Making BLUE GO Better

2009-2010
Plant Operations
Annual Report
WHO WE ARE

MISSION STATEMENT

Plant Operations, a member of the University community, maintains the physical environment and provides related services to support the University in reaching its goal of excellence in education, research, and public service.

The eight departments of Plant Operations are: Plant Building and Grounds Services, Facilities Maintenance, Construction Services, Utilities & Plant Engineering, Work Management, Plant Administrative Services, Materials and Moving Services, and Plant Academy.

VISION

• To be an organization where continuous and measurable improvement in services is the standard.
• To be recognized by the University community for excellence in service, as a partner in solving our customers’ problems, and as the provider of choice.
• To be an innovative leader in facilities management.
• To be an organization where all employees are treated equitably and honestly.
• To be an effective, diverse work community.
• To be a learning organization, where all staff members are empowered and supported in reaching their full potential.
• To be a workplace where the atmosphere of trust encourages creativity and innovation.

Rich Robben, Executive Director of Plant Operations
Steve Brabbs, Restructuring Project Manager
Mary Diskin, Business Administrator
Lukeland Gentles, Division Controller and Assoc. Director of Administrative Services
Sarah Ely, Plant Academy Training Center Manager
Kevin Fraley, Assoc. Director of Work Management
Paul Guttman, Assoc. Director of Construction Services
Lowell Hanson, Assoc. Director of Facilities Maintenance
Stacy Johnson, F&O Human Resources Manager
Kim Kiernan, F&O Business Manager
Kris Kolevar, Planet Blue Project Manager
John Lawter, Assoc. Director of Plant Building and Grounds Services
Keith Trombley, Senior OSEH Representative
Bill Verge, Assoc. Director of Utilities & Plant Engineering
Lynette Wright, Materials & Moving Services Manager
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THE REGENTS OF THE UNIVERSITY OF MICHIGAN
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For other University of Michigan information call 734-764-1817.
WHERE WE’RE GOING

The fiscal year 2010 was one of great importance to the future delivery of Plant Operations services. Faced with a changing economic climate, the Plant department has been challenged to find ways to substantially reduce costs while maintaining the high level of service to which the University of Michigan community has become accustomed. To achieve these ends the department has embarked on several courses of action to change the paradigms under which we operate. These changes are: Facilities Maintenance restructuring, Plant Building Services institution of task team cleaning, and best practices implementation at our Central Power Plant. These initiatives, described in more detail within this report, are expected to exceed the goals above. Plant is also well underway on the Planet Blue energy conservation program, which has been introduced into more than 66 buildings and is producing over $3 million in savings annually.

The Plant Operations motto of *We Make Blue Go* is more true now than ever as we strive to make Blue go *smarter, greener, stronger, and better.*

Rich Robben,
*Executive Director for Plant Operations*
Building a Better Future on a SOLID FOUNDATION

Outstanding Facilities Service and Value

(OS1) Cleaning

Utilities Best Practices

- Cross-functional Teams
- Customer Satisfaction
- Skills Training

- Sustainability
- Communication
- Diversity
- Health & Safety
- Great Place to Work

Planning & Scheduling Maintenance
Asset Management
Reliability-Centered Maintenance

- Facilities Condition Assessment
- Strategic Planning
- Cost Control
2010 PERFORMANCE

PLANT OPERATIONS COMPLETED MORE THAN 119,000 WORK ORDERS FOR THE CAMPUS IN 2010.

The Facility Condition Assessment (FCA) was launched in 1998 to identify deferred maintenance backlog and develop tools for prioritization. This Facilities Condition Needs Index (FCNI) graph shows the overall condition of campus, which has improved over FY09 as a result of demolition of old buildings and new construction.

Preventive Maintenance (PM) is an important facet in sustaining the physical assets of the University of Michigan. Performing PM is a proactive method to improve the reliability of building systems, reduce energy consumption and improve safety. Most importantly, it contributes to the avoidance of costly unplanned corrective repairs that interrupt the core mission of the University.

The Facility Condition Assessment (FCA) was launched in 1998 to identify deferred maintenance backlog and develop tools for prioritization. This Facilities Condition Needs Index (FCNI) graph shows the overall condition of campus, which has improved over FY09 as a result of demolition of old buildings and new construction.
In facilities using the new OS1 cleaning program, Quality Assurance (QA) defects (low scores on the QA scale) were reduced by 70%. Building inspectors from Work Management perform the custodial and maintenance inspections.

The Central Power Plant continues to maintain the lowest possible non-fuel operating costs: work began on a water chemicals reduction project that will save approximately $150,000 per year.

Customer satisfaction with recently completed Construction Services projects remains high: 83% were satisfied during the summer/fall survey period, and 96% of customers were satisfied during the winter/spring survey period.

Building Services cleans more than 15 million square feet daily.

In facilities using the new OS1 cleaning program, Quality Assurance (QA) defects (low scores on the QA scale) were reduced by 70%. Building inspectors from Work Management perform the custodial and maintenance inspections.

Grounds Services turns campus yard waste into mulch for planting beds.
2010: A YEAR OF CHANGES

Plant Building and Grounds Services (PBGS) completed the first year of a three year roll out to convert all custodial operations in 200+ facilities to a new system called Operating System 1 (OS1). The (OS1) cleaning program was developed by ManageMen, Inc. as a safer, cleaner, simpler way to maintain facilities. (OS1) utilizes a task team-oriented working environment, which divides work by specific tasks rather than by areas. (OS1) is a proven method that provides not only a better work environment but also better results. Cleaning staff become specialized through 16 hours of classroom and 90 days of on the job certification training. Custodians work with “greener” products and ergonomically correct equipment. In addition to substantial productivity improvements, the (OS1) system will lead to a cleaner, safer, healthier, work environment, for both our custodial staff and the U-M community. In facilities using the OS1 program, custodial costs have decreased by 10% while service has improved by 16%.

Construction Services adjusted the work assignments of a significant number of managers. To maintain high levels of responsiveness and customer service, two managers from the hospital were reassigned to campus projects and a third manager was moved from one area of campus to another. Construction Services made several modifications to its business operation model to comply with the recommendations of the University of Michigan Internal Audit report. These changes have resulted in improved management information and oversight.

Facilities Maintenance continued its restructuring efforts during FY10 by completing design of a new organizational structure and work management process for the North Campus Pilot region. The restructuring is aimed at fundamental improvements in how FM performs building maintenance and repair activities. In late spring, cross-functional teams worked with consulting partners to design and prepare the organization for a new work flow that emphasizes work planning and scheduling, preventive and predictive maintenance, and asset performance. This restructuring will result in a significant improvement in how Plant Operations provides long-term stewardship for U-M’s physical infrastructure, and will lead to improvements in productivity, asset management practices, overall organizational performance and cost effectiveness.

Plant Hospital Maintenance (PHM) served as an integral resource in opening the new Brehm Tower and the new MCIT Data Center, adding over 275,000 sq ft to the hospital campus. In addition, PHM initiated the staffing plan for the new 1.2 million sq ft Children and Women’s Hospital, scheduled to open in November 2011.
A Benchmarking and Management Study of the Utilities & Plant Engineering (UPE) Central Power Plant (CPP) recently concluded that the CPP “has one of the highest overall facility efficiencies of the universities reviewed.” The study, performed by a third party consultant, benchmarked the CPP against peer institutions and third party plants. The strongest benchmark metric found was the Operations & Maintenance costs efficiency comparison, which noted that U-M had one of the lowest O&M costs per megawatt-hour produced. The study recommended optimizing the CMMS into a best-in-class work management tool. The CPP plans to use this recommendation as a foundation of its restructuring plan going forward, which will reorganize the CPP maintenance and project groups into one department, allowing coordinated planning of resources and proactive maintenance planning culture.

Moving and Trucking increased revenue by 4.6% by participating in bids with outside service suppliers, promoting services at strategic supplier shows, and meeting with potential customers to expound on services and favorable cost structure, which includes the ability to bill by half-hour increments.

Facilities & Operations Human Resources conducted a two day training session for Plant leadership responsible for hiring. The goal of the training is to improve the quality and diversity of hires and hiring committees by emphasizing reasons for structured, performance-based interviewing. The training focused on high volume hiring areas - skilled trades and supervision. Hiring committees began utilizing the process immediately.

Work Management initiated a significant restructuring to align with changes in Facilities Maintenance. Work Management, along with internal and external stakeholders, redesigned the flow of work, which impacts maintenance, repair, and improvement work. Work Management also began designing key metrics and functions to improve the way Plant uses data to maximize allocation of staff resources and performance of U-M’s assets. New tracking functions added to the Computerized Maintenance Management System include “Asset Performance,” “Planning and Scheduling Work”, and “Property Hierarchy”. 
General Fund budget expenditures finished within 0.45% of budget.

Dollars spent per square foot has decreased.
Plant Operations’ **Long-Term Financial Planning** calls for significant decreases in Facilities Maintenance and Building Services budgets. Budget reductions are made possible by the current restructuring efforts in both departments, which will facilitate a reduction in budget without a reduction in quality or services provided to the U-M community. The multiyear budget spreadsheets below reflect the longer term strategy of initial investment in new systems that will result in longer term savings.

### BUILDING SERVICES: General Fund Budget Analysis & Planning FY09 - FY13

<table>
<thead>
<tr>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>Cumulative Change</th>
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<tbody>
<tr>
<td><strong>Revenues</strong></td>
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<td></td>
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</tr>
<tr>
<td>Carryover</td>
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<td>(125,000)</td>
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<tr>
<td>Baseline Allocation</td>
<td>21,274,939</td>
<td>21,274,939</td>
<td>21,118,912</td>
<td>20,879,246</td>
<td>19,909,246</td>
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<tr>
<td>Net/Other Changes</td>
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<td>685,334</td>
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<td>(800,000)</td>
<td>(970,000)</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td>21,274,939</td>
<td>21,118,912</td>
<td>20,879,246</td>
<td>19,909,246</td>
<td>19,909,246</td>
</tr>
<tr>
<td><strong>Expenses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salary and Wages</td>
<td>13,345,278</td>
<td>13,655,099</td>
<td>13,102,880</td>
<td>12,267,426</td>
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<td>Benefits</td>
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<td>5,987,656</td>
<td>5,662,479</td>
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<td>Other expenses</td>
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<td>414,395</td>
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<td>475,000</td>
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<td>Supplies and materials</td>
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<td>1,294,000</td>
<td>1,325,000</td>
<td>1,302,054</td>
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<td><strong>Sub-Total</strong></td>
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<td>20,798,931</td>
<td>19,909,246</td>
<td>19,880,846</td>
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<td>OS1 Expenses</td>
<td>121,706</td>
<td>249,277</td>
<td>358,000</td>
<td>270,000</td>
<td>28,400</td>
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<td><strong>Total Expenses</strong></td>
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<td>21,908,922</td>
<td>21,156,931</td>
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<td>19,909,246</td>
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<td><strong>Projected GF Balance</strong></td>
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<td>(790,010)</td>
<td>(277,685)</td>
<td>(49,659)</td>
<td>0</td>
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</tbody>
</table>

Notes: FY10 deficit offset by transfers from general fund ($290K) and enterprise ($400K), Plan to offset FY11 deficit with same approach as FY10

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### FACILITIES MAINTENANCE: General Fund Budget Analysis & Planning FY09 - FY13

<table>
<thead>
<tr>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
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<tbody>
<tr>
<td><strong>Revenues</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Carryover</td>
<td>0</td>
<td>365,604</td>
<td>(71,643)</td>
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<tr>
<td>Baseline Allocation</td>
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<td>28,102,436</td>
<td>26,982,436</td>
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<td>Net/Other Changes</td>
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<td>n/a</td>
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<tr>
<td>Restructure Reduction</td>
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<td>(787,000)</td>
<td>(1,000,000)</td>
<td>(1,120,000)</td>
<td>0</td>
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<td><strong>Total</strong></td>
<td>29,102,479</td>
<td>28,370,969</td>
<td>28,030,793</td>
<td>26,982,436</td>
<td>26,982,436</td>
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<tr>
<td><strong>Expenses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salary and Wages</td>
<td>14,382,749</td>
<td>14,797,836</td>
<td>14,784,155</td>
<td>14,074,175</td>
<td>13,810,560</td>
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<tr>
<td>Benefits</td>
<td>4,283,114</td>
<td>4,433,670</td>
<td>4,288,062</td>
<td>4,057,974</td>
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<tr>
<td>Other Org. Expenses</td>
<td>3,327,679</td>
<td>3,041,510</td>
<td>2,936,596</td>
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<td>Supplies and materials</td>
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<td>5,984,087</td>
<td>5,745,322</td>
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<td>13,956</td>
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<td>0</td>
<td>6,466</td>
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<td><strong>Sub-Total</strong></td>
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<td>28,370,968</td>
<td>27,992,900</td>
<td>27,012,214</td>
<td>26,990,551</td>
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<tr>
<td><strong>Sub-Total Restruct. 1x's</strong></td>
<td>0</td>
<td>580,000</td>
<td>191,400</td>
<td>0</td>
<td>0</td>
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<tr>
<td><strong>Total Expenses</strong></td>
<td>29,102,480</td>
<td>28,370,968</td>
<td>28,572,900</td>
<td>27,203,614</td>
<td>26,990,551</td>
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<tr>
<td><strong>Projected GF Balance</strong></td>
<td>(1)</td>
<td>(542,107)</td>
<td>(221,178)</td>
<td>(8,115)</td>
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</tbody>
</table>

1. restructuring costs covered by transfer from enterprise and construction accounts
SUSTAINABILITY REPORT

When normalized to population and building area, energy use is 22% less than FY04

- **28.55%** U-M campus recycling rate, according to Waste Management Services, an increase of 2.6% over last year. Over 2,700 tons of material was recycled in 2010 across campus.

- **45%** Reduction in salt and sand used in winter deicing operations on campus.

- **10,000** Square feet of ceiling tile recycled through the ceiling tile recycling program, created by a partnership of Construction Services, Recycling, and Hospital Capital Construction.

- **0** Waste goal at the Zero Waste basketball game in December 2009, a joint effort by the Athletic department and Plant Building and Grounds Services.

- **6.6** Tons of material diverted from the landfill during eight Green Clean Day events

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Plant Engineering worked with other Plant units to install a new electric-centrifugal chiller at the East University Chiller Plant, which significantly reduced steam costs for the East U region of campus.
Planet Blue continues to be successful in helping the university reduce its energy costs and increase recycling. The program began with five pilot buildings in FY08 and was expanded to 30 more buildings across the Ann Arbor campus in both FY09 and FY10. In the original pilot buildings, U-M decreased overall energy usage by 13 percent and in the 30 additional buildings, energy usage decreased by a net 11 percent in FY10. Collectively, the efforts in all of these buildings resulted in a cost avoidance of $3 million in FY10. Through these savings, U-M avoided releasing more than 12,318 metric tons of carbon dioxide into the environment, which is the equivalent of removing over 2,464 cars from U.S. roads.

In Mendelssohn Theatre, teams installed new lighting to reduce electrical consumption without altering the stage setting during performances, saving 28% (or $63,000) of the annual lighting cost. Teams also calibrated or replaced thermostats, alleviating temperature fluctuation complaints.

In Medical Science Unit II, teams installed new variable air volume controls in lab and research areas, allowing fans to be scaled back or turned off completely when areas are unoccupied. Along with the replacement of steam traps and repairs to heat exchangers, energy consumption was reduced by 15% with a cost avoidance of $401,000.
ALIGNING WITH BUSINESS & FINANCE GOALS

PROVIDER OF CHOICE

Customer-negotiated Service Level Agreements (SLAs) for Facilities Maintenance (beyond the continuing hospital SLA) have grown 94% since FY09 to over $1.7 million in maintenance and repair services.

The North Campus Research Complex (NCRC) was purchased by the U-M Medical School in 2009. Since then, Plant Operations has helped support the facilities, even though the space is not part of the general fund campus:

> Construction Services (CS) constructed an ADA-compliant ramp for NCRC. The successful on-time completion led to several more projects restoring space for new occupants. For the NCRC Childcare unit, CS completed the project –from estimation to state inspections – in less than 2 months, just in time for camps to begin the following week.

> Plant Building Services won the contract for the custodial operations at NCRC. The bid closely matched the existing contractor’s estimate of cost and service levels; NCRC leadership awarded this to U-M’s operations primarily because of the more favorable compensation package offered our employees.

> NCRC and Housing have been incorporated into the 24/7 Call Center service coverage. NCRC Preventive Maintenance planning data is also being coordinated with Work Management.

EMPLOYER OF CHOICE

Facilities Maintenance began offering the Commercial Building Maintenance Certification program to provide expanded employee advancement opportunities for U-M maintenance mechanics.

Employee satisfaction across Plant Operations remained steady amidst significant changes in the organization, with mean responses at 69 (on a 1-100 scale) in the spring 2010 Business & Finance Employee Satisfaction Survey.

BEST IN CLASS

Building Services won the “Rookie of the Year” award (best new program) at the annual OS1 symposium. The department also won the 2010 CIMS (Cleaning Industry Management Standard) Certification with Honors. International Sanitary Suppliers Association (ISSA) grants this certification for best practices in the industry.

Grounds Services received an Arbor Day Foundation Tree Campus USA designation again in January 2010, along with the Professional Grounds Management Society Green Star Award for exceptional grounds maintenance in October 2009.

Employee & Customer Satisfaction Correlation

- **Satisfaction Scores as measured by B&F Satisfaction Surveys**
- **1. Building Services**
- **2. UPE**
- **3. Facilities Maintenance**
- **4. Construction Services**
- **5. Grounds Services**

Employee Satisfaction vs. Customer Satisfaction

- **0 - 5** = 5.5
- **6 - 6.5** = 6
- **6.5 - 7** = 6.5
- **7 - 7.5** = 7
- **7.5 - 8** = 7.5
- **8 - 8.5** = 8
- **8.5 - 9** = 8.5
- **9 - 9.5** = 9

- **Maintain**
- **Improve Both**
- **Improve Employee Satisfaction**
- **Improve Customer Satisfaction**
PLANT OPERATIONS SHOWCASE

Construction Services fully implemented WinEstimator as the estimating program for all estimates. WinEstimator software assists in creating more accurate and timely job estimates.

Grounds Services updated staff work plans to include snow operations, which allows flexibility to provide customized services while still maintaining specific priority levels. These work plans are used in the creation of Service-Level Agreements, for which Grounds guarantees a service level and price.

The Utilities & Plant Engineering Utility Records Integration team developed a fully functional web interface for the Geographical Information System (GIS), including as-built drawings and photographs of all manholes, catch-basins and substations. The GIS integrates all forms of geographically referenced information, and can be a helpful tool in analyzing and visualizing data and patterns to help solve problems and make decisions.

Plant Academy launched the year-long U-M Facilities Professional Certificate Program for facilities professionals from U-M’s schools and colleges. The program, which teaches skills and core competencies of the building manager’s role, enrolled 27 building managers in the 09-10 cohort with wide representation across academic programs, Health System, and Housing. Upper level certificate participants completed a variety of practicum projects, creating tools and information for the use and shared advancement of U-M facilities management practices.

The Central Power Plant completed another significant step in the CPP Master Water Plan, which is designed to keep the 95 year-old plant operating efficiently while maintaining reliability in service. This year, the CPP installed Condensate Polishers to remove contaminants through Filtration and Ion Exchange, which improves the quality of water in the condensate return and feed water makeup system. The quality (purity) of the condensate used to generate steam is critical to the efficiency and health of the equipment, and results in decreased costs of energy to the U-M community.

The U-M Skilled Trades Apprenticeship Program run by Facilities Maintenance underwent a triennial US Department of Labor EEO Review and Program Quality Assessment and passed “without any flaws.” The program aims to provide a path for career development to Facilities Maintenance employees.

In February 2010, Plant Operations hosted the 3-day Michigan Association of Physical Plant Administrators (MiAPPA) conference, which brought together colleagues from colleges and universities across Michigan. The conference, which included educational sessions, a vendor showcase, campus tours, and keynote speakers, highlighted leadership and sustainability in higher education facilities. Despite the frigid temperatures and blizzard-like conditions, the event was the highest-attended MiAPPA conference in the organization’s 43-year history.
PLANT OPERATIONS PROVIDES A MYRIAD OF SERVICES TO THE U-M COMMUNITY AS PART OF OUR MISSION TO MAKE BLUE GO.

> **Construction Services** employees fabricated and installed 279 custom lockers for many U-M athletic teams throughout the year. Go Blue!

> U-M’s campus had 33 inches of snow in February 2010, breaking a record for the most snow campus has ever received in that month with 17 of 28 days with recorded snowfall. Thanks to the hard work of **Plant Building & Grounds Services** staff, the University kept on rolling without any major problems.

> University administrative units in the Fleming Administration Building needed 72 pallets of documents shredded – when the shredding contractor was unable to commit to a time frame, **Moving and Trucking** stepped in and drove six trucks and a semi-truck loaded with documents to a shredding facility in Troy, MI.

> **The Utilities & Plant Engineering** Power & Lighting shop successfully serves the needs of the U-M Biological Station on Douglas Lake, which is 250 miles away from campus.

> **Facilities Maintenance** Building Automation Systems (BAS) group monitors and controls 181,382 data points on the control system, which is a computerized, intelligent network of electronic devices designed to monitor and control the mechanical systems in a building. From their desks, BAS technicians can stop, start, and reschedule fans and other systems all over campus. The BAS group works with the Direct Digital Controls group – who installs, programs, and maintains the control system components to provide a consistent building climate while reducing energy and maintenance costs.

> The **Utilities & Plant Engineering** Energy Billing Systems team pays all utility bills for U-M. In FY10, over $89 million was paid to 25 utility vendors located as close as Ann Arbor and as far as Jackson, Wyoming.