

Facilities and Infrastructure Report

FISCAL YEAR 2016-17



Infrastructure Planning and Facilities
MICHIGAN STATE UNIVERSITY



This report can be best viewed online here: ipf.msu.edu

[CONTENTS]

WELCOME 3

PARTNERSHIPS 4-12

PEOPLE 12-16

LEADERSHIP DEVELOPMENT 17

APPENDICES:

- >> CONSTRUCTION REPORT
- >> IPF KEY PERFORMANCE INDICATORS
- >> PROPERTY HOLDINGS REPORT



Infrastructure Planning and Facilities
MICHIGAN STATE UNIVERSITY
ipf.msu.edu

 facebook.com/MSUFacilities

 [@facilitiesmsu](https://instagram.com/@facilitiesmsu)

 [@MSUFacilities](https://twitter.com/@MSUFacilities)



A message from the associate vice president

Each year Infrastructure Planning and Facilities provides an update on contributions it has made toward preserving, maintaining and expanding the physical campus and its beautiful grounds. Emphasis is always placed on the value we bring to the many campus visitors, faculty, students and staff. In essence, IPF defines its success through the success of the many campus users.

To that end, it is important to note that our most important asset is not the bricks, mortar and landscape we maintain, rather it is our employees and the limitless passion they bring to their jobs each and every day. This report will highlight how we are investing in our people so that they in turn can provide the best possible service to MSU.

The report also highlights some of the many partnerships in which IPF engages to create value and stretch dollars for our constituents. These partnerships support the university's mission to advance knowledge and transform lives, its commitment to diversity and inclusion and its core values of quality, inclusiveness and connectivity. IPF partnerships with campus entities help advance research opportunities, improve MSU's standing with the broader community and result in good stewardship of our resources.

This report uses stories about our people and the partnerships they create to demonstrate how IPF has positively affected the campus community we serve. Even if you don't see us quietly going about our business, know that we are keeping MSU running 24/7/365.

Infrastructure Planning and Facilities proudly serves, every single day.



Sincerely,
Dan Bollman
Associate Vice President
Strategic Infrastructure Planning and Facilities



PARTNERSHIPS

Partnerships bring pieces of a puzzle together to create something whole. If one piece is missing, the picture is incomplete. IPF is an important piece of the puzzle. In fact, it's the table upon which the puzzle gets built, and that's true whether the partnership advances research, strategy or stewardship.

The solar carport strategic partnership provides sustainable energy and helps raise MSU's profile as a national leader in alternative energy.

The mobile access partnership increases technology access that improves employee efficiency and university stewardship.

And who would have thought that an idea to put chairs into a little-used area of green space would grow into a partnership to conduct social research into how and why people use the chairs within the "People's Park." IPF's partnerships are designed to address issues with solutions that can be implemented to make a difference.

RESEARCH

Innovation Center will bring new food products to market

"This isn't just an MSU-driven project. Financial commitments were provided by many organizations and agencies. It's important to recognize that MSU saw the benefits, but the industry had the willingness to take the initiative and invest in its operation."

That's how IPF project manager Tony Rhodes sees the new Food Processing Innovation Center (FPIC) under construction in Okemos. Construction began in April 2017 and is expected to conclude in December 2017. This "first in the nation" center is possible through



collaboration between IPF, the College of Agriculture and Natural Resources Product Center and several organizations in Michigan's agri-food sector.

The FPIC allows food companies to create and test-market new high-value consumer products for the market place.

[>> read more](#)



New STEM building underway

The new Interdisciplinary Science and Technology Building (ISTB) is going up fast. According to IPF architect Jeff Kasdorf, “Typically a project like this takes about four years from design conception to completion.” This building will take about half that time.

Why the rush? Faculty and students in STEM fields need more research space. Construction of the new building supports two MSU initiatives—the Strategic Academic Development Initiative (SADI) and the Global Impact Initiative (GII). SADI supports providing modern teaching and interdisciplinary research space to support growth in STEM-related fields. GII seeks to recruit more than 100 new STEM faculty investigators.

- Cost of building: \$100 million
- Six stories and 160,000 gross square feet
- Since April 2017, the project has accrued more than 113,345 trade labor hours

[>> read more](#)

More energy, more research

IPF partnered with Consumers Energy and the Facility for Rare Isotope Beams (FRIB) to construct a new substation completed in March 2017. The substation addresses the need for more power to deal with the university’s expected research expansion over the next decade.

The extra power from the substation will allow the FRIB to “enable scientists to make discoveries about the properties of rare isotopes (that is, short-lived nuclei not normally found on Earth), nuclear astrophysics, fundamental interactions and applications for society, including in medicine, homeland security and industry.”

- New substation capacity: 100 megawatts
- The substation’s location near the power plant reduced length of transmission lines and overall costs

[>> read more](#)



Lab renovations provide more “real life” student experiences

When the College of Natural Science decided it needed to update some of the lab spaces in the Natural Science Building, IPF partnered with them to come up with spaces that fit today’s way of teaching and learning.

According to assistant professor John Zubek, the new labs feature pentagonal tables that make the rooms into something that is a cross between labs and classrooms. The set-up makes it easier for students to collaborate with each other and for professors to engage with students.



Student Anna Wright said the setting is more like it would be in a real healthcare situation.

Zubek says the renovated rooms give students more independence and better access to equipment.



Chair setup sparks research idea

In summer 2017, Landscape Services added plastic Adirondack chairs for students to enjoy in People’s Park. The idea came from Dan Bollman, Associate Vice President of Strategic Infrastructure Planning and Facilities and Barb Kranz, Director of Facilities, Planning and Space Management.

Landscape Services then partnered with MSU’s School of Planning, Design and Construction to create a research project with the use and placement of the chairs throughout the landscape.

The chairs are placed in the same arrangement every morning, but can be moved around for those passing through to stop and take a break.

- Students are studying the movement of the chairs throughout each day and the different arrangements that the occupants of the park use to socialize
- Signs with the text “#IDEACHAIR” engage social media users in voicing their ideas
- IPF staff and student and faculty researchers will review the research over the winter 2017-18, and pending the outcome, will explore pursuing a similar experiment next year

New research center focuses on cancer, autism and more

A six-story, world-class research facility, the Grand Rapids Research Center is home to 33 investigators and their research teams with room for 11 additional research teams. Alzheimer’s and Parkinson’s diseases, cancer, women’s health and infertility, autism and pediatric cancers are among the research.

- Project cost: \$81.5 million
- Square footage: 162,800



STRATEGIC DEVELOPMENT

End of Red Water?



Anyone who has spent much time on the MSU campus has heard about MSU's water. Red

Water Alerts are fairly common, and campus surveys consistently rate the water quality as a problem. A plan to improve MSU's water aesthetics and palatability was authorized by the MSU Board of Trustees (BOT) in December 2016.

Alternatives evaluated included an iron-filtration plant with an elevated storage tank, an on-site water softening plant or purchase of treated water from Lansing or E. Lansing. The analysis concluded that the most cost-effective option to address the primary concerns of the water's appearance and taste was to construct an iron filtration plant with an elevated storage tank. The tank will be located east of the T. B. Simon Power Plant. Construction is scheduled to begin in July 2018 and be completed in December 2019.

- The estimated cost is \$21 million
- The tower will hold approximately two million gallons of water

Solar carports



Construction on a new solar array project — a venture that could save MSU \$10 million over the next 25 years — began in fall 2016. Arrays are a collection of solar panels linked together that can act as an additional energy source.

- Solar arrays are being constructed at five parking lots covering 45 acres
- The largest solar carport array in the country with about 40,000 panels

[>> read more](#)



Service upgrade moves IPF up

ContactIPF quickly addresses requests for immediate help for everything from damaged windows to icy sidewalks. Providing top-notch service to the MSU community has always been ContactIPF's top priority.

By incorporating new technology, customers can now contact IPF service center specialists by phone, text message, email and web chat. ContactIPF runs 24/7/365 and is now part of IT Services (see IPF ICT/MSU IT Services integration, page 10).

Renovating for collaboration



The MSU Hub for Innovation in Learning and Technology opened in Wells Hall over the fall of 2016. The Innovation Hub replaces the old math library and will embody MSU's core values by designing opportunities and promoting new ideas throughout the university.

- The 6,735 square-foot area is a flexible multi-use space, with the exception of a conference room, three focus rooms and a kitchenette space

[>> read more](#)

IPF lends copper for art exhibit

Several loads of copper piping was loaned to The Eli and Edythe Broad Art Museum for the "Beyond Streaming: A Sound Mural for Flint" exhibit. The exhibit attracted hundreds of visitors and hosted many school field trips for youth throughout Michigan.



Breslin Center upgrades

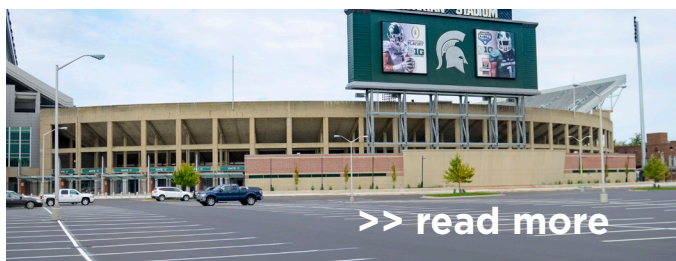
The Breslin Student Events Center facility upgrades will enhance the student, alumni, fan and public experience.

- Focuses on the functionality, extends the useful life of the building, improves services to fans and creates a lasting legacy by integrating a sense of Spartan tradition
- 22,000 square-foot addition expands concourse, upgrades restroom facilities, improves security and more



Spartan fans get better experience

The south end of Spartan Stadium lacked fan amenities, with limited concessions and no restrooms. But that all changed when IPF used a technique called “design build delivery” that allowed the Spartan Stadium South End Zone Addition to be completed during a compressed design and construction schedule of just eight months. This expedited construction method used pre-fabricated toilet plumbing assemblies for the 231 toilet fixtures. The project also included expanded ticketing plazas and concession spaces.



IPF and MSU sports

While fans cheer on their favorite MSU athletics team, Infrastructure Planning and Facilities is behind the scenes making it all possible. Custodians, plumbers and electricians work together to keep MSU’s stadiums running smoothly.

[>> get an inside look](#)

Apartments, retail and office space bring neighborhood feel



1855 Place was constructed to provide a neighborhood feel on approximately 70 acres of space at the corner of Kalamazoo and Harrison roads.

The neighborhood provides resident housing, green space, office and retail space, as well as surface and parking deck options.

The apartment buildings accommodate both multi-family housing and single residents. The project had a 26-month construction schedule.



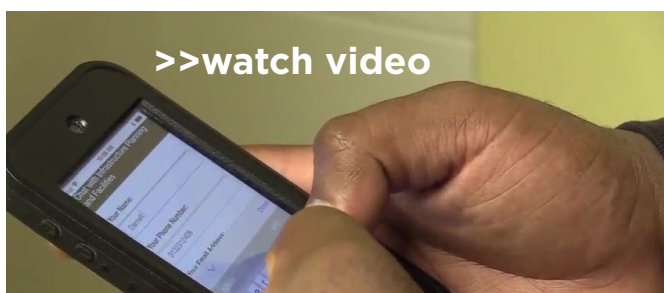
The project consolidated office space from across campus, freeing up space for academic programs while saving resources and improving communication. This consolidation also creates synergies between Residential and Hospitality Services and Intercollegiate Athletics.

- Project cost: \$156.7 million
- Includes 10 buildings housing 509 apartments (1,230 beds)
- More than 600,000 labor hours, averaging \$4.5 million of work monthly



STEWARDSHIP

Mobile Action Plan



IPF is equipping the 21st century workforce with a digitally interconnected environment.

Providing mobile devices to front line employees improves access to critical information, allowing them to make informed daily decisions while in the field, resulting in an improved customer experience.

This saves the organization money, which helps stabilize the cost of service, saving dollars that can be invested towards research.

As a result, IPF will:

- Provide mobile devices improving access to information
- Align technology systems, creating an eco-system for knowledge management
- Implement action analytics and evidence-based decision making to advance culture and improve customer requirements

IPF ICT/MSU IT Services integration

Technology and support are crucial as IPF advances to modernize its systems and processes. The integration between IPF IT Services and MSU IT Services advances IPF's technological abilities, resulting in improved service. Being embedded in MSU's IT environment provides direct access to cutting edge technology and resources to support IPF projects. There also will be a reduced duplication of efforts as technology processes are aligned.

Integration impacts include:

- Leveraging resource pools to increase depth and breadth of skills and expertise
- Create and sustain consistency of the customer IT experience
- Enhance career development

Technology upgrade boosts employee efficiency

IPF looks for ways to build on recent advances. With the use of iPad ArcMap collector, IPF technology staff have streamlined processes with the ability to identify landscape issues and log into a single database.

- Staff locate solutions from technology devices, which prevents having to go back to the office, saving an immense amount of time
- Crews can instantly report work and identify problems as they arise

MSU honored among top members of Michigan's energy-efficient community



A team from IPF received an honorable mention for their Energy Conservation Measures (ECM) commissioning process for campus buildings.

The recognition at the Governor's Energy Excellence Awards was for the new CO2 sensors that were installed in the Wharton Center's heating ventilation and air conditioning systems.

Reducing the amount of outside air ventilation when spaces are not fully occupied, the sensors' cost savings include:

- \$60,000 annual savings for the university
- 18.9 percent reduced steam consumption
- 5.3 percent reduced electric consumption

Shop Everything MSU: major profit

The MSU Surplus Store organized Shop Everything MSU in December of 2016 to provide a one-stop holiday shopping experience for the MSU community.

Nearly 1,000 customers generated a \$57,000 profit to the university.

[>> read more](#)

FACILITIES CONNECT

Replacing 20-year-old, highly complex software was identified as a major priority for IPF in 2015-16. A project manager with IT Services' project management office started the process to bring a new management system platform to IPF employees with hopes to implement it over the next two years.

The project, Facilities Connect, is one that involves input from many employees across all departments within IPF.

Determining the requirements and the problems to be solved before an official RFP will be submitted, the Facilities Connect project will ensure the next 20 years of productivity in facilities management will result in a higher focus on increased integration, robust reporting and analytics, and a more intuitive and easy-to-use system that increases productivity. A special IPF team will determine a vendor during the first half of 2018.

IPF employee saves thousands

When a rare part broke on a piece of equipment needed for an upcoming inspection, Tim Dennany, maintenance mechanic II, identified a quick solution. Results of Dennany's mechanical expertise to fix the hydraulic cylinder include:

- \$2,100 parts savings
- Avoiding downtime while waiting for the part to ship
- Documented knowledge management for future repairs



PEOPLE

Between full-timers, part-timers, temps, students and more, IPF employs about 1,400 people — one of the largest areas at Michigan State University. That means one of IPF's major expenses is payroll and such things as training for new employees, interviewing and hiring, and employee retention.

Given the trend for young people to go to college instead of trade school, paying attention to people also includes creating

apprenticeship opportunities that will fill IPF's own pipeline with potential skilled trades' workers.

Creating an apprenticeship program may be one idea for succession planning at the skilled trades' level, but what about the leadership level? With nearly all executive leaders eligible for retirement, IPF's Executive Leadership Team is looking at ways to retain leadership expertise in its succession planning process.

FUTURE

Listening to employees

Employees are IPF's most valuable asset. In August 2016, IPF management reached out to IPF employees through an employee engagement survey, now conducted annually. Two-thirds of employees took the 2016 survey.

Key themes emerged, action plans were created and better communication from leadership and policies came to the forefront. Hiring transparency, career mapping and supervisor consistency were also identified for action.

Improving employee satisfaction allows IPF to ask staff members to identify ways to improve on-the-job efficiencies.

This allows MSU's financial assets to channel into research and academic priorities. For instance, despite the increase in square footage that IPF operates while MSU builds for the future, the number of IPF FTEs has remained moderately flat for several years.

Other examples of increasing efficiency include planning to expand mobile device use throughout IPF; documenting processes with easy-to-use software; new training options; and using the Baldrige framework to identify strengths and opportunities. *See Appendix, July 2017 Strength Report, Mobile Policy story, ProMapp story and IPF training story.*

- MSU IPF's total project spending is \$4.44 per gross square foot, which is 55.4 percent of our peer average of \$8.01
- In June 2017, IPF had 1,375 employees including full-time, part-time, temps, on-call and students

IPF tackles succession planning from top to bottom

About 40 percent of IPF's workforce is eligible for retirement (some have been for many years) or will be eligible within the next five years. The pipeline that should be feeding the skilled trades industry is running dry, as young people increasingly see college as the answer to a future career, instead of trade school and an apprenticeship program.

IPF's highly skilled, long-term workforce contains a wealth of specialized knowledge about MSU's infrastructure, people and processes. To feed the skilled trades' pipeline, IPF is developing an inclusive, comprehensive mentoring/apprenticeship program using community outreach, internal training and intentional partnerships.

All IPF sectors are looking at succession planning, including IPF's current Executive Leadership Team (ELT). The team is already experiencing retirement-related turn over, with more to come in 2017-18.

The ELT began discussion on such succession-planning topics as leader assessment, leader development and their roles as advisory leaders. IPF leaders are looking at Performance Excellence, training databases and other tools to develop a new generation of leadership from within.

- The average IPF employee has 15 years of service at IPF
- The average IPF employee is 48 years old
- Eighty-three percent of IPF executive leaders are eligible to retire in less than one year
- The average IPF executive leader is 55 years old with 24 years of service at IPF

Cloud-based software provides process management solution

IPF is a large, complex organization with many services to offer. These services require specialized knowledge and expertise for which a practitioner often needs specific education, training and time on the job.

Without documentation of the thousands of processes involved in delivering IPF services, IPF could be seriously at risk of losing decades worth of knowledge when someone leaves or retires.

While building a project management toolkit for IPF, the project manager knew that creating a knowledge management system in which to store processes was vital to good project management.

The cloud-based business process management software Promapp streamlines IPF's business processes and captures day-to-day operational information in a standard format.

"We needed a simple, straight-forward approach to process management," the project manager said. "Promapp's software will help us improve the clarity, accessibility and consistent execution of our business processes."

- Eliminates variations and inconsistencies in process documentation
- Improves ability to reproduce documents and projects
- Clarifies costs and resources that projects need, which likely will save money



ENGAGEMENT

Bike Safety advocate Tim Potter earns special recognition

Tim Potter of Surplus and Recycling received the 2017 Bicycle Friendly America Leadership Award from the League of American Bicyclists for his efforts to create programs for universities and their neighboring communities to improve bike safety and friendliness.

The programs are focused around The five E's for a Bicycle Friendly America: Engineering, Education, Encouragement, Enforcement and Evaluation and planning. This focus encourages collaboration and cooperation between universities and communities to ensure safety.

“To get recognized for doing something, it felt kind of weird,” Potter said with a laugh. “It was also very humbling. I thanked my boss here on campus who encourages me to do this work. It’s nice to have that support from my leadership.”

[>> read more](#)



Landscape Services revamps playground

Children at the Spartan Child Development Center (SCDC) now have a larger sandbox and a new fenced-in grass area where they can explore, learn and play thanks to a collaborative partnership between the SCDC and Landscape Services.

Liz Lauren, executive director of the SCDC, was ecstatic to see the project come together. “They went above and beyond to support our program ideas and ensure the safety of the children that we care for,” Lauren said. “Our goal was to create additional outdoor learning spaces for our children and with years of observation on the playground, we knew IPF’s Landscape Services would be perfect for the job.”

- Landscape Services work performance score is 4.3 out of 5
- Grounds staffing acre/FTE is 26.44 at MSU, compared to 24.4 for peer institutions (8.4 percent higher)

[>> read more](#)



IPF Craftsmanship - Building Services

MSU Infrastructure Planning and Facilities Building Services staff help to keep campus running every day.

One of the department's primary responsibilities is to maintain the 15 miles of metal pipes that bring steam from the power plant and water back to be recycled. The steam transported in these underground tunnels fuels building heaters, hot water heaters and water coolers for air conditioning.

In addition, Building Services can be found doing installations across campus including the newest addition at the Eli and Edythe Broad Art Museum, "The Bird."

They also put in water tanks for the new fish lab in Giltner Hall and water coolers in Wells Hall.

Building Services does other types of metalworking as well. They recently designed and installed a special railing for the MSU Bike shop that has a lockable swing gate. This gate makes receiving and loading materials coming to and from the shop safer and easier.

"It's a very nice bit of engineering that resolves a dilemma we had," said Tim Potter, bike service center manager.

- MSU scored at or above the peer average in four of five customer satisfaction categories
- Eighty-five percent of survey-takers at MSU said IPF's performance met, exceeded or greatly exceeded performance expectations

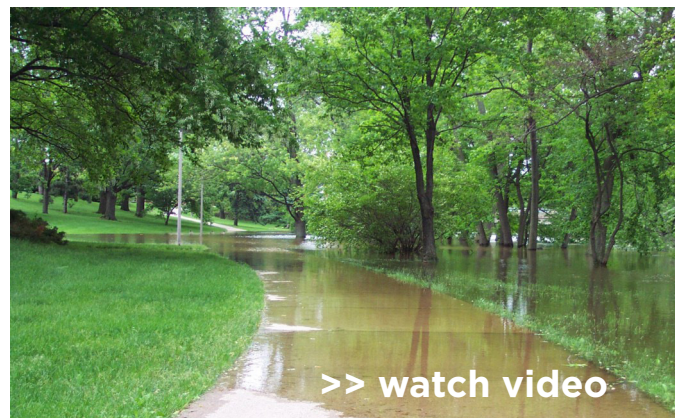
[>> read more](#)

Storm leaves destruction on campus

Infrastructure Planning and Facilities (IPF) Landscape Services and campus arborist worked collaboratively to assess the damage and implement cleanup efforts after a severe thunderstorm hit campus over the summer 2016. The W.J. Beal Botanical Garden sustained the most damage, with four trees lost and seven damaged. Some trees date to the 1800's.

Downed branches and trees were recycled by MSU. Solid wood from downed trees were donated to the [MSU Shadows](#), MSU's wood re-purposing program.

[>> read more](#)



[>> watch video](#)

Red Cedar overflow: April 2017

IPF responded immediately when the Red Cedar River flooded several key areas of campus. Cresting at about eight feet, the overflow resulted in road, sidewalk and bike lane closures, power outages and flooded landscaping, just weeks before spring commencement and student move out. IPF is prepared to respond to campus infrastructure emergencies.



Change to first shift saves dollars and improves retention

IPF Custodial Services recently started cleaning classrooms, research areas and administrative buildings during first shift hours. Key benefits from this transition include an increase in staff retention, efficiencies, customer satisfaction and a significant cost savings.

The move to first shift cleaning was the result of an IPF internal study of time and materials needed to accomplish the cleaning process coupled with a stringent training program that ensures a consistent and uniform experience.

The study supported the ability to right-size a staffing model and to standardize tools and materials. The full transition took about 18 months.

- Staff report greater job satisfaction
- Daylight cleaning provides an opportunity to see what needs to be cleaned leading to an increased sense of accomplishment
- Shift change has led to a higher rate of retention, more opportunity for advancement and higher performance



IPF gives MSU students hands-on experience

Landscape Services partners with the MSU Horticulture department annually to provide students with an opportunity to gain practical planting skills and get hands-on experience.

Two labs are conducted every year. “We do a planting lab and an irrigation lab,” said Matt Bailey, Landscape Services coordinator. “We teach the class proper planting techniques, equipment, layout and methods.”

In addition, students learn about design intent, the reasons for selecting certain plants and how to overcome design challenges.

[>> read more](#)



Diversity report progress

In December 2016, IPF collaborated with Residential and Hospitality Services (RHS) to review diversity and inclusion endeavors. This effort displayed the need to diversify staff throughout the units to reflect the changing demographics of the university, region, state and nation.

An external review team noted Dan Bollman and Vennie Gore’s leadership in reviewing diversity, inclusion and equity practices, especially in the areas of recruitment, retention, performance and success planning. Gaps, including how these efforts relate to institutional efforts, as well as how communication strategies impact progress were also noted.

The next steps are for IPF and RHS to continue to collaborate on a framework for diversity, inclusion and equity and assess strategies to promote a diverse and inclusive work environment.

LEADERSHIP DEVELOPMENT

Leadership model provides blueprint for IPF leaders

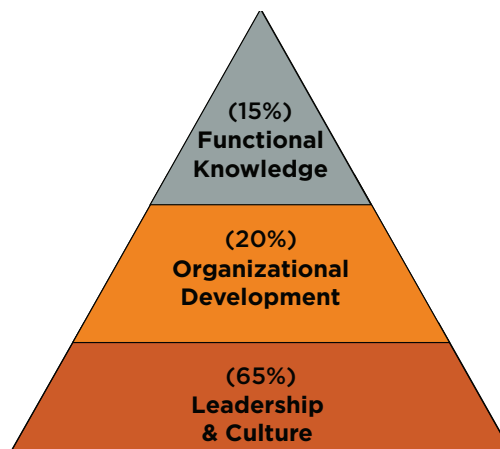
IPF's Executive Leadership Team (ELT) is comprised of individuals with a great deal of experience. Most of them came up through the ranks, and they know how their individual units operate. But as an executive leader, where should their attention be focused?

According to the 2016 Employee Engagement Survey, executive leaders need to focus more on leadership, mentoring, personal development and organizational development.

After several succession planning discussions and recommendations from consultant Studer Group, the ELT's Leadership Model was created to help ELT members determine how best to spend their time.

The base of the model calls for 65 percent of a leader's time to be spent on leadership and culture, including organizational communication, employee engagement, leader development and performance management/coaching. Twenty percent of the model is devoted to organizational development (strategy, project management, etc.). At the top of the pyramid? Just 15 percent of time should be spent on functional work, external environment trends and role-specific knowledge.

- Custodial Services holds a yearly High Performance meeting where the CS leadership team comes together and discusses what "high performance" means in the context of their work
- IPF hosted Rachel Hutter, Disney Vice President for Global Safety, for a discussion on "Equipping the 21st Century Workforce with a digitally connected environment"



MSU Leadership Initiative supports employee development

What makes a leader? IPF is part of the MSU Leadership Initiative, a campus group with a goal of determining how leadership competencies can be developed at all levels within an organization. With MSU employees throughout campus (and IPF) developing strong competencies in multiple leadership areas, MSU's mission is better advanced.

As this is implemented, IPF plans to leverage competency development through its involvement in other organizations to support employee development. The group includes faculty and staff members and is led by Jennie Yelvington in MSU Human Resources.

- Strategic Initiatives' director spoke at the national Higher Education Facilities Summit on how engagement can drive innovation
- IPF's training and development project identified approximately \$500,000 in potential annual savings because of underutilized employee assistance funds

ANNUAL CONSTRUCTION REPORT: FISCAL YEAR 2016-17

Major capital projects are those that are \$1 million or greater and require Board approval. Minor capital projects are those that are greater than \$250,000 and less than \$1 million.

The Board requests a listing of these projects on an annual basis. In addition to the annual report, the Board receives quarterly construction reports reflecting current construction projects.

The report highlights two areas for the 11 major capital projects that were closed during 2016-17. These areas include planned budget and actual cost of the project. The following table also includes data for the 24 minor capital projects that were closed during the fiscal year.

The approved budgets for the projects totaled nearly \$54 million. The final cost of these projects was above \$48 million, a difference of about \$5.3 million, or 10 percent, which was returned to the appropriate units.

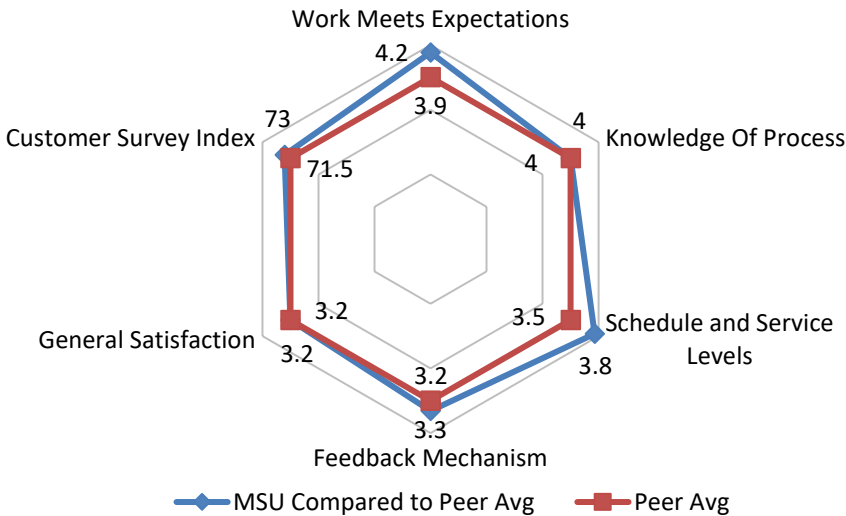
Project Number	Project Name	Project Type	Close Date	Consultant	Contractor	Delivery Method	Authorized Budget	Actual Costs
CP12185	MUNN ICE ARENA - ADDITION 2 - CHILLER ENCLOSURE AND HVAC UPGRADES ICE MAKING SYSTEM	Major	9/23/2016	Rossetti	Granger Construction	CM	\$ 6,500,000	\$ 6,470,942
CP15188	AG EXPO EXHIBITORS-WICK 1 - RENOVATIONS FOR HEAT	Major	9/16/2016	IPF	IPF	ICM	\$ 127,280	\$ 86,730
CP15902	SHOOTING RANGE - OPERATIONS CENTER - CONSTRUCT ORIGINAL BUILDING	Major	8/29/2016	Steadfast Construction Inc	Steadfast Construction Inc	DB	\$ 480,000	\$ 476,397
CP09297	KELLOGG CENTER - REPLACE ABSORPTION CHILLED WATER SYSTEM	Major	11/11/2016	URS Corporation	IPF	ICM	\$ 3,430,000	\$ 3,075,675
CP10356	MSU COLLEGE OF LAW - ADDITION 1 - NORTH ENTRANCE IMPROVEMENTS	Major	12/6/2016	WTA Architects	Moore-Trosper Construction Company	GC	\$ 605,000	\$ 548,094
CP12316	CHITTENDEN HALL - RENOVATION	Major	12/15/2016	HopkinsBurns Design Studio	Christman Company	CM	\$ 6,200,000	\$ 5,912,796
CP12376	STEAM DISTRIBUTION - NORTH CAMPUS - INFRASTRUCTURE IMPROVEMENTS - WEST CIRCLE DR - 2014 (PH 3 OF 4)	Major	12/5/2016	FTC&H	Granger Construction	CM	\$ 14,900,000	\$ 14,219,552
CP15104	NATURAL GAS DISTRIBUTION - INSTALL NEW PIPELINE FROM MT. HOPE RD	Major	12/9/2016	Consumers Energy	Consumers Energy	Consumers Energy	\$ 3,450,000	\$ 2,411,754
CP14275	HUBBARD HALL - EXTERIOR MASONRY REPAIR AND WINDOW REPLACEMENT - PHASE ONE	Major	3/15/2017	WTA Architects	Nielsen Commercial Construction	GC	\$ 2,500,000	\$ 2,297,999
CP15900	Sheep Barn - Addition 2 - Sheep Lambing and Research Facility	Major	3/28/2017	Steadfast Construction Inc	Steadfast Construction Inc	DB	\$ 550,000	\$ 549,196
CP15195	PARKING - LOT 89 - COMMUTER LOT - REPAVE SOUTHEAST SECTION	Major	3/29/2017	IPF	Carol's Excavating LLC	ICM	\$ 2,500,000	\$ 1,451,034
						11 projects	\$ 41,242,280	\$ 37,500,169
CP12381	STEAM DISTRIBUTION - BOGUE/SERVICE ROAD - MISCELLANEOUS REPAIRS 2014	Minor	9/9/2016	FTC&H	IPF	Shops	\$ 500,000.00	\$ 490,955
CP13319	LIFE SCIENCE - RENOVATIONS TO LABS B430 AND B431	Minor	8/16/2016	Bernath Coakley	Moore-Trosper Construction Company	GC	\$ 376,587.00	\$ 375,803
CP14298	MUNN ICE ARENA - SEATING UPDATES	Minor	9/27/2016	Rossetti	Moore-Trosper Construction Company	GC	\$ 970,000.00	\$ 858,715
CP14301	SPARTAN STADIUM - ALTERATIONS TO STUDENT SECTION SEATING	Minor	9/8/2016	VEC Engineering PLLS	Granger Construction	GC	\$ 900,000.00	\$ 877,213
CP13244	LIFE SCIENCE - REPLACE ROOFS 6, 10, 11 AND 14-16	Minor	10/13/2016	Roofing Technology Associates	Bornor Restoration	GC	\$ 300,000	\$ 193,895
CP14113	INTRAMURAL RECREATIVE SPORTS - WEST - ALTERATIONS TO ROOMS 8, 9, 226, 227, 245 AND 246	Minor	11/4/2016	TMP Associates Inc	Nielsen Commercial Construction	GC	\$ 330,000	\$ 289,347
CP14289	OWEN GRADUATE HALL - RENOVATE TWO PASSENGER ELEVATOR CARS IN WEST WING	Minor	12/12/2016	Bernath Coakley	Moore-Trosper Construction Company	GC	\$ 725,000	\$ 661,049
CP14308	FARRALL HALL - REPLACE ROOFS 3 AND 4	Minor	12/19/2016	Roofing Technology Associates	Bornor Restoration	GC	\$ 600,000	\$ 525,514
CP15076	GILTNER HALL - ALTERATIONS TO SUITE 312	Minor	10/20/2016	Bernath Coakley	Nielsen Commercial Construction	GC	\$ 284,000	\$ 277,060
CP15243	LIFE SCIENCE - REPLACE ROOFS 4, 5, 7, 8, 9, 12 AND 13	Minor	11/30/2016	Roofing Technology Associates	Bornor Restoration	GC	\$ 803,080	\$ 777,223
CP13228	BIOMEDICAL PHYSICAL SCIENCES - IMPLEMENT ENERGY CONSERVATION MEASURES	Minor	1/5/2017	IPF	Quality Air Services Inc	GC	\$ 655,800	\$ 655,799
CP15005	AKERS HALL - EAST WING MASONRY RESTORATION	Minor	1/11/2017	IPF	Ram Construction	GC	\$ 290,000	\$ 186,369
CP15304	DEMONSTRATION HALL - ALTERATIONS TO ROOM 109	Minor	1/17/2017	IPF	Nielsen Commercial Construction	GC	\$ 255,000	\$ 253,952

Project Number	Project Name	Project Type	Close Date	Consultant	Contractor	Delivery Method	Authorized Budget	Actual Costs
CP15064	NISBET - ALTERATIONS TO SUITE 220	Minor	1/25/2017	Engineering Applications Inc	J Perez Construction Inc	GC	\$ 828,264	\$ 672,778
CP15260	ANTHONY HALL - REFURBISH COOLING TOWERS 1 AND 2	Minor	2/21/2017	IPF	IPF	Shops	\$ 250,000	\$ 141,929
CP15135	HOLDEN HALL - REPLACE DOMESTIC WATER PIPING	Minor	3/31/2017	IPF	Allied Mechanical Services	GC	\$ 338,000	\$ 315,728
CP14119	CONRAD HALL - ALTERATIONS TO ROOMS 100	Minor	5/1/2017	Bernath Coakley	Moore-Trosper Construction Company	GC	\$ 547,000	\$ 546,344
CP16073	TB SIMON POWER PLANT - EMERGENCY REPAIRS TO STACK	Minor	5/12/2017	IPF	Gerard Chimney Co	DB	\$ 600,000	\$ 422,954
CP12153	ENG RESEARCH COMPLEX - ALTERATIONS TO LAB A38	Minor	5/17/2017	Diclemte Siegel Engineering	J Perez Construction Inc	GC	\$ 625,000	\$ 556,044
CP14290	MASON ABBOT HALL - MASONRY RESTORATION AND DOWNSPOUT REPLACEMENT	Minor	6/2/2017	IPF	D.C. Byers Company	GC	\$ 400,000	\$ 362,607
CP15097	HOLMES HALL - ALTERATIONS TO ROOMS E5, E6 AND E26A	Minor	6/2/2017	IPF	Nielsen Commercial Construction	GC	\$ 405,000	\$ 333,026
CP15272	CASE HALL - ALTERATIONS TO ROOM 337	Minor	6/14/2017	IPF	Moore-Trosper Construction Company	GC	\$ 385,000	\$ 332,451
CP14351	PLANT BIOLOGY - REPLACE FIRE ALARM SYSTEM AND SMOKE DETECTION	Minor	6/15/2017	IPF	IPF	DB	\$ 759,000	\$ 538,122
CP15287	WHARTON - GREAT HALL - REPLACE STAGE FLY RAIL	Minor	6/20/2017	IPF	Secoa, Inc.	GC	\$ 390,000	\$ 253,265
						24 projects	\$ 12,516,731	\$ 10,898,142
Major & Minor Totals							\$ 53,759,011	\$ 48,398,311

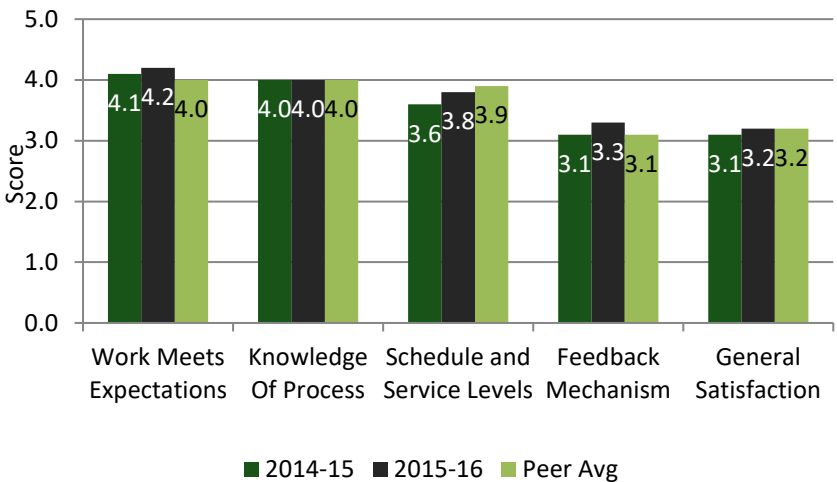
Budget for Closed Projects	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17
Authorized Budget:	\$ 84,843,838.00	\$ 52,410,475.00	\$ 236,944,478.00	\$ 244,564,890.00	\$ 149,759,600.00	\$154,275,164.00	\$53,759,011.00
Final Cost:	\$ 80,362,824.00	\$ 48,451,752.00	\$ 226,396,069.00	\$ 237,428,564.00	\$ 139,028,879.00	\$143,339,743.00	\$48,398,311.00
Total Returned:	\$ 4,481,014.00	\$ 3,958,723.00	\$ 10,548,409.00	\$ 7,136,326.00	\$ 10,730,721.00	\$10,935,421.00	\$5,360,700.00
Total % Returned:	5.3%	7.6%	4.5%	2.9%	7.2%	7.1%	10.0%
Contract:	\$ 59,054,199.00	\$ 33,789,257.00	\$ 155,668,557.00	\$ 164,735,416.00	\$ 102,757,439.00	\$95,518,261.00	\$38,531,616.00
Number of Projects Closed	41	41	44	47	47	46	35

Infrastructure Planning & Facilities Customer Satisfaction Metrics

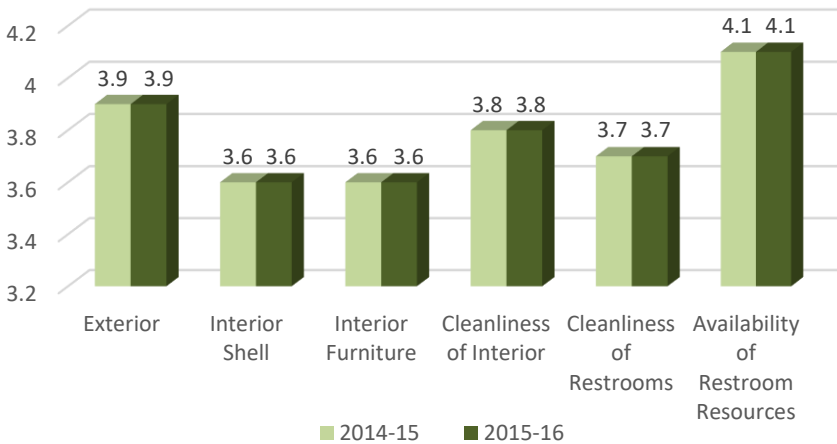
IPF Customer Satisfaction Metrics



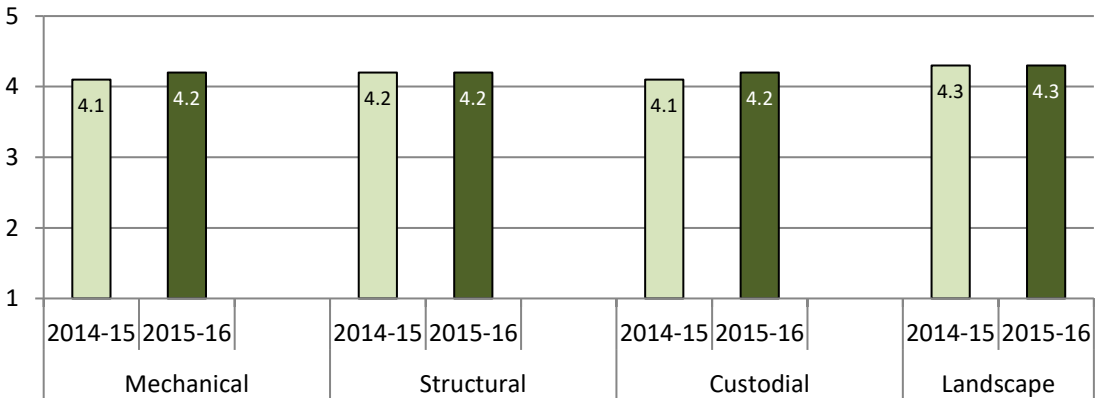
Customer Survey Category Breakdown



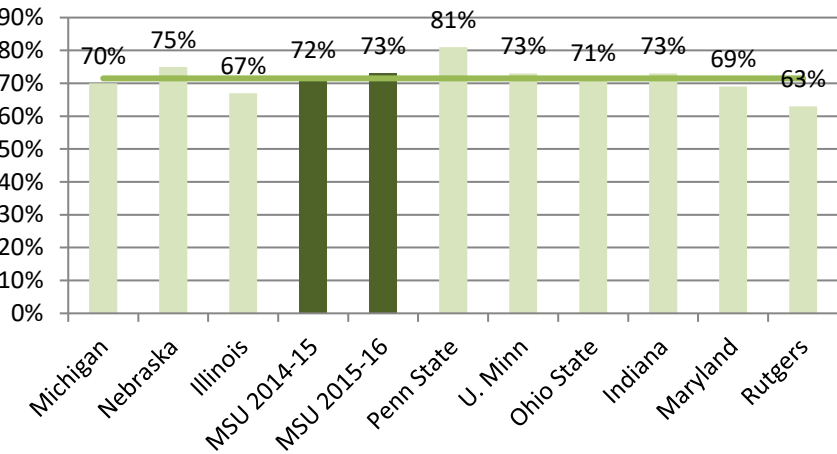
Assessment of Building Conditions & Cleanliness
Goal is to Maintain or Improve Year/Year



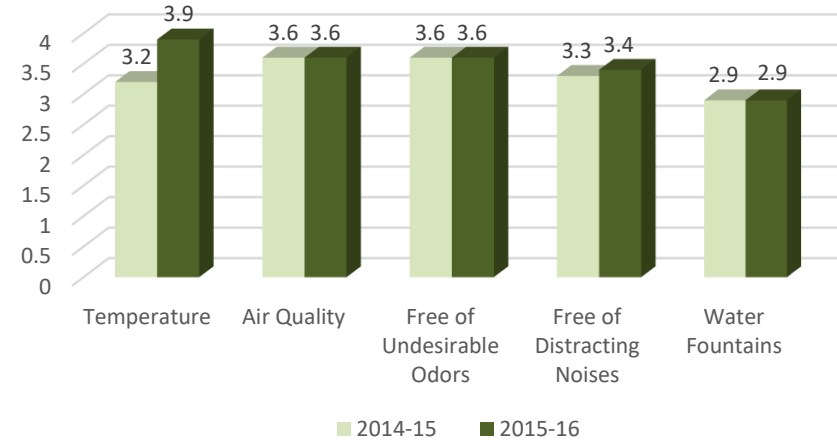
Work Performance
Goal is Maintain or Improve Year/Year



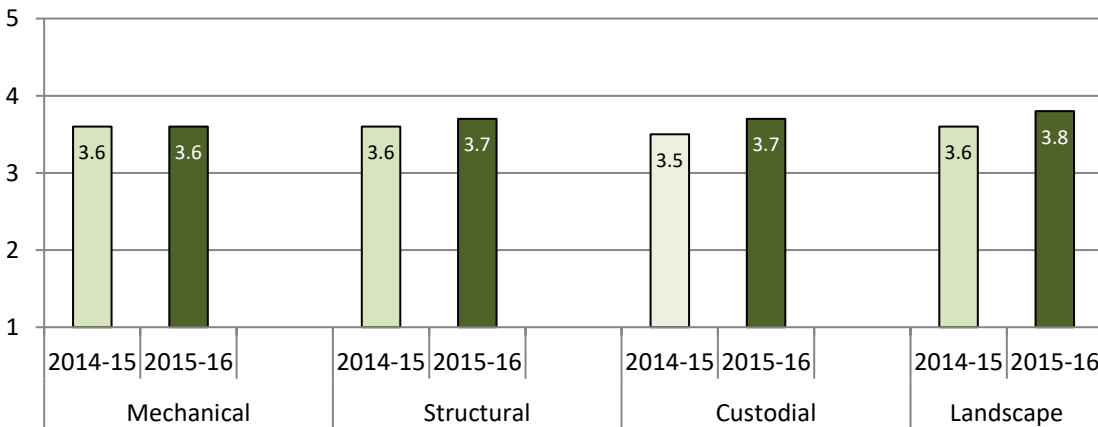
Customer Survey Index
Goal is Improvement Improvement Year/Year



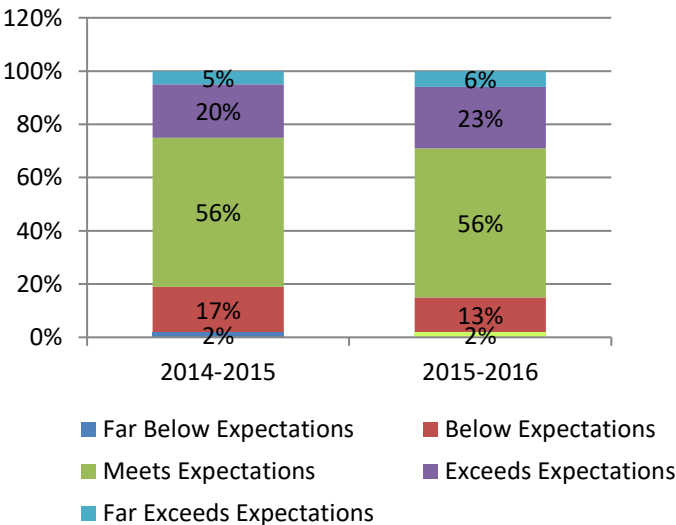
Assessment of Building Comfort
Goal is Maintain or Improvement Year over Year



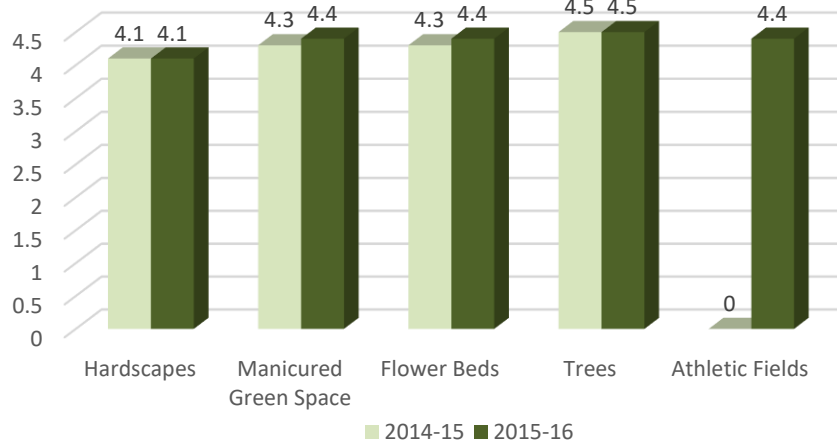
Communication
Goal is Maintain or Improve Year/Year



General Satisfaction with IPF Performance

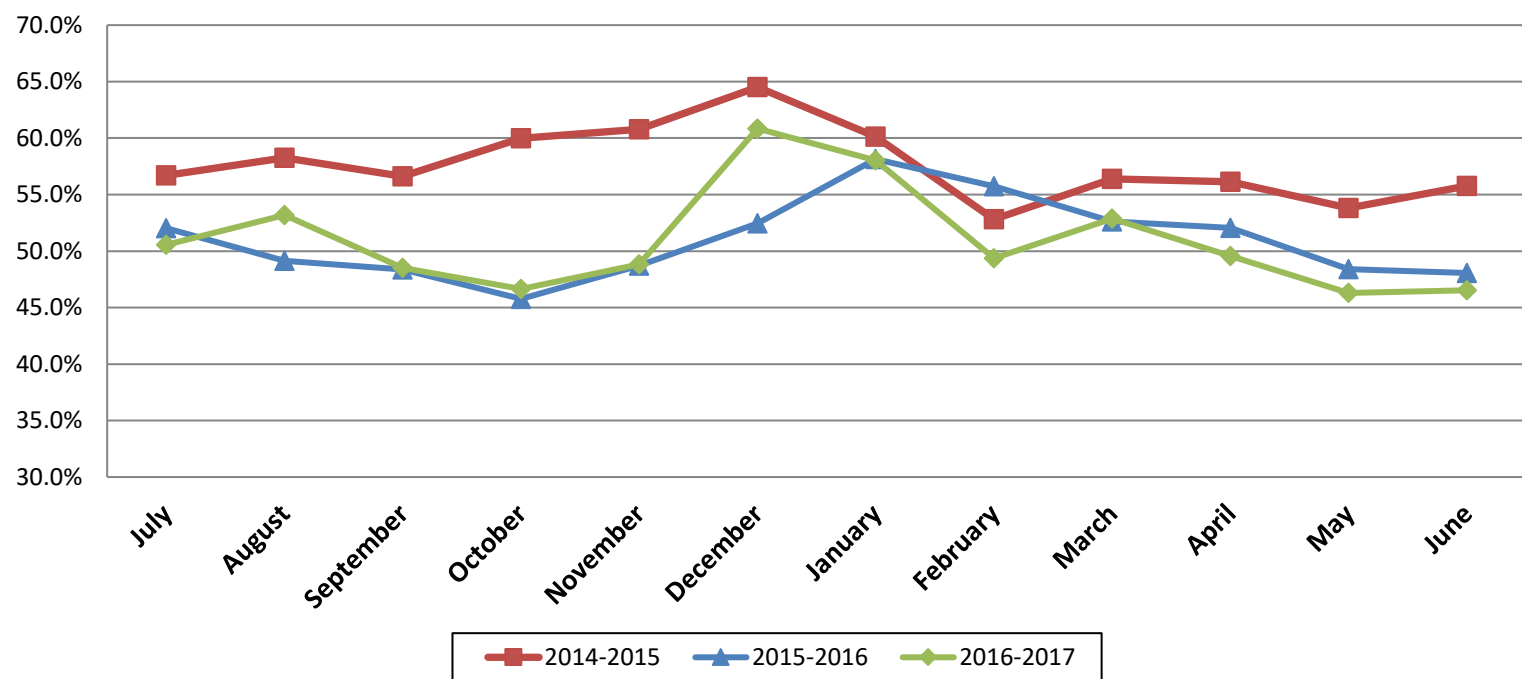


Assessment of Campus Grounds
Goal is Maintain or Improve Year/Year

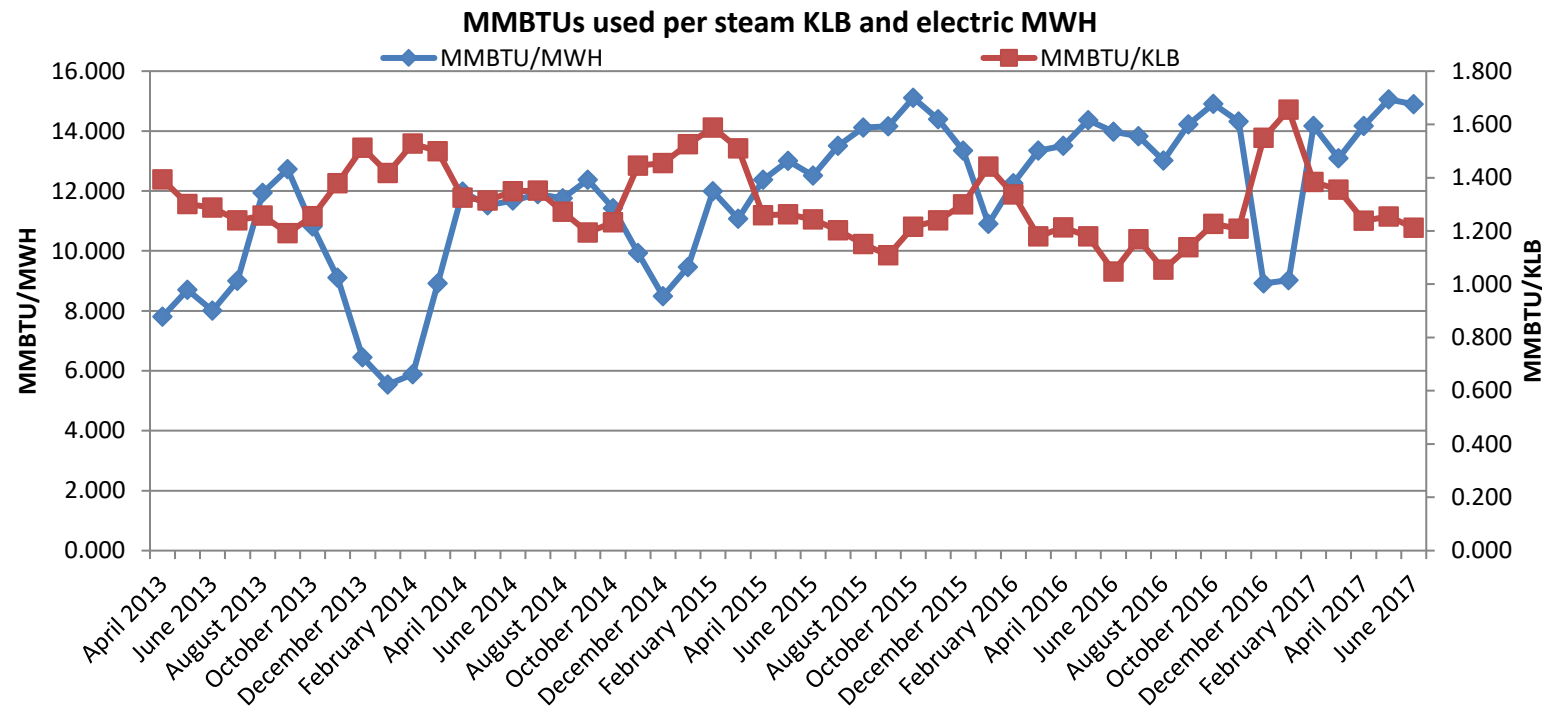


Infrastructure Planning & Facilities Energy and Environment Metrics

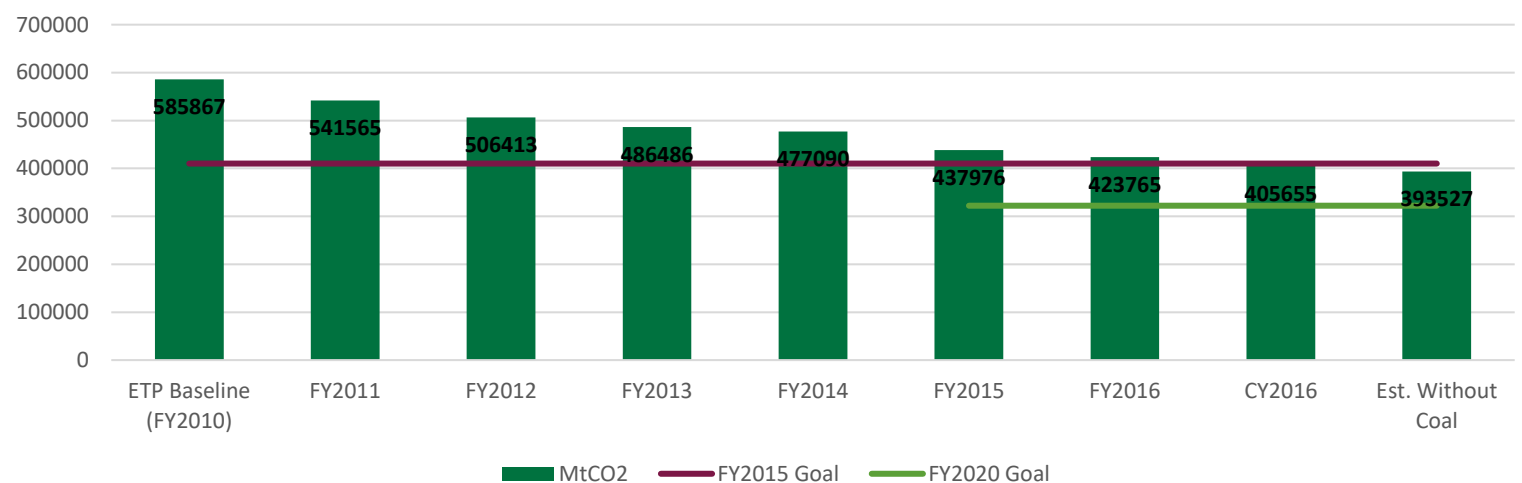
Power Plant Efficiency



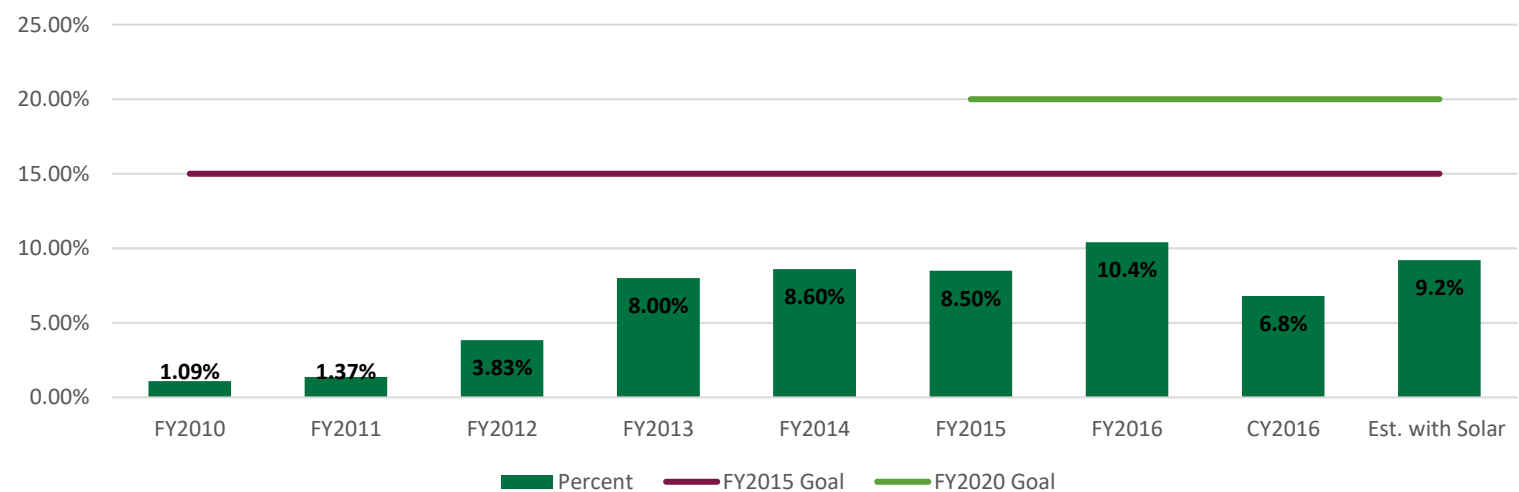
Heat Rate by Month



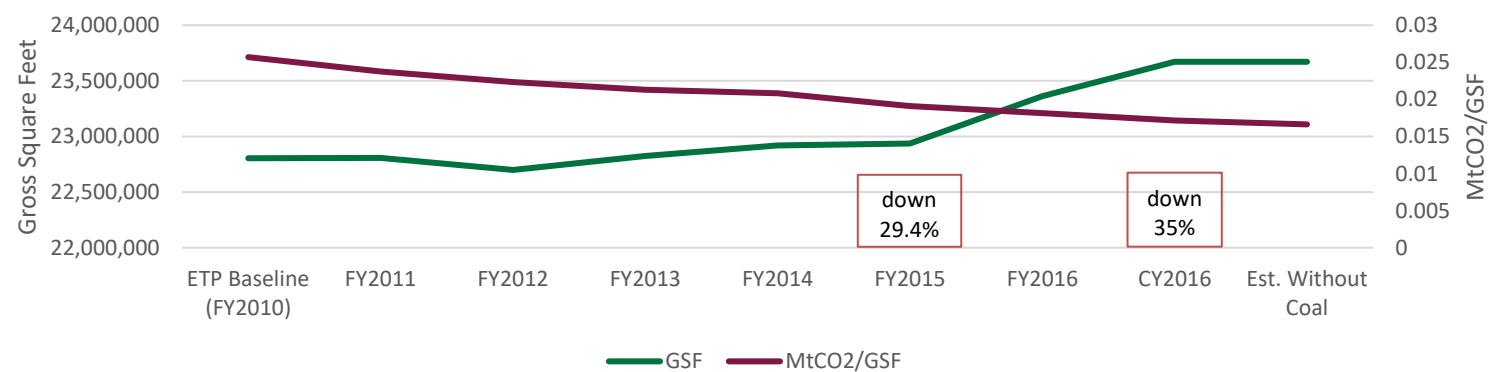
CMSU East Lansing Campus Total Scope 1 and Scope 2 Emissions



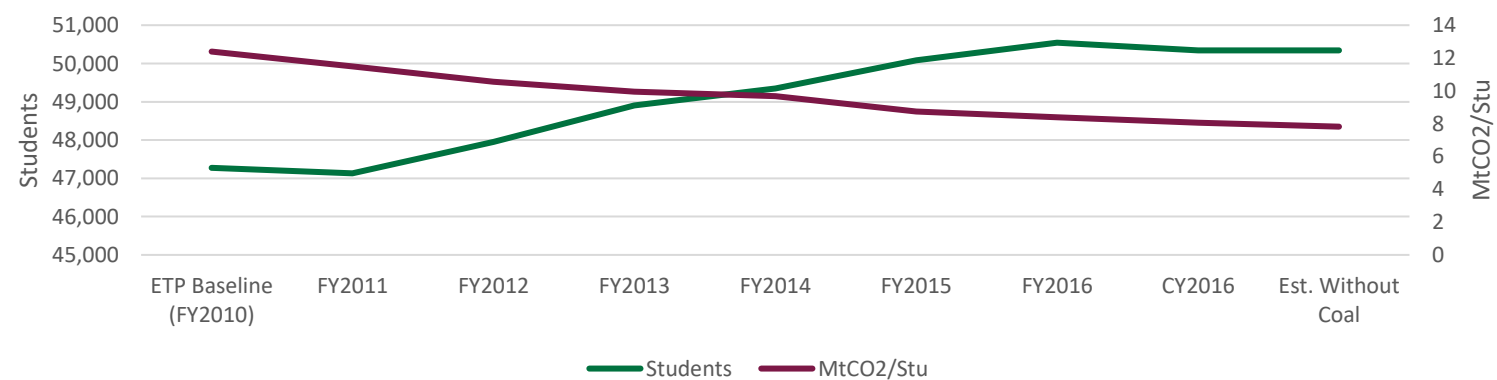
MSU East Lansing Campus % of Scope 1 and Scope 2 Energy from Renewable Sources



MSU GHG per GSF



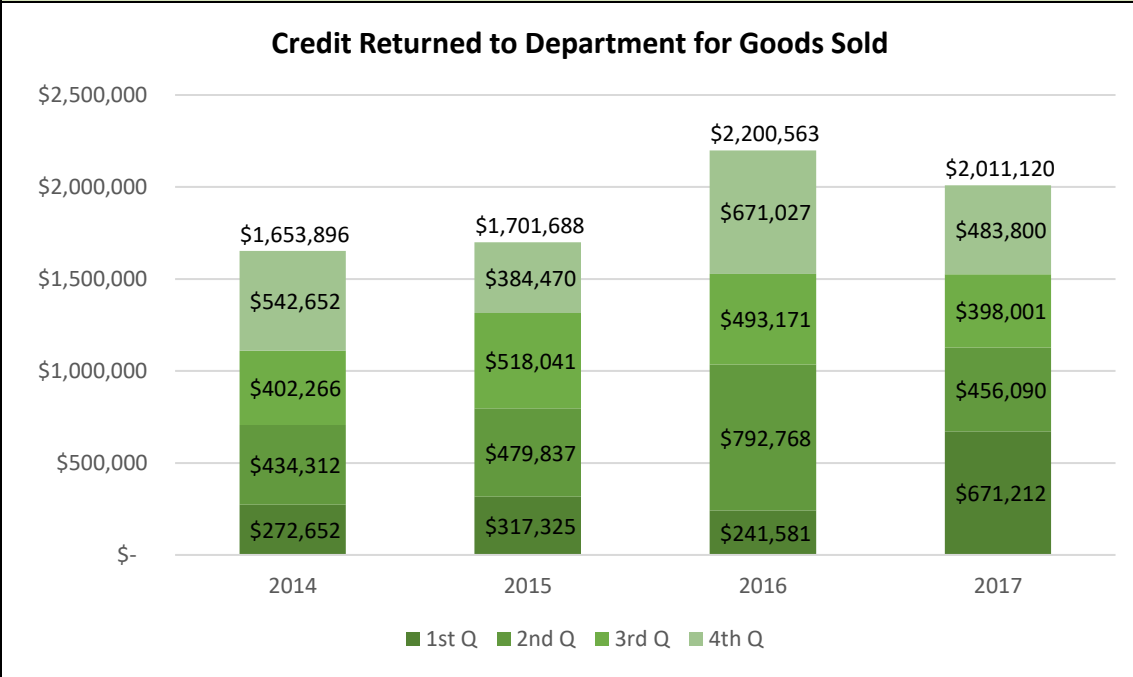
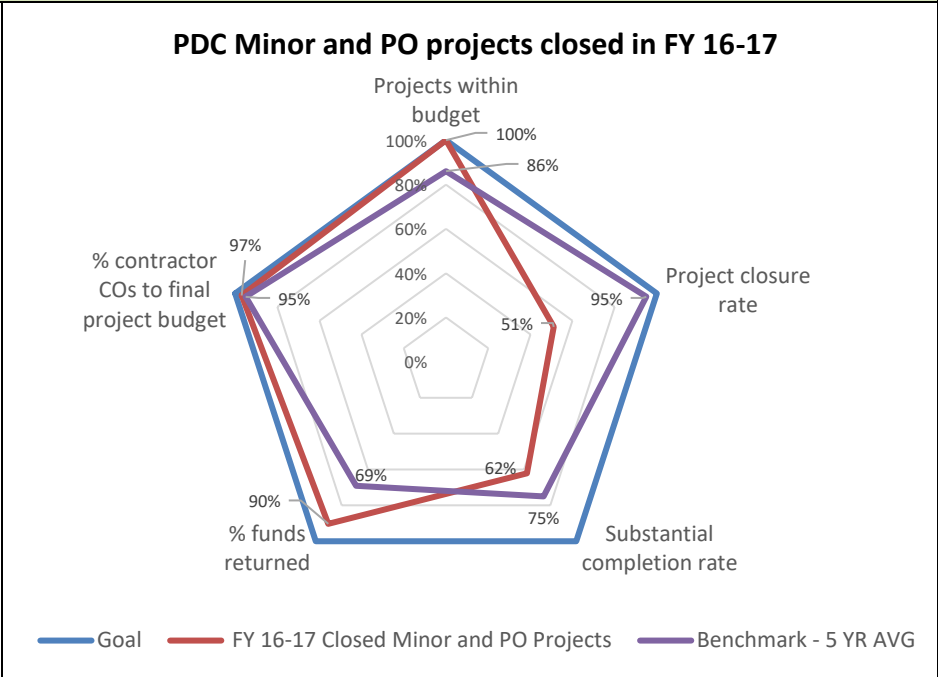
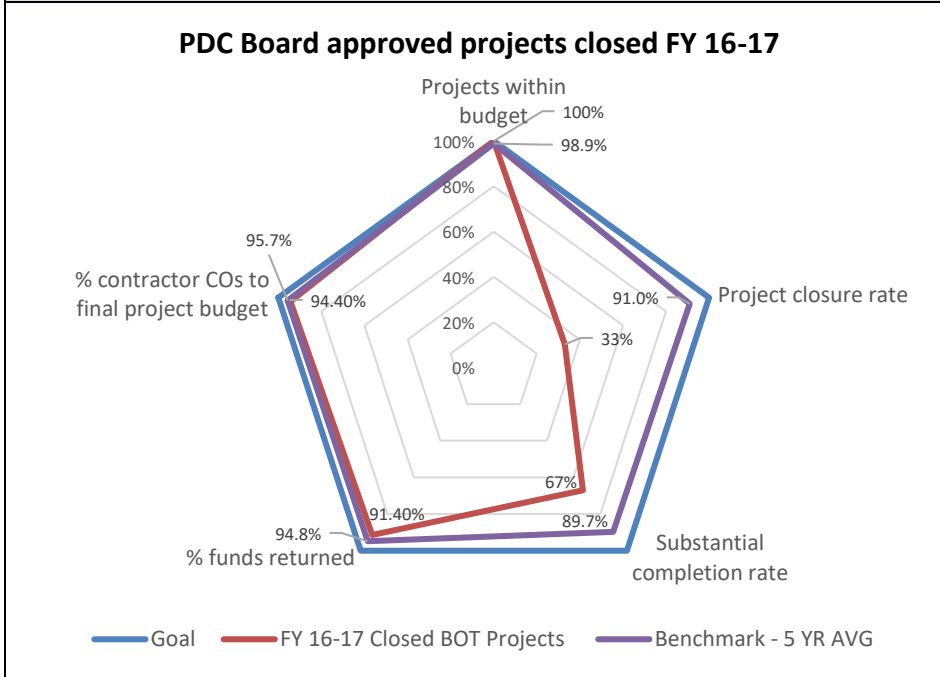
MSU GHG per Student



Infrastructure Planning & Facilities Operational Service Metrics

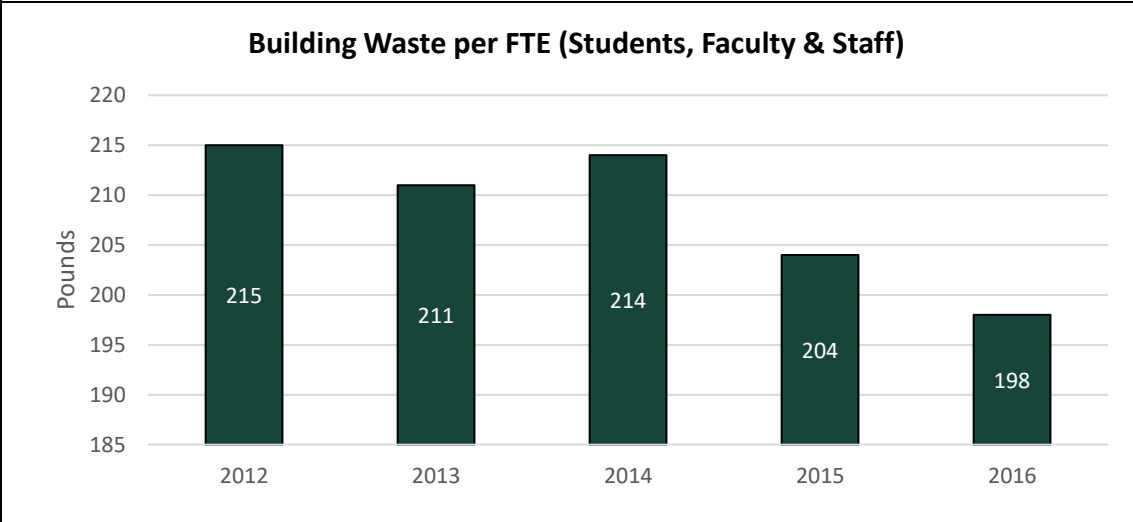
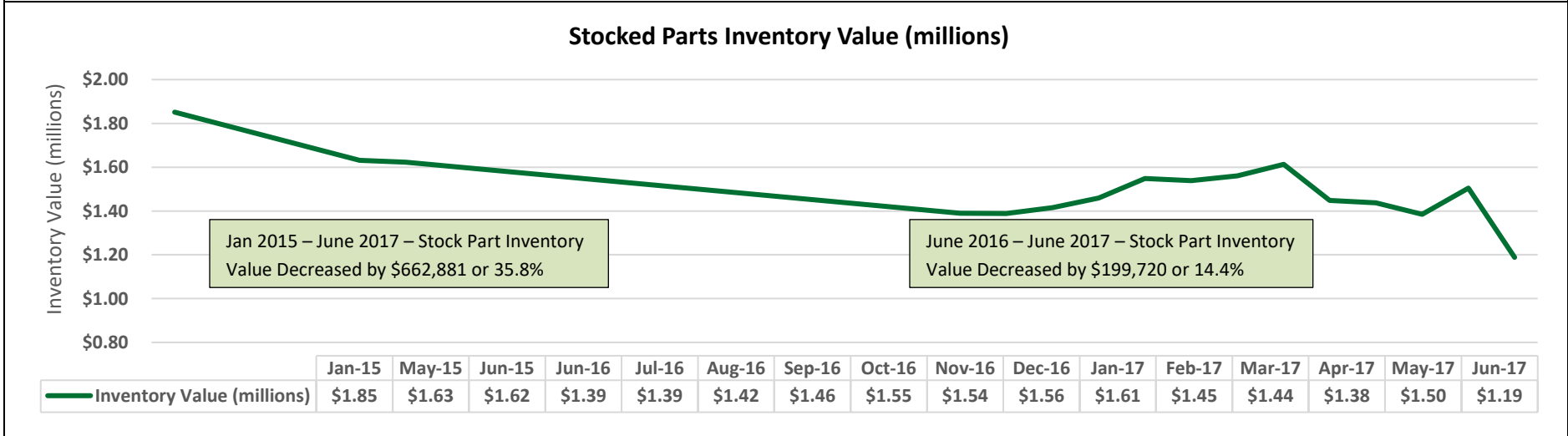
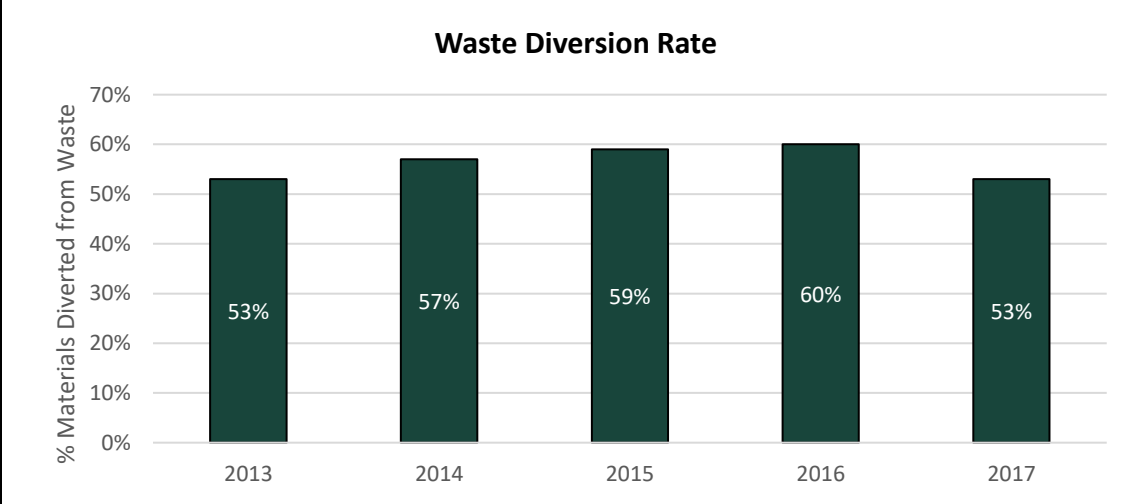
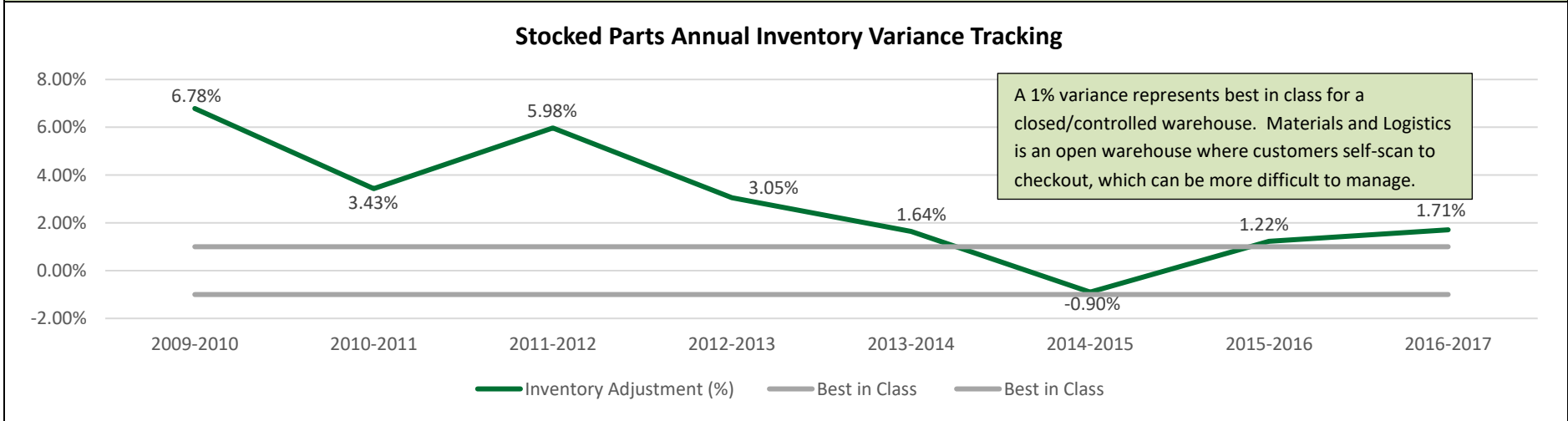
Planning, Design, & Construction

Surplus Store and Recycling Center



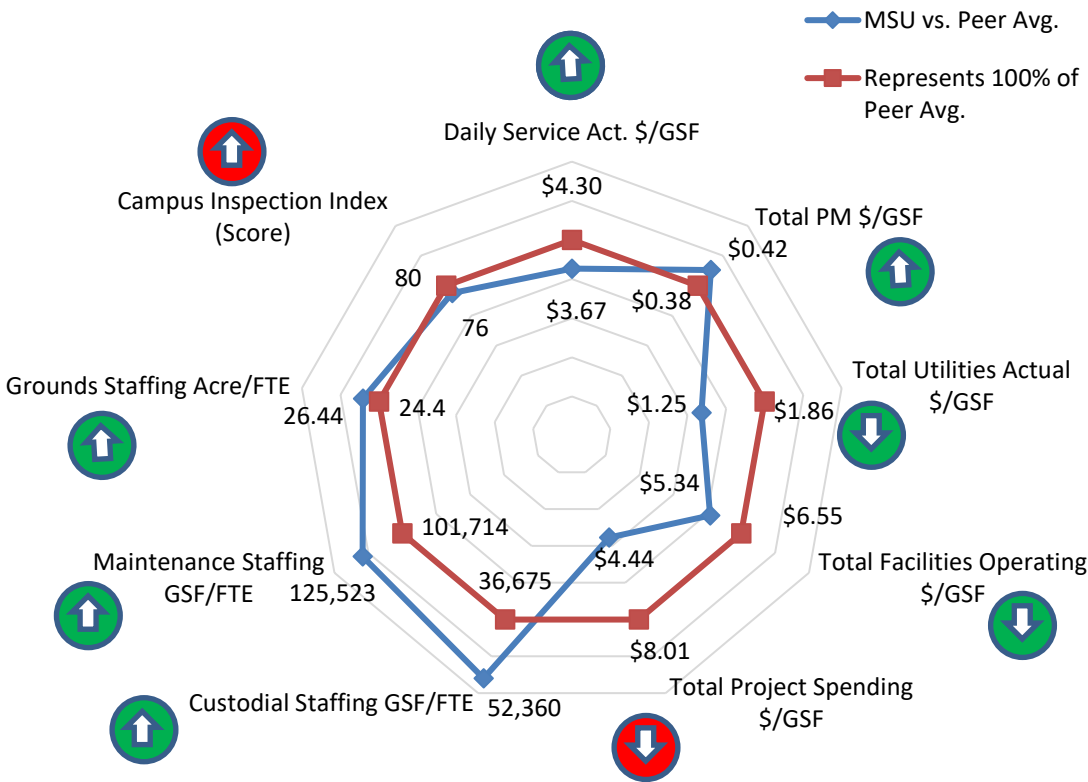
Materials and Logistics

Percentage of all materials (recycling, surplus, food waste) diverted from the waste stream. Includes construction waste processed by our program. Rate was greatly impacted from low diversion rate from 1855 project.

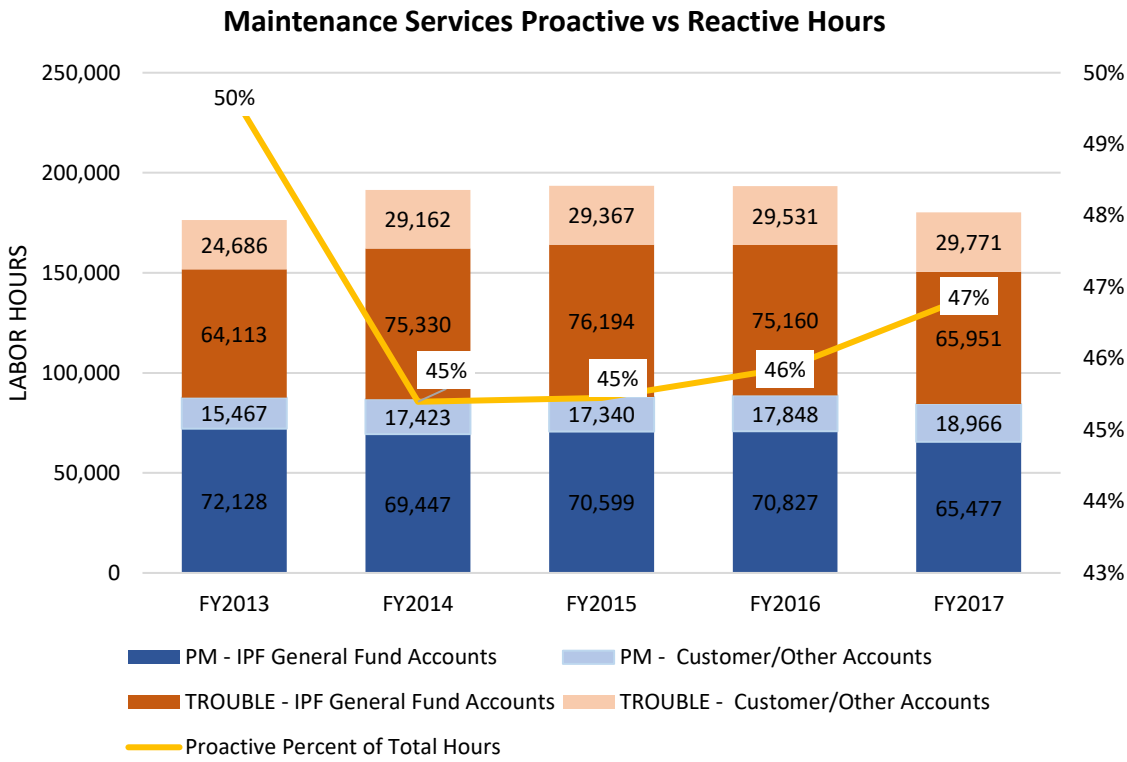


Infrastructure Planning & Facilities Operational Service Metrics

Cost & Staffing vs. Peer Group Average

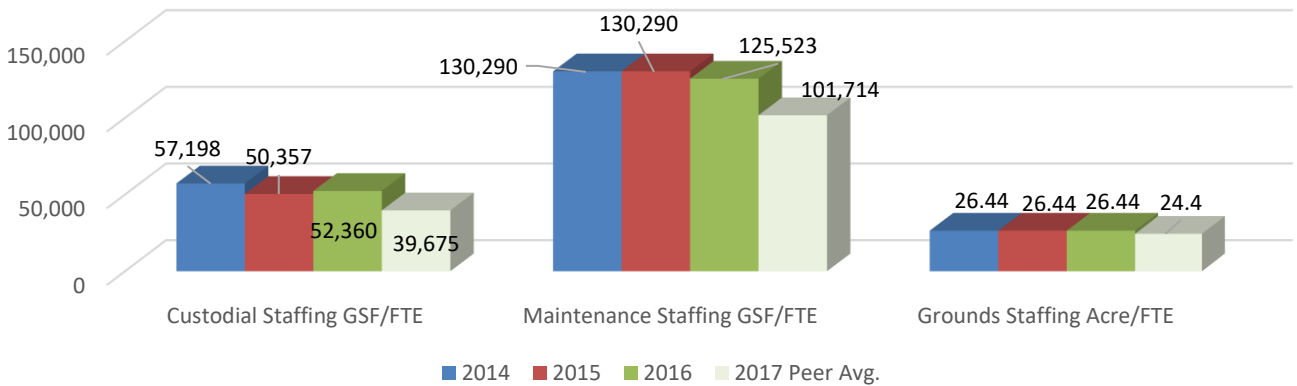


Performance Indicators

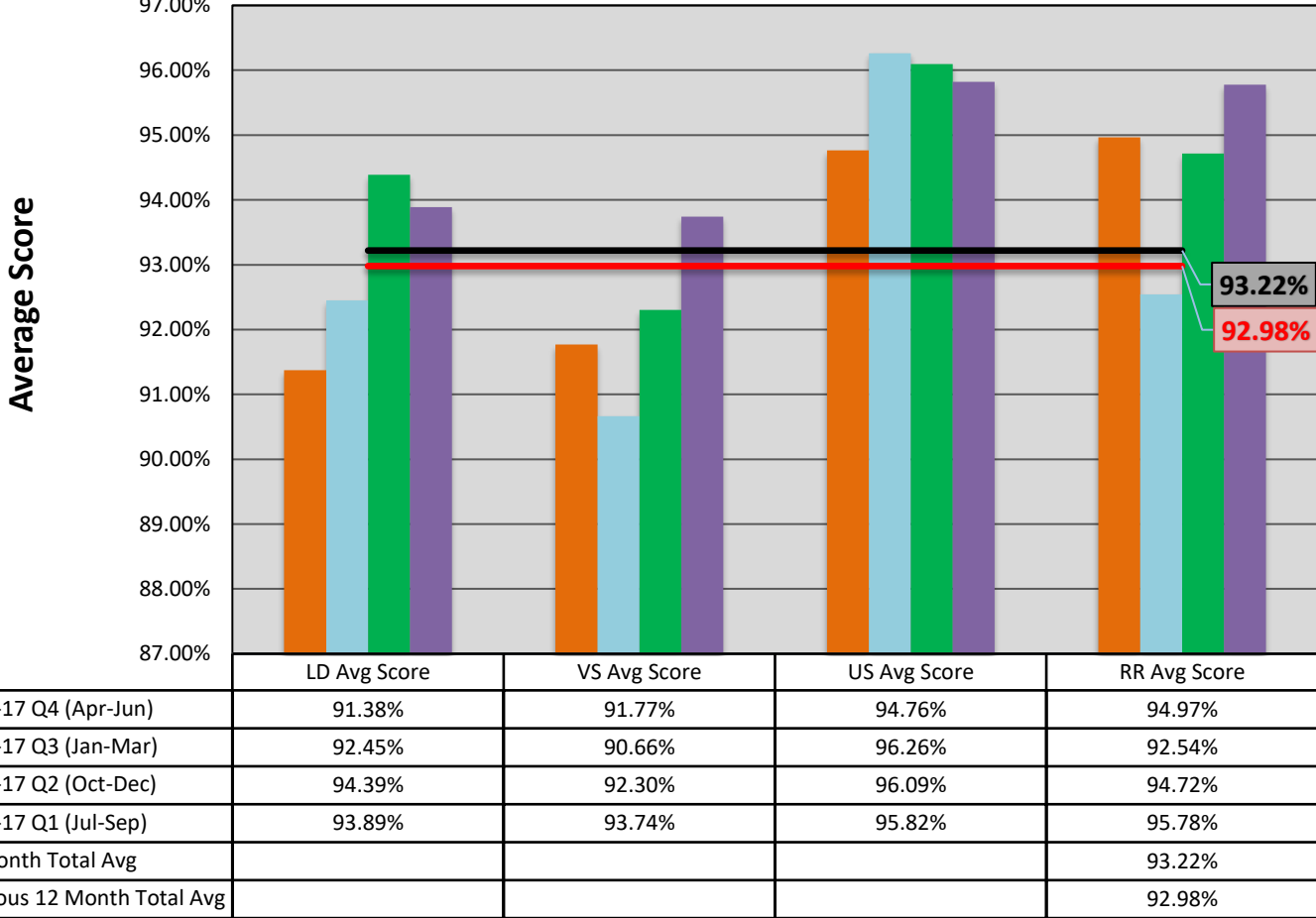


2015-2016 Sightlines Data	Michigan State University	Peer Group Average	MSU vs. Peer Avg.	High	Low	
Daily Service Act. \$/GSF	\$3.67	\$4.30	85.3%	\$7.11	\$3.13	Rutgers
Total PM \$/GSF	\$0.42	\$0.38	110.5%	\$0.73	\$0.06	PSU
Total Utilities Actual \$/GSF	\$1.25	\$1.86	67.2%	\$3.42	\$0.88	Rutgers
Total Facilities Operating \$/GSF	\$5.34	\$6.55	81.5%	\$10.94	\$4.40	Rutgers
Total Project Spending \$/GSF	\$4.44	\$8.01	55.4%	\$23.72	\$1.56	Uminn
Custodial Staffing GSF/FTE	52,360	39,675	132.0%	63,457	28,558	Illinois
Maintenance Staffing GSF/FTE	125,523	101,714	123.4%	143,472	47,965	Neb
Grounds Staffing Acre/FTE	26.44	24.4	108.4%	45.41	11.87	Purdue
Campus Inspection Index (Score)	76	80	95.0%	87.6	73.5	Illini

Staffing Trends vs. Peer

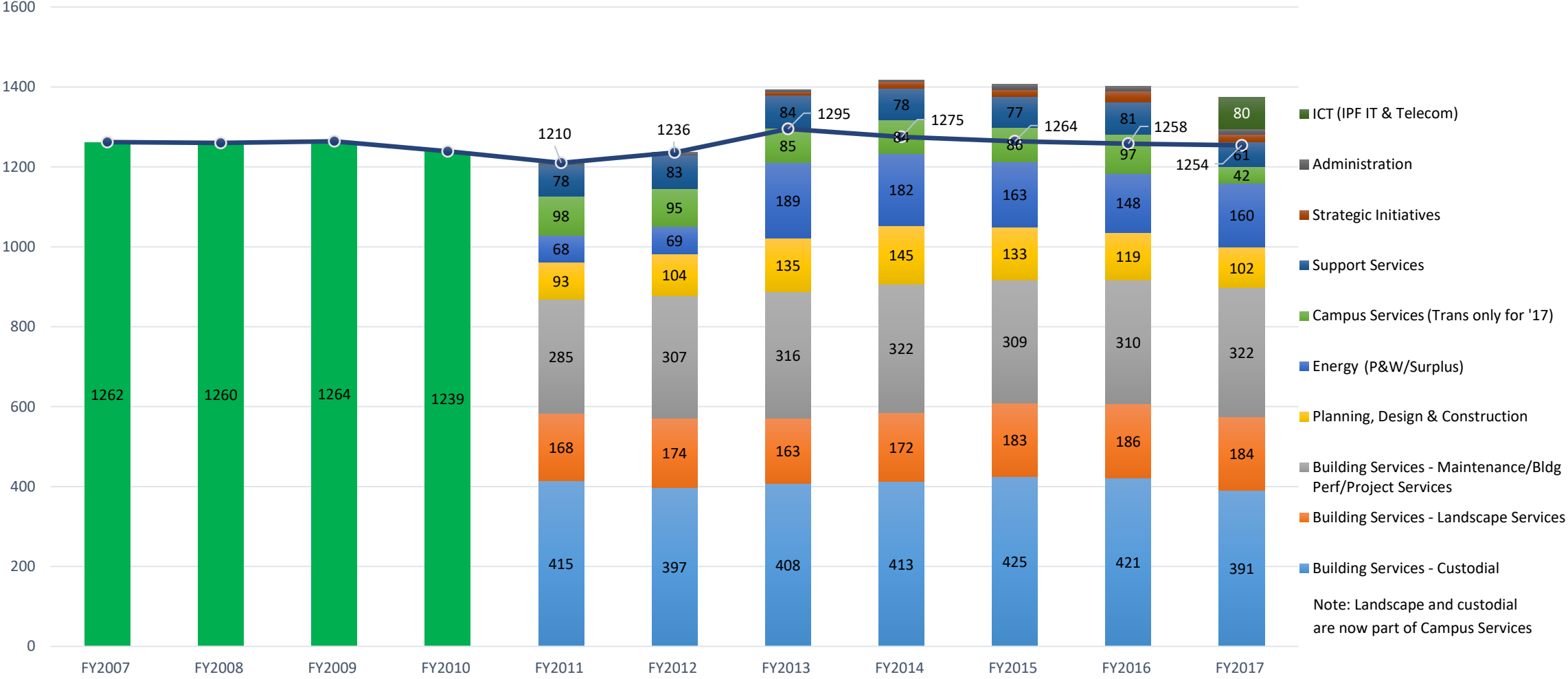


Custodial Quarterly Average Specialist Scores



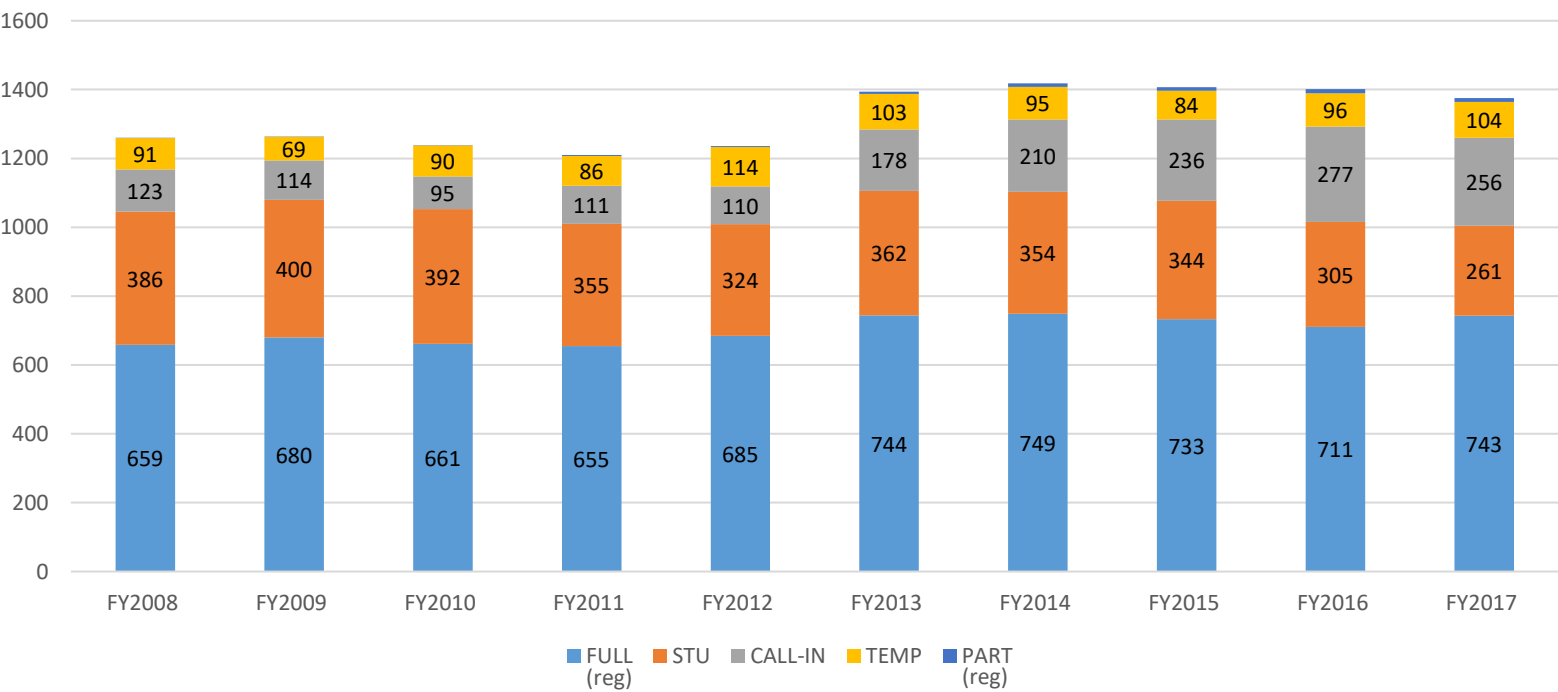
Infrastructure Planning & Facilities Staffing Metrics

IPF Total Personnel Strength

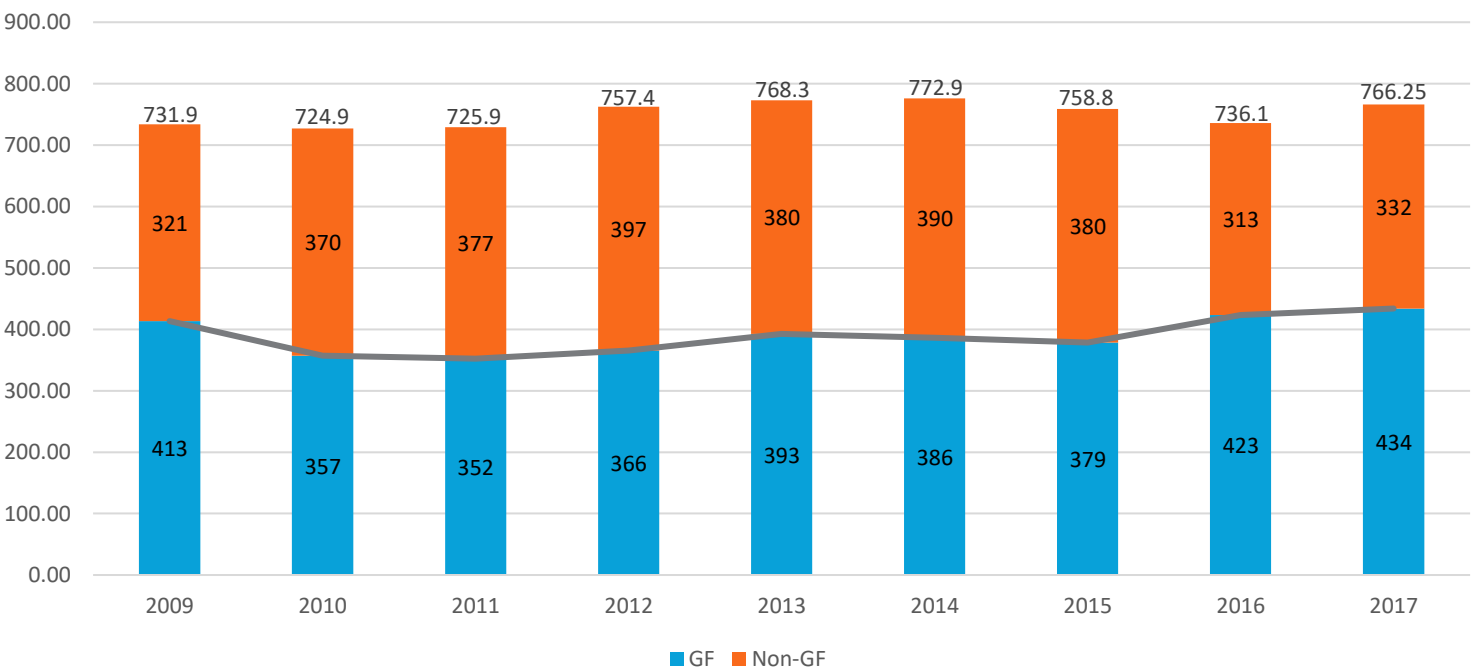


- The graph showing total strength by function represents the total number of employees for the IPF including all labor classes. There are significant changes shown in 2012 and 2013, due to the organizational restructures and changing requirements.
- The total strength by labor class illustrates the changes in ratio of full time staff compared to non-full time. The percentages at the top show the % of staff that are full time employees.
- Union agreements limit the ratio of call-in and temp staff that can be utilized in relation to full time staff.
- The retirement eligibility graph shows the percentage of employees eligible to retire and speaks to the need for strong succession planning.
- The trend line near the top of both the total strength and full time strength shows what IPF would look like currently without the units added during the restructure.
- Starting in 2016, IPF started allocating absences between GF and non-GF. Prior, they were calculated in non-GF only which explains a portion of the growth in GF.

Total Strength by Labor Class

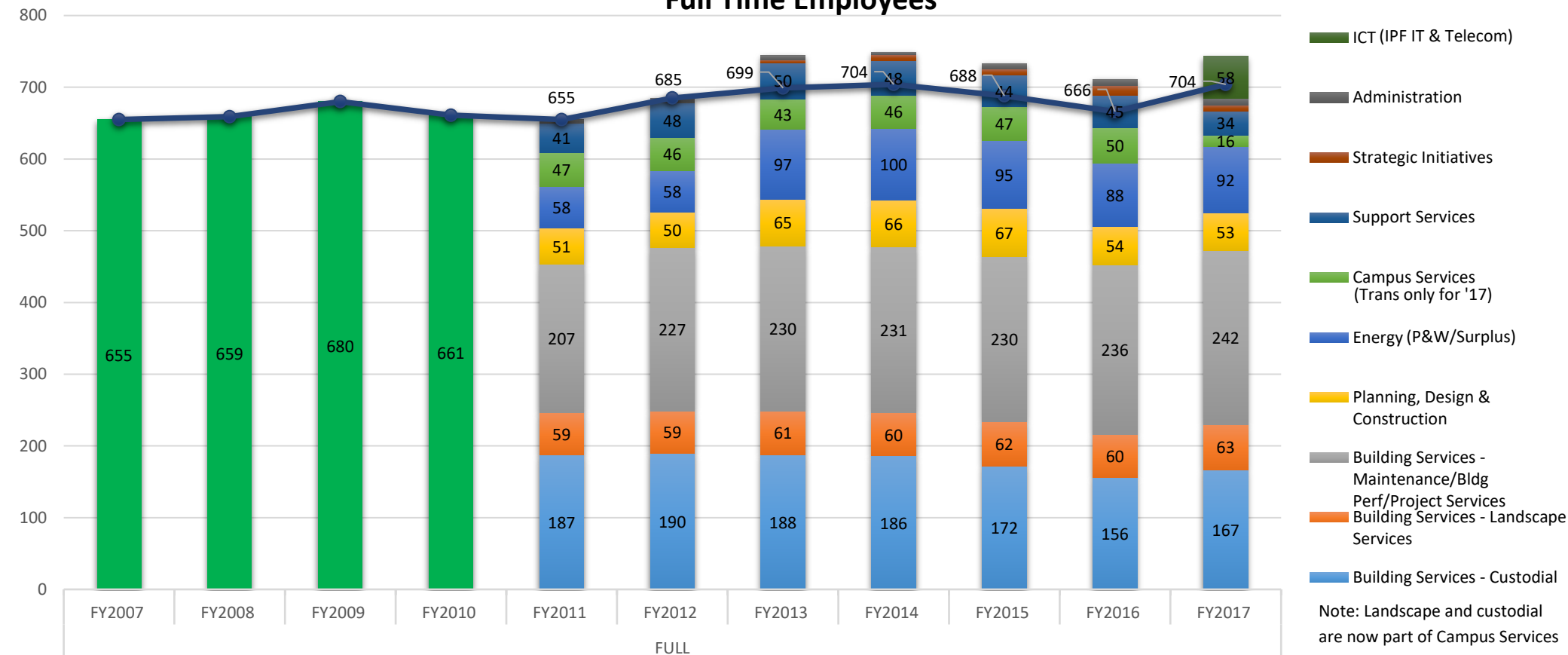


FTE Count



Infrastructure Planning & Facilities Staffing Metrics

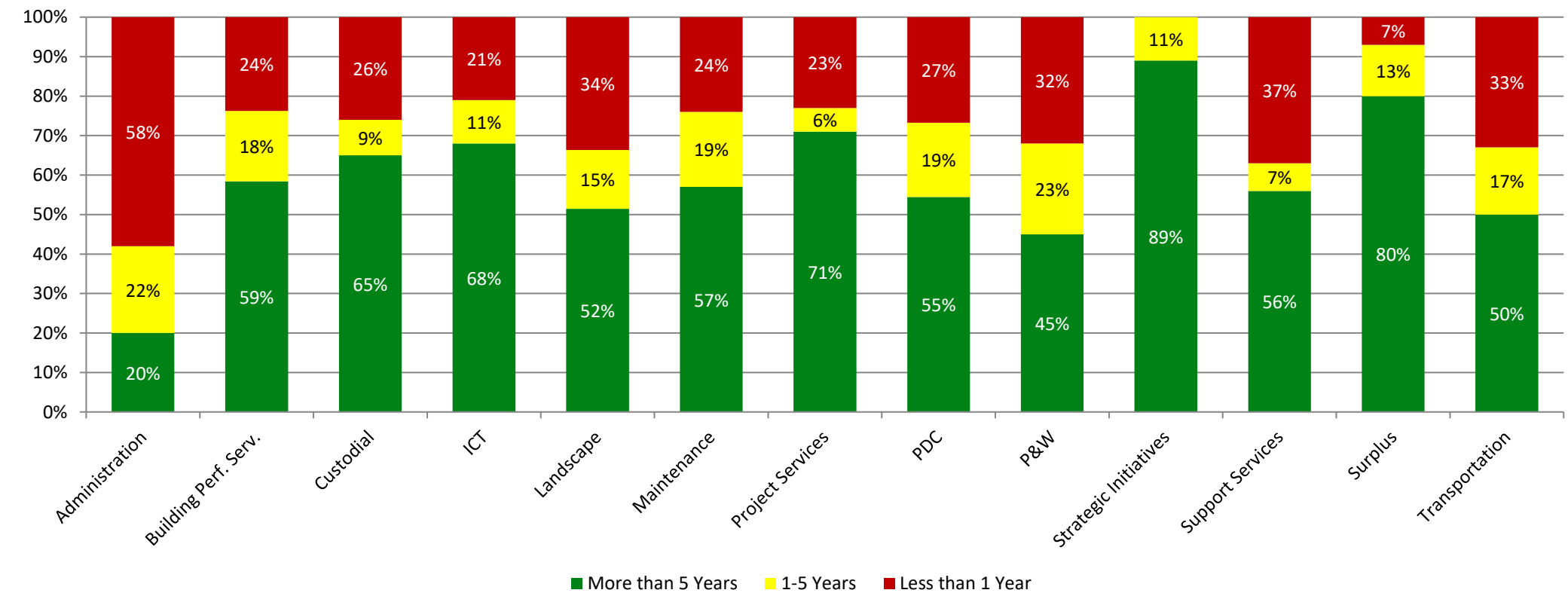
Full Time Employees



Full Time Staff Changes

- **2017**
 - Campus services reorganized to include transportation, surplus, landscape and custodial
 - ICT includes IPF IT & Telecom (formerly of Campus Services)
- **2016**
 - Reduction in FT custodial staff
- **2015**
 - Dissolved part of Energy/Environment
 - Reduction in FT custodial staff
- **2014**
 - Relatively unchanged
- **2013**
 - Surplus/Recycling added to Energy
 - CPA added to PDC
 - P/W added 5 employees
 - Strategic Initiatives formed (4 employees)
- **2012**
 - Maintenance adds 20 employees to satisfy homeland security requirements (Safety/Security area)
- **2011-2013**
 - Commissioning group formed/evolves

Retirement Eligibility of Full Time Employees - as of Jan. 2017



Campus Size (million sq ft)

