# Iterative Project Report for Programs & Multi-Year Phased Projects

Submitted to Project Oversight on 11/25/2024

## GENERAL INFORMATION

**Program/Project Name:** Traffic Monitoring Program (TMP)

**Agency Name:** Department of Transportation

**Project Sponsor:** Scott Zainhofsky

**Project Manager:** Leila Thompson

## PROGRAM DESCRIPTION

The Traffic Monitoring Program is a multi-year initiative focused on transforming business processes, core technology applications, employee safety, and customer services related to providing traffic data.  This will be accomplished through a multi-stage "roadmap" considering the following elements:

- Replacing aging data software

- Developing a Traffic Monitoring Strategic Plan (TMSP), considering:

  o first & foremost, the needs of our customers, including:

    ▪ North Dakota Department of Transportation (NDDOT) Design Division

    ▪ NDDOT Materials and Research Division

    ▪ NDDOT Programming Division, Traffic Operations Section

    ▪ external customers' needs have been determined to be narrower than the above internal-customer needs

  o the safety devices and procedures we provide our team members

  o the data-collection equipment we use (both permanent and portable)

  o the vehicles we drive to deploy the equipment

  o alternate data sources

  o where and how we gather the data

  o data quality control and assurance procedures

  o among others

- Procuring and integrating multi-modal probe data

- Initial implementation of the Traffic Monitoring Strategic Plan, within the Program budget constraints.

This Program was established in January 2023 to more efficiently and effectively manage the multiple traffic data related projects appropriated for the 2021-23 biennium.  Due to its extreme age, the funding needed to replace the current Traffic Data Editing and Analysis (TDEA) software is highly uncertain.  Additionally, effectively managing a network of permanent field sensors and short-term portable count locations, both geographically disbursed across all of North Dakota, requires a perpetual program of investments and optimization decisions that will never be "completed."  Additionally, NDDOT has a long-standing history of recurring funding that may be used for this ongoing program management.  Therefore, combining the special appropriations for the traffic data related projects in the current biennium allows the Executive Steering Committee (ESC) to maximize the benefits and minimize the costs in establishing a world class traffic monitoring program for the citizens of North Dakota.

The Program projects are as follows:

- Traffic Data and Editing Analysis (TDEA)
- Traffic Monitoring Strategic Plan (TMSP)
- Multi-Modal Probe Data (MMPD)
- Initial implementation of the Traffic Monitoring Strategic Plan (ITMSP)

## BUSINESS NEEDS

TDEA:

1. Replace the current outdated Traffic Data Editing and Analysis system with a COTS or SaaS solution.

2. A system capable of handling the collection of multi-modal (bicycle, pedestrians, vehicles) traffic data.

3. Efficiently report mandated information to the Federal government

4. Reduce IT support required to generate reports for a specific business purpose when needed by staff.

## PROGRAM FORMAT

**Program Start Date:** January 6, 2023

**Budget Allocation at Time of Initial Start Date:** $3.5 Million

**How Many Projects Expected at Time of Initial Start Date:** Four: TDEA, TMSP, MMPD, and ITMSP

**Phase Approach Description:** Projects will be executed sequentially and /or concurrently based on available resources.

**Estimated End Date for All Projects/Phases Known at Time of Initial Start Date:** TDEA: 10/30/2024, TMSP: TBD, MMPD: TBD and ITMSP: TBD.

## PROGRAM ROAD MAP

The program road map shows the high-level plan or vision for the program/projects/phases. It is intended to offer a picture of the lifespan of all the effort that is expected to be required to achieve the business objectives.

| Project | Title | Scope Statement | Estimated Months Duration | Estimated Budget |
|---------|-------|-----------------|---------------------------|------------------|
| TDEA | Traffic Data and Editing Analysis | This project is part of the Department of Transportation (DOT) Traffic Monitoring Program (TMP).  The project will deliver a new traffic data editing and analysis (TDEA) application to manage historical storage, viewing, editing, processing, reporting, analyzing, and importing/exporting of all traffic/weigh-in-motion (WIM) information. | 22 | $1,000,000.00 |
| TMSP | Traffic Monitoring Strategic | This project will produce a strategic plan including a long-term vision for the multi-modal traffic data services provided and an implementation plan (with planning-level cost and resource estimates) to achieve that vision. | TBD | TBD |

**Notes:**

## PROJECT BASELINES

The baselines below are entered for only those projects or phases that have been planned. At the completion of a project or phase a new planning effort will occur to baseline the next project/phase and any known actual finish dates and costs for completed projects/phases will be recorded. The iterative report will be submitted again with the new information.

| Project/ Phase | Project/ Phase Start Date | Baseline End Date | Baseline Budget | Funding Source | Actual Finish Date | Schedule Variance | Actual Cost | Cost Variance |
|---|---|---|---|---|---|---|---|---|
| TDEA | 12/01/2022 | 10/30/2024 | $1,000,000.00 | State Highway Fund | 11/25/2024 | 0 | $837,775.78 | -$162,224.22 |
| TMSP | 12/01/2022 | TBD | TBD | State Highway Fund | | | | |
| | | | | | | | | |

**Notes:** The TMSP project was placed on hold from February 10, 2023, until July 3, 2023, due to resource constraints.

## OBJECTIVES

| Project | Business Objective | Measurement Description | Met/ Not Met | Measurement Outcome |
|---|---|---|---|---|
| TDEA | 1. By acquiring a new TDEA system, we will be able to expand traffic data storage, analysis and reporting to include multi-modal traffic data. | 1. Immediately after implementation, new TDEA system will have the capability to store, analyze, and report on multi-modal traffic data. Traffic data personnel will verify capability by entering a recent sample of multi-modal traffic data in the system. | Met | The system has the capability to store, analyze, and report on multi-modal traffic data. Traffic data personnel will verify capability by entering a recent sample of multi-modal traffic data in the system. |
| | 2. Utilizing a portable device, our field crew will be able to report collected field data in real-time. | 2. Immediately after implementation, Traffic Data personnel will verify the new system reduces (and ideally eliminates all) manual data entry steps and reduces the number of steps requiring manual intervention and intermediate manual process starts. | Met | The manual data entry steps were reduced. But additional time is required to determine if they were eliminated. |

| Project | Business Objective | Measurement Description | Met/ Not Met | Measurement Outcome |
|---|---|---|---|---|
| | 3. Reduce the time required to and reduce or eliminate manual data entry for uploading Federally mandated data by implementing an automated process. | 3. During the April 15, 2025, reporting period, the NDDOT – Planning/Asset Management, Roadway Data Section (Roadway Data Section or Roadway Data) personnel will verify the new system produces accurate and properly formatted federal reports and is capable of appropriately interfacing with the federal reporting system. The mandated data will be uploaded via an automated process. | Not Met | We expect this measurement to be met by April 2025. |
| | 4. Obtain a new TDEA reporting module to generate standard and custom (i.e., specific business purpose) reports. | 4. Immediately after implementation, Traffic Data personnel will create various reports, including unique, business-necessary reports that currently would (and/or do) require ad hoc assistance from NDIT. More than one of the tested reports currently requiring NDIT support should be producible from the system without NDIT or ongoing vendor support. | Partially Met | Some reports can be produced by Traffic Data personnel without assistance, while other ad hoc reports will require NDIT assistance or additional training. |
| TMSP | | | | |

## KEY LESSONS LEARNED AND SUCCESS STORIES

A lessons learned effort is performed after each project or phase is completed. This process uses surveys and meetings to determine what happened in the project/phase and identifies actions for improvement going forward. Typical findings include, "What did we do well?" and "What didn't go well and how can we fix it the next time?"

| Project | Key Lessons Learned and Success Stories |
|---------|------------------------------------------|
| TDEA | **What Went Wrong:**<br><br>1. The people who actually used TDEA did not have a direct vote in choosing ms2.<br>2. I just don't feel the project provided an "Excellent" solution exceeding my expectations.<br>3. Expectations/success of a project are not necessarily the same for all.<br><br>**What Went Right:**<br><br>1. While I rated a number of items 2, I am satisfied with the project. It appears it will meet our needs and is, overall, an improvement to what we had, in many ways.<br>2. I have very limited interaction with the software, but what have tried works for me.<br>3. Although the project has been bumpy, I think we are doing well.<br>4. I think we are on the right track, but the vendor hasn't been the most receptive throughout the project.<br>5. Based on comments made during various meetings, the new systems meet the needs of the staff and will increase some efficiencies in business processes.<br>6. Leila is a pleasure to work with and managed the project very efficiently and collaboratively.<br><br>**Lessons Learned:**<br><br>1. The RFP should have required the vendor to conduct process mapping for existing processes and procedures before starting solution implementation. Near the start of the project, the team suggested this to the vendor, who indicated it's not their typical process. However, several challenges arose because the vendor didn't understand NDDOT's true needs at a detail level in certain items, causing additional vendor and State work to correct deliverables that didn't meet the needs. Need to ensure the solutions are specific to the NDDOT. Also, require the Vendor to map and successfully demonstrate their proposed To-Be process for approval prior to implementation.<br>2. The number of meetings required for the project were more than I thought it would be. It would have been helpful to understand upfront how the project would be managed/executed, and the timelines. While these items were shared through the Project Management Plan, this formal process was so new to the team with so much new material coming at once that the team didn't understand nor even "know what they didn't know" making it hard for them to ask questions. One potential improvement might be to have a "Large Project Process Orientation" training session ahead of the vendor being selected. The goal of this orientation would be to explain the overall process, key terms, and team member expectations, with the understanding these may need to be reiterated throughout the process as reminders.<br>3. When recommending technical solutions, the solution should be vetted thoroughly before being implemented and provided to the vendor as a solution. This approach is critical to saving time, reducing rework, and preventing schedule delays. The Team should be sure to review and evaluate the Technical Solution documentation thoroughly.<br>4. Team members must attend meetings and read notes beforehand if absent. This proactive approach helps to avoid hashing out potential solutions in front of the vendor during the vendor meeting, saving time and resources. Have internal Team meetings prior to meeting with the Vendor. After production implementation, several issues were reported, possibly because the vendor needed to provide more years of data so the team could test a complete cycle of the business processes thoroughly. Need to ensure users create and execute test cases that cover all critical business processes, and ensure more exception, capacity, error testing is done, not just positive testing.<br>5. Have more in-depth discussions about current business processes to ensure the vendor understands key elements that will be needed in the new software. There were several features originally identified as capable of using existing features during the gap analysis activities that were later found to need customization and required additional effort by both teams.<br>6. Changing business processes to take advantage of the a new software's efficiencies can be difficult, even when there is an obvious benefit. Starting that process early on could make it less challenging. |

| Project | Key Lessons Learned and Success Stories |
|---------|------------------------------------------|
| TDEA | **Key Success Stories:**<br>1. This 'one stop shop' COTS software will eliminate several middleware apps that were previously required.<br>2. Provisional data is now available to the public in near real time vs. waiting months until the final processed data is available after the collection year is completed and the annual adjustment factors can be computed for that season.<br>3. I like the integration with Roads and Highways and how attributes update when editing in TCDS.<br>4. Multi-modal data can now be stored, accessed, and analyzed through this COTS software.<br>5. This COTS software will be regularly updated with enhancements generated by NDDOT and all other customers of this vendor, rather than the State of North Dakota paying for and conceiving of all updates to the legacy in-house built software.<br>6. The vendor was able to integrate several new features into the software towards the end of the project to provide additional functionality.<br>7. The data migration was challenging but a big success. The team overcame a number of obstacles and worked together to provide a clean data set that will be useful today and in the long run. |
| TMSP | |

## KEY CONSTRAINTS AND/OR RISKS

| | |
|---|---|
| TDEA | Cost, schedule, scope, and quality are often in conflict during projects. The sponsor elected to prioritize as follows:<br>1. Quality<br>2. Cost<br>3. Schedule<br>4. Scope |
| TMSP | TBD |