



**Traffic Monitoring Equipment:
Challenges, Lessons Learned, and its Role with
the Commercial Traffic Enforcement
Community**

NATMEC June 22, 2010

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Michigan's History with Permanent Traffic Recorder Equipment

Data Collection Section has been monitoring traffic since the 1930's

Equipment collecting:

- Vehicle Counter (133+)
- Speeds (92)
- Vehicle Classification (43)
- Truck Axle Weights (40)

Challenges with Monitoring programs

- Economic
- Resource
- Business Needs
- Federal Mandates

Challenges - Economic

- **Making sure the data is representative** (adequate samplings)
- **Staffing for repair and maintenance** (when you perform your own)
- **Longevity of the equipment** (road pavement, sensors)
- **Replacement when construction is it taking out a site, should you rebuild, improve or retire** (use of job tear sheets to fold into the design)
- **Cost of sites** (number of lanes, equipment type, count, class, speed, wim, phones, power, software, hardware)

Challenges - Resources

- **Staffing** (monitor contractors during installations)
- **Repair** (lane closure restrictions, loops, sensors, critters, modems and boards)
- **Maintenance** (keeping the sites collecting)
- **Special reporting for holidays** (keeping the sites collecting, after storms, or weather events)
- **Retrofitting/warehousing supplies/ equipment**
- **Evaluating the data for quality**

Challenges - Business Needs

- Monitoring program/seasonal factors/growth factors
- Pavement Design
- Bridge loading analysis
- Weight enforcement
- A Data provider for research and public use

Challenges - Mandates

- Federal reporting tied to money, travel trends and analysis needs
- Air Quality Monitoring Programs
- Inputs for applications (travel models, analysis models, and warrants)

Lessons Learned

- Keep your data users/stakeholders close
 - CVE and Pavement Design Teams
- Understand your customer's business needs when merging and blending them
 - Capturing axle weight in all lanes is expensive
 - Collecting axle by truck for ESALs(70 million records)
 - Storing all the truck information by time of day
 - Maintaining the TWIS (Truck Weight Information System)
- Logic to save money will cost someone else something

Have a Strategic Plan



DATA COLLECTION SECTION STRATEGIC PLAN

(Last updated 01/31/08)

Mission: *Provide the highest quality traffic and travel information to meet our customer's needs*



Plan Development	Aligning MDOT and Section Goals	Strategic Objectives			Assumptions	
DATA COLLECTION SECTION MISSION STATEMENT: "Provide the highest quality traffic and travel information to meet our customer's needs."						
		CUSTOMERS/PARTNERS	COLLECTION EFFORTS "OUR CORE"	EFFICIENT AND EFFECTIVE	EMERGING RESPONSIBILITIES	STAFF
1.1 The data collection section met on Aug. 29, '05 to review & develop our strategic plan. Our effort was to make sure we have aligned our objectives with the current work assignments within our section.	2.1 MDX 2.2 Scriv 2.3 Our MDX and 2.4 Using qual staff 2.5 Build secti deve 2.6 The Core Staff 2.7 The proc	Provide products, programs and services that meet our customers current and future needs Providing technical support for MPO and Regional Agencies	Collect, Process and Report needed traffic and travel information Successfully carry out traffic studies that fulfill our customers needs	Continually improve our products and processes to meet our current and future customer needs Maintain and evaluate changes at the federal level related to Traffic Monitoring Guide and the Highway Performance Monitoring System (HPMS)	Broaden our focus to identify and incorporate the changing and evolving needs for our customers Actively participate with the Motor Carrier Committee providing more WIM capability, including increased Wireless options and updating reporting options	Provide a balanced work force to fulfill our mission Invest for the future by providing existing and new employees with necessary resources. These include safety training, tools, practical on-the-job training and the resources necessary to complete their tasks
1.2 A mission statement was developed.		Implement ad hoc special programming efforts to improve software and create unique results, as requested	Continually improve and produce our AADT & CADD maps annually, as well as other specialty maps (PTR & safe enforcement sites, etc.) that present the traffic data to meet our customer's needs	Seek, test and implement new equipment through research and development to reach new levels of quality	Project Management Coordination • TARUT • CRADA • CAR-VII • others	Equip field staff with the documentation, communication and administrative information
1.3 Section staff participated with free-flowing discussions.		Strive to react quickly to provide requested information (phone, web, email or written), whether it's an internal or external request	Maintain our high level of traffic data quality and assurances through our processing and review of short term counts, classifications and PTR data	Modify processes as needed to improve our products and/or customer service	Initiate, Provide Leadership and the Coordination of a research effort focusing on the feasibility of conducting Origin and Destination studies on high volume roads, including findings, reports and recommendations to management	Administratively align resources with the study requirements to efficiently and effectively conduct the studies, including training and recruitment of staff
1.4 This document presents the aims & intentions of the Data Collection Section to address MDOT's 2006 Strategic Plan did 3-14-06. This strategic plan is achievable & realistic. It also attempts to identify elements affecting the objectives of the Data Collection Section.		Seek to maintain and enhance data quality	Provide the necessary maintenance of our database files	Provide the expertise on the use of our data and collection activities that better address and assist our customer's needs	Maintain the Payment Warranty Monitoring Tools and Applications and include policy statements related to the scope of the analysis	Provide organizationally, the management and leadership critical for staff to understand their responsibilities to carry out their assignments effectively, and foster learning through training coordination
1.5 This plan attempts to identify many areas within the Data Collection Section that may warrant further investigation for the challenges ahead.		Implement future thinking to be one step ahead of data needs	Report information	Provide procedures that allows for other sources of traffic data to be included in the corporations data base	Coordinate and facilitate recommended improvements to Track Weight Information System (TWIS), to include various report enhancements that detail weight information, based on proposed roadway Design guideline changes, the needs by Motor Carrier, and Project Planning	Convey and market the work that the section does department-wide and to the public
		Communicate effectively on what we do and how we do it to MDOT Leadership, Administration, Regional and Central Office MDOT staff, and also to the public	Provide access to traffic and travel related information (web, internal and external to MDOT)	Utilize ITS information	Actively participate on committees groups regarding traffic information (i.e., simulation models, Design Guide Studies, Statewide ITS initiative) and serve as the data collection experts, helping to set direction and focus related to travel information.	Strive for excellence by our personnel and our program through planning and tool development
		Coordination with Department of Information Technology (DIT)		Incorporate other traffic data into traffic monitoring corporation data base, including turning movements and travel time delay studies	Continue advancing the use of travel time delay studies and the data processing to improve quality to offer this type of study as a tool for decision makers	
		Work with ITS-RTIS to acquire traffic count data			Pull forward our corporate data using GIS applications to meet the future needs of the department	
		Work with local agencies to gather traffic information for HPMS			Work Zone Safety and Mobility	
			Provide ADT for federal aid for reporting through HPMS			

Performance Measure Considerations

- Site information (about the equipment)
- Site information (about the data)
- Your performance measures may not matter
- How much of the system data is being used
 - Bridge loading (100th of second data time stamp)
 - MEPDG (sampling distribution)
 - Holiday travel information
- Folks would love a site between every interchange

Commercial Traffic Enforcement Community

- Work with them, they carry guns
- Business needs –
 - Catching the bad guys
 - Protecting infrastructure
 - Feedback on successes
- Develop Strategy teams and partner with them

Commercial Traffic Enforcement Community

- Techniques such as Wireless sites
- Annual Call for CVS enforcement projects
 - WIM sites and PITWS (permanent intermittent truck weigh sites)
- Develop strategic enforcement plans
- Enforcement needs to be mobile and flexible as much as possible, cost effective/efficient
- Develop Feedback loops with the data

Commercial Vehicle Strategy Team

MDOT and State Police/Motor Carrier Division Strategic Plan

- Create and maintain an effective partnership
- Improve highway safety
- Improve highway security
- Protect highway infrastructure

Access to Commercial Vehicle Weight Data

- Michigan's Truck Weight Information System (TWIS)
- 70 million vehicles and their axle weights (1 yr of data)
- Access from desktop for Design, Planning, and Enforcement
- Analyze and Integrate the data
 - Load Equivalency Factors, Equivalent Single Axle Load (ESAL), Overweight vehicles, Speeds

**Travel Information Unit
Data Collection Section**

**Michigan Department of
Transportation**

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