination and discuss implementation progress quarterly.

### FATAL CRASH INVESTIGATION REPRESENTATIVES:

- NDOT Vision Zero Coordinator
- NDOT Active Transportation
- NDOT Traffic Management
- NDOT Traffic Engineering
- WeGo
- MNPd
- TDOT

|                                 |   |
|---------------------------------|---|
| <b>Equity Focus</b>             | <ul style="list-style-type: none"> <li>• Use police report information to collect additional details, when available, about overburdened populations - such as race, age and homelessness</li> </ul>          |
| <b>Lead Staff</b>               | Traffic Safety Engineer   |
| <b>Performance Measure</b>      | <ul style="list-style-type: none"> <li>• Swiftly respond to fatal crashes, provide annual report with yearly fatal crash trends</li> </ul>  |
| <b>Resources / Case Studies</b> | <ul style="list-style-type: none"> <li>• <a href="#">In addition to a design team that reviews fatal crashes, in San Francisco, a Vision Zero epidemiologist reviews medical examiner reports.</a></li> </ul> |



## Vision Zero Report Card

**Action Plan Strategy:** Expand performance measures to include roadway safety.

**Overview:** The annual report card increases transparency and accountability about NDOT's progress towards Vision Zero goals. The report card will be set up to be easily understood and a critical evaluation tool that will allow NDOT to revisit implementation priorities each year and respond to new crash trends. As engineering strategies are implemented over time, specific crash reduction targets will be developed and progress will be highlighted.

|                                 |  |
|---------------------------------|--|
| <b>Equity Focus</b>             | <ul style="list-style-type: none"> <li>Document specific actions taken to address inequities in traffic safety</li> <li>Develop individual report cards for high need corridors along the HIN</li> </ul> |
| <b>Lead Staff</b>               | TSE Vision Zero Coordination Position (Currently Vacant)   |
| <b>Performance Measure</b>      | <ul style="list-style-type: none"> <li>Completing an easy to understand annual report and effectively communicating successes and failures to the public.</li> </ul>                                     |
| <b>Resources / Case Studies</b> | <ul style="list-style-type: none"> <li><a href="#">Austin Texas Vision Zero Report Card</a></li> <li><a href="#">Denver Colorado Vision Zero Report Card</a></li> </ul>                                  |

## Bicycle & Pedestrian User Count Program

**Action Plan Strategy:** Implement a robust active transportation user count program

**Overview:** Currently, NDOT does not have a formal count program that would provide the ability to understand exposure to crashes and provide more perspective to the crash data. Using the data currently available, the volume of pedestrian and bicyclist crashes can be determined, but not the rate of crashes (i.e. the number of crashes per bicyclist or pedestrian) as the average rate of bicyclists and pedestrians is not known. A more robust count system will help NDOT understand where people walk and bike, update the HIN to incorporate exposure rates, and conduct before/after evaluations of safety projects. In addition, policy changes are in progress to require new multimodal counts with each Traffic Impact Study (TIS) which can be leverages to as part of the new count program.

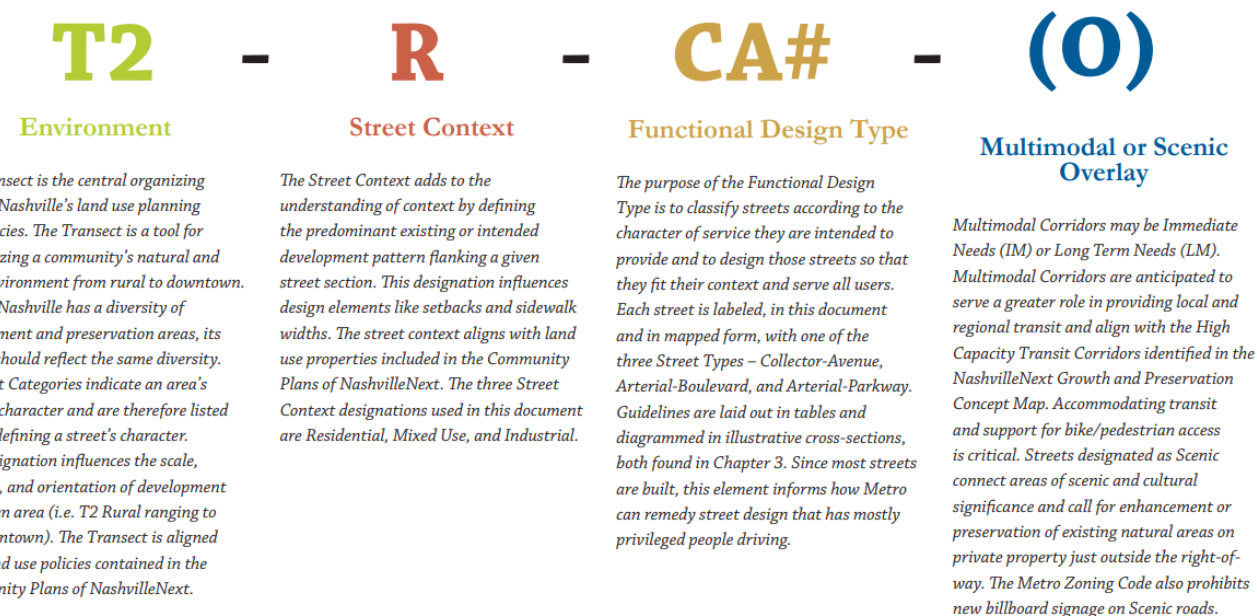
|                                 |   |
|---------------------------------|---|
| <b>Equity Focus</b>             | <ul style="list-style-type: none"> <li>Ensure diversity of count locations</li> </ul>   |
| <b>Lead Staff</b>               | Walking & Biking Manager  |
| <b>Performance Measure</b>      | <ul style="list-style-type: none"> <li>Identify federal, state, and local funding opportunities for bike ped counts/counter technology and establish a library of available funding sources</li> <li>Identify specific locations along HIN where user counts are appropriate and needed and perform counts along the HIN</li> </ul> |
| <b>Resources / Case Studies</b> | <ul style="list-style-type: none"> <li><a href="#">Counting and Estimating Volumes Resource List</a></li> <li><a href="#">North Carolina Nonmotorized Volume Data Program</a></li> </ul>  |

## Complete Street Design Guidelines

**Action Plan Strategy:** Update roadway design standards and expedite implementation to prioritize safety.

**Overview:** The Major & Collector Street Plan (MCSP), developed as part of NashvilleNext, is a comprehensive plan and implementation tool for guiding public and private investment in the major streets (Arterial-Boulevards, Arterial Parkways and Collector-Avenues) that make up the backbone of the city's transportation system (see image below). There is currently an opportunity to update the MCSP to incorporate the HIN priority segments and current best practices. In addition, NDOT will update all existing design standards to ensure they reflect complete street principles and prioritizes a safe system approach. These two actions will help advance safety principals and overall corridor livability throughout Davidson County and will apply to future development, maintenance, and major roadway reconstruction projects.

|                                 |  |
|---------------------------------|--|
| <b>Equity Focus</b>             | <ul style="list-style-type: none"> <li>Ensure the MCSP update incorporates and evaluates the equity analysis developed in the Vision Zero Action Plan</li> <li>Evaluate adherence of updated design guidelines in highly vulnerable areas to ensure implementation is equitable across all of Davidson County</li> </ul> |
| <b>Lead Staff</b>               | Walking & Biking Manager   |
| <b>Performance Measure</b>      | <ul style="list-style-type: none"> <li>Evaluate and update all design standards and operating procedures</li> <li>Update the MCSP to incorporate current best practices</li> </ul>   |
| <b>Resources / Case Studies</b> | <ul style="list-style-type: none"> <li><a href="#">Baltimore City, MD Complete Streets Manual</a></li> <li><a href="#">NACTO Design Resources</a></li> </ul>   |



## Asset Management Data Collection

**Action Plan Strategy:** Explore opportunities for enhanced data collection, organization, and use.

**Overview:** Asset management refers to data regarding the management, operation, and maintenance of transportation infrastructure. NDOTs current roadway centerline file lacks quality information such as number of travel lanes, sidewalk inventory, crossing treatments, signal equipment, posted sign inventory, etc. NDOT will leverage the emergence of data products, like [Ecopia](#) and [Mapillary](#), to collect this information using artificial intelligence (AI)-derived data products. By collecting this data, NDOT will be able to implement quick build and capital projects much faster by having access to reliable and robust roadway characteristic data.

|                          |  |
|--------------------------|--|
| Equity Focus             | N/A  |
| Lead Staff               | Traffic Safety Engineer  |
| Performance Measure      | <ul style="list-style-type: none"> <li>Create a new roadway centerline with expanded data for roadway characteristics</li> </ul> |
| Resources / Case Studies | <ul style="list-style-type: none"> <li><a href="#">Spain used AI to identify common patterns in road crashes</a></li> </ul>      |

## Vision Zero Dashboard Maintenance and New HIN Project Tracker

**Overview:** The Vision Zero Dashboard will increase the transparency of collision data and findings for the general public and, to stay current, will need to be maintained frequently. In addition to the Vision Zero Dashboard, a new HIN Project Tracker will be created that communicates NDOTs actions and progress for full transparency. The tracker will keep the public aware of how, when, and where projects are being implemented.

|                          |  |
|--------------------------|--|
| Equity Focus             | <ul style="list-style-type: none"> <li>Ensure the Dashboard and HIN Project Tracker are accessible</li> </ul>  |
| Lead Staff               | Vision Zero Coordinator  |
| Performance Measure      | <ul style="list-style-type: none"> <li>The Vision Zero Dashboard is maintained quarterly</li> <li>A new HIN Project Tracker is created and maintained quarterly</li> </ul> |
| Resources / Case Studies | <ul style="list-style-type: none"> <li><a href="#">New York City, NY</a></li> <li><a href="#">Seattle, WA</a></li> </ul>   |



## Education/Encouragement

Vision Zero represents a change from the status quo. For too long, traffic deaths have been accepted as inevitable, and city streets have not prioritized safety for all users. There is a need for culture change at all levels: the people who design, implement, and use the transportation network in Nashville. Extensive outreach to staff, stakeholders, and the community will facilitate this change. This chapter includes plans for a revamped awareness campaign, specific activities for target populations, and engagement with technical staff and advocates.

### Vision Zero Education + Awareness Campaign

**Action Plan Strategy:** Educate all roadway users.

**Overview:** NDOT will create and launch an effective marketing and education campaign with the goal of raising awareness about Vision Zero initiatives and goals and educating all roadway users. The campaign will feature both proactive safety messaging as well as respond to crash findings in order to target specific behaviors, such as pedestrian hit-and-runs. NDOT will procure a consultant to develop a long-term strategic communications plan and brand identity for Nashville's Vision Zero program as well as develop marketing and educational materials, print collateral and develop promotional items (posters, postcards, yard signs, t-shirts, etc.), identify audiences, develop innovative media ads (cell phone banners, convenience store/gas station displays, smart TV's, radio, buses, marquees, etc.), conduct outreach to residents, non-profits, students, community partners, develop earned and paid media strategies, and more.

NDOT will coordinate efforts of the campaign with both internal and external partners, such as the NDOT's TDM program, MNPd's community outreach division, and WalkBike Nashville, to leverage resources and outreach activities to expand the reach of the campaign.

|                          |   |
|--------------------------|---|
| Equity Focus             | <ul style="list-style-type: none"> <li>Campaign messaging will be developed to target crash findings in high need areas</li> <li>Campaign deployment strategies will be selected using an equity lens to ensure materials are sensitive to cultural differences and accessible to all</li> <li>Campaign materials will be produced in both English and Spanish and will comply with ADA standards</li> </ul>                                      |
| Lead Staff               | Communications & Community Engagement   |
| Performance Measure      | <ul style="list-style-type: none"> <li>5% follower growth across each social media platform (Facebook, Twitter, &amp; Instagram)</li> <li>Impressions per post: Twitter 130,000+, Facebook 1,000+, Instagram 1,400+</li> <li>Reach per post: Facebook 800+ and Instagram 1,200+</li> <li>Engagement per post: Twitter 1,500+, Facebook 50+, Instagram 80+</li> <li>Developed Vision Zero education videos with the goal of 3,000 views</li> </ul> |
| Resources / Case Studies | <ul style="list-style-type: none"> <li><a href="#">Vision Zero Network - Communication Strategies</a></li> <li><a href="#">New York City, NY Vision Zero Awareness Campaigns</a></li> <li><a href="#">Denver, CO Multimodal Safety Education Campaign</a></li> </ul>  |



## Equitable Engagement Playbook

**Action Plan Strategy:** Engage people living in vulnerable areas in transportation planning.

**Overview:** As part of a broader encouragement effort that addresses equity head-on, NDOT and its partners will engage residents in vulnerable areas. Part of this effort will be identifying Vision Zero peer city examples of vulnerable community engagement around traffic safety and developing a communications plan. To ensure progress, engagement metrics will be developed in conjunction with the equitable engagement strategies to develop goals and monitoring.

|                                 |  |
|---------------------------------|--|
| <b>Equity Focus</b>             | <ul style="list-style-type: none"> <li>Target engagement efforts along the HIN that is located in the highly vulnerable areas</li> <li>Ensure communication is tailored to reach a diverse audience</li> <li>Communication materials should be translated in multiple languages</li> </ul> |
| <b>Lead Staff</b>               | Communications & Community Engagement  |
| <b>Performance Measure</b>      | <ul style="list-style-type: none"> <li>Release and host staff training on NDOT Equitable Engagement Playbook</li> </ul>  |
| <b>Resources / Case Studies</b> | <ul style="list-style-type: none"> <li><a href="#">Durham, NC Equitable Engagement Blueprint</a></li> <li><a href="#">Seattle, WA Equitable Community Engagement Program</a></li> </ul>  |

## Community-Led Vision Zero Committee

**Action Plan Strategy:** Engage people living in vulnerable areas in transportation planning.

**Overview:** A Vision Zero Community Committee will be established and formed with community champions to assist with vulnerable community engagement activities. The committee should meet quarterly, be paid for their time, and evaluate progress towards implementation of the Vision Zero Action Plan, leverage their communication channels, and discuss safety concerns.

|                                 |  |
|---------------------------------|--|
| <b>Equity Focus</b>             | <ul style="list-style-type: none"> <li>Members should represent diverse voices from across varying Nashville neighborhoods</li> <li>Members should be compensated for their time to respect their limited availability and commitment to helping with implementation activities</li> <li>Translation of all materials and live interpreters should be prioritized</li> </ul> |
| <b>Lead Staff</b>               | Communications & Community Engagement  |
| <b>Timeline</b>                 | Quarterly meetings   |
| <b>Performance Measure</b>      | <ul style="list-style-type: none"> <li>Host quarterly meetings with Vision Zero Community Committee</li> </ul>   |
| <b>Resources / Case Studies</b> | <ul style="list-style-type: none"> <li><a href="#">Denver, CO Community Connector Program</a></li> </ul>   |

## Safe Routes to School

**Action Plan Strategy:** Expand the Safe Routes to School Program.

**Overview:** Safe Routes to School (SRTS) promotes walking and bicycling to school through infrastructure improvements, encouragement programs and events, safety programs, and other methods. The aim of SRTS is to make it safer for students to walk and bike to school and encourage more walking and biking. This will be part of a larger cultural, education, and encouragement initiative for children and parents. NDOT will partner with Walk Bike Nashville to expand their existing SRTS program to include school safety audits of schools located along the HIN. These audits will provide a tailored approach to implementing quick build and/or capital projects within a quarter-mile of an elementary school.

|                                 |  |
|---------------------------------|--|
| <b>Equity Focus</b>             | <ul style="list-style-type: none"> <li>Schools along the HIN that are also located in highly vulnerable areas should be prioritized</li> <li>Ensure that recommendations reflect the community needs and values through equitable engagement activities</li> </ul> |
| <b>Lead Staff</b>               | Vision Zero Coordinator  |
| <b>Performance Measure</b>      | <ul style="list-style-type: none"> <li>Six schools will be audited annually</li> <li>Recommendations from the SRTS audits will be included in the annual Vision Zero Report Card to track implementation and evaluate progress</li> </ul>                          |
| <b>Resources / Case Studies</b> | <ul style="list-style-type: none"> <li><a href="#">Safe Routes to School Partnership</a></li> </ul>  |

## BENEFITS

### of walking and biking to school



#### HEALTHY LIVING

Walking, biking, and rolling are great ways to get more physical activity.



#### BETTER EDUCATIONAL ACHIEVEMENT

Students who are active in the morning arrive at school focused and ready to learn.



#### CLEANER AIR AND WATER

Walking, biking, and rolling are sustainable modes of transportation that don't produce air pollution.



#### LESS TRAFFIC

More students walking, biking, and rolling to school means less congestion around schools, which is safer and healthier for everyone.



#### INCREASED SOCIAL INTERACTIONS

Walking and biking get families outside and talking with their neighbors.



#### COST-EFFECTIVE

Walking, biking, and rolling are inexpensive ways to get around and require little upfront maintenance costs.

# Enforcement

It is the unfortunate reality that Vision Zero work is intertwined with systems that have harmed people, particularly Black people, in the United States. Traffic stops are one of the most common interactions people have with enforcement officers. A [recent study found that people of color are over-policed](#), as they drive, bike, or walk. Inequitable enforcement is not justified. Vision Zero represents a new system of thinking, and that includes rethinking enforcement strategies. Vision Zero reinforces that systematic improvements in street design, engineering, and policy have the greatest impact to change behavior on streets.

## Speed Feedback Signs In School Zones

**Action Plan Strategy:** Expand the Safe Routes to School Program and Prioritize vulnerable areas and people who have less mobility choices.

**Overview:** NDOT will recommend policy changes to Metro Council for consideration that would revisit the policy language to permit automated enforcement in school zones, such as in Memphis, which activates cameras in school zones 30 minutes prior to school opening, 15 minutes prior to school closing, and for 30 minutes after school has closed. In the meantime, NDOT, in collaboration with MNP, will purchase speed feedback signs and install them in school zones along the HIN.

The MNP is a key partner in the collection and analysis of crash data. There are opportunities to align data collection at a scene of a crash with known best practices, especially for crashes involving people walking or biking.

Finally, in addition to the 5-year implementation strategies defined here, there should be additional research and consideration on the role automated traffic enforcement could play. Currently, Nashville disallows automated traffic enforcement. Other municipalities in Tennessee have deployed automated traffic enforcement as a component of their traffic safety programs.



The City of Seattle funds their Safe Routes to School program with revenue received from school zone speed cameras (photo above).

|                            |   |
|----------------------------|---|
| <b>Equity Focus</b>        | <ul style="list-style-type: none"> <li>Ensure locations of speed camera, if approved, don't place an undue burden on highly vulnerable areas in Nashville</li> </ul>              |
| <b>Lead Staff</b>          | Traffic Safety Engineer   |
| <b>Performance Measure</b> | <ul style="list-style-type: none"> <li>Install 15 speed feedback cameras</li> <li>Evaluate the effectiveness of speed feedback cameras with before/after speed studies</li> </ul> |

## Positive Re-Enforcement Strategies

**Action Plan Strategy:** Revisit approach to traffic enforcement.

**Overview:** Positive re-enforcement provides a means to engage the community that amends traditional policing, tickets, and fines. Because there is often a disproportionate impact of traffic fines on low-income communities, positive re-enforcement efforts, particularly along the HIN and high need areas, will support better roadway behaviors. As part of a comprehensive Vision Zero implementation strategy, NDOT should work with MPD to identify opportunities to integrate positive re-enforcement strategies along the HIN that are tailored to Nashville communities.

|                                 |   |
|---------------------------------|---|
| <b>Equity Focus</b>             | <ul style="list-style-type: none"> <li>Ensure that positive reinforcement doesn't inadvertently target highly vulnerable populations</li> <li>Prioritize strategies that correlate with specific crash profiles</li> </ul>              |
| <b>Lead Staff</b>               | Vision Zero Coordinator   |
| <b>Performance Measure</b>      | <ul style="list-style-type: none"> <li>Develop a custom positive reinforcement strategy document to outline potential activities and identify deployment details</li> <li>Implement and test positive enforcement strategies</li> </ul> |
| <b>Resources / Case Studies</b> | <ul style="list-style-type: none"> <li><a href="#">Vision Zero Network - Rethinking the Role of Enforcement</a></li> </ul>  |

## Update Police Report + Officer Training

**Action Plan Strategy:** Explore opportunities for enhanced data collection, organization, and use.

**Overview:** The data collected at the scene of an incident varies from state to state. States such as Arizona and California include more specific reporting than Tennessee to better capture circumstances that could identify the cause of the crash. NDOT, in collaboration with MNP, TDOT and the State Department of Safety and Homeland Security to update the police report to cover important details and nuances particularly as they relate to pedestrian and bicyclist-involved crashes. The goal will be to make the report as easy to complete as possible. Once the report is updated, police officer training should be conducted to ensure the improved consistency and reliability of data.

|                                 |   |
|---------------------------------|---|
| <b>Equity Focus</b>             | N/A   |
| <b>Lead Staff</b>               | Vision Zero Coordinator   |
| <b>Performance Measure</b>      | <ul style="list-style-type: none"> <li>Update the police report template</li> <li>Host one virtual and recorded police officer training</li> <li>Evaluate police report data quality after the police officer training</li> </ul> |
| <b>Resources / Case Studies</b> | <ul style="list-style-type: none"> <li><a href="#">San Francisco, CA Traffic Fatality Protocol</a></li> </ul>   |



# 4

# Roles + Responsibilities

This chapter outlines the roles within NDOT regarding Vision Zero implementation as well as how NDOT will coordinate with TDOT and other important stakeholders.

## A Shared Responsibility

The people who plan, design, build, maintain, and use the roads in Nashville all share in the responsibility to make Nashville a safer place to travel. Though safety was always a priority for NDOT, the Vision Zero Action Plan and goal to achieve zero traffic deaths by 2050 mark a renewed commitment towards protecting people who travel on Nashville's streets, particularly the most vulnerable users.

This Chapter establishes the roles and responsibilities NDOT staff and their partners have in achieving the strategies from the Vision Zero Action Plan and the actions identified in this Implementation Plan. Formed in 2021, the mission of NDOT is to provide leadership and vision on Nashville's transportation systems. With new plans (the WalkNBike update and Vision Zero Action Plan) and a growing staff, there is ample opportunity to shape staffing roles and needs, taking safety into greater consideration.

This chapter will provide guidance on how NDOT will sustain partnerships and collaborate with key stakeholders.

### A COMMITMENT TO EQUITY

From its inception, equity has been central to Vision Zero efforts in Nashville. Continued support for Nashville's most vulnerable populations is essential. In addition to the equity goals outlined in the engineering and programmatic actions, overarching equity recommendations are defined below:

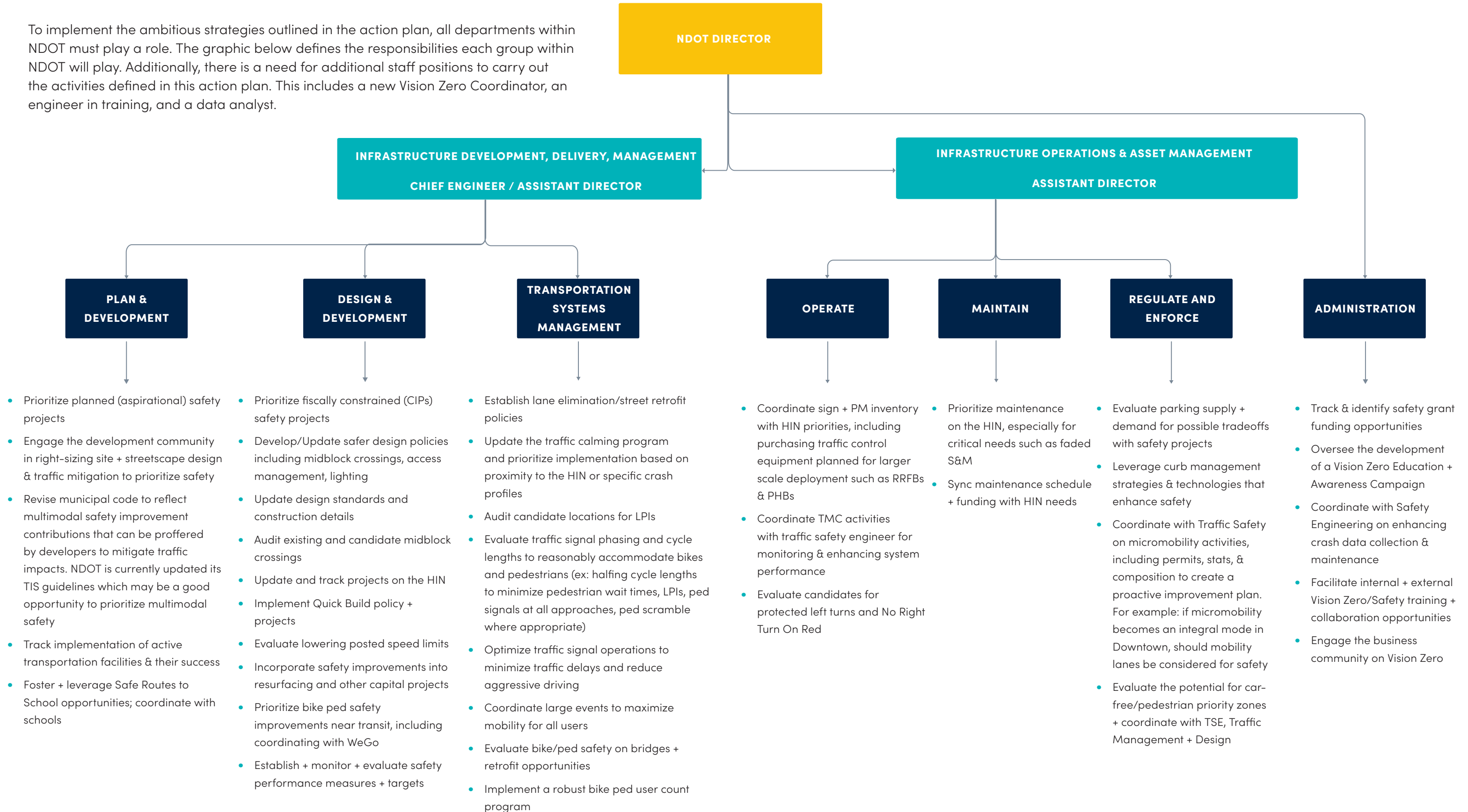
- Establish a shared city-wide definition of equity. Equity can have many meanings. By using shared definitions and terminology, each department, including NDOT, will work consistently to better understand and address inequalities, and work towards city-wide goals.
- Invest in support staff and tools focused on equity for all Metro departments.
- Continue to identify and engage with priority populations in Vision Zero work. Examples could include older adults, children and unhoused people.



More than **30% of collisions** for all modes occur in areas with the highest concentration of poverty, renters, and housing cost-burdened households, despite these areas making up **20% of the population**

# NDOT Roles & Responsibilities

To implement the ambitious strategies outlined in the action plan, all departments within NDOT must play a role. The graphic below defines the responsibilities each group within NDOT will play. Additionally, there is a need for additional staff positions to carry out the activities defined in this action plan. This includes a new Vision Zero Coordinator, an engineer in training, and a data analyst.





# Metro Roles & Responsibilities

Though the implementation plan focuses on actions NDOT will take, furthering safety in Nashville is a goal across Metro's departments and agencies. Metro departments are grouped into three roles: Close Collaborators, Strategic Partners, and "Keep Informed" Partners. In addition to the relationships between NDOT and Metro departments, each department is encouraged to articulate and plan their specific actions to implement the Vision Zero Action Plan.



## Close Collaborators: Coordinate Often

### PUBLIC HEALTH DEPARTMENT

Utilize community outreach tools and strategies. Collaborate under the shared vision that traffic deaths are a public health crisis.

### NASHVILLE PUBLIC SCHOOLS

Expand SRTS programming.

### WEGO TRANSIT

Collaborate on bus stop safety, bus driver training, and any route or service changes that would impact where people walk or bike.

### POLICE DEPARTMENT

Collaborate on education and enforcement. Collaborate on data collection and crash analysis.

### DEVELOPMENT & HOUSING AGENCY

Proactively integrate safe systems into Metro housing and development projects.

### MAYOR'S OFFICE

Remain involved in high level planning, visioning, and funding efforts. Assist with public communication.

### PLANNING DEPARTMENT

Coordinate closely with NDOT to ensure safe system principles are woven into all planning activities, policies, studies, and engagement.

### PARKS & RECREATION DEPARTMENT

Proactively plan and design safe routes to parks and trails. Collaborate on bike and pedestrian facility design funding efforts. Assist with public communication.

## Strategic Partners: Bring in as needed

### INFORMATION TECHNOLOGY SERVICES

Improve Metro data collection and visualization as needed. Maintain access and update the Vision Zero dashboard. Coordinate smart city efforts.

### GENERAL SERVICES DEPARTMENT

Work with fleet manager to ensure proper operator training and invest in safety improvements to fleet vehicles (such as truck side guards).

### NASHVILLE GENERAL HOSPITAL

Work with medical examiner to obtain and synthesize medical reports for fatal and severe injuries to bicyclists and pedestrians.

### HISTORIC PRESERVATION

Ensure safe system approach is integrated into projects and transportation projects meet preservation requirements.

NASHVILLE PUBLIC LIBRARY

METRO SPORTS AUTHORITY

NASHVILLE FARMER'S MARKET

METRO ARTS

Reach large public groups through events and services. Key partner for communication, outreach, and advocacy.

## Keep Informed

DISTRICT ATTORNEY

OFFICE OF EMERGENCY MANAGEMENT

EMERGENCY COMMUNICATIONS

METRO NASHVILLE COMMUNITY OVERSIGHT

METRO SOCIAL SERVICES

HUMAN RESOURCES

DAVIDSON COUNTY SHERIFF'S OFFICE

LAW DEPARTMENT

NASHVILLE FIRE DEPARTMENT

# TDOT Roles + Responsibilities

The Tennessee Department of Transportation is the federally designated organization responsible for the construction and maintenance of most state routes across Tennessee. They are also the designated recipient for many formula and discretionary funds that are distributed to municipalities, counties, transit agencies, regional planning

organizations and other entities responsible for public transportation.

Because of the shared ownership of many of the roads on the High Injury Network, TDOT is a pivotal partner in the implementation of the plan. The organization comprises several divisions that focus on different aspects of the delivery and upkeep of a multimodal transportation network. This plan identifies TDOT divisions NDOT staff should consider to be close collaborators when pursuing improvements on state routes.



## Close Collaborators: Coordinate Often

### TRAFFIC OPERATIONS

Responsible for the Traffic Management Center and Traffic Incident Management program, perform traffic engineering studies, prepare traffic signal, roadway lighting, and roadway signage designs. Also responsible for reviewing Transportation Systems Management & Operations (TSM&O) practices to reduce congestion through lower-cost technology improvements.

### MULTIMODAL

Supports mobility for all through public transportation, bicycle and pedestrian infrastructure, complete streets and Travel Demand Management. They also manage the Pedestrian Road Safety Initiative and Multimodal Access Grant Program.

### LONG RANGE PLANNING

Responsible for planning, developing and managing statewide transportation studies and planning tools that help guide statewide policy for the department. This division collects and maintains eTRIMS, the roadway inventory database, and manages the Congestion Mitigation and Air Quality and Transportation Planning grant programs. They also oversee the Corridor Management Agreements, focusing on access management.

### ROADWAY DESIGN

Responsible for oversight of roadway design standards and policy updates. They also ensure roadway plans meet state and federal guidance.

### REGION 3

Directs transportation operations for 26-county area of Middle Tennessee.

### STRATEGIC TRANSPORTATION INVESTMENT DIVISION (STID)

Provides support for projects that address safety, congestion and economic development needs across the state. Manage and develop projects for the Roadway Safety Audit program. Maintain safety data and provide location identification and analysis of the crash database.

## Strategic Partners: Bring in as needed

### CONSTRUCTION DIVISION

Responsible for transitioning projects from development to construction phase.

### COMMUNITY RELATIONS

Responsible for maintaining media and community group relationships, and internal/external program and project messaging.

### ENVIRONMENTAL DIVISION

Responsible for identifying, assessing and mitigating environmental risks of projects. Oversight of Environmental Justice and NEPA document development.

### PROGRAM DEVELOPMENT AND ADMINISTRATION DIVISION

Responsible for developing the State Transportation Improvement Program (STIP), establishing project schedules, establishing project funding authorization, and home to Local Programs section.

### LEGISLATIVE SERVICES

Advises on legislative issues by working with members of the Tennessee General Assembly. Responsible for communicating the effect of all proposed legislation.

### LOCAL PROGRAMS DEVELOPMENT OFFICE

Assists local governments with administering state and federal aid projects. Manages Transportation Alternatives Program (TAP) and Safe Routes to School program.

### CIVIL RIGHTS DIVISION

Responsible for administration of state and federal nondiscrimination programs, including Title VI, Affirmative Action and Small Business Development.

### MATERIALS AND TESTS DIVISION

Responsible for ensuring all material used in construction and maintenance meets the appropriate specifications.

### STRUCTURES DIVISION

Responsible for designing and developing plans and specifications for all highway structures and inspection of bridges.

### ASSET MANAGEMENT DIVISION

Responsible for ensuring roadway network and highway assets are maintained at high level using cost effective measures. Develop annual roadway budget, interagency maintenance agreements, and roadway maintenance contracts.

### PROGRAM DELIVERY

Responsible for managing roadway program.



# Stakeholder Roles + Responsibilities

## Elected Officials

### COUNCIL

Metro Council is made up of 40 council members representing 35 districts, with 5 at-large council members. Achieving consensus with this large group is challenging. However, political support is crucial.

- **Coordination Frequency:** An annual update to council on the outcome of Vision Zero implementation efforts, with additional updates to the Transportation & Infrastructure Committee
- **Key Actions:**
  - » Pass policies recommended by NDOT to advance Vision Zero on topics such as dedicated Vision Zero funding allocations, complete street policy, pedestrian crossing policy, etc.
  - » Coordinate with TN General Assembly on potential changes to state policy that impacts Vision Zero implementation
  - » Assist with project promotion – providing information and education to constituents when new projects are constructed
  - » Assist with education efforts such as awareness campaign within their individual districts

## Peer Agencies (outside of Metro)

### GNRC

The Greater Nashville Regional Council (GNRC) is the regional metropolitan planning organization (MPO) and facilitates the regional Bicycle and Pedestrian Advisory Committee (BPAC). GNRC provides communities with technical and topical expertise regarding growth and development in the region; they also administer some federal grants.

- **Coordination Frequency:** On-going
- **Key Contacts:** GNRC Representative serving on the Vision Zero Advisory Committee
- **Key Actions:**
  - » Participation in Advisory Committee
  - » Mechanism for federal funding assistance; prioritizing projects using safety/crash data as a key criteria
  - » Adding safety recommendations to long range transportation plan

### DEPARTMENT OF SAFETY & HOMELAND SECURITY

The Tennessee Highway Safety Office works with law enforcement officials, judicial personnel and community advocates to coordinate activities and initiatives relating to the human behavioral aspects of highway safety. They administer the 2022 \$23M grant program focusing on changing driver behavior through increased education, enforcement, and community partnerships. The group collects, maintains, and analyzes crash data.

- **Coordination Frequency:** Annually
- **Key Contacts:** Tennessee Highway Safety Office Program Manager (for crash data)
- **Key Actions:**
  - » Vision Zero dashboard – provision of crash data as available for Davidson County
  - » Coordination and assistance with and review of engineering, enforcement, education, and evaluation programs
  - » Coordinate with awareness campaign/behavior programs

## Community Groups

### DEVELOPER COMMUNITY

Consistently labeled among America’s fastest growing cities, Nashville has seen an exceptional amount of development over the past decade. Nashville’s development community shapes

the urban form in Nashville, and thus close partnerships are necessary.

- **Coordination Frequency:** Annually
- **Key Actions:**
  - » Coordination with Metro Planning in regards to development ordinances
  - » Education/training for developers – to understand impacts of development at micro-scale (development location) and macro-scale (surrounding area); understand Metro policies and their purpose

### BUSINESS COMMUNITY

Business leaders in Nashville drive economic growth; their presence in Vision Zero efforts provide an added resource for funding and implementation.

- **Coordination Frequency:** Annually
- **Example Organizations:** Nashville Area Chamber of Commerce, local business associations
- **Key Actions:**
  - » Provide support or sponsorships for education strategies such as:
    - + Awareness campaign
    - + New project promotion
  - » Provide funding through business groups and foundations that can move actions forward; funding may also serve as match for federal grants

### NONPROFITS AND ADVOCACY GROUPS

Advocacy groups in Nashville have the unique ability to read the pulse of the community and have earned trust with the communities they serve. As such, community-based organizations are a critical first step in identifying and engaging with community leaders and building

consensus from specific groups. Nashville also benefits from dedicated and passionate workers and volunteers advocating for safer transportation. In particular, WalkBike Nashville has led the charge for safer streets for pedestrians and cyclists for years.

- **Coordination Frequency:** Quarterly
- **Example Organizations:** WalkBikeNashville, LaunchPad, Transit Now Nashville, Civic Design Center, and ULI Nashville Chapter.
- **Key Actions:**
  - » 2-3 key nonprofits, such as WalkBike Nashville, to be part of Advisory Committee
  - » Assist with bike/ped user counts
  - » Assist with awareness campaigns
  - » Help to engage with residents in vulnerable areas on project implementation
  - » Assist with new project promotion – providing information and education through their existing channels

### NEIGHBORHOODS AND CIVIC ORGANIZATIONS

Residents in Nashville’s neighborhoods are intimately connected to the challenges and opportunities presented on roads in their communities. Leadership in these groups have also expressed frustration that their concerns have not been adequately addressed.

- **Coordination Frequency:** Annually
- **Example Organizations:** Nashville Neighborhood Alliance, YMCA, Civic Design Center and Neighbor2Neighbor.
- **Key Actions:**
  - » Assist with awareness campaigns
  - » Help to engage with residents in vulnerable areas where they have built up trust and relationships
  - » Assist with new project promotion – providing information and education through their existing channels

# 5

# Funding Overview

This chapter identifies potential funding opportunities as well as documents current funding commitments for Vision Zero implementation.

## Introduction

Accomplishing the Vision Zero goals and specific actions identified in Chapter 4 will require a significant financial and resource commitment. Metro Nashville has already begun allocating budget to Vision Zero, safety, and traffic calming initiatives. *A recurring, sustained source of expanded funding will be required to advance Vision Zero.* Leveraging those funds is a strategy that will further increase the amount accomplished through infrastructure and programmatic improvements. Given the uncertain economic climate, it is difficult to know what state and local resources will be available at different time frames in the future; thus, it will be important to update the Vision Zero funding strategy annually, to coincide with the annual Metro budget cycle.

Metro Nashville has access to a variety of state, federal, and local programs to support Vision Zero spending; and the current Infrastructure Investment and Jobs Act (IIJA) federal infrastructure bill, passed in 2022, offers the promise of more federal support for safety initiatives. Below are the general “buckets” of funding resources that can be accessed for Vision Zero.

### Local Funding

Local funds are used for capital and operating expenses and to match federal and state sources. This includes the preparation of the Capital Improvements Budget (CIB) which is the primary document outlining projects over a 6-year horizon allowing decision makers to determine a funding schedule that is fiscally and administratively feasible. The budget is discussed each spring with the CIB and filed by May 15th with Metro Council reviewing for final annual approval by June 15th of each year.

### Regional (MPO) Funding

The Greater Nashville Regional Council (GNRC) is the administrator of the Metropolitan Planning Organization (MPO) for the Nashville metropolitan area with federal regulations and oversight provided by the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), and the Tennessee Department of Transportation. The GNRC is largely responsible for planning, coordinating and distributing federal funds for local and regional projects. Typically, projects are funded through the Transportation Improvement Program (TIP) which is a four or five-year work program that lists projects that must be consistent with the current, adopted long-range transportation plan.

### State Funding

Tennessee DOT (TDOT) manages state-level funding programs that may be particularly important for TDOT roadways that traverse Nashville and Davidson County. While NDOT has access to several different funding programs through the state, such as Congestion Mitigation and Air Quality (CMAQ) that funded the Vision Zero Action Plan, specific programs for safety implementation are described below.

- **Highway Safety Improvement Program (HSIP)** provides oversight and management of safety projects across the state. The 2022 \$66M program funds multiple statewide safety initiatives, including grant programs and safety audits. Funding consists of federally apportioned formula funds and state funds. HSIP programs relevant to Vision Zero include:
  - » **Pedestrian Road Safety Initiative (PRSI)** identifies safety concerns to reduce the number of fatal and severe pedestrian crashes. The project's selection process



includes a data driven Pedestrian Safety Prioritization Tool to analyze fatal and severe crashes, and internal and external stakeholder engagement. Typically Local Agencies are responsible for the delivery of their grant projects. However, some programs offer TDOT delivery options for certain circumstances.

- » **Road Safety Audits (RSA)** are used for quick improvements to correct safety issues like geometric deficiencies, striping or lack of signage. Additional right-of-way is not needed to complete the project. The projects are completed within one year of the final report.
- » **Spot Safety Program** addresses specific safety concerns identified by regional request and approved by the Spot Safety Committee.
- **Transportation Planning Grants** managed by Long Range Planning is a \$3.2M program to assist Tennessee communities with coordinating multimodal transportation and local land use decisions. Grant recipients create planning documents that support improvements in traffic flow, safety, and efficiency of the transportation network. There is a \$250k maximum award for communities located in metropolitan areas of the state.
- **Transportation Alternatives Program (TAP)** is a local community enhancement program available to municipalities across Tennessee. Funds can be used to build sidewalks and bike/pedestrian trails.
- **Tennessee Highway Safety Office (THSO)** is a division of the Tennessee Department of Safety and Homeland Security advocating for traffic safety. Their mission is to reduce traffic fatalities toward zero deaths. They administer the 2022 \$23M grant program focusing on changing driver behavior through increased education, enforcement, and community partnerships.

## FTA Funding

While FTA funding is not directly related to Vision Zero efforts, there is plenty of research that suggests transit usage as a way to reduce traffic fatalities. Therefore, one more tool in the Vision Zero toolbox could be to increase transit service in areas/communities with high safety issues. There are potentially two sources of FTA funding that could be used to assist in conducting the bus stop safety audits and physical improvements to bus shelters. These are the Bus and Bus Facilities competitive program (5339 grants), which is a competitive program with approximately \$1 billion in funding available. The other is FTA's regular formula program (5307) or competitive capital invest program (5309), either of which could assist with costs to upgrade existing shelters to make them safer.

## Federal Funding - IIJA

As described previously, the IIJA provides additional funds to tackle Vision Zero initiatives. This includes increases of funding to existing programs such as RAISE, TAP, HSIP, and CMAQ which flow through and are administered by the MPO and TDOT.

New dedicated funding in the IIJA include relevant competitive discretionary grants described below, with Safe Streets for All offering the most significant opportunity for Metro Nashville. In most cases, during the current Biden administration, these projects should address equity and areas of persistent poverty as defined by the US government. These new programs include:

- **Safe Streets and Roads for All** is funded at \$5B appropriated (and up to \$6B total pending future appropriation) for five years and is a [competitive program](#) for local governments to create Safety Action Plans (Vision Zero) and to fund the

recommendations from these plans. Eligible activities include developing a comprehensive safety (or Vision Zero) action plan, conducting design and development activities in support of the Action Plan, and carrying out projects and strategies identified in an Action Plan. Given the completion of Nashville's Vision Zero Plan in 2022, this is ideal timing to fund projects using local funds as match (program details and NOFO expected in May 2022). This program should be a priority for Metro Nashville.

- **RAISE (Rebuilding American Infrastructure with Sustainability and Equity)**, formerly known as TIGER and BUILD under previous administrations, is funded at \$7.5B over the next five years (starting in 2021). This is a popular competitive program that funds local or regional transportation projects that improve safety, environmental sustainability, quality of life, economic competitiveness, state of good repair, and connectivity. In 2021, multi-modal projects (that included active transportation elements) made up over 80% of the awarded projects.
- **The Active Transportation Infrastructure Investment** is a competitive program for AT networks and spines, with \$1B authorized but not yet appropriated as of spring 2022. This program would focus on improvements addressing walking and bicycling infrastructure.
- **Reconnecting Communities** is another program with \$500M appropriated (and up to \$1B total pending future appropriation) for planning and construction to remove mobility barriers in communities impacted by past infrastructure implementation. This may address Vision Zero issues, particularly where a major highway has divided communities, making for dangerous roadway crossings.
- **Healthy Streets** is a \$500M discretionary program that will address issues such as urban heat island/tree cover in low income and minority communities. This funding source may address Vision Zero concerns by creating streetscapes and other measures to calm or slow traffic.
- **The Carbon Reduction Formula Program** is a \$6.42B program that will be allocated by population to states and then downwards to municipalities. Eligible projects include public transit projects, bikeways, walkways, and trails to facilitate non-motorized users of the road. While not as directly applicable as above programs, this may be an opportunity for Metro Nashville to improve safety for non-motorized users.

## TDOT and MPO-Administered Funding Programs Summary

| FUNDING PROGRAM  | ADMINISTERING AGENCY | DESCRIPTION AND ELIGIBLE RECIPIENTS   | LOCAL MATCH |
|--|----------------------|---|-------------|
| Federal Highway Safety Improvement Program (HSIP)        | TDOT                 | Umbrella safety program that funds different programs like RSA and PRSI. Communities across TN. This is not a grant program, rather TDOT applies funding based on state priorities.   | N/A         |
| Pedestrian Road Safety Initiative (PRSI)                 | TDOT                 | Safety improvement program for pedestrian-related severe crashes. Cities and counties are eligible but not a grant application process. FY22 approximately \$6M, FY23 approximately \$10M (this program is funded through the larger HSIP program). | N/A         |
| Tennessee Highway Safety Office (THSO)                   | THSO                 | Grant program focusing on changing driver behavior. Cities, counties are eligible.  | Varies      |
| Transportation Planning Grant (TPG)                      | TDOT                 | Competitive grant program used to fund safety, congestion and access management. Available to communities within MPO areas across the state. The max award in 2022 is \$200,000.  | 20%         |
| Transportation Alternatives Program (TAP)                | TDOT                 | Local community enhancement grant. Cities are eligible. The average award is \$350,000.   | 20%         |
| Congestion Mitigation and Air Quality Improvement (CMAQ) | TDOT                 | Provides funding for air quality improvement and congestion reduction projects. Air quality nonattainment or maintenance communities.   | 0-20%       |
| Surface Transportation Block Grant (STBG)                | TDOT/MPO             | Flexible transportation program used to fund a variety of programs. Cities, counties and state are eligible.  | 20%         |
| Metro Planning (PL)                                      | MPO                  | MPO transportation planning funds.  | 20%         |

## TDOT and MPO-Administered Funding Eligible Activities

|             | Planning and Design | Road Safety Audit | Training | Safety Education | Staffing | Construction | Quick-Build | Data Mgmt |
|-------------|---------------------|-------------------|----------|------------------|----------|--------------|-------------|-----------|
| <b>HSIP</b> | ✓                   | ✓                 |          | ✓                |          | ✓            | ✓           | ✓         |
| <b>PRSI</b> | ✓                   | ✓                 |          |                  |          | ✓            | ✓           |           |
| <b>THSO</b> |                     |                   | ✓        | ✓                |          |              |             |           |
| <b>TAP</b>  |                     |                   |          |                  |          | ✓            |             |           |
| <b>CMAQ</b> | ✓                   | ✓                 | ✓        | ✓                | ✓        | ✓            |             | ✓         |
| <b>STBG</b> | ✓                   | ✓                 | ✓        | ✓                | ✓        | ✓            | ✓           | ✓         |
| <b>PL</b>   | ✓                   | ✓                 | ✓        | ✓                | ✓        |              |             | ✓         |



## IIJA Funding Programs Summary

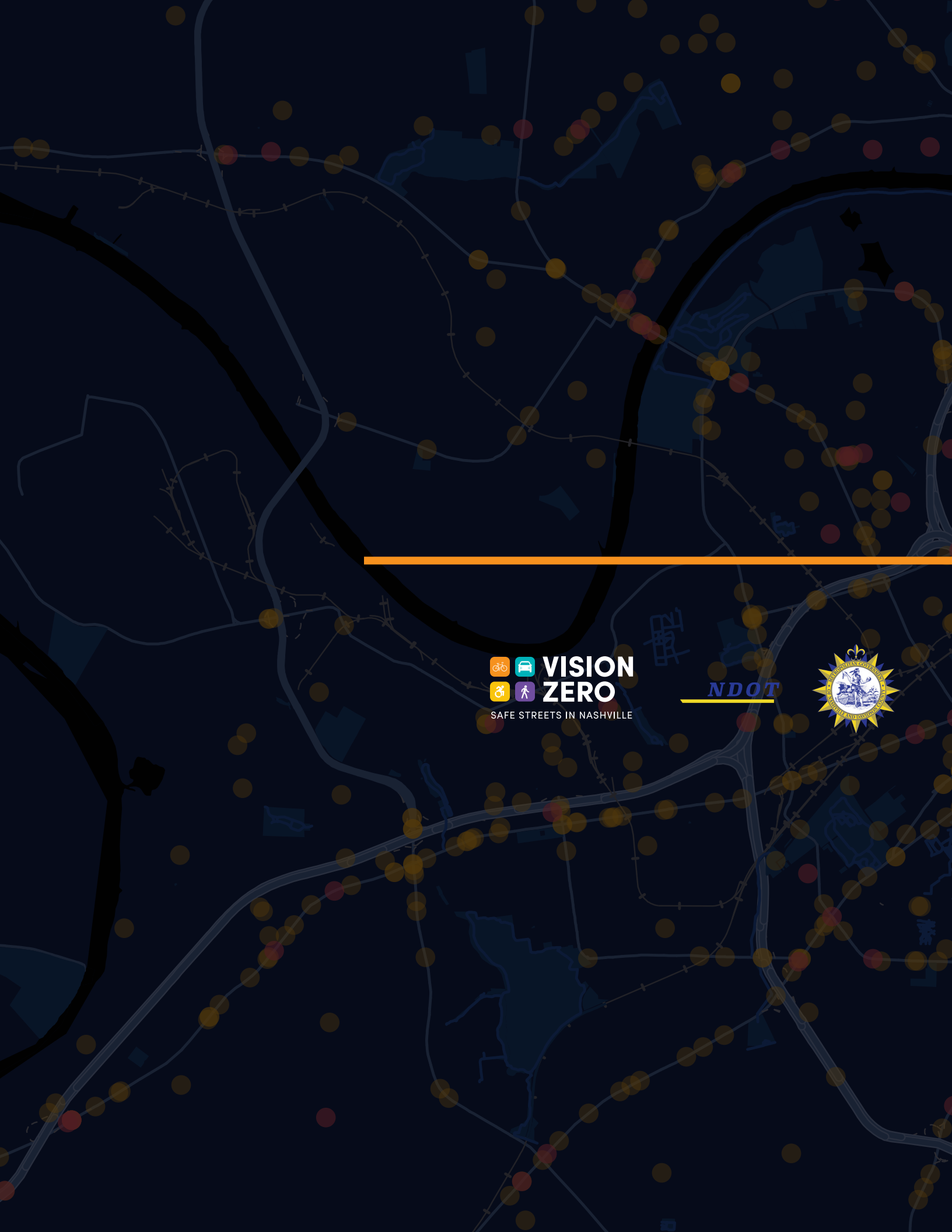
| FUNDING PROGRAM   | ADMINISTERING AGENCY  | DESCRIPTION AND ELIGIBLE RECIPIENTS  | LOCAL MATCH   |
|---|---|--|---|
| Safe Streets for All (SS4A)   | FHWA (State or Local entity may administer project, working with FHWA if awarded) | Competitive grant; FY22 - \$1B<br><br>Based on the Self-Certification Eligibility Worksheet in the FY22 NOFO, the Nashville Vision Zero Action Plan allows NDOT to be eligible for an implementation grant.                | 20%   |
| RAISE (Rebuilding American Infrastructure with Sustainability and Equity) | FHWA (State or Local entity may administer project, working with FHWA if awarded) | \$7.5B over 5 years (\$1.5B/year); funding for transportation projects (multimodal projects that address equity and safety will be favored under current administration. The maximum funding award is approximately \$30M. | 20% but projects with a higher local match are typically more competitive. Disadvantage communities may be eligible for local match waiver. |
| Active Transportation Infrastructure Investment                           | FHWA (State or Local entity may administer project, working with FHWA if awarded) | \$1B over 5 years (\$200M/year); funding for active transportation projects  | N/A   |
| Reconnecting Communities  | FHWA (State or Local entity may administer project, working with FHWA if awarded) | \$500M (and up to \$1B in future appropriation); competitive grant program for planning or construction.   | N/A   |
| Healthy Streets   | FHWA (State or Local entity may administer project, working with FHWA if awarded) | \$500M for programs that address urban heat island.  | N/A   |
| Carbon Reduction Formula Program  | State or MPO  | \$139M over 5 years for the state of Tennessee; will be distributed through MPOs and state; flexibility for each state so uncertain how this will trickle down. Active transportation and trail projects may be funded.    | N/A   |

## IIJA Funding Eligible Activities

|   | Planning and Design | Road Safety Audit | Training | Safety Education | Staffing | Construction | Quick-Build | Data Mgmt |
|---|---------------------|-------------------|----------|------------------|----------|--------------|-------------|-----------|
| <b>SS4A</b>                                     | ✓                   |                   |          |                  |          | ✓            | ✓           |           |
| <b>RAISE</b>                                    | ✓                   |                   |          |                  |          | ✓            |             |           |
| <b>Active Transportation Investment Program</b> | ✓                   |                   |          |                  |          | ✓            | ✓           |           |
| <b>Reconnecting Communities</b>                 | ✓                   |                   |          |                  |          | ✓            |             |           |
| <b>Healthy Streets</b>                          |                     |                   |          |                  |          | ✓            |             |           |
| <b>Carbon Reduction Program</b>                 | ✓                   |                   |          |                  |          | ✓            | ✓           |           |

SS  
4A

**The Safe Streets for All (SS4A) program, introduced in 2022, will have its first notice of funding opportunity in May 2022 and will award implementation projects from Vision Zero plans. This is an opportunity to make significant implementation advances for NDOT.**



 **VISION  
ZERO**

SAFE STREETS IN NASHVILLE

**NDOT**

