

(\$ in thousands)

Project Requests for State Funds					
Project Title	Priority Ranking	Funding Source	2016	2018	2020
Public Health Lab Capital Equipment	1	GO	\$ 2,869	\$ 0	\$ 0
Total Project Requests			\$ 2,869	\$ 0	\$ 0
General Obligation Bonds (GO) Total			\$ 2,869	\$ 0	\$ 0

Public Health Lab Capital Equipment

AT A GLANCE

2016 Request Amount:	\$2,869
Priority Ranking:	1
Project Summary:	\$2.869 million in state funds to purchase capital equipment necessary for the Public Health Laboratory to detect and investigate emerging infectious diseases, foodborne illness outbreaks, disorders of newborns, and chemical contaminants that pose a threat to human health.

Project Description

The Minnesota Department of Health Public Health Laboratory (MDH-PHL) performs critical laboratory testing to detect public health threats, including foodborne illnesses such as *Salmonella*, emerging infectious disease threats like *Ebola*, rare but treatable disorders in newborns, and hazardous chemicals in the environment. Much of the testing performed at MDH-PHL is not available in other laboratories and requires the use of sophisticated facilities and instrumentation.

This proposal provides capital equipment necessary to:

- Support faster and more accurate detection of health threats, to ensure MDH and its partners in other state agencies have the best scientific data and methods available to protect the health of Minnesotans.
- Replace equipment that is no longer supported by the vendor and undermines the security of the state's information technology infrastructure.
- Meet increased demand from MDH programs and state agency partners for specialized laboratory testing, which has grown significantly in recent years.

Funding would be used to purchase approximately 18 instruments, which range from a \$40,000 alpha spectrometer that detects radiation from a nuclear power plant accident or "dirty bomb" to a \$400,000 mass spectrometer for detecting contaminants in environmental samples or human specimens (e.g. biomonitoring for perfluorochemicals (PFCs) in the east metro).

Project Rationale

State-of-the art equipment enables the laboratory to detect extremely small amounts of chemical contaminants and more rapidly detect infectious diseases. Without advanced testing methods, we will be missing key pieces of data needed to respond to ever-changing chemical and biological threats. MDH must continuously update laboratory capital equipment to maintain our ability to detect harmful chemical compounds and radioactive substances, or novel biological threats, such as avian influenza or Ebola.

While the MDH-PHL has existing capital equipment valued at approximately \$10 million, there is no other budget mechanism to substantially replace obsolete instruments or to expand laboratory capability. Failure to replace aging equipment poses an unacceptable risk to lab capability and readiness to respond to outbreaks and emergencies that require laboratory services.

The laboratory facility shared by the departments of Health and Agriculture was completed in 2005. Analytical and support equipment purchased at the time of construction is nearing the end of its projected service life. Because of advances in technology, analytical instruments currently in use by the laboratory have become outdated and have either been replaced by newer technologies or are no longer supported by the vendor. Investment in newer, more sensitive and reliable technologies is needed to maintain or build capacity for critical testing in the areas of:

- **Foodborne illness outbreaks.** MDH-PHL was designated as a Genome Tracker site by the U.S. Food and Drug Administration (FDA) in 2013. FDA provided the equipment, reagents, and personnel to perform DNA sequencing on the important foodborne pathogen, *Salmonella*. MDH-PHL has recently used this technology to identify multiple outbreaks of foodborne illness related to frozen chicken products, which would not have been possible without the sophisticated equipment donated by FDA. The MDH-PHL now needs to expand capacity to do more testing and needs to supplement the FDA-donated instrument with one that can quickly process a large number of samples.
- **Emerging infectious diseases.** MDH-PHL was one of the laboratories selected by the Centers for Disease Control and Prevention as an Ebola testing site due to the availability of advanced technology, adequate facilities to protect staff and public safety, and experienced and willing laboratory staff. However, capital equipment used to perform this work is aging and needs to be replaced in order to be able to keep pace with new technologies and newly identified infectious diseases.
- **Rare but treatable disorders in newborns .** MDH-PHL screens newborns for more than 50 treatable disorders. Improvements to analytical methods have resulted in increased sensitivity and specificity of these tests, resulting in fewer false negative and false positive test results, which results in improved outcomes for newborns and their families. Early identification and treatment of a newborn's rare or hidden disorder can prevent a child's illness, physical disability, developmental delay, or death.
- **Chemicals in the environment.** MDH-PHL performs testing for chemicals of emerging concern, such as pharmaceutical compounds, hazardous chemicals, and radioactive substances, which are increasingly found in the environment. Biomonitoring studies have been conducted to detect chemical contaminants, for example perfluorochemicals, in the blood of Minnesota residents. Data from these analyses are used to design interventions to protect public health. Testing for these compounds requires the use of extremely sophisticated, and expensive, analytical instruments, many of which are reaching the end of their service life.

In addition, the volume and scope of testing at the lab have increased significantly over the last ten years. The number of air, water and soil samples analyzed by the Environmental Health Lab

increased by 40 percent between FY 2012 and FY 2014, and the number of tests performed to identify infectious disease trends and outbreaks increased by 47 percent between FY 2013 and FY 2014. Implementation of newer, more automated technologies enables the laboratory to better handle the increased testing volume.

Failing to replace old instruments whose software cannot be upgraded also poses an IT security risk. Currently, MDH must maintain a separate IT network for older instruments so their security risks do not threaten other state activities. Maintaining a separate network is inefficient and costly. It is not sufficient to merely replace or upgrade the computer components of old instruments, because newer software cannot be used to run older instrumentation properly. It is necessary to replace the entire instrument including the computer.

Other Considerations

The MDH-PHL currently has no funding mechanism to fund the initial purchase of capital equipment and has only a limited budget (approximately \$300,000/year) for replacement of existing laboratory equipment. MDH supplements this limited budget by using one-time federal or state funds when available. On occasion, federal partners have provided equipment for special projects, however this is not a reliable mechanism for obtaining critical instrumentation. Most often, federal agencies and other funders only pay for testing to be performed, not for building the capacity to do testing.

Investing in new equipment allows MDH-PHL to leverage additional federal funds that further enhance our ability to protect public health. For example, the laboratory's analytical chemistry ability to detect low levels of chemical contaminants in blood and urine have enabled the laboratory to obtain federal funding to conduct additional studies. Most recently, the MDH-PHL, in collaboration with the University of Minnesota, was awarded funding to act as an assessment hub for the Children's Health Exposure Assessment Resource (CHEAR) project. The project looks at chemical and non-chemical factors that may impact children's health and development.

MDH received national public health accreditation in 2014, after a rigorous site review by the Public Health Accreditation Board, meeting 98% of the National Public Health Accreditation Standards which will be reassessed in five years. These capital investments complement our strategy of maintaining and meeting the standards for national accreditation.

Impact on Agency Operating Budgets

The Department of Health is unable to replace depreciating laboratory assets on a scheduled basis. Operating budgets are currently stretched by efforts to manage these assets. Newly purchased instruments would be covered under a warranty for 1 to 2 years after purchase. After that time maintenance agreements, typically 10% of the purchase price of the instrument annually, will be required. The laboratory is currently paying for maintenance agreements out of existing operating budgets. It would continue to do so under this proposal.

Description of Previous Appropriations

The Health Department has received no state appropriation for the explicit purpose of purchasing capital equipment for the Public Health Lab. However, construction of the laboratory, which is jointly occupied by the Department of Health and the Department of Agriculture, was financed with \$60 million in general obligation bonds. Legislation authorizing the use of bonds was enacted in 2002.

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