

# Facilities Management Evaluation Program



## THE UNIVERSITY OF BRITISH COLUMBIA

**Building Operations Department**  
**July 30 - August 3, 2017**

### **Final Report**



The Facilities Management Evaluation Program is a service of  
APPA: Leadership in Educational Facilities

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APPA: Leadership in Educational Facilities is an international association dedicated to the development of leadership and professional management applicable to the planning, design, construction, maintenance, and operation of the facilities required for quality teaching, research, and public service.

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# Introduction

This report reflects the observations and recommendations of a team of senior university facility administrators who visited The University of British Columbia (UBC) from July 30 through August 3, 2017. The major focus of this report is the evaluation and assessment of the Building Operations Department (BO) within the Office of Finance and Operations. The review was patterned after the Facilities Management Evaluation Program of APPA: Leadership in Educational Facilities that was modified to reflect the more focused evaluation of just the BO Department.

The judgment and recommendations included in this report are based on the review team members' many years of experience in college and university facilities management combined with extensive interviews, detailed document reviews, and studied comparisons.

Members of the review team were selected to comprise higher education facility managers (FMS) who are experienced in managing complex institutions. Members of the review team include the following individuals:

Jack K. Colby, P.E. – Co-Team Lead  
APPA Past President, APPA Fellow  
Senior Director for Energy Programs – Retired  
North Carolina State University  
Raleigh, North Carolina

Jay Klingel – Co-Team Lead  
Director, Operations & Maintenance – Retired  
University of Virginia  
Charlottesville, Virginia

Richard Robben  
True North, FMC, Principal and Owner  
Director of Plant Operations – Retired  
University of Michigan  
Ann Arbor, Michigan

Jeff Lamb  
AVP, Facilities Management – Retired  
Capital Plan Strategic Development  
Dalhousie University  
Halifax, Nova Scotia, Canada

The review team conducted extensive interviews, within the BO Department and with numerous principal administrators, academic and research department heads, faculty and staff internal and external to BO who constitute the major campus stakeholders, and the client constituency for BO services. This review would not have been possible without the full cooperation and participation of all those who were interviewed and who freely shared their comments without reservation. All participants were especially gracious with their time and contributed significantly by offering their perspective on the successes and challenges facing the school and BO's service delivery efforts. The time provided to this effort afforded the review team the opportunity to gain valuable insight into the complexities of the organization and guided our understanding of the overall picture of service delivery. It also gave the staff an opportunity to articulate their successes along with the current and future challenges that the organization faces as they look forward. The customer groups were of particular importance in providing key comments and perceptions of BO services through their first-hand experience in working with BO staff.

The review team purposefully avoided interpreting singular comments or isolated observations as representative of systemic problems or issues. To that end, some of those interviewed may wonder why their particular opinion or point of view is not articulated or specifically addressed within this report. Conversely, there will be others who will find the report overly critical believing that the review team's observations or recommendations are based on isolated comments.

Those members of the school's administration and community who participated in the interview process include:

<b>Participant</b>	<b>Title</b>
Alkenbrack, Catherine	Director, Facilities Planning (ID)
Archibald, Bryan	Millwright, Subhead
Beck, Phil	Head Gardener
Bell, Brannen	Facilities Manager – Museum of Anthropology
Bisson, Georges	Labour
Brooks, Barry	Operations Manager Custodial
Brusse, Phillip	BMS Manager (EWS)
Capps, Deborah	Facilities Manager
Castres, Benny	Carpenter (Zone)
Colville, Evan	Business Analyst
Cooper, Dan	Associate Director, Athletics & Recreation (Athletics)
Creelman, Charles	Electrical Project Coordinator
Crudo, Frank	Superintendent Municipal Services
Cunningham, Michael	Technical Specialist, Architectural

<b>Participant</b>	<b>Title</b>
Desmarais, Francois	Facilities Manager
Devolin, Mike	System Owner, People Process Manager, Arch.
Din, Tariq	Senior Manager, Occupational Health and Safety (Risk Management Services)
Drozdzik, Marcus	Electrical Project Coordinator
Fenton, Flora	Service Centre Coordinator
Forsyth, Lindsa	Subhead Gardener
Freek, Chris	Senior Manager for Communications (VP FO Office)
Gibbons, Kishani	Operations/Project Manager
Gibson, Colin	Subhead, Labour
Giffin, Jeff	Energy Conservation Manager (EWS)
Gordon, Barb	Senior Planner, Facilities Planning (ID)
Gray, Gordon	Senior Operations Manager – Centre for Comparative Medicine
Harakh, Vinesh	Subhead Electrician
Henderson, Orion	Director, Planning and Innovation (EWS)
Hill, Derek	Electrician, Elevators
Holm, Matt	Manager, Municipal Services
Holt, Paul	Director, Utilities and Energy (EWS)
Hugli, Richard	Electrical Utilities Manager
Ingram, Joyce	Labour
Jelic, Darko	System Owner/Technical Specialist, Electrical
Kieta, Maria	Custodian
Kurtu, Jamal	Director, Operations and Facilities Management, Faculty of Pharmaceutical Sciences
Lehner, Django	Operating Engineer
Lin, Ed	Chief Building Officer – Campus Planning
Lincoln, Peter	Electrician
Lindsay, Mark	Head Maintenance Engineer/Millwright
Lis, Marian	Mechanical System Owner
Lundeen, Pearl	Business Analyst
Lynch, Sean	Assistant Supervisor Custodial
MacDonald, Rob	Facilities Manager
MacDonald, Sean	Millwright
Madden, John	Director, Sustainability and Engineering (C&CP)
Magnusson, Karyn	Managing Director
Manji, Azmina	Superintendent, Custodial Services
McCormick, Lee	Head Operating Engineer

<b>Participant</b>	<b>Title</b>
McGill, Cam	Co-Managing Director, Chan Centre for the Performing Arts
McGregor, Sean	Electrician
McLoughlin, Peter	People & Process Manager, Mechanical Systems
McMaster, Case	Controls Electrician
McMullen, Clay	Head Plumber
McNichol, Ray	Portfolio Finance Director for Finance & Operations and Human Resources
Metras, John	Managing Director, Infrastructure Development (ID)
Morris, Kevin	Head Painter
Moscato, Tina	Head BMS Operations Centre
Neal, Russel	People & Process Manger, Mechanical Trades
Nealy, Michelle	Director, Dean's Office, Space Planning & Facilities, Faculty of Medicine
Pablo, Ariel	Custodian
Paley, Mike	People & Process Manager, Electrical
Paz, Marcello	Assistant Head Service Worker Custodial
Pearce, Denise	Director of Trades
Perry, Ward	Labour
Plumridge, Andy	Senior Analyst
Poohkay, Suzanne	Director, Capital Planning (ID)
Porritt, Andrew	Senior Engineer, Technical Services
Psiharis, Alexandra	Service Centre Coordinator
Ram, Neil	Electrician
Ramirez, Ariel	Head Service Worker Custodial
Ratner, Pam	Vice Provost, Enrollment and Academic Facilities
Ritchie, Ken	Head Garage Mechanic
Roseborough, Linda	Health Wellness and Safety Advisor (RMS)
Rosenthal, Adam	Storekeeper
Rougeau, Grazyna	Subhead Gardener
Sacre, John	Superintendent, Asset Stewardship
Sanguinetti, Jennifer	Director, Project Services (ID)
Shields, Thomas	Subhead, Steamfitter
Short, Robin	Payroll Administrator
Shu, Meng	Service Centre Coordinator
Simpson, Andrew	Vice President, Finance and Operations
Skrypnyk, Warren	Refrigeration Tech
Smith, Jeff	Project Coordinator

<b>Participant</b>	<b>Title</b>
Smith, Jeff	Project Coordinator
Stander, Fred	Electrician
Tang, Denise	Assistant Supervisor Custodial
Temple, Bert	Head Sheet Metal
Thayer, Michael	Architect, Building Maintenance & Operations
Todaro, Patrizia	Director, Human Resources (HR)
Varma, Martin	Head Carpenter
Vasic, Obrad	Roofer
Villarica, Meynardo	Carpentry (Zone)
Wasylyshen, Pamela	Operations Manager Custodial
Weidner, Tamas	Operations Manager, Municipal Services
Weigel, Janice	Superintendent, Customer Services
Wenzel, Dave	Project Coordinator
Whittaker, Shane	Maintenance Technical Specialist
Windle, Steve	Head Tool Crib Operator
Wolfram, Gary	Head Waste Management Operations
Wong, Patrick	Facilities Manager
Woodson, David	Managing Director, Energy & Water Services (EWS)
Wright, Jason	Facilities Manager

At the conclusion of the site visit, the APPA review team presented a verbal report to the BO leadership team, the vice president for Financial Operations, and a representative from Internal Audit.

### **Acknowledgments**

The APPA review team wishes to thank all those who contributed to the review. Everyone was most generous with their time and their comments. We found the site visit well organized and effectively communicated to the many participants. Special thanks are extended to all members of the BO leadership team. Their investment of time and attention was critical to the success of the review and most instrumental in facilitating and ensuring a thorough review.

We would like to express our additional special gratitude to Marcia Lang, Denise Pearce, and Kishani Gibbons who served as our principal contacts for preparing and obtaining materials and documents in advance of our campus visit and who were our schedulers and meeting coordinators during the site visit. Marcia, Denise, and Kishani were most patient and efficient in accommodating our requests for additional information and our need to change or add interviews to our schedule. They did a superb job of arranging for team



members to get to their various appointment destinations on time and were very proficient in providing help to the team on numerous occasions.

The review team especially acknowledges the participation of so many hardworking women and men of the BO Department who gave so graciously of their time and who demonstrated a genuine interest in the review process.

We also thank Vice President for Finance and Operations Andrew Simpson, Managing Director Karyn Magnusson, and all of the UBC administrative and academic staff for the opportunity to provide this evaluation report and to perform this review. This occasion was indeed a most professionally rewarding experience for the APPA review team.

# Executive Summary

APPA: Leadership in Education Facilities conducted a facilities management evaluation for The University of British Columbia focused on the BO Department only at the request of the BO Department leadership. Using the seven objective criteria developed as part of APPA's Facilities Management Evaluation Program (FMEP), a review team assembled by APPA examined the Building Operations Department at UBC with respect to its clarity and adequacy in the following areas:

- Leadership
- Facilities Strategic and Operational Planning
- Customer Focus
- Assessment and Information Analysis
- Development and Management of Human Resources
- Process Management
- Performance Results

UBC leadership requested that in addition to the general review of the BO Department, the review team should provide a focused review of the status of the current program for preventive maintenance and how the program would rank against industry practice and like programs at peer institutions. This issue is included in a section at the end of the report titled Other Considerations.

The University of British Columbia Vancouver campus was founded in 1915 and is a comprehensive research institution serving the educational needs of over 50-million students from all provinces and numerous foreign countries. The university is now regarded as one of the top 20 global universities. The main campus is located on British Columbia's, Point Grey Peninsula, the traditional territory of the Musqueam People just west of Vancouver City. The community of almost 39,000 persons enjoys an assortment of cultural, recreational, and athletic attractions, combined with a mild climate, clean air, and a beautiful environment. The main campus includes over 200 buildings totaling more than 9-million gross square feet located on approximately 1,000 acres of maintained land. The buildings on campus represent many differing architectural styles constructed over the campus's 100-year life as growth demanded new space. Current efforts to repurpose older building and integrate old and new styles is impressive. All new buildings adhere to LEED high performance building standards and many innovative concepts are being incorporated to provide reduced operating costs and a lower environmental footprint.

The Building Operations Department at UBC includes a staff of over 700 employees who are responsible for the operation and maintenance of the physical plant. In addition to the challenges of preserving the physical assets, BO must also respond to the impact of British

Columbia's growing needs and increasing demand for higher education programs in Vancouver and across the province. A staff of architects and engineers in Infrastructure Development also provides planning, design, project management, and construction management for the university's major capital improvement program. Energy and utilities are supplied by the Energy and Water Services Department. The three departments comprise the facilities component of the Finance and Operations Division.

UBC is unique in that it acts as its own "authority having jurisdiction" for adherence to building codes and urban planning. Development of the campus is guided by a campus master plan and a private development authority that may be subject to change as a new university strategic plan is developed and adopted under the new administration. Over the last five years, the university has seen significant growth not only in campus population but in physical infrastructure. More recently, action by the province has provided significant amounts of reinvestment to address deferred maintenance and renewal under the Routine Capital program.

The people who make up the BO organization at UBC are highly skilled and dedicated employees. They strive to deliver quality service and are aware of the need to adapt to the dynamic and challenging forces that are impacting today's higher education. They also appear to demonstrate creativity and vision when faced with resource constraints and competing priorities.

Building Operations at UBC maintains and operates several notable and unique systems, facilities, and programs for which they should be justly proud. These include:

- The solid commitment to energy and water conservation exemplified by collaborative work with Energy and Water services on the new campus hot water utility system startup and the biomass fired utility plant.
- A strong commitment to sustainability as an integral part of capital development, maintenance, and operations.
- The appearance and upkeep of the campus grounds.
- The cleanliness and "first impression" created due to the quality efforts of the custodial staff.
- The impressive tools for communications to both the BO staff and the campus community.
- Efforts by the BO management team to engage employees, build trust, and to provide transparency.
- Collaboration with other facilities related units with a focus on benefit to the institution.

Under the leadership of Managing Director Karyn Magnusson, the department has embarked on the implementation of a strategic plan that envisions a very different

organization than that which existed two years ago. The new plan is well researched and developed but is very aggressive and will require a high level of change management to move the large organization closer to the goals. Clearly, as should be expected, there is resistance to the many changes related to the plan and the workforce has not fully embraced the longer-term benefits of the plan. Facilities organizations at large higher education campuses are not known for their nimbleness or ability to adopt to rapid change due to their size and the repetitive nature of their responsibilities. Great care and leadership is required to bring about the changes envisioned in the “Four Pillars” strategic plan.

The review team has concluded that the BO Department, hereafter frequently referred to as (BO), is in most cases fulfilling its mission amid many forces impacting the organization. Operating in a period of rapid campus expansion and redevelopment with strained financial resources, increasing workloads, the complexity of recruiting and developing a diverse and multi-skilled workforce, coping with rapid changes in technology, and dealing with administrative directions are just a few of the dynamics that must be dealt with every day. The success that the facilities organization has achieved is not an accident. Overall, it is evident that the staff takes pride in its work and is moving toward incorporating new ideas and innovations into the work processes.

Most members of the campus community are satisfied with the overall performance of the facilities organization and noted improvements made during the past several years as indicators of a positive direction. During its four-day visit to the campus, the review team was greatly impressed that BO seems to be in harmony with the university's vision and mission as well as its day-to-day needs.

Building Operations is entering an era when there will likely be a mismatch of expectations and resources. The campus community's expectations will likely not diminish to a level that corresponds with the anticipated decline in resources. In fact, the demand for services is growing and is driven by four major factors. The first is UBC's increasing emphasis on research and outreach programs and an attendant need for BO to be responsive, timely, knowledgeable, and economical in the delivery of its services to support higher levels of research activity and the complexity of the facilities need to support the new programs. The second is the additional workload placed on the department by the growth in new and in renovated campus facilities, as evidenced by the CCM facility, ESB Building, etc. Each major complex project requires extensive integration and coordination of efforts between BO, Infrastructure Development, and Energy and Water Services, and in some cases the Properties Trust to be implemented successfully. Third is the expectation that campus ancillary units will increase their use of BO services as the new work management system is integrated and as the technical skills required for maintaining and operating newer more complex building systems increases beyond the capability of ancillary staff. Fourth is the present difficulty of hiring qualified personnel for vacant positions created by workforce aging, turnover, and workforce demographics.

## LEADERSHIP

The Building Operations organization is recovering from past challenges. The current leadership has recognized the need to re-establish trust within the organization and to refocus on moving the department in a positive direction. Significant effort has been invested in engaging employees to identify issues, establish a baseline of existing conditions, establish goals, and to describe actions to achieve those goals. The Four Pillars strategic plan and the Enhanced Assets, Operations, and Services (EAOS) program are now showing results through an exceptional communications plan and active demonstration of commitment by the leadership team. Various components of the plan have made good progress. Other components have been delayed due to the absence of effective business processes or management tools such as a current maintenance management system. It is important that communications continue and that highly visible successes be celebrated to let the organization share in the successes.

Dramatic change as described in the EAOS program is always difficult for large established organizations. Engaging the staff at all levels and demonstrating how the change will improve the work environment will help move EAOS into the second phase.

The organization structure will need to change in order to clarify roles, simplify reporting relationships, and unify similar functions to facilitate accountability and meaningful management metrics. This includes recommendation to introduce an AVP role to bring together the collective interests of BO, Energy and Water Services and Infrastructure Development. Particular gains in this regard would be around management of the BMS data to improve operational outcomes and the design, delivery, and QA of minor and major capital projects. Priorities described in EAOS will require training of staff to gain support, understanding, and their active participation.

As duties change and leadership positions are established, staff will need both professional development and technical skills training. The EAOS program should include components and resources for reinvestment in staff.

## FACILITIES STRATEGIC AND OPERATIONAL PLANNING

Building Operations at UBC has developed its own strategic plan to set goals and objectives and to map out a plan to move the organization ahead in future years. Extensive work occurred to identify deficiencies, engage the staff in evaluations of the workplace, develop goals, and describe changes to the organization to achieve the goals. The Four Pillars plan (Leadership Development, Asset Management, Customer Focus, and Employee Engagement) and the subsequent EAOS program as the road map for success have been implemented under phase I of the plan. Extensive communications have been developed to not only describe the plan but to report on its progress and to keep the organization

engaged. As might be expected, changing the culture of a large and complex organization requires time and buy-in from a majority of staff. This process does not occur quickly and must be flexible enough to adjust to changes as the plan evolves. Prior to phase II, it will be beneficial to assess current status and revise the phase II scope and timeline to recognize the lessons learned in phase I.

The university planning tools provide broad support for principles of sustainability and adherence to a total cost of ownership approach. Building Operations is beginning to play a more prominent role in the capital process through participation in work groups at many levels and in making valuable contributions to the capital delivery process. Planning is aligned with the university mission and goals. Some of this may change due to the recent change in administration.

## **CUSTOMER FOCUS**

Customer service is one of the Four Pillars identified in the BO strategic plan and identification of client needs clearly has a high priority within the department. The zone maintenance system was set up primarily to ensure prompt satisfaction of client requests and the facility manager (FM) positions are focused on communication with organizational clients within their zones in order to proactively identify customer requirements and to expedite their resolution. Unfortunately, the organizational emphasis on customer focus is not as clear for other units within BO outside of the zones and, even within the zones, there is a lack of systematic assurance that customer priorities are being met.

Quantitative measurement of customer satisfaction with the work of the zones is collected through an online survey, the Net Promoter Score, and the results are shared widely within the department as a measure of customer satisfaction. In interviews with clients, however, the review team heard concerns about other services, such as moves and estimates for client-funded work, where there seemed to be little mechanism for ensuring satisfaction other than calling up their FM to complain. Facility managers were universally praised for their efforts in being effective communicators and in coordinating activities such as power outages and project work, but they do not have authority to direct work within their zones and can only exercise personal influence.

The main concern of the review team regarding the emphasis placed on customer focus by the BO Department is the paucity of information concerning the cost of providing these services. Zone personnel are self-directed in completion of service requests and their time is charged primarily to standing work orders by building, so it is impossible to differentiate between reactive maintenance work and true customer service work. In fact, work that is supposed to be client-funded that takes less than two days of labour is currently provided at no charge, and there is no record of what the total cost of this concession is to the BO maintenance budget. Outside of the zones, staffing levels have not been set with any

correlation to customer service levels, except for the custodial unit, so again the cost of prioritizing customer focus is lost within the overall BO budget.

On a positive note, one of the main priorities in the EAOS project is to identify the staffing needs to meet not only the requirements of external clients but also to meet the stewardship needs of the facility assets that are the focus of the stewardship pillar in the BO strategic plan. By implementing a new computer maintenance management system (CMMS) or, in the short term, eliminating standing building work orders and normalizing the use of service requests and work orders, BO will be able to more clearly identify the resources required to meet both of its primary strategic priorities.

## **INFORMATION AND ANALYSIS**

As is the case with many universities, there is a wide range of data that needs to be collected in order to evaluate how the university's BO Department is performing. It usually takes more than one method to collect data and some of the methods are effective and often others are not. We believe this is the case at UBC BO. Through the use of several satellite data collection methods and its stripped down computerized work order system, the department has started to use some of the collected data and information to create information and knowledge. The satellite systems include Excel spreadsheets, the Lasefische databases, the time card system, building management system (BMS) and VFA facility condition assessment reports.

The existing Peoplesoft system is a rudimentary work order tracking system. It is currently not utilized to autogenerate preventive maintenance work orders and to add characterization through use of work codes, problem codes, equipment classifications, and repair codes. The Peoplesoft module also lacks a robust way to build maintenance schedules. The spreadsheets and databases are capturing only basic completion data. On the other hand, the time card system, BMS, and the VFA reports are processing data as is desired to provide knowledge of the processes being tracked.

Eventually this data and information will be refined and used to make better-informed decisions to enhance the management of change and to gain additional knowledge. This will occur once a more robust CMMS system can be obtained to consolidate the growing number of satellites and to provide the needed data collection abilities. As resources continue to be tightened, the need for pertinent, accurate, and reliable knowledge will be critical. With this knowledge in hand, it can be communicated throughout the organization and used to drive processes and improve departmental effectiveness.

UBC BO has not yet reached a desired level of data collection and to process that data and disseminate applicable key performance indicators (KPIs) that are critical to the effective leadership of the department. Although a substantial amount of data is being collected

through its legacy system, limitations inherent in that kind of system do not easily allow the transition from data to KPIs. UBC BO may thus explore opportunities to transition to a CMMS or CAFM (computer-assisted facilities management system) that will help pave the way for collecting and utilizing credible data to identify and measure practicable key performance measures.

UBC Building Operations currently uses a nationally recognized standard for determining overall building condition, facility condition assessment, and the data is being used as desired. The BMS system is also providing knowledge as desired and is currently analyzing cutting edge technology to monitor and anticipate building conditions. There does not exist a good system for review of building cleanliness. The review team suggests an in-house inspection program be developed to regularly sample areas of campus.

Monthly expenditure reports are used to balance expenditures and to plan for carryover projects. To better balance the pressures of funding capital projects with the needs of maintenance and operations, additional analysis and the adoption of clear priorities and adequate budgets will be required. Again, replacing or upgrading the existing legacy information system to a more comprehensive system can help achieve this objective. The current budget training system is operating well in tracking expenditures but the use of blanket building orders limits the ability to define program costs.

The department leadership recognizes the limitations of the current systems and is actively discussing additional changes that need implementation to improve the level and quality of KPIs. The EAOS program (discussed earlier in this report) is widely accepted by the workforce and is the guiding policy generator for what needs to be accomplished. Adequate KPIs rank very high in the going forward plans.

IT hardware and software business continuity should be addressed in a formal plan that is developed for the specific needs of UBC BO.

## **DEVELOPMENT AND MANAGEMENT OF HUMAN RESOURCES**

The strategic plan of the BO Department is a clear demonstration that BO management understands the importance of effectively managing and developing their human resources. Two of the Four Pillars in the plan, Leadership Development and Employee Engagement, are directly associated with this field and the plan recognizes that without excellence in these support pillars, then the service pillars of Asset Stewardship and Customer Focus are much less likely to be successful. Execution of the plan regarding these two pillars has been impressive and BO management should be commended on their many successes in the area of human resource management.



In order to increase employee engagement, BO has put major emphasis on communication and recognition. A communications audit was conducted and BO management used the results to create a spectrum of communications vehicles designed to ensure that essential information was communicated in the most effective manner for employees, such as crew talks and face-to-face interactions with supervisors, while less essential information that helped to develop broader knowledge of departmental priorities and successes was communicated through newsletters, digital message boards, and town hall meetings. The BO recognition program includes effective formal awards such as the Excellence Awards and Service Awards that are presented at major departmental events as well as informal recognition such as “You are Awesome” coffee breaks and one-on-one feedback from immediate supervisors, who have been provided with training on doing this effectively.

Other employment engagement efforts have included renovation of public spaces and shop areas within the University Service Building, which houses many BO employees, and the provision of uniforms on an optional basis. The effectiveness of the uniforms would be increased by making them an obligatory condition of employment, which would make them, in fact, a uniform feature of all BO employees. Another means of improving employee engagement recommended by the review team would be to expand performance management of front-line employees beyond the current attendance management system to a more comprehensive analysis of their performance at work in contributing to BO priority activities.

The Leadership Development pillar has been explicitly addressed through a series of workshops specifically created to address areas of weakness that had been identified through the EAOS process and through the communications and customer service surveys. Job descriptions were created for new management positions, such as the system owners and technical specialists, and job descriptions for existing positions were expanded to explicitly include soft skills for supervisors, such as communications and informal performance management and recognition. The Leadership Development program and the Employee Engagement efforts have been very successful based on feedback received by the review team. It is particularly impressive that the positive impact of the program was even recognized at the level of front-line employees. The only concern raised about the Leadership Development program was that, in its current form, it was a one time measure, and efforts will be needed to make it an ongoing form of training available as new supervisors and managers join the department.

It would appear to the review team that the changes made through the two strategic priority pillars are having a collateral impact on the labour relations climate in the BO Department, at least in relation to CUPE Local 116, which represents the majority of the unionized employees. For example, cooperative measures have been taken with the CUPE local to improve compensation for tradespeople and the selection process for them, so that regional issues of recruitment and retention can be addressed within BO. It is the opinion of the review team that BO management should continue to focus on positive labour relations

measures with the majority of their employees. This continued success in employee engagement should influence the members and local executive of IUOE Local 882 to return to the bargaining table to finalize a collective agreement that has been outstanding for almost three years.

## **PROCESS MANAGEMENT**

The facilities organizations at large, complex, research-intensive universities are very process oriented and regimented in order to achieve quality results and uniform compliance across a very large and diverse workforce. This is also true because of the high number of ancillary organizations that they serve and the diverse needs and expectations of these customers. These business processes are important foundational blocks upon which the organizational culture and ethics can be built. At UBC, the Peoplesoft work management platform, which was implemented many years ago not for its attributes but because it was part of an enterprise system, does not appear to be serving the BO organization well and does not provide the needed levels of functionality now available through computerized maintenance management systems (CMMS). A number of core services such as preventive maintenance, labor metrics, cost of work, customer billing, asset history, etc., that are facets of the Asset Management pillar have been held back by the lack of a comprehensive business platform. It is a priority to accelerate the procurement and implementation of a new CMMS to act as the focal point of the cultural change needed in the BO organization.

Integration of the CMMS with MRO inventory management, enterprise financial systems, HR databases, asset inventory systems, space planning, capital asset management, classroom scheduling, security systems, and building automation systems (BAS) will unlock the financial benefits of metadata that can be used to optimize facility use and operating cost, the second largest cost centre on a university campus.

The BO organization is performing many of these functions with the legacy system or home built data systems. The implementation of a new CMMS platform is a critical next step to support phase II of the strategic plan.

## **PERFORMANCE RESULTS**

The condition of individual campus buildings varies but in general appears to be meeting UBC goals. The overall facility condition index (FCI) rating for campus facilities of 0.33 falls in the “poor” category. Nevertheless, the overall appearance of the campus grounds is clean and complements the appearance of the surrounding community. Fountains and flower beds are well maintained and provide an inviting appearance. Cleanliness of the

interior building common space looks good. Operation and environmental conditions within the buildings are acceptable to good.

UBC BO is commended for its efforts to provide and maintain an environment that is attractive and functional, particularly to the casual observer and visitor. Nevertheless, the review team believes that many areas and systems unseen by the public are in poor repair, even though UBC BO has set high standards.

Various upgrades and new buildings have been added to the campus and its building systems over the past ten years. This level of construction is anticipated to continue into the future. Allocations by the Province in recent years have been growing.

**FCA:** Campus FCI is at 0.33, which is “Condition Poor.” This level needs to be addressed to avoid critical failures and shutdowns of obsolete and worn out systems, some of which are highly mission critical. The new construction program and the combined university and Province contributions can make a gradual impact on the FCI if maintained at current levels

**Custodial:** Based on our limited tours of building interiors (administrative, museum, research, theater, and classroom), the review team thought a good job was being done by the Custodial Department.

**Grounds:** It is evident when walking the campus that it is well laid out. Hardscape and walkways are well designed and attractive; fountains and sustainable features are operable and pleasing to view. It was also clear that the main malls are better maintained than the back areas of campus and that lawn and shrub beds are suffering under the draught conditions being experienced by the area. Many of the iconic trees on campus malls appear to be reaching the end of useful life through disease and trimming.

**Maintenance:** This area is more difficult to assess the performance results without the type of data that would come from a robust CMMS. Several observations are illuminating, however. The VFA facility condition data reports high levels of deferred maintenance, anecdotal stories of equipment failures and emergency response, high deferred maintenance suggests increased breakdown maintenance, the lack of a preventive maintenance program, only a rudimentary regulatory compliance life safety program and questionable asset data. Additionally, comments made by the workforce suggest that at least some members of the team do not believe in preventive and predictive forms of maintenance. Additionally, there is no centralized maintenance oversight of activity as would be found in a work control group.

**Survey NPS:** Customers seem to be generally satisfied with the services provided by BO; surveys show satisfaction levels to be reasonably high. The data is limited, however, to one question and is not delineated by building or school. Leadership recognizes the need for

additional tools that will provide more definitive data to better measure customer satisfaction.

**Employee Satisfaction:** Present efforts to engage the workforce are making excellent headway even though some undercurrent issues remain.

**EAOS:** The Enhanced Asset Operations and Service Program (EAOS) is a well thought out and comprehensive program to change from a reactive to a proactive methodology. It is one of the best programs the review team has seen. It is currently at the beginning of its implementation and will be greatly aided with the implementation of a new CMMS.

Overall, the UBC BO Department is meeting its obligations to the campus community. The maintenance and operations group is currently struggling without a comprehensive CMMS and is in transition to the EAOS program. There are areas for improvement in most sections of the department. Two areas of positive note are the FCA program and the human factors areas that are discussed in Section 5.0: Development and Management of Human Resources.

## **OTHER CONSIDERATIONS – PREVENTIVE MAINTENANCE PROGRAM**

Preventive maintenance is the proactive performance of routine scheduled maintenance on key building system components to extend component life, reduce component failures, reduce costly unplanned outages, and reduce program interruption. Through this risk management strategy, maximum value is obtained from the system asset and losses due to program interruption are reduced or avoided.

The preventive maintenance (PM) program at UBC was a focus area of the overall FMEP of the BO unit. Building Operations recognizes in their self-review, "Enabling Greatness," that their preventive maintenance program is one of the areas in need of significant improvement. While the program is not currently, in the team's opinion, at the level expected at a complex research institution, there are signs of progress. Work is underway to complete the inventory of assets and job plans, essential to a comprehensive approach to PM. BO is planning to procure a fully functional computerized maintenance management system to replace the current version of PeopleSoft, providing an information system designed to support an organized preventive maintenance program. Although various trade groups are using spreadsheets or databases to track PM activities, the lack of a consistent or coordinated approach to PM data is not conducive to managing the program.

# Evaluation Report and Recommendations

The University of British Columbia (UBC) Vancouver campus was founded in 1915 and is a comprehensive research institution serving the educational needs of over 50-million students from all provinces and numerous foreign countries. UBC is now regarded as one of the top 20 The main campus is located on British Columbia's, Point Grey Peninsula, the traditional territory of the Musqueam People just west of Vancouver City. The community of almost 39,000 persons enjoys an assortment of cultural, recreational, and athletic attractions, combined with a mild climate, clean air, and a beautiful environment. The main campus includes over 200 buildings totaling more than 9-million gross square feet located on approximately 1,000 acres of maintained land. The buildings on campus represent many differing architectural styles constructed over the campus's 100-year life as growth demanded new space. Current efforts to repurpose older building and integrate old and new styles is impressive. All new buildings adhere to LEED high performance building standards and many innovative concepts are being incorporated to provide reduced operating costs and a lower environmental footprint.

The Building Operations Department at UBC includes a staff of over 700 employees who are responsible for the operation and maintenance of the physical plant. In addition to the challenges of preserving the physical assets, BO must also respond to the impact of British Columbia's growing needs and increasing demand for higher education programs in Vancouver and across the province. A staff of architects and engineers in Infrastructure Development also provides planning, design, project management, construction management, and inspection services for the university's major capital improvement program. Energy and utilities are supplied by the Energy and Water Services Department. The three departments comprise the facilities component of the Finance and Operations Division.

UBC is unique in that it acts as its own "authority having jurisdiction" for adherence to building codes and urban planning. Development of the campus is guided by a campus master plan and a private development authority which may be subject to change as a new university strategic plan is developed and adopted under the new administration. Over the last five years, the university has seen significant growth not only in campus population but in physical infrastructure. More recently, action by the province has provided significant amounts of reinvestment to address deferred maintenance and renewal under the Routine Capital program.

The people who make up the Building Services organization at UBC are highly skilled and dedicated employees. They strive to deliver quality service and are aware of the need to adapt to the dynamic and challenging forces that are impacting today's higher education.

They also appear to demonstrate creativity and vision when faced with resource constraints and competing priorities.

Building Services at UBC maintains and operates several notable and unique systems, facilities, and programs for which they should be justly proud. These include:

- The solid commitment to energy and water conservation exemplified by collaborative work with Energy and Water services on the new campus hot water utility system startup and the biomass fired utility plant.
- A strong commitment to sustainability as an integral part of capital development, maintenance, and operations.
- The appearance and upkeep of the campus grounds.
- The cleanliness and “first impression” created due to the quality efforts of the custodial staff.
- The impressive tools for communications to both the BO staff and the campus community.
- Efforts by the BO management team to engage employees, build trust, and to provide transparency.
- Collaboration with other facilities related units with a focus on benefit to the institution.

## 1.0 LEADERSHIP

*Senior leaders in an effective facilities organization set direction and establish customer focus, clear and visible values, and high expectations in line with institutional mission, vision, and core values. Effective facilities leaders facilitate the dialogue around larger leadership issues, such as total cost of ownership (TCO), sustainability, recapitalization requirements, and facilities reinvestment. Leaders inspire the people in the organization and create an environment that stimulates personal growth. They encourage involvement, development and learning, innovation, and creativity. Leaders act as both educators and change agents.*

### **1.1 Describe how leadership roles and responsibilities and the decision-making structure are defined by the facilities department and generally understood by internal and external stakeholders.**

The current management team (BOLT) is in place and functioning to address both daily and long-term issues as they arise. The breakout of duties and responsibilities, which has been an area for improvement, is being addressed through charts of primary and secondary assignments that are currently being vetted with the organization. The hierarchy for decision making is in place but the current organizational structure generates some overlapping responsibilities and potential duplication of effort.

As is typical for a large research-intensive university, BO operates in a matrix environment where there are many peers, stakeholders, and community participants involved in any large decisions. The leadership appears to be seeking to establish these communication channels and to directly address issues of importance to BO. It also appears that leadership is going to great lengths to improve communications both within the department and to external constituents.

The APPA team observed that the three managing directors, each leading an organization related to facilities management, all report directly to the vice president. This arrangement puts the vice president in the position of arbiter on nonstrategic decisions and is not typical for the other major units reporting to the vice president. A more prevalent reporting structure at peer institutions is to have all facilities and space management related functions reporting to an associate vice president position. Particular gains in this regard would be around management of the BMS data to improve operational outcomes and the design, delivery, and QA of minor and major capital projects. This arrangement may even include facilities related functions in the ancillary operations. As third party development and public/private arrangements have become more prevalent, some institutions will also include real estate and property management functions in the associate vice president portfolio.

***Recommendation 1.1.1***

***Continue positive communications internally to staff and externally to peers and the campus community. There is a good story to tell that let's everyone know of the positive changes underway.***

***Recommendation 1.1.2***

***Initiate a focused effort to fill key leadership positions within BO to provide stability and to bring additional capacity to the organization.***

***Recommendation 1.1.3***

***Look for opportunities to celebrate highly visible near-term progress and successes through EAOS to demonstrate progress, build trust, and to prove that the new program is actually working to make BO a better place to work. One example is the "transition team" to address start-ups and new construction quality control.***

***Recommendation 1.1.4***

***Continue with efforts to further define and train on new roles and responsibilities especially when the recommended organizational shifts are implemented.***

***Recommendation 1.1.5***

***Evaluate the potential to consolidate all facilities related functions under a new***

*associate vice president position. Consider adding other functions such as space, third party development, and public/private partnerships.*

**1.2 Describe how the leadership system includes mechanisms for the leaders to conduct self-examination, receive feedback, and make improvements.**

The Building Operations leadership team members are engaged at many levels as evidenced by the “stand up” briefings, staff meetings, EAOS work group meetings, and shop briefings. Leaders are focused on positive improvement by engaging employees at all levels, not only through communication but also through actual participation in program development and implementation. Programs are evaluated for success and modified as needed to achieve the desired goals. Feedback mechanisms are in place to allow comments from both staff and campus customers.

**1.3 Describe how the organization aligns its mission, vision, and value statements with those of the institution.**

The mission, vision, and values of the university are clearly evident in the strategic plan for BO (Four Pillars) and also in the transformation program (EAOS). The role of BO seems to be clearly understood and is widely communicated on the website, kiosk postings, newsletter, etc. This is especially true for sustainability that is observed to be an integral component of nearly all BO functions. Various media types such as kiosks, the departmental newsletter, the website, and postings, are utilized to convey messaging to staff, peer organizations, and the university community that BO’s mission and vision are well aligned with those of the university and the vice president’s organization. The work of the various committees setting capital project priorities appear to utilize the university strategic plan and the academic plan to guide setting of priorities and the development of projects although it is acknowledged that the university plan may be changing due to a change in top administration.

**1.4 Describe how effective the senior leadership of the department has been in establishing and sustaining internal and external communications plans that (a) educate the campus community on the facilities department’s role in institutional success; (b) promote customer and stakeholder feedback; and (c) reinforce the role of front-line staff in creating a positive public impression of the quality of organization services.**

Discussions with several building administrators indicated that they receive regular communication regarding happenings in BO and that they generally feel that they understand BO’s role, responsibilities, and mission. This communication comes through the facility managers, the BO management team, and through the website. The website design also provides easy access to information regarding the department’s role and the methods for obtaining support, maintenance response, and requested work. The website is welcoming, informational, and easy to use for the community user. Users did identify a



long-standing issue of financial responsibility for certain types of maintenance and renewal that needs clarity.

Feedback from customers and the community is obtained through the “single question” feedback form that asks, “How did we do?” This information appears to be used for continuous improvement discussion among management, supervision, and staff.

To promote engagement by line staff in the ownership of the facility stewardship responsibility, the vision plan and the strategic plan (Four Pillars and EAOS) both emphasize individual accountability and customer service. The plans have been presented in numerous shop sessions, are evident on the electronic bulletin boards, and are displayed in the workplace in prominent locations. It was also observed that employees are asked to actively participate in strategic discussions to set directions for the department through the EAOS program. The “Path Forward” for EAOS clearly indicates the benefits to staff in moving from being a reactive organization to being a planning organization.

***Recommendation 1.4.1***

***Provide guidance on the website for general financial responsibility for basic maintenance functions with emphasis on specific items that “are not” the responsibility of BO.***

***Recommendation 1.4.2***

***Consider expansion of the customer feedback program to include feedback to specific units on an annual basis such as municipal, custodial, etc., as a metric for continuous improvement. Focus on facility administrators or others that regularly do business with BO. Continue with the existing program with a focus on project and billable work.***

***Recommendation 1.4.3***

***Continue to support the website and informational kiosks to promote transparency with staff, celebrate progress and successes, and to provide recognition of staff achievement and contributions to the vision.***

**1.5 Describe how the leadership of the facilities department emphasizes the importance of excellence and how it engages in excellence.**

It was clear to the team that excellence in all aspects of the organization is a key component of the Four Pillars plan. The engagement of employees and the delivery of customer service are two of the pillars that are very prominent. The balance of customer service and satisfaction versus the delivery of core operating and regulatory compliance services will need to be addressed.

The demands on facilities staff to maintain competency during a time of significant change due to technology are increasing dramatically. An important component of excellence is the skills and technical abilities of staff. The team heard from staff about the need for succession planning, professional development, and skills training.

***Recommendation 1.5.1***

***Develop a consistent and comprehensive means of determining professional development needs of leadership staff. Utilize APPA professional development training and certification to provide a development "track" for managers with leadership potential. Utilize the Supervisor's Toolkit training on campus to better equip new first-line supervisors for their job responsibilities. Take advantage of APPA and PCAPPA opportunities for scholarships to reduce the cost of delivering these programs.***

***Recommendation 1.5.2***

***Identify expectations for delivery of customer service and monitoring of customer satisfaction levels in order to focus staff efforts in high priority areas. Determine core maintenance and operating responsibilities and deliver training to staff on balancing these demands with customer service.***

**1.6 Describe how the leadership of the facilities department promotes and ensures ethical behavior in all interactions.**

The team observed that there exists a goal of individual accountability that may not have existed before. However, the tools to create metrics to monitor performance, completion rates, timely delivery, and cost effectiveness and provide feedback to managers, supervisors, and staff, generally do not exist due to the limitations of the current CMMS. Many opportunities exist for employees, especially those involved with procurement, contracting, accounting, and budgeting to face ethical decisions or conflicts of interest. It was not clear to the team that training of staff occurs to raise awareness of ethical issues and that there is a clear method of transparency for potential conflicts of interest. As employees become more engaged and the decision-making process is driven lower in the organization, the potential for issues increases and should be countered with clear policies and training.

***Recommendation 1.6.1***

***Develop policies and/or processes to clearly define expectations in terms of employee behavior on ethical issues and for potential conflicts of interest. Provide training and awareness of case studies and legal/ethical issues that may be encountered by staff.***

## 2.0 FACILITIES STRATEGIC AND OPERATIONAL PLANNING

*Strategic and operational planning consist of the overall planning process, the identification of goals and actions necessary to achieve success, and the deployment of those actions to align the work of the organization. The successful facilities organization anticipates many factors in its strategic planning efforts: changing customer expectations, business and partnering opportunities, technological developments, institutional master plans, programmatic needs, evolving regulatory requirements, building organizational capacity, and societal expectations, among other criteria.*

### **2.1 Describe the strategic plan that was developed for the facilities organization that includes the goals and objectives of the department.**

Based on discussion with staff, the department is in a rebuilding phase that started in late 2014. Indications are that trust was lost between workers and management and that communications were poor resulting in morale and organizational performance problems. The new managing director has initiated a staff-driven, very comprehensive evaluation of the issues and has identified priorities for re-establishing good working relationships, trust within the organization, and engagement of staff. The current strategic plan (Four Pillars), which is focused on the BO Department, and the EAOS program, describes needs and deficiencies, the goals and objectives, and the remedies to achieve those goals and objectives. Many of the goals and objectives are related to organizational structure and reporting relationships that must be addressed to clarify duties and responsibilities and to provide clear reporting relationships. The plan is highly developed with graphic diagrams and a process graphic that describes the Path Forward. A task listing and associated time line has been developed to act as the road map to move the organization ahead. Tasks from the plan are at various levels of implementation. Periodic updates are provided to staff on progress.

In an earlier organizational change, the Energy and Water Services Department was separated from the BO Department. Management has invested significant effort to define duties and responsibilities, identify shared strategies, and coordinate operational responsibilities and shift staffing to match the assignment of functions. Discussions are continuing at the managing director level to make further adjustments.

#### ***Recommendation 2.1.1***

***Evaluate organizational models for the zones, the central shops, minor construction, work management, and business support services to simplify the organization, create clear duties and responsibilities, provide clear reporting hierarchy, identify resource allocation opportunities to advance strategic moves, and reduce overlap of responsibilities. Utilize models at peer institutions for examples.***

*Recommendation 2.1.2*

*Continue efforts to divide duties and responsibilities with Infrastructure Development and with Energy and Water Services to clarify division of labor, simplify decision making, and allocate resources properly.*

- 2.2 Describe the process used to develop the strategic plan and how participation from internal and external stakeholders was sought out, the process used to gain approval of the plan by the administration, and how it was communicated to internal and external stakeholders.**

The team learned that extensive preliminary work was done by department leadership to identify employee concerns, organizational problems, business process deficiencies, and financial/resource challenges. This information was captured in a critical document called the "Current State Analysis." EAOS goals acted as the basis for extensive questions asked at fact-finding sessions that were used to identify the baseline (Current State) of key systems, processes, and organizational structures. All key stakeholders including staff were encouraged to participate in these sessions and the subsequent development of the issues and gaps to be addressed by the EAOS program.

- 2.3 Describe the processes defined to ensure that strategic goals and key performance measures are understood by all and the extent that those goals and measures are periodically reviewed.**

The vision described by the Four Pillars document conveys the strategic priorities and core values for the department. The EAOS program has been thoroughly vetted with staff and has been communicated through numerous media types. The leadership team has communicated the two phases of the plan and how they will be rolled out. Progress on the plan is updated periodically. The original timetable was very aggressive and may not have accounted for the slower adoption by the whole organization. It may prove beneficial to regroup based on actual progress and an assessment of the program and then revise the phase II scope and timetable to better reflect lessons learned and the ability of the organization to respond to change.

*Recommendation 2.3.1*

*Utilize the CMMS selection and implementation as a team building and unifying benefit to the organization.*

*Recommendation 2.3.2*

*Conduct an assessment of the current status of the plan and lessons learned.*

*Recommendation 2.3.3*

*Recalibrate the scope and timetable for phase II based on the FMEP recommendations and the experience of the leadership team.*

**2.4 Describe how the institution's and the facilities' master plan incorporate and reflect principles of sustainability, total cost of ownership, and overall facilities renewal.**

The self-assessment clearly described the level of commitment that UBC has adopted toward sustainability and the built environment. The BO strategic plan (Four Pillars) includes the stewardship of assets as a key component. A long-term view is described for decisions involving maintenance versus replacement and capital planning priorities for renewal. Through the improvements in the project delivery processes effort led by the New Building Quality Assurance Committee, total cost of ownership is a factor in all decisions related to new facilities. Each project is expected to make a positive contribution toward lowering the total cost of ownership.

**2.5 Describe the current strategies and processes defined to ensure continuity of functions in the event of staff turnover, contractor failure, or other unanticipated disruptions.**

Given the high level of capital construction activity, the potential for project related disruptions is very high. BO and Utility and Water Services interact with the project services group to anticipate problems and minimize the impact. Responses to contractor-induced disruptions are coordinated through this same group. Vacant key positions within BO have had a negative impact on stability and communications in dealing with project related issues.

**2.6 Describe the emergency response plans that are currently in place and how they are communicated to facility employees and the campus community as required.**

The formal published emergency response plan is administered by Risk Management with BO assuming roles and responsibilities within the plan. It was not clear from the self-assessment that the plan had been practiced by staff through drills or tabletop exercises. Reference was made to a departmental emergency plan as well as an emergency operations centre (EOC) in the self-assessment, but it was not clear how the department participates in a university level emergency event.

In the event of an emergency, a unit such as BO must address business continuity at two levels. First, the plan must focus on impacts to campus facilities and programs and explain how to restore function and stabilize the environment. Second, the plan must address the continuity of business processes within BO to ensure that services can be maintained and that backup processes are not only available but that the staff has been thoroughly trained so they understand and own these responsibilities.

***Recommendation 2.6.1***

***Develop a business continuity plan for BO that addresses key business functions, communications, payroll, work management, contracted services, and coordination with ancillary units.***

*Recommendation 2.6.2*

*Conduct periodic drills to demonstrate staff understanding and readiness for roles and responsibilities in an emergency response. Conduct exercises to test communications protocols and response coordination. Federal and/or provincial assistance may be available to support these events.*

**2.7 Describe the process and timing for a regular, periodic review of the facilities strategic plan.**

A comprehensive strategic plan for the three facilities cohort groups was not evident to the team although significant collaboration occurs to identify project needs that feed into the capital planning process. The EAOS plan is under active implementation and is being evaluated in terms of priorities and a revised timetable. The plan anticipates a periodic review of progress and a recalibration of effort to achieve the goals. A revised organizational unit is being considered to help drive the program forward.

**2.8 Describe the process used to develop the capital plan, addressing needs for renovation, major repairs, and/or upgrades.**

Based on interviews with both BO staff and staff from Infrastructure Development, the development of projects greater than \$5 million is managed by the Capital Planning Working Group located in the Infrastructure Development unit and the UBC Properties Trust. The process engages many stakeholders and evaluates projects against criteria related to strategic plan priorities for UBC. Projects are vetted with UBC executive members and the UBC Board of Governors.

The Routine Capital program includes projects below \$5 million and is managed by the Infrastructure Development unit with input from BO and Energy and Water Services. These projects focus on cyclical renewal and maintenance needs. The process of development and evaluation of projects is governed by the Routine Capital Steering Committee. The facility condition index (FCI) is used as a metric to show progress against deferred maintenance and renewal backlogs. It is notable that in 2016-17, UBC completed \$43 million worth of Routine Capital projects, demonstrating a significant commitment to reinvestment in facilities and goals to keep facilities functional and to be able to support the university mission.

**2.9 Describe the processes utilized to ensure a budget is developed with input from multiple levels of staff using historic expenditures, needs analyses, and with effective allocation of available resources to support the organization's goals and objectives, while seeking new and innovative measures to leverage resources.**

Interviews with staff indicated that input to the lists for capital projects, particularly the Routine Capital, is provided and that BO management participates in processes for setting

priorities and project selection for funding. This is also the case for the “unplanned renewal” budget that is managed by BO and is utilized for minor repairs, renewal, and replacement that is immediate in nature and is not covered by the Routine Capital funding.

Less information was made available to the team regarding the development and subsequent management of operating budgets. Funding appears to be provided on a square footage level. Management of expenditures occurs at the system owner level. It was not clear to the team how line employees and first-line supervisors are engaged to make contributions to the budgeting process and the identification of maintenance & operations needs. The chart of accounts appeared to be typical and adequate for an operating unit the size and complexity of BO. Revenue from ancillary units is budgeted and tracked as an integral part of the operating budget process.

*Recommendation 2.9.1*

*Align operating budgets with new organizational structure. Engage staff at all levels in formulation of operating budgets and fiscal needs.*

*Recommendation 2.9.2*

*Revisit the “New Building” funding model and incorporate actual costs, tiers for types of buildings, impacts of technology (communications, BAS, smart building concepts), and total cost of ownership concepts.*

*Recommendation 2.9.3*

*Anticipate growth in billable support services to ancillary units. Be sure that the organizational structure responds to incremental growth in services without the necessity of organizational restructuring at each increment.*

*Recommendation 2.9.4*

*Given BO's expertise in critical systems maintenance, operations, and compliance, it is recommended that these services be marketed to ancillary units to achieve a more uniform institutional approach to ensuring that assets are cared for appropriately, that energy and environmental goals are reached, and that documentation of regulatory compliance issues is consistent.*

**2.10 Describe the process used to ensure that the capital planning process aligns itself with the campus master plan and the institution’s strategic plan, in terms of preferences and current and future.**

Capital planning occurs at three levels: (1) major capital, (2) routine capital, and (3) unplanned capital. The Campus and Community Planning Group, along with Land Use and Public Realm, manages the campus master plan. The Capital Planning Work Group includes representation from many stakeholder groups and generates the Major Capital Plan. Infrastructure Development manages Routine Capital in collaboration with BO and

Energy and Water Services. Unplanned capital is managed by BO. The Master Plan, the Land Use Plan and other provincial documents are utilized to guide the development of capital projects to ensure alignment with the UBC strategic plan that is expected to change soon under a new administration.

***Recommendation 2.10.1***

*Continue efforts to update UBC's Technical Guidelines for capital projects and open discussions with Infrastructure Development and Properties Trust on how to achieve compliance with the guidelines.*

***Recommendation 2.10.2***

*Engage the Provost's Office to a greater extent in discussions regarding scope development and priorities for academic projects.*

**2.11 Describe the process used to ensure that representatives from operational units participate in the development of construction program planning and are active participants in the acceptance of completed projects and documents.**

Through the self-assessment and interviews with staff, the team determined that representatives from operations are participating in the development of capital projects, their scope, and priorities. This falls under the asset stewardship strategy of the Four Pillars. An example of progress in this area is the formation of the transition team whose members contribute to the capital process from project development to inspections for acceptance. The team also manages the handover of completed projects utilizing processes described in the UBC Technical Guidelines.

***Recommendation 2.11.1***

*Evaluate the formation of a facility administrator's network to bring together all administrators to provide updates on procedures and processes, inform on what's new in BO and standardize duties and responsibilities.*

***Recommendation 2.11.2***

*Strengthen the UBC Technical Guidelines to include standards for equipment items and systems where compatibility and communications are required. Review design and construction guidelines from peer institutions to further enhance the guidelines document. Collaborate with the Properties Trust to achieve compliance with campus guidelines for new construction.*

**2.12 Describe how leadership is building and expanding organizational capacity and capabilities.**

The departmental strategic plan and the EAOS program include plans for expanding both organizational capacity and the capabilities of the staff. Development of a new



organizational structure and business processes will streamline current operations and allow higher productivity. Investment in staff development and training will expand skill levels and effectiveness. UBC continues to grow at a rapid rate. It should also be anticipated that BO will provide higher levels of support for ancillary units in the future. The organization must be able to absorb marginal expansion in responsibilities without major reorganization or restructuring with each increment of growth.

***Recommendation 2.12.1***

***In the areas of growth and capacity, review planned organizational diagrams to ensure that marginal expansion capacity is available and that marginal growth can be absorbed without structural changes.***

**2.13 Describe the practice used to ensure that the workplace environment optimizes staff performance.**

The team witnessed the strong emphasis on workplace safety. Also seen were strong examples of a commitment to employee wellness and the benefits to the employer from having a fit and healthy employee base. Also, alternative work schedules have been offered to staff to address long commuting distances and the remote location of the campus. Employees are regularly recognized for superior performance through awards and public recognition in the workplace. Corrective options are available for employees that could benefit from counseling, performance reviews, and performance management plans.

### **3.0 CUSTOMER FOCUS**

*Customer focus is a key component of effective facilities management. Various stakeholders (faculty, students, staff, and other administrative departments) must feel their needs are heard, understood, and acted upon. Various tools must be in place to assure customer communication, assess and assimilate what is said, and implement procedures to act on expressed needs.*

Building Operations has clearly demonstrated that they understand these requirements by identifying customer service as one of the Four Pillars in their departmental strategic plan. In the plan, they commit to "...deliver the best value to our customers by working in a trusting partnership that anticipates their needs and finds creative solutions to emerging issues and always keeps them apprised of our priorities and progress."

In our interviews with customers at all levels in the university, there were common themes of very good communications between BO and the customers, and overall satisfaction with the quality of the services provided by BO. The customers also indicated, however, that scheduling of services was sometimes problematic and our team did observe that, in several parts of the organization, mechanisms did not seem to be in place to ensure that completion of work was aligned with customer or departmental BO priorities.

### **3.1 Describe the process you use to identify your customers.**

Building Operations has formally categorized their customers using APPA standard definitions based on their relationship to BO and UBC. Internal customers are those units and personnel within BO who receive support services from other units or personnel within the department. Customers external to the department are classified as UBC-affiliated, such as core UBC departments, faculties and ancillary units or non-UBC affiliated entities such as private businesses that lease campus spaces on a long- or short-term basis. BO also acknowledges that everyone who physically spends time on the campus is a BO customer, whether they are people living in the residential developments within the university endowment lands, casual visitors attending the Chan Centre for Performing Arts, or touring the campus as potential students.

These customer categories were defined as part of the creation of the BO strategic plan. The strategic plan was developed in a very consultative manner, including direct involvement by 25 management personnel and robust communication and feedback mechanisms with the remainder of the department over a two-year period. With customer focus, as one of the four pillars in the plan, there was considerable discussion around who the customers were and how best could they be served.

### **3.2 Describe how you identify the needs and expectations of both your internal and external customers and how you measure your success in meeting those expectations.**

The specific needs of the external customers are identified in two ways:

- They identify their needs through one of BO's inbound channels, including the Service Centre, the website, a Twitter channel, or through dedicated FMs, who function as customer service agents to identified departments and faculties.
- The FMs proactively identify customer needs through meetings and other networking opportunities with existing clients and by identifying new clients within their assigned zone of the campus.

All of the external customers that were interviewed by the team were familiar with the self-serve module of PeopleSoft, which serves as the online service request and work order system for BO, and knew how to submit and track their requests. They also were very complimentary of the FMs who were easy to contact by phone or email to follow up on a work request if the service standards didn't meet the expectations of the client. The FMs are also expected to deal with not only the daily service issues, but also to work with the clients to identify any facility renewal deficiencies that need to be included in the annual Routine Capital program, which aims to reduce the level of deferred maintenance on campus.

The establishment of the FM positions has had a huge positive impact on the ability of BO to proactively identify all of the client needs for specific services. This success is measured in two ways, a short online survey known as the Net Promoter Score (NPS), which is

related to individual client service interactions, and feedback that is solicited from key customers within each zone as part of the annual performance reviews of the FMs.

The NPS is solicited at the conclusion of all service requests and can also be accessed through the BO website. It asks a 1 to 10 score for the question: “How would you rate your most recent experience with your BO zone team?” The scores are regularly tracked and communicated to the entire department through a variety of media. While the high scores that have been achieved in recent years are commendable, the FMEP team was concerned that the NPS question focuses only on the zone teams and does not, therefore, provide a feedback process for the many other members of the BO Department that provide services to external clients. So in this regard, it is technically not a comprehensive performance assessment tool for BO. As well, the information provided to the team indicated that some 2,000 responses had been received annually in recent years, but that number was not put in the context of how many service requests had been completed. Without knowing the response rate, it is hard to assess the statistical validity of the NPS results.

***Recommendation 3.2.1***

***Adjust the NPS format to encourage client comments on all service offerings. Analyze supporting data to ensure that NPS results are statistically sound so that the positive trends can be used as a valid measurement of departmental success.***

The annual feedback solicited from key customers is another method of measuring BO success with their external customers. Based on the interactions of the FMEP team with a number of key clients, it would appear that this is a method that would receive frank positive and negative feedback of a broad nature that could be used in assessing the performance of BO in relation to that client. It is unfair, however, to use this feedback to assess the performance of the FMs, since they do not directly oversee the activities of the zone staff or other BO service providers, and they can only ensure that client priorities are met through their personal ability to persuade the service providers to address their priorities first.

**3.3 Describe the process you use to establish the type of organizational structure and levels of service most likely required to meet customers’ needs and expectations and describe the communication processes you use to share those service levels and structure.**

The rationale for the organizational structure and levels of service vary widely between different units in BO. In the custodial unit, the levels of service have been defined based on APPA standards; staffing levels have been set based upon those standards and a detailed description of the services provided to clients, including frequencies, is provided on the BO website. Waste Management also provides detailed information on what to expect from their unit as routine service and how to access nonroutine services, but no rationale was provided for the staffing levels in this area.

Beyond those two units, there is very little information shared with customers on what levels of service they can expect. There is a description of the responsibilities of each unit in BO on the website; however, no information on service levels is apparent. In terms of organizational structure, BO has two unique features designed to assist the organization to define and meet service level expectations.

The first unique feature is the zone model that was set up in 2009 to address customer requested work and minor maintenance tasks within all core UBC buildings. Many other universities have zone-based teams, but they are normally defined on geographic proximity which optimizes trades personnel efficiency by reducing travel time between worksites. At UBC, the zones are set up based upon grouping of buildings occupied by common departments or faculties. Thus, for example, all of the buildings occupied by the Faculty of Arts would be in one zone, even if they were spread widely across the campus. The intent of this model is to ensure that all of the client service requests are more consistently prioritized and that communications with building occupants can be facilitated because the FM assigned to the zone will have fewer customer points of contact.

In practice, however, this zone system is ineffective at ensuring consistent customer service levels for several reasons. First, the staffing level for each zone is identical, with one individual assigned to the zone from each of seven trade classifications, without any evident relationship to the total square footage or technical complexity of the buildings being served. Second, the distribution of the buildings within a zone means that many tradespersons spend a considerable period of time travelling around campus, particularly in the zones that straddle pedestrian-only malls that do not allow direct travel by vehicle.

Third, the tradespersons within each zone operate in a self-directed mode, so the customer priorities that are defined by the FM or are identified by a service request submitted through the Service Centre are not necessarily those work orders selected by the zone staff to implement on a daily basis. The FM can influence the work completed by the zone staff, but ultimately it is the head of the associated trade shop that is accountable for the distribution of labour time within their particular trade group. The review team was even told of zone staff being pulled out of the zone to complete construction project work and vice versa without consideration of relative customer service priorities.

Finally, zone staff currently charges their time for most types of work to standing work orders by building. This prevents any analysis of the cost or effectiveness of zone staff in meeting customer priorities or service levels and makes it difficult to hold them accountable for their performance in this regard. The Service Centre indicated that, even when the completion of an item of work was recorded by closing the original service request, it was often difficult to have the tradespeople enter notes on the service requests regarding the details of the work. There has even been a policy introduced that waives the labour cost on any client-funded requests that require less than two days of labour. This further blurs the line between maintenance work and customer satisfaction. Customers

interviewed by the review team also expressed dissatisfaction with response time for a number of requests for minor work and estimates for other services, but other than calling their FM to get them to investigate, they did not seem to have any other way to ensure that BO staff met any specific service standards.

***Recommendation 3.3.1***

*The zone model currently used by BO should be reviewed to improve its efficiency and effectiveness. Grouping buildings geographically or by technical complexity should be considered, as well as analyzing staffing levels to ensure correlation of staffing with expected service levels for both core maintenance tasks and customer requested work.*

***Recommendation 3.3.2***

*Accountability for zone activities should be reviewed. If the FMs are to be held accountable for ensuring customer satisfaction within their zone, then they should have more direct control over the allocation and completion of the work of the zone staff.*

***Recommendation 3.3.3***

*The use of service requests and work orders should be normalized. In most maintenance management systems, service requests are used to identify a service requirement and the budget that should be charged in order to accomplish it. The Work Management Unit approves core maintenance work and optional client service work should be charged to a client account. Once a service request is approved by the appropriate authority, it is converted to a work order and all tracking of the accomplishment of the requested work, including time spent, materials used, and status of the work, is tracked through the work order system. Use of the standing work orders by building should be discontinued and individual work orders should be used to track discrete pieces of work.*

The second unique feature of the UBC BO Department that is designed to assist the organization to define and meet service level expectations is the pod concept used to manage the three divisions of the trades group. This concept is aimed primarily at meeting the needs of the internal customers to BO, which in this case are the building systems and the technical authorities that define the regulatory maintenance requirements for many of them. Within each division, there is a system owner position that is accountable for the condition of all of the assets that they oversee. The system owner is supported by two managers, one the technical specialist, who focuses on PM strategies, equipment selection, and technical troubleshooting, and the other, the people and process manager, who manages the performance of the large group of tradespeople within the division through unionized heads and subheads. This structure is a clear improvement over the previous situation where there was only one management position in each division and there was not enough capacity to proactively manage the three technical divisions. There are,

however, some issues associated with the implementation of this concept that are proving problematic.

One is that BO is having significant problems in filling all of the new positions. One of the system owners has been recalled from retirement and both of the other positions are currently filled on an acting basis by one of the division managers. If this concept is going to have a reasonable chance of success, then these positions really should be filled as soon as possible. On the other hand, both of the acting system owners appear to be doing an effective job despite wearing two hats and there may not be a need to have both a system owner and a technical specialist position in all divisions.

The second issue concerns the division of duties between the system owner, the technical specialist, and the people and process manager. By having them all in the same division, there is a risk that the line between the closely related responsibilities can become blurred and trades staff may be unsure who is in charge. If a work management unit were to be created as recommended in Criterion 6.1, then the technical specialists could be moved to that unit to clearly delineate responsibilities. There they would set technical and PM standards which would be defined through the creation of appropriate work orders which would then be passed on to the trades group to implement. The role of the people and process manager would then clearly be to manage the effective and efficient accomplishment of the assigned work.

***Recommendation 3.3.4***

***Assess the need for three managers in each trades group division to effectively carry out the duties of the new pod system of management***

***Recommendation 3.3.5***

***If a work management unit is created, move the technical specialist positions to the new unit, so that the roles of work definition and work management are appropriately separated.***

**3.4 Describe the process that enables customers to obtain services and monitor progress or status. Describe the processes available to customers that encourage them to provide feedback on results and/or perceptions of quality and value.**

Key customers are all aware of the PeopleSoft system that allows them to submit and track service requests online. Other customers that submitted requests by telephone, email or Twitter do not appear to have the same ability to track their progress or status. Even the regular users of PeopleSoft indicated that certain statuses, such as estimating, could be “black holes” and that they had no other recourse than calling or emailing their FM in order to determine the status of the request. Normalization of the use of work orders and service requests, see recommendation 3.3.3, would aid in tracking the status of all types of work. As well, implementation of a more user-friendly CMMS, see recommendation 4.1.1,

would facilitate greater communication of more details of the status of any requested work. In the meantime, establishment, communication, and consistent achievement of service level standards for some of these intermediate statuses already in PeopleSoft would be helpful.

***Recommendation 3.4.1***

***Establish, communicate, and achieve service level standards for common intermediate service request statuses such as investigation and estimating.***

As discussed in criterion 3.2, customers are encouraged to utilize the NPS survey tool to provide immediate feedback about zone service work. BO appears to take comments to heart and does take action to remedy any concerns raised in the comments portion of the survey. Other areas such as custodial or landscaping would benefit from implementation of recommendation 3.2.1, which would allow the NPS tool to be used to encourage feedback on these other daily BO services.

**3.5 Describe how customer feedback is used to affect continuous improvement and innovation.**

BO uses the EAOS program to ensure continuous improvement and innovation. Each of the nine areas for improvement are mapped to a specific set of inputs and outputs documented on the “EAOS Tree.” The EAOS Tree is displayed in various key locations within BO and its prominence is evidence of its critical role in emphasizing continuous improvement within the department and the resources that are being dedicated to it. One of the three primary “roots” on the EAOS Tree is the need to better understand client needs of UBC spaces. It is clear when one examines the branches of the tree that develop from the client root that BO intends to use current tools such as NPS and FM liaison work to document customer feedback and incorporate it in the resulting BO operating systems of the future.

**3.6 Describe the practice used to evaluate the extent to which both the leadership of the organization and its front-line staff meet customer needs and expectations.**

Beyond the items discussed in the last two subsections, the only other area of feedback that hasn't been addressed is the issue of quality assurance for the custodial unit. As discussed in criterion 3.3, the custodial group have defined their service levels according to APPA standards and have set their staffing numbers accordingly. They do not, however, have a formal quality assurance system of inspections in order to confirm that they are achieving the desired standards. In fact, the custodial managers did indicate that they do have significant attendance management problems that impact their ability to complete all of the scheduled routes on any given day. A formal QA inspection process would allow them to confirm the impact of these attendance problems.

**Recommendation 3.6.1**

*Advance the implementation of the planned custodial QA inspection program so that the regular achievement of APPA service levels can be confirmed.*

**Recommendation 3.6.2**

*If the QA program indicates that service levels are not being achieved due to attendance issues, modify service expectations and institute a program such as “floater” positions that allow for proactive management of temporary absences rather than reactive management of them on a daily basis. See recommendation 7.2.1 regarding worker absenteeism and its impacts on quality assurance.*

## **4.0 ASSESSMENT AND INFORMATIONAL ANALYSIS**

*Assessment and information analysis describes how your organization uses information and analyses to evaluate and drive performance improvements. Of interest are the types of tools used and how the tools are used to measure and enhance organizational performance.*

Raw data is not very useful. Data must be refined to be beneficial. Data refinement is the process by which data become more important to the organization. The data refinement process includes the following steps: data, information, knowledge, and wisdom. Data is the lowest common element collected. Information comes into existence when the data is organized and labeled so that it becomes important. Once data is collected and then becomes consistent, organized, or validated, it is transformed into knowledge. Knowledge helps individuals understand what is important and what must be known about a particular subject. The next step in the refinement process is wisdom, which comes from understanding the knowledge and then making judgments concerning it. Wisdom becomes information- and knowledge-based management when the gathering of information and knowledge can lead to better decision making.

*“Core beliefs, vision, and mission should drive the strategy in which the organization functions. Strategy will help to define the environment in which the organization needs to work. Proper direction and the continuous improvement process will help the organization meet its ongoing purpose. Once the strategy has been defined, it should drive the organization’s structures and systems. Most of the data, information, and knowledge needed by the organization will come from the way that the structures and systems are established. Structures and systems should focus on people making good judgments, and these judgments should be in line with and provide congruency to the organization’s core beliefs, vision, and mission. Each part of the strategy, structures, and systems should clearly define what data, information, and knowledge are needed so that wisdom can be used in making the correct judgments. All data, information, and knowledge must support this process.” (APPA’s Body of Knowledge (BOK).*



**4.1 Describe the processes that are used to identify and collect key performance indicators/benchmarking for your most critical areas. Describe your key performance measures determined to be critical to your organization.**

UBC BO has yet to define, collect, and disseminate applicable key performance indicators (KPI) critical to the effective leadership of the department. Although a substantial amount of data is being collected through its legacy system, limitations inherent in that system do not easily allow the transition from data to KPIs. An improved computer-assisted facilities management system will help pave the way for utilizing credible data to identify and measure practicable key performance measures.

An improved computerized management system will give the facilities group a good start in collecting the appropriate data that will help recognize what is happening within the operation. As the information is refined and turned into knowledge, this operation will become better at understanding what its needs are and what impact changes have on it. Correctly identified key performance indicators must support the institution's strategic long-term plan.

It is obvious that facilities has been collecting data. The systems used to collect data are:

- a. The legacy budget tracking system that does not delineate budget information acceptably for tracking program costs at detail level. This may only be the way the system has been set up by BO. For example, all work orders are charged to a building account regardless of the classification of work. Electrical repairs are charged to the same building number as are plumbing repairs. Other items tracked in the legacy system are inventory costs and metrics, fleet costs, service request volumes, etc.
- b. The legacy system work order module provides only a marginal ability to analyze collected data and does not collect adequate types of data to provide valuable and insightful KPIs. It also lacks a PM and scheduling module both of which are critical to effective maintenance management and the pursuit of a viable total cost of ownership program.
- c. A time card system that is cumbersome to use and due to lack of work definition it does not currently provide significant data in usable formats for knowledge growth.
- d. Spreadsheets are kept to track completion of inspection and maintenance of backflow preventer, high voltage feeders, critical electrical distribution panels, emergency showers and eyewash stations, roofs, elevators, boiler pressure vessels, emergency generators, fire alarm, sprinkler, and tire pump testing, but these only reflect completion data. Impairments in life safety systems that come about as a result of inspection are tracked and reported.
- e. Contractors inspect and track maintenance on chillers, RO water, cranes, elevators, and fire extinguishers.

- f. Spreadsheets are kept to track PM work on critical building systems at CCM and pharmacy.
- g. Facility asset condition is being inspected through a Province run program that provides the reports and Dbase. This system is performing as desired and provides excellent input to capital planning.
- h. Building management system monitors building operating systems and is providing desirable data to operations. The system is operating at the cutting edge and is soon to be used to predict needs and failures of the HVAC systems. This system could be improved through the better integration of teams in Energy and Water Services and BO and collective focus on reliability and total cost of ownership.
- i. Employee and customer satisfaction is tracked through a simple satisfaction survey that provides good timely data. The department communication program is very effective at disseminating information to the workforce. The process for identifying employee issues is working. The team did not see in the self-evaluation or site visit of how the data is used to plan programs to correct the issues. Similarly, the customer survey shows the current level of satisfaction through the NPS, but the system does not provide information or data to analyze underlying problems that could negatively impact NPS.
- j. APPA FPI benchmarking data against both Canadian and U.S. peer institutions. This data shows comparative cost and staffing data. Usually the differences stem from varied operating methods and suggest best practices. However, there is a lack of performance data to determine what level the results are being achieved with the staffing provided. Closer benchmarking with leading peers is needed. The review team did not uncover any signs of enhanced benchmarking.

Institutions use information to assist them in making decisions. This is at the levels of knowledge, understanding, or wisdom. Because of the vast amounts of information available, organizations are focusing on ways to manage the knowledge that is included in the information gathered. As knowledge management is used in organizations, the correct decision-making opportunities of an organization increase.

***Recommendation 4.1.1***

***Upgrade or replace the legacy CMMS to accommodate improved analysis of the vast amount of data already being collected by the department and to augment with additional data items not being collected that will give better insights into the maintenance management process. The spreadsheet and Dbase satellites can be consolidated in to the new system. Then the department's management team will be able to establish appropriate KPIs, benchmarks, and dashboards that will enable informed decision making and improved planning for the future, as well as improving the credibility of information being shared with the institution's senior leadership.***

*Recommendation 4.1.2*

*Develop a follow-up methodology to dive deeper into the negative NPS feedback to understand better underlying issues and develop plans to correct them.*

*Develop an action plan for concerns stemming from the employee survey.*

*Recommendation 4.1.3*

*Using APPA FPI data and the knowledge of peer institutions, pick an institution that exhibits an advantage in one or more categories and request a more detailed head-to-head review to see if there are better methods that can be used to give UBC BO similar results.*

**4.2 Describe the process that is used to incorporate the results of key performance metrics into a systematic evaluation that supports improvement of key processes, decision making and innovation, and achieving continuous improvement within the facilities departments. Include discussions on ROI calculations.**

As mentioned in criterion 4.1, UBC BO has not yet defined sophisticated KPIs in all areas. UBC BO does have budget status reports that are available to all levels of management and a type of “aged trial balance” indicating the status and numbers of active work orders. This is not to say that UBC BO leadership is making difficult decisions in a vacuum. They rely very heavily on the data that is available in the legacy system, and some of the satellites, requesting from the system administrator all sorts of reports that they have to digest when faced with making a decision. In this manner, they do perform an informal ROI analysis, (See: The Business Case Time Card Improvement Project), but it is a time-consuming process that may not be based on all information relevant to the ultimate decision.

A concern of the review team is that the information being collected for some areas is inadequate to make valid maintenance management decisions. On the other hand, the FCA data is being very effectively utilized. The review team suggests that a careful analysis be made of what information is needed by BO to develop the desired KPIs. The result of this analysis then provides good input to the selection of a new CMMS system.

On the positive side the FCA data is being used at an exceptional level to educate board members on the importance of continued funding to reduce deferred maintenance levels and to select the highest priority projects needed to improve overall campus condition and reduce the demand on operations and maintenance funding.

*Recommendation 4.2.1*

*See recommendation 4.1.1 for the procurement of a new CMMS or enhanced legacy system. As part of the selection process an analysis of what data is needed will be necessary to produce actionable knowledge. Once an improvement over the current CMMS is in place, UBC BO's entire management*

*team can benefit from the existence of improved information and better knowledge—leading to better decisions and long-term planning.*

**4.3 Describe the process that is used to ensure that performance measures being used are current and valid and how these align with those of peer institutions.**

UBC BO has been performing FCA on a five-year cycle, personnel data for lost time data is updated from time cards on a monthly basis, and budget actuals planning is provided monthly. Maintenance data, however, is limited particularly for PM activities since there is no easy way for reporting; also the practice of charging all work to one building account reduces ability to determine program costs. There is also a practice to not use a work order altogether for some percentage of the work. The review team found out this fact anecdotally in discussion with workers.

Until a new CMMS is in place and a disciplined work flow is developed, UBC BO will not have a complete set of high confidence KPIs by which to manage the department.

**4.4 Describe the procedures used to communicate the results of the performance indicators and benchmarking to key campus decision makers and other interested stakeholders (internal and external) for the purpose of education, budgeting, and engagement. Describe the process used to validate the effectiveness of that communication process.**

The dissemination of information that is currently being collected helps the institution to obtain additional funding and make changes to the current environment. The information helps the institution cope with annual change.

The best example of the use of KPI data to influence campus decision makers is the use of bubble diagrams of campus building age and size. FCI was very informative to the UBC Board and has resulted in sustainable support of capital renewal funding.

UBC BO's leadership and their vice president have a great relationship and communicate on these types of issues and others on a weekly basis. As suggested above, all that is needed is credible performance indicators that are meaningful to this type of audience.

**4.5 Describe the process used to ensure that hardware and software systems are effective, user-friendly, secure, reliable, and up to date. Include a description of the business continuity plan describing actions to be taken in the event of an emergency or other out-of-normal event.**

Ensuring that the software programs and hardware systems they perform on are up to date, user-friendly, and not plagued with breakdowns is a prime contributor to worker efficiency, data collection, and flow of information. As such, it is critical to a modern facilities management organization that these systems are kept in peak performance.

This is accomplished by making certain that:

- a. Software systems are kept up to date and with the latest revisions.
  - b. Software systems are continually evaluated against the needs of the department.
  - c. Workers are well trained in the use of applicable software.
  - d. The file servers, laptops, desktops, handhelds, etc., are all capable of meeting software and reliability needs.
  - e. A properly trained staff of IT professionals is in place to monitor the above conditions and to act when necessary to make changes to the IT infrastructure.
- This is the business continuity plan.

The review team has noted several aspects of the above conditions that are in place. UBC BO has implemented several projects or is in the planning process for the upgrade of software systems. Completed projects include the UBC Vancouver Campus online records tool for storing and access of building information. There is a project underway to upgrade the time card system and planning is underway for the replacement of the CMMS currently in use. Steps have also been taken to have the call centre representatives trained to act as backup software support to the department.

We did note, however, that a Peoplesoft software failure was reported which prevented customers from entering service requests online. This is a symptom of either a software or hardware failure. Additionally, we noted that there exist vacant positions in the department's IT group. Evidence of an IT business continuity plan was not found or of a replacement program for IT hardware.

Our industry has become increasingly dependent on a robust functioning IT environment. Without a properly functioning IT support organization, the proper assessment of data and analysis of information will not occur. Recommendations for the tune up of this function are listed below.

***Recommendation 4.5.1***

***Identify all costs associated with the purchase and successful implementation of a new CMMS. Develop a business case justifying the investment, at least partially based on some of the recommendations in this report. Present the case to the administration, with a couple of strategies in hand, illuminating options that could develop the necessary resources.***

***Recommendation 4.5.2***

***Enhance the level of IT expertise within UBC BO by filling vacant positions, particularly if the department is successful in replacing its legacy system. An effective facilities department cannot afford to operate without reliable systems.***

**Recommendation 4.5.3**

*Develop an IT business continuity plan for the upgrade and replacement of software and hardware systems that recognizes the department needs that are identified above.*

## **5.0 DEVELOPMENT AND MANAGEMENT OF HUMAN RESOURCES**

*An organization's success depends increasingly on the knowledge, skills, innovation, creativity, and motivation of its employees and partners. The following criteria address the ways in which the facilities organization ensures a continuous learning environment and a positive and progressive workplace.*

BO has made great progress since 2009 in almost all areas of HR management and development. Current BO management are to be commended for the transformation that was described to the review team in the culture, communications, and labour relations environment that has taken place, especially since the arrival of the new managing director in 2014.

**5.1 Describe the process used by the department to identify and develop position responsibilities, determine competencies required, and develop job descriptions to ensure these all align with work unit and department roles and responsibilities, and that they are well understood by all members of the staff.**

One of the main building blocks of the EAOS program involves clarifying roles and responsibilities, particularly at the supervisory and management levels, as well as ensuring that the proper numbers of staff with the appropriate skill sets are allocated to all BO tasks.

In 2016, all of the unionized supervisory job descriptions were reviewed and rewritten to include all of the "soft" supervisory skills that had previously been omitted. Above the supervisory level, it was recognized that the combination of increasingly complex technical and managerial skills that were required of the single manager in each of the three technical divisions was leading to overload, burnout, and rapid turnover of personal. The pod system was therefore created which introduced the system owner, technical specialist, and people and process manager positions in each division. A comprehensive roles and responsibilities matrix was created using the RASCI (responsibility, accountability, supportive, consulted, and informed) methodology to clearly delineate the relationships between the new positions and the supervisory levels within the Trades Division. These were widely communicated through crew talks, a weekly newsletter, and other reference materials.

Job descriptions for nonsupervisory unionized personnel are created and maintained in accordance with the provisions of the respective collective agreements. BO appears to have a robust onboarding process which ensures that new employees are made aware of all

important job-related information, including the scope of their duties as outlined in the job description and how it applies to their particular shop or team.

A leadership program was developed within BO that consisted of a series of workshops "...whereby all members of the organization learn the soft skills needed to effectively navigate relationships, build high performing teams, and foster meaningful ways to provide feedback that inspires improvements and change." A priority of this program was to ensure that all roles and responsibilities in the new model were clearly understood and that the supervisory level was thoroughly trained in the soft skills that had recently been incorporated in the job descriptions.

The Leadership Development Program was universally complimented by all who described it to the FMEP team. One observation that was made, however, was that the program was essentially a one-time effort and that an ongoing approach for providing such training to new employees would have to be developed.

***Recommendation 5.1.1***

***Formulate plans to ensure that the highly effective BO Leadership Development Program becomes a sustainable program that can be offered to all new supervisory and management personnel.***

**5.2 Describe employee recognition programs and practices and how they are used to encourage, recognize, and reward improved performance.**

The review team would like to congratulate BO on an exemplary employee recognition program. The keystone of the program is the BO Staff Excellence Awards that are given out annually in December at the holiday staff event. Awards are given out in various categories that reinforce the mission and values of both BO and UBC as whole. Both peers and management can nominate employees for awards. The awards themselves are professionally made by the BO sign shop and are displayed prominently in the atrium of the University Services Building, which is the home of the BO Department. The Staff Excellence Awards are supplemented by long service awards, ad hoc events such as the "You Are Awesome" coffee, and ongoing recognition at crew talks and in the newsletter of kudos from clients collected through emails, FM meetings, and the NPS system. The Leadership Development Program even includes a section dedicated to identifying strong performances and practices daily recognition for a job well done. Overall, this is a strong recognition program that most other universities would do well to emulate.

The program also does not stop at individual recognition. UBC has successfully been nominated for two APPA Sustainability Innovation awards in the last six years and this recognition is shared widely on the BO website and in the newsletter. As well, this FMEP review is being treated as the first step in applying for the APPA Award of Excellence. If

successful, BO leadership will undoubtedly share this recognition with all members of the department.

**5.3 Describe your process for setting individual goals and how they promote innovation in the department.**

BO has a formal performance management system in place for all superintendents, managers, and front-line supervisors. It begins with the establishment of performance goals, many of which are currently aligned with EAOS continuous improvement plans. One-on-one meetings are held with the individual's supervisor on a periodic basis and a formal annual review meeting is also held and documented. Once again, the Leadership Development Program was designed to prepare all supervisors and managers to have performance discussions with empathy and professionalism in order to make this process an effective one.

Goal setting with front-line staff is currently focused primarily around personal development and career progression. It is the intention of BO to develop a one-on-one process where all employees take part in annual goal setting and performance review in order to reinforce their understanding of how their performance can contribute to the overall mission and priorities of the BO Department.

***Recommendation 5.3.1***

***Continue with plans to expand one-on-one performance reviews to all front-line employees to reinforce recognition of their positive contributions and to encourage buy-in by employees toward the continuous improvement efforts of the EAOS program.***

**5.4 Describe how the facilities department fosters an organizational culture that rewards cooperation, communication, and skill sharing across work units.**

BO fosters a cooperative culture by concentrating on effective communications across all levels of the department. Formal communications audits were conducted in 2014 and 2016 to determine what types of information were essential for staff to be aware of and what information was helpful. The most trusted sources of information were identified as well. As a result, crew talks were determined to be the most effective way of communicating essential information to front-line staff with backup through electronic channels such as a digital signage network, newsletters, and the BO website. Training of the supervisors in conducting effective crew talks was also included in the Leadership Development Program and carefully scripted materials are provided to the supervisors each week based on an information-gathering meeting held by the managing director with the leadership team and all FMs every Monday morning.



Cooperation between units within BO and with units outside BO is enhanced by the existence of numerous committees designed to promote information sharing regarding specific initiatives such as total cost of ownership, zero waste, development permits, service contracts, and sustainability. Regular meetings are held between FMs and project services managers to ensure smooth handling of projects within the responsibility of Infrastructure Development. In addition, there has also been a transition team created to ensure that capital projects are handed over from the University Property Trust, who builds them, to Infrastructure Development and BO, who have to manage them through their lifespan. In discussion with various elements of BO from system owners to front-line tradespeople, there are still significant issues to be resolved in this capital project handover process but the transition team is thought to be a good first step.

***Recommendation 5.4.1***

***Continue to develop proactive measures to be used by the transition team for future capital projects that will improve compliance with technical design guidelines and ensure complete commissioning and effective handover of all building systems.***

Cooperation is also encouraged in BO by the improved labour relations climate that has been developed since the arrival of the current managing director. Previously, labour relations were handled in what has been described as an “old school” approach in which issues were typically dealt with in a confrontational manner. In recent times, management has worked cooperatively, especially with CUPE Local 116, to resolve issues such as equitable overtime sharing and shop steward leave requests and to create a more cooperative union-management relationship. Unfortunately, the IUOE L882 has been without a contract since 2014, and the relationship between that local and management continues to be less cooperative.

***Recommendation 5.4.2***

***Continue to focus attention on increasing labour-management cooperation with CUPE Local 116, which contains the majority of unionized employees within the BO Department. Success in achieving positive relations with the larger portion of the BO employees should influence the remaining employees in IUOE Local 882 to encourage their representatives to achieve a positive collective agreement in the near future.***

One other method of fostering an organizational culture of cooperation and teamwork is to have all members of the team wearing uniform clothing to communicate to everyone inside and outside the organization that they are literally all on the same team. UBC BO does provide uniforms to staff on an optional basis and many employees were observed to be proudly wearing them as they performed their duties. Making the uniforms an obligatory condition of employment would ensure a consistent message from all members of the department and thereby enhance a common feeling of employee engagement.

***Recommendation 5.4.3***

***BO should make uniforms an obligatory condition of employment rather than an optional benefit in order to enhance employee engagement and teamwork.***

**5.5 Describe how work performance and attendance expectations are reviewed and the process used to communicate such information to employees.**

Work performance and attendance expectations are set during a thorough onboarding process. Employees are formally assessed during their probation period to ensure that they understand those expectations and are capable of meeting them on an ongoing basis.

Once they are through probation, the primary element of performance review for front-line employees in BO is a quarterly attendance management review. Detailed records are kept of individual and unit attendance and, where anomalies are evident, informal conversations are held with the employee to determine the underlying causes and to provide an opportunity for them to improve their attendance. If improvement does not follow, then more formal actions are taken to deal with the attendance problems. The current reporting system is based on input of data from paper time cards into spreadsheets and other software, making it labour intensive and not user-friendly if the employee questions the validity of the information. One of the priorities of the EAOS project is to implement an online time and attendance reporting system that should improve usability of these reports.

The only other means of performance review for front-line employees that was shared with the review team was a review by supervisors with tradespersons of incomplete service requests. Because so much work is charged to standing building work orders, there does not appear to be much accountability associated with the completion of service requests so a review of incomplete service requests is likely not an accurate assessment of actual employee performance.

***Recommendation 5.5.1***

***As recommended in 3.3.3, accomplishment of work should be tracked through work orders, not service requests, so that a more accurate assessment of the time spent, materials used, and scope of work can be documented for performance management and financial tracking. On several occasions during the FMEP visit, comments were heard to the effect that more staff would be required in order to perform adequate PM tasks, as well as some other routine maintenance work, once operational performance standards have been set. As discussed in Section 3.0: Customer Focus, the review team believes that resources that should be used to do core maintenance work are currently being used to keep client departments happy, but that the use of building standing work orders is camouflaging this unintentional allocation of funds. Affordable levels of service***

*need to be developed in both the asset stewardship and customer service goals before an accurate staffing level and workforce organization can be proposed.*

## **5.6 Describe how career development needs are assessed, provided, and monitored.**

Career development is assessed and supported on an individual basis within BO. With front-line staff, the main official career development opportunity is to submit an Expression of Interest to serve in acting leadership roles. Front-line staff members also have opportunities to access financial support of up to \$1,000 annually for CUPE Local 116 employees for professional development, and tuition waivers are also available. Management employees can access up to \$550 per year for personal professional development as well as tuition waivers. In-house training is also available to support leadership development and to provide safety and other industry mandated certifications.

One area where professional development is considered based on departmental requirements is the need for apprenticeships. A joint Apprenticeship Committee has been formed including managers from BO and Energy and Water Services, as well as representatives from CUPE Local 116. The mandate of the committee is to identify hard-to-fill trades where apprenticeships could be offered in order to develop expertise in house. The committee also reaches out to engage students, women, and visible minorities to promote diversity in the department through apprenticeship opportunities.

Individual trades employees that met with the review team mentioned several times that they did not feel that they were given access to technical skills training to improve their skills beyond their basic trade certification levels. The mandate of the Apprenticeship Committee could be expanded to include identification and rectification of technical skills deficiencies within the BO Department caused by rapid technological change.

### ***Recommendation 5.6.1***

***Expand the mandate of the Apprenticeship Committee or introduce another mechanism for the identification and provision of training for the rectification of technical skills deficiencies due to rapid technological change.***

Given the recruiting challenges outlined in criterion 5.9, BO might also want to consider a broader professional development management process that extends beyond just apprenticeships and technical training to proactively manage development of employees at all levels in the department who demonstrate the desire and abilities to advance to higher levels of responsibility within BO.

### ***Recommendation 5.6.2***

***Create a formal process for the management of professional development of promising employees from inside BO due to the current challenges of recruiting and retaining employees from outside of the department.***

**5.7 Describe the processes used by the organization, both at the institutional and departmental level, to promote organizational diversity both in its workforce and leadership.**

The only formal mechanism mentioned to the review team regarding diversity was the application of the UBC employment equity policy to all hiring processes. Nevertheless, UBC has been recognized as North America's most culturally diverse university by the Times Higher Education "World's Most International Universities 2017" ranking and observations by the review team on the make-up of the BO leadership team and of all levels of management within the department would seem to indicate that UBC BO is well ahead of most other university FM Departments in terms of diversity. While this diversity may reflect the high level of diversity within the Greater Vancouver Region, it is still a testament to BO management practices that the department is not dominated by the white male demographic that is still too typical within technical trades and educational facilities management in general.

**5.8 Describe how the organization utilizes both formal and informal assessment methods and measures to determine employee well-being, employee satisfaction, and motivation.**

The primary institutional measurement of employee well-being, satisfaction, and motivation is the Workplace Experience Survey which is administered by UBC HR Department every three years. When it was first administered in 2011, there were strained relationships between management and unions in BO, and CUPE members were actively discouraged from taking part. Even with the limited participation rate, it was evident at that time that members of the department did not trust management, and they were generally dissatisfied with their work environment. By 2014, trust was beginning to be re-established and over one-third of BO employees took part in the survey. Specific dissatisfaction was expressed regarding supervisory skills, unit culture, attraction and retention, and total compensation, among other issues. Recent efforts to improve communications, leadership skills, and working conditions have all been a direct result of listening to the 2014 WES results. The WES will be conducted again in the very near future and current BO leadership are looking forward to reviewing the results and using them to measure their success to date with the EAOS process and other improvement initiatives.

***Recommendation 5.8.1***

***Promote participation in the upcoming WES in order to assess the success of improvement measures implemented since 2014. Provide positive incentives to all employees, such as gift card draws, in order to achieve maximum participation for more statistically relevant results. Communicate positive results to reinforce the success of recent BO initiatives and improve the workplace environment.***

The Centre for Occupational Health, Safety, and Wellbeing is another, less formal way to both measure and strengthen employee well-being and motivation. The centre is a fully equipped fitness facility run by Risk Management Services, which also offers massage and physiotherapy, functional movement assessments, and health screenings, as well as certified personal training and other injury prevention and conditioning programs. The centre is situated on the main floor of the University Services Building so it is easily accessible to almost all employees of BO. Use of the centre is, for the most part, voluntary, but monitoring of usage does provide BO management with measurement of the success of the program and as participation grows, the well-being and conditioning of greater numbers of employees will help to reduce injuries and improve productivity.

#### **5.9 Describe the approaches used to ensure the effectiveness of recruitment programs to provide well-qualified staff and to retain high performers.**

UBC, in general, and BO, in particular, are facing a perfect storm of compounding issues that make recruitment and retention of most classifications of BO personnel difficult. Shortages of skilled tradespeople, relatively low compensation rates in university collective agreements, an aging workforce, bureaucratic recruiting processes, and even the location of the campus on the prosperous western side of the city of Vancouver, far from reasonably priced accommodations, all conspire to thwart efforts to hire and keep good people.

BO management has been imaginative in developing alternative approaches that have adjusted compensation within the constraints of agreements and of government wage restraint policies, as well as improving processes to make BO more attractive as an employer. In terms of wages, BO created new trades classifications that allowed for increased wages associated with modified job descriptions, and they completed a market review of management salaries, which justified some increases there as well. Hiring processes have been improved through increased advertising, through redevelopment of the BO website to highlight positive working conditions and accessible recruitment information, and through modification of selection criteria for CUPE Local 116 positions, to reduce the weight placed on seniority so that more qualified candidates have a better chance of success. And finally, in terms of working conditions, onboarding has been improved to connect new employees to the organization more quickly and effectively, alternate work schedules have been introduced to reduce commuting time, and the structure of system owners and technical specialists was created to reduce the heavy workload and burnout in the ranks of technical managers.

The review team commends BO management in their efforts to be creative and flexible in the face of their difficult recruiting environment. They do not, however, have any further recommendations that would ease the situation in light of the difficult market conditions in the Greater Vancouver area.

**Recommendation 5.9.1**

*It is recommended that BO evaluate the Needs-Based Training Program and an employees working out of classification (EWOC). Needs-based training is identified by actual assessments of employee skill levels compared with a standard in order to identify deficiencies and to describe course content to correct the deficiencies. In a maintenance organization, it is common for employees to be asked to perform work at a higher classification level on a “nonrecurring” basis if the employee holds the skills, training, certifications, etc., to perform the tasks. Often, performance of these duties makes the employee eligible for EWOC compensation. Examples are dusty trades work, ACM abatement, certified pressure vessel welding, etc. These programs may improve internal recruitment and should be explored.*

**5.10 Describe the processes used by both the department and the institution for orienting new employees so they can successfully fulfill their responsibilities.**

Much like the recognition program that is in place in UBC BO, the departmental onboarding program appears to be among the best in class. There are checklists in place, union involvement, socialization efforts including meeting with the managing director and taking part in a crew welcome coffee, and a buddy system to ensure that there is a designated go-to person to get any questions answered. All managers and supervisors are trained in the onboarding process as part of the Leadership Development Program and all checklists and other information are available on the BO website. The review team was not able to recommend anything further for improvement in this area. Well done to the BO leadership team.

**5.11 Describe the processes used to determine appropriate staffing levels, based on identified and approved operational performance standard(s).**

As discussed in Section 3.0: Customer Focus of this report, there are very few processes currently in place to determine appropriate staffing levels. One of the main goals of the EAOS project is to define service levels and associated staffing requirements, but there is significant work remaining before that project is complete.

The one major exception is the custodial group where staffing levels are based on APPA Custodial Service standards. The APPA standards define frequencies of all activities being completed and the staffing levels, on a per square foot basis, that would be required to support those frequencies. As discussed in criterion 3.6, these staffing levels should be modified to account for the base level of absenteeism that is routinely experienced in a workforce of this size and nature. See recommendation 3.6.2.

**5.12 Describe how the department manages and organizes its workforce to accomplish its advertised mission and objectives.**

The primary objective of the EAOS program is to create the appropriate structure and develop the necessary systems to allow BO to manage and organize its workforce to accomplish both its asset stewardship and customer service goals. On several occasions during the FMEP visit, comments were heard to the effect that more staff would be required in order to perform adequate PM tasks, as well as some other routine maintenance work, once operational performance standards have been set. As discussed in Section 3.0: Customer Focus, the review team believes that resources that should be used to do core maintenance work are currently being used to keep client departments happy, but that the use of building standing work orders is camouflaging this unintentional allocation of funds. Affordable levels of service need to be developed in both the asset stewardship and customer service goals before an accurate staffing level and workforce organization can be proposed.

***Recommendation 5.12.1***

***Ensure that the EAOS program recognizes the necessary balance between the resources required to do core maintenance work and client service tasks and that the resulting workforce structure and staffing levels reflects an appropriate emphasis on the actual current costs of both types of work.***

The EAOS program appears to have strong support among the participants and is resourced appropriately. Based on the difficulties retaining an in-house project manager for this project and for selection of a CMMS system to support management of the department, the review team recommends engaging a project manager on contract to ensure continued momentum towards the completion of the project and to bring greater knowledge and expertise regarding the technical system options available to the department.

***Recommendation 5.12.2***

***Hire a contract project manager to maintain momentum in the EAOS program and in the selection of a new CMMS.***

**5.13 Describe how the department identifies needs for improvement and measures progress in the areas of regulatory requirements, health, safety, emergency preparedness, and security. Describe the processes used to train employees in these categories and how the effectiveness of those training programs is ascertained.**

In terms of technical regulatory requirements, BO management has collaborated with the British Columbia Safety Authority to review inspections and operations protocols. As part of the EAOS program, all assets are being inventoried and any associated regulatory requirements are being identified, along with any necessary PM procedures or documentation submissions. Once the appropriate PM work orders are put in place, then

appropriate training will be conducted so that BO personnel can not only comply with all regulatory requirements but perform reliability based maintenance. Building Operations complies with all British Columbia Health and Safety legislation in terms of training and equipment. Through the use of the Wellness Centre described in criterion 5.8, the Risk Management Services unit supports BO in promoting fitness and wellbeing and in providing appropriate injury avoidance measures. Other safety training is provided through crew talks to ensure that work procedures and pre-job safety evaluations minimize risk exposure for all BO workers.

The UBC Emergency Plan is managed by Risk Management Services and BO personnel have defined roles within the plan. There is an annual exercise of the Emergency Plan and the Emergency Operations Centre to ensure understanding of all roles and responsibilities and standardized procedures are used in the case of minor emergencies such as power outages and building floods.

Security is the responsibility of the UBC Security Department. Other than close liaison between the Security Department and BO staff, such as custodians or patrolling operating engineers to ensure reporting of suspicious activities, there seems to be little direct interaction between the two departments.

## 6.0 PROCESS MANAGEMENT

*Effective process management addresses how the facilities organization manages key product and service design, delivery processes, and continuous improvement. Process management includes various systems or “core competencies” such as work management, performance standards, estimating systems, planning, design, and construction of new or renovated facilities, space management, event management, and other key processes that affect facilities functions.*

**6.1 It is critical that a facility’s organization understand its “core competencies” and how they relate to the mission, environment, and strategic goals in areas of:**

- **Administration**
- **Operations and maintenance**
- **Planning, design, and construction**
- **Utilities and energy**

**Describe:**

- **How the core competencies described in criterion 6.1 contribute to the delivery of customer value, organization success, and stewardship in your organization.**
- **How the facility performance indicators and related measures for each core competency are used.**
- **How the core competencies support compliance and coordinate with the agencies having jurisdiction.**



The self-review provided by BO titled Enabling Greatness addressed this topic of core competencies by highlighting several areas they felt were performed at a high level, and others they recognized in need of improvement. This introspective self-analysis is indicative of an organization in the mode of continuous improvement, with goals in mind to build on strengths and focus on areas of desired development.

An area of considerable strength is the effective means of communication both within BO and with the network of customers in the university community. The FMEP team witnessed a Monday morning standup session in which managers and supervisors share weekly accomplishments, challenges, progress, work impact, etc. which feeds information to a weekly newsletter. The team also witnessed a crew talks session in which each of the front-line crews gather to review the information in the newsletter. Facility managers meet routinely with the building administrators in their respective zones to share information pertinent to their facility. There are message boards in the shop area and other selected locations that provide news and facilities information to BO staff. These are just a few of the examples of an excellent communication culture. An area of potential improvement would be increasing customer and senior administrator involvement by developing a schedule of periodic information meetings.

***Recommendation 6.1.1***

***Develop a formal network of building administrators, in which each building has a designated customer contact. Conduct periodic group meetings with the building administrators to share information on topics such capital programs, introducing new senior staff in BO, EAOS progress, and other information helpful to customers.***

***Recommendation 6.1.2***

***Develop an advisory group representing each faculty and administrative vice president area for a similar periodic group session hosted by the managing director of BO.***

Enabling Greatness highlighted the current facilities condition program process and the FMEP team learned more about this impressive approach during our visit. From the method of onsite inspections and data collection to the reporting on comparative facility condition to the development of the priorities and five-year recapitalization plan, the team found this to be a top-notch program. The recent influx of capital renewal funding may well have been due, in part, to the efforts and validity of this program. Particularly impressive is the means by which stakeholders contribute to the prioritization of projects and the five-year plan. It is our understanding that the process is for all academic facilities on campus. It would be to UBC's advantage to include ancillary facilities as well for a comprehensive approach to facilities condition for the entire facilities portfolio.

Another important effort that impressed the FMEP team was the recently developed transition team approach to commissioning new facilities. Building Operations relies on a functional commissioning process to ensure new facilities systems operate as designed, are designed and built in accordance with the Technical Guidelines, and include a complete inventory and maintenance plan for new systems and equipment. While the process is not fully developed at this point, many improvements are already underway. The process for code review and Technical Guideline review in new projects is conducted by separate offices resulting in some level of redundant design review, and may be more effective if combined in a single unit.

***Recommendation 6.1.3***

***Consider combining code and Technical Guideline compliance in one unit. The Technical Guidelines are developed to ensure designing for maintainability, to ensure appropriate UBC standards, and to enhance total cost of ownership. Many organizations realize cost and consistency benefits from single point of responsibility for adherence to codes and guidelines.***

Most large campus facilities organizations include a work management component to manage certain administrative support functions such as work control, customer relations, preventive maintenance program, facilities condition program, and service contracting. While BO performs these functions, they are not all organized in a single unit providing a clear management direction. The Service Centre and facilities managers are part of the Customer Services Division, but maintenance program management is distributed to the Trades Division. Apparently, organizational changes are being considered that would lead to a more cohesive administrative support group, but such changes have not yet been formally made.

***Recommendation 6.1.4***

***Create a comprehensive work management unit. Combine administrative support efforts into a single unit, allowing units executing work to focus on effective and efficient methods of delivering their services. Responsibilities of the work management unit would include:***

- ***Work control for the reception, categorization, authorization, and assignment of work performed by BO.***
- ***Preventive maintenance program management. A single source of responsibility of data control, issuing PM work orders, metrics, quality assurance. Most large facilities organizations assign an individual to manage this essential program.***
- ***Maintenance program management. Building systems such as roofs, elevators, HVAC, and fire and life safety systems are often managed through a series of maintenance program managers, focusing on proper levels of PM, managing service contracts, developing long range renewal plans.***

- *Facilities condition and renewal program*
- *Transition team and commissioning*
- *Customer relations – work reception (the current Service Centre) and facilities managers*
- *Primary interface with communications, finance, and human resources*
- *Service contracting and stores operation*
- *Administrative and clerical support*
- *Informatics and management of the CMMS and other information systems*
- *KPI reporting from the CMMS*
- *See also recommendation 3.3.5*

The process to identify and assign work for maintenance and other routine trades work is somewhat inconsistent without the benefit of a fully functional CMMS or a consolidated work management presence. For instance, PM is mostly identified and tracked in the individual trades areas, service calls may be identified and assigned from the Service Centre, and customer requests are often made verbally to zone personnel.

All maintenance work is charged to a standing building work order such that individual work information is not captured for financial or performance metric purposes. By using standing work orders there is no means to capture the time charged, when the work was accomplished, by whom, or the total cost. Zone personnel respond to customer requests, most often for nonmaintenance work, and accomplish the work charging to the standing building work order. While a great customer relations tool, this diverts valuable maintenance funding to nonmaintenance activities. Additionally, zone personnel work under a process of self-guided or autonomous work prioritization, which can lead to deprioritizing such activities as preventive maintenance.

#### *Recommendation 6.1.5*

- *Change the process and culture of work order management.*
- *Examine the work order flow process with roles and responsibilities for each step of the process. This will cover categorization of each individual piece of work accomplished by the trades groups – PM, service work, corrective, major maintenance or typical categories in large facilities organizations. Establish budgets for the different categories of work in order to direct, prioritize, and track financial performance.*
- *Eliminate standing building work orders. Each work assignment should have its own individual work order. This enables the data required for meeting performance standards, financial metrics, and provides a permanent record of work accomplished. Front-line staff may complain that this causes undue*

*extra work on time cards, but our collective experience suggests this is easily learned and incorporated.*

- *Further investigate capabilities in PeopleSoft for PM work. Although a new CMMS is the eventual right solution, it will be a lengthy process to procure and implement. The team observed the PeopleSoft work order process to confirm the capability of issuing individual work orders. The PM module may be available to UBC. Additionally, there exists a fundamental work order flow process that is being followed by the call centre. It should be investigated as to how the existing process can be augmented to provide the level of data input wanted by the maintenance organization.*

Enabling Greatness describes the wide array of services provided by BO, with a balanced focus on the pride of progress on many of their programs with the desire of continued improvements in others. As part of that self-review, BO identified the PM program as one of the areas in need of significant improvement.

Building Operations and the FMEP team identified and discussed several areas of the PM program that will lead to an improved approach.

- Incomplete inventory of assets.
- Incomplete set of PM job plans.
- Inability to classify and prioritize work orders of all types.
- Inadequate CMMS for modern application of the PM program.
- Inconsistency of data collection and reporting among trades groups.
- Method of collecting cost data of preventive maintenance work.

The current program status reflects that of a new and growing program that is being developed without the benefit of a modern computerized maintenance management system's benefit. There is a reasonable approach and strong commitment to PM for building systems related to regulatory compliance. There are actions that could be taken now to further strengthen the current PM program.

#### ***Recommendation 6.1.6***

- *Improve the BO approach to PM.*
- *Accelerate the procurement and implementation of a new CMMS. Consider engaging a contract project manager to provide guidance and assist with the project.*
- *Focus on completing the inventory of equipment and develop the hierarchy of systems and equipment.*
- *Assign or hire a PM program manager to provide oversight to the PM process.*

- *Take advantage of PeopleSoft current capability to assign and charge time to individual PM work orders for consistency and to begin tracking performance and financial information.*

The FMEP team noted and discussed the current organizational location of the construction office, a group performing minor construction projects, in the Customer Services Division. Our experience in this area is that success is normally dependent on a unit specializing in this work, with resources under its direction, and organizationally placed in the trades area. As Customer Services transitions to provide more work management support services, the Trades Division will focus more on executing work. We would suggest the minor construction unit be moved from Customer Services to the Trades Division, separate from the maintenance effort, staffed with sufficient trades resources to accomplish the work. As workload in either maintenance or minor construction peaks and valleys, resources can be shifted to meet organizational priorities.

***Recommendation 6.1.7***

*Consider moving the construction office from Customer Services to the Trades Division with appropriate staff resources assigned directly to the construction office.*

**6.2 Describe the processes used to establish measurements for process inputs and outputs required to achieve efficiency and effectiveness.**

As mentioned earlier, both the limited capabilities of PeopleSoft and the approach to work order management used by BO result in difficulty tracking meaningful metrics of maintenance work. A more effective work management system engaged in work reception, categorization, authorization, and assignment of all work would improve the approach of BO to setting and tracking performance standards. Elimination or significant reduction in the use of standing building work orders will lead to more ability to measure efficiency and effectiveness of service delivery. In addition, when maintenance work is identified, the Service Centre enters a “service request” in PeopleSoft, but does not convert it to a work order. Labour can only be charged to a work order. So, when work is completed, the shop can close the service request, but no date of work, number of hours, individuals involved, or other pertinent information is made available for application of performance-based metrics.

***Recommendation 6.2.1***

*Create a KPI dashboard of basic performance metrics, and include progress at weekly “stand-up” and “crew talks” meetings. This will require making the changes described in recommendation 6.1.5 related to establishing individual work orders for all work.*

***Recommendation 6.2.2***

***Start with the end in mind. Determine metrics and benchmarks that will be used to monitor performance and cost effectiveness and then design the database to feed the reports for monitoring.***

The team did find exemplary examples of valuable metrics in the areas of facility conditions and time and attendance. In addition, UBC participates in APPA's facilities performance indicators program, an annual benchmarking process providing comparative data in a number of facilities management areas. Various shops keep data in spreadsheets to reflect such information as aging reports, too hot/cold reports, backflow preventer and emergency generator inspection reports, and elevator entrapments.

**6.3 Describe how stakeholders are involved in the development and implementation of core processes.**

Building Operations exhibits a focus on communication and collaboration such that stakeholders both within and external to the department have an opportunity to contribute to processes. In fact, one of the four pillars of their core values is employee engagement, and there is evidence of the commitment to that value. The EAOS program is an impressive example of including all levels of the BO Department in setting strategic direction. Many of the issues and plans in the current EAOS "Tree" were identified from the front-line staff at the inception of the program. The current EAOS Committee is made up through representation of management and individuals from the trades, custodial, and municipal services workforce. Facilities managers provide an essential link to clients, learning how services can be best provided from a customer vantage point.

Other examples of stakeholder participation include:

- Trades, custodial, and municipal services input to the Technical Guidelines annual review and updates.
- Trades input to the facilities condition program and resulting renewal plans.
- Make versus buy decisions are made with input from union representatives in seeking best value for the university.
- An increased emphasis on the commissioning process includes trades participation on design reviews and construction tours in order to improve the turnover process.
- A steering committee with representation from both BO and other stakeholders work together to develop the plans for capital renewal priorities.

**6.4 Describe the protocol established to evaluate processes established to determine opportunities for improving efficiency, effectiveness, and value for the success of the organization.**

It is apparent that BO is constantly searching for ways to improve efficiency, effectiveness, and add value. Again, look no further than EAOS as the prime example of setting the organization's aspirational goals. Issues, challenges, ideas for improvement are recommended by staff and management for consideration by the EAOS Committee. The EAOS "Tree" is a road map of sorts describing major goals, action items required to achieve, and the interdependencies of the actions and goals. EAOS progress is communicated to staff routinely in crew talks as well as via message boards. The EAOS Tree could be improved by establishing milestones and desired completion dates.

***Recommendation 6.4.1***

***Take the next step in EAOS development by projecting milestone dates and responsibilities for achieving the goals stated in the EAOS Tree.***

***Recommendation 6.4.2***

***As part of the EOAS implementation the following processes should be given consideration:***

- a. Use the BAS system to enhance the maintenance management process.***
- b. Provide opportunities for increased Energy and Water Department collaboration with BO.***
- c. Use mobile technology.***
- d. Inspect more closely the use of outside contractors or consider moving activities in-house where the needed level of expertise exists and retain the contractor use where the expertise does not exist.***
- e. Clearly define expectations of the empowered workforce.***
- f. Integrate the MRO relationship with work order material management and CMMS integration.***
- g. Seek opportunities to share fixed overhead costs by providing services to ancillary units such as housing.***

## **7.0 PERFORMANCE RESULTS**

*The performance of a facilities organization can be assessed in a number of dimensions: campus appearance, customer satisfaction, employee satisfaction, effectiveness of systems operations, financial results, and supplier/business partner results to mention a few. Having measurement tools in place to assess performance is critical in an environment of continuous improvement.*

UBC BO is performing well in a number of dimensions and rebuilding in some others.

The tools used to assess performance are wide and varied. They range from single question survey results to benchmarking and from detailed data analysis to budget performance.

Results should be examined in relation to performance in areas such as asset management, customer focus, financial outcomes, human resource developments, capital reinvestment, and supplier management.

**7.1 Describe processes in place to ensure that the appearance of the buildings and grounds is in keeping with the surrounding community as well as the desired image of the institution.**

*The UBC campus is located on the western most part of Vancouver. The campus cultural surroundings include location in the traditional, ancestral, and unceded territory of the Musqueam people. Private residences call this campus home. As a result, you will find elementary schools, High Schools, community centres, shopping spaces, recreational facilities and museums on campus.” UBC staff believe “it is important to show respect to the communities and nature that surrounds us by maintaining campus grounds and buildings to a high level of cleanliness, and functionality, while ensuring we do so sustainably, and cost-effectively.” This quote (paraphrased) is taken from the FMEP self-assessment document and eloquently states the overall goal of the UBC BO department.*

**The Goal:** The governing document for the above goal is the Vancouver Campus Plan Design Guidelines. The plan adequately describes the expected results of effort on campus and must be followed by construction for new buildings and spaces.

**New Construction:** Additionally, there are several standing committees that focus on new construction.

- a. New Building Quality Assurance Committee
- b. The Development Review Committee
- c. The Landscape and Infrastructure Committee

These committees are charged with ensuring compliance to the campus plan design guidelines and that all stakeholder UBC departments are working collaboratively to provide quality buildings and infrastructure to the community. UBC BO also administers a set of detail design guidelines for internal building system design. These instructions are provided to architect/engineering firms and must be followed in the design of buildings.

The review team commends the level of planning and guidance that goes into the new construction of campus. It is clearly evident when walking the campus and is a credit to the participating departments including UBC BO, which acts a major stakeholder in the processes.

The role of steward does not end with turn over from construction. After receiving the buildings and infrastructure from construction, UBC BO is charged with the maintenance, upkeep and renewal of assets associate with the buildings and infrastructure.



Benchmarking data provided to the team reveals that the BO Department is generally better funded and a staffed than the peer average in most areas. There should then be an expectation that performance results should be high. Unfortunately, the benchmarking data does not compare any performance metrics i.e., inspection data on custodial operations for determining the cleaning level of spaces. The data would inform how effective the cleaning process is in relation to resources received.

**Custodial Operations:** Based on our limited tours of building interiors (administrative, museum, research, theater, and classrooms), the review team thought a good job was being done by the Custodial Department. The department has a work plan based on traditional area cleaning methodology. The department lacks a detailed QA inspection program that would fix the cleaning level using APPA standards as a benchmark. It is recommended elsewhere in the report that a QA inspection program be developed.

**Grounds and Urban Campus Forestry:** It is evident when walking the campus that it is well laid out. Hardscape and walkways are well designed and attractive; fountains and sustainable features are operable and pleasing to view. It was also clear that the main malls are better maintained than the back areas of campus and that lawn and shrub beds are suffering under the draught conditions being experience by the area. Many of the iconic trees on campus malls appear to be reaching the end of useful life through disease and trimming. We did not find evidence of a detailed work plan in either grounds or forestry. We also received comments from staff and supervision that the departments are understaffed for the level of work to perform and that even though trees are tracked (tagged) no data is recorded in the data base as to condition or treatments. We also found no evidence of a tree replacement plan.

**Maintenance and Operations:** This area is more difficult to assess the performance results without the type of data that would come from a robust CMMS. Several observations are illuminating however. The VFA facility condition data reports high levels of deferred maintenance, antidotal stories of equipment failures and emergency response, high deferred maintenance suggesting increase breakdown maintenance, the lack of a preventive maintenance program, only a rudimentary regulatory compliance life safety program, and questionable asset data. Additionally, comments made by the workforce suggest that at least some members of the team do not believe in preventive and predictive forms of maintenance. Additionally, there is no centralized maintenance oversight of activity as would be found in a work control group.

A recommended addition to the effort would be to reorganize the maintenance department to include a work control group answering to either the managing director or the manager of M&O. This group would be responsibility for managing the workflow and PM programs, preparing schedules work plans and asset lists, etc. and is further described in recommendation 7.1.4.

The current program is based on a breakdown philosophy that we believe is incompatible with a research environment and raises the risk level to the university. As such the current maintenance state is not viewed as meeting the high expectations set forth above. However, that does not tell the whole story. The maintenance group will be particularly impacted by the EAOS program. This is in the early stages of implementation, but promises to be (when complete) one of the most comprehensive and complete entreaties on maintenance philosophy that we have encountered.

Another area that is moving forward with exceptional performance is the building management system. We usually refer to this area as BAS), which monitors building system activity. It provides insights to potential issues and alarms when systems are out of normal operating ranges or set-points.

The team believes the foundation is very good in the department, but that it is not currently performing to expectations. However, within three years (if the EAOS program is aggressively pursued), our expectations would be that the department will be a model of modern maintenance management.

***Recommendation 7.1.1***

***The Grounds Services Department should develop a detailed work plan that describes the multitude of activities that need to be performed and a schedule to accompany it. Work codes and priority areas can be devised and estimates of time should be developed. When the new CMMS is available, it should be incorporated into the system. So it should be developed with that end in mind. As part of the plan work, codes or separate accounts should be set up for the different tasks so that time can be recorded against the various activities. This allows for better analysis of data in the future.***

***Recommendation 7.1.2***

***The forestry group should develop a detailed work plan that describes the multitude of activities that need to be performed and scheduled. Work codes and priority areas can be devised and estimates of time should be developed. When the new CMMS is available, it should be incorporated into the system. So it should be developed with that end in mind. As part of the plan work, codes or separate accounts should be set up for the different tasks so that time can be recorded against the various activities. This allows for better analysis of data in the future. The tree database should be put back in use and all activities on trees tracked. The database should be included into the CMMS or the GIS system when available.***

***Recommendation 7.1.3***

***Move aggressively forward with the EAOS program and include a data analysis and continuous improvement aspects to the end of the program.***

***Recommendation 7.1.4***

*In order to put the correct emphasis on the EAOS program and onto the data collection and analysis, we recommend the creation of a Work Control Department. This department would be responsible for managing the input requirements and dissemination of data from the new CMMS. Other areas of responsibility of work control would be:*

- a. Issuance and tracking of preventative work orders*
- b. Tracking the workflow process for all work orders*
- c. Management of the asset database*
- d. Preparation of PM work plans*
- e. Prioritization of work orders*
- f. Preparation of work schedules and estimated time values (ETVs)*
- g. Preparation of planned multitrade shop projects*
- h. Other duties as needed*

See previous sections on recommendations for organizational structure.

**7.2 Describe how the organization determines that the condition and cleanliness of facilities are in keeping with the image and standards adopted by the institution as well as activities associated with its mission and programs.**

The campus goal is described above. As a consequence, the condition of the buildings and grounds on campus have historically maintained at a level to match that vision. The institution subscribes to the philosophy that if potential students and stakeholders like what they see while visiting the campus that they will be more inclined to enroll and/or remain at the university.

Adequate custodial services are essential in providing clean and sanitary facilities. When custodial services are missing or inadequate, the image of the institution suffers, as do ongoing activities and programs. Custodial Services at UBC are well managed. Using APPA standards on staffing and cleaning goals as the measure, the custodial group is striving for blended Level 3 (defined as casual in attention) for existing buildings and a Level 2 (defined as ordinary tidiness) for new buildings. The review team's inspections and perceptions suggest that custodial is meeting its goal levels. However no formal QA inspection program exists nor has a financial assessment be made to see what cleaning level based on the current funding level should be achievable.

UBC BO operates in a traditional/dedicated area cleaning system using a Kanban material delivery methodology. Cleaning equipment is state of the art and very well maintained. The custodial group is hampered by high lost-time rates which disrupts normal cleaning routines due to the lack of a relief crew.

The review team noted two methodologies that could assist.

- a. Team cleaning instead of area cleaning is being used throughout the country in an attempt to be more efficient and effective in providing cleaning services.
- b. Revising the base scope of services so that a relief crew could be pulled together.

While the review team was not able to visit many campus buildings, the level of cleaning in the buildings visited seemed to meet APPA's Level 3. The current custodial manager is fully committed to the continuous improvement of the department and is working to continuously improve the effectiveness of the cleaning program and to ensure that the system meets the needs of the institution.

The NPS customer survey suggests a good level of satisfaction with the overall effort.

***Recommendation 7.2.1***

***Absenteeism whether scheduled or unscheduled needs to be accounted for. Custodial Services should explore possible solutions to the lost time issue by evaluating the following programs:***

- a. ***Task team cleaning is a team cleaning methodology that has demonstrated higher efficiencies and a better method for handling missing workers.***
- b. ***Revised base scope of services so that enough workers can be drawn from the work plan and assembled into a relief team.***

***Recommendation 7.2.2***

***Custodial Services should develop a QA inspection program for its activities. Perform regular inspections of all buildings, involving the entire custodial management team (supervisors and higher). Communicate results and standards to building occupants. There are several programs on the market that can quickly fill the need. This could be a program that can be rolled into the CMMS when available. See recommendation 3.6.2.***

**7.3 Describe how the department assesses that building systems, infrastructure systems, and utility systems are maintained and operated at a level of reliability and efficiency that contributes to the successful implementation of the institution's mission and programs.**

There are multiple parts to answering this question. First off from an operation perspective, UBC operates a sophisticated BAS. All major buildings are monitored. With this system as explained in criterion 7.2, BO is able to monitor and initiate response to problems that are occurring. New tools that are being deployed also allow for the identification of hidden problems and also predicting of potential failure. Rounds are also made in accordance with Canada labor law by 23 operating engineers. These inspections of critical equipment are intended to monitor running condition first-hand. Coupled with the enhanced "eyes on" the equipment operating system, the department has traditionally followed a break down

or reactive maintenance repair system. This system does not protect against equipment failures but does allow for fast response to those failures. Depending on the severity of failure, critical equipment could possibly be out of service for extended periods of time.

From an maintenance perspective and as explained in criterion 7.2, more reliable systems are now in practice that extend equipment life, reduce breakdown rates, and even predict failures ahead of time so that the failures can be remedied in a controlled and planned fashion there by reducing downtime and increasing reliability. The staffing of these PM functions is often achieved through the reprogramming of existing staff duties and responsibilities thus putting increased emphasis on prevention rather than a break-down approach to maintenance.

Additionally, the EAOS program is now underway and should replace the existing program.

It is a fact of facilities life that old and outdated mechanical and electrical systems are prone to failure. Disruptions for customers happen most often when systems fail, and in particular, critical research projects are placed at high risk. With a university goal to significantly increase research programs, steps need to be taken to meet and satisfy research program needs by providing more reliable mechanical and electrical systems and where needed, to install redundant systems

Using the facility condition assessment system described earlier, projects that are of a high priority are implemented that will improve reliability and reduce maintenance needs. Capital investment is therefore prioritized and used to address troublesome areas. This allows for the reallocation of maintenance resources to other priorities.

The BO Department has a program to perform regulatory compliance inspections of life safety systems and regulatory equipment and systems. The following items need to be addressed:

- a. Fire alarm testing
- b. Fire pump testing
- c. Sprinkler system testing
- d. Emergency generator testing
- e. Fire suppression systems
- f. Backflow preventer
- g. Fire extinguisher inspection and testing
- h. Other regulatory requirements mandated by Canadian authorities

This program needs to expand and to be included in the CMMS when available.

*Recommendation 7.3.1*

*Improve program for centralized tracking and QA of inspection and maintenance of the above systems.*

*Recommendation 7.3.2*

*Evaluate reprogramming of the operating engineer duties to include performance of preventive maintenance tasks that are compatible with retained duties and that can be accomplished with existing man hours while still meeting compliance with Canadian labor law.*

**7.4 Describe the processes established to ensure that funding resources are effectively used and are adequate to support a level of facilities maintenance that prevents the deferral of major maintenance and repairs.**

The institution is commended for recognizing the importance of its facilities as well as their major maintenance and replacement. The UBC BO uses the FCA reports and database for tracking and identifying projects that are part of deferred maintenance or capital renewal categories of capital needs. Additionally, the list of projects can be augmented by in-house knowledge of deficiencies. The lists are prioritized by a capital review committee to determine priorities.

Funding is provided through a combination of government allocation and UBC matching funds. Although the current level of funding (~\$50 million) is inadequate to reverse the current rising trend of the facility condition index, it appears that both the governance of the university and the Province recognize the need to renew the campus.

The institution's aggressive renovation and construction program has demolished old facilities and replaced aging building systems within renovated and new buildings, which has worked to reduce deferred maintenance levels. But still the current estimate of deferred maintenance of over \$1 billion continues to grow. Current levels of facilities-related funding appear to be adequate to cover routine maintenance, emergency repairs with some left for minor reductions of the deferred maintenance backlog.

Every effort should be made to impress upon the institutional leadership that making significant progress toward the institutionally embraced and published goals of funding is critical to achieving the success desired for the institution's facilities in support of the institutional strategic plan. Modeling of the FCA database indicates that a combined new construction (the portion of new construction that retires FCA items) and capital renewal funding (described above) needs to be in the \$80 to 100 million range to significantly impact the FCI index. Attaining these funding goals is also crucial in avoiding the current risk of untimely or catastrophic system failures.

***Recommendation 7.4.1***

***Establish and maintain realistic and predictable annual funding levels for capital renewal and deferred maintenance that will allow the Finance and Operations Division to carry out orderly and well-planned facilities maintenance and upgrade programs. In addition to buildings, attention must be given to the needs of the central heating and chilled water plants as well as utility infrastructure.***

**7.5 Describe the tools used to assess whether the staff is highly motivated and productive, taking pride in the accomplishment of their duties.**

UBC BO has demonstrated repeatedly that the department leadership places a high value on the workforce and is working along multiple fronts to engage and enhance both the relationship with management and workforce support of department goals. UBC BO uses a survey tool to document, among other things, the engagement of the workforce. The survey is called the Workplace Experience Survey. The questionnaire asks all faculty and staff to rate the organization. The survey results tie-in to areas of strength as well as the areas needing improvement. Other programs and processes used include:

- a. A robust communication program describe in Section 5.0: Development and Management of Human Resources
- b. Leadership Development Training Program described in Section 5.0: Development and Management of Human Resources
- c. Increased staff involvement on planning committees
- d. Increased use of shop meetings and “all hands” meetings
- e. Department recognition program
- f. Staff empowerment
- g. Employee satisfaction survey.

The review team noted the positive attitude of the workforce during interviews. The BO/HR efforts seem to be making a positive impact on worker attitude. It must still be noted that the IUOE union has been unable to negotiate a contract with the university. This suggests that there are still under current issues that are holding back full commitment to the UBC BO goals. For example, the issue of wage scale in the Vancouver area was repeatedly raised during discussions.

***Recommendation 7.5.1***

***The BO Department should begin to phase in continuous improvement (CI) activities for the front-line staff to engage in for department processes. It appears that the workforce is a very receptive to being engaged and could respond very well to a grass roots CI program.***

***Recommendation 7.5.2***

***Consider more aggressive strategies to settle the IUOE contract. The current stalemate is negatively impacting actions to move the BO strategic plan forward. The review team has had success in using interest-based bargaining as a collaborative technique for settling difficult issues.***

**7.6 Describe the processes used to ensure that the levels of service are consistent with customer needs and requirements and within the facilities department's capability.**

As noted previously, most customers interviewed by the review team seemed to be satisfied with the services provided by the UBC BO Department. A few customers, however, were unhappy with some provided services and the response from some shops, most notably multitrade shop work. All felt that the facilities organization had been traditionally underfunded and understaffed. UBC BO leadership understands the importance of customer satisfaction and has made attempts to measure satisfaction levels for its services by using the NPS survey method. The results of the survey indicate a highly positive response to the simple question: "Are you satisfied with services provided?"

Routine meetings are held between the facility managers and building managers, faculty, and administration representatives. The results of these meetings are discussed and action taken to remedy issues. In 2009, the department created a zone maintenance structure that responds quickly and directly to customer requests for service. It is highly prized by customer stakeholders.

It is the opinion of the reviewers that the UBC BO is making great strides in the engagement of customers into their planning for the department services.

The results of the NPS survey are helpful, but the questions are general. They do not cover all services provided by UBC BO, and it does not target specific customers. The department's most specific feedback currently comes from the routine meetings, informal comments, notes, letters, memoranda, and the electronic mail received.

***Recommendation 7.6.1***

***It could be useful for UBC BO to develop a quick (less than 10 questions) targeted survey for diving deeper into the areas where the NPS may not be scoring at levels desired.***

**7.7 Describe how managers and supervisors are encouraged and enabled to stay in touch with the needs of higher education and how they relate to their own institution.**

Departmental leaders are members of and participate in the programs of several associations that serve higher education such as SCUP, APPA, PCAPPA, and WCUPPA.



These associations stay in touch with what is happening within higher education and are familiar with the ongoing changes that occur in colleges and universities.

Departmental managers and supervisors also regularly read articles and reports that are published in national magazines and journals that are geared to the programs of higher education. Employees are very good at bringing to the attention of others within UBC BO pertinent and timely information published in magazine and other periodicals.

Finally, management staff, union supervisors, and technical management staff are often certified as facility management administrators (FMAs), project management professionals (PMPs), professional engineers (PEs), applied science technologies and technicians (ASTTs), and certified education facilities professionals (CEFPs).

*Recommendation 7.7.1*

*Continue participation in APPA's programs, and others, despite budget constraints. Broaden opportunities for midlevel managers and front-line supervisors to participate in events, even if only at the local level. Explore opportunities to partner with other institutions in the area to co-host events and the APPA Institute of Facilities Management.*

## **8.0 OTHER CONSIDERATIONS**

### **Preventive Maintenance**

The FMEP team was asked to focus on the current efforts of the BO Department to manage and perform preventive maintenance services in the facilities on the UBC campus. This section summarizes the observations specifically related to the preventive maintenance program. Recommendations related to preventive maintenance are found in previous sections of the report.

Preventive maintenance (PM) is defined as a procedure of inspecting, testing, servicing, and reconditioning facilities assets and/or systems at regular planned intervals according to specific instructions. A PM program is intended to reduce asset/system failures, prevent unplanned outages, minimize program disruption, and to extend asset service life. When applied to the buildings, systems, and components making up the portfolio of facilities on a college campus, the program can consist of thousands of individual assets, each with multiple instances of PM activities per year. A PM program normally requires (1) an inventory of assets/equipment, (2) job plans describing the preventive work activities, and (3) scheduled frequencies of the work. Job plans and work frequencies are often provided by manufacturers as recommendations to obtain expected performance from their products.

Most modern facilities organizations on major college campuses use a CMMS with a PM module to manage the identification, assignment, scheduling, and tracking of PM work. The performance of PM work often identifies deficiencies and results in the generation of corrective work orders and/or equipment renewal.

The evaluation of PM performed by BO is structured in response to five criteria provided by UBC:

- Adequacy of the program
- Progress against the plan
- Benchmarking of cost and progress against other universities
- Impact of productivity and supervisor/staff ratios on cost and effectiveness of the program
- Assessment of safety and liability risks

Interviews and reviews of materials were conducted with these criteria in mind, and the following findings are offered in the order of the criteria.

## 8.1 Program Evaluation Criteria

### *Adequacy of the Program*

As part of the preparations for the FMPEP, BO performed a self-review and provided a written report describing their processes, procedures, and level of success based on the standard criteria of the FMPEP program. The report, titled *Enabling Greatness*, describes the wide array of services provided by BO, with a balanced focus on the pride of progress on many of their programs with the desire of continued improvements in others. As part of that self-review, BO identified the PM program as one of the areas in need of significant improvement.

As a result of discussions with BO and others on the UBC campus, the FMPEP team has identified the following areas of the PM program that require increased efforts in order to lead to an improved approach.

- ***Incomplete inventory of assets.*** The basics of developing a PM program start with identifying all of the equipment (assets) that need to be maintained, then determining which of those items are critical to the operations or not. The BO Department is in the process of collecting this data. Many assets and their nameplate data have been captured but the approach is not comprehensive, equitable across all facilities, nor strategic. A comprehensive approach to data collection and capture is needed.
- ***Inadequate CMMS for modern application of the PM program.*** Facilities organizations use robust CMMS systems to keep track of assets, tasks and work orders, and scheduled frequencies that are essential to managing a PM program. The

current PeopleSoft product is not adequate to meet the needs of a large, complex, research-intensive environment such as that found at UBC. Implementation of a fully functional CMMS is imperative to derive the full benefits from a PM program.

- ***Inconsistency of data collection and reporting among trades groups.*** Significant efforts by staff have resulted in stand-alone database or spreadsheet data being used to manage high priority and regulatory requirement related PM work. However, uniformity and consistency in data collection and capture is needed across the organization.
- ***Method of collecting cost data of PM work.*** Building Operations does not currently have a means to identify or segregate the cost of PM work. Specific cost data is not being collected through separate PeopleSoft work orders dedicated to PM work, so accurate cost data is not available. Since PM and all other work orders are charged to standing building accounts, there is no way to distinguish preventive from corrective or other work activities. The PM program design should identify the organization of cost data and the reports necessary to manage the program and maximize benefits.

The current program status reflects that of a new and growing program that is being developed without the benefit of a modern computerized maintenance management system's benefit. There is a reasonable approach and strong commitment to PM for building systems related to regulatory compliance. However, as the system grows in the number of assets, the current methods may become unwieldy and more prone to data corruption.

The consensus of the FMEP team is that the current PM program is not at the level of most institutions of the size and complexity of UBC. While the current approach to PM has limitations, there is evidence of a strong commitment by both management and front-line staff to improve the program. Work by EAOS team has identified PM as one of the high priority areas of improvement in their strategic approach. Interviews with trades supervision and front-line staff revealed a strong support for PM, a cornerstone requirement for a successful program.

### ***Progress Against the Plan***

The FMEP team was unable to identify a specific plan for improving the PM program, although the EAOS process has certainly identified improving PM as part of their strategic initiatives. A series of actionable items and milestone dates were not made available.

In assessing how BO is progressing against a plan to improve the PM program, the FMEP team addressed questions related to the status of the plan several years ago, the current status, and aspirations for the status several years in the future. The anecdotal information about past, present, and future suggests BO is continuing its efforts to build on the progress they have made and to prioritize PM moving forward.

From conversations with BO staff, it was apparent there was not significant emphasis on PM in the trades areas two to three years ago. Only pockets of trades groups were engaged in PM activities, and even fewer were tracking the completion of work in any sort of database.

Today, PM work is much more prevalent, and most work is tracked in either an Excel spreadsheet or Laserfiche software database formats. Preventive maintenance is now being accomplished on most compliance related systems such as fire systems, elevators, and backflow preventers, and records are available. Confirming a complete asset inventory continues to be a challenge as was evidenced by the discovery by BO that their secondary backflow preventer inventory until just recently had been incomplete. And again, it is worth noting that management and front-line staff members are united in their desire to develop a more mature approach to PM.

In the near future, BO is planning to implement a new CMMS with a dedicated PM module, to hire a PM program manager, and to develop a more complete asset hierarchy and inventory. Additional improvements to the program include developing the ability to track PM performance for more meaningful performance and financial metrics, and establishing a means to capture assets and PM plans as part of commissioning new capital projects.

#### ***Benchmarking Against Other Universities***

As previously mentioned, data related to PM work undertaken by UBC BO is not currently managed in a modern CMMS. While the version of PeopleSoft used by UBC has limited facilities equipment and work order capability, we were unable to determine if a PM module was part of the software available to BO. Regardless, the PM work performed by BO is not captured in a single database in a consistent format, limiting the capability for meaningful PM performance or cost metrics.

Some trades groups employ an effective tracking of completion metrics of PM work through spreadsheets or shared databases, but the variation in formats is not conducive to collection of overall departmental metrics. Additionally, all routine maintenance work is charged to standing building work orders as opposed to individual specific work-related work orders, preventing BO from the ability to isolate and capture PM cost data. The FMEP team is recommending a departure from the standing building work order approach as part the comprehensive BO assessment and report. Although the current version of PeopleSoft could allow some improvements in capturing cost and performance data, the procurement and implementation of a modern CMMS will provide UBC with the capability to greatly enhance its approach to manage PM work and compare more comprehensive performance and cost data with other peer institutions.

### ***Impact of Productivity and Supervisor/Staff Ratios***

Although productivity and supervisor-to-staff ratios can certainly impact the cost and effectiveness of a PM program, the FMEP team was unable to ascertain the impact of these variables in our short time on campus.

With regard to productivity, a more detailed study of the amount of time tradespeople spend on direct work efforts versus nonproductive time (travel, materials kitting, etc.) would be required to evaluate productivity metrics. At peer institutions, it is expected that scheduled and routine PM will result in higher staff productivity when compared with models using a “breakdown maintenance” strategy where unplanned work is dominant. We did observe a productivity issue regarding the zone structure, in which the noncontiguous zones could often result in an unreasonable amount of travel time between buildings. The FMEP team will recommend to BO a consideration to shift from a customer centric zone make-up to a geographic zone.

Building Operations does not currently categorize maintenance work in order to provide cost data of the program, so the FMEP team was unable to evaluate the cost of the program. Supervisor-to-staff ratios appear to be in line with that experienced by team members in other universities.

An expanded and centrally managed PM program can lead to a more proactive approach to maintenance, enhancing reliability of systems performance, extending the life of equipment, and reducing unscheduled breakdowns. This can be especially important on a large university campus where building/system life expectancies are long, and the time between renewals is often extended beyond their expected useful life. Planning and scheduling labor resources is an effective aspect available with modern CMMS applications, leading to a more productive workforce.

It is worth noting that an increased emphasis on PM will require institutional support for an investment in maintenance. This does not necessarily mean an increase in existing maintenance budgets, but instead an agreement that PM takes precedence over many routine customer requests for facilities services. Currently, zone staff performs customer requested work, charging only for materials, if the requested work is not expected to exceed two days. A disciplined approach, with an appropriate priority toward PM, could shift focus to maintenance-based work and impact the focus of BO on customer request for nonmaintenance services.

### ***Assessment of Safety and Liability Risks***

Preventive maintenance, by its very nature, is a risk management/risk tolerance program. The more frequent and more extensive the PM activities, there is increased confidence in reliability and the extension of equipment life. Facilities managers balance financial and operational constraints with the criticality of the system or equipment being maintained. For instance, an emergency generator at a hospital may have a higher frequency of testing

than an emergency generator at an administrative office facility. The age of equipment and its environmental conditions can also impact the frequency of PM activities.

Regulatory compliance on certain facilities systems may require a stringent frequency of inspection and testing. Fire detection and suppression, elevators, certain laboratory equipment, and backflow preventers are examples of building systems requiring testing and inspection. The FMEP team found that BO is committed to meet the regulatory requirements on these systems, and given their current facilities software, is performing at a reasonable level and keeping records of their inspection activities. As mentioned, a new CMMS will allow better scheduling, better tracking, and better cost controls on these PM work orders.

Finally, a mature PM program is a key component of a total cost of ownership strategy. A new capital asset investment includes the initial capital expense, ongoing operational expense, and future renewal expenses. Building Operations is currently developing an improved commissioning and transition process, including an approach to identify equipment and associated PM plans to effectively maintain warranties and initiate proper building maintenance practices at the time ownership transfers. This process can extend the time until system renewals are required.

## **8.2 Summary**

The FMEP team reviewed the entire BO offering of services in the areas of maintenance, housekeeping, landscaping, municipal services, and minor customer requests. We found an organization committed to customer service, proud of their support to the university, with an excellent approach to organizational communications. Their four pillars of leadership development, asset management, customer focus, and employee engagement create a framework for an organizational strategy that is shared by all levels of the department. As the FMEP team focused on the current approach to PM, we found a program that could be improved. However, we were impressed with the openness of the leadership in recognizing the program shortcomings and the fact that they had already begun a plan for improvement. We are confident that the organization is moving forward and hope our observations and recommendations will prove to be of value.

# Conclusion

The FMEP process is one of the highest levels of self-assessment that a Building Operations organization can undertake. Not every facilities organization is willing to open their department for scrutiny by outside peers, and internal and external stakeholders. This bold step reflects an organization that is genuinely interested in improving and being recognized among the best. The sense of pride in UBC by the employees is evident at all levels. Building Operations staff is motivated, and effective in the performance of their roles and responsibilities.

It has been a beneficial professional experience for each of the APPA team members. As we said at the exit interview, we all learned some valuable things from the site visit. We appreciate the hospitality and professionalism that exists on the UBC campus. We are grateful for the time and effort spent preparing for and engaging in this evaluation process. A careful review of the findings and recommendations will aid in your journey of continuous improvement and the goal of achieving your greatest potential. We hope this report will motivate the Building Operations Department and that the positive changes already underway will continue. If so, then all of our effort will have been for the good.

# APPA Team Member Biographies

**Jack K. Colby**

**North Carolina State University**

**Assistant Vice Chancellor for Facilities Operations (retired)**

Jack Colby served as assistant vice chancellor for Facilities Operations at North Carolina State University since 1999. Prior to that, he served at UNC-Greensboro, Duke University, and Daniel International.

Colby holds degrees in Mechanical Engineering from Virginia Tech (1974) and an MBA from the Fuqua School at Duke University (1983). He is a professional engineer in North Carolina and a graduate of the APPA Institute for Facilities Management and the Leadership Academy.

An APPA member since 1978, Colby has served at the state, regional, and international levels. In 1994, he was elected as APPA vice president for Professional Affairs and in 2000 as secretary treasurer. In July 2002, he was recognized for his service to APPA as a recipient of the Meritorious Service Award. He took office as APPA President in 2005 and completed 11 years of board service in 2007. He now chairs the APPA Professional Certification Board and the Thought Leaders Series Summit. In 2013, he was designated as an APPA Fellow.

At North Carolina State University, Colby was responsible for 900 staff members performing operations in housekeeping, grounds, utilities, and BO for 350 buildings, 5 central utility plants, distribution systems for 3 campuses, energy management, and campus sustainability programs. He held position as the sustainability officer for the campus and co-chairs the campus-wide Sustainability, Energy, and Carbon Reduction Committee.

**Jay Klingel**

**University of Virginia**

**Director, Operations and Maintenance (retired)**

Jay Klingel worked at the University of Virginia Facilities Management organization for 35 years, from 1979 through 2014, with responsibility for a number of programs. Klingel began his career at the University of Virginia managing an in-house construction division, responsible for renovation and improvement projects throughout the university's academic and health systems areas. From 1989 to 2007 he was the director, Business Management Services, responsible for work management, finance, information systems, procurement, and human resources. From 2007 to 2014, Klingel served as the director, Operations and Maintenance, responsible for an 850-person organization including facilities maintenance, housekeeping services, landscape services, project services, and work management.



Klingel has been extensively involved with the APPA and SRAPPA organizations for over 30 years. He served as chair of APPA's Institute for Facilities Management from 2001 through 2014, was dean of the O&M track from 1998 through 2016, and on the faculty since 1994. Klingel has presented at several APPA annual meetings, SRAPPA meetings, and local chapter meetings. He has been a contributing author to several APPA publications including the *Facilities Manager* magazine, *Critical Issues* series, *Operational Guidelines for Educational Facilities: Maintenance*, and the *Facilities Management Manual*. Klingel was a member of the APPA Professional Development Committee from 2001 through 2014, chaired the Host Committee for the 1985 annual SRAPPA meeting at the University of Virginia. He is the recipient of several APPA awards, most recently the 2014 Meritorious Service Award.

**Jeff Lamb**  
**Dalhousie University**  
**Assistant Vice President Facilities Management**

Jeff Lamb has almost 36 years of experience in facilities management, design, and construction. He has a bachelor's degree in Civil Engineering and a Master's degree in Structural Engineering from the Royal Military College of Canada and is a professional engineer registered in the province of Nova Scotia. Jeff worked for 18 years in the Canadian Forces, retiring in 1996 as a Lieutenant Colonel. Among other duties, he was in charge of facilities management at three Air Force bases and worked on design and construction of military installations in the Canadian Arctic. Since leaving the military, Jeff has been responsible for facilities operations, maintenance, and construction at two universities: for seven years at Mount Allison University and for the last 11 years at Dalhousie.

Jeff has been heavily involved in industry associations, serving for over 10 years as an Executive for the Atlantic Chapter of APPA as the vice president of Professional Development, and he continues to serve on the CAUBO Facilities Management Committee.

**Rich Robben**  
**University of Michigan-Ann Arbor**  
**Executive Director of Plant Operations (retired)**

Richard W. Robben is the principal and owner of True North FMC, a facilities management consulting services to higher education. A current client is the University of Chicago where he has served as the interim associate vice president for Facilities Services with responsibility for the entire facilities management portfolio and as a Turnaround consultant for a major reorganization for the department.

Prior to starting True North FMC, he served as executive director of Plant Operations at the University of Michigan-Ann Arbor. His responsibilities included planning and directing the administrative and operational activities of Plant Operations. With an operating budget

in excess of \$200 million, Plant Operations is responsible for the upkeep and operation of the Ann Arbor Campus including facilities maintenance, construction services, utilities, plant engineering, work control, grounds, waste management, building custodial services, and plant academy. During his tenure, he oversaw efforts to implement the Energy Star conservation program, which is saving the University of Michigan over \$9 million annually; a new web-based work order management system, which provides greater consulting and accountability of financial and human resources; a PM program to extend the life cycle of campus assets; the development of a strong strategic business plan for optimizing resources and priorities; and a facilities condition assessment program for the management of deferred maintenance. His recent focus on energy conservation behavior change has resulted in the implementation of the Planet Blue program at the university. While at Michigan he also was appointed as an adjunct professor of Naval History and as a member of the Board of Directors for the Ann Arbor Transportation Authority, the local public transportation system.

Before joining the University of Michigan in 1996, Robben was director of Physical Plant at the Morningside and Midtown campuses of Columbia University. He was an adjunct professor for Facilities Engineering at the State University of New York-Maritime College before moving to Michigan.

Robben holds a B.S. in nuclear engineering from SUNY-Maritime and an MBA from Columbia University. He served in the U.S. Naval Reserve from 1974 to 94, attaining the rank of commander. He is a licensed professional engineer and a member of the National Society of Professional Engineers, APPA, the National Association of College and University Business Officers, and Tau Beta Pi, the National Engineering Honor Society.