

# Major Project Request

## 2013-15 Biennium

### Agency

University of Wisconsin

### Institution

Madison

### Project Title

Babcock Hall Dairy Plant Addition

### Project Description and Scope

This project will construct a three-story addition to and will remodel portions of Babcock Hall to house the Center for Dairy Research (CDR). The project will have the following components:

- 1) Demolition of 5,000 GSF of space that includes the existing milk intake area, the existing drying tower, a mechanical space at the northwest corner of Babcock Hall, a stair tower will be demolished, and the existing 3,200 GSF Science House at 1645 Linden Drive.
- 2) A 19,800 ASF/32,497 GSF addition that includes space for the CDR, an atrium space a new milk intake facility with three storage silos, and a new mechanical penthouse for the Dairy Plant.
- 3) Renovation of 29,689 GSF of space on the basement, first and second levels of the existing dairy plant will be renovated and creation of additional space within Babcock Hall by constructing an intermediate floor in a section of an existing two-story space.

The CDR addition will include two floors of flexible research space, designed to allow for easy change-out of equipment as research needs change. The third floor level will contain a dedicated meeting room for 60 people and two training areas. Movable walls between the two training areas will allow several different configurations of the floor. An atrium between the existing building and the addition will contain restrooms, electrical and telecom rooms, an elevator, and will provide accessible entry from both the north and south. The CDR offices will remain on the second floor of the existing building. Six parking stalls will remain on the south side of the addition.

### Background

The UW's commitment to agriculture and food science has played a critical role in the development of Wisconsin as America's Dairyland. It began in the late 1800s, when Wisconsin was evolving from the leading wheat producing state to an emerging dairy state. The university hired Stephen Babcock, who was teaching at Cornell at a time when New York was the leading dairy state, as Professor of Agricultural Chemistry. Babcock is often referred to as the Edison of the dairy industry, his most famous invention occurring in 1888 when he developed the Babcock milk fat test, which enabled a dairy processor to not only compensate farmers fairly, but to produce a consistent product that consumers could depend on. Soon after, the UW established the first dairy school in the U.S. that consisted of a resident 2-week training course in dairy manufacturing.

The dairy program was originally housed in Hiram Smith Hall. In 1948, the 80,833 ASF/136,071 GSF Babcock Hall was constructed to replace the outmoded Hiram Smith Hall as the home of the dairy department. It contained additional instructional space and an entire working dairy plant. Today, Babcock Hall houses the Food Science Department, the Dairy Plant, Dairy Store, and the Center for Dairy Research (CDR). The Food Science Department is home to more than 115 undergraduate and 40 graduate students, of which about 30 work on dairy related research project. The Center for Dairy Research, located within the Dairy Plant, was established 25 years ago, and is the largest dairy foods research center in the U.S. In 2010 alone, the CDR provided research, technical support and outreach to almost 200 Wisconsin dairy companies, dairy buyers/end users, suppliers, regulatory agencies and national/international dairy organizations. Together the Food Science Department and the Center for Dairy Research offer more than 22 short courses and 17 custom industry trainings per year. Since 1989, nearly 10,000 participants have taken either a short course or custom training program.

In 2010, the Department of Food Science and Center for Dairy Research agreed to jointly fund a planning study to look at options for renovating the Dairy Plant. Different options were explored for updating the existing infrastructure and adding the additional space needs to meet the instructional, research and outreach mission of both programs. This proposal is the result of that study.

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### **Analysis of Need**

The Babcock Dairy Plant makes dairy products for consumer sale on campus and thus is subject to the regulations and inspection by the FDA as well as the Wisconsin Department of Agriculture, Trade, and Consumer Protection. The current plant, designed as state of the art when built in the 1940s, has never been renovated, and no longer meets current health code standards and regulations for dairy plant construction and operation. This non-compliance puts the plant in danger of being closed by regulators in the near future if deficiencies are not corrected.

There are a number of condition issues in this over sixty-year old facility. The dairy plant cooling system is plumbed into the concrete floor and is therefore unserviceable. The 1940s era piping for potable and chilled water lines is aged and corroded beyond repair, with leaks causing unsafe bacterial loads to develop. The ventilation system, originally designed when fresh air intake through screened windows was permissible, is no longer allowed by regulatory agencies. With closed windows and no air circulation the work environment is extremely hot and humid in the summertime, with routinely recorded heat indexes of greater than 100°F. Inadequate ventilation results in an unhealthy work and teaching environment, and the potential for growth of pathogenic bacteria, as well as spoilage and contamination between research projects and products being produced for human consumption. The Dairy Plant has an aging, corroding electrical system in a wet environment with numerous shorts and wire exposures.

There are also functional problems that compromise health and safety. Currently the raw milk storage tanks and processing equipment are on the open floor; modern standards of dairy plant design require them to be physically separated to minimize the risk of pathogenic bacteria from the raw milk cross-contaminating finished dairy products and causing consumer illness and potential product recalls. There currently is no ability to separate research projects from the consumer product manufacturing area that also poses the potential risk for cross contamination. Plant security is also an issue with too many poorly secured access points. The work area for accommodating short course participants is unsafe due to crowded conditions as well as exposure to steam lines, corroded electrical outlets, chemicals, etc.

The existing space is too small to adequately serve contemporary needs. The Wisconsin cheese industry is expanding, especially in the area of specialty and artisan cheeses, and cultured products such as yogurt, Greek yogurt, Quark, Kefir, and Fromage Blanc is one of the fastest growing dairy categories. However, currently the CDR cheese and dairy proteins pilot areas are full beyond capacity, with no ability for further growth. Thus there is no space available for a specialty cheese ripening area or a cultured products area. The new facility would provide separate temperature and humidity-controlled spaces for cheese ripening, as well as sufficient space for production and research of cultured dairy products.

CDR programming, which requires clients to come to campus to access the small-scale manufacturing equipment, continues to grow at industry request. Although nearly 1400 people per year attend various educational offerings, many times potential students are turned away or are placed on long waiting lists for short courses due to space limitations. An expanded facility would allow the CDR to increase the number of training courses/activities offered, as well as increase class size.

### **Alternatives**

Renovating only the infrastructure of the existing plant (ventilation, electrical, plumbing, etc) does not address the lack of space to meet industry needs or resolve functional deficiencies that create the potential for contamination between research projects and product produced for consumption.

An even larger addition to the west end of building was also considered but proved too costly. Additionally, the study considered creating a mezzanine across the entire existing dairy plant processing floor while also upgrading infrastructure. This also proved costly and would result in potential disruption for the dairy plant and CDR operations of more than one year.

The current proposal of a smaller addition and infrastructure upgrades stays within a budget that the dairy industry can support, allows for continuation of operations, updates infrastructure, and creates significant new processing and teaching square footage designed to be flexible to cope with future needs.

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#### **Project Budget**

Construction Cost:		\$	20,977,000
A/E Design Fees:	8.00%	\$	1,729,000
Other Fees:	0.00%	\$	210,000
DFD Management Fees:	4.00%	\$	898,000
Contingency:	7.00%	\$	1,468,000
Movable/Special Equip:		\$	6,638,000
		\$	31,920,000

#### **Funding Source**

#### **Total**

General Fund Supported Borrowing	\$	15,959,000
Gifts and Grants	\$	15,961,000

**\$ 31,920,000**

#### **Fee Impact:**

There is no fee impact associated with this project.

#### **Impact on Operating Budget:**

No new custodial or maintenance staff will be hired as the result of this project. It is anticipated that there will be increases to utilities costs because of the increased space.

#### **Project Schedule**

Program Approval:	07/2013
A/E Selection:	09/2013
Design Report Approval:	06/2014
Bid Date:	07/2015
Start Construction:	09/2015
Substantial Completion:	02/2018
Final Completion:	04/2018

The project schedule includes 15 months to build the addition, 3 months for CDR to move in to addition and for the Dairy Plant to move out, and 12 months to complete the Dairy Plant remodeling.

#### **Project Delivery**

Because of food grade requirements associated with this project, as well as a constricted site, and phasing of the new construction and renovation, the campus requests single-prime bidding as a delivery method. Accordingly, a waiver of §16.855 Wis. Stat. under §13.48(19) Wis. Stat. will be sought to allow for single-prime bidding.

#### **Previous Action**

None.