

## Committee Minutes

### BUILDINGS AND GROUNDS COMMITTEE

The Inn at Virginia Tech – Duck Pond Room  
March 26, 2018

#### Closed Session

10:00 a.m.

**Board Members Present:** Mr. Mike Quillen, Mr. C.T. Hill, Mr. Robert Mills, Mr. Dennis Treacy

**VPI & SU Staff:** Mr. Mark Gess, Dr. Chris Kiwus, Ms. Kayla Smith, Dr. Sherwood Wilson

1. **Motion for Closed Session.**
2. **Briefing by Legal Counsel on Probable Litigation:** The Committee received a briefing from Legal Counsel on Probable Litigation.
3. **Motion to Reconvene in Open Session.**

#### Open Session

10:30 a.m.

**Board Members Present:** Mr. Mike Quillen, Mr. C.T. Hill, Mr. Robert Mills

**VPI & SU Staff:** Ms. Jennifer Altman, Dr. Ruben Avagyan, Mr. Mac Babb, Mr. Whit Babcock, Mr. John Beach, Ms. Kim Briele, Mr. Bob Broyden, Dr. David Clark, Mr. Nick Clements, Mr. Van Coble, Mr. Joe Crane, Mr. Brian Daniels, Mr. Bob Dellinger, Mr. Billy Dudding, Mr. Kevin Foust, Dr. Lance Franklin, Mr. Tom Gabbard, Ms. Elaine Gall, Mr. Mark Gess, Dr. Chris Kiwus, Mr. Bob Massengale, Ms. Heidi McCoy, Ms. Robin McCoy, Ms. Sarah McCoy, Mr. Grant Morris, Mr. Mike Mulhare, Dr. Ed Nelson, Mr. Mark Owczarski, Mr. Charlie Phlegar, Mr. Todd Robertson, Mr. Robert Sebek, Dr. Frank Shushok, Ms. Karlee Siepierski, Ms. Kayla Smith, Mr. Jason Soileau, Mr. Dwyn Taylor, Mr. Jack Washington, Dr. Erik Westman, Dr. Sherwood Wilson

1. **Tour of Holden Hall and the Power Plant:** The Committee toured Holden Hall and the Power Plant.
2. **Consent Agenda:** The Committee approved or accepted the items listed on the Consent Agenda:

- a. **Approval of the Minutes for the November 5, 2017 meeting.** The Committee approved the minutes from the last meeting.
  - \* b. **Resolution for Appalachian Power Company Easement:** The Committee approved a resolution to execute an easement requested by Appalachian Power approximately seventeen feet (17') in width by approximately seventeen feet (17') in length for an underground electrical facility vault, and fifteen feet (15') in width by approximately two hundred five feet (205') in length for an underground electric transmission line, over, under, upon and across university property adjoining Prices Fork Road on the Moore Farm in the Prices Fork Magisterial District of Montgomery County, Virginia.
  - c. **Acceptance of Capital Project Status Report:** The Committee accepted the Capital Project Status Report.
3. **Utilities and Energy Management Presentation:** The Committee received a presentation from Dr. Chris Kiwus regarding campus utilities and from Dr. Ruben Avagyan regarding energy management initiatives. Highlights included an overview of the university's steam, chilled water and electric service operations as well as energy conservation measures completed through the five-year energy action plan.
  - \* 4. **Resolution for Issuance of a Quitclaim Deed:** The Committee approved a request to issue a Quitclaim Deed to Northampton County, Virginia relative to an approximately one (1) acre parcel of land on U. S. Highway 13 near Fairview, in Northampton County, Virginia in which Northampton County believes Virginia Tech holds an interest.
  - \* 5. **Resolution on Appointment to Sanitation Authority:** The Committee received and approved a resolution requesting approval for Lucius Merrit's reappointment as a joint representative to the Blacksburg-Virginia Polytechnic Institute Sanitation Authority Board of Directors.
  - \* 6. **Resolution on Representation of the Board at Public Hearings for Authorities:** The Committee approved a resolution to appoint the Vice President for Operations as the Board of Visitors' representative to any public hearings required for proposed modifications to the governing documents of five public service Authorities (sanitation, solid waste, emergency communications, water, and airport).
  7. **Design Preview for Student-Athlete Performance Center:** The Committee previewed the design underway for the Student-Athlete Performance Center.
  8. **Introduction of the Interim University Building Official:** The Committee was introduced to the Interim University Building Official, Ms. Elaine Gall.

- 9. June Agenda Discussion:** The Committee discussed potential topics for inclusion on the June meeting agenda.

**Joint Open Session with Finance and Resource Management**

**11:30 a.m.**

**Board Members Present:** Ms. Greta Harris, Ms. Anna James, Mr. C. T. Hill, Mr. Robert Mills, Mr. Mike Quillen, Mr. Robert Sebek – staff representative, Mr. Horacio Valeiras

**VPI & SU Staff:** Ms. Jennifer Altman, Mr. Mac Babb, Mr. Whit Babcock, Mr. Bob Broyden, Mr. Nick Clements, Mr. John Cusimano, Mr. Brian Daniels, Dr. John Dooley, Dr. Lance Franklin, Mr. Tom Gabbard, Mr. Mark Gess, Dr. Robin Jones, Dr. Chris Kiwus, Mr. Bob Massengale, Ms. Robin McCoy, Ms. Sarah McCoy, Ms. Nancy Meacham, Mr. Grant Morris, Mr. Mark Owczarski, Mr. Charlie Phlegar, Dr. Scot Ransbottom, Dr. Tim Sands, Ms. Savita Sharma, Mr. M. Dwight Shelton Jr., Dr. Frank Shushok, Jr., Ms. Kayla Smith, Mr. Jason Soileau, Mr. Dwyn Taylor, Mr. Jack Washington, Dr. Sherwood Wilson

- \* 1. **Approval of Resolution for Student-Athlete Performance Center:** The university's Six-Year Capital Outlay Plan approved by the Board of Visitors included a project for an Athlete Nutrition Center, currently known as the Student-Athlete Performance Center.

The desired program will enhance the student experience of athletes in all 22 intercollegiate sports; approximately 580 students, and can be accommodated with a complete renovation of the fourth floor of the Jamerson Center with the addition of a balcony. The renovation and expansion will provide state-of-the-art spaces for dining, nutrition, recruiting, donor hospitality, and allow for a seamless transition to the Cassell Coliseum concourse. The project schedule anticipates major construction to start in Summer 2019 with occupancy by early 2021.

The Athletics program has received \$16.165 million in private gifts for the designated capital improvements and to create an endowment for the upkeep and maintenance of the Student-Athlete Performance Center. This resolution seeks approval to proceed with planning, constructing, and equipping activities to implement the program at a total project cost not to exceed \$15.165 million. The Athletics program is continuing its efforts to raise additional private funds to enhance the space. This resolution includes authorization to adjust the total project budget up by 10 percent and not more than new private gifts designated to the project beyond the existing \$15.165 million.

The Committees recommended the Resolution for the Student-Athlete Performance Center to the full Board for approval.

- \* 2. **Approval of Resolution for ACC Network Studio:** The university's Six-Year Capital Outlay Plan approved by the Board of Visitors included a project for an ACC

Broadcast Studio expansion. As a member of the Atlantic Coast Conference, Virginia Tech will participate in the new ACC Network channel to be launched in 2019. Improved and expanded broadcasting facilities are needed to meet required telecasts of athletic events on the new channel.

The scope of work to establish the necessary broadcasting facilities include interior renovations to an existing control room, constructing two new control rooms, two new studios, and installing other infrastructure and equipment.

To meet the schedule expectations of the ACC network for a Fall 2019 launch, the Athletics program desires to start the renovations in Spring 2018, complete the project by early Spring 2019, and operate the studios for several months prior to network broadcasting. The estimated project cost inclusive of design, construction, infrastructure improvements, and equipment is \$10 million. This request is for authorization to proceed with the design, construction, and infrastructure improvements for a \$10 million ACC Network Studio project.

The Committees recommended the Resolution for the ACC Network Studio to the full Board for approval.

- \* 3. **Approval of Resolution for Commonwealth Ballroom Improvements:** The Commonwealth Ballroom, located on the second floor of the Squires Student Center, is the largest ballroom on campus and was originally built in 1937 with renovations and additions occurring in 1969 and 1991. It hosts approximately 160 events each year including major activities such as orientation, career fairs, Gobbler Nights, and Ring Dance. The ballroom has reached an age and condition with deferred maintenance that requires repairs and improvements to meet the university's expectations for event hosting.

The proposed scope of work for the Commonwealth Ballroom project includes replacing outdated and nonfunctioning lighting systems, stage systems, ceiling tiles, and air handlers and installation of a Skyfold dividing wall. Construction is anticipated to start in Fall 2018 and be complete in Spring 2019 in time for commencement.

The total project costs for Improvements is \$3.246 million. This request seeks authorization to complete the Squires Commonwealth Ballroom Improvements project.

The Committees recommended the Resolution for Commonwealth Ballroom Improvements to the full Board for approval.

There being no further business, the meeting adjourned at 11:50 a.m.

- \* **Requires full Board approval.**

**BUILDINGS AND GROUNDS COMMITTEE**  
**March 26, 2018**  
**Capital Project Status Report**

Project Name	Project Description	Estimated Total Project Cost	Non-General Funds	Project Teams	Contract Completion Date	Project Status
<b>FEASIBILITY</b>						
Global Business Analytics Complex	The Feasibility Study for the Global Business and Analytics Complex (G-BAC) will investigate facility options for up to four buildings comprising a replacement for the Pamplin College of Business, creation of a Data Analytics and Decision Sciences facility, and two living/learning communities.	TBD	TBD	Moseley Architects/RAMSA TBD	November 2017	Feasibility Study is complete. Final renderings and cost estimate were received in October 2017. Pamplin College of Business is continuing fundraising efforts for the project.
Global System Sciences	Envisioned as a destination, the facilities will serve as the headquarters of what is anticipated to be a world-renowned group focused on solving critical regional and global problems, including environmental, animal and human health. This facility will include disciplinary and interdisciplinary faculty of the College of Science, College of Natural Resources, College of Agriculture and Life Sciences, and the College of Veterinary Medicine, and University Institutes to facilitate education and research related to this important destination area.	TBD	TBD	EYP TBD	TBD	A/E contract issued to project team for Feasibility Study. Kickoff meeting scheduled for March 2018.
Newman Library Feasibility Study	The project will evaluate existing building's infrastructure, code compliance requirements for egress, change of building use, and restroom facilities.	TBD	TBD	Colley Architects Blacksburg, VA TBD	February 2018	Feasibility study is complete. Final deliverable has been received with occupancy, restroom fixture count, and egress addressed. Project budgeting and phasing strategy are under development.
Southgate Dining Food Production Center	The purpose of this feasibility study is to provide Virginia Tech Dining Services with appropriate and sufficient information to determine the most desirable option for the future growth of the Food Processing Facility. The three options being explored are: 1. Renovation/Additions to existing facility, 2. Renovation/Addition & New Building - Separate functions, 3. New Building.	TBD	TBD	Architects Alliance TBD	TBD	Feasibility study is underway. A/E will be providing deliverables for each of the design options including potential site locations for a new facility by spring 2018.
<b>DESIGN</b>						
Boiler Package 12	Demolition and disposal of decommissioned coal fired boiler (No. 6) and installation of a new 100 lbs/hour natural gas/oil fired packaged boiler (No. 12)	\$6,800,000	\$6,800,000	Affiliated Engineers, Inc. (AEI) Atlanta, GA TBD	Winter 2019	Project design is underway. Preliminary Design documents due in April 2018 which will initiate pre-purchase of new boiler.
Chiller Plant Phase II	This project includes the replacement and upgrade of plant equipment in the existing campus chiller plants and the expansion of the underground distribution infrastructure to link campus chiller substations and bring additional existing campus buildings on line. Improvements include the replacement of two outdated chillers in the North Plant with two new upgraded larger capacity chillers; and addition of two new 1,500 ton chillers in the Southwest Plant. The project also includes the replacement and upgrade of ancillary equipment with state-of-the-art, optimally sized pumping and system support equipment.	\$40,821,000	\$9,800,000	Affiliated Engineers, Inc. (AEI) Atlanta, GA TBD	Fall 2020	Preliminary Design phase is underway. Project slated to go out for bid for construction in summer 2018.
Corps Leadership and Military Science	Three story structure that provides a centralized and consolidated home to the Corps of Cadets administration and ROTC programs.	TBD	TBD	Clark Nexsen TBD	TBD	Preliminary Design documents completed. Project on hold pending state authorization for general fund for development of working drawings and construction.

**BUILDINGS AND GROUNDS COMMITTEE**  
**March 26, 2018**  
**Capital Project Status Report**

Project Name	Project Description	Estimated Total Project Cost	Non-General Funds	Project Teams	Contract Completion Date	Project Status
Creativity & Innovation District Living Learning Community	This project involves the provision of a new residential life building in the newly emerging Creativity & Innovation District. The proposed 203,000 GSF (520 bed) facility will support the growing living/learning community (LLC) anticipated for this key area of campus and is a realization of Virginia Tech's Beyond Boundaries initiative.	\$105,500,000	\$105,500,000	VMDO Charlottesville, VA	Fall 2021	Design-build project. Criteria/Bridging Document Phase initiated with targeted completion by July 2018. Design-build term procurements will initiate in spring 2018.
				TBD		
Dietrick Hall Enclosure & Spirit Plaza	This project will expand dining services by enclosing approximately 6,400 GSF of overhang area to create new interior dining space. The exterior plaza area will be renovated to create an outdoor venue that can provide an environment to study and host events and gatherings.	\$7,000,000	\$7,000,000	AECOM Roanoke, VA	TBD	A/E design services contract being finalized. Schematic design is scheduled to be complete in spring 2018.
HITT Hall and the Intelligent Infrastructure Complex (Smart Dining)	Program elements envision a 30,000 GSF HITT Hall space connected to Bishop-Favrao Hall, a 15,000 GSF Fusion Lab, a 30,000 GSF Smart Dining space and a 5,000 GSF Data for the Masses student activity space. Project intent is to showcase technology and innovation as a key component of the Intelligent Infrastructure Destination Area.	\$50,000,000	\$50,000,000	TBD	TBD	Design-build project. Criteria consultant contract negotiations ongoing. Criteria/Bridging Documents targeted for completion by fall 2018.
				TBD		
Holden Hall Renovation	This project includes the renovation of an approximately 21,000 GSF portion of Holden Hall fronting the Drillfield. The remaining 21,000 GSF of the existing building will be demolished and replaced with approximately 80,000 GSF of new engineering instruction and research space for a total building size of 101,000 GSF.	\$61,886,000	\$17,500,000	Moseley Architects Virginia Beach, VA	Fall 2021	Preliminary Design phase is underway. Construction start targeted for summer 2019.
				W.M. Jordan Co.		
Improve Kentland Facilities (Phase II)	This project includes new construction of three buildings totaling approximately 28,900 GSF including a metabolic research laboratory, an applied reproduction facility, and a bovine extension teaching/research facility to serve Agency 229, Virginia Cooperative Extension and the Virginia Agricultural Experiment Station.	\$9,363,000	\$0	Spectrum Design, PC Roanoke, VA	TBD	Project bid-busted in December 2016. Project was re-designed and re-bid in fall 2017 and busted a second time. Recourse strategy underway.
				TBD		
Livestock and Poultry Research Facilities (Phase I)	This project is the first of two phases to renew existing facilities for the College of Agriculture and Life Sciences' livestock and poultry programs. This first phase includes approximately 126,000 GSF of new and renovated facilities located along Plantation Road and Giles Road and at Kentland Farm.	\$22,500,000	\$0	Spectrum Design, PC Roanoke, VA	Summer 2020	Schematic Design phase is ongoing with a target for completion of phase in March 2018. Preliminary Design phase to follow.
				TBD		
Multi-Modal Transit Facility	This is a Capital Lease Project administered by the Town of Blacksburg (ToB) and funded by Federal Transportation Administration grants and a university match. The project is targeted for LEED Platinum to provide a campus sustainability demonstration showcase.	\$38,000,000	N/A	Wendel Associates Buffalo, NY	Fall 2020	BOV approval was given in November 2017. Ninety percent (90%) design re-submittal due in March 2018. Bid documents slated for advertisement by the Town of Blacksburg in spring 2018. Construction is anticipated to begin in late summer/fall 2018.
				TBD		
Student Wellness Improvements	The project provides a comprehensive solution for student wellness services through upgrades to McComas Hall and major renovations to War Memorial Hall to meet the needs of the Schiffert Health Center, Cook Counseling Center, Recreational Sports, College of Liberal Arts and Human Sciences programs, and the College of Agriculture and Life Sciences (Human Nutrition Foods & Exercise).	\$63,000,000	\$63,000,000	CannonDesign Baltimore, MD	Winter 2021	Project transitioned from Feasibility Study to full project delivery design services in late fall 2017. Schematic Design package expected March 2018. CM at Risk contractor procurement being initiated.
				TBD		

**BUILDINGS AND GROUNDS COMMITTEE**  
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**Capital Project Status Report**

Project Name	Project Description	Estimated Total Project Cost	Non-General Funds	Project Teams	Contract Completion Date	Project Status
Undergraduate Science Laboratory	The project will construct a new undergraduate science laboratory facility of 102,000 gross square feet (GSF) to accommodate the growing demand for STEM-H degrees at Virginia Tech.	\$71,709,000	\$0	ZGF Architects Washington, DC	Fall 2021	Schematic Design is ongoing and on schedule for completion in May 2018. Preliminary design phase expected to begin in June 2018.
				TBD		
Undergraduate Science Laboratories Renovations	This project will repurpose six laboratory/teaching spaces in Derring Hall and one laboratory in Hahn Hall. These repurposed laboratories will expand space to meet growing demand for course sections in biology, chemistry, organic chemistry, and microbiology.	\$10,000,000	\$10,000,000	Studio Twenty Seven Architecture Washington, DC	August 2019	Project was bid in November 2017 and received no bids. Project is currently undergoing a sequence revision and minor design changes. Project is slated to re-bid in spring 2018.
				TBD		
<b>CONSTRUCTION</b>						
Athletic Facilities Improvements	This is an umbrella project for improvements to multiple athletics facilities, including Rector Field House, Baseball, Tennis, and Cassell Coliseum Bowman Room (Nutrition Center).	\$37,500,000	\$37,500,000	Rector: Cannon Design Baseball: Cannon Design Tennis: TKA Architects (Criteria Documents) Nutrition: Hanbury Architects	Rector: Spring 2018 Baseball: Spring 2018 Tennis: TBD Nutrition: TBD	Sub-projects as follows: 1) Rector Field House - Includes building renovation and new additions to provide indoor infield, batting and pitching cages for softball, and indoor throws area for Indoor Track & Field, new entry, restrooms, team rooms, and support spaces. Construction is scheduled for completion in March 2018. 2) Baseball - Includes demolition of the existing press box and seating bowl, and construction of a new, larger press box structure to include suites, press, game operations, radio/TV broadcast, ticket office, team store, concessions, restrooms, and support spaces. Also includes renovations to the existing Weaver Baseball Center to add a team locker room, team lounge, training, equipment, coaches locker room, and support spaces. Construction is scheduled for completion in March 2018. 3) Tennis - Includes an addition and renovation to provide for improved tennis team and training facilities. The Design/Build Team originally selected was not able to hold their technical / cost proposals beyond December 31, 2017. The procurement of a Design/Build Team will be re-started when funding is approved. 4) Student-Athlete Performance Center - Includes the renovation and new construction to provide improvements for athletic team training and nutrition program by expanding the existing Bowman Room. Funding has been received by the Department of Athletics. Schematic Design started in January and is scheduled to be completed in April. Authorization of a separate Capital Project being requested at the March BOV Meeting.
				Rector: Branch Associates Baseball: Whiting-Turner Contracting Co. Tennis: D/B Contractor TBD Student-Athlete Performance Center: TBD		
Fire Alarm Systems and Access	This project provides for critical life safety improvements in several educational and general facilities on campus. Fire alarm systems will be installed or expanded in as many campus buildings as funding allows, including Architecture Annex, Food Science & Technology, Lane Hall, Litton-Reaves Hall, Norris Hall, Patton Hall, Randolph Hall, War Memorial Hall (Gym), Wallace Annex, and Whittemore Hall.	\$4,900,000	\$0	Multiple A/E Firms	Summer 2018	Architecture Annex, Food Science & Technology, Lane Hall, Patton Hall, Wallace Annex, War Memorial Hall (Gym), Whittemore Hall, and Randolph Hall are complete. Installation of Fire Alarm System in Norris Hall and Litton Reaves Hall are in progress and are scheduled to be completed this spring.
				Multiple Contractors		
Lane Electric Substation Expansion	This project will expand the existing electrical sub-station to add approximately 37 percent additional power capacity to serve the campus Life Sciences and Northwest Precincts and the Corporate Research Center's proposed expansion.	\$6,500,000	\$6,500,000	Appalachian Electric Power and Virginia Tech Electric Service	Summer 2019	The project is administered by the VTES in coordination with Appalachian Power Company (APCo) and Appalachian Electric Power (AEP). Construction of two control buildings is complete and VTES is continuing electrical fit-out inside. New electrical lines have been checked and are satisfactory. APCo is continuing fit-out of additional metering points. Transformer procurement is complete, and delivery is scheduled.
				Appalachian Electric Power and Virginia Tech Electric Service		

**BUILDINGS AND GROUNDS COMMITTEE**  
**March 26, 2018**  
**Capital Project Status Report**

Project Name	Project Description	Estimated Total Project Cost	Non-General Funds	Project Teams	Contract Completion Date	Project Status
O'Shaughnessy Hall Renovation	This project includes major renovation of a 72,000 GSF student residence building into a living-learning community. The residence hall originally housed 350 students and upon completion will house 344 students.	\$21,500,000	\$21,500,000	Moseley Architects Virginia Beach, VA	August 2018	Renovations are underway on multiple floors simultaneously, resident room and bathroom finishes are underway and site utility work is ongoing. Project is on schedule for occupancy in August 2018.
				WM Jordan, Roanoke, VA		
Renovate/Renew Academic Buildings	This project will renovate three existing campus buildings - Sandy Hall, Liberal Arts Building, and the original portion of Davidson Hall. Collectively, these renovations will increase the functionality of three underutilized building assets, address several deferred maintenance issues, and reduce critical space deficiencies. Small additions are planned for Sandy and Liberal Arts Buildings to meet current emergency egress code requirements. New elevators in Sandy and Liberal Arts Buildings will provide ADA access.	\$35,029,000	\$0	Glavè & Holmes Architecture Richmond, VA	August 2018	Construction is underway on all three buildings. Davidson Hall and Liberal Arts Building are expected to complete by the start of Fall Semester 2018. Sandy Hall is lagging slightly behind due to unforeseen site conditions.
				Branch & Associates Roanoke, VA		
Unified Communications and Network Renewal Project	This project replaces outdated equipment and upgrades campus communications systems, providing infrastructure and equipment enhancements over a five year period. The project scope includes upgrades to the Internet Protocol (IP) Network, the cable plant, and equipment rooms in buildings throughout campus.	\$16,508,000	\$16,508,000	Multiple A/E Firms	December 2017	The network equipment for the data center has been ordered. Network and systems engineering teams are collaborating with our vendor partners to develop and refine the project plan. The HVAC systems issue in Derring Hall has been resolved and the facilities project is substantially complete. Project closeout activities are underway. Last report for this item.
				Various Contractors		
Upper Quad Residential Facilities	This project provides for the demolition and construction of replacements for Brodie and Rasche residence halls to serve the Corps of Cadets. The new residence halls totaling approximately 210,000 GSF will provide over 1,000 beds in double and triple rooms sharing hall community bathrooms. These new residence halls will be constructed at the approximate location of the original Rasche Hall and Brodie Hall. Both buildings will provide double and triple occupancy rooms that meet the residence and in-room storage space needs of the cadets. Both new residence halls will provide dedicated meeting, community, and group spaces, specifically designed to meet Corps program and organization needs. Thomas Hall and Monteith Hall will also be demolished as part of this project.	\$91,000,000	\$91,000,000	Clark Nexsen Charlotte, NC	Pearson - August 2015 New Cadet Hall - April 2017	The Upper Quad project is complete and the closeout audit of the project is underway. Clark Nexsen is compiling final A/E closeout documents. Last report for this item.
				Barton Malow Company Charlottesville, VA		
Virginia Tech Carilion (VTC) Biomedical Research Expansion	This project, executed under the Public-Private Education Facilities and Infrastructure Act of 2002 (PPEA), will construct an approximately 139,000 GSF building adjacent to the Virginia Tech - Carilion Research Institute in Roanoke, VA. The new facility will include high intensity biomedical research capable laboratories with surgical-type suites, Bio-safety Level Three laboratories, and animal imaging facilities that require high field magnetic resonance imaging. The remaining space will include high intensity dry laboratory research and training spaces including computational facilities, offices, procedural training rooms, and technical training space.	\$89,865,000	\$0	AECOM	Spring 2020	The Comprehensive Agreement was executed with Carilion Clinic in December 2017. Site construction is underway while the project design documents continue to develop. Foundation and structural steel permits expected to be issued in February. Ninety-five percent (95%) Working Drawings expected late March.
				Skanska		



March 26, 2018



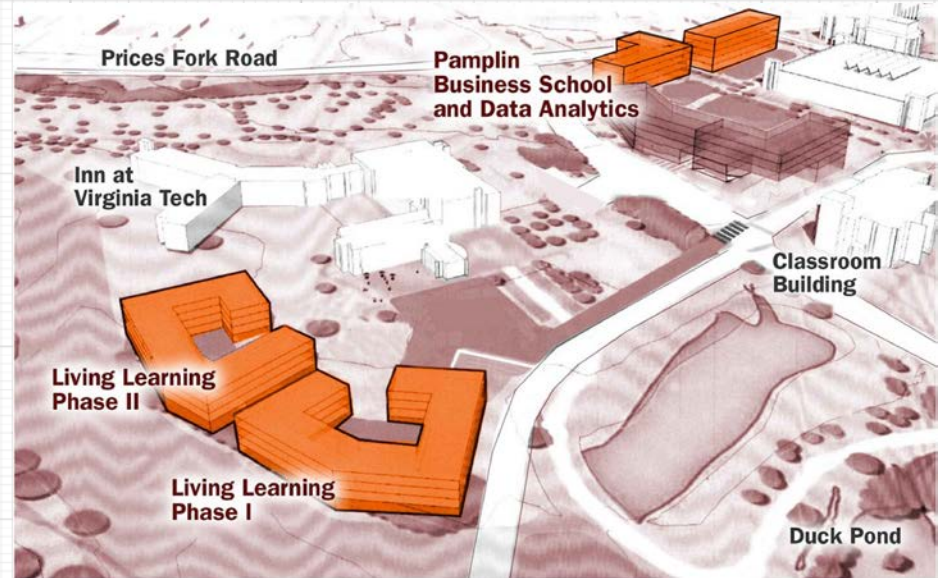
# **CAPITAL PROJECT STATUS REPORT**



**Christopher H. Kiwus, PE, PhD**  
Associate Vice President and Chief Facilities  
Officer

# ■ PROJECTS IN FEASIBILITY

- Global Business Analytics Complex
- Global System Sciences
- Newman Library Feasibility Study
- Southgate Dining Food Production Center



## ■ **PROJECTS IN DESIGN**

- **Boiler Package 12**
- **Chiller Plant Phase II**
- **Corps Leadership & Military Science**
- **Creativity & Innovation District Living Learning Community**
- **Dietrick Hall Enclosure & Spirit Plaza**
- **HITT Hall & the Intelligent Infrastructure Complex (Smart Dining)**



## ■ **PROJECTS IN DESIGN**

- Holden Hall Renovation
- Improve Kentland Facilities (Phase II)
- Livestock and Poultry Research Facilities (Phase I)
- Multi-Modal Transit Facility
- Student Wellness Improvements
- Undergraduate Science Laboratory
- Undergraduate Science Laboratories Renovations





# ■ PROJECTS UNDER CONSTRUCTION

- Athletic Facilities Improvements
- Fire Alarm Systems and Access
- Lane Electric Substation Expansion
- O'Shaughnessy Hall Renovation
- Renovate/Renew Academic Buildings
- Unified Communications and Network Renewal Project
- Upper Quad Residential Facilities
- Virginia Tech Carilion (VTC) Biomedical Research Expansion





***OVERVIEW OF  
UTILITIES AND  
ENERGY  
MANAGEMENT***

**MARCH 26, 2018**

# *Overview of Utilities and Energy Management*



**PRODUCTION,  
DELIVERY, AND  
MANAGEMENT OF  
SAFE, RELIABLE,  
AND EFFICIENT  
UTILITY AND  
ENERGY SYSTEMS**



**PROACTIVE AND  
EFFECTIVE  
STEWARDSHIP OF  
UNIVERSITY  
RESOURCES AND  
THE ENVIRONMENT**



# ***UTILITY AND ENERGY SYSTEMS***

## **UNIVERSITY MANAGED**

- **ELECTRICAL DISTRIBUTION**
- **HEATING**
- **COOLING**
- **MECHANICAL DISTRIBUTION SYSTEMS**

## **EXTERNALLY MANAGED**

- **WATER/SEWAGE (LOCAL AUTHORITY)**
- **NATURAL GAS (ATMOS ENERGY)**





# ***UTILITY AND ENERGY SYSTEMS***

## **THE UNIVERSITY OPERATES AND MAINTAINS:**

- **CO-GENERATION POWER PLANT**
- **ELECTRIC DISTRIBUTION UTILITY**
- **CENTRAL CHILLED WATER PLANTS**
- **ASSOCIATED DISTRIBUTION SYSTEMS REQUIRED TO TRANSPORT UTILITY SERVICES**
  - **ABOVE THREE COMPONENTS**
  - **POTABLE WATER**



# POWER PLANT



STEAM



ELECTRICITY



HOT WATER

- OPENED IN **1901**
- ANNUAL STEAM OUTPUT > **943 BILLION BTUs**
- **6,250-KILOWATT, 12,470-VOLT STEAM-TURBINE-POWERED GENERATOR** EXTRACTS & EXHAUSTS STEAM
- **7 MILES** OF STEAM LINES & PIPING
- PROVIDES **STEAM, HEATING, HOT WATER,** & A PORTION OF **ELECTRICITY** NEEDS
- PRIMARY FUEL SOURCES: **COAL & NATURAL GAS**
- SECONDARY FUEL SOURCES: **FUEL OIL**
- CONTINUAL EVALUATION OF **FUEL PRICES, OPERATING COSTS, & THERMAL LOADS** TO DETERMINE WHICH ASSETS TO USE TO MEET THERMAL DEMANDS
- EFFICIENCY TRACKED VIA **CONTINUOUS EMISSIONS MONITORING SYSTEM**



# ***VIRGINIA TECH ELECTRIC SERVICE***

- **UNIVERSITY-OPERATED** FOR MORE THAN 100 YEARS
- OPERATES IN A **SIMILAR MANNER TO OTHER ELECTRIC UTILITY ORGANIZATIONS**
- MOST OF THE ELECTRIC POWER USED BY VTES CUSTOMERS IS **PURCHASED UNDER A CONTRACT WITH AEP**
- STRIVES TO OFFER EXCELLENT **CUSTOMER SERVICE** AND THE BEST **OVERALL VALUE**
- SERVES THE **BLACKSBURG CAMPUS** AND ABOUT **6,000 RESIDENTIAL AND COMMERCIAL CUSTOMERS**
- **RATES ARE COMPARABLE** TO THOSE OF OTHER ELECTRIC UTILITY PROVIDERS




# DISTRICT CHILLER PLANTS

- **TWO DISTRICT CAMPUS CHILLED WATER PLANTS**
- **COMPLEX METHOD TO COOL WATER AND PUMP IT TO NEARBY BUILDINGS.**
- **IN GENERAL, A CHILLED WATER PLANT IS 50 PERCENT MORE EFFICIENT THAN INDIVIDUAL COOLING SYSTEMS.**
- **LONG-RANGE PLANS CALL FOR BUILDING MORE CENTRALIZED CHILLED WATER PLANTS IN VARIOUS PARTS OF CAMPUS. THIS WILL IMPROVE ENERGY EFFICIENCY, REDUCE COSTS, AND ALLOW FOR ADDITIONAL GROWTH.**
- **\$40.8 MILLION PROJECT TO UPGRADE EXISTING CHILLER PLANT EQUIPMENT IS UNDERWAY.**





# *Overview of Utilities and Energy Management*



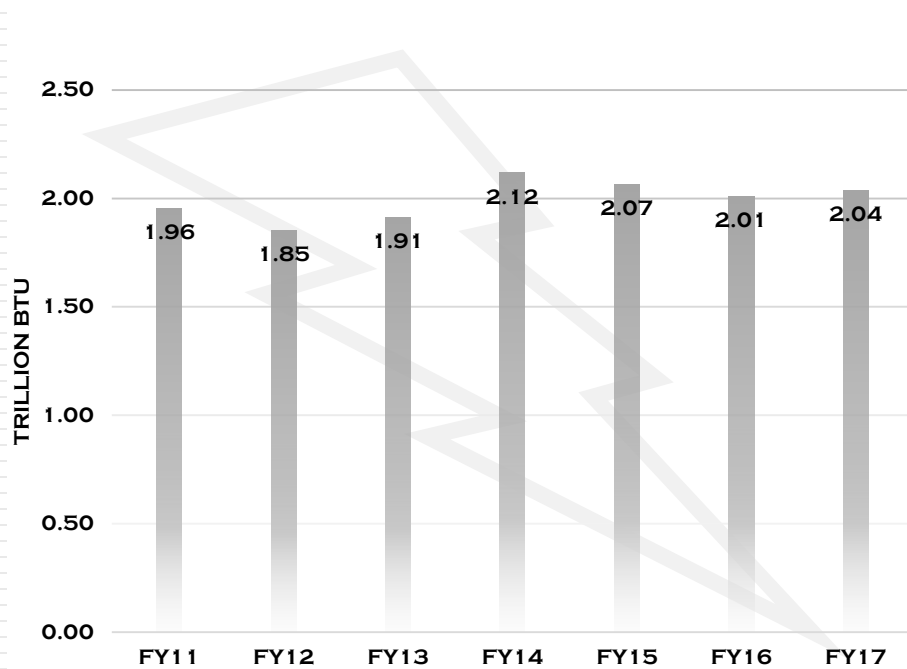
**PRODUCTION,  
DELIVERY, AND  
MANAGEMENT OF  
SAFE, RELIABLE,  
AND EFFICIENT  
UTILITY AND  
ENERGY SYSTEMS**



**PROACTIVE AND  
EFFECTIVE  
STEWARDSHIP OF  
UNIVERSITY  
RESOURCES AND  
THE ENVIRONMENT**

# ENERGY DASHBOARD

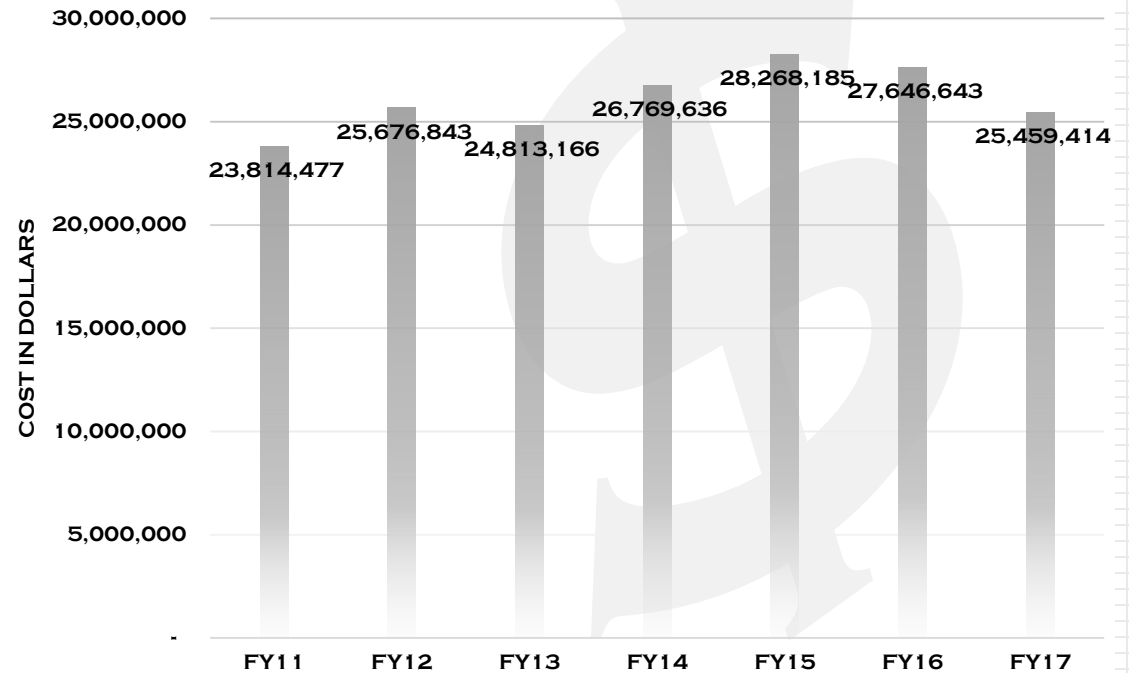
## TOTAL ENERGY CONSUMPTION



**2.04 TRILLION  
BTU**

**FY17 TOTAL PURCHASED ENERGY  
CONSUMPTION**

## TOTAL ENERGY COST

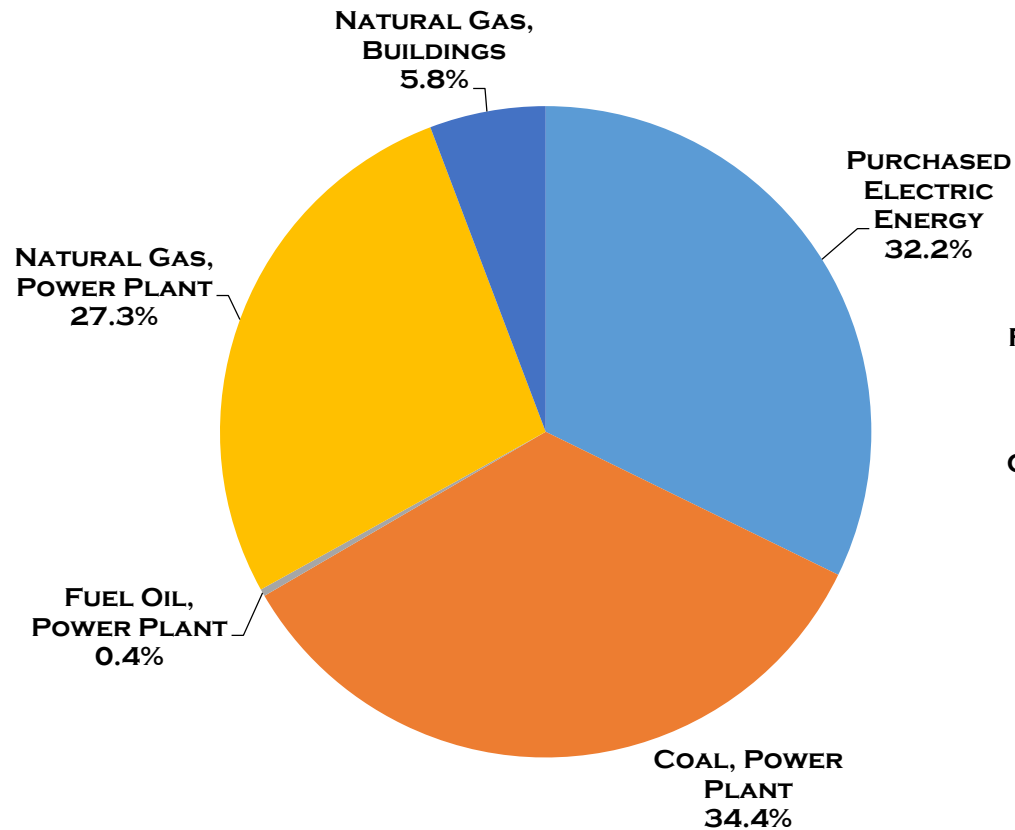


**\$25.5 MILLION**

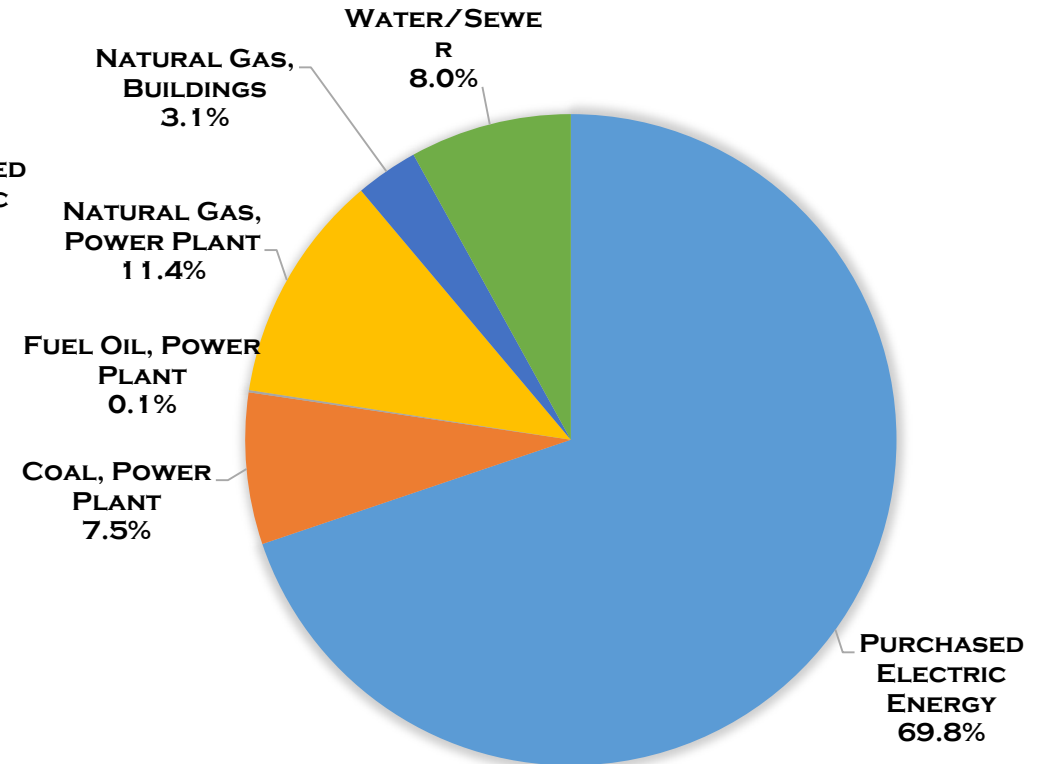
**FY17 TOTAL PURCHASED ENERGY COST**

# ENERGY DASHBOARD

## ENERGY BREAKOUT BY UTILITY (FY 2017)

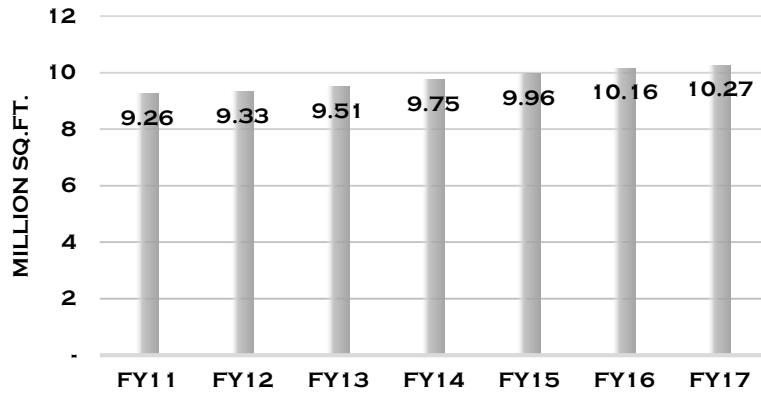


## COST BREAKOUT BY UTILITY (FY 2017)

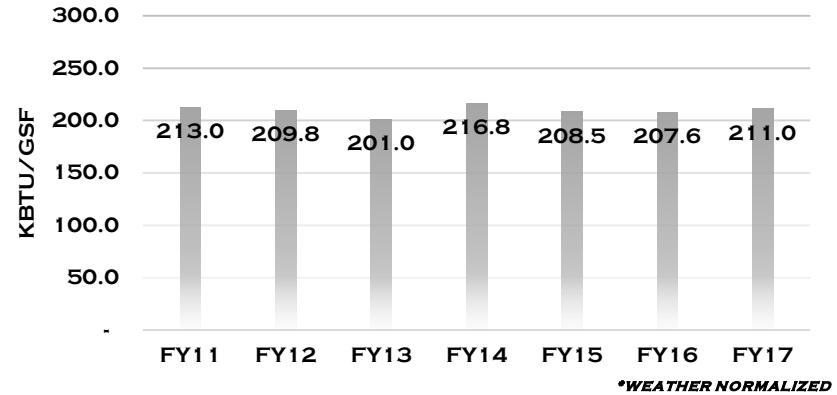


# ENERGY DASHBOARD

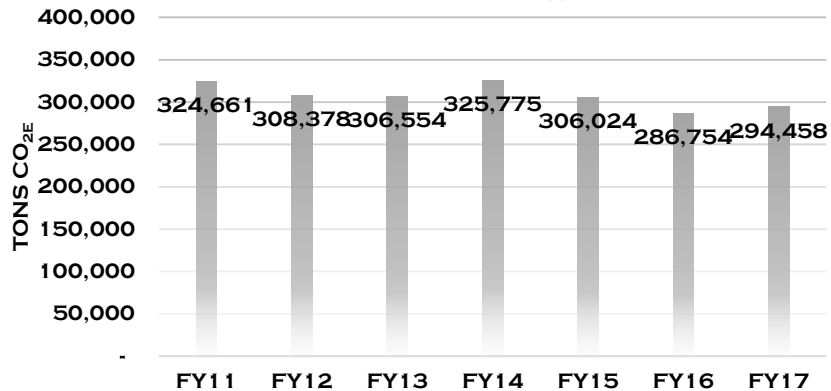
**MAIN CAMPUS GROSS AREA**  
MILLION SQ. FT.



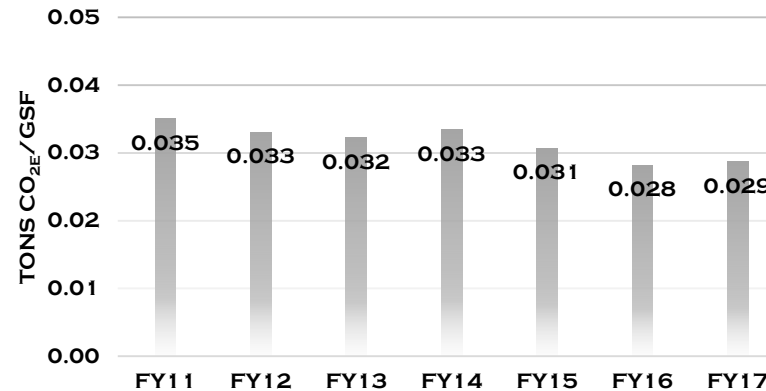
**ENERGY INTENSITY\***  
THOUSAND BTU/ SQ. FT.



**TOTAL CARBON FOOTPRINT**  
TONS CO<sub>2</sub>



**CARBON FOOTPRINT INTENSITY**  
TONS CO<sub>2</sub>/ SQ. FT.





# **ENERGY MANAGEMENT: ORGANIZATION AL COMMITMENT**

- **UNIVERSITY POLICY GUIDANCE**
- **ENERGY AND SUSTAINABILITY COMMITTEE**
- **CLIMATE ACTION COMMITMENT**
- **MASTER PLAN SCOPE CONSIDERATIONS**
- **OFFICE OF SUSTAINABILITY**
- **OFFICE OF ENERGY MANAGEMENT**



# Office of Energy Management

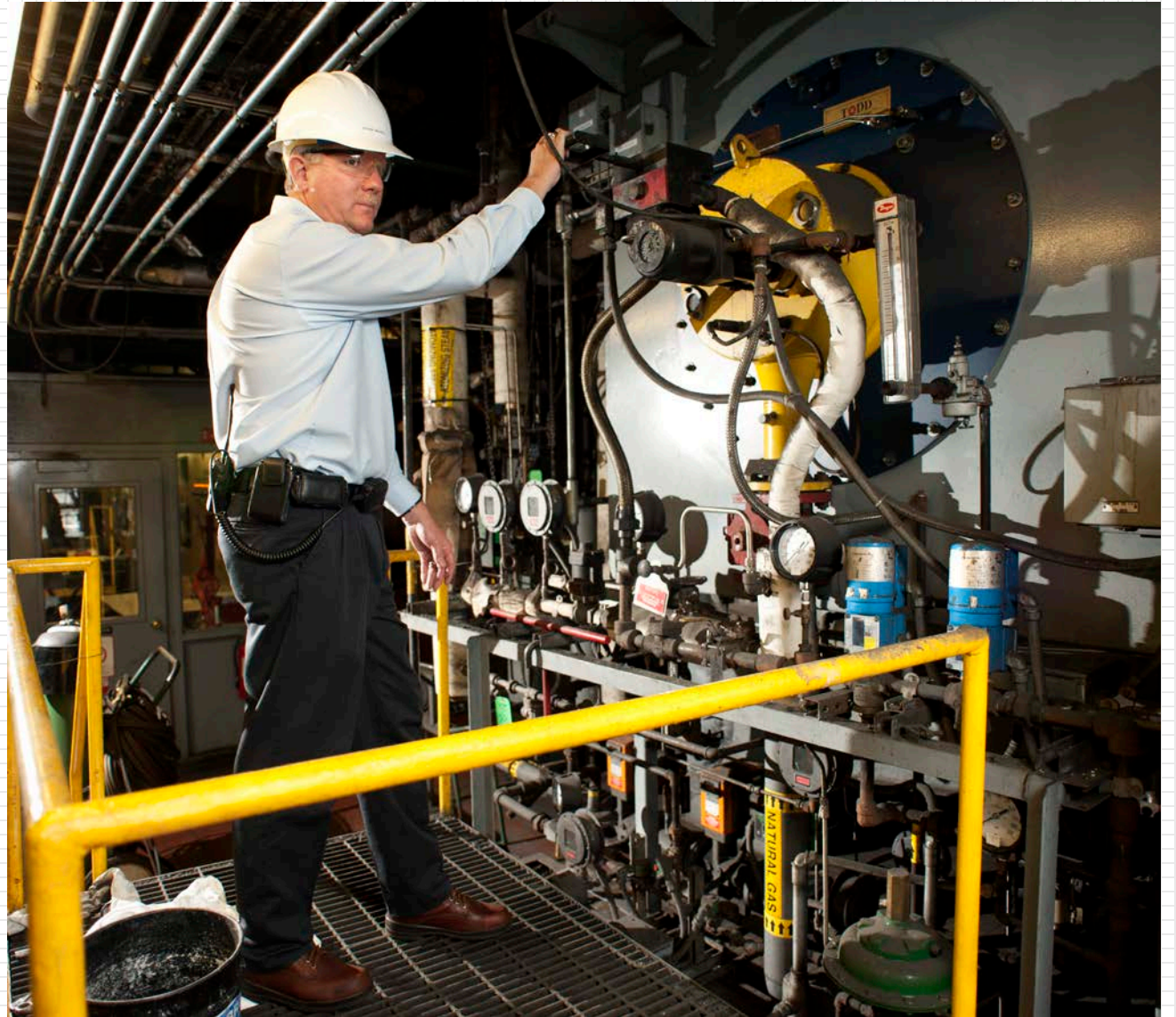
- MONITOR AND ANALYZE **ENERGY CONSUMPTION** ON CAMPUS
- ESTABLISH ENERGY-REDUCTION **GOALS** AND THE **ROADMAP** TO ACHIEVE THEM
- COORDINATE IMPLEMENTATION OF ENERGY **REDUCTION** PROGRAMS
- OVERSEE EXECUTION OF ENERGY **RETROFIT** PROJECTS
- VERIFY POST-RETROFIT ENERGY **SAVINGS**
- REPORT ENERGY **STATISTICS** TO VARIOUS STAKEHOLDERS





# ***ENERGY MANAGEMENT: KEY INITIATIVES***

- **INSTALLATION OF NEW, DEDICATED GAS LINE TO THE CENTRAL STEAM PLANT TO PROVIDE RELIABLE NATURAL GAS THAT WILL REDUCE DEPENDENCE ON COAL**
- **ADDITION OF NEW, HIGH-EFFICIENCY NATURAL GAS BOILER TO THE CENTRAL STEAM PLANT THAT WILL HELP INCREASE UTILIZATION OF NATURAL GAS AND IMPROVE ENERGY EFFICIENCY**
- **PERFORMANCE OF CAMPUS-WIDE ENERGY AUDITS AND BUILDING ENERGY BENCHMARKING**
- **ESTABLISHMENT OF A FIVE-YEAR ENERGY ACTION PLAN**
- **IMPLEMENTATION OF ENERGY CONSERVATION PROJECTS ALIGNING WITH THE ESTABLISHED FIVE-YEAR ENERGY ACTION PLAN**
- **ESTABLISHMENT OF IN-HOUSE ENERGY AUDIT TEAM**



# FIVE-YEAR ENERGY ACTION PLAN

- IDENTIFIED **50** “ENERGY HOGS” OR ENERGY INTENSIVE BUILDINGS
- REPRESENTING ONLY **35%** OF THE UNIVERSITY’S GROUNDS, THESE FACILITIES COLLECTIVELY ACCOUNT FOR APPROXIMATELY **70%** OF THE UTILITY COSTS ASSOCIATED WITH OPERATION OF THE MAIN CAMPUS
- FOLLOWING THIS STUDY, A COMPREHENSIVE FIVE-YEAR ENERGY ACTION PLAN WAS DEVELOPED TO CONCENTRATE ON **10** “ENERGY HOGS” PER YEAR





# ***FIVE-YEAR ENERGY ACTION PLAN***

## **KEY INITIATIVES**

- **CONVERSION OF THE NORTH CHILLER PLANT TO VARIABLE PRIMARY FLOW**
- **CHILLED WATER METERING**
- **STEAM METERING**
- **ENERGY MANAGEMENT AND FDD TOOL**
- **ENERGY AUDITS**
- **ENERGY RETROFIT PROJECTS**
- **EXISTING BUILDING COMMISSIONING**



# ***FIVE-YEAR ENERGY ACTION PLAN***

## **KEY METRICS**

- MORE THAN **\$5.5 MILLION** INVESTED IN FIRST TWO PHASES, AVG. SIMPLE PAYBACK OF **4.75 YEARS**
- PHASE THREE UNDERWAY, **\$3.7 MILLION** INVESTMENT AVAILABLE
- EXPECTED SAVINGS OF UP TO **\$6 MILLION** ANNUALLY UPON FULL INTEGRATION OF PLAN
- ACHIEVED ABOUT **14,851 TON** REDUCTION IN CARBON EMISSIONS TO DATE

## **OTHER BENEFITS**

- IMPROVEMENT OF **INDOOR AIR QUALITY** AND **ILLUMINATION**
- INCREASED LONGEVITY OF **MECHANICAL** AND **LIGHTING SYSTEMS**
- IMPROVEMENT OF THE **ENERGY ACCOUNTING** PROCESS



# ***ENERGY MANAGEMENT: ONGOING INITIATIVES***

- **VIRGINIA TECH GUIDELINES FOR ENERGY EFFICIENT DESIGN**
- **DESIGN AND CONSTRUCTION STANDARDS**
- **LEED® BUILDINGS**
- **ENERGY STAR®**
- **ENVIRONMENTAL PROTECTION AGENCY WATERSENSE REQUIREMENTS**
- **PJM DEMAND RESPONSE AND “LIGHTS OUT POWER DOWN!”**



# ***ENERGY MANAGEMENT: LIVING LABORATORY***

- PART-TIME **STUDENT EMPLOYEES** TO ASSIST WITH ON-GOING ENERGY EFFICIENCY INITIATIVES, DATA ANALYSIS, AND WEBSITE DEVELOPMENT
- VARIOUS **STUDENT ORGANIZATIONS AND GROUPS** ON CAMPUS ACTIVELY PROMOTE SUSTAINABILITY AND ENERGY CONSERVATION
- BRIDGE TO OFFICE OF SUSTAINABILITY **STUDENT INITIATIVES** AND **INTERNSHIP PROGRAM**





# THE FUTURE

- CONSTRUCTION OF A **NEW POWER PLANT**
  - LOCATION PRESCRIBED BY MASTER PLANNING
  - PRODUCTION, RESEARCH, INSTRUCTION IMPACTS
  - NATURAL GAS FUEL SOURCE WITH ADDITIONAL BAYS FOR OTHER SOURCES
- CHILLED WATER DISTRIBUTION **SYSTEM UPGRADE**
- EXPANSION OF **SENSING, METERING, MONITORING, AND CONTROLS**
- EXPANSION OF **LEED** PORTFOLIO
  - LEED PLATINUM AT MMTF (SUSTAINABILITY SHOWCASE)
- DEVELOPMENT OF A 5-YEAR **ALTERNATIVE ENERGY** ACTION PLAN



# Questions?



## **DESIGN PREVIEW FOR THE STUDENT-ATHLETE PERFORMANCE CENTER**

This partnership between Dining Services and the Department of Athletics seeks to create a 200-250 seat nutrition center centrally located within the athletics area of campus. This approximately 29,000 gross square foot renovation and new construction project, currently in schematic design, is intended to provide a competitive advantage for athletics. While available to all students, this facility will tailor its offerings towards the needs of athletes. Meal offerings will be designed to provide performance-based nutrition. Its capacity is also designed to serve the existing group of Virginia Tech athletes in close proximity to their training and performance spaces. This arrangement fosters community, supports athletic performance, and offers a flexible meeting and event space for related uses.



# Capital Project Information Summary – Student-Athlete Performance Center

## BUILDINGS AND GROUNDS COMMITTEE

March 26, 2018

### **Title of Project:**

Student-Athlete Performance Center

### **Location:**

This facility is a renovation of, and addition to, the existing Gordan D. Bowman Memorial Club Room (Bowman Room). This room is on the fourth floor of the Jamerson Athletic Center, located between Lane Stadium and Cassell Coliseum. Additional light renovation and minor construction will also occur on floors one through three.

### **Current Project Status and Schedule:**

The project is currently in the schematic design phase. Full construction is targeted to begin in summer 2019, with a potential for early groundbreaking for site work in late 2018. Occupancy is targeted in early 2021.

### **Project Description:**

This project supports overall recruitment and branding efforts by the Department of Athletics, while also providing another dining center to the campus population. Capturing views of the indoor practice facility, outdoor football practice field, and Lane Stadium will provide visual reinforcement of the athletics brand to users of the space. The facility will also be designed to meet best practices for sustainable design and operations. The total project budget is \$15.165 million, with the potential for an increase to \$16.682 million (contingent upon receipt of additional private gifts).

### **Brief Program Description:**

This project focuses on a partial renovation of, and addition to, the fourth floor of the Jamerson Athletic Center. On this floor, approximately 5,700 square feet of additional seating (including balconies) will be constructed. This figure also includes the enclosure of a portion of the existing roof to widen the entry corridor from Cassell Coliseum and to create limited office space. The approximately 10,000 square foot fourth floor renovation focuses on modification to, and or creation of, additional dining, servery, and kitchen space. The approximately 10,000 square feet of third floor renovations focus on enhancing structural stability to accommodate enhanced weight on the fourth floor. The scope of this renovation is expected to be both light and heavy, with further details emerging as design progresses. New elevator-related construction (of 565 square feet) will also occur. New construction on floors one and two focuses on the elevator shaft (for a total of 1,130 square feet). 1,200 square feet of additional renovation will also occur on these floors for elevator egress.

**Contextual Issues and Design Intent:**

Primary exterior materials include precast concrete, Hokie Stone, and a glazing system. The facade of the structure contains five separately accessible balconies.

**Architect/Engineer:**

Hanbury

**Construction Manager:**

To be determined

March 26, 2018



# **STUDENT-ATHLETE PERFORMANCE CENTER**



Board of Visitors Design Preview

## ■ **STUDENT-ATHLETE PERFORMANCE**

### **CENTER** Project Information

- **New Construction:** ~7,400 GSF
- **Renovation:** ~21,500 GSF
- **Delivery Method:** Design-Bid-Build
- **Funding:** \$15.165 Million (Total Project)
- **Design Phase:** Schematic
- **Construction Start:** Summer 2019\*
- **Targeted Occupancy:** Early 2021

# STUDENT-ATHLETE PERFORMANCE

CENTER  
Project Location



Site



# ■ STUDENT-ATHLETE PERFORMANCE

## CENTER

Existing Condition (Interior)



# STUDENT-ATHLETE PERFORMANCE

## CENTER

Existing Condition (Exterior)



# STUDENT-ATHLETE PERFORMANCE CENTER

Site Plan

Student-Athlete Performance Center





# STUDENT-ATHLETE PERFORMANCE

## CENTER

Interior Rendering (View toward Lane Stadium)



View toward Lane Stadium

Service

Dining

# STUDENT-ATHLETE PERFORMANCE CENTER

FOURTH FLOOR PLAN

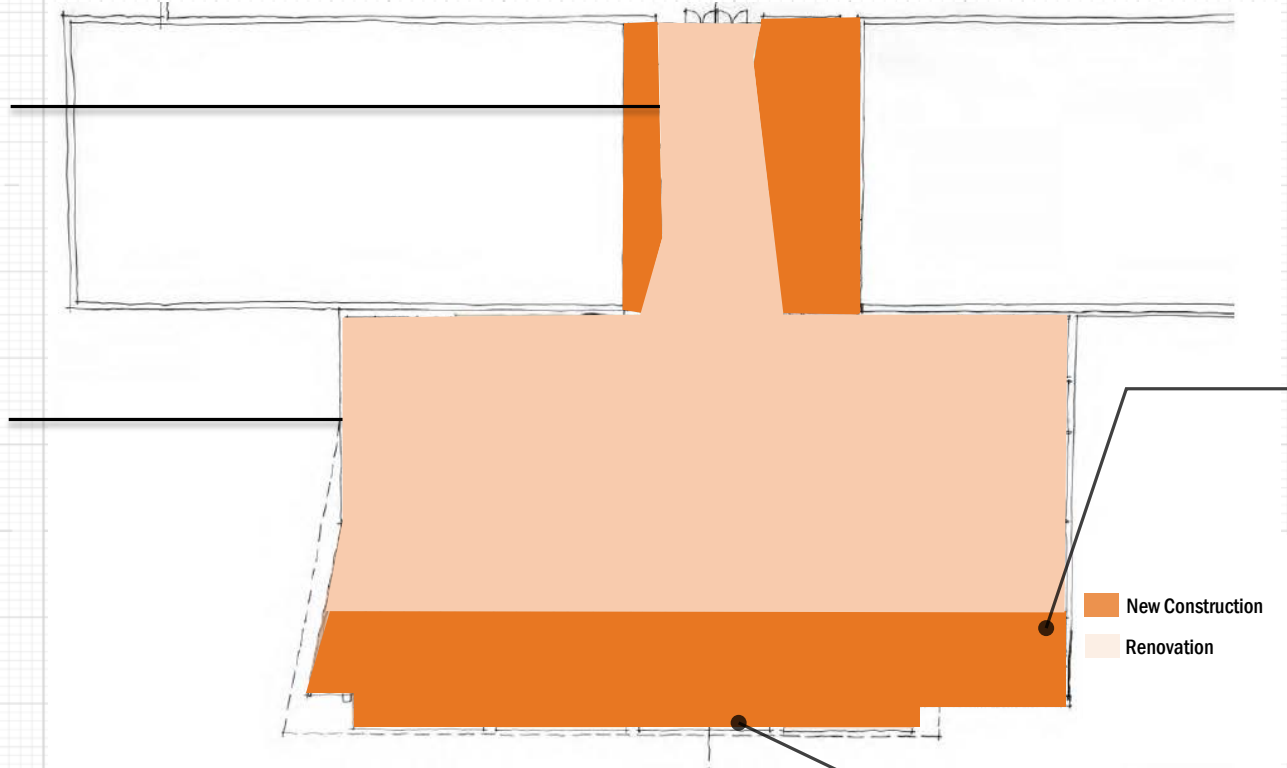
Access to  
Cassell  
Coliseum

Entry

Freight  
Elevator

New Construction  
Renovation

Exterior Balconies



# STUDENT-ATHLETE PERFORMANCE

## CENTER

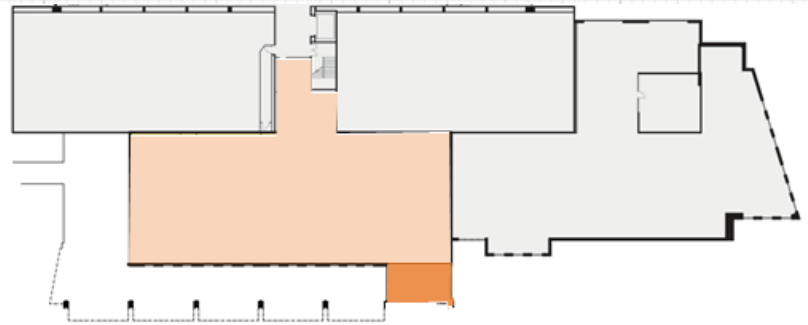
First Floor





Second Floor



Third Floor



 New Construction  
 Renovation

## ■ **STUDENT-ATHLETE PERFORMANCE**

**CENTER**  
Recommendation

- That the Design Preview graphics be approved, and authorization be provided to continue with the project design consistent with the drawings shown.