

MICHIGAN DEPARTMENT OF STATE POLICE

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Forensic Science for Michigan – Our Path Forward

Rising to the demands of an exceptional criminal justice system

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Please contact the MSP Forensic Science Division for possible updates to this plan.

Revisions are made periodically. Older versions are available upon request.

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What's Inside

<i>Public Service Doctrine</i>	2
<i>Table of Contents</i>	5
<i>Vision and Mission</i>	7
<i>Organizational Values</i>	8
<i>Forensic Science Division Today</i>	10
<i>About Forensic Science</i>	15
<i>Service Delivery Models</i>	19
<i>Backlogs and Workloads</i>	23
<i>Forensic Evidence Academy</i>	30
<i>Priorities and Competencies</i>	35
<i>Benchmarks and Initiatives</i>	40
<i>Recommended Reading</i>	47



Public Service Doctrine

The forensic science laboratories of the Michigan State Police (MSP) employ and equip scientific subject matter experts who routinely analyze physical evidence associated with the commission of crimes. These employees also remain available to consult as experts with criminal justice agencies across the State of Michigan. Employment in the forensic sciences is demanding yet rewarding. By its very nature, forensic science produces evidence each and every day that is used to judge the guilt or innocence of fellow citizens. The ability of its organizational leaders to properly manage human, fiscal, and intellectual resources is of paramount importance to the Michigan criminal justice system – and ultimately the safety of Michigan citizens.

“The service capacity of Michigan’s laboratories must be kept in balance with a level of demand expected from a justice system that is well-informed about contemporary issues and established best practices related to the use of forensic evidence in preserving public safety – in other words, an exceptional criminal justice system.”

This guiding document represents a clear, forward-thinking commitment to ensuring that the MSP forensic science laboratories deliver maximum value to Michigan’s criminal justice institutions. It also summarizes, in detail, what must remain the fundamental paradigm governing the delivery of forensic science services to Michigan citizens. The results of the successful and disciplined adherence to these principles over the long term are:

- A criminal justice system that is fair, efficient, and responsive
- Police officers who can apprehend criminals quickly and reliably
- Prosecutors who utilize scientific evidence with fairness, accuracy, and expertise in satisfying their constitutional and legal responsibilities

Projecting and competing for the resources needed to achieve these goals is a basic responsibility of all managers in the Forensic Science Division (FSD). The service capacity of Michigan’s laboratories, however, must be kept in balance with a level of demand expected from a justice system that is well-informed about contemporary

issues and established best practices related to the use of forensic evidence in preserving public safety – in other words, an *exceptional* criminal justice system. Conversely, *unreasonable demand*, or expectations placed upon laboratories by criminal justice agencies that are not sufficiently prepared to utilize forensic science services in an efficient and effective manner, can be easily corrected with ongoing educational programs and process-improvement strategies. Reflexive increases in capacity that fail to address the underlying imbalances in the system only encourage future problems.

Advocating for the allocation of resources for forensic science laboratories, when some of those resources would be better spent on more effective public safety priorities, particularly those that *prevent* crime, is not an effective resource management practice and will ultimately harm the credibility of everyone working in the Forensic Science Division. The investment of adequate resources in forensic science must certainly remain a priority, especially in the current environment where technology is an increasingly important part of public safety. But maintaining an awareness and appreciation for the appropriate place and role of forensic science in the criminal justice system is equally necessary to earn the long-term trust of authorities who invest taxpayer resources in forensic science services.

Customer Satisfaction

The Forensic Science Division is committed to achieving a high level of customer satisfaction by meeting the following expectations:

- **Quality** – The delivery of services that are trustworthy, valuable, and timely. This includes the impartial and unambiguous communication of scientific testing results and opinions that are used in the investigation and adjudication of criminal cases.
- **Asymmetry** – The tactical application of human, fiscal, and intellectual resources to proactively support police efforts to protect the security and safety of Michigan citizens, families, and businesses.

- **Economy** – The responsible and transparent use of fiscal resources to deliver maximum public safety returns on investment.
- **Best Practices** – The continuous learning about, teaching and development of, and commitment to best practices in delivering prompt and reliable forensic science services.
- **Courtesy** – Organizational behaviors that lead professionals in the criminal justice community to feel appreciated, respected, and understood by the employees of the Forensic Science Division.

Turnaround Time Goals

This plan calls for no less than 70% of all work requests to be completed within 30 days, with a cap of no more than 15% of all work requests completed in over 90 days – Known as the *70/15 Project*. The average turnaround time for our laboratories and program areas should be no greater than 40 days. For space and staffing normalization, our laboratory facilities should provide an average of approximately 800 square feet of clean and secure space per full time employee. Moreover, our optimal staffing level should be estimated, in good faith, using a credible formula that accounts for crime trends and national crime laboratory data compiled by the U.S. Department of Justice.

Employee Commitment

Successful employment within the Forensic Science Division and the promotion of employees to positions of leadership will be predicated upon one's commitment to the objectives and values outlined in this plan. If there are any questions regarding this document and the information provided within, please do not hesitate to contact a member of the Executive Leadership Team located at the administrative offices for the Forensic Science Division.

Table of Contents

2	Public Service Doctrine
3	Customer Satisfaction
4	Turnaround Time Goals
4	Employee Commitment
5	Table of Contents
7	Vision and Mission
7	Vision
7	Mission
7	Evidence of Success
8	Organizational Values
8	Five Values of Forensic Science Achievement
9	Leadership for Empowerment
10	Forensic Science Division Today
10	Profile
11	Services
12	Locations
13	Current Trends
14	Professional Responsibilities
15	About Forensic Science
15	Quality of Life
16	Value in Real Dollars
17	New Data on Crime Costs
19	Service Delivery Models
19	Historical Background
20	Competing Philosophies on Objectivity
20	Traditional “Symmetric” Model
21	Understanding Capacity and Demand
21	Proactive “Asymmetric” Model
23	Backlogs and Workloads
23	About Forensic Laboratory Workloads
23	Cases and Requests

24	Backlogs
25	Average Turnaround Time
25	Expectations and Scope of Work
27	What Should be Tested? – <i>The CSI Effect</i>
29	What it all Means
30	Forensic Evidence Academy
30	Outreach Education to Agencies
34	About the Michigan State Police Training Academy
35	Priorities and Competencies
35	Strategic Priorities of the Forensic Science Division
36	Strategic Priorities of the Forensic Science Laboratories
37	Strategic Priorities of Quality Assurance and Technical Development
38	Strategic Competencies of Forensic Science Division Employees
40	Benchmarks and Initiatives
40	Minimum Performance Standards
40	Maximum Performance Limits
41	Asymmetric Service Delivery
43	Criminal Justice Outreach
44	Quarterly Performance Statements
44	Innovative and Preventative Action Submission System (IPASS)
46	Leadership and Development Team (LDT)
46	Annual Division Leadership Conference
47	Recommended Reading
47	Crime Scene Processing
47	Crime Laboratory Policy and Perspectives
48	Forensic Evidence Practices and Perspectives
49	Judicial Rulings Related to Forensic Science
49	Leadership and Organizational Development
50	Science and the Public Trust

Vision and Mission

Vision

We envision an improved quality of life for the citizens, families, and businesses of Michigan where forensic science laboratories use scientific methods to quickly and reliably identify criminals before they become violent. We also envision working in close collaboration with the criminal justice community of Michigan as trusted and valued partners in the investigation, adjudication, and reduction of crime in our state. Our laboratories will serve as centers of scientific integrity and technical knowledge while

“It shall be our mission to function as a cohesive and trustworthy team of forensic science professionals committed to strengthening the criminal justice community of Michigan with science, quality, and professionalism.”

acting quickly to support even the most serious investigations and criminal proceedings. Our laboratories will continually improve and promote effective and efficient methods in the use of forensic evidence to support the pursuit of justice and safety across Michigan.

Mission

It shall be our mission to function as a cohesive and trustworthy team of forensic science professionals committed to strengthening the criminal justice community of Michigan with science, quality, and professionalism.

Evidence of Success

Success for the forensic science professionals of the Michigan State Police is to deliver forensic science services that support effective criminal justice in the State of Michigan. On this path, employees are motivated and generous with their energy, talents, and intellect. They know what is expected of them and they feel empowered by the organization to serve the citizens of Michigan. Managers strive to create a culture that contributes to high morale, creative thinking, and constructive communication. When these conditions exist, then the Forensic Science Division can consider itself successful.

Organizational Values

The fundamental philosophy upon which this plan is based is that overall organizational stability is a prerequisite for any future success or achievement – and is the key ingredient for producing quality. Quality is not a value; it is an outcome. An unstable organization cannot deliver the sort of quality that should be expected of a forensic science service provider. The behavior of each employee, regardless of his or her level of authority or collective bargaining affiliation, is primary evidence of the organization's progress towards meeting its strategic objectives.

Five Values of Forensic Science Achievement

Values are *behavioral priorities* to which employees and managers in successful organizations commit themselves for the purpose of achieving their goals. Any employee who demonstrates an overall commitment to these values with enthusiasm and consistency, is unlikely to fail, and likely to build a strong reputation within the Forensic Science Division and throughout the criminal justice community of Michigan:

1. *Customer Service*

Earning loyalty and support from those who depend on our services. Every interaction with a member of the Forensic Science Division should be helpful and impressive. Whether during a simple phone call or a complex meeting to discuss the legal ramification of forensic testing results, all customers should feel important, appreciated, and supported by Forensic Science Division employees.

2. *Integrity*

Moral and ethical centeredness with a natural tendency towards professionalism, sincerity, and generosity. Integrity is the backdrop of effective decision-making that is focused on doing what is right even when no one is watching. It is not always easy and can even be painful, sometimes requiring the highest levels of professional and interpersonal skill to achieve.

3. ***Scholarship***

A long-term commitment to learning and improving. Scholars prioritize knowledge and expertise over ego and rituals, and they effectively share their knowledge and experiences with others who will benefit from them. They are committed to continuous education and gathering information that allows future decisions to be made with increasing clarity.

4. ***Innovation***

A desire and commitment to improve whenever possible. What is now the status quo was once a product of innovation. We are the beneficiaries of innovation and therefore owe it to future employees and customers to continuously develop and embrace new ideas that help to secure a better future for our organization. Innovation, however, is born from stability and flexibility, which means that leaders and supervisors must create a proper environment for employees. Ineffective leadership stifles innovation and the sharing of new ideas.

5. ***Cautious Confidence***

A strong belief in our likelihood of success tempered by an awareness that all of us make mistakes. Confidence is a privilege that is earned through experience and past achievement, but it can never be allowed to transform itself into arrogance or narcissism. Experts who believe they are above making mistakes are the most likely to fail because they cannot mitigate a risk that they do not believe to exist. Self-critical analysis is the basis of quality assurance.

Leadership for Empowerment

Employees in management positions are expected to demonstrate a mastery of and commitment to these values; however, leadership also requires effective skills in communication and interpersonal relationships that serve as an example to others in our organization. The inability to serve as an example to others should disqualify an employee from earning and/or holding a leadership position in the Forensic Science Division.

Forensic Science Division Today

Profile

The Michigan Department of State Police is subdivided into service bureaus and offices under which specific divisions are organized. Each bureau or office is managed by an executive level manager having the title of Deputy Director who reports to the Director of State Police. Deputy Directors are considered members of the department's Executive Council, which provides advice and feedback to the Director of State Police in a variety of critical subject matters and issues. Bureaus are then subdivided into divisions led by division directors.

The Forensic Science Division (FSD) is the largest of the Michigan State Police's many divisions with approximately 260 employees – or approximately 10% of the total State Police personnel count. It is organized under the Science, Technology, and Training Bureau. The Forensic Science Division and its staff are managed by a Division Director whose office is located in the division headquarters at the north end of the Lansing Forensic Science Laboratory near the MSP training academy at 7320 N. Canal Road in Lansing, Michigan.



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Services

The Forensic Science Division is the only full-service provider of forensic science services in the State of Michigan. The forensic disciplines offered are Biology (includes Body Fluid Identification and DNA and Serology), Latent Prints, Firearms & Toolmarks, Trace, Controlled Substances, Questioned Documents, Blood Alcohol, Toxicology, and Polygraph. These services are available to all law enforcement agencies statewide from seven laboratories located throughout the state. Several of these services are centralized at one location while others are available at all seven laboratories. Currently, services are utilized by nearly 700 law enforcement agencies across the State of Michigan.

At its core, forensic science is the unbiased application of scientific disciplines to reveal the truth behind physical evidence recovered from crime scenes. In other words, forensic science gives a voice to physical objects that can't speak for themselves. This is achieved through the application of sound scientific techniques performed by



A latent print examiner processes a beverage bottle with fingerprint dust. Items of this sort are often “fumed” with superglue vapors to prevent damage to the prints.

appropriately qualified professionals. The forensic examination of evidence in the disciplines offered by the MSP Forensic Science Division can conclusively implicate or exonerate a person suspected of a crime. Each of the available disciplines serves as a critical forensic component in our criminal justice system, offering the expertise of each discipline to the courts.

With the MSP Forensic Science Division being the only full-service forensic laboratory system available to all law enforcement agencies in the State of Michigan, it is the only resource capable of providing all of the major forensic science disciplines to law enforcement agencies in the State of Michigan. There are smaller laboratories within the state that offer a limited range of services, such as the Oakland County Sheriff's Department and the Battle Creek Police Department.

At each of the laboratories around the state, our staff are well educated, highly trained and dedicated to their work. Many of them are leaders in their professions and

active in their respective professional organizations. The FSD of the Michigan State Police enjoys a proud reputation built upon many years of hard work by our staff. The Division is well respected in both the general forensic science and criminal justice communities.

Locations

Seven forensic science laboratories are strategically located throughout the state: Bridgeport, Grand Rapids, Grayling, Lansing, Marquette, Northville, and Sterling Heights. Although the laboratories operate as part of a larger state-wide, they act collaboratively with criminal justice agencies in their surrounding communities.



The Michigan Department of State Police operates seven strategically located laboratories throughout the State of Michigan. The current laboratories are well positioned to deliver services to the major population centers and Interstate Highway corridors.

Current Trends

Similar to what is taking place across the country, the Forensic Science Division continually faces significant fiscal, social, and judicial challenges, all of which are surmountable given a proper management strategy to move the organization forward with cautious confidence. The demand for forensic science services has never been higher, measured both in terms of incoming cases and the number of tests being requested per case. Popular television programs have had a profound impact, both positive and negative, on the current environment. The popularity of forensic science has raised awareness about its value and attracted new types of funding, but this popularity has also created confusion about how and when forensic science should be employed as a resource in criminal investigations. The “kitchen sink philosophy” of crime scene processing too often replaces a more methodical and measured approach to collecting evidence. This results in nearly “everything but the kitchen sink” being collected and submitted to a forensic science laboratory for analysis. To some extent this philosophy is understandable when even trial attorneys fear walking into a courtroom without some sort of forensic evidence to support their cases.

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From a legal and judicial vantage point, significant discussions reaching as high as the White House in the various levels of federal government are taking place to explore the causes of recent failures in forensic science laboratories around the country. Part of the impetus for these explorations was the 2009 National Academy of Science report titled *Strengthening Forensic Science in America – A Path Forward*, which directed a series of recommendations to Congress about the management and practice of forensic science. Some of the recommendations were highly controversial while others were considered more mainstream by those in the profession. Regardless, the Forensic Science Division now finds itself as one of hundreds of forensic science organizations across the United States that are struggling to navigate the turbulence caused by rising demand, scarcity of resources, and emerging public policy controversies.

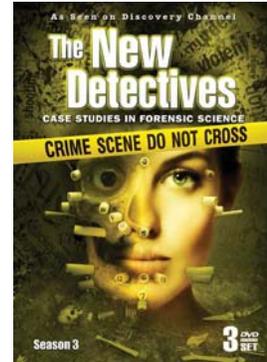
The immediate imperative, however, is to maintain a level of work capacity that is adequate to meet *legitimate* and *reasonable* levels of demand. Later in this document, the more traditional approach of symmetrically increasing resources to keep up with demand will be discussed. This approach has value; but a more proactive or “asymmetric” approach that seeks to influence both capacity and demand concurrently, will also be presented as an approach that will maximize the cost benefit of providing forensic science services in the future.

Professional Responsibilities

The American Society of Crime Laboratory Directors / Laboratory Accreditation Board publishes a document titled *Guiding Principles of Professional Responsibility for Crime Laboratories and Forensic Scientists*. It is a detailed outline of the fundamental responsibilities of forensic science professionals working in accredited laboratories.

About Forensic Science

“The New Detectives” is how *Discovery Channel* characterized forensic science in 1996 when it launched its long running program on the use of science to solve even the most complex crimes. Since then, our criminal justice system’s dependence and trust in forensic science have grown by leaps and bounds. But more than this, forensic science contributes to a more secure society for the citizens of Michigan and every other criminal jurisdiction in the United States.



Quality of Life

Forensic science plays a direct and unmistakable role in preserving a better quality of life in Michigan that is conducive to:

- Raising Families
- Educating Children
- Starting and Operating Businesses
- Worshiping
- Vacationing
- Socializing

A question that is often asked by public policy makers is “what do scientists in laboratories have to do with protecting quality of life?” Historically, this was a difficult question to answer mainly because forensic science was a reactive service that came into play once a crime had already been committed. Today, this is no longer the case. Because of our growing ability to compile and manage forensic intelligence, such as DNA profiles and fingerprints of convicted offenders, we can link criminal perpetrators to many crimes long before police investigators would have a reason to even suspect it.

Approximately ten years ago, USA TODAY published an article summarizing research revealing that approximately 40% of all individuals arrested for sexual assault (rape) began their criminal careers by committing burglaries. This fact underscores the

importance of leveraging forensic intelligence in lesser crimes to identify and rehabilitate criminals before they become violent. During the 2009 calendar year, for example, the MSP Forensic Science Division produced nearly 1,000 DNA “hits” where a convicted offender or arrestee was linked to an unsolved crime or perhaps where two unsolved crimes were linked to each other. Similarly, the division produced over 500 fingerprint “hits” resulting in the same sort of high-value intelligence that allowed law enforcement professionals to act on new scientific information.

The actual *value* of these criminal associations to society is equal to the loss, damage, and costs that were prevented because the offender was identified through forensic intelligence and rendered unable to commit additional crimes. This presents both opportunities and problems for the Forensic Science Division. On the positive side, the value of forensic science can be easily explained in qualitative terms, particularly by describing instances where a forensic association directly linked a suspect to a crime or allowed law enforcement professionals to remove a high-risk criminal from the streets. Conversely, however, minimal data are currently available to *quantitatively* estimate the value of forensic science in real dollars. This day will come as research currently being conducted at West Virginia University and other academic institutions is making progress in this area.

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Value in Real Dollars

In 1996, the National Institute of Justice (NIJ), which is the research and development arm of the U.S. Department of Justice, published a report titled *The Extent and Costs of Crime Victimization: A New Look*. According to this report:

The researchers found that victimizations generate \$105 billion annually in property and productivity losses and outlays for medical expenses. This amounts to an annual “crime tax” of roughly \$425 per man, woman, and child in the United States. When the values of

pain, long-term emotional trauma, disability, and risk of death are put in dollar terms, the costs rise to \$450 billion annually (or \$1,800 per person).

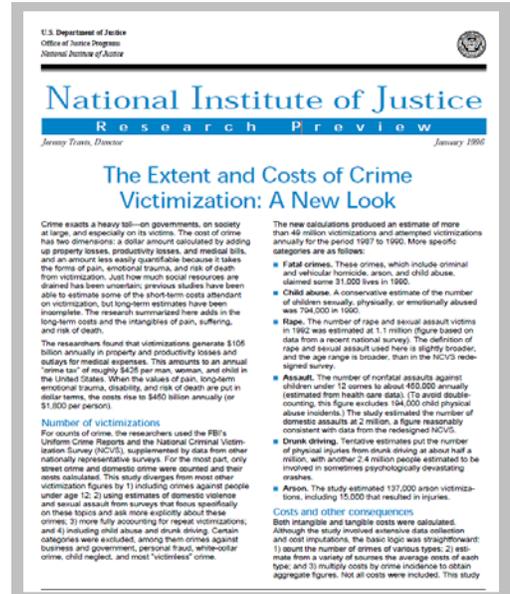
In light of these findings, one can see how the crime-prevention value of forensic science translates quickly into momentous cost savings for the citizens of Michigan. For example, NIJ reported that the total projected costs associate with a single rape / sexual assault was \$86,500 in 1996. If one conservatively estimates that the Forensic Science Division prevents 20 rapes per year, which is likely an underestimation, then the savings to society equals \$1.73 million, and this is only for prevented rapes and sexual assaults. For murders, NIJ estimated the total costs to be approximately \$2.94 million per offense. According to these figures, the Forensic Science Division would need to prevent only thirteen murders per year to completely cover its total annual operational costs.

Whether the impact of forensic science can be evaluated qualitatively or quantitatively, in modern society, whether in healthcare, engineering, or other sensitive professions, public expectations demand science whenever feasible. Traditional police work is still critical to public safety, but recent discoveries about the unreliability of confessions, jailhouse informants, and eyewitness identifications have further spiked the demand for forensic science services in our criminal justice system.

The bottom line is that forensic science, when practiced and managed properly, enhances quality of life and lifts public confidence in the fairness and reliability of our criminal justice system. Part of this plan includes strategies for controlling unreasonable demand and correcting misplaced expectations that unnecessarily drive costs upward. But the reality remains that forensic science routinely prevents crime, which renders financial and intellectual investments in this critical service highly worthwhile.

New Data on Crime Costs

In 2010, researchers at Iowa State University utilized a more aggressive model for calculating the cost of crime, which included interviewing incarcerated offenders for the



purpose of better understanding the cost that each offender creates for society per offense. According to the study, this includes “victim costs, criminal justice system costs, lost productivity estimates for both the victim and the criminal, and estimates on the public’s resulting willingness to pay to prevent future violence.” The results were staggering:

<u>Estimated Social Cost per Offense</u>	
Murder	\$17,250,000
Rape	\$448,532
Armed Robbery	\$335,733
Aggravated Assault	\$145,379
Burglary	\$41,288

According to the above figures, the Forensic Science Division would need to prevent only two murders per year to offset its operational costs.

Certainly, all law enforcement efforts should have the same effect of preventing crime. Police agencies across the State of Michigan, therefore, can also use the available research to justify their own budgets as well. But it is critical to understand that forensic science solves many crimes that traditional policing cannot. Forensic science can also produce evidence having a level of reliability and objectivity that exceeds what routine witnesses can provide in a criminal trial.

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Forensic science is an investment that produces massive benefits for a relatively low cost. With the passage of time and the completion of ongoing research, the exact return on investment will be revealed with more clarity.

Service Delivery Models

Historical Background

The concept of “crime laboratories” was born in the late 1920s and early 1930s following two high-visibility criminal cases that vaulted forensic science, or *scientific crime detection* as it was called, into the public spotlight. The first was the 1929 St. Valentine’s Day massacre in Chicago where members of Alphonse Capone’s gang were believed to have killed seven members of a rival gang on the north side of Chicago. Suspecting that the victims may have been killed by corrupt police officers, a forensic expert was able to conclusively identify the bullets as having been fired

“Through the 1960s and up to the current day, the demand for forensic science services has exploded within the national criminal justice community and Michigan has followed a similar course.”

from two Thompson submachine guns carried by Capone’s men. Next, in 1932, the infant son of famous American aviator Charles Lindbergh was kidnapped from his crib during the night and found dead by the side of a road in New Jersey some three weeks later. Overwhelming forensic evidence was used to confirm the guilt of Richard “Bruno” Hauptmann, a local carpenter who would later be convicted and executed for his crime. His trial in 1934 was considered “the trial of the century,” and to this day is regarded as one of the most intense and public trials in American history.

Prior to these tragic events, police were justifiably suspicious of scientific evidence, preferring to follow traditional “gumshoe” work to solve crimes within their communities. But in the years that followed, scientific detection laboratories began to emerge across the United States, including Detroit, which established one of the first crime laboratories in the late 1920s. In 1953, President Dwight Eisenhower’s appointment of Earl Warren to become the 14th Chief Justice of the United States resulted in unexpectedly complex rulings from the U.S. Supreme Court that were heavily criticized as limiting the power of law enforcement professionals to solve and prevent crime. They also created a judicial environment where scientific testing would become the preferred approach to proving guilt or innocence. Through the 1960s and

up to the current day, the demand for forensic science services has exploded within the national criminal justice community and Michigan has followed a similar course.

Competing Philosophies on Objectivity

There are differing opinions about the role forensic science should play in American jurisprudence. Most of the prevailing ideas have some value even when they seem to compete with each other. On one hand, scientists are expected to remain “objective” and ignore the case circumstances that police and prosecutors tackle on a daily basis. This clinical paradigm is typically fueled by the belief that forensic scientists are more effective in a static environment with limited decision-making authority. The problem, however, is threefold. First, it prevents forensic scientists from delivering the full benefits of their expertise in criminal cases. This is harmful to both the prosecution and defense. Second, it disconnects forensic scientists from the realities affecting their environment, which limits their ability to develop the global understanding of their profession that is necessary for professional growth and future leadership effectiveness. Third and finally, it creates a perception among law enforcement officers that forensic scientists are aloof and naïve, which erodes trust and stifles the communication that is necessary to fully leverage the power of forensic techniques in the most complex cases.

Competing with this traditional paradigm is an emerging philosophy. It seeks to engage forensic science professionals in the social and professional factors that impact their work on a daily basis while mitigating the risks of undue influence through strong quality assurance programs.

Traditional “Symmetric” Model

Forensic science, even today, has traditionally been symmetric and transactional in its approach to delivering services. In this model, forensic science laboratories track the volume of incoming cases and items of evidence over time and respond by seeking the resources needed to keep pace with rising demand. In a symmetric approach to forensic science, the focus of management is primarily directed towards building capacity through increases in headcount, equipment, supplies, and even laboratory space. At the least responsive end of this service delivery spectrum, evidence is worked on a first-come-first-service basis with few other factors being considered. With

some additional management intervention, laboratories typically prioritize certain kinds of cases such as those with pending court dates.

The problem with this model is that it is overly transactional and focused on capacity building. As laboratories build capacity thereby reducing backlogs and turnaround times, demand for services begins to increase and can eventually offset any gains made in capacity.

Understanding Capacity and Demand

Imagine a drug identification unit having a three month turnaround time for its services. This means that law enforcement officers wait three months for results after submitting a sample for testing. With a three month turnaround time, the demand for drug testing services will be lower than if the laboratory was producing drug testing results in, for example, fifteen days. If the laboratory's capacity building efforts result in an improved turnaround time of ten days, the demand for the laboratory's drug testing services will spike dramatically. This, however, creates a problem.

The higher levels of demand tend to encourage the submission of low-value evidence having little potential

“The future of forensic science in Michigan and throughout the United States lies in a balanced, asymmetric approach to forensic science management where capacity gains are only made concurrently with efforts to influence demand.”

to positively impact a criminal investigation. Consequently, the taxpayer dollars used to build laboratory capacity become exhausted by excessive demand and more time being wasted on lower value evidence.

Proactive “Asymmetric” Model

The future of forensic science in Michigan and throughout the United States lies in a balanced, asymmetric approach to forensic science management where capacity gains are only made concurrently with efforts to influence demand. This requires discipline, strong communication skills, and efforts to engage the criminal justice community with continuing education and informational resources. At the most aggressive end of the aforementioned service delivery spectrum, forensic science laboratories may opt to consider a variety of crime trends and law enforcement strategies when designing an

appropriate system for delivering services. For example, the concept of “Hot Spot Policing” has been previously reported by researchers in the U.S. Department of Justice as an effective tool for law enforcement professionals. Hot Spot Policing involves the intense focusing of resources on high crime areas. A forensic science laboratory taking a highly proactive and aggressive asymmetric approach may contribute significantly to the reduction of crime in that area by prioritizing cases from hot spots so that active criminals may be identified with immediacy.

Admittedly, this approach is divergent from traditional models of forensic science and may initially be criticized as inappropriately placing scientists in an investigative posture. This, however, is not entirely true. Asymmetric approaches to forensic science are driven primarily by forensic science managers, not forensic scientists at the bench. In an asymmetric system, scientists are equally committed to quality and objectivity. The major difference lies in how the evidence is prioritized and how forensic intelligence is gathered and reported to law enforcement professionals in the field. The ultimate goal is to influence demand for forensic science services so that it does not overtake the resources made available to deliver them effectively and promptly. Capacity building for legitimate demand is proper and necessary. Capacity building for illegitimate demand is not. This document will present a plan for managing an asymmetric approach to forensic science service delivery including simple performance metrics and critical indicators to assist in monitoring progress.

“The ultimate goal is to influence demand for forensic science services so that it does not overtake the resources made available to deliver them effectively and promptly.”

Backlogs and Workloads

There is considerable confusion among journalists and public policy makers about forensic science backlogs, what they mean, and how they can be prevented. This section is intended to provide a general overview of forensic science backlogs and workloads.

About Forensic Laboratory Workloads

Forensic science laboratories operate in a fashion that is similar to automotive service centers. Items of evidence (or cars) are brought to a facility with requests for certain kinds of work. Work is assigned to a technician who completes the work and prepares a report. In some instances, multiple technicians having different areas of expertise may be assigned to perform different types of work that must also be performed in a certain

“Although backlogs can be measured, what is actually experienced by criminal justice professionals is more telling. Analyses that take several months to complete can cause delays and problems for investigators regardless of what the officially measured backlog may be at any given time.”

sequence. When the work is completed, the customer returns to the facility and takes possession of the evidence (or car). This is a simplistic model that does not capture the full complexity of work in a forensic science laboratory, but it illustrates accurately how the process generally works.

Forensic science laboratories can track a number of critical indicators to facilitate a comparison of workloads across different time periods. When the current capacity of laboratories cannot keep pace with demand, the gross backlogs rise proportionately.

Cases and Requests

When a violent crime occurs, evidence is collected at the crime scene and submitted to a forensic science laboratory. That crime is considered a **case** and is logged into the laboratory case management system (LCMS). Multiple **work requests**, however, may be created for that one case, such as Latent Prints, DNA, and Firearm Identification. In the laboratory, one violent crime may even have several work requests for the same

discipline. Over the course of a few months, a single violent crime, for example, may have five Latent Print work requests, ten DNA work requests, and six Firearm Identification requests.

During the 2010 fiscal year, the laboratories of the Forensic Science Division provided services in just over 57,000 criminal offenses. For these 57,000 offenses, 87,800 work requests involving over 97,500 evidence examinations were completed, some of which can take scientists days to finish. This number includes a count of multiple drug samples identified during the completion of a single work request.

Backlogs

In the simplest terms, a *backlog* is a count of uncompleted forensic requests in a laboratory or laboratory system. It is a whole number, such as 950, that represents a snapshot of uncompleted requests. This may be a backlog count for all uncompleted forensic requests (gross backlog) or perhaps a net count of uncompleted forensic requests for a particular discipline such as DNA or Latent Prints. Because forensic requests are being created and completed almost on a minute-by-minute basis, backlog counts change constantly. The net backlog count of cases completed in excess of 30 days tends to be the industry target against which performance is measured.

Although backlogs can be measured with reasonable accuracy, what is actually *experienced* by criminal justice professionals is just as telling. Evidence examinations that take several months to complete can cause delays and problems for investigators regardless of what the officially measured backlog may be at any given time. From a customer service standpoint, what investigators and prosecutors experience is as important as what can be measured – and forensic science professionals must remain sensitive and responsive to both.

In essence, forensic science backlogs are a symptom, not a disease. It is unacceptable for scientists and managers to become spectators who simply watch backlogs rise. Furthermore, reactively calling for more people and fiscal resources in the absence of a well coordinated effort to proactively influence backlogs is not appropriate. A multifaceted approach to preventing backlogs by controlling demand with good management policy and educational outreach must be a constant priority.

Average Turnaround Time

How backlogs impact the criminal justice system is measured using a different indicator called *turnaround time*, which is commonly confused with backlog. Turnaround time is the average period of time that a submitting agency must wait to receive test results after they have submitted the evidence to a laboratory. Thirty days is widely regarded as an optimum average turnaround time target for a forensic science laboratory.

While backlog counts change minute by minute, average turnaround times tend to remain fairly stable and are therefore a more accurate measure of laboratory progress. However, turnaround times can be misunderstood as well.

Returning to the scenario where evidence from a violent crime is submitted to one of the Forensic Science Division laboratories, most of the work requests are typically created within a day or two of the initial submission of evidence. But in many other instances, additional work requests can be assigned to a case over a period of months or even years. Further complicating the matter, some requests are intentionally delayed when the laboratory has been advised that the police agency will be submitting additional evidence for analysis. In other words, not all work requests in a laboratory backlog are the result of excessive demand or inadequate capacity.

Expectations and Scope of Work

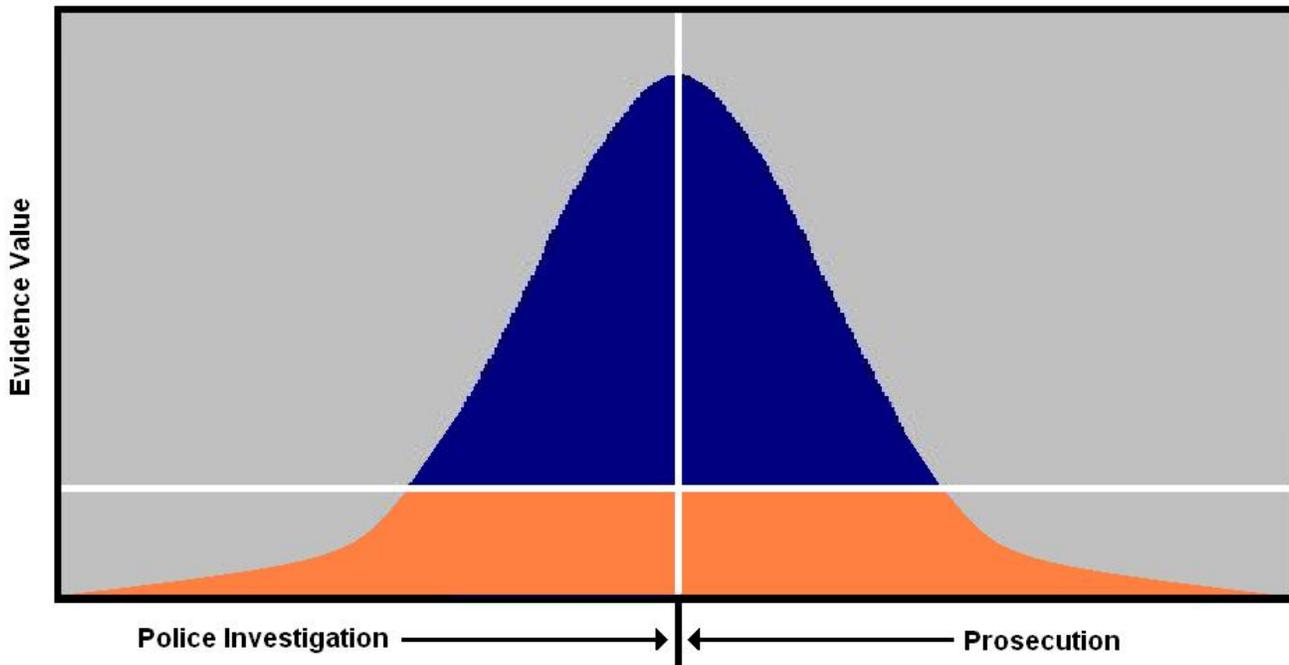
Forensic science represents an area of public safety investment that pays high returns when scientists apply resources to the analysis of physical evidence that allows the investigation and prosecution of crimes to be performed more accurately and swiftly. Forensic science professionals carry an unusually heavy burden in this effort. They are expected to balance the police investigator's – and victim's – wish for fast turnaround of laboratory testing with the legal and judicial expectations of accuracy and completeness. All the while, it is rarely possible for forensic science personnel to predict if the public significance of a particular case may elevate even after the evidence has left the laboratory. The expectations of police, prosecutors, defenders, judges, journalists, and victims often conflict, which makes forensic science a demanding and sometimes risky profession.

Complicating matters, the criminal prosecution of cases is an inherently adversarial process. Forensic scientists are expected to remain neutral; which is often viewed as

frustrating to a party whose interests are perceived as being compromised by the practices and policies of the forensic science laboratory. Fortunately, good-faith communication and collaboration are usually sufficient to resolve any challenges that arise. From time to time, however, these efforts fail to produce common ground. Consequently, forensic science laboratory personnel may be required to exercise professional discretion to ensure that the investment of taxpayer resources delivers the highest possible return of enhanced public safety.

Simply put, the forensic scientist's commitment to due diligence in a case ends with the beginning of the next case waiting to be worked. Policies that set parameters around what types of evidence will be processed by a forensic science laboratory or what types of analyses will be conducted in the context of given case circumstances have the proven effect of dramatically enhancing the delivery of forensic science services. The rights of defendants and the interests of victims are protected when forensic testing is timely and accurate. In the absence of set parameters, or in a system of justice that places no limits on what laboratories are expected to do, experience has demonstrated that laboratories become significantly impaired.

FORENSIC SCIENCE IMPACT CURVE



The above graph illustrates how the impact of forensic science services can vary as a function of evidence value from the perspective of both police agencies and

prosecutors. The **dark blue area** depicted in the *Forensic Science Impact Curve* represents evidence tested by forensic science laboratories where the results have reasonably high value to the investigation and prosecution of crimes. The **orange area** represents lower value evidence where resources would be better directed to higher value activities (opportunity cost). Forensic science laboratories across the United States, including the FBI Laboratory in Quantico, Virginia, establish evidence submission and analysis policies intended to maximize the impact of available resources while minimizing the opportunity costs associated with evidence testing that routinely produces few benefits for the criminal justice system. Evidence value often lies in the eyes of the beholder, so there will always be disagreement, in some instances, about what constitutes high value evidence.

What Should be Tested? – *The CSI Effect*

Forensic science laboratories have a professional and moral obligation to apply their capabilities with due diligence when necessary to support the criminal justice system in determining the following:

- What crimes were committed
- The manner in which the crimes were committed
- The extent of losses, damages, or injuries suffered by victims
- Who was responsible
- How to prevent similar crimes from occurring in the future

Problematically, the potential use of forensic evidence in the investigation and adjudication of criminal matters is almost without limit. For example, forensic scientists could spend several weeks, and exhaust thousands of dollars in consumable supplies, in an attempt to find DNA and fingerprints on a single beer bottle that was thrown onto a person's front lawn by a drive-by litterer. But it is doubtful that any reasonable criminal justice professional would judge this to be a wise use of resources. This is an extreme example that does not reflect the difficulties associated with evaluating cases that fall in the gray areas. Ultimately, professional discretion aided by appropriate policies is exercised in the laboratory by qualified and trained personnel. When a reasonable and appropriately experienced criminal justice professional, armed with the pertinent facts of

the case, would consider due diligence to have been exercised by the laboratory, it is then time to move forward with other cases waiting for analysis.

Many prosecutors have argued that the television show *CSI* and other programs that dramatize the use of scientific evidence in solving crimes has significantly and unjustifiably inflated the expectations of jurors. Forensic laboratory testing, as mentioned earlier, is a tool for solving crimes. It is *not* and *should not*, however, be a resource that is abused for the purpose of ruling out every conceivable hypothesis that may arise during the investigation or prosecution of a crime. This can result in massive crime laboratory delays and forensic scientists who lose motivation and enthusiasm due to the decreasing impact of their work on public safety. Fortunately, unreasonable demands

“ . . . the potential use of forensic evidence in the investigation and adjudication of criminal matters is almost without limit. For example, forensic scientists could spend several weeks, and exhaust thousands of dollars in consumable supplies, in an attempt to find DNA and fingerprints on a single beer bottle that was thrown onto a person’s front lawn by a drive-by litterer. But it is doubtful that any reasonable criminal justice professional would judge this to be a wise use of resources.”

placed upon laboratories, whether by juries, judges, prosecutors, defenders, or police, can be overcome with effective programs of outreach and communication.

How forensic science resources are directed to criminal cases cannot be unilaterally dictated by any one party, including the laboratory. In 2004, the American Prosecutors Research Institute, an affiliate of the National District Attorneys Association, underscored the importance of cooperation in managing forensic evidence:

In evaluating every case, prosecutors, police and forensic scientists or criminalists should determine what evidence is probative of the defendant’s guilt. This evidentiary or case review should be a collaborative process.

Similarly, Michigan Rule of Evidence 403 allows for the exclusion of relevant evidence on the grounds of prejudice, confusion, or waste of time:

Although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence.

Scientists are not qualified to make legal interpretations. But in many instances, it is the scientific nature of the evidence and the generally accepted practices of the relevant scientific community that determine whether or not the analysis of evidence is confusing, misleading, or “a waste of time.” Nor is it uncommon for scientific evidence to be perceived by a prosecutor or defender as being conclusively probative and indicative of a defendant’s guilt or innocence when, in fact, prudent scientific practitioners would have a compelling reason to disagree. The unfortunate reality is that these decisions often must be made in the laboratory before cases ever reach the desk of a prosecutor. For this reason, scientists frequently do their part to keep the criminal justice system as speedy and fair as possible by identifying evidence or analyses that are wasteful or potentially misleading. When disagreements occur, honest and open discussions with police, prosecutors, and defenders are warranted.

What it all Means

Average turnaround times are the key indicator of progress. It represents the overall level of service provided by a laboratory as perceived by law enforcement agencies particularly when demand exceeds capacity. By examining the average output of scientists in particular units over a given time period, projections can be made as to what the optimum level of staffing should be, assuming that effective efforts to eradicate illegitimate demand are being taken.

Forensic Evidence Academy

The proper management of forensic evidence from the crime scene to the courtroom is a rapidly developing and increasingly important competency for all Criminal Justice professionals in the 21st century. The delivery of educational and training services in partnership with other criminal justice experts in Michigan is, and will remain, a top priority for the Michigan State Police Forensic Science Division.

In early 2011, the director of Michigan State Police, Colonel Kriste Kibbey Etue, created the Science, Technology, and Training Bureau, which combines the major scientific and training functions of the Michigan State Police. In partnership with the Training Academy, the Forensic Science Division will leverage the expertise of its laboratory personnel and its partnerships with other criminal justice agencies, to deliver high quality continuing education and training programs aimed at boosting the Michigan criminal justice community's overall knowledge and expertise in matters related to the proper management of forensic evidence.

Outreach Education to Agencies

The following is a listing of courses that will be offered to all Michigan criminal justice professionals on a regular basis:

Front End Forensics: **Managing Forensic Evidence at the Crime Scene**

Audience:	Crime scene technicians, detectives, lawyers, scientists
Instructors:	Michigan State Police Forensic Science Personnel
Duration:	6 hours
Time:	9 AM to 4 PM
Description:	A moderately advanced course that introduces attendees to the concept of "front end forensics" and develops their knowledge and skills related to the initial crime scene response and the inspection, photography, and collection of pertinent physical evidence. This course places an emphasis on effective strategies for identifying and selecting the evidence having the most <i>scientific potential</i> for accurately solving and prosecuting crimes.

Front End Forensics: **Evidence Preservation and Laboratory Submission**

Audience: Crime scene technicians, detectives, lawyers, scientists

Instructors: Michigan State Police Forensic Science Personnel

Duration: 6 hours

Time: 9 AM to 4 PM

Description: This course provides detailed information and lessons on how to properly preserve forensic evidence and prepare it for submission to the Michigan State Police forensic science laboratories. Instructors will educate attendees on the laboratories' case submission and analysis policies as well as the scientific basis for screening evidence prior to laboratory analysis.

Front End Forensics: Legal and Judicial Considerations

Audience: Crime scene technicians, detectives, lawyers, scientists

Instructors: Wayne County Prosecutor's Office, Michigan State Police

Duration: 6 hours

Time: 9 AM to 4 PM

Description: Decisions made at the crime scene and during the preservation and packaging of evidence have a significant impact on the prosecution of criminal cases. Prosecutors from Wayne County, Michigan in partnership with the Michigan State Police Forensic Science Division will educate attendees on contemporary legal and judicial issues related to crime scene evidence collection and processing.

Front End Forensics: Modernizing Police Evidence and Property Rooms

Audience: Property and evidence managers, detectives, police administrators

Instructors: Michigan State Police Forensic Science Personnel

Duration: 6 hours

Time: 9 AM to 4 PM

Description: This course addresses key issues and best practices in managing a modern police evidence and property room. Topics related to the long-term preservation and storage of evidence, as well as evaluating options for designing new or renovated evidence and property rooms will be discussed in detail. The potential installment and use of computer aided inventory systems with barcode and radio frequency identification (RFID) tags will be covered as well.

Forensic Science for Trial Lawyers: Examination of Scientific Experts

Audience:	Criminal and civil litigators, law students, prosecutors, defenders, forensic scientists, educators
Instructors:	Michigan State Police Forensic Science Personnel
Duration:	6 hours
Time:	9 AM to 4 PM
Description:	The ability of criminal and civil litigators to effectively and fairly examine scientific experts on the witness stand is vital to ensuring accurate and useful scientific testimony. Although there are a variety of scientific experts with many different backgrounds working in many different industries, there are fundamental principles that govern the behavior and professional practices of scientific experts regardless of their industry or subject matter. This course examines the basics of science and enlightens trial lawyers about how scientific experts can be questioned in courts of law with confidence and poise. Contemporary issues related to malpractice, bias, and error rates are also covered in depth.

Forensic Science for Journalists: The World of Forensic Science – Real Life CSI

Audience:	All journalists, correspondents, and journalism students
Instructors:	Michigan State Police Forensic Science Division
Duration:	6 hours
Time:	9 AM to 4 PM
Description:	Forensic science is a difficult subject for journalists to cover mainly because crime laboratories don't "own" the cases they work. As a result, forensic experts can rarely speak publicly about the work they do and the successes and failures they encounter in the laboratory. This course provides a detailed examination of forensic science and the core issues that most often lie beneath the surface of news stories, but rarely rise to the surface. Attendees of this important course will leave with new confidence and a broad understanding of how science is used to solve and prosecute crimes.

Forensic Scientist Series I: Responsibilities and Challenges of Prosecutors

Audience:	Michigan State Police Forensic Science Personnel
Instructors:	Wayne County Prosecutor's Office
Duration:	6 hours
Time:	9 AM to 4 PM
Description:	This is a specialized course for forensic science professionals to build their understanding about the challenges of prosecuting criminal cases.

Forensic Scientist Series II: Responsibilities and Challenges of Defenders

Audience: Forensic science laboratory personnel
Instructors: State Appellate Defender's Office
Duration: 6 hours
Time: 9 AM to 4 PM
Description: This is a specialized course for forensic science professionals to build their understanding about the challenges of representing criminal defendants.

Forensic Scientist Series III: Judicial Evaluation of Scientific Validity

Audience: Forensic science laboratory personnel
Instructors: Michigan Court of Appeals
Duration: 6 hours
Time: 9 AM to 4 PM
Description: This is a specialized course for forensic science professionals to build their understanding about the challenges judges and juries face when evaluating the validity and weight of scientific evidence in the courtroom.

Forensic Scientist Series IV: Errors, Bias, and Malpractice

Audience: Forensic science laboratory personnel
Instructors: Michigan State Police Forensic Science Division Director
Duration: 6 hours
Time: 9 AM to 4 PM
Description: This is a specialized course for forensic science professionals to build their understanding about the effects of bias in the crime laboratory as well as the most common and most dangerous risks associated with working in the profession of forensic science. Attendees will leave with an appreciation for how errors and instances of malpractice occur in forensic science laboratories, and how those instances can be avoided.

Forensic Evidence in White Collar and Public Corruption Crimes

Audience: All law enforcement and criminal justice professionals
Instructors: Michigan State Police Forensic Science Division
Duration: 6 hours
Time: 9 AM to 4 PM

Description:

This is a moderately advanced introductory course covering the most common potential uses of forensic evidence in the investigation of white collar crimes and public corruption cases. Individuals most often associate forensic evidence with violent crimes, but the investigation of white collar and public corruption crimes can be equally supported by strong scientific evidence if investigators understand what forensic tools are available to them. Attendees will leave this course with a strong foundation of information and knowledge that will improve their capacity to solve and prevent white collar and public corruption crimes.

About the Michigan State Police Training Academy

The Michigan State Police Training Division is dedicated to enhancing the professionalism of all police employees through the development of character and competence. It is recognized that the development of all employees within the department requires a close sharing relationship with all other law enforcement agencies. For this reason, the Michigan State Police Training Division offers numerous

learning opportunities for the criminal justice community.



The Michigan State Police Training Academy is located off I-96, Lansing Road Exit 98A, at: 7426 North Canal Road, Lansing, Michigan 48913. This modern high-rise building, constructed in 1974, contains 104 dormitory rooms capable of accommodating 208 persons. It includes complete

food service facilities capable of seating 275 persons. The training facilities include eight classrooms of varying sizes to accommodate 30-70 people, a computer skills training center, an auditorium with seating capacity for 250 people, and a training scenario house.

(www.michigan.gov/msp - then go to Training Division for more information)

Priorities & Competencies

Strong organizational development practices require the establishment of a basic set of strategic priorities followed by the continuous training and encouragement of employees to master the competencies necessary to pursue those priorities. An organization is strengthened through the development of its employees and managers first.

The purpose of this section is to outline the basic organizational priorities to which the Forensic Science Division and its two branches, laboratory operations and quality assurance and technical development, shall commit themselves over the long term. The administration of all training to employees will be based on developing competencies that have been identified as necessary to meet those priorities.

Strategic Priorities of the Forensic Science Division

Under the leadership of the Forensic Science Division Director, aided by two Assistant Division Directors and all employees of the Forensic Science Division, the following strategic priorities are set forth:

1. *Maintain strategic clarity*

The definition of success, the strategic priorities, and the means to achieve the goals of the Forensic Science Division must be apparent to all employees. Employees must know what is expected of them and each other and they must be empowered, rewarded, and held accountable for the quality of their contributions.

2. *Keep the organization in cadence*

Unpredictable organizations tend to produce unpredictable employee performance. The tasks and responsibilities that must be carried out to achieve the goals of the Forensic Science Division must be predictable, reliable, and rhythmic. In other words, success must be scheduled, and that schedule must be followed.

3. *Communicate and reward values leading to success*

Values are behavioral priorities. Those priorities must be communicated and followed. Employees must observe and experience a remarkable benefit for demonstrating a commitment to those values.

4. *Produce, monitor, and report division performance*

The Forensic Science Division is part of a governmental law enforcement agency that relies upon taxpayer dollars to achieve its mission. Performance

expectations must be established, progress must be monitored continuously, and the division's actual performance as compared to its goals must be reported transparently.

5. *Earn loyalty and support across the Michigan criminal justice community*

The strategic priorities of the Forensic Science Division will have public safety significance and will affect how the various agencies of Michigan's criminal justice system carry out their constitutional responsibilities. It is critical for the Forensic Science Division to maintain healthy and constructive partnerships with these agencies, which must be kept aware of and encouraged to support the strategic priorities of the division.

Strategic Priorities of the Forensic Science Laboratories

Under the leadership of the Assistant Division Director in charge of Laboratory Operations, aided by a cohesive team of laboratory directors, the following strategic priorities are set forth:

1. *Earn regional customer loyalty and collaboration*

The forensic science laboratories of the Michigan State Police must remain committed to earning the loyalty of customers in its service area while encouraging support and collaboration in the laboratories' efforts to maximize the impact of its available fiscal, human, and intellectual resources. This collaboration must also support efforts to implement and follow best forensic practices in the laboratories and in the field.

2. *Earn commitment and loyalty among top performing employees*

The management systems of the forensic science laboratories must focus on the performance of top performing employees in terms of both their core technical responsibilities and their impact on the working environment of their laboratories. The management and rewarding of high performing employees is more efficient and effective than the management and punishment of low performing employees.

3. *Develop and reward leadership talent*

Identifying and developing employees who are most likely to become the future leaders of the Forensic Science Division is necessary for the long-term effectiveness of the organization.

4. *Provide safe and effective work conditions*

Not only do employees have a right to work in an environment that is reasonably conducive to success, both physically and psychologically, such an environment maximizes productivity and efficiency.

5. *Manage and project fiscal and human resource needs*

It is the responsibility of the laboratories to pay close attention to their resource needs as well as their use of resources. Future budget and staffing needs must be accurately and responsibly projected and reported. Whenever possible, efforts must be made to identify opportunities to enhance laboratory performance at a lower cost.

Strategic Priorities of Quality Assurance and Technical Development

Under the leadership of the Assistant Division Director in charge of Quality Assurance and Technical Development, aided by a cohesive team of technical program coordinators, the following strategic priorities are set forth:

1. *Maintain accreditation conformance*

The Forensic Science Division is committed to maintaining conformance to the ISO/IEC 17025 standard for calibration and testing laboratories as amplified by the *ASCLD/LAB International* supplemental requirements.

2. *React to emerging risks and opportunities*

The changing technical, judicial, and administrative landscapes of forensic science frequently introduce new risks and opportunities. These new risks and opportunities must be recognized, discussed, and acted upon.

3. *Analyze and respond to industry trends & issues*

Forensic science is a unique industry with common challenges. Emerging trends and best practices are constantly revealing themselves. The ability to recognize emerging trends and predict what will become a best forensic science practice will allow the Forensic Science Division to deliver maximum value to its customers.

4. *Develop the strategic competencies of employees*

Every employee of the Forensic Science Division plays a role in meeting the strategic priorities of the division. To do so, employees must build and master competencies that have been identified (see below) as necessary to effect progress. Training and continuing education must be administered strategically and thoughtfully. Training and education are not benefits; they are tools for improving the overall performance of the division.

5. *Enhance and economize technical practices*

A major risk to the Forensic Science Division is for technical practices to become ritualistic and outdated as a result of resistance to change or ignorance to successes being experienced by professionals in other laboratories around the country and, perhaps, around the world. Technical practices must constantly evolve and remain aligned with emerging trends in the profession of forensic science. They must also remain efficient so as to meet customer needs at a reasonable cost to taxpayers.

Strategic Competencies of Forensic Science Division Employees

Training and continuing education opportunities are administered to employees for one reason only: to improve the ability of the Forensic Science Division to meet its priorities and responsibilities. Traditionally, the profession of forensic science has viewed training and continuing education, simply referred to as “training” in this document, as benefits for employees having no link to the overall strategic objectives of the organization. In the current economic environment, and with the increasing scrutiny faced by forensic scientists in court and in legislative inquiries, this approach is no longer appropriate or viable.

Fifteen competencies have been identified as necessary to meet the strategic priorities of the Forensic Science Division. Employees shall be continuously evaluated for their performance in these core strategic competencies. They will also be evaluated for their potential to deliver a return on the investment of resources to build competencies that are underdeveloped. These core strategic competencies are described below and serve as the foundation for all future employee development decisions:

- 1. *Our path forward - strategic priorities and values***
Knowledge and understanding about the strategic vision of the Forensic Science Division to include employees’ grasp of their role in contributing to the success of the division.
- 2. *Interpersonal relations and communications***
The ability to interact constructively and effectively with coworkers, subordinates, supervisors, customers, and other stakeholders.
- 3. *Administrative tools and methods***
Mastery of basic administrative skills such as time management, task prioritization, business etiquette, software programs such as those in the Microsoft Office suite, filing, computer skills, and electronic data organization.
- 4. *Principles of evidence and property management***
Knowledge and understanding of the legal and technical requirements of managing forensic evidence and other forms of property.
- 5. *Customer care and support***
The skills and personal attributes used to earn the trust, confidence, and loyalty of customers.

- 6. *Competencies and knowledge for the position***
This category encompasses all of the specialized skills, knowledge, and abilities associated with the position for which the employee was hired or promoted.
- 7. *Criminal justice procedure and practices***
Knowledge and understanding of the rules of criminal and investigative procedure and its relationship to the employee's area of expertise
- 8. *Expertise development and access to peers***
The continual development of an employee's specialized area of expertise and his or her access to the relevant community of peers.
- 9. *Professional consulting and communication***
The skills and abilities used by subject matter experts to consult with customers and communicate specialized knowledge effectively and authoritatively.
- 10. *Workplace synergy and impact***
The skills and abilities of employees to build the morale of coworkers and enhance the overall working environment.
- 11. *Forensic science administration and management***
The skills, knowledge, and abilities necessary to operate a forensic science laboratory or work unit.
- 12. *Employee development and behavior***
The ability to mentor and develop employees and to manage human resources. The ability to monitor and plan the future development of employee competencies and administer employee training programs in alignment with the strategic priorities of the organization.
- 13. *Organizational development and planning***
Knowledge and understanding of the basic and advanced principles of organizational development.
- 14. *Executive leadership***
Knowledge and understanding of the principles of transformational leadership and executive level administration of a governmental agency. This includes principles of strategic planning, human and fiscal resource management, intellectual resource management, and executive level direction of senior staff members and managers.
- 15. *Public policy and legislative leadership***
Knowledge, skills, and abilities related to executive level leadership in formulating public policy and negotiating legislative priorities.

Benchmarks and Initiatives

This section sets forth some of the major goals and programs that will be initiated for the purpose of addressing each of the fifteen strategic priorities outlined in the previous section. This is not an exhaustive list. Other priorities and measurable objectives that will be used to drive progress within the Forensic Science Division and across the Michigan criminal justice system will be implemented as needed. In the absence of measurable indicators, progress will be inappropriately dependent upon style, preferences, and the subjective interpretation of the division's current condition. It is not out of the realm of possibility that benchmarks may be adjusted or modified to correct overly ambitious targets or, conversely, to set more aggressive goals that allow more value to be delivered to the citizens of Michigan.

Minimum Performance Standards

The following critical indicators and targets are set forth as minimum standards of performance:

Goal 1: Space allocation	800 sq. ft. per FTE*
Goal 2: Percent of gross backlog less than 30 days	70%
Goal 3: Regular hours as a percent of total worked	95%

* Full time equivalent employee

Maximum Performance Limits

The following critical indicators and targets are set forth as maximum limits.

Goal 1: Total new work requests per FTE	70 per quarter
Goal 2: Percent of gross backlog over 90 days	15%
Goal 3: Staff in labs below 600 sq. ft. per FTE	25%
Goal 4: Average work request turnaround time	40 days

Asymmetric Service Delivery

On September 1, 2010, the Forensic Science Division initiated its 70/15 Project, an ambitious program to eliminate forensic backlogs in the State of Michigan. Under the 70/15 Project, the following objectives are set forth:

Goal 1: At least 70% of all cases completed across the division, within each laboratory, and within each program/discipline area will have a turnaround time of less than 30 days.

Goal 2: At most 15% of all cases completed across the division, within each laboratory, and within each program/discipline area will have a turnaround time of more than 90 days.

The remaining 15% of completed cases may be completed between 30 and 90 days, which is a reasonable expectation for forensic science laboratory throughput. The key aspect of the 70/15 Project is that it sets a cap of 15% for cases completed over 90 days while setting a minimum projected goal of 70% of cases completed in less than 30 days, which will drive average turnaround times down. As average turnaround times drop, the perception of service will drastically improve.

In order for the stated objectives to be met and maintained, however, the Forensic Science Division will be required to proactively (or asymmetrically) influence demand across the State of Michigan. Five strategic action items will serve to transition the division into an asymmetric service delivery model:

Goal 3: Clear adjudicated cases from the gross backlog

If efforts are not made to clear cases from the backlog that require no forensic testing, the Forensic Science Division will exhaust an unacceptable amount of resources on cases that have been adjudicated or have little value. Improvements in communication and data management will allow the division to identify waiting work requests that are no longer needed by the courts or law enforcement agencies.

- Goal 4:** Collaboratively enforce reasonable case submission policies
Case submission policies that substantially reduce the submission of low value evidence that unnecessarily exhausts valuable resources must be implemented, enforced, and updated. The division must collaborate with the criminal justice community to maximize the understanding of these policies and provide training that allows police agencies to more effectively triage evidence prior to submission to a forensic science laboratory.
- Goal 5:** Tactically prioritize analytical work to support crime reduction efforts
Forensic science is both a law enforcement function and a judicial support service. Cases are typically worked on a first-come first-served basis with prioritization efforts taking place to ensure that the needs of the criminal justice community are being met in more severe or urgent cases. A shift in thinking, however, is needed to allow the division to work with police officials and prosecutors in high crime areas (hot spots), to help bring about an actual reduction in crime by quickly identifying perpetrators in these areas before they repeat or escalate their offenses.
- Goal 6:** Deliver forensic intelligence to the law enforcement community
Large quantities of interesting data exist in the records of the Forensic Science Division. Unfortunately, these data have never been studied, correlated, and reported to the law enforcement community. The Forensic Science Division will deliver significantly more value to the public by studying its data, identifying patterns and trends, and issuing detailed reports that can be used to support crime reduction efforts.
- Goal 7:** Expand and manage the use of video testimony
The Confrontation Clause of the Sixth Amendment to the U.S. Constitution protects the right of a defendant “to be confronted with the witnesses against him.” The use of video technology, when deemed appropriate by prosecutors, defendants, and judges, allows expert witnesses to testify in court without being physically present. It also minimizes the number of

instances in which scientists exhaust time to drive to a courthouse only to learn that a defendant has stipulated to the testimony or has entered into a plea agreement. Travel and preparation time are significant expenses for the Forensic Science Division. Increased acceptance of this method in courts across the state will create remarkable savings.

Criminal Justice Outreach

The following initiatives are aimed at making information and educational materials available to our customers on a regular basis:

Goal 1: MichiganForensics.org

A website containing information about the Forensic Science Division and its services, as well as educational materials about best practices in the management of forensic evidence and property.

Goal 2: Michigan Forensics Today

An electronic and printed newsletter for distribution to our customers. Michigan Forensics Today will contain information about news and events related to the collection and testing of forensic evidence in Michigan.

Goal 3: Forensic Evidence Academy

As outlined previously in the document, the Forensic Evidence Academy is a program to deliver high quality continuing education and training aimed at boosting the Michigan criminal justice community's overall knowledge and expertise in matters related to the proper management of forensic evidence.

Goal 4: Customer Satisfaction and Loyalty Surveys

Each year, the Forensic Science Division will distribute an electronic customer satisfaction survey to solicit feedback on our performance. The results of the surveys will be carefully analyzed by the Executive Leadership Team during the annual management review.

Quarterly Performance Statements

At the end of each fiscal quarter, the Division Director will prepare a statement of division performance, which lists all data necessary to establish the critical indicators (minimum standards and maximum limits) upon which future organizational decisions will be based. The Quarterly Performance Statement represents the only formal measurement of backlog and other critical data used to summarize the overall performance of the division during the reported quarter. The Quarterly Performance Statement does not necessarily reflect the division's rate of progress towards its stated goals and objectives, but instead gives a snapshot of the current state and stability of the Forensic Science Division.

Quarterly performance statements should also be compiled into an Annual Performance Statement showing critical indicators at the close of the reported fiscal year. This allows for year to year comparisons of division performance.

Innovative and Preventative Action Submission System (IPASS)

One of the most important aspects of developing an organization is soliciting and reviewing the input of employees in an organized and reliable way. The Innovative and Preventative Action Submission System (IPASS) is an electronic, survey-based, system to allow employees to submit ideas, complaints, concerns, and questions to the Executive Leadership Team of the Forensic Science Division.

The IPASS system operates as follows:

1. An electronic (FS-22a) survey form remains posted on the Document Management Site for the Forensic Science Division. The form allows employees to submit recommendations, ideas, observations, complaints, concerns, and comments. Employees may wish to identify themselves or remain anonymous.
2. The FS-22a form also allows employees to identify sponsors who can be identified as supporting the employee's submission.
3. Upon completion of the form, the responses are automatically emailed to the office of the Division Director.

4. An automated response is sent to the submitting employee confirming receipt of the survey and thanking them for participating in the IPASS program.
5. The office of the Division Director maintains copies of all surveys, which are evaluated during the annual management review.
6. When an FS-22a survey is deemed to contain an idea or recommendation that the Division Director believes should be made available to employees for comment, a Concept Development Paper (FS-22b) will be completed and posted in the Division Director's home page on the Document Management Site. Any supporting references or information may be posted with the Concept Development Paper to comprise a Concept Packet. The Division Director also reserves the right to act privately to sensitive issues raised in an FS-22a form.
7. With each Concept Packet, a hyperlink to a survey (FS-22c), will be posted to invite employees to participate in the development of the concept, or perhaps to voice their disapproval of the concept under consideration. As the concept develops, revisions to the original Concept Development Paper may be posted, and new employee input surveyed.
8. When the office of the Division Director has determined that the concept has matured sufficiently for implementation or other appropriate action, the concept will be made into an action priority or terminated all together. When this occurs, the concept development process is completed and the packet is removed from the Document Management Site.
9. Records associated with the IPASS program will be maintained at the office of the Division Director and included in documentation associated with the annual management review.

Leadership and Development Team (LDT)

The Forensic Science Division Director and Assistant Division Directors will identify a Leadership and Development Team (LDT) comprised of approximately 25 high

performing employees who are interested in developing their management and leadership skills. The LDT membership roster is reviewed during the annual management review. Membership is a privilege and may be revoked at any time with or without cause. LDT members will be invited to attend the annual Division Leadership Conference, which will be held at the end of each fiscal year at either the Michigan State Police Headquarters or Michigan State Police Training Academy.

Annual Division Leadership Conference

At the end of each fiscal year, the Division Director will host an annual Division Leadership Conference. Invitees to the conference are all division managers at the 14 level and above, all bureau command staff, award recipients, and members of the Leadership and Development Team. The purpose of the conference to:

- Review the strategic priorities of the Forensic Science Division
- Exchange information and recommendations for making progress in the upcoming fiscal year
- Showcase guest speakers and other subject matter experts of interest
- Discuss the findings and observations of the annual management review
- Provide training on any new management methods or techniques
- Update managers on new policies and regulations
- Recognize and congratulate award recipients
- Afford division managers an opportunity to present papers
- Keep division managers connected and informed about important activities and issues affecting the Michigan Department of State Police

Recommended Reading

Crime Scene Processing

Crime Scene Investigation

Donald O. Schultz, Prentice Hall

1977

Criminalistics: An Introduction to Forensic Science, 8th Edition

Richard Saferstein, Prentice Hall

2004

Techniques of Crime Scene Investigation, 7th Edition

Barry A.J. Fisher, CRC Press

2004

Crime Laboratory Policy and Perspectives

Bodies of Evidence

Brian Innes, Reader's Digest

2000

Building Forensic Technology Capacity

National Conference of State Legislatures

November 2009

But it Works on TV!

Sharon Begley, Newsweek

April 2010

Crime Labs Costly But Save Money

Ted Sell, Los Angeles Times

April 1955

Dollars to Lab a Wise Investment

San Gabriel Valley Tribune, Editorial

July 2009

The Evolution of Forensic Science: Progress Amid the Pitfalls

Peterson and Leggett, Stetson Law Review

September 2007

Examining Forensics

Kenneth Jost, CQ Researcher

July 2009
Perspective On: A Forensics Lab
Sara Goudarzi, Lab Manager Magazine
August 2009

Study Finds New Thrill in “Lab” of Crime
Chicago Daily Tribune
December 1931

Forensic Evidence Practices and Perspectives

The Case Against Evidence
Keith O’Brien, New York Times
November 2010

Forensic Evidence: Science and the Criminal Law, 2nd Edition
Terrence F. Kiely, Taylor & Francis Group
2006

IACP Responds to the National Academy of Sciences Report on Forensics
International Association of Chiefs of Police, Legislative Alert
July 2009

Making Forensic Science More Scientific
Peter Neufeld and Barry Scheck (Editorial), Nature Magazine
March 2010

Physical Evidence in Forensic Science
Henry Lee and Howard Harris, Lawyers and Judges Publishing Company, Inc.
2006

Preliminary Position Statements and Recommendations on Strengthening Forensic
Science
National Association of Criminal Defense Lawyers
2010

Scientific Evidence in Criminal Cases, 3rd Edition
Moenssens, Inbau, and Starrs, Foundation Press
1986

Strengthening Forensic Science in the United States – A Path Forward
National Academy of Sciences
2009

Judicial Rulings Related to Forensic Science

Bullcoming v. New Mexico
Supreme Court of the United States
2010

Daubert v. Merrell Dow Pharmaceuticals
Supreme Court of the United States
1993

General Electric Company v. Joiner
Supreme Court of the United States
1997

Khumo Tire Company v. Carmichael
Supreme Court of the United States
1998

Melendez-Diaz v. Massachusetts
Supreme Court of the United States
2009

Leadership and Organizational Development

Being Clear Isn't Enough
Paul Kerr, Society for Human Resource Management
2011

Chaos to Cadence: Transforming Sales Organizations to Win in the Global Economy
IBM Global Business Services, White Paper
2009

Few Companies Execute Strategy Well, Study Finds
Theresa Minton-Eversole, Society for Human Resource Management
2007

How to Incorporate Career Development and Training with Work Requirements and the
Goals of the Organization
Society for Human Resource Management
2010

Knowledge, Research, and Leadership in Forensic Science
Science and justice (Editorial)
2010

Leading With the Brain
David Rock, Society for Human Resource Management
2011

Managing the Matrix
Eric Krell, Society for Human Resource Management
2011

Organizational Clarity
Mary Day, Society for Human Resource Management
2002

Strategic Planning: How Can a Skills Inventory be Used for Strategic HR Planning
Society for Human Resource Management
2008

Study: Employees' Trust in Leaders Has Declined
Rebecca R. Hastings
2011

When Workers Support the 'Flight Plan'
John F. Schierer, Society For Human Resource Management
2011

Science and the Public Trust

ASCLD/LAB Guiding Principles of Professional Responsibility for Crime Laboratories
and Forensic Scientists
ASCLD/LAB

On Being a Scientist
National Academy of Sciences
2009

Reflections on Rules in Science: An Invisible-Hand Perspective
Thomas C. Leonard, Journal of Economic Methodology
2002

Science and Society: Towards a Democratic Science
The British Council
March 2001

Science and the Public Trust
Lab Manager Magazine
September 2009