LD 636: An Act To Authorize a General Fund Bond Issue To Support Public Higher Educational Facilities

LD 782: An Act To Authorize a General Fund Bond Issue To Support Science, Technology, Engineering and Mathematics Education to Enhance Economic Development

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STEM and other Higher Education Infrastructure Projects at the University of Maine System

1st Regular Session, 126th Legislature

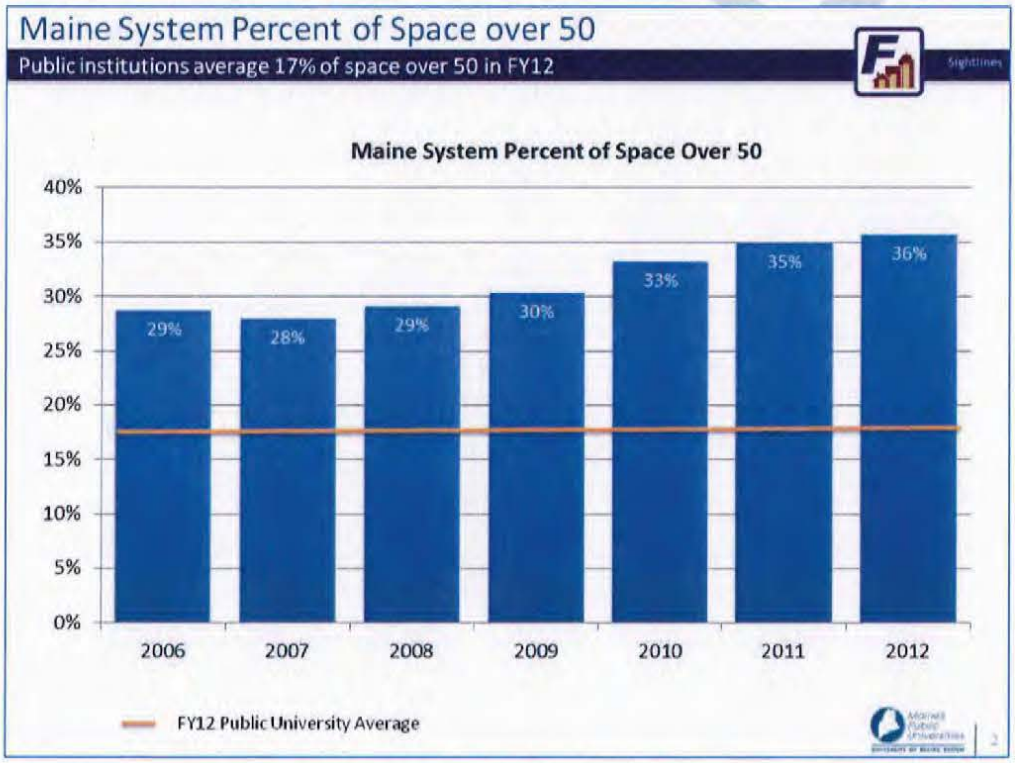
Maine's Public Universities
UNIVERSITY OF MAINE SYSTEM

LD636
An Act To Authorize a General Fund Bond Issue To Support Public Higher Educational Facilities

LD782
An Act To Authorize a General Fund Bond Issue To Support Science, Technology, Engineering and Mathematics Education to Enhance Economic Development

The projects of the University of Maine System described in the following pages:

- ✓ Are primarily focused on improving science, technology, engineering and math learning and career training in Maine.
- ✓ Focus on the stewardship of already-existing facilities, while limiting new or increased space.
- ✓ Are located statewide from Portland to Fort Kent and Machias to Farmington, in settings urban and rural, and at all seven institutions of the Universities of the Maine System.



The facility infrastructure at the University of Maine System:

- ✓ Totals approximately 9 million square feet.
- ✓ Has a replacement value of approximately $2 billion.
- ✓ Has a total asset re-investment need of more than $800 million.
- ✓ Is getting older and in greater need of investment.
- ✓ Facilities with older renovation ages are at higher risk for facility deterioration and failure, according to third-party assessments.

THE UNIVERSITY OF MAINE

Project Goal: Renovate estimated 39,000 square feet of outdated STEM classrooms and laboratories in Orono.

Amount Requested: $22,000,000

Facilities Involved in the Project: Little Hall, Neville Hall, Bennett Hall, Barrows Hall, Aubert Hall, Boardman Hall, Crosby Lab, Hitchner Hall

Approximately 90 percent of the targeted space is in buildings which have not been substantially renovated in approximately 50 years or more. An estimated 39,000 square feet of existing classroom and laboratory space would be renovated to serve students in STEM subjects such as Math, Psychology, Sociology, Computer Science, Engineering, Physics, and Chemistry. Enrollment growth and technological advances, as well as aging mechanical and electrical systems have made these buildings functionally obsolete. Moreover, the condition of these buildings negatively affects student recruiting. Reinvestment in these classrooms and laboratories are essential to future growth of the university and to the overall economy of the state of Maine.

- ***The research projects conducted in these buildings focus on renewable energy, wireless communication, advanced sensors, and biomedical engineering.***
- ***Faculty with offices or laboratories in Barrows, Boardman and Hitchner have attracted a combined $40 million in research funding in recent years***

Barrows Hall serves over 300 students, which is nearly 20% of all the engineering students enrolled at UMaine. Enrollment in these programs has grown 10% since 2007 and a similar rate of growth is expected in the future. Boardman Hall serves nearly 1,100 students, which is over 60% of all the engineering students enrolled at UMaine. Enrollment in these programs has grown by 25% since 2007 and a similar rate of growth is expected in the future. During 2012, more than 2,200 UMaine students enrolled in classes and laboratory sections meeting in Hitchner Hall.

THE UNIVERSITY OF MAINE

Project Goal: Construct 18,000 square foot Animal and Plant diagnostic lab.

Amount Requested: $8,000,000

Facilities Involved in the Project: New Construction

The lab will monitor animal and plant populations for new/foreign diseases, and diseases that harm people (e.g.: avian influenza). The capabilities of the current facilities are inadequate to meet Maine's needs.

Construct an estimated 4,800 square foot of new classroom and laboratory space for engineering and other STEM fields and as well as a new 18,000 square foot Animal and Plant Diagnostic Lab. Maine is an international border state with New England's largest agricultural economy. The Maine agriculture industry, including forestry, is valued at an estimated $2.9 billion annually. Agriculture is a growing industry in Maine. To protect this industry, human health and wildlife interests throughout the state, timely and efficient management of diseases and insect pests is crucial.

UNIVERSITY OF MAINE AT AUGUSTA

Project Goal: Science Lab and Nursing Lab Upgrades, Augusta and Bangor

Amount Requested: $3,450,000

Facilities Involved in the Project: Jewett Hall in Augusta, Camden Hall in Bangor

The University of Maine at Augusta's science labs were constructed in the late 1980's and have not had any major upgrades since. A portion of the bond funds will be used to upgrade the laboratory facilities in Jewett Hall in Augusta. On UMA's Bangor campus outdated lab facilities also would be updated to address the need for the physics courses and other science offerings. UMA's Nursing labs would be modernized to simulate state of the art health care facilities. Technology would be added to the labs to enhance UMA's ability to deliver programming at a distance.

UNIVERSITY OF MAINE AT FARMINGTON

Project Goal: Renovation of science facilities in Preble and Ricker Hall

Amount Requested: $3,450,000

Facilities Involved in the Project: Preble Hall, Ricker Hall and Ricker Addition

UMF has 125 science majors and 40 laboratory sections that meet each week of the semester.

The buildings of Preble and Ricker Halls are the heart of the science programs at the University of Maine at Farmington. The science classrooms and laboratories found there serve students in biology, chemistry, geology and physics, as well as in computer science. The funds will allow the renovation of facilities, including instrumentation, to improve the learning environment and the infrastructure upon which they depend. The project would include improvements at 12 laboratories. All labs within the Ricker Preble complex, with the exception of the recently renovated general chemistry and organic chemistry labs, are sixty years old and have not been renovated. In many cases the mixed lecture/laboratory spaces are using folding tables instead of true laboratory tables, creating the potential for accidents in the lab that could harm students and damage equipment.

All labs have inadequate wiring for modern instrumentation and the fluorescent lighting found throughout the building is not set up properly to use in conjunction with the LCD data projectors that have become an integral part of laboratory instruction. There is little to no available space for storage and ongoing research projects by either students or faculty. This lack of adequate facilities can have a significant impact on recruitment and retention of both future faculty and students to UMF.

UNIVERSITY OF MAINE AT FORT KENT

Funds will improve learning facilities for Nursing, Biology, Chemistry, Forestry and Environmental Studies students.

Project Goal: Renovate Science Laboratories

Amount Requested: $800,000

Facilities Involved in the Project: Cyr Hall

Project calls for upgrading UMFK's Science laboratories. Equipment needs include autoclave, microscopes, gas, vacuum line, centrifuge space, ultralow freezer space, appropriate layout space for delicate instruments, and space for multiple students to work under "clean" conditions" to support Science and Technology related programs such as Nursing, Biology, Chemistry, Forestry, Environmental Studies.

UNIVERSITY OF MAINE AT FORT KENT

Project Goal: Create a Wildlife Law Enforcement Forensics Lab

Amount Requested: $850,000

Facilities Involved in the Project: Former Fort Kent Armory

Project will improve training space and tools for students studying to protect Maine's great outdoors.

Project will establish a Forensics lab to support "hands on" learning for the students in the environmental sciences, wildlife, fisheries, wildlife law enforcement programs, potentially in the former Fort Kent Armory building, which is now University property per prior action of the Legislature. There is only one forensics lab in the State. This new lab in northern Maine would benefit workforce development and a revenue opportunity. These funds would also be used to rehabilitate other facilities for Rural Public Safety Programs.

UNIVERSITY OF MAINE AT FORT KENT

Project Goal: Upgrade Network

Amount Requested: $300,000

Facilities Involved in the Project: Nadeau Teleconference Center

Improves distance learning and supports the creation of a technology and information security work and business center.

These funds would upgrade Nadeau Teleconference Center and help support the creation of a Technology and Information Security Work/Business Center. It would improve network infrastructure to provide the same technological experience as on a large campus and facilitate online instructional delivery.

UNIVERSITY OF MAINE AT FORT KENT

Project Goal: Renovate and expand the Nursing Resource Center

Amount Requested: $750,000

The virtual nursing lab will support workforce development for rural hospitals.

Facilities Involved in the Project: Nadeau Hall

Funds to support expanding existing nursing laboratory to a 10-bed unit suite to accommodate increased nursing enrollments and support development of allied health programs and certificates (i.e. associate degrees in cardiovascular and pharmacy technician and occupational assistant). Invest in simulation equipment and technology and other necessary materials (e.g., 10 beds, mock oxygen and suction setup, IV pumps, cardiac monitors, simulation equipment and models). A virtual nursing lab would allow UMFK to offer hospitals in rural settings workforce development.

THE UNIVERSITY OF MAINE AT MACHIAS

Project Goal: Structural renewal and other improvements of Powers Hall

Amount Requested: $500,000

Facilities Involved in the Project: Powers Hall

Repair deteriorated exterior of primary campus building with an estimated renovation age of more than 50 years and a net asset value of just 18 percent. The facility houses Music and Art classrooms, Performing Art Center, Art Gallery, administrative offices and numerous student services.

Remedies deterioration and restores the integrity and appearance of primary campus facility for classrooms, performance space, student services and more.

THE UNIVERSITY OF MAINE AT MACHIAS

Project Goal: Laboratory Upgrades

Amount Requested: $1,100,000

Facilities Involved in the Project: Science Building

Enhances hands-on, technical career preparation and boosts the regional economy.

UMM has extensive STEM programs, especially in marine and environmental areas. Students take full advantage of UMM's unique field locations, but lack up-to-date labs. Faculty grant work has resulted in significant opportunities, including a new genetics lab and instructional space additions at our marine field station. This project would bring UMM's other lab spaces up to the same standards, thereby increasing student success and preparation for careers. This upgrade would include a zoology lab, a marine biology lab, two chemistry labs, and a physics lab.

THE UNIVERSITY OF MAINE AT MACHIAS

Project Goal: Laboratory Upgrades- Marine Culture Lab & IT Teaching Lab

Amount Requested: $1,100,000

Facilities Involved in the Project: Science Building

UMM's community outreach and applied research advances the natural resources-based economy of Washington County. A facility to provide hands-on learning, research, and outreach collaboration, including K-12 educational outreach, would build on success and foster expanded economic impact. This project would include two separate but related areas of expansion: a. An expansion of the applied marine culture research facility, which supports the shellfish industries of Maine, and a teaching/learning space for student-run aquaria and extensive marine mammal skeletal reconstruction; and b. A STEM teaching/learning lab (IT based) that would employ new pedagogies to advance student readiness and success in STEM areas, providing instructors and students with a facility for one-on-one and group learning with instructional technology and close "instructor-as-coach" support.

UNIVERSITY OF MAINE AT PRESQUE ISLE

Project Goal: Upgrade space, equipment, furnishings, microscopes for Science Classrooms and other STEM facilities.

Amount Requested: $1,300,000

Facilities Involved in the Project: Folsom Hall

Replaces microscopes, computers and other furnishings and equipment in laboratories for biology, chemistry, geology, physics, geographic information systems and several allied health science programs.

The funds will help replace obsolete science furnishings, microscopes and computers in laboratories for biology, chemistry, geology, physics, geographic information systems and several allied health science programs. Folsom Hall was renovated in the summer of 2009 to make it more energy efficient, environmentally friendly and a superior learning atmosphere but the lab spaces remain below the level of many high school facilities.

UNIVERSITY OF MAINE AT PRESQUE ISLE

Project Goal: Upgrade fume hoods in all laboratories to energy efficient

Amount Requested: $1,000,000

Facilities Involved in the Project: Folsom Hall

Replaces fume hoods in laboratories for energy efficiency and to meet the needs of molecular biology students and other science programs.

The fume hoods in all laboratories need to be upgraded, and at least one new fume hood is needed to a recently created molecular biology lab. The hoods and ventilation system would be energy efficient and programmable to suit the needs of the UMPI science program.

UNIVERSITY OF MAINE AT PRESQUE ISLE

Project Goal: Create a small laboratory and support faculty STEM research.

Amount Requested: $400,000

Facilities Involved in the Project: Folsom Hall

The Presque Isle faculty have been increasingly involved in biomedical, genetics, ecological, geophysical and other externally-funded research projects. However, they have been constrained by lack of facilities to conduct cutting-edge fundable research. These funds would help create or complete research laboratory space that could be used by faculty working with upper-level students. Five faculty research labs would be created or updated.

Increases opportunities for joint student-faculty research and for externally funded research.

UNIVERSITY OF SOUTHERN MAINE

Project Goal: Renovation of 12 Labs, Portland, Gorham and Lewiston/Auburn and improvements to the facilities housing the laboratories.

Amount Requested: $15,000,000

Facilities Involved in the Project: Bailey Science Wing in Gorham, Payson Smith Hall in Portland, Science A-Wing in Portland, and facilities in Lewiston.

Improves 12 undergraduate labs in Portland, Gorham, and Lewiston currently used by more than 3,000 STEM students each academic year.

UNIVERSITY OF SOUTHERN MAINE, CONTINUED

Funds the renovation of up to 12 laboratories; Targeted are 6 in the Portland Science complex, 4 in Bailey Hall on the Gorham campus, and 2 on the Lewiston/Auburn campus. The buildings involved would include Bailey Science Wing, Payson Smith, Science A-Wing, and the facility in Lewiston.

While this will not renovate all USM Science labs, it will encompass labs in the sciences of biology, chemistry, physics, geosciences, and environmental science in Portland and Gorham, and Nursing and Occupational Therapy in Lewiston.

All these proposed labs and the buildings housing them in Portland and Gorham have an estimated renovation age of greater than 50 years.

Most of the undergraduate teaching labs at USM are below the level of many high school science facilities. Equipment that is outdated, in need of repair, or subject to failure creates difficulties for faculty and students.

Labs in Payson Smith, the Portland Science building and the science wing of Bailey Hall have environmental problems and building envelope infiltration issues that detract from the teaching and learning experience. These conditions also contribute to high levels of energy consumption. For the Portland and Gorham projects this will include renovation/modernization, building envelope and window replacement work for lab related areas to ensure against further infiltration of outside environmental conditions.

Project will encompass labs in the sciences of biology, chemistry, physics, geosciences, and environmental science in Portland and Gorham, and Nursing and Occupational Therapy in Lewiston.