

### NEW JERSEY STATE TRANSPORTATION INNOVATION COUNCIL www.NJDOTtechtransfer.net/NJ-STIC

3<sup>RD</sup> Quarterly Meeting September 19, 2022



# WELCOME

### Michael Russo Assistant Commissioner NJDOT Planning, Multimodal & Grant Administration

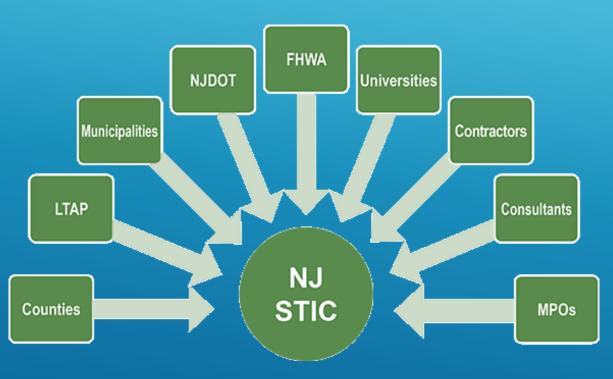


### WELCOME ATTENDEES & SPECIAL GUESTS

Feature Presentation:

NJDOT Bureau of Safety, Bicycle, and Pedestrian Programs "Innovative Approaches to Safety"

Dan LiSanti, Director Jeevanjot Singh, Section Chief





### **FHWA UPDATES**



#### Helene Roberts, P.E. Innovation Coordinator & Performance Manager FHWA, NJ Division Office

### CIA TEAM SAFETY

NJDOT – Dan LiSanti FHWA – Keith Skilton CORE INNOVATION AREA REPORTS

### CIA TEAM INFRASTRUCTURE PRESERVATION

NJDOT – Shivani Patel FHWA – Nunzio Merla

CIA TEAM MOBILITY & OPERATIONS

NJDOT – Sal Cowan FHWA – Ek Phomsavath CIA TEAM ORGANIZATIONAL SUPPORT & IMPROVEMENT

NJDOT – Chrystal Section (on behalf of Zenobia Fields) CIA TEAM Safety

NJDOT – Dan LiSanti FHWA – Keith Skilton





Safety Benefits:

Agencies have experienced the following benefits after LRSP implementation:

25%

reduction in county road fatalities in Minnesota.

#### 17%

reduction in fatal and serious injury crashes on county-owned roads in Washington State.

#### 35%

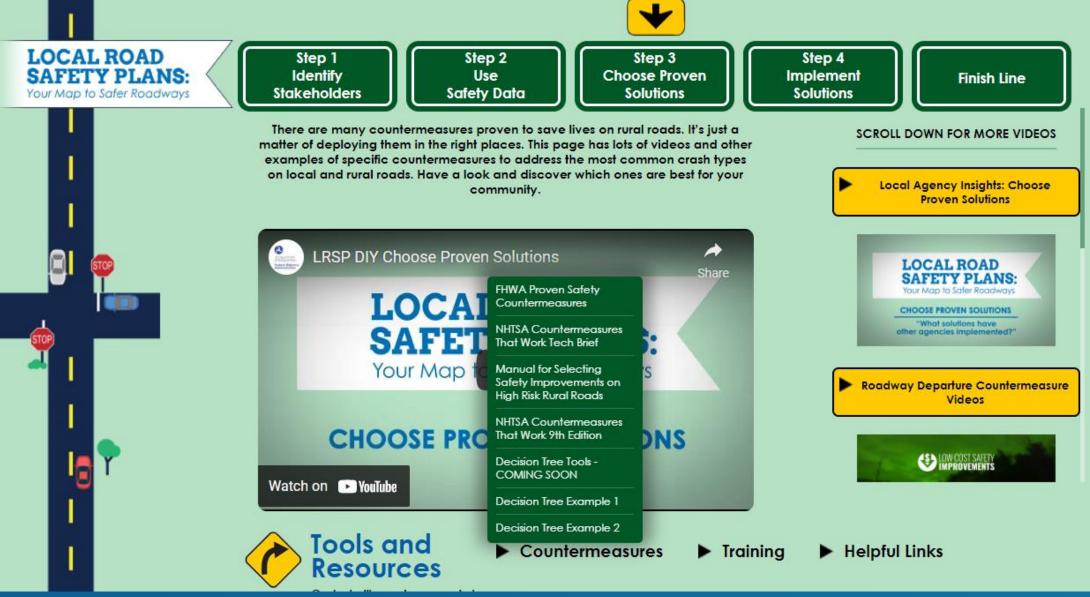
reduction in severe curve crashes in Thurston County, WA.



Source: FHWA









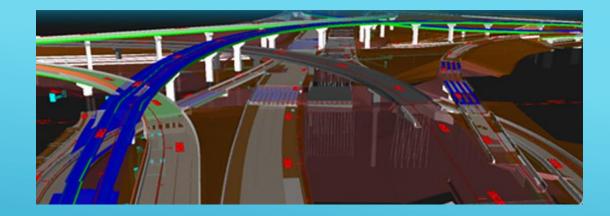


# QUESTIONS?

CIA TEAM INFRASTRUCTURE PRESERVATION

> NJDOT – Shivani Patel FHWA – Nunzio Merla

## **DC - 6 Digital As-Builts**



Purpose: To explore the use of 3D models to build projects and update that digital information to reflect the project's as-built condition



- The team is still in the process of selecting a pilot project (OpenRoads software)
- Team meetings will resume in the 4<sup>th</sup> quarter
- NJDOT staff participated in the FHWA Digital As-Builts Forum on July 25, 2022

# e-Ticketing

EDC - 6



Purpose: Provide stakeholders with an electronic means to produce, transmit, and track and verify materials deliveries



- Initiated the procurement process for an e-ticketing vendor
- The team is awaiting approval of procurement documentation
- Next steps: completing the procurement process, selecting a vendor and learning the system

### EDC - 6

### **Targeted Overlay Pavement Solutions (TOPS)**





Purpose: To develop and install overlays that provide long-life performance under a wide range of traffic, environmental, & existing pavement conditions

- The Route 42 project (UPC 213090) which includes Ultra High Performance Thin Overlay was awarded on June 20, 2022
- NJDOT Pavement Management Unit conducted skid testing on three projects
- The team participated in the "Enhanced Friction Overlay Experience" forum hosted by the National Center for Asphalt Technology



### **UHPC for Bridge Preservation and Repair**



#### **Purpose:** To explore the use of UHPC for Bridge Preservation and Repair

- The team presented at the 39<sup>th</sup> Annual International Bridge Conference on July 18-20, 2022
- Currently preparing for the first UHPC link slab applications-Superstructure Replacement Project, River Road over Rt. 287 Bridge
- UHPC link slab applications are currently in Final Design for multiple projects
- The team will complete the UHPC overlay testing data and establish baseline



# QUESTIONS?

CIA TEAM Organizational Support & Improvement

NJDOT – Chrystal Section on behalf of Zenobia Fields

### **Group Input – Survey Results for Mentoring**

1. How do you believe matches should be made for Mentoring Program? (Select Top Three)

#### More Details

By Discipline (i.e. engineer, plan... 3 5 By Unit Mentee Selection from Mentor ... 4 Staff - Manager Pairing 3 3 Peer Pairing 0 2 Compatibility Survey 4 1 Speed Mentoring 5 Supervisor Assignment 0 Other 2

#### Mentor Profile Categories

- Mentee needs 360 match
- Career level skills strengths, development goals, mid-level and above
- Organization skills and Soft skills
- Organizational Awareness\*
- Background education, work experience (yrs at DOT and prior), supervisory experience
- Gender



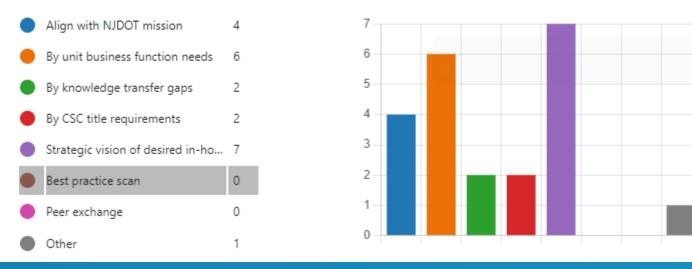
- Planner
- Engineer
- Accounting
- Auditing
- Technology
- Environmental
- Project Management
- Data Science/Analyst
- Research and Innovation
- Cross-cutting
- Construction management
- Mechanics and Electricians
- Trades ie. Carpentry, real estate

### Group Input – Survey Results for Skillsets

2. How skillset development needs be identified? (Select Top Three)

F&A

#### More Details



#### **Unit Needs**

<u>CPM</u>

Digital As-Builts/BIM PMRS

#### <u>toss</u>

Cyber/Data Security Procurement and Accounting – New Activities/Demands

Trades Diesel Mechanics Electrical Mechanics ITS

**PMGA** 

#### <u>Skillset</u>

- Clean/Green Economy mechanic/electrical and trades
- Equity Officer 508 Compliance information accessible for all abilities
- Software/Hardware Development
- GIS
- Data Integration and Application Development
- Data Analytics and Visualization
- Connected Vehicle and
   Infrastructure
- Cloud Computing
- Communication/Presentation
- Staff driven?

Resiliency Electrician Infrastructure

### Group Input – Survey Results for Outreach





#### **Colleges/Universities**

- County Colleges
- Trade/Vocational Schools
- Promotional Video
- Open House

#### <u>Others</u>

Speaker Bureau outreach – each unit, Talent Acquisition teams – through personnel coordinators Trade associations for job postings Staff mentoring of high school students – formalizing or promoting TRAC & RYDES program Union partnership Workforce Development Plans – through Civil Rights (Civil Service Requirement) Expand "Take you child to work day"



# QUESTIONS?

# CIA TEAM MOBILITY & OPS

NJDOT – Sal Cowan FHWA – Ek Phomsavath

## EDC-6: Next-Generation TIM: Integrating Technology, Data, and Training

#### NJDOT collaborating with NJSP

- Computer-Aided Dispatch (CAD) integration project
- CAD integration into traffic operations centers to improve incident response and quicker clearance.

#### "Development" Stage

- Maintain the existing team
- NJ State Police CAD system (Motorola FLEX) being re-evaluated
- Access/deployment for DOT to be reevaluated once system issues resolved



### EDC-6: Crowdsourcing for Advancing Operations

#### NJDOT collaborating with Drivewyze

- Real-time trucking alert system
- Improve mobility and traffic operations
- Reduce commercial vehicle crashes

#### "Institutionalized" Stage

- Deployed in January 2022
- Continue to assess system performance
- Established continued funding/sustainability of crowdsourcing





# QUESTIONS?

### 10-MINUTE BREAK & TRANSPORTATION TRIVIA

Go to <u>www.menti.com</u> Use code 5575 6996 Feature Presentation

### NJDOT Innovative Approach to Safety

Dan LiSanti, Director Jeevanjot Singh, Section Chief





### NJDOT Innovative Approach to Safety

Dan LiSanti, Manager Jeevanjot Singh, Section Chief Bureau of Safety, Bicycle & Pedestrian Programs

**September 19, 2022** 



### Agenda



- 1. Who We Are
- 2. Evolution of Safety Programs
- **3.** STIC Previous Accomplishments

#### 4. Moving Forward

- a. Reactive to Proactive
- b. Process Improvement
- c. Procurement
- d. Diversify
- e. Countermeasures
- f. SHSP
- g. Safety Resource Center

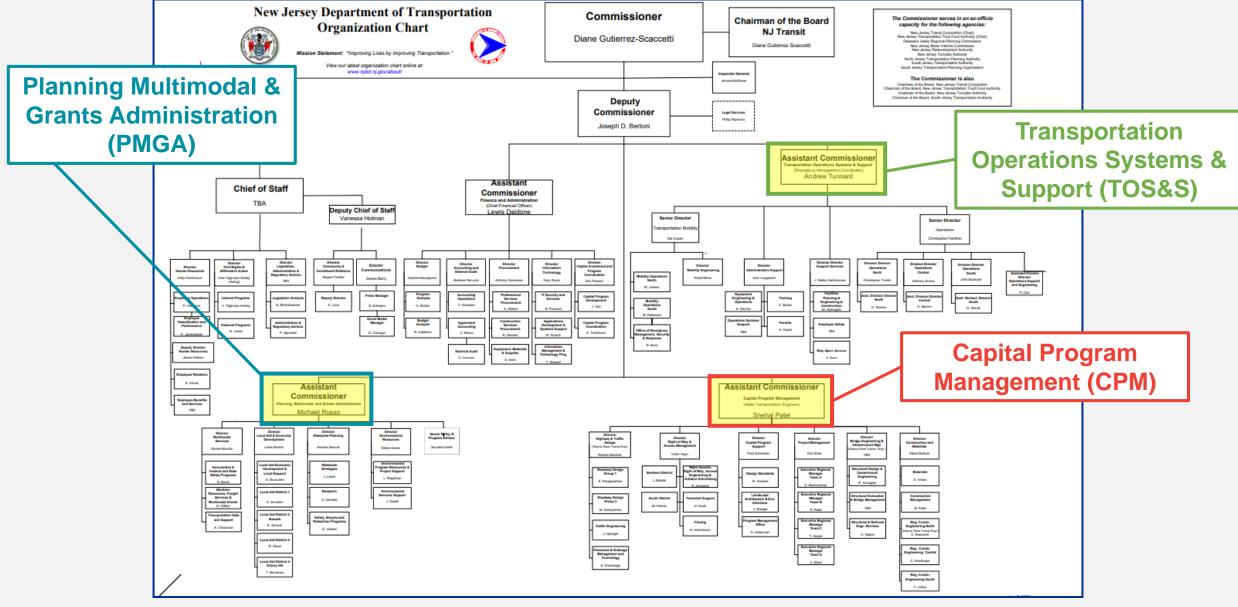
#### 5. Questions

### Who We Are

### NJDOT



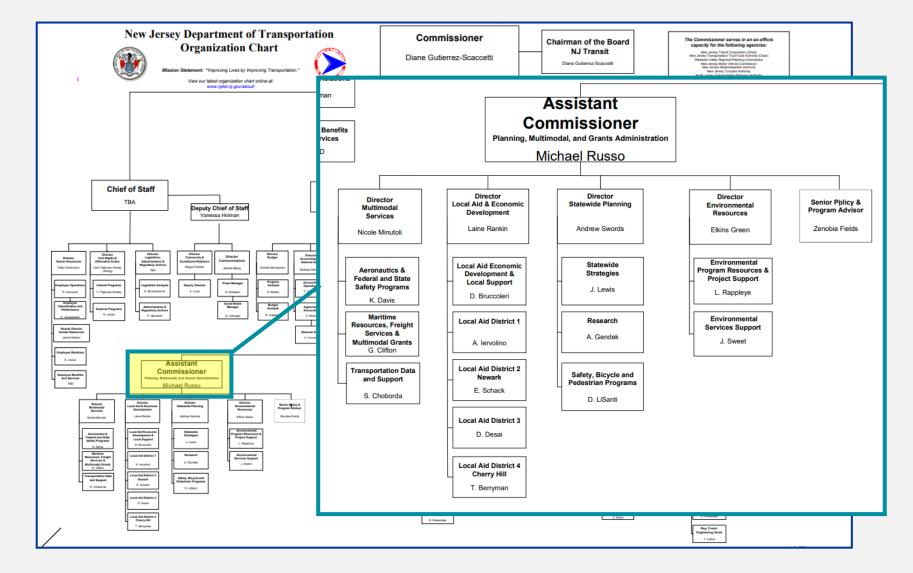
### Organization



### Planning, Multimodal and Grants Administration (PMGA)

- 1. Environmental Resources
- 2. Local Aid
  - > District Offices
  - > Major Access & Outdoor Advertising
  - > Economic Dev & Support
- 3. Data & Multimodal Services
  - Maritime, Freight & Multimodal Grants
  - > Aeronautics
  - > Transportation Data & Support

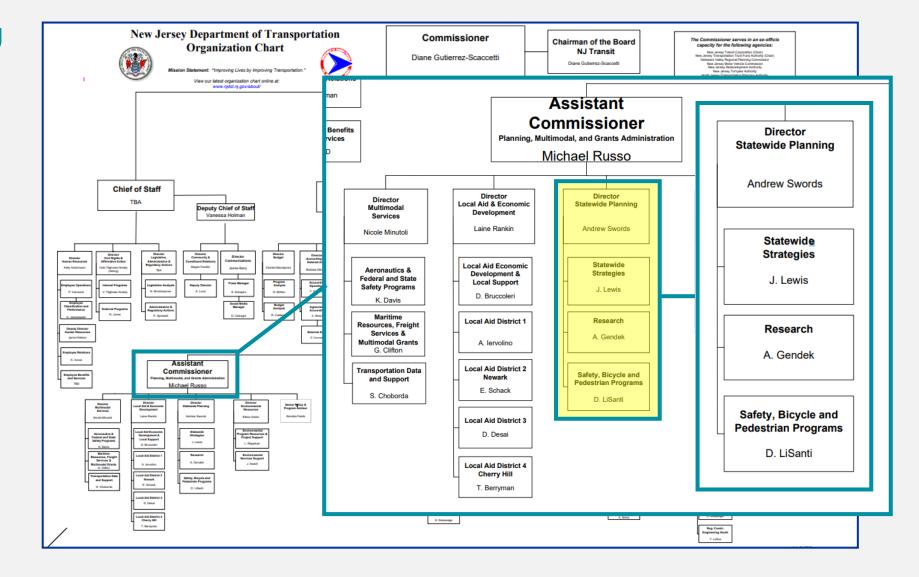
#### 4. Statewide Planning



### Planning, Multimodal and Grants Administration (PMGA)

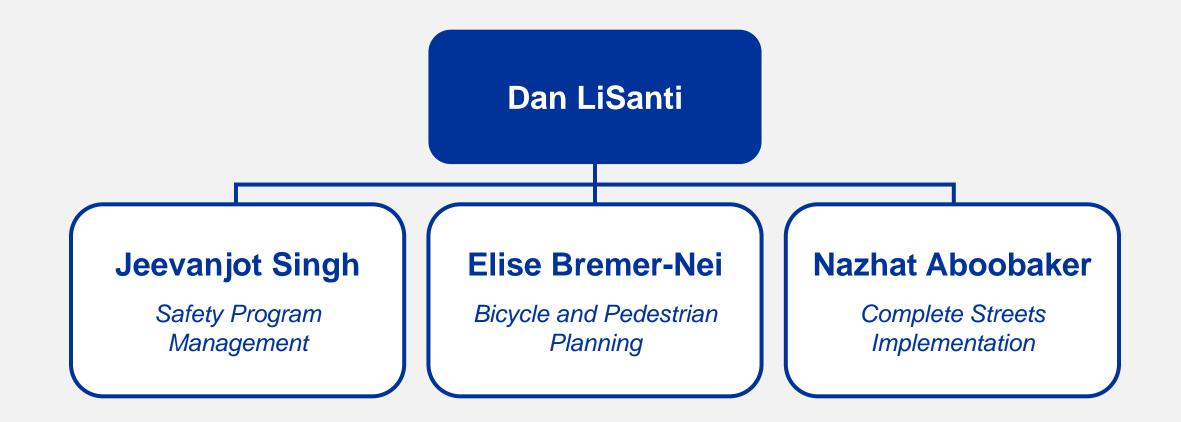
#### 4. Statewide Planning

- > Bureau of Research
- > Statewide Strategies
- Bureau of Safety, Bicycle & Pedestrian Programs



### Bureau of Safety, Bicycle & Pedestrian Programs (BSBPP)





#### Bureau of Safety, Bicycle & Pedestrian Programs (BSBPP)



- I. Administer federal HSIP funds
- 2. Maintain Complete Streets Initiative
- 3. Encourage Complete Streets Policies
- Develop, administer, implement and manage the state's Strategic Highway Safety Plan (SHSP).
- 5. Implement the action plans and coordinate
- 6. Encourage appropriate inclusion of safety improvements
- 7. Develop and maintain the Safety Management System Screening Lists

- 8. Collaborate with the MPOs, review and approve Local Safety projects, administer the Local Safety Program
- 9. Oversee Safety Resource Center, Bike Ped Resource Center, Safe Routes to School Resource Center, HSIP Project Development and Support and CMAQ consultants.
- 10. Complete Systemic Analyses Horizontal Curve Safety Assessment, School Zones, Intersections
- 11. Complete federal reporting requirements
- 12. Coordinate with internal and external partners through meetings, workshops, conferences

# We do a lot!

#### **Overall Program – 2023**



#### **Capital Program (\$4.4B)**

- > NJDOT \$2.9B
- > NJ Transit \$1.5B

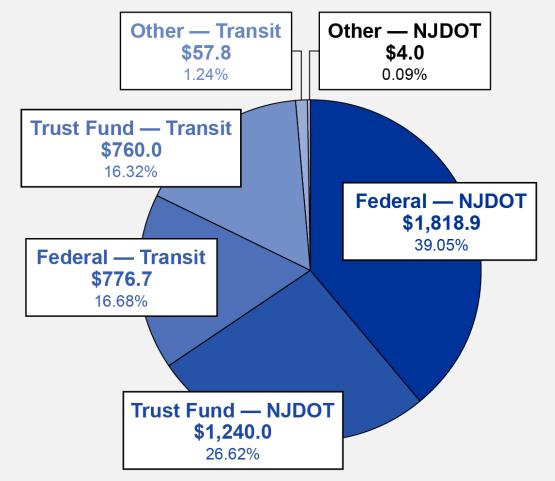
#### **State Funds**

- > \$810M NJDOT
- > \$430M Local Aid
- > \$760M NJ TRANSIT

### Safety (\$143M)

> \$73M HSIP

#### Sources of Funds (\$ in Millions)





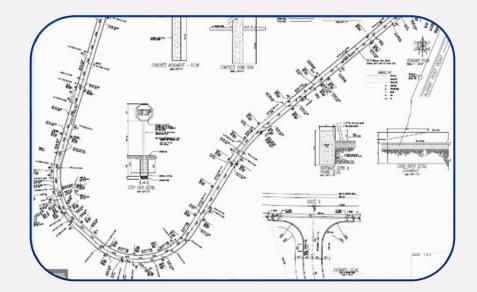
#### Active HSIP Projects in the Safety Portfolio

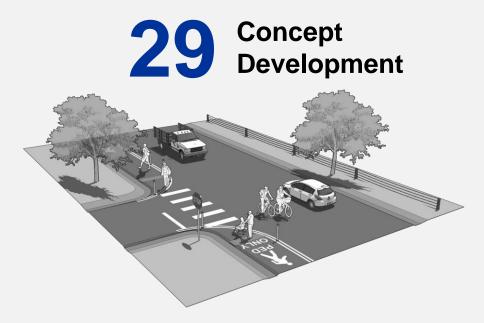






Design





101

Construction



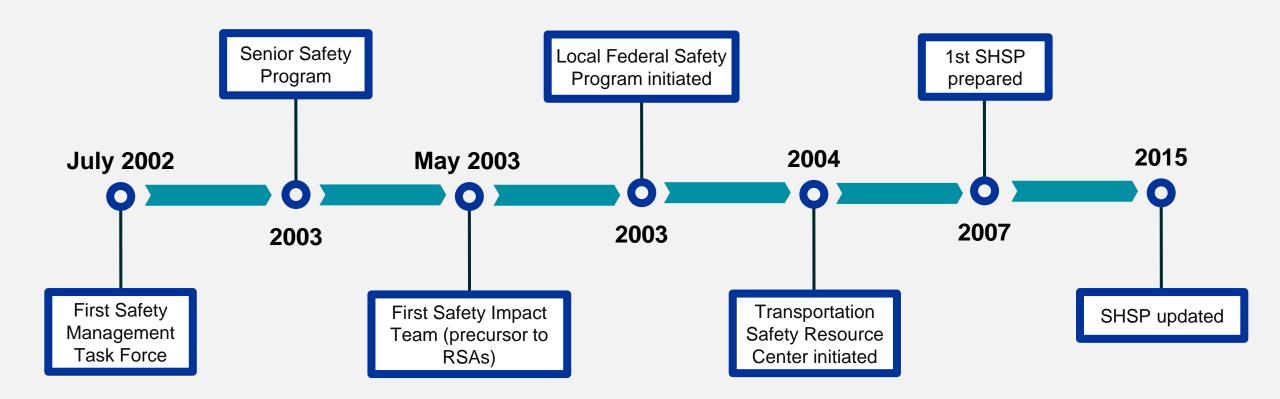


# **Evolution of Safety Programs**



#### Past – Bureau of Safety Programs

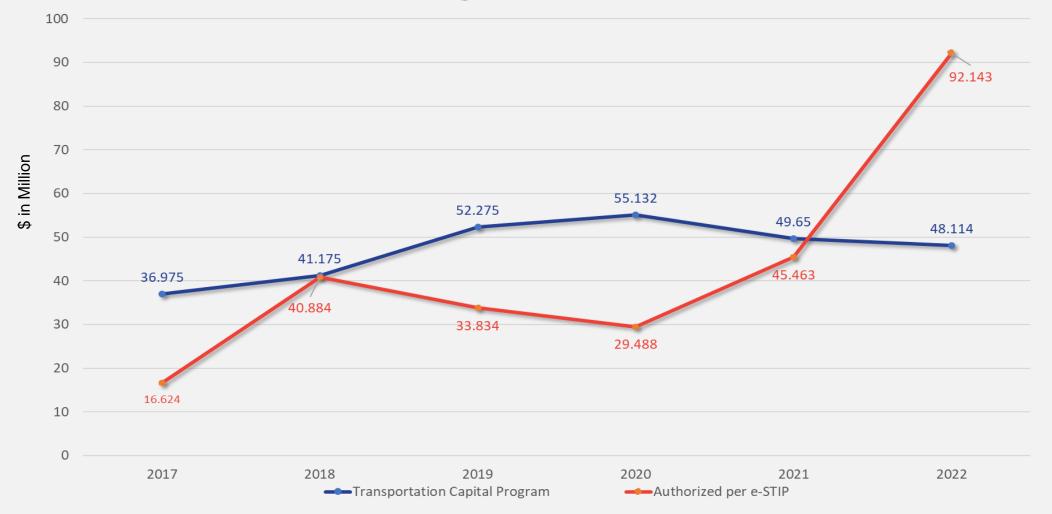




#### HSIP Program Programmed versus Authorized

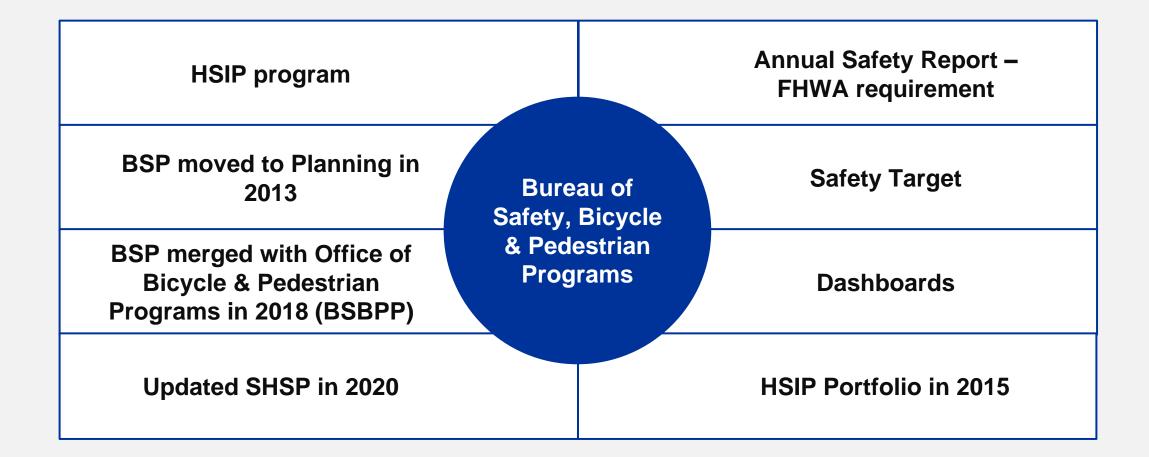


#### HSIP – Programmed vs Authorized



#### Present







#### FY 2022 HSIP Performance

PLANNING **Highway Safety** Improvement Program Planning Motor Vehicle Crash Records Processing Rail-Highway Grade Crosssing Program (salaries)

LOCAL AID

STATE

Safety Programs

Individual Projects Clearzone Program

ITS

Local Safety/High Risk Rural Roads Program Individual Projects

Rail-Highway Grade Crossing



**Compliance Goal: \$58 Million** 

\*Reference: Table 7, HSIP Implementation Plan





TOTAL

\$90 M

\$80 M

\$70 M

\$60 M

\$50 M

\$40 M

\$30 M

\$20 M

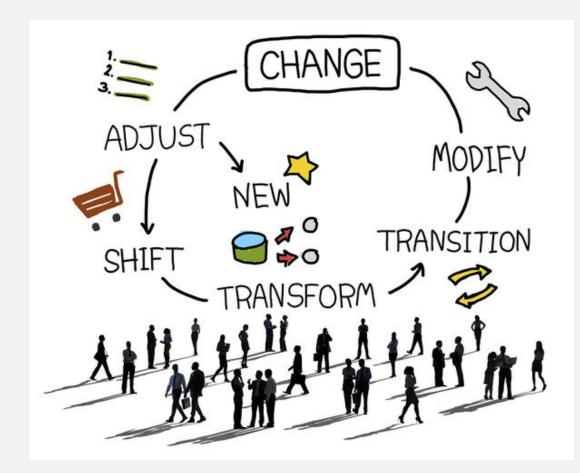
\$10 M

\$0 M

#### 45

#### **Continued Evolution**

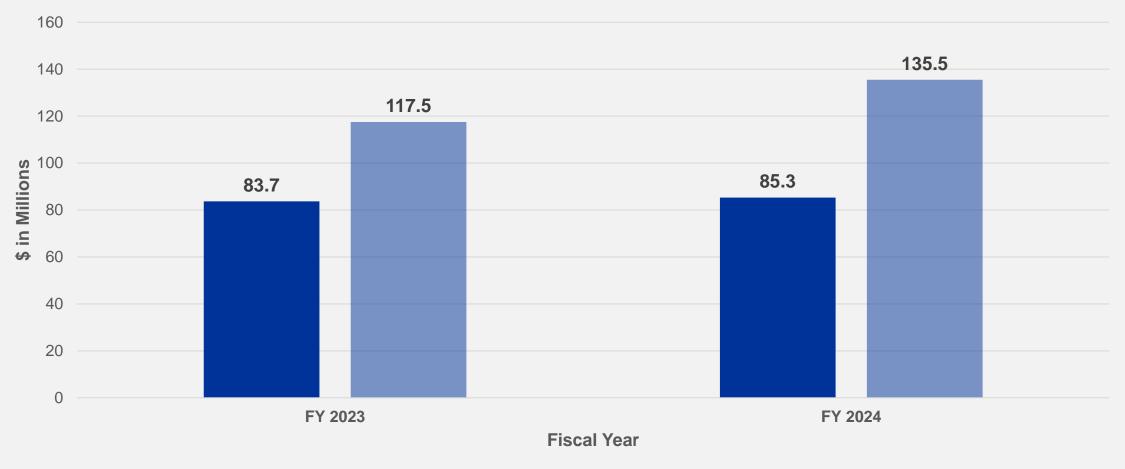
- Started with in-house design and maintenance projects
- Created network screening, identify locations
- > Hot-spot projects, intersection improvement, corridor improvement projects
- > Systematic projects
- > Systemic projects
- > Safe Systems Approach
- > Diversify the HSIP Portfolio
- > Get on the technology bandwagon





#### HSIP Program Programmed versus Planned





Programmed Planned







- Safe Transportation for Every Pedestrian (STEP)
  - Pedestrian Crossing Countermeasures at Uncontrolled Locations
  - Systematic Midblock Crosswalk Improvement projects

- > Data Driven Safety Analysis
  - Substantive Safety Local Safety Peer Exchanges: Central (2017), South (2018) and North (2019)
- > NJDOT Reducing Rural Roadway Departures Training
  - FHWA Resource Center / NJDOT Virtual training (March 2021)





# **4A** Reactive to Proactive

Safety Concern Identification



#### **Systemic**

- > Horizontal Curve Safety Assessment
- > Wrong Way Driving
- > Forthcoming Safety Assessments:
  - > School Zones
  - > Intersections







#### **Systematic**

- > Vegetation Safety Management
- > Midblock Crosswalk Improvements









# **Process Improvement**



Safety Project Delivery





#### Limited Scope Process (Project Initiation)

- Limited Scope CD Checklist
  - > Develop CD Checklists
    - Horizontal Curve Sign Program
    - High Friction Surface Treatment (both are available on the CPD website, use pictures)

		Department of T roject Delivery Proce		$\bigcirc$
Problem Screening Planning Funds Review Problem Statement	Concept Development Planning Funds Conduct Data Collection	Preliminary Engineering reliminary Engineering uthorization	Final Design Final Design Authorization ROW/Utility Authorizations Manage Project Communications	Construction Construction Authorization Advertise for Bids
Subject Matter Expert Review Check NJDOT Management System Prioritize Problem Statements Conduct Field Investigation Validate Problem Recommend Preliminary Project Scope CPC Approval and Assignment	Evaluate Deficiencies and Identify Fatal Flaws Evaluate Planning Alternatives Coordinate with Stakeholders Complete Environmental Screening Assess Right of Way (ROW) and Access Impacts Determine Preliminary Preferred Alternative (PPA) Identify Substandard Design Elements Determine Environmental Document Prepare Construction Cost Estimate Select Designer	anduct Environmental Analysis for PA itiate Roadway Engineering itiate Structural Engineering itiate ROW and Access itiate Utility Engineering repare Final Design and onstruction Cost Estimates anage Project Centracts	Complete Roadway Engineering Complete Structural Engineering Complete ROW and Access Complete Utility Engineering Complete Environmental Process Prepare Final Design Submission Certify Construction Contract Documents Manage Project Contracts	Award Project Conduct Construction Startup Conduct Mobilization Manage Construction Changes Conduct Construction Operations Complete Construction Closeout Project
Stoppod Average Average Averag	Execute Public Involvement Action Plan Design Communications Report Concept Development Report Purpose and Need Statement Preliminary Preferred Alternative Environmental Document Classification Preliminary Engineering Scope Statement	kecute Public Involvement Action ian esign Communications Report reliminary Engineering Report Approved Enviroamental Document Approved Design Exception Report Cost Estimates (Final Design & Construction) Approved Project Plan Final Design Scope Statement Division of Project Management	Execute Public Involvement Action Plan Design Communications Report Environmental Reevaluations and Permits Access Permits Acquisition of ROW Construction Contract Documents Supporting Agreements Division of Project Management	Keep Public Informed Maintain Community Support Design Communications Report Completed Project As-Builts Closeout Documentation Division of Project Management and Division of Construction Services and Materials or Operations

# **Capital Project Delivery Process** (Network Diagram - Activities)

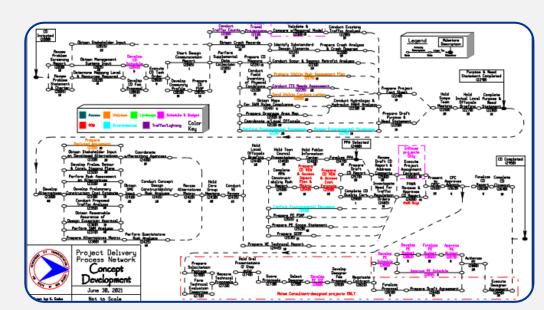
> Added HSM and Complete Streets activities to the CPD Network Diagram and WBS

> CD

- > HSM Analysis
  - > Develop HSM Analysis
  - > Review HSM Analysis
  - > Approve HSM Analysis
- > Complete Streets Checklists

> PE

Complete Streets Checklists







### **Engagement (Project Development)**



- > Project development
- > Consultant Selection Teams



# **Post Deployment Evaluation (Project Evaluation)**



- > Developing a comprehensive process for post construction evaluation
  - > Center Line Rumble Strips
  - > HFST
  - > Road Diets



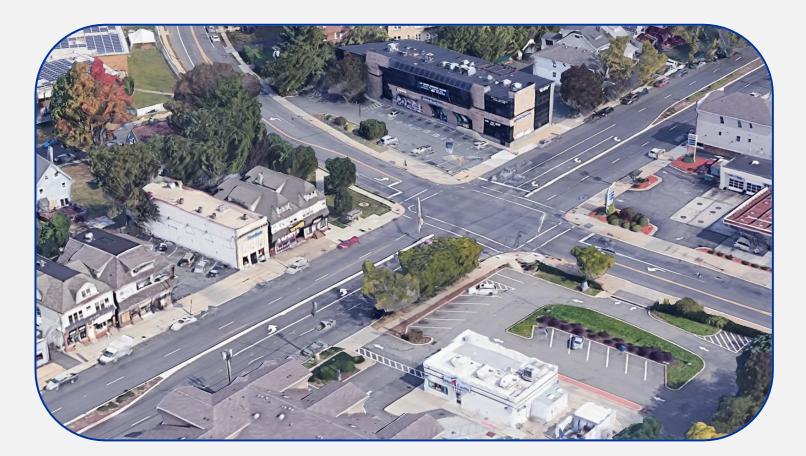






### **Split Funding**

- > HSIP monies
- Route NJ 439, Route NJ 28 (Westfield Avenue) to Route NJ 27 (Newark Avenue) -\$0.85 million out of \$5.7 million









- > Job Order Contracting
  - > Safety Project Delivery
    - > Horizonal Curve Safety
    - > Vegetation Safety Management







#### **Stakeholders**





Maintenance

Technology

Communications

### **Diversify project types**





#### Maintenance

> Vegetation Safety Management

### Technology

- > Wrong Way Driving Warning Systems
- > Pedestrian Detection Systems
- > Lead Pedestrian Intervals



- **Communications/Special projects** 
  - > PSAs/Public Outreach





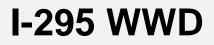




#### Wrong Way Driving Systems



#### I-80 WWD







#### **Pedestrian Detection Systems**



- > Passive pedestrian detection
- > Active pedestrian detection



Rt 129 & Lalor Street

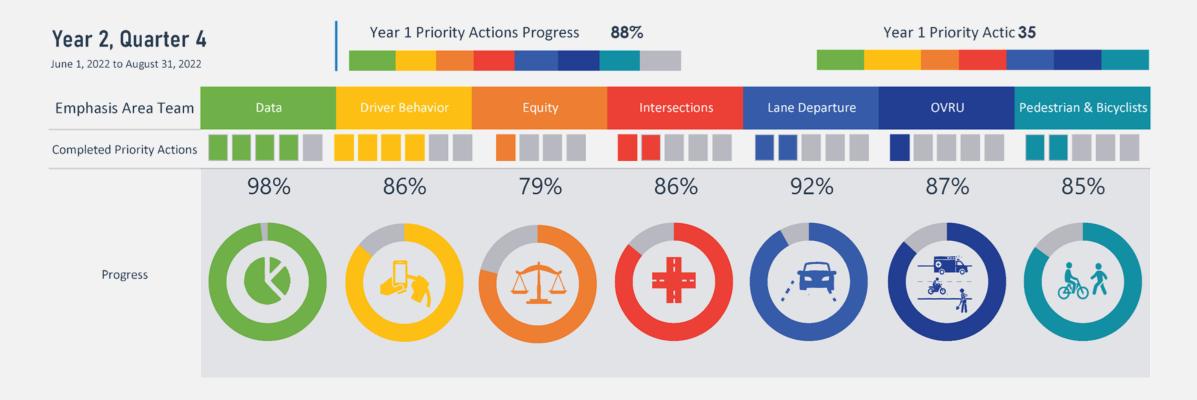




#### Implementation



#### > Emphasis Areas, Deliverables and Engagement



# 4G Safety Resource Center









#### **One-stop centralized clearinghouse** for transportation safety in New Jersey

Supports 'Towards Zero Deaths' and an aspirational goal of Zero Deaths by 2050

Disseminates information & connects parties to industry resources Serves as gateway to multimodal safety programs, funding guidance, reports Supports Implementation of SHSP and supports administration of associated programs

Assists with reporting requirements

#### **SRC** Elements





#### Brand

Promise, purpose, values, mission, vision, image, experience, impression





#### Website

Primary gateway to everything safety



#### Training Program

Comprehensive curriculum & learning center



Social Media Connecting with people



#### **Meetings & Events**

Instruments to facilitate knowledge sharing and NJDOT's vision for safety









## NJDOT Innovative Approach to Safety

Dan LiSanti, Manager (609-963-1879) Jeevanjot Singh, Section Chief (609-963-1096)



**September 19, 2022** 



## **REMINDERS & ANNOUNCEMENTS**

NJDOT Tech Transfer Website www.njdottechtransfer.net

NJ STIC Website www.njdottechtransfer.net/nj-stic/

STIC meeting recordings, presentations, and summaries <a href="https://www.njdottechtransfer.net/nj-stic-meetings/">https://www.njdottechtransfer.net/nj-stic-meetings/</a>



# New Jersey STIC Innovative Initiatives Survey

Responses due September 30<sup>th</sup>!

https://rutgers.ca1.qualtrics.com/jfe/form/SV\_51DllrFHtpoYI50

# 2022 Build A Better Mousetrap Winner







## Sawcut Vertical Curb

https://cait.rutgers.edu/mousetrap/





### AASHTO INNOVATION INITIATIVE (A.I.I.)

- Annual nationwide
   competition
- Advancements in transportation technology
- Funding for acceleration of adoption

For more information, go to: aii.transportation.org



FHWA-22-CAI-030
September/October 2022 | V16 | Issue 92

# INNOVATOR

U.S. Department of Transportation Federal Highway Administration

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#### **Leaning Into Innovation**

The national State Transportation Innovation Council (STIC) meeting held in June highlighted New Jersey's success at accelerating innovation through communication and collaboration, and it featured the results of a U.S. Domestic Scan Program study on how agencies are organizing to adapt to evolving technologies.

Amy Lucero, Associate Administrator for FHWA's Office of Transportation Workforce Development and Technology Deployment, told participants during the meeting's webcast to keep sharing ideas, keep trying new things, and keep encouraging staff to think outside of the box.

"This is how we become better and how our transportation system becomes better," said Lucero. "The STIC Network is a great way to stay engaged and to learn from each other, and I think we've seen tremendous benefit from that over the last 10 to 12 years."



New Jersey STIC Communications Plan Brandee Chapman, Innovation Coordinator for the New Jersey Department of Transportation (NJDOT), described three efforts-the New Jersey STIC Communications Plan, an innovation

deployment workshop, and the agency's drone program—that have helped further the agency's culture of innovation and improve the way they do business.

The New Jersey STIC Communications Plan was developed as a guide to encourage the exchange of ideas and promote innovation among STIC members and the broader New Jersey transportation community.

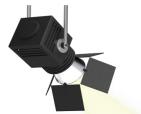
"The most effective communication methods will vary based on audience, which is where this plan comes in," said Chapman. "It identifies a range of communication tools that raise awareness of the STIC and Every Day Counts program, highlight success stories and challenges relating to implementing innovations, and convey the progress that New Jersey is making on all of those fronts."

Chapman said some of the most successful tools are their highly attended tech talks and webinars, which cover current practices and emerging issues in transportation.

#### Accelerating Innovation through Teamwork

NJDOT piloted a "Let's Go: Accelerating Innovation through Teamwork" workshop aimed at guiding a team in the creation of an action plan to accelerate innovation deployment. The participants focused on succession planning and three-dimensional (3D) project delivery, which aligns with EDC e-Ticketing and digital as-builts.

The workshop resulted in NJDOT's succession planning team exploring the reestablishment of a department-wide mentoring program, and it also helped the agency's 3D delivery team focus its vision and begin planning a pilot. "We found that the Let's Go workshop was a





#### NATIONAL SPOTLIGHT ON NJ STIC!

Read **September/October V16 Issue 92** at: <a href="https://www.fhwa.dot.gov/innovation/innovator/issue92/">https://www.fhwa.dot.gov/innovation/innovator/issue92/</a>



# 2022 STATE INNOVATION FORUM San Diego, CA

Attendees:

12 State DOTs AASHTO TRB FHWA USDOT



# **2022 NJDOT SAFETY SUMMIT**



Tuesday, October 11 10:00am – 12:30pm VIRTUAL

Learn more at: Driving Toward Zero Deaths NJ (saferoadsforallnj.com)



# **STIC INCENTIVE PROGRAM**

NJDOT Tech Transfer Website https://www.njdottechtransfer.net/new-jersey-stic-requests/

> Selection Criteria Eligible Projects/Activities How to Apply List of Projects



# THANK YOU!

www.NJDOTtechtransfer.net/NJ-STIC (609)963-2242 – Bureau of Research