



## **Northeast Ohio Areawide Coordinating Agency**

### **INVEST Regional Safety Program Evaluation – Final Report**

April 29, 2015



# TABLE OF CONTENTS

Introduction.....	1
NOACA's Regional Safety Program.....	2
NOACA INVEST Project Objectives.....	3
INVEST Evaluation Methodology & Scoring.....	5
Recommendations & Identification of Improvements.....	7
Key Outcomes of Using INVEST.....	12
Recommendations to FHWA on Improving INVEST.....	15

# NOACA INVEST REGIONAL SAFETY PROGRAM EVALUATION – FINAL REPORT

## INTRODUCTION

The Northeast Ohio Areawide Coordinating Agency (NOACA) is the metropolitan planning organization (MPO) and designated areawide water quality management agency for the counties of Cuyahoga, Geauga, Lake, Lorain, and Medina in Ohio. In these capacities it:

- Works with other organizations to help address northeast Ohio's transportation, air quality, and water quality needs.
- Conducts metropolitan planning for various modes of transportation, including vehicles, freight, transit, bicycle, pedestrian, etc., while considering the transportation system's impact on the environment and land use.
- Prepares the region's long-range transportation plan and short range transportation improvement program, which is the region's capital budget for federally funded transportation projects.
- Conducts studies that address congestion, improve safety and strengthen community livability.

NOACA is directed by a 45-member Board of Directors, representing all five NOACA counties, plus transit agencies, the Northeast Ohio Regional Sewer District, the Cleveland-Cuyahoga County Port Authority, Ohio EPA, and the Ohio Department of Transportation (ODOT). The NOACA region is home to 2.1 million people and over 150 units of government. The region is anchored by several urban core cities with the largest being Cleveland.

NOACA was awarded an implementation grant as part of the Federal Highway Administration's (FHWA) Infrastructure Voluntary Evaluation Sustainability Tool (INVEST). The NOACA INVEST project was targeted at evaluating the sustainability of the Regional Safety Program for the Cleveland metropolitan region and:

- Used INVEST to evaluate the effectiveness of NOACA's Regional Safety Program
- Improved NOACA's safety data analysis and reporting

- Will be used to produce a Transportation Safety Action Plan to implement improvements and expand the sustainability of the NOACA Regional Safety Program
- Developed a case study that demonstrates to other MPOs and DOTs how INVEST can help agencies improve in the important sustainability area of safety.

The ultimate goal was to improve our region's sustainability by reducing fatal and serious injuries that negatively impact the social and economic principles through loss of life, injury and damages to personal and public property. The INVEST tool allowed NOACA to assess the sustainability of our current Regional Safety Program and incorporate sustainable strategies into the development of a Transportation Safety Action Plan (TSAP). The results will be used to refine our regional safety goals and objectives, evaluate and prioritize projects and establish safety performance measures and targets later this year.

## **NOACA'S REGIONAL SAFETY PROGRAM**

Transportation safety is a critical public health issue in the United States. Nationwide, crashes killed more than 32,000 people per year in 2011. Last year in Ohio, there were roughly 287,000 traffic crashes and 1,122 people were killed on the state's transportation system. The Cleveland Metropolitan region with a population of just over 2 million comprises almost 18 percent of the state's population. In 2012, with more than 46,000 crashes, the region accounted for more than 16 percent of all traffic crashes in Ohio and experienced 98 fatal crashes killing 103 people. This accounts for 9 percent of the fatalities in Ohio. Additionally, the region experienced 17,477 injury crashes accounting for more than 24 percent of all of the state's injury crashes. The annual cost to the region of these serious crashes is estimated at about \$1.5 billion<sup>1</sup>.

Since 2008, NOACA has been actively analyzing crashes in the region and conducting road safety audits at various intersections. The Cleveland metro region does not currently have an adopted goal or performance target related to transportation safety. To better focus efforts on reducing fatal and severe injury crashes in the Cleveland metro region, NOACA began revamping its Regional Safety Program (RSP) in the fall of 2013. The RSP became a stand alone work program emphasis area for the first time in the 2015 state fiscal year and began to focus on:

- MAP-21 safety performance measures.
- Developing systemic performance measures for identifying high severity crash arterials across the region.

---

<sup>1</sup> FHWA (1994) *Motor Vehicle Accident Costs – Technical Advisory*, T 7570.2, Federal Highway Administration, (<http://www.fhwa.dot.gov>), Course#15257, p. VI-28

- Using strategies, including those identified in the Highway Safety Manual, to evaluate arterial safety counter measures, such as medians, speed management, access management, roundabouts, and road diets.
- Safety strategies that match solutions to the crash pattern and street and neighborhood context, rather than an approach of simply bringing roadways up to adopted standards.
- Convene a targeted workgroup of safety professionals (law enforcement, EMS, etc.) to develop targeted strategies to reduce the prevalence of common crash behaviors like driving under the influence of alcohol and/or drugs, speeding and aggressive driving.
- Continue data collection and analysis of ODOT crash data to support regional and local planning efforts.
- Integrate all of the 5 E's (Education, Enforcement, Evaluation, Engineering and Encouragement) of safety into regional and local plans and projects.

To assist with the changes to the RSP, NOACA applied for an INVEST grant.

## **NOACA INVEST PROJECT OBJECTIVES**

Sustainability is a key component of NOACA's Regional Vision:

*"NOACA will STRENGTHEN regional cohesion, PRESERVE existing infrastructure, and BUILD a sustainable multimodal transportation system to SUPPORT economic development and ENHANCE quality of life in Northeast Ohio."*

The Regional Safety Program (RSP) directly implements the Vision by improving quality of life and contributing to a more sustainable multimodal transportation system for residents of Northeast Ohio. At the center of the RSP is the analysis of regional crash data and creating a framework for targeted actions to reduce fatal and serious injury crashes for all users of the region's transportation system.

To help support the development of the analysis of the regional crash data and overhaul the RSP, NOACA applied and was awarded funding from both the Ohio Department of Transportation (ODOT) and the FHWA as part of INVEST. The INVEST Tool was used to evaluate the Regional Safety Program and identify areas for improvement. The grant was awarded under the Operations and Maintenance module focusing on safety management in the amount of \$17,000. NOACA requested technical assistance from ODOT's Highway Safety Program Office in Columbus. ODOT awarded NOACA \$10,000 in funding to assist with the technical analysis of the regional crash data. The detailed scope of work for the NOACA INVEST project is in Appendix 1.

NOACA proposed to take a different approach to regional crash analysis and create a State of Safety in the Cleveland Metropolitan Region Data Report. This replaced the

NOACA Crash Report that was produced every 2-3 years. The most recent NOACA crash report was produced in December 2011 and focused at a very high level on general crash characteristics for the NOACA region. The new data report greatly expands the analysis of crashes in the NOACA region and will be used to develop findings and targeted recommendations/strategies to reduce fatal and serious injury crashes.

The NOACA project used funding from INVEST and ODOT to:

- Use INVEST Tool to evaluate the effectiveness of NOACA's Regional Safety Program
- Improve NOACA's safety data analysis and reporting
- Produce a Transportation Safety Action Plan (TSAP) to implement improvements and expand the sustainability of NOACA's Regional Safety Program

The improved safety data analysis and reporting will serve as the foundation for the TSAP that will be developed by July 2015. The goal was to create a data analysis template that can be easily replicated annually to monitor the sustainability, performance, and implementation of the RSP. It could also serve as the template for other MPOs to replicate in advancement of the MAP-21 safety performance planning.

The goal of the TSAP is to use a data-driven framework to provide targeted recommendations for strategies to reduce fatal and severe injury crashes. This work will be done in conjunction with ODOT's update of the statewide Strategic Highway Safety Plan (SHSP). The TSAP will serve as the regional version of the Ohio SHSP and will reflect the goals, measures and targets that have been adopted by ODOT. The TSAP will be produced using the recently formed Regional Safety & Operations Council, a technical advisory council to the NOACA Board and Committees.

The financial resources provided by both FHWA and ODOT were used to hire a consultant to assist with three tasks:

- *Task 1 – State of Safety in the Cleveland Metropolitan Region* – An analysis of crashes, traffic, and roadway data provided by NOACA to summarize regional crash trends. The detailed analysis can be found in Appendix 3.
- *Task 2 – High Crash Corridors Analysis Tool* – An ArcGIS-based high crash corridors analysis tool was created that featured a customized dynamic sliding window analysis, performance measures calculation, and the ability to consider new data.
- *Task 3 - INVEST Assessment and Planning for Future Safety Needs* – A review of the NOACA staff evaluation using the INVEST tool.

NOACA selected Kittelson & Associates, Inc. (KAI) to assist in this effort on a \$35,000 contract from September 2014 – January 2015.

## INVEST EVALUATION METHODOLOGY & SCORING

FHWA released INVEST in 2012 as a self-assessment tool to help agencies integrate sustainability into transportation planning, programs, policies and projects. The tool consists of three modules: System Planning, Project Development and Operations and Maintenance. Agencies can use INVEST to self-assess on pre-set evaluation criteria ranging from high-level program and policy analysis to project-specific assessments.

NOACA's FHWA INVEST grant supported an evaluation of the Regional Safety Program using the following criteria selected by FHWA staff:

- System Planning Criteria
  - Safety Planning (SP-6);
  - Transportation Systems Management and Operations (SP-14)
  - Linking Asset Management and Planning (SP-15)
- Project Development Criteria
  - Highway and Traffic Safety (PD-4).
  - PD-10 Pedestrian Access
  - PD-11 Bicycle Access
  - PD-13 Freight Mobility
- Operations and Maintenance Criteria
  - Safety Management (OM-5)
  - Maintenance Management System (OM-9)
  - Highway Infrastructure Preservation and Maintenance (OM-10)
  - Traffic Control Infrastructure Maintenance (OM-11)
  - Transportation Management and Operations (OM-13)
  - Work Zone Traffic Control (OM-14)

NOACA staff completed a self-assessment using these criteria and a summary is included below in **Table 1**. The detailed INVEST self-assessment scoring worksheets can be found in Appendix 2.

<b>TABLE 1 - INVEST CRITERIA SUMMARY</b>				
<b>Number</b>	<b>INVEST Element</b>	<b>Points Available</b>	<b>Points Received</b>	<b>Percent of Available Points</b>
SP-06	Safety Planning	15	4	27%
SP-14	Transportation System Management and Operations (TSMO)	15	7	47%
SP-15	Linking Asset Management and Planning	15	4	27%
PD-04	Highway and Traffic Safety	10	3	30%
PD-10	Pedestrian Access	2	0	0%
PD-11	Bicycle Access	2	2	100%
PD-13	Freight Mobility	7	2	29%
OM-05	Safety Management	15	2	13%
OM-09	Maintenance Management System	15	0	0%
OM-10	Highway Infrastructure Preservation and Maintenance	15	1	7%
OM-11	Traffic Control Infrastructure Maintenance	15	0	0%
OM-13	Transportation Management and Operations	15	0	0%
OM-14	Work Zone Traffic Control	15	0	0%
<b>TOTAL</b>		<b>156</b>	<b>25</b>	<b>16%</b>

Overall, NOACA only achieved 16% of the available points under the thirteen INVEST criteria. The self-assessment identified that a number of criteria in both Project Development and Operations & Maintenance are not applicable to a MPO. As the region's regional planning organization, NOACA is not an owner/operator of transportation facilities. Constructing and maintaining facilities and adopting local ordinances are beyond the purview of the agency. NOACA works with member agencies to develop plans to implement infrastructure and/or ordinances.

**Table 2** reflects an updated self-assessment removing the criteria that are not applicable to the agency. NOACA was able to increase the score from 16% to 27% of the available points by eliminating the criteria found to not be applicable to a MPO.

<b>TABLE 2 - UPDATED INVEST CRITERIA SUMMARY</b>				
<b>Number</b>	<b>INVEST Element</b>	<b>Points Available</b>	<b>Points Received</b>	<b>Percent of Available Points</b>
SP-06	Safety Planning	15	4	27%
SP-14	Transportation System Management and Operations (TSMO)	15	7	47%
SP-15	Linking Asset Management and Planning	15	4	27%
PD-04	Highway and Traffic Safety	10	5	50%
PD-10	Pedestrian Access	2	0	0%
PD-11	Bicycle Access	2	2	100%
PD-13	Freight Mobility	7	2	29%
OM-05	Safety Management	15	2	13%
OM-10	Highway Infrastructure Preservation and Maintenance	15	0	0%
<b>TOTAL</b>		<b>96</b>	<b>26</b>	<b>27%</b>

The results of the updated self-assessment were used to identify improvements to the RSP and NOACA programs and policies.

## **RECOMMENDATIONS & IDENTIFICATION OF IMPROVEMENTS**

NOACA had KAI review the results of the INVEST self-assessment and identify potential modifications to make to the RSP for planning for future safety needs, based on current trends in safety performance evaluations and safety management approaches. The emphasis of the recommendations is on System Planning, SP-6, Safety Planning, as it contains the most criteria that were directly applicable to NOACA's RSP.

The following summarizes the self-assessment results for each of the three INVEST modules, highlights existing activities and identifies recommendations for improving the RSP. More details on the self-assessment recommendations can be found in Appendix 3.

System Planning

**Table 3 – System Planning Self-Assessment Criteria Results**

#	Criteria	NOACA Score	Points Possible
<b>Safety Planning (SP-6)</b>			
1	Collaboration and participation in the development and implementation of the state Strategic Highway Safety Plan (SHSP).	1	2
2	Integration of the "Toward Zero Death Vision" into the Agency's Vision for transportation planning.	0	1
3	Development of plan that incorporates safety into the short- and long-range transportation planning.	0	1
4	Integration of safety performance measures into the transportation planning process.	0	1
5	Integration of safety consideration in the selection and evaluation of strategies during the transportation planning process.	1	3
6	Integration of statistically sound approaches into the LRTP to determine projected safety performance.	0	3
7	Collection and maintenance of data for the public roadway system to incorporate safety into the LRTP process.	2	4
SP-6 Total		4	15
<b>Transportation Systems Management &amp; Operations (SP-14)</b>			
1	Set transportation system management and operations (TSMO) policies, goals, and objectives.	1	2
2	Develop a plan for TSMO strategies.	1	4
3	Support or implement TSMO strategies.	2	4
4	Establish performance goals and monitor progress.	3	5
SP-14 Total		7	15
<b>Linking Asset Management and Planning (SP-15)</b>			
1	Incorporate asset management based performance measures.	0	3
2	Incorporate asset management and economic analysis to prioritize investments.	0	8
3	Prioritize maintenance and preservation.	4	4
SP-15 Total		4	15
<b>SYSTEM PLANNING CRITERIA TOTAL</b>		<b>15</b>	<b>45</b>

Highlights of existing NOACA activities in the System Planning category include:

- Collaboration with ODOT on RSAs

- NOACA staff belief that reducing crashes is important as any crash could lead to a death
- GIS is used to help integrate safety into the LRTP process and document includes TSMO strategies
- TSMO policies are incorporated into NOACA's Congestion Management Process (CMP)
- TSMO strategies are given priority in the development of the Transportation Improvement Program (TIP)
- The CMP includes performance measures
- NOACA's asset management policy includes a defined regional pavement condition goal used in selecting and prioritizing projects for the regional TIP

The following are actions that NOACA is going to consider undertaking to improve regional safety planning related to the specific System Planning criteria:

1. Collaborate with ODOT and other agencies in developing the TSAP (SP-6 #1) – This includes integrating the ODOT SHSP goals into the regional TSAP and identifying areas of overlap.
2. Include a long-range vision with intermediate performance targets in the TSAP (SP-6 #2) – This includes incorporating a Toward Zero Deaths vision, which is a strategy to reduce fatal and serious injury crashes to the point there are no more fatalities on America's roads. ODOT has integrated this into the SHSP. An intermediate goal might be including percentage reductions in fatalities and serious injuries over the next five, ten and twenty years.
3. Utilize a collaborative multi-disciplinary approach to achieve the goals of the TSAP (SP-6 #2) – Partnering with organizations to help meet established performance targets can be achieved with NOACA as a regional convener.
4. Use a data driven process to identify strategies that have been proven to be effective at reducing fatal and severe injury crashes (SP-6 #3 and #5) – Deploy FHWA's *Proven Safety Countermeasures*, which are nine safety treatments focused on intersection, pedestrian and roadway departure crashes.
5. Develop quantifiable performance measures and targets, including examining feasibility of using a measure and analysis methods that account for regression-to-the-mean (SP-6 #3 and #4) – MAP-21 currently requires MPOs like NOACA to work with ODOT and FHWA to develop safety performance measure targets.
6. Incorporate quantitative safety analyses into the programming process (SP-6 #3) – This includes adding criteria to the TIP selection to account for the quantitative impact a project will have on crashes.
7. Incorporate the predictive method from Part C of the *Highway Safety Manual* in long-range planning studies (SP-6 #6) – Although this criterion refers to regional analysis, there is not currently a proven macro-level crash prediction of future safety performance. Instead, the focus would be for future corridor studies to deploy the predictive method from the HSM.

8. Consider opportunities to improve data quality, availability and compatibility across datasets (SP-6 #7)
9. Join crash data to other datasets to conduct analyses (SP-6 #7)
10. Identifying opportunities for coordination between the CMP and the forthcoming TSAP (SP-14).
11. Incorporating quantitative safety analysis into the CMP (SP-14).
12. Include the cost of crashes in life-cycle costs analysis or benefit-cost analysis (SP-15 #2)

Project Development

**Table 4 – Project Development Self-Assessment Criteria Results**

#	Criteria	NOACA Score	Points Possible
<b>Highway and Traffic Safety (PD-4)</b>			
1	Incorporate human factors considerations.	2	2
2	Build awareness among the public regarding contributing factors to crashes.	0	1
3	Explicit consideration of safety using quantitative scientifically proven methods.	3	6
PD-4 Total		5	9
<b>Pedestrian Access (PD-10)</b>			
1	Implement new (or improve existing features) for existing pedestrian facilities that address safety, comfort and connectivity -OR-	0	1
	Implement features in the design and construction of new pedestrian facilities that address safety, comfort, connectivity and aesthetics and environment.	0	2
PD-10 Total		0	2
<b>Bicycle Access (PD-11)</b>			
1	Implement new (or improve existing features) for existing bicycle facilities that address safety, comfort and connectivity -OR-	0	1
	Implement features in the design and construction of new bicycle facilities that address safety, comfort, connectivity and aesthetics and environment.	2	2
PD-11 Total		2	2
<b>Freight Mobility (PD-13)</b>			
1	Implement one or more of the features listed in the criterion.	2	7
<b>PROJECT DEVELOPMENT CRITERIA TOTAL</b>		<b>9</b>	<b>20</b>

Highlights of existing NOACA activities in the Project Development category include:

- NOACA staff conduct RSAs and consider human factors in assessments and countermeasure selection
- NOACA has a current regional bicycle plan and assists member agencies with bicycle planning and project development
- NOACA provides funds to projects that enhance freight mobility and safety

The following are actions that NOACA is going to consider undertaking to improve regional safety planning related to the specific Project Development criteria:

1. Engage in outreach campaigns to promote traffic safety (PD-4 #2)
2. Incorporate quantitative safety analysis methods into the planning process (PD-4 #3)
3. Establish a systematic pedestrian infrastructure program (PD-10)
4. Consider having a specific focus on commercial/freight vehicles in the TSAP (PD-13) – Commercial vehicles are an emphasis area of ODOT’s SHSP and NOACA should work to incorporate this into the regional planning process.

Operations and Maintenance

**Table 5 – Operations and Maintenance Self-Assessment Criteria Results**

#	Criteria	NOACA Score	Points Possible
<b>Safety Management (OM-5)</b>			
1-3	Assess current safety performance	2	4
4	Set goals and targets	0	3
5	Develop a plan	0	2
6	Implement the plan	0	3
7	Measure progress and monitor performance	0	3
OM-5 Total		2	15
<b>Highway Infrastructure Preservation and Maintenance (OM-10)</b>			
1	Develop a road maintenance plan	1	4
2	Establish metrics and measure performance	0	4
3	Set goals and monitor progress	0	3
4	Maintenance quality assurance	0	4
OM-10 Total		1	15
<b>OPERATIONS AND MAINTENANCE CRITERIA TOTAL</b>		<b>3</b>	<b>30</b>

Highlights of existing NOACA activities in the Operations and Maintenance category include:

- NOACA has regularly published a report of regional crash trends

- NOACA has an asset management policy that includes a defined pavement condition goal for the region that is used in selecting and prioritizing projects for the TIP

The following are actions that NOACA is going to consider undertaking to improve regional safety planning related to the specific Operations and Maintenance criteria:

1. Develop performance measures and targets for emphasis areas defined in the TSAP (OM-5 #1 and #2)
2. Prepare a TSAP that is collaborative and includes systematic and proven strategies (OM-5 #3)
3. Include and implementation plan as part of the TSAP (OM-5 #4)
4. Include the fifth “E,” evaluation (OM-5 #5)

## KEY OUTCOMES OF USING INVEST

There is substantial room for NOACA to better incorporate sustainability principles to the Regional Safety Program and into the general regional planning process. This section summarizes those opportunities and outlines the next steps for each.

By combining the INVEST self-assessment and the recommendations produced by the consultant, NOACA has outlined actions it will be undertaking over the next year to better incorporate sustainability and improve the Regional Safety Program. Next steps fall into the categories of collaboration, data-driven processes and implementation.

**Collaboration** – across disciplines, jurisdictions, and planning documents and processes

- A) *Safety & Operations Council (SOC)* – NOACA recently established the SOC to bring together the E’s of safety into one group (engineering, enforcement, education, emergency response and evaluation) and provide a forum to discuss overlapping issues of safety and operations. The SOC consists of a cross-section of multiple disciplines: local agency planning and engineering staff, law enforcement and emergency responders, ODOT, FHWA, GCRTA, Ohio Traffic Safety Office and community members. The SOC will identify and prioritize safety and operations strategies to seek funding and advise NOACA staff on transportation system management (TSMO) and operations and safety initiatives. The purpose of the SOC will be to assist NOACA staff with:

- Providing ongoing safety data analysis
- Developing a high crash corridors program for more targeted systemic safety improvements
- Establishing and monitoring safety performance measures and targets
- Developing projects and initiatives that target reductions in fatal and serious injury crashes

- Coordinating and supporting safety grant applications to the ODOT District Safety Review Team process and other safety funding sources
  - Continuing the Road Safety Assessment program
  - Providing ongoing local safety and operations technical assistance to local member agencies
- B) *Development of Transportation Safety Action Plan (TSAP)* – The goal of the TSAP is to use a data-driven framework to provide targeted recommendations for strategies to reduce fatal and severe injury crashes. The work is currently underway and will be completed and approved by the NOACA Board by the end of 2016. The TSAP will:
- a. Be produced by the SOC and will be a collaborative project.
  - b. Incorporate the *Toward Zero Deaths* framework consistent with ODOT's SHSP.
  - c. Include a specific focus on commercial/freight vehicles consistent with ODOT's SHSP.
- C) *Coordination of Congestion Management Process (CMP) and TSAP* – The current NOACA CMP recognizes that crashes are a significant source of congestion. However, it lacks specific objectives to help leverage funds and staff time to manage congestion and reduce crashes. The TSAP will recommend modifications to the CMP to try and address these issues.
- D) *Promoting traffic safety* – The TSAP presents a good opportunity to coordinate and promote traffic safety across the region. Efforts to raise awareness of safe driving habits and traffic safety issues are critical to reducing fatal and serious injury crashes as human factors play a role in 90 percent of crashes.

**Data-driven Processes** – identifying emphasis areas, selecting proven countermeasures, and developing quantitative performance measures

- A) *Safety performance measures and targets* – MAP-21 requires MPOs to set targets for safety performance measures. NOACA will be evaluating the current proposed measures and targets and whether to go beyond the minimum measures and targets as part of the TSAP. Targets for specific sub-groups like bicyclists, pedestrians, and other emphasis areas will be explored.
- B) *Use data-driven process to identify strategies to reduce fatal and serious injury crashes* – Develop a targeted set of safety strategies and countermeasures and create an evaluation framework to guide the regional planning process. Incorporate quantitative safety analyses into the regional planning process, including TIP development and corridor/project-level planning process.

- C) *Deploy new crash analysis tool* – KAI developed a High Crash Corridors Tool analysis tool for NOACA. The tool is a GIS-based crash analysis program that efficiently identifies locations (i.e. corridors, segments, sub-areas) that may potentially benefit from safety-focused projects or countermeasures. The tool can also be used to identify locations for further detailed study. It can dynamically analyze road segments and crash data in the Cleveland metropolitan region. The detailed User Guide can be found in Appendix 4.

**Implementation** – assigning responsibilities, timeframes, and evaluation metrics and processes

- A) *TSAP will include implementation plan* – Development of the TSAP is only the first step in improving regional safety. It will need to include a defined implementation plan, including timeframes and responsibilities for identified actions.
- B) *Incorporate evaluation in to the Regional Safety Program* – The Regional Safety Program will begin to include annual reviews of the effectiveness of the TSAP with respect to the established safety performance measures. A preliminary State of Safety in the Cleveland Metropolitan region was put together as part of the INVEST grant and is included in Appendix 5.
- C) *Develop a pedestrian infrastructure program* – MPOs do not construct infrastructure. However, planning agencies can assist local jurisdictions with planning and project development. NOACA’s current Bicycle Program has been successful in this regard. NOACA will be expanding this program to include Active Transportation and improve efforts for pedestrians, bicyclists, wheelchair and small-wheeled transport and how these modes access transit.

By completing these actions, NOACA’s INVEST self-assessment score will increase from 27 percent to 71 percent as shown in **Table 6**.

**TABLE 6 – INCORPORATING THE RECOMMENDATIONS UPDATED INVEST CRITERIA SUMMARY**

Number	INVEST Element	Points Available	Points Received	Percent of Available Points
SP-06	Safety Planning	15	13	87%
SP-14	Transportation System Management and Operations (TSMO)	15	11	73%
SP-15	Linking Asset Management and Planning	15	11	73%
PD-04	Highway and Traffic Safety	10	7	70%
PD-10	Pedestrian Access	2	2	100%
PD-11	Bicycle Access	2	2	100%
PD-13	Freight Mobility	7	5	71%
OM-05	Safety Management	15	13	87%
OM-10	Highway Infrastructure Preservation and Maintenance	15	4	27%
<b>TOTAL</b>		<b>96</b>	<b>68</b>	<b>71%</b>

Many of the recommendations from the INVEST self-assessment are underway and will be completed by the end of 2016. NOACA has incorporated them as part of their Overall Work Program for fiscal year 2016 (July 1, 2015 – June 30, 2016).

### **RECOMMENDATIONS TO FHWA ON IMPROVING INVEST**

The INVEST self-assessment provided NOACA with great insight into its Regional Safety Program and other regional planning programs. The System Planning module works very well with the evaluating the traditional work program and products of MPOs. However, the criteria for both the Project Development and Operations and Maintenance modules were generally not applicable to tasks that an MPO would generally perform and did not recognize the statewide frameworks in which an MPO would not be required to perform a particular function.

For many criteria, the INVEST tool does not recognize the differences between statewide and regional approaches. It is included in OM-5: Safety Management, but this greater flexibility should be expanded to other criteria. There are largely three primary audiences for the INVEST tool: state DOTs, MPOs and local agencies. The tool might be organized to recognize the different functions and institutional frameworks of these three different agencies. The System Planning module is the most applicable to MPOs and should have specific modifications to the criteria to recognize the differences.