

**Improving Building Maintenance Without Additional Funding-University of
Nebraska's Unique Approach to Zone Maintenance**

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Executive Summary

The Building Systems Maintenance (BSM) division at the University of Nebraska-Lincoln (UNL) has traditionally been a central trade shop based organization, with all staff operating out of a single location. Based on the previous five years analyses, it was determined that funds spent for corrective maintenance were far exceeding our investment in preventive and deferred maintenance. Our need to perform corrective maintenance was clearly dictating our daily tasks. We were being reactive and were unable to prioritize the needs of the university. With our entry into the Big 10, we expected major growth. It was clear we needed to implement change, not only to maintain the expected level of maintenance, but to serve the university community more efficiently in a challenging economy and to be prepared to meet the Chancellor's challenge of increased enrollment and campus growth.

We decided we needed to redefine ourselves and adopt a new business plan, converting our operation from centrally located trades-specific groups to an association of zone-based shops made up of smaller, task-organized teams, consisting of an appropriate mix of multi-skilled workers who would be led by a skilled technician.

We only undertook this reorganization after a great deal of assessment and analysis and very careful study and consideration. To our benefit, there is a wealth of information available about the successes and failures of zone maintenance implementation, and we were able to identify, in advance, keys to success as well as potential challenges. We learned that other institutions that had successfully transitioned to a zone-based program almost always were given increased financial support, and if budgets were not increased, levels of service and customer satisfaction suffered. An increase in the budget was not an option and providing lower quality service was out of the question. We knew we had to be creative and find another way.

That "other way" was not to follow the norm and make an abrupt or deadline driven change, but to develop a transition framework that could move forward as our demands and resources would allow. Workers in leadership positions were used to structure the tasks and responsibilities of the zone teams, and they were able to absorb this responsibility into their normal workdays. This left all front line staff on the job until the zone was fully ready for them. Their transition to this new world was seamless, and our customers experienced no reduction in service.

It was important for us to understand the risks involved during the conversion from central shops to zone shops, yet we knew we had to take an unconventional approach. Like our other colleagues in higher education, our resources were stretched thin to begin with, and we were challenged by having to develop and implement this significant change while not allowing existing service to suffer.

What made UNL's transition to zone maintenance unique from other institutions that transitioned before us? UNL developed a flexible framework by which we could phase the transition without any increase in budget or staffing and still be able to meet the needs of our campus customers. This has been the key to UNL's success. The results have been dramatic and are measurable.

Introduction of the Organization

The University of Nebraska–Lincoln Building Systems Maintenance, a department of the Facilities Management and Planning under the Vice-Chancellor of Business and Finance, is responsible for the maintenance of more than 150 buildings on two campuses.

The University of Nebraska, chartered in 1869, is a land-grant university and is a member of the Association of Public and Land-grant Universities (APLU). It is one of the nation's leading teaching institutions, and a research leader with a wide array of grant-funded projects aimed at broadening knowledge in the sciences and humanities.

UNL Building Systems Maintenance (BSM) has an annual budget of approximately \$6.3 million and has 65 employees to care for more than 8 million gross square feet (gsf) of space serving more than 24,000 students and 6,100 faculty and staff. Its work is spread across two campuses, separated by about 1-1/2 miles with residential neighborhoods between. Buildings range in age from a few built in the 1890's to facilities that have just completed construction. They vary from large multi-story laboratory buildings, to classrooms or offices, to animal research facilities.

BSM management consists of the Director, Associate Director, and a team of Managers and Zone Managers who provide budgetary, strategic, and managerial guidance to the organization.

Problem Statement

Analysis of UNL facilities operational data related to balance between the number of hours being spent on Corrective Maintenance (CM) versus Preventive Maintenance (PM) and Deferred Maintenance (DM) made it clear that we were spending far too much time answering emergency calls and not enough time actually maintaining our buildings. We were always “putting out fires” instead of preventing them; being reactive instead of proactive. We needed to change the way we were doing business and had no additional resources available to address the problem.

Design

From our research we learned that successful implementation of PM zones had almost always been accomplished by committing additional resources, if only temporarily. When resources were not increased and the workforce simply dismantled and reassigned to zones, failure was almost certain.

Keeping that in mind, a phased structure was developed, and a process was implemented that required success at each level before moving on to the next. Phasing gave us the ability to learn from mistakes. It also let us gauge our progress and adjust the speed of implementation as resources or demands increased or decreased.

This phased approach was vitally important. This process has been critical in enlisting employee support. UNL Human Resources and Facilities Management & Planning (FMP) Business Operations were able to adjust their level of involvement as the processes developed.

Two key elements of the transformation have shown us that this process will achieve sustainable results. Those are its dynamic nature and the engagement contributed by department partners.

We introduced this as a flexible plan. The most important message to everyone involved was that it was a plan committed to success and not willing to accept failure. Each step forward was supported by previous success. At any time, if circumstances changed, we were ready to slow down and reevaluate our direction.

The engagement of our implementation partners has had the effect of creating a support system for the transition plan as a whole. We coordinated with our Business Operations, Inventory, Custodial Services, Facilities Management and Construction, Campus Administration, Human Resources, and other campus stakeholders in our efforts. In the end, they each had a sense of

ownership in the transition plan, and each continues to give us their support. The result is a program that is greater than the sum of its individual parts, but those individual engagements will assure its continued success.

The elegance of this flexible, phased approach to transition from a trades-based maintenance model to a PM zone-focused model is that it is dynamic and fluid. It can be implemented by almost any college or university maintenance operation regardless of their size or resources.

Any campus willing to restructure its organization so the maintenance division can focus on the ongoing care of the building will be able to implement the necessary change. The change does not have to be expensive. Increased resources can speed implementation, but if customer demands increase, the activities involving the zone set up team can be scaled back.

Implementation

The first step was to partner with our Human Resources department to create new PM zone position descriptions and build a four-person tactical team that would mirror the group eventually assigned to the zone. That pilot team was charged with the setup of the first zone. Their tasks were to:

- Define zone composition and criticality of each building
- Inventory assets and building systems
- Research O&M best practices
- Create a preventive maintenance task list
- Recommend composition of permanent zone team qualifications

When complete, the pilot team was assigned to a new zone and the process was repeated.

As the pilot team moved on, the permanent PM zone team moved in and took over their new roles. An important point to note is that the new roles came with new job descriptions and PM zone-relevant assignments that had been developed beforehand with close participation by Human Resources. People were assigned to clearly defined roles. Clarity that they were now doing a “new” job was crucial. The reassessment and substantive restructuring of our department combined with our phased approach to the change were essential to our success.

Benefits

PM Zone maintenance is broadly recognized as having wide ranging benefits for colleges and universities. A zone structure allows for a centralized command organization with decentralized execution. It supports an economy of management and contributes to a sense of ownership and responsibility within the front line workforce. Benefits have been shown to include:

- Increased accountability
- Better execution of preventive maintenance
- Improved efficiency (Overall maintenance costs dropped 14% from FY10 to FY12)
- Reduced corrective maintenance (Corrective Maintenance labor dropped from 72% of hours to 48% from FY10 to FY12)
- Reduced response time (Response time for Corrective Maintenance requests dropped by 1.5 days from FY10 to FY 12)
- Improved customer relations (“Excellent” ratings from customer surveys increased by 11% from FY10 to FY 12)
- Ability to incorporate increasing regulatory requirements
- Implementation of equipment manufacturers’ recommended best practices, resulting in an effective maintenance model that enables us to cover more buildings with fewer resources

While all of these are common benefits of a zone-based system, the real benefit to the institution was that through the structure of our transition we were able to achieve all of those things with no increase in financial resources.

Additionally, we were able to make these improvements while maintaining our previous level of support to all of our customers and auxiliary operations.

Another satisfying and unexpected benefit was the improved coordination and cooperation that has been realized by working with other departments involved in our effort. In an attempt to find zone shop space in the various building, we worked with our Custodial partners and developed a plan to share space. This sharing of space has been to our mutual benefit with BSM being able to find “homes” for our PM teams and Custodial having a place where they can conduct their business and not be limited to small closets.

By utilizing our unique structure of reorganization and phased implementation, the university is in a position to better meet the challenges of the future.

Retrospect

Our transition to a PM Zone-Based business model has been very successful, but, while in the process of purchasing a new Computerized Maintenance Management System (CMMS), we discovered how much improved our scheduling and budgeting would have been if we had had the CMMS in place at the beginning of the process. The data we have used to measure our success is valid, but the data that we will have available once the CMMS is in place will enable us to set individual budgets for each zone. The Zone Leaders will have the financial tools necessary to make better informed planning and purchasing decisions.

