By Duane G. Hickling

Understanding and Improving FM Performance Using APPA's FPI Data

For more than two decades, the annual APPA Facilities Performance Indicators (FPI) survey has been used by higher education institutions to measure facilities management (FM) performance. APPA has seen the measurement of FM performance in higher education evolve significantly over that time. Many institutions are now in the third generation of FM performance measurement.

FIRST-GENERATION FACILITIES MANAGEMENT PERFORMANCE MEASUREMENT

In the 1980s, the initial level of performance measurement saw institutions asking the question, *"Are we spending enough on our facilities portfolio?"* To answer this question, institutions would look at the spending of peer group averages and measure their own level of spending in comparison to them. Often, spending at the average of a peer cohort group was viewed as adequate.

SECOND-GENERATION FACILITIES MANAGEMENT PERFORMANCE MEASUREMENT

By the late 1990s, progressive institutions were moving into a second level of performance measurement and asking a different question: *"Are we getting full value from the resources committed to sustaining our facilities portfolio?"* To answer this question, institutions compared their facilities less to peer group averages, and instead leaned more toward identified *best practices*. This led FM departments to look at workflow processes and lean management principles. Sophisticated work

"...the exact same...actions that allow the workforce to be more productive are the same things that delight customers."

COMING SOON.....FPI 2.0

APPA is in the final stages of updating its popular Facilities Performance Indicators (FPI) survey and report. The new survey will be powered by Qualtrics, while the report will be powered by Tableau. This powerful combination will offer participants ease of navigation and data entry when completing the survey; and dynamic filtering options enable both mirco and marco results when generating dashboards. Look for the new survey at *www.appa.org/fpi*.

management systems and the implementation of mobile technology could significantly improve the productivity of a workforce by redesigning work processes to eliminate activities that weren't contributing to the accomplishment of that work.

THIRD-GENERATION FACILITIES MANAGEMENT PERFORMANCE MEASUREMENT

The questions driving the first two levels of FM performance measures are valuable and should be addressed, but many institutions are now realizing that it isn't enough to control costs and provide value. The third-generation approach currently being used is entirely different. Education institutions are now asking the question, *"Is our facilities portfolio appropriately sized and adequate to support our institutional mission?"* This question recognizes that the *quality* of building space is likely more important than the *quantity* of space in supporting the academic mission of instruction and research. Maintaining less space can offer significant savings.

The discussion of identifying alignment of the facilities portfolio (amount of space and its quality) with the academic mission is a discussion that reaches across departments of the institution. The facilities department may keep an accounting of the amount of space on campus, who occupies it, and identify the condition of that space, but there are other departments that assign those spaces, such as offices and laboratories, and schedule classrooms.

The senior facilities officer (SFO) is an important contributor to this conversation. Being able to accurately inform academic leadership regarding the implications and cost of building additional space that may not be extensively used, versus renovating and upgrading existing space, is an important element in the capital decision process.

The FM performance measurement progression to generation three doesn't mean

DEFINITIONS:

AFOE = Annual Facilities Operating Expenses (does not include any capital expenses).

PU = Purchased Utilities.

Maintenance = Cost of the labor, benefits, parts, materials, and contracts needed to maintain the campus facilities buildings.

APPA Maintenance Service Level = Service levels 1 through 5 as defined by APPA's *Operational Guidelines* publications (1 is best; 5 is worst)

that generation one was wrong. Instead, it suggests that institutions may be requiring a deeper, more sophisticated look at the complexities of measuring the resources needed to own and operate the facilities portfolio. It is becoming necessary to be more analytical, by comparing metrics and even triangulating multiple data points, in order to reveal accurate information regarding the condition and use of the facilities portfolio.

The FPI has a wide range of metrics that can be analyzed and can give a great deal of information about the facilities portfolio and the institutional resource commitment required to support it. It is possible to drill into the data to gather underlying information about the facilities portfolio that may not be initially obvious. We can use an example from this year's APPA FPI database to demonstrate the value of working through the various levels of facilities performance measurement.

GENERATION-ONE PERFORMANCE METRICS ANALYSIS

In our first example, we can start with a generation-one approach in evaluating an institution's funding level to support their facilities portfolio. This is the approach that the FPI database is most commonly used to depict.

Figure 1 is a similar group of large public research institutions selected from the 2017–18 APPA FPI database. They are all in the same Carnegie classification and in the same APPA region, and they range in size of maintained space from approximately 6 to 17 million gross square feet (GSF).

We are going to look most closely at **Institution 1**, which has been participating in the FPI for several years.

Using generation-one analysis, Institution 1's facilities department appears to be underfunded. They are spending a full dollar per GSF less than the nearest comparative institution and are delivering only at APPA maintenance service Level 4. The nearest comparative institution is also maintaining the campus only at maintenance service Level 4.

All other institutions are delivering at building maintenance service Level 3, and have 40% or more funding than Institution 1. With this information, the SFO of

Institution 1 could make a compelling argument that they are underfunded. Over a period of time, an institution delivering APPA Level 4 maintenance service will likely see frequent systems failures and unscheduled outages, because they will have difficulty completing preventive maintenance on mission-critical equipment. They will also likely be stretched thin enough that service response time for minor repairs will be long and campus personnel may be dissatisfied.

Looking deeper into the data, Figure 2 is a table

Large Public Research Institutions

Institution	AFOE + PU (\$/GSF)	Maintenance (\$/GSF)	APPA Maintenance Service Level
1.	\$6.63	\$1.16	4
A.	\$8.39	\$3.61	3
В.	\$7.94	\$2.06	3
C.	\$10.34	\$1.71	3
D.	\$9.36	\$2.70	3
E.	\$7.63	\$1.88	4
F.	\$8.07	\$1.79	3

Figure 1. Comparison of Annual Facilities Operating Expenses + Purchased Utilities (AFOE + PU), Maintenance Funding, and APPA Maintenance Service Levels.

Institution	AFOE per Student (\$/FTE)	AFOE + PU per Student (\$/FTE)	APPA Maintenance Service Level	
1.	\$1,673	\$2,655	4	
А.	\$1,059	\$1,431	3	
В.	\$1,299	\$1,856	3	
C.	\$1,296	\$1,650	3	
D.	\$1,314	\$2,368	3	
E.	\$1,282	\$2,081	4	
F.	\$1,281	\$2,151	3	

Large Public Research Institutions

Figure 2. Comparison of Annual Facilities Operating Expenses (AFOE) Per Student, AFOE + Purchased Utilities (PU) Per Student, and APPA Maintenance Service Levels.

of the same institutions comparing their AFOE and AFOE plus purchased utilities on a per-student basis. This table gives some insight as to what financial burden each student carries for maintaining and operating the campus facilities.

This data implies a more difficult situation for Institution 1. Here each student's tuition commitment to sustain the facilities portfolio is larger than any of the other institutions in the selected cohort group, in spite of the low per-GSF spending level. This lower cost per GSF and higher cost per student is often a leading indicator that a campus is sustaining too much building space.

This situation is challenging on a number of levels in that a sustained lower level of operations and maintenance services is not going to improve the campus's long-term ability to recruit and retain students. If the students are dissatisfied with their living, learning, and recreational environment, the dissatisfaction will quickly be expressed publicly on social media. That will make it even more difficult to recruit students particularly in our current environment of overall shrinking enrollment.¹

A common solution to the problem of poor campus facilities is to build new buildings. Shiny new instructional or recreational space is often seen as necessary to support student recruitment and retention efforts. But, unless an equal amount of older building stock is removed, the additional space will exacerbate the operations and maintenance challenges for institutions in the same category as Institution 1.

The circumstances of Institution 1 are not unique. It is easy to go through the APPA FPI database and find similar instances in other APPA regions and Carnegie classifications. Anyone using the FPI database and looking at only one set of metrics is vulnerable to seeing only part of the problem. Their observations and understanding may be incomplete.

GENERATION-TWO PERFORMANCE METRICS ANALYSIS

Institution 1 has been attempting to address their challenges and has made significant progress. Eight years ago, their investigation into the FPI data led them to understand that even though they were "underfunded" on a GSF basis, their energy consumption was nearly 25% more British Thermal Units (BTUs) per GSF than their public research university peers. This data point brought them to a "generation-two" performance measurement realization—they were likely not getting full value from the resources committed to their facilities portfolio.

Given the size of Institution 1's campus, energy conservation measures could conservatively generate savings in excess of \$2 million per year. They have been aggressively pursuing energy conservation to address this problem and have made significant prog-

ress. Energy consumption has declined nearly 20% per GSF. The energy savings have been used to improve their spending on maintenance.

Institution 1 has now realized generation three in their use of facilities performance metrics. The SFO has been active in educating campus and academic leadership regarding the cost of space and the need to accurately align the facilities portfolio with the academic mission. **The facilities department no longer refers to their situation as "underfunded." They now label the inadequate resource issue as "overspaced."**

Over the last six years, in spite of national trends showing fewer U.S. students, Institution 1 has grown student enrollment by 9.2%. But, realigning space and institutional mission is hard. The data is showing they are still lagging behind their peers.

	2017-18 FY	2016-17 FY	2015-16 FY	2014-15 FY
Satisfied	\$6.17	\$6.76	\$8.02	\$5.34
Very Satisfied	\$5.55	\$5.42	\$5.04	\$5.24
All APPA FPI Participants	\$5.55	\$5.34	\$5.14	\$5.00

AFOE \$/GSF for Fiscal Years 2015 through 2018

Figure 3. Annual Facilities Operating Expenses (AFOE) [\$/Gross Square Foot (GSF)] of Satisfied vs. Very Satisfied Campus Customers vs. All APPA FPI Participants

During the same six years of student growth, the maintained space on campus has grown by 19.4%.

It may be easy to suggest a large portion of the space growth was necessary to support growth in the research program. A robust, growing research program has benefits for a public research university. It is indisputable that faculty recruitment and increased prestige through discoveries, patents, publications, and related societal benefits are all important goals of a public research university. But expecting the research program to fully fund campus facilities growth may not be a good strategy. One only has to look at the wide variation in research indirect overhead rates across institutions in the same APPA region to wonder if research overhead reimbursement fully funds research facilities and other related costs.²

This discussion in no way questions the value of any portion of the academic mission of an institution. As facilities managers, our role is to fully participate in supporting the institutional mission. We can "fall in love" with our buildings to the point that we lose sight of whether they are providing full value in supporting the mission. The role of FM in managing the institutional physical built environment is much more than construction followed by operations and maintenance funding to support whatever is constructed. FM needs to provide executive leadership with the information necessary to help avoid a situation where their institution ends up with costly surplus space. Looking deeper than initial cost comparisons is a requirement for understanding the entire situation.

WHAT IS THE COST OF IMPROVING THE LEVEL OF FACILITIES CUSTOMER SATISFACTION?

Another significant challenge facing FM leadership is responding to the campus's desire to improve customer satisfaction. Almost every FM team has heard complaints from faculty, staff, or students at some point that necessitate the department improve overall customer satisfaction. And often the facilities department's response is, "We would very much like to improve services, have quicker response times, and provide better communication, but we don't have the resources to do so."

The FPI provides cost metrics based on customer satisfaction levels. Many institutions do not complete the customer satisfaction module in the category of "satisfied," so it is worthwhile to also compare the "very satisfied" customer responses to the costs of services across the entire database. What is interesting about this data is how it shows that providing services for "very satisfied" campus customers is consistently less expensive than doing so for merely "satisfied" customers, and is comparable to the *average* of all the APPA FPI participants.

This data feels counterintuitive. How is it possible to improve services without an increase in costs? The answer is that the exact same activities and management actions that allow the workforce to be more productive are the same things that delight customers. Most customers want to know the status of their work orders; they want reliability and predictability from the services they are provided; and they don't want surprises.

Communication can usually be automated (think ability to track work orders in the same way a FedEx package is tracked); and having documented work processes that have been subjected to lean management analysis will allow workers to perform more productively and accomplish work without interruptions. The consistency of a documented workflow will allow maintenance and repairs to be performed in a reliable, predictable manner.

Tracking customer responses and designing service delivery to satisfy customers' desire for work status information and work consistency is one of the best ways to assure that the FM organization is getting full value from their operations and maintenance resources.

Elevating the use of the APPA FPI data analysis from generation-one comparisons to a more complex, sophisticated level of investigation can enable facilities managers to strategize and communicate more creative solutions with institutional leadership. (§)

ENDNOTES

- U.S. higher education student enrollment decreased from 18.1 million students to 16.8 million from 2010 to 2017. https://nces.ed.gov/programs/coe/indicator_cha.asp.
- 2. "Taking a Hard Look at University Research: Without Transparency, Can We Expect Funders to Foot the Whole Bill?" *https://ssir.org/ articles/entry/taking_a_hard_look_at_university_research.*

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