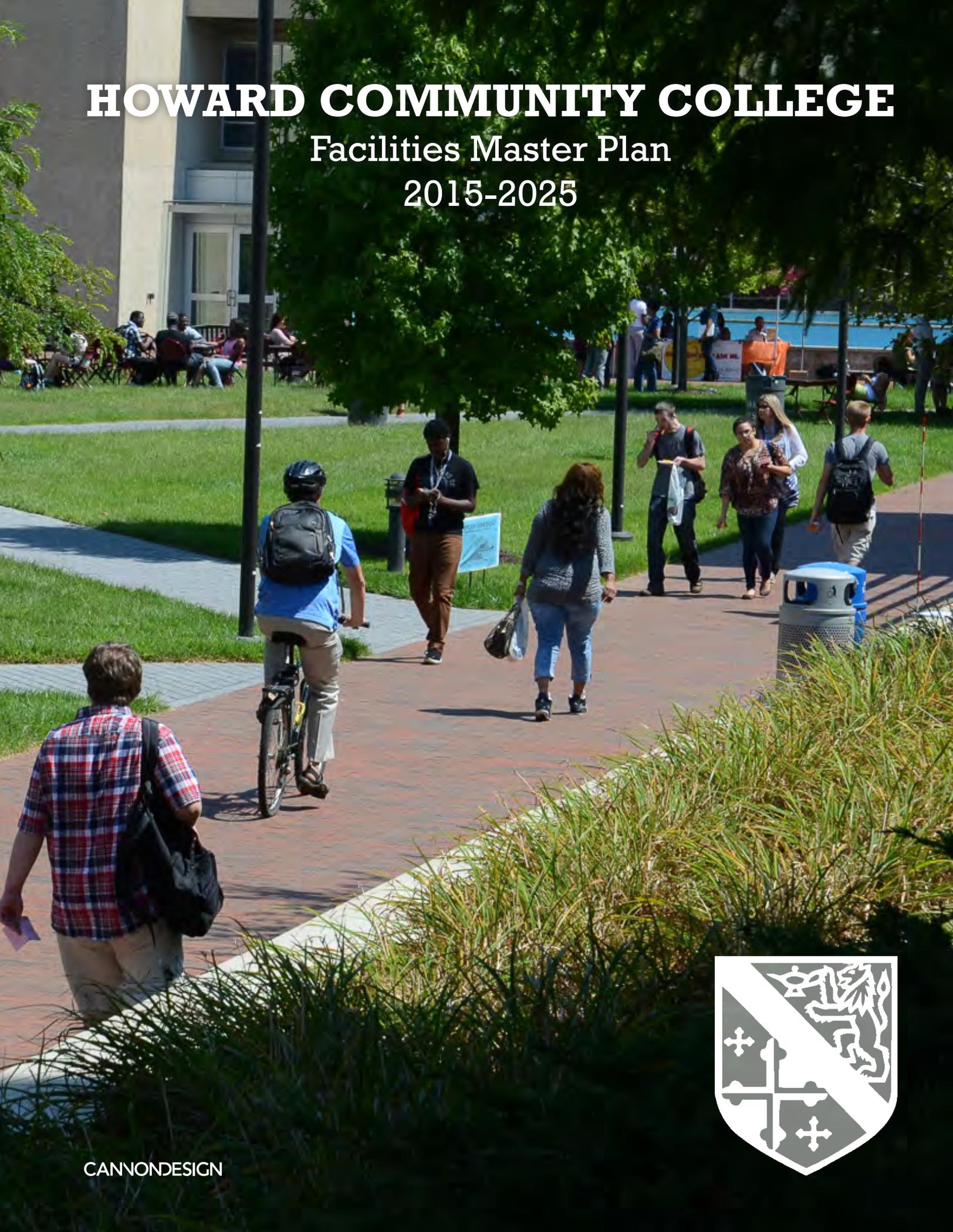


HOWARD COMMUNITY COLLEGE

Facilities Master Plan

2015-2025



HOWARD COMMUNITY COLLEGE

FACILITIES MASTER PLAN

2015-2025

Acknowledgements

Howard Community College embarked on an exciting year-long campus master planning process to establish a framework for the orderly development of all capital improvements that support the mission, vision, values, and strategic initiatives of the college. The successful master planning process included a comprehensive look at the physical environment of the campus and how that environment helps the college succeed in its educational mission. The campus master planning initiative provided an opportunity for the entire community to participate in shaping a critical aspect of the college's future.

The facilities master plan was prepared with support and input from the college community, including the Board of Trustees, the college's faculty, staff and students, and the Steering Committee. The consultant team acknowledges this important input, with many thanks to the following:

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CONSULTANT TEAM

CannonDesign
Site Resources, Inc.
Symmetra Design

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01

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

CAMPUS PROFILE

Howard Community College (HCC) is a public two-year institution serving the educational needs of the citizens and employers in Howard County since 1970. The college is conveniently located mid-way along the Baltimore-Washington corridor. With its slogan, "You Can Get There from Here," the college has forged a variety of partnerships to offer career and transfer programs to nearly 30,000 students annually. Howard Community College ranks high among its peers with a 54.2 percent four-year transfer rate and offers a campus experience on par with many four-year schools. The 119-acre campus, while landlocked, has strategically expanded to accommodate growth while maintaining a rich ecosystem with stunning vistas.

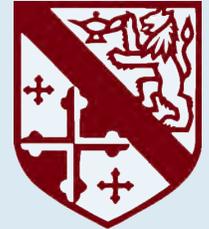
PURPOSE

A master plan is a comprehensive long-term strategy that provides a framework for the orderly development of all capital improvements to support the role, mission and educational plans of the college. Facilities master plans in the state of Maryland are required in order to establish and verify an institution's five-year capital improvements plans and annual capital budgets.

PLANNING METHODOLOGY AND PROCESS

This document encompasses the assessment of several areas that are aimed at understanding the immediate and future needs of Howard Community College. As a part of this master planning process, monthly steering committee meetings were held and a series of focus group meetings were conducted with each academic division and non-academic group. This collaborative process involving representatives from all constituency groups throughout campus, created a thoughtful and holistic vision for the facilities master plan update.

Focus group meetings were used to generate discussion on the campus' mission and vision, future program changes, technology across the campus, teaching and learning environments, and the needs for campus support and staff. Community members were invited to the campus to give input on the plan. Information generated from these discussions assisted with identifying synergies between divisions and campus support areas.



MISSION, VISION, AND VALUES

Mission: *Providing pathways to success*

Vision: *A place to discover greatness in yourself and others*

Values: *Innovation, Nurturing, Sustainability, Partnerships, Integrity, Respect, Excellence, Service*

STRATEGIC GOALS (2015-2020)

Student Success, Completion, and Lifelong Learning

Organizational Excellence

Building and Sustaining Partnerships



Steering Committee Visioning Session

SUMMARY OF PLANNING DATA

In order to provide targeted growth recommendations, a part of the master planning process is to develop a space needs analysis based upon enrollment projections. The economy has experienced a major recession since the last master plan completed in 2010. Compounded by the aging population and continued decline of graduating high school seniors nationwide, the next five years of enrollment will see a change in trend lines.

- Student enrollment is projected to grow 25 percent by 2025.
- Full-time enrollment is projected to grow 39 percent while part-time enrollment is projected to grow 17 percent
- Full-time day equivalents (FTDE) are projected to grow 26 percent.
- As full-time enrollment is projected to grow so will student credit hours (SCH).
- Weekly student contact hours (WSCH) are projected to increase 18 percent and will be increasingly lab-based as curriculum delivery evolves over the next 10 years.
- Faculty and staff growth is needed to support projected enrollment. HCC continues to target a 50/50 ratio for full-time to part-time faculty. Realities of funding sources limit these targets.
- While the library staff has significantly reduced space dedicated to library stacks, HCC still has a deficit in student study spaces associated with the library relative to national trends.
- As seen in the past, HCC is unable to build facilities to keep up with current and projected needs. The next ten years will show a continued deficit of space for HCC.

ENVIRONMENTAL SCAN

The purpose of the environmental scan is to review and assess factors and trends that will influence current and future academic programs and facilities needs at Howard Community College. Reviewing national trends for local applicability in conjunction with the environmental scan produced by the HCC office of planning, research and organizational development (PROD) provided the following:

- The current catchment zone for HCC is primarily within Howard County and is largely capturing a daytime student enrolled in transfer studies.
- The occupational programs have seen growth in recent years and may continue to grow as further emphasis is placed nationwide on the creation of a middle-skills workforce.
- The recent general education curriculum realignment clarified pathways to key transfer institutions and better aligned strategies for completion and remediation requirements.
- Continuing to create industry connections among faculty and students leads to higher transfer rates and job placement.

CAMPUS ASSESSMENT

The campus assessment included four strategic areas that contributed to building a comprehensive plan for future growth. The four key areas are as follows:

Building & Grounds Assessment

- The Hickory Ridge and the athletics and fitness center buildings have been well maintained by HCC over the last several years but are unable to meet current and future programmatic demands. Continued maintenance will not alleviate the state of the current building systems.
- Several exterior envelopes, as identified in the master plan, require renovation and selective upgrades to existing parapets but the use of the facilities are not impeded by these needs.
- As the campus development continues, consideration should be placed on upgrading and maintaining accessible pathways, landscape conditions, and preservation of existing campus natural habitats.
- HCC has demonstrated its commitment to the preservation and enhancement of the forest conservation areas on campus.



HCC unveiling Great College to Work For, 2014

Technology & Infrastructure

- There is an increased demand placed upon the existing wireless network that has exceeded the technologies ability to provide throughput connection.
- The expectation for connectivity through wireless networks will need to be managed. Current wireless will need robust capabilities and as it is currently residential in nature for both speed and bandwidth.
- In order to support full south campus development, infrastructure design and implementation will need to be coordinated carefully between built and natural landscapes.

Sustainability

- Howard Community College has a strong commitment to sustainability and should continue to develop programs that involve students, faculty and staff.
- Sustainable measures should continue to be incorporated during the planning phases of future building projects.
- In order to achieve compliance with state stormwater regulations, many open areas around proposed buildings will need to be designated specifically for stormwater management.

Signage

- It is recommended that HCC integrate the signage master plan on a project-by-project basis.
- HCC should continue to implement a strategy for signage that is clear, consistent, and intuitive to navigate.

VEHICULAR & PEDESTRIAN CIRCULATION

The master plan studied both vehicular and pedestrian circulation. As a result of these intensive studies, several key areas for development were identified in order to improve circulation for both mode of transit.

Vehicular

- The main campus roadway is proposed to be relocated to the periphery of campus in order to reduce vehicular and pedestrian conflict zones.
- The entrance from Hickory Ridge Road is proposed to have a new traffic circle to alleviate congestion similar in style to that of the Little Patuxent Parkway entrance.
- Howard Community College will need to plan additional parking garage locations to meet current and projected enrollment growth for faculty, staff, and students.

Pedestrian

- An Americans with Disabilities Act (ADA) accessible bridge connection is proposed to support pedestrian access between north and south campuses.
- Each proposed building project should continue to consider pedestrian access in relation to both signage and site development.



Proposed 2025 Master Plan Vision

- Existing Building
- Proposed Building
- Demolished Building
- Existing Parking Garage
- Proposed Parking Garage

PLAN RECOMMENDATIONS

This final illustrative plan builds upon the collective work of the steering committee and master planning teams. It is a plan that reflects the established campus planning principles, accommodates future growth, creates a cohesive main campus, and maximizes land use while honoring the natural habitats on campus. This was accomplished by the following:

- Eliminating all pedestrian & car conflict zones through a campus road re-alignment extending to south campus.
- Strategic placement of new parking structures relative to road re-alignment.
- Use of buildings as gateways to frame entry points and create a sense of arrival.
- Placement of a campus hub and pedestrian bridge to physically and programmatically tie north and south campuses together.
- Strategic placement of new buildings on south campus to eliminate feeling of “distance” while also preserving existing pond and surrounding natural habitat.
- Comprehensive analysis and design of future storm water management and other sustainable initiatives.
- Definition of new green open spaces which build on framework of existing campus quads.
- Celebration of commitment to athletics, recreation, and wellness through placement of athletics facility and closer proximity to fields.

PROPOSED PLAN

The proposed plan for Howard Community College will be separated into three phases that recognize the capital funding cycles for the State of Maryland. Below are listings of the proposed projects:

PHASE 1 (2015-2020)

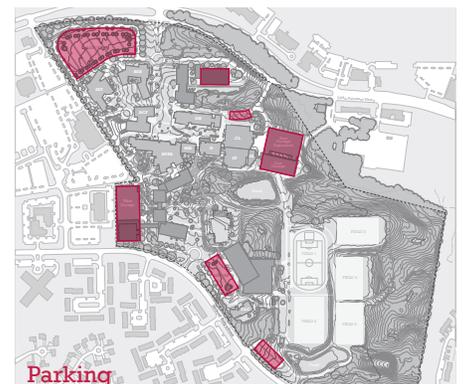
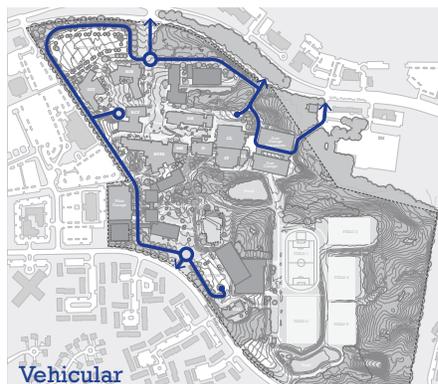
- Project 1: Mathematics & Entrepreneurial Center with Lot F Road Realignment
- Project 2: Athletics Facility with South Campus Traffic Circle & Road Realignment
- Project 3: North Parking Garage and Plant Operations Building

PHASE 2 (2020-2025)

- Project 4: Campus Hub & Pedestrian Bridge
- Project 5: General Academic Building with Pedestrian Bridge connection
- Project 6: Continuing Education Building

PHASE 3 (2025+)

- Project 7: West Parking Garage Expansion
- Project 8: Student Life Building with Academic Component



02

INTRODUCTION



Existing Campus Plan

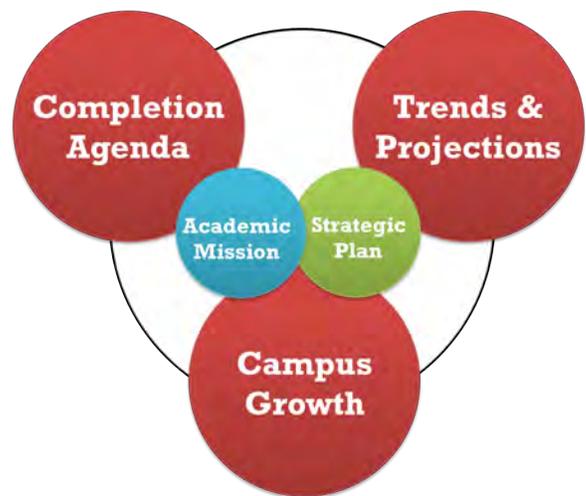
- Existing Building
- Existing Parking Garage

INTRODUCTION

Howard Community College (HCC) engaged CannonDesign to conduct a facilities master plan (FMP) update for the main campus in Columbia, MD. This 12-month process examined several key areas in order to provide Howard Community College with a plan for future campus growth.

The process investigating these areas solidified guiding principles, established and approved with College collaboration, and provided a holistic view of campus growth.

The facilities master plan (FMP) serves as a funding and approval basis for capital improvements. This is the case for all Maryland community college's major construction projects included and outlined in the facilities master plan. The FMP scope is broad, covering topics from basic space needs, to technology, to traffic demand management, and site development. The resulting document addresses the quantitative or qualitative improvement needs, as well as campus developments for short and long-term impacts.



Components of a Comprehensive Master Plan

The Facilities Master Plan (FMP) is the foundation of community college capital improvements program. Each institution's FMP establishes orderly capital project development that supports the Institutional five-year Capital Improvements Program (CIP) and Annual Capital Budget Request.

(Code of Maryland Regulations (COMAR), Title 13B Maryland Higher Education Commission, Subtitle 07 Community Colleges, Chapter 4 Construction Procedures, Regulation 01 Funding)

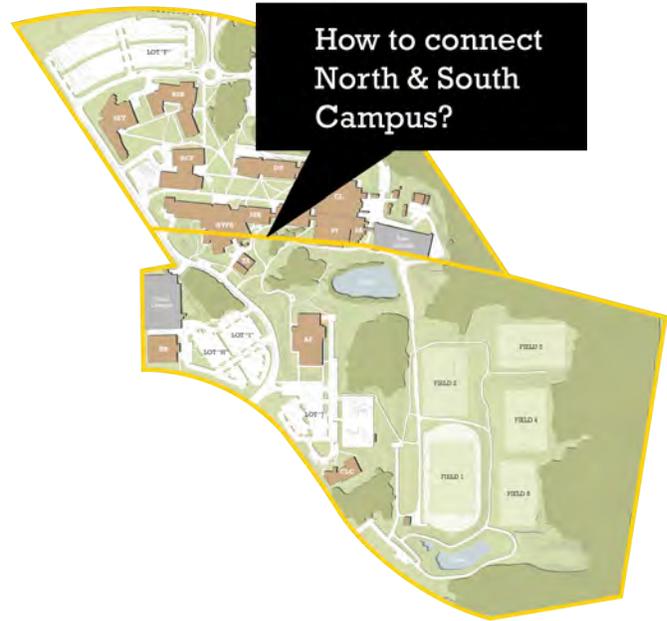
WHY IS THIS MASTER PLAN UNIQUE?

Facilities master plans in the state of Maryland are required in order to establish and verify an institution's five-year Capital Improvement Program and Annual Capital Budget. A building project may take many years as it moves from conception to completion, often overlapping budgets and master plan cycles. Therefore a successful master plan should provide direction and intent yet be flexible and adaptable enough to accommodate unforeseen changes.

Columbia, Maryland is home to Howard Community College and is one of the most notable planned communities. The planning approach, to have a series of land use nodes connected by vehicular and recreational pathways, created a specific site for the HCC campus. The main campus at Howard Community College is therefore constrained by perimeter roadways and land use conservation sites with 30% of land set aside in a conservation zone. There is little developable land left within the existing site extents. Therefore, future development must be thoughtful and precise.

Much of recent campus development has occurred in the North Campus around the original campus Quad. With the opening of the new Health Sciences building and the recent ground breaking of the Science, Engineering, and Technology building, there is very limited developable land left in the North of campus.

This master plan therefore looks closely at the future of south campus development. A major need for South Campus is a future campus road realignment which will provide a large area of developable land. This significant opportunity for land development will afford Howard Community College the space necessary for future growth. This future growth was examined in detail in order to bridge both North and South campus. A strong emphasis was placed on the connection between them; how and why one moves between the two both physically and programmatically.



(above) Conceptualizing the Future of South Campus
(below) Campus Zones

PROCESS

This master planning process was organized into two parts, each containing three phases. The first part focused on collection, assessment, and data analysis of existing conditions. The master plan team surveyed the main campus, reconfirming classroom/class laboratory and departmental locations. The team also met with campus representatives to gather information on campus operations, campus needs, and academic profiles as a way to better understand faculty, staff and students.

The second part of the planning process presented potential concepts by the master planning team. It concluded with concept refinement and extensive collaboration and review with the Steering Committee, the President’s Team, and the Board of Trustees.

The Steering Committee is a group of 32 people representing each constituency group on campus.

The Steering Committee met on a monthly basis for presentations on key planning topics, group discussions, and brainstorming activities. A series of focus group discussions distilled key campus needs and enabled the planning team to generate consensus on planning priorities and project development. In addition to Steering Committee presentations, the planning team presented the plan as it developed throughout the process to the President’s Team, the Board of Trustees, and at a Community Breakfast where members of the community came and shared their thoughts on future development.



Master Plan Timeline & Tasks



Proposed 2025 Master Plan Vision

- Existing Building
- Proposed Building
- Demolished Building
- Existing Parking Garage
- Proposed Parking Garage

CAMPUS PLANNING PRINCIPLES

A master plan is a comprehensive long-term strategy which provides a framework for the orderly development of all capital improvements to support the role, mission and educational plans of the college. This document is the compilation of information aimed at understanding the immediate and future needs of Howard Community College. While the information varied in content and topic, it revealed a list of campus needs, concerns, and interests which were confirmed by the Steering Committee and summarized in the following list of campus planning principles. The campus planning principles strive to reflect the Mission, Vision, and Values of the College as well as capture its Strategic Goals for 2010-2015.

Howard Community College 2015-2025 Strategic Goals

- Student success, completion, and lifelong learning
- Organizational excellence
- Building and sustaining partnerships

Campus Planning Principles

- Celebrate landscape as a natural asset to campus.
- Reconfigure entry points as gateways to campus.
- Extend character of North campus to South campus and create strong connectivity.
- Enhance student experience through student activity zones.
- Create enhanced model access.

These campus planning principles in conjunction with key programmatic drivers shape the 10 year vision for this campus master plan. Furthermore, these planning principles became a set of performance criteria by which individual ideas and plan concepts were considered throughout the development process.



Celebrate
landscape as
natural asset to
campus.



Reconfigure
entry points as
gateways to
campus.



Extend
character of
North to South
Campus and
create strong
connectivity.



Enhance
student
experience
through student
activity zones.



Create
enhanced moda
access.

03

CAMPUS OVERVIEW

CAMPUS OVERVIEW

CAMPUS HISTORY & DEVELOPMENT

Howard Community College is a public two-year institution serving the educational needs of the citizens and employers in Howard County since 1970. The college is conveniently located mid-way along the Baltimore-Washington corridor. With its slogan, “You Can Get There from Here,” the college has forged a variety of partnerships to offer career and transfer programs to nearly 30,000 students annually. Howard Community College ranks high among its peers with a 54.2 percent four-year transfer rate and offers a campus experience on par with many four year schools. The 119 acre campus, while landlocked, has strategically expanded to accommodate growth while maintaining a rich ecosystem with stunning vistas.

SATELLITE LOCATIONS

There are also satellite campuses located in East Columbia, Laurel, and Mt. Airy. The Charles Ecker Business Training Center in Columbia focuses on business training and workforce development. The Laurel College Center is a regional higher education facility with multiple two-year and four-year partners located in Laurel, Maryland. The Mt. Airy Center for Health Care Education is a collaboration with Carroll and Frederick community colleges located in Mt. Airy, Maryland.

“Community colleges are the gateway to the future. Howard Community College is an example of everything we want for our higher education facilities in Maryland,”

-U.S. Senator Barbara A. Mikulski



Howard Community College Today

1993**2002****2005**

HISTORIC GROWTH

In 1966, HCC was founded by the Board of Education in Howard County, formally authorized by the Howard County Commissioners and established by the State as Maryland's fourteenth community college. The planned community of Columbia, which surrounds the HCC main campus, was founded in 1967. The housing development was the vision of pioneering urban planner and free enterprise-based philanthropist James Rouse. The new city typology was unprecedented and planned by an assemblage health, family life, education, recreation, government, transportation and employment experts. Columbia's emerging concept was a multi-faceted city with local accessibility and familiarity, supporting up to 100,000 residents within 10 self-contained villages.

In a mutually beneficial relationship, the College benefitted from some degree of built-in enrollment and growth and Columbia could offer affordable postsecondary education options to new residents. The ebb and flow of HCC's enrollment since its inception serves as a mirror for the state of the surrounding community, greater Columbia and the country as a whole. HCC's profile and identity has remained strong as a quality institution supporting the continuum of education and lifelong learning. Matching national trends, Howard Community College, during times of economic downturn has filled classrooms, providing degrees and supplemental training for employment; while an upswing in economy and plentiful jobs has been

exhibited as slight dips in enrollment.

Due to the planned nature of the community, the education of its population, the entrepreneurial business spirit and the proximity to Baltimore and Washington DC, Howard County has been and is today considered one of the most desirable areas to live in the U.S.

CAMPUS DEVELOPMENT

EARLY 1970S

Three years following the founding of the college, a ground-breaking ceremony was held for the construction of a new structure named the Learning Resources Center on a 119 acre property sold by Alfred Bassler his share of his father's 400 acre Cedar Lane farm. This flagship building, which was thereafter dedicated to Senator James Clark Jr., would serve as the colleges' core academic facility for a number of years.

1975-1985

The college's first campus master plan in 1974 reflected an optimistic outlook for growth over the next ten years due mostly to the simultaneous opening of James Rouse's planned community of Columbia. In the span of a few years starting in 1976, a number of new buildings were constructed on campus including the Nursing Building, the Athletic & Fitness Building, and the McCuan Hall & Smith Theatre. These facility additions to the campus would allow HCC to continue to grow as a robust and quality education offering for the surrounding population.

2008**2011****2014**

Aerial Views of Howard Community College Campus 1993-2014

1982 UPDATE

An update to the 1974 master plan was executed which specifically revised implementation as part of Phase Three. Included in this plan update was a Community Education building, Student Center, Technical Arts Building (ST) and an expansion of surface parking on the then Grand Prix Field.

1985-1995

A notable enrollment growth at HCC continued from 1985 to 1990. The Science & Technology (ST) building was constructed in direct response to this increase by adding capacity and career type specialization. A larger student body also meant a greater critical mass that warranted adding campus life features including a new Student Activities Building. The Hickory Ridge office building and property were acquired in the early 1990s as added capacity for the college.

1995-2005

Although several support facilities including a carpentry shop, storage building, temporary arts modular buildings, and the Children's Learning Center were added to the campus prior to 2002, the next significant academic facility for HCC was the design and construction of the Mary Ellen Duncan Hall of English, Languages and Business in 2003. Although the addition of purpose-built contemporary classrooms and computer labs was a notable addition to the physical plant, it was the siting of Duncan Hall that was perhaps the most significant imprint on the campus as its position defined and enclosed what would from then on be considered the main quadrangle of the college.

2005-2010

Just as significant was the design and construction of the new Horowitz Visual & Performing Arts (HVPA) Center in 2006. HVPA's scale and form as the new cultural hub of Downtown Columbia marked the school's commitment to the Arts & Humanities as well as to attract and impress first-time visitors to the campus.

Rounding out what would be several years of significant and warranted additions to the campus, was the design and construction of the new Student Services Hall in 2007. As a major non-academic facility, the addition marked an important step for HCC as a quality institution catered to supporting the myriad of learning and campus life needs of today's community college student.

2010-TODAY

The addition and placement of RCF building on the Columbia Main Campus not only provided a reception and 'front door' facility for the campus' main entry access, but also served as the campus 'hinge' facility in anticipation of what is referred to as the build-out of the 'North Precinct'. The design and construction of the new Health Services Building in 2013 marked the first of two buildings that would eventually comprise this new section of the HCC campus.



MISSION, VISION, AND VALUES

Mission: *Providing pathways to success*

Vision: *A place to discover greatness in yourself and others*

Values: *Innovation, Nurturing, Sustainability, Partnerships, Integrity, Respect, Excellence, Service*

STRATEGIC GOALS (2015-2020)

Student Success, Completion, and Lifelong Learning

Organizational Excellence

Building and Sustaining Partnerships

ACADEMIC PROFILE

Howard Community College opened in the fall of 1970 with just 600 students enrolled. Today, HCC has over 10,000 credit students supported by seven academic divisions and an additional 16,000 individuals seeking personal or professional continuing education.

The academic divisions are as follows:

- Arts and Humanities
- Business and Computer Systems
- English and World Languages
- Health Sciences
- Mathematics
- Science, Engineering, and Technology
- Social Sciences and Teacher Education

These divisions offer 153 areas of study leading to one of the following degrees or certificates:

- Associate of Arts transfer degree (AA)
- Associate in Applied Science (AAS)
- Associate of Arts in Teaching (AAT)
- Associate of Science in Engineering (ASE)
- Employment Proficiency Certificate
- Enhanced Skills Letter of Recognition

In 2013, Howard Community College awarded 1,171 degrees or certificates. The following are the five degrees which accounted for 86% of the total associate degrees awarded in 2013:

- Arts & Science Transfer (20%)
- General Studies Transfer (43%)
- Nursing (15%)
- Business Administration Transfer (4%)
- Information Technology (3%)

Of the lower division certificates which were awarded in 2013, the following amounted to 54% of the total certificates awarded:

- Biomedical Engineering (19%)
- Licensed Practical Nursing (12%)
- Electronics Tech (10%)
- Network Administration (8%)
- Transfer Studies (8%)

Howard Community College produced 2% of the total degrees produced in Maryland in 2013. Of the sixteen Maryland Community Colleges, Howard Community College produced 8% of these total degrees. This market share of degrees and certificates amongst the Maryland Community Colleges has grown from 4% to 8% in the last ten years. In 2013 the following degree programs produced more than 60% of the total degrees produced by the sixteen Maryland community colleges:

Associate Degrees

- Culinary & Hospitality Management
- **Computer Engineering**
- **Biomedical Engineering**
- **Computer Aided Design Technology**
- General Studies Transfer
- **Healthcare for the Professional**
- **Cardiovascular Technology**
- Entrepreneurship

Certificates

- Culinary & Hospitality Management
- **Biomedical Engineering**
- Transfer Studies
- **Cardiac Monitoring and Analysis**
- **Advanced Cardiovascular Imaging & Intervention**

With the recent opening of the new Health Sciences building and the forthcoming Science, Engineering, and

Technology building programs which are in bold should continue to see growth and degree production. The Culinary & Hospitality programs will also see growth following the forthcoming renovation of the Nursing & ST buildings. Finally, Entrepreneurship is a program which has been designated as

an emerging program within this master plan. This program will be enhanced by the proposal of new incubator space and the repositioning on campus to better align with synergies on campus and within the county.

Trends in Degrees & Certificates by Program - MHEC Institutions 2000-2013

	CIP	Program	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013			
																HCC	MD	%	
Associate Degree	110101 Total	COMPUTER SCIENCE TRANSFER	3	4	8	12	8	6	9	5	5	2	11	12	13	8	130	8%	
	110901 Total	NETWORK ADMINISTRATION	4	7	5	2	4	1	1	2	0	0	4	6	4	6	48	13%	
	120504 Total	CULINARY MANAGEMENT	0	0	0	0	0	0	0	1	3	3	6	5	3	2	3	100%	
		HOSPITALITY MANAGEMENT	0	0	0	0	0	0	0	0	4	4	3	3	4	1			
	130101 Total	TEACHER EDUCATION TRANSFER	12	20	23	27	28	29	14	16	20	16	16	20	24	24	141	17%	
	131202 Total	ELEM EDUC/ELEMENTARY SPEC EDUC (AAT)	0	0	0	0	6	5	11	6	13	8	14	18	17	15	213	7%	
	131210 Total	EARLY CHLDHD ED/EARLY CHLDHD SPC ED	0	0	0	0	0	0	0	5	7	6	6	3	10	6	111	5%	
	131306 Total	SECONDARY EDUCATION-ENGLISH (AAT)	0	0	0	0	0	0	0	0	0	0	0	5	1	2	9	22%	
	131311 Total	SECONDARY EDUCATION - MATHEMATICS (AAT)	0	0	0	0	0	0	0	1	0	0	0	1	1	1	8	13%	
	131323 Total	SECONDARY EDUCATION - CHEMISTRY (AAT)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0%	
	131329 Total	SECONDARY EDUCATION - PHYSICS (AAT)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0%	
	131330 Total	SECONDARY EDUCATION-SPANISH (AAT)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	11	0%
	140101 Total	ENGINEERING TRANSFER	2	6	2	6	5	10	4	5	5	7	3	6	4	10	203	5%	
	140901 Total	COMPUTER ENGINEERING (ASE)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	67%
	141001 Total	ELECTRICAL ENGINEERING (ASE)	0	0	0	0	0	0	0	0	0	0	0	1	2	3	13	23%	
	150303 Total	ELECTRONICS TECH	1	0	1	1	2	0	5	1	2	1	0	0	2	2	30	7%	
	190401 Total	BIOMEDICAL ENG	3	0	3	2	1	4	0	3	3	1	6	10	3	16	16	100%	
	151202 Total	COMPUTER SUPPORT TECHNOLOGY	10	5	5	9	6	1	1	6	1	4	3	2	2	3	29	10%	
	151301 Total	COMPUTER AIDED DESIGN TECH	1	4	4	3	6	5	3	2	4	2	1	9	7	2	3	67%	
	159999 Total	PHOTONICS TECHNOLOGY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	95	0%
	190708 Total	EARLY CHILDHOOD DEVELOPMENT	4	3	0	4	5	4	3	5	2	3	7	5	7	9	97	9%	
	240101 Total	ARTS & SCIENCES TRANSFER	53	63	57	69	86	97	102	103	127	112	116	172	190	210	1,540	14%	
	240102 Total	GENERAL STUDIES TRANSFER	41	66	64	96	124	131	146	133	185	180	204	341	372	461	654	70%	
	430107 Total	POLICE SCIENCE	0	0	0	0	0	0	0	0	0	3	5	3	1	0	273	0%	
	460499 Total	CONSTRUCTION MANAGEMENT	0	0	0	0	0	0	0	0	0	0	0	1	0	0	18	0%	
	510799 Total	HEALTH CARE FOR THE PROFESSIONAL	0	0	0	0	1	2	1	3	0	1	2	1	1	2	2	100%	
	510901 Total	CARDIOVASCULAR TECH	6	6	3	1	1	3	7	5	13	5	2	4	9	4	4	100%	
	510904 Total	EMT/PARAMEDIC	0	0	1	2	3	2	5	2	6	4	3	6	8	2	41	5%	
	510907 Total	RADIOLOGIC TECHNOLOGY	0	0	0	0	0	0	0	0	0	0	18	10	10	14	158	9%	
	513801 Total	NURSING	54	27	42	45	38	59	89	67	129	111	121	131	158	162	1,726	9%	
	820101 Total	BUSINESS ADMINISTRATION TRANSFER	31	34	36	38	42	38	37	50	57	75	67	68	60	46	1,270	4%	
	820201 Total	BUSINESS MANAGEMENT	9	10	10	6	9	10	2	3	11	10	7	7	13	10	314	3%	
	820302 Total	ACCOUNTING	0	0	0	0	0	0	0	0	0	0	0	2	7	173	4%		
	820401 Total	OFFICE TECHNOLOGY	1	1	1	0	3	4	2	0	2	1	0	1	1	0	36	0%	
	820701 Total	ENTREPRENEURSHIP (AA)	0	0	0	0	0	0	0	0	0	1	0	2	1	1	5	60%	
		ENTREPRENEURSHIP (AAS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2		
	821201 Total	INFORMATION TECHNOLOGY	0	0	0	0	1	2	3	7	5	13	9	18	24	33	234	14%	
		MICROCOMPUTER APPLICATIONS	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0		
		Associate Degree Total	235	256	266	323	379	413	445	435	604	572	635	872	955	1,066	7,612	14%	
	Lower Division Certificate	110901 Total	INFORMATION TECHNOLOGY - WEBMASTER	0	0	0	0	0	0	0	0	0	0	1	0	0	34	28%	
			NETWORK ADMINISTRATION	2	2	0	0	0	1	1	3	0	3	8	2	4	8		
			WEB DEVELOPER	0	0	0	0	0	0	0	0	1	0	0	0	3	1		
		120504 Total	CULINARY MANAGEMENT	0	0	0	0	0	0	0	1	1	5	8	4	5	4	17	65%
			HOSPITALITY MANAGEMENT	0	0	0	0	0	0	1	0	2	4	0	3	6	7		
		150303 Total	ELECTRONICS TECH	0	0	0	0	1	0	0	3	0	1	0	2	6	10	31	32%
190401 Total		BIOMEDICAL ENG	1	0	0	0	0	3	1	3	0	3	2	7	8	19	19	100%	
151202 Total		COMPUTER SUPPORT TECHNOLOGY	0	3	2	4	0	1	1	1	0	3	1	1	3	2	96		
151301 Total		COMPUTER AIDED DESIGN TECH	0	1	1	0	1	2	1	0	2	2	2	5	5	3	13	23%	
159999 Total		PHOTONICS TECHNOLOGY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	0%	
190708 Total		EARLY CHILDHOOD DEVELOPMENT	0	4	2	1	5	1	0	3	0	2	3	6	6	4	37	11%	
240102 Total		TRANSFER STUDIES	0	0	0	0	0	0	2	0	0	1	1	0	0	8	8	100%	
310999 Total		EXERCISE SCIENCE - MARTIAL ARTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0%	
319999 Total		EXERCISE SCIENCE-PERSONAL TRAINING	0	0	0	0	0	1	2	1	0	0	0	0	0	3	8	38%	
460499 Total		CONSTRUCTION MANAGEMENT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0%	
500402 Total		GAMING AND SIMULATION DESIGN	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	36	3%
		GRAPHIC DESIGN	0	0	0	0	0	1	0	2	1	1	4	2	4	0			
		MULTIMEDIA DESIGN	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
		TELEVISION PRODUCTION	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
		WEB DESIGN	0	0	0	0	0	0	0	0	2	0	1	1	2	0			
800406 Total		PHOTOGRAPHY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	0%
801002 Total		ARTS ADMINISTRATION	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0		
510901 Total		CARDIAC MONITORING AND ANALYSIS	0	0	0	0	0	0	3	3	2	1	4	3	3	3	3	100%	
		CARDIOVASCULAR TECH	9	7	6	7	11	6	8	10	2	4	0	1	3	0			
510904 Total		EMT/PARAMEDIC	0	0	1	1	1	1	1	6	1	5	4	8	5	101	5%		
510989 Total		ADV. CARDIOVAS. IMAGING & INTERVENT	0	0	0	0	0	0	6	2	0	0	0	1	2	3	67%	3%	
511502 Total		HUMAN SERVICES	0	0	0	0	1	1	4	0	2	0	1	5	2	5	26	19%	
513901 Total		LICENSED PRACTICAL NURSING	16	26	17	14	22	20	16	22	20	21	16	17	24	12	206	6%	
820201 Total		BUSINESS MANAGEMENT	0	0	0	0	1	1	0	4	2	0	3	2	4	2	297	1%	
820299 Total		E-COMMERCE/E-BUSINESS	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5	0%	
820302 Total		CERTIFIED BOOKKEEPING	0	0	0	0	0	0	0	0	0	0	0	0	1	1	279	0%	
820401 Total		OFFICE TECHNOLOGY	0	2	1	0	1	0	5	2	0	0	0	3	1	5	57	9%	
821201 Total		INFO TECHNOLOGY - E-COMMERCE DESIGN	0	0	0	0	1	0	0	0	0	0	0	0	0	0	70	0%	
		INFO TECHNOLOGY - INTERNET PROFESSI	0	0	0	0	3	3	0	0	0	0	1	1	1	0			
821899 Total		RETAILING	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0		
010601 Total		PLANT SCIENCE	5	1	0	0	0	0	0	0	0	0	0	0	0	0	10	0%	
090101 Total		COMMUNICATION STUDIES	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0		
		Lower Division Certificate Total	33	46	30	27	45	43	57	61	44	55	61	70	102	105	1,426	7%	
		Grand Total	268	302	296	350	424	456	502	496	648	627	696	942	1,057	1,171	9,038	13%	

Sources: MHEC Annual Degree Report, published August 2014
 "Trends in Degrees and Certificates by Program, 2000-2103"

The following is a complete listing of all areas of study and degrees or certificates offered at HCC as of the fall 2014:

Arts & Humanities

A.A. DEGREE

Art History
 Art
 Asian Studies
 Communications Studies
 Dance Performance
 Diversity Studies
 Film Studies
 Gaming and Simulation Design
 Graphic and Interactive Design
 Interdisciplinary Studies
 Liberal Arts
 Music
 Philosophy and Religious Studies
 Television and Radio
 Theatre
 Women's Studies

LETTER OF RECOGNITION

Music History
 Music Performance - Jazz
 Music Performance - Voice
 Music Technology - Audio
 Techniques
 Music Technology - Music and
 Sound Creation
 Music Therapy
 Theatre/Performance
 Theatre/Technical

Business & Computer Systems

A.A. DEGREE

Accounting
 Business Administration
 Computer Science
 Entrepreneurship
 Information Systems Management-
 Office Systems
 Information Systems Management-
 Programming/Technical Systems
 Information Technology
 International Business
 Network Security

A.A.S. DEGREE

Business Management

Culinary Management
 Entrepreneurship
 Hospitality Management
 Network Engineer
 Network Security Administration
 Office Technology

CERTIFICATE

Baking and Pastries
 Business in the Virtual
 Environment
 Casino Management
 Certified Bookkeeping
 Entrepreneurship
 Event Management
 Food and Beverage Management
 Legal Office Assistant
 Lodging Management
 Medical Transcriptionist
 Microsoft Certified Systems
 Engineer (MCSE) Window Server
 2003
 Network Security Administration
 Office Assistant
 Professional Coaching
 Professional Cooking
 Web Developer

LETTER OF RECOGNITION

Entrepreneurship
 Legal Office Assistant
 Mobile Applications Development
 Office Automation Specialist
 Software Applications Specialist
 Preparation for the CPA
 Examination
 Accounting

English/World Languages

A.A. DEGREE

Arabic
 English
 Spanish

Health Sciences

A.A. DEGREE

Exercise Science

Health Care Management
 Health Education
 Human Services
 LPN Pathway Sequence
 Nutrition
 Public Health

A.A.S. DEGREE

Cardiovascular Technology–
 Invasive Technologist
 Dental Hygiene
 Diagnostic Medical Sonography
 Emergency Medical Technician/
 Paramedic
 Health Care for the Professional
 Health Information Technology
 Medical Laboratory Technician
 Nuclear Medicine Technology
 Nursing
 Nursing–Accelerated
 Physical Therapist Assistant
 Radiologic Technology
 Respiratory Care
 Surgical Technology

CERTIFICATE

Accelerated Cardiovascular
 Program for Hospital Trainees
 Cardiac Monitoring and Analysis
 Cardiovascular Technology for
 Health Professionals
 Emergency Medical Technician/
 Paramedic
 Health Information Technology
 Licensed Practical Nursing
 Surgical Technology

Mathematics

A.A. DEGREE

Mathematics

Science, Engineering, and Technology

A.A. DEGREE

Bioinformatics
 Biotechnology
 Engineering
 Environmental Science

Horticulture
 Life Science
 Physical Science
 Pre-Allied Health
 Pre-Dentistry
 Pre-Medicine
 Pre-Optometry
 Pre-Pharmacy
 Pre-Veterinary Medicine

A.A.S. DEGREE

Biomedical Engineering
 Bioprocessing Technology
 Computer Support Technology
 Computer-Aided Design
 Technology
 Construction Management
 Electronics Technology

A.S.E DEGREE

Computer Engineering
 Electrical Engineering

CERTIFICATE

Biomedical Engineer Specialist
 Bioprocessing Technology
 Cisco Certified Networking
 Computer Forensics
 Computer-Aided Design
 Technology
 Construction Management
 Electronics Technology
 Help Desk/LAN Support
 Technology

LETTER OF RECOGNITION

Bioprocessing Technology

Social Sciences and Teacher Education A.A. DEGREE

Anthropology
 Conflict Resolution
 Criminal Justice
 Early Childhood Education
 Elementary Education
 General Studies - Business/
 Technology Emphasis

General Studies - Certificate
 Students
 General Studies - General Studies
 General Studies - Science
 Emphasis
 History
 International Studies
 Political Science
 Psychology
 Social Sciences
 Social Work
 Sociology

A.A.S. DEGREE

Early Childhood Development
 Police Science

A.A.T. DEGREE

Early Childhood Education/Early
 Childhood Special Education
 Elementary Education/Elementary
 Special Education
 Secondary Education - Teacher
 Education
 Secondary Education - Chemistry
 Secondary Education - English
 Secondary Education -
 Mathematics
 Secondary Education - Physics
 Secondary Education - Spanish

CERTIFICATE

Early Childhood Development

CERTIFICATION - PROFESSIONAL

Training
 Teacher Education

LETTER OF RECOGNITION

Early Childhood Development

**SENATE BILL 740
COLLEGE & CAREER READINESS & COLLEGE
COMPLETION ACT OF 2013**

Senate Bill 740 (SB-740) establishes a number of requirements aimed at increasing college readiness and completion in the State. The bill is a compilation of individual higher education initiatives from across the nation rolled into a single piece of legislation. Maryland Governor from 2007-2015, Martin O’Malley established a goal in 2009 that by 2025, 55% of Maryland adults (25-64 years old) will hold at least an associate’s degree. Currently, the percentage is between 44% and 46.5% of Maryland adults. This increase of approximately 2.25% annually amounts to roughly 55,000 degrees by 2025. MHEC’s “Maryland Ready: Maryland State Plan for Postsecondary Education 2013-2017” states that in order to accomplish this goal, three items must be accomplished:

- Transform Remediation
- Reduce Time to Degree
- Accelerate Success

The College & Career Readiness & College Completion Act of 2013 targeted these items with the following requirements. While this is not the complete listing, it highlights the major points which directly impact curriculum and academics at Howard Community College:

At the public high school level:

- Students must be assessed for college readiness prior to 11th grade in English, Language Arts, and Mathematics.
- For those deemed not college ready, transitional courses should be provided during 12th grade as a joint effort between high schools and community colleges.
- Math is required for each year of high school and must include Algebra II.

At the community college level:

- Curriculum for an A.S. or A.A. degree must be no more than 60-credits. Programs which are defined as longer than 2 years or require professional accreditation requirements & coursework may not apply.
- Students must develop a degree plan within the first semester which follows a clear pathway to a degree.
- This degree plan must include college level Math, Reading, and English courses within the first 24 credit hours. If developmental courses are required prior, the college must develop a course redesign to target specific developmental needs.

Transfer Agreements, Reverse Transfer Agreement, Dual Enrollment, Degree Incentives:

- The statewide transfer agreement applicable to A.A. and A.S. degrees states that 60-credits at the community college level for general education, elective, and major courses must transfer to a public four-year.
- A student with at least 30-credits earned toward a bachelor’s degree at a Maryland public four-year institution can reverse transfer to a two-year for credit toward an associate’s degree.
- Community colleges are responsible for developing incentives for students to obtain an associate’s degree prior to transferring.

Near Completers:

- Those that have previously earned at least 45-credit hours in community college should be targeted as potential candidates to re-enroll or graduate through a marketing campaign.

GENERAL EDUCATION REALIGNMENT AT HCC

These requirements, specifically the pressure to reduce programs to 60-credits and the conundrum of providing remediation in addition to required coursework within 24-credits, spurred a general education and curriculum realignment at HCC in the last three years. While the state’s mandates on degree production are not yet a requirement, the reality of performance based funding in the near future may make it one. HCC formulated General Education Goals as well as College goals, highlighting critical thinking, reasoning, and communication amongst others. Web intelligence reports and focused working groups assessed enrollment and persistence within each area of study and degree path. Sixty programs were weeded or streamlined to more clearly align with pathways and established articulation agreements.

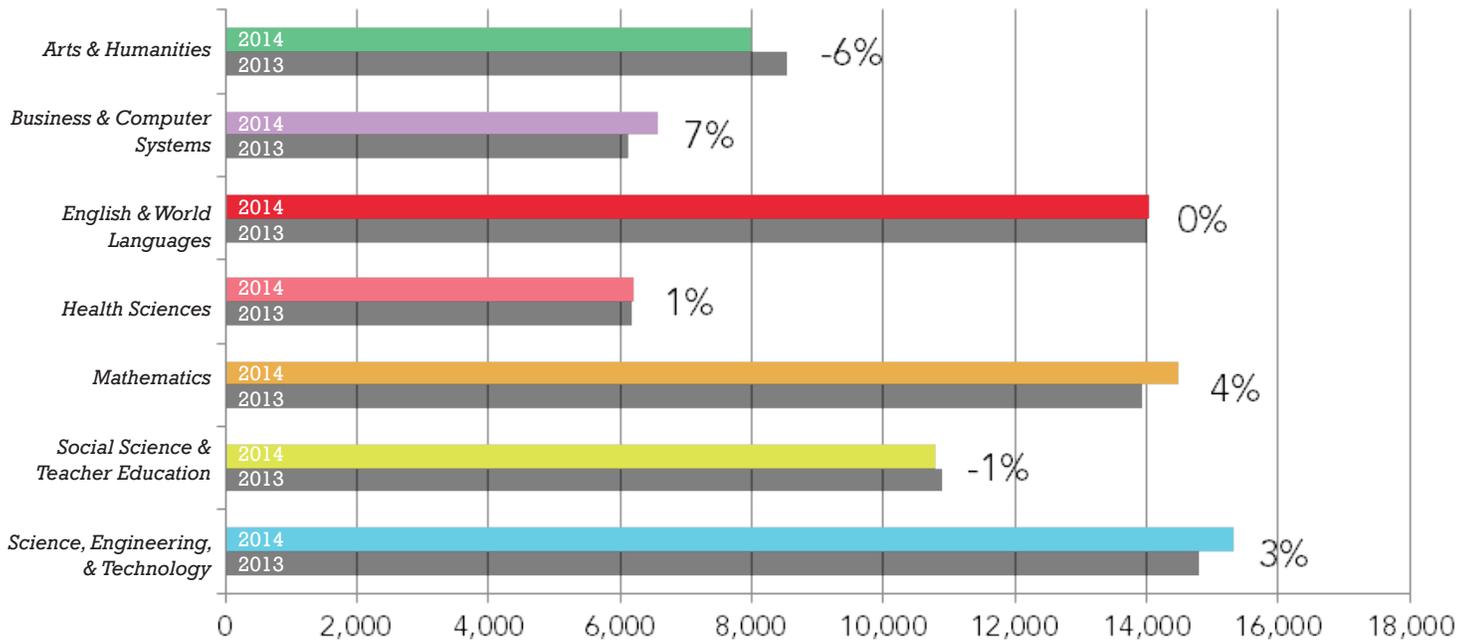
General Education Goals

- The Creative Process
- Critical Thinking
- Global Competency
- Oral and Expressive Communication
- Scientific & Quantitative Reasoning
- Written Communication
- Information Literacy
- Technological Competency

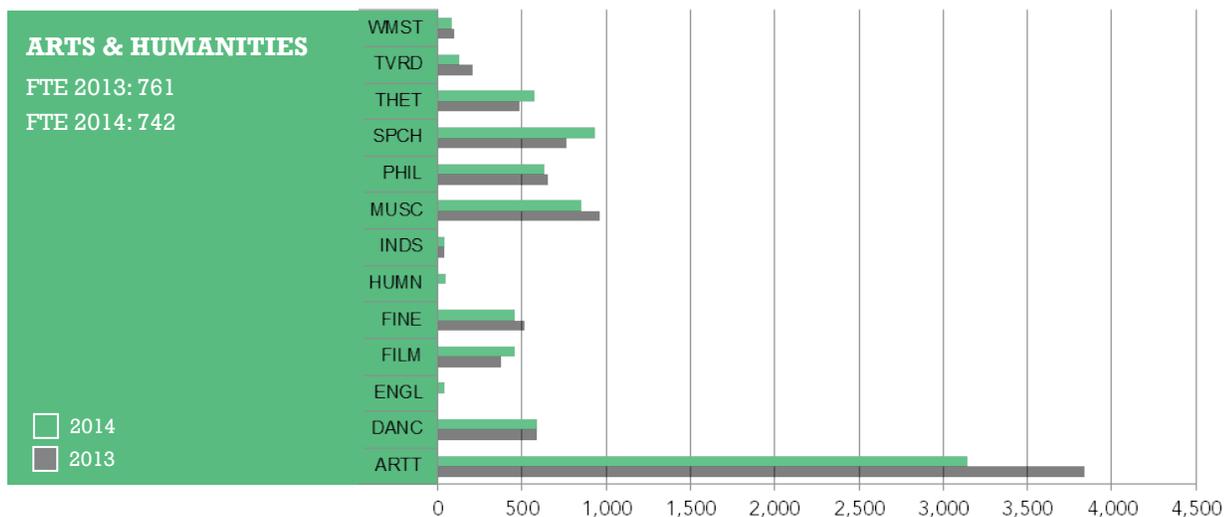
DIVISIONAL BREAKDOWN

The following are Weekly Student Contact Hour (WSCH) comparisons by division. In order to capture change in course scheduling as a result of the general education re-alignment, totals for 2013 and 2014 are provided. Weekly Student Contact Hours are a measure of load or impact on the physical space on campus. WSCH are calculated by taking the number of hours a course meets per week multiplied by the number of students enrolled in the class.

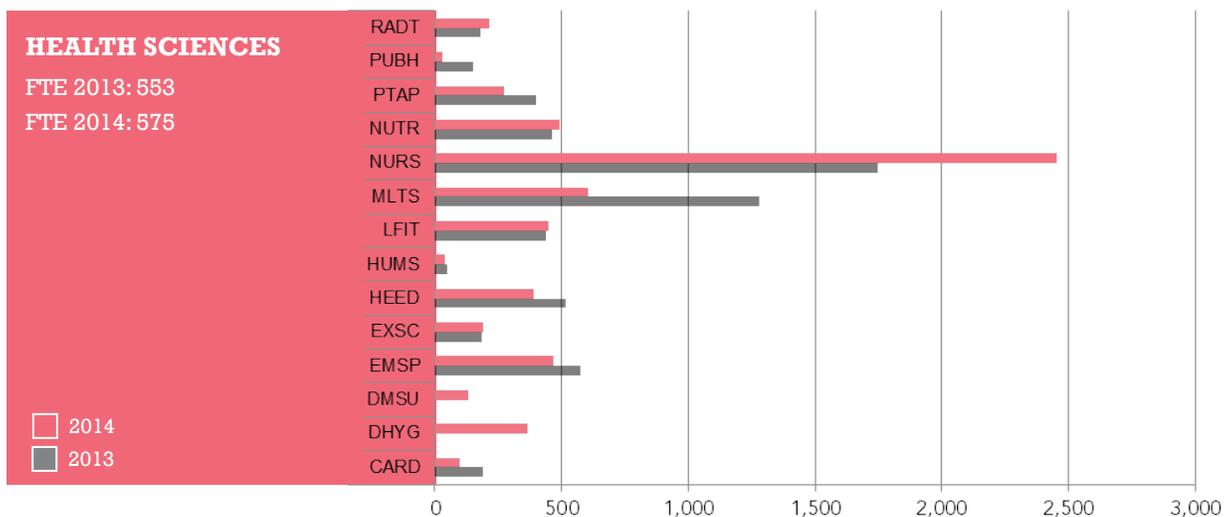
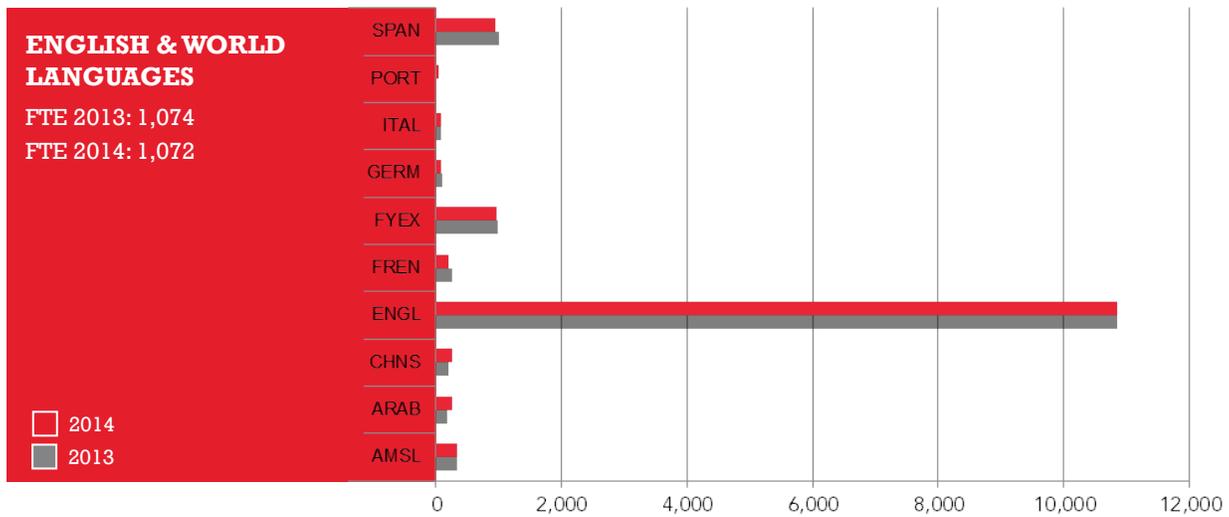
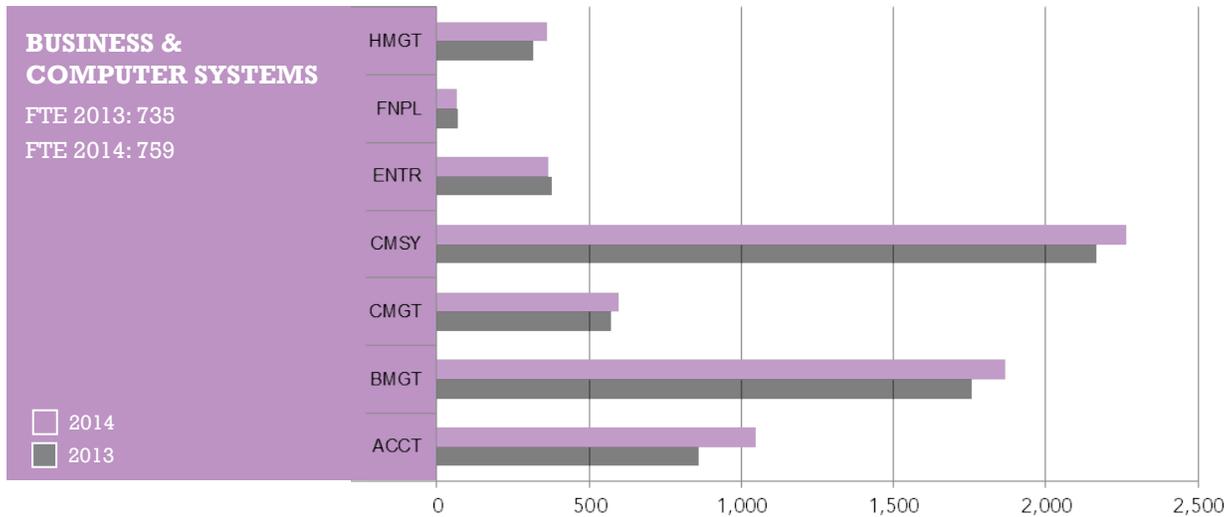
Contact Hour Delivery (WSCH) by Division 2013 & 2014

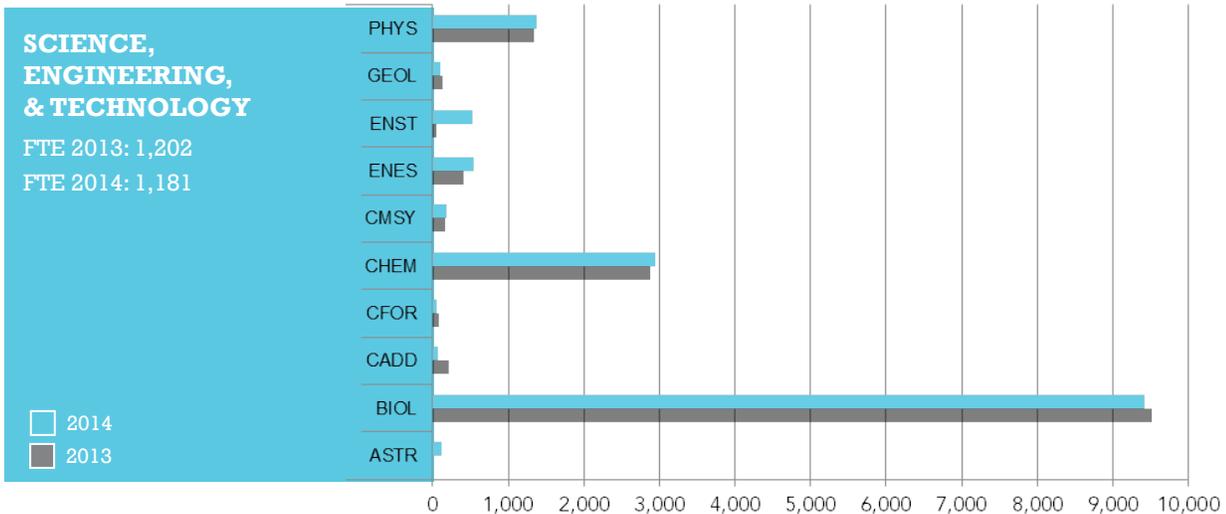
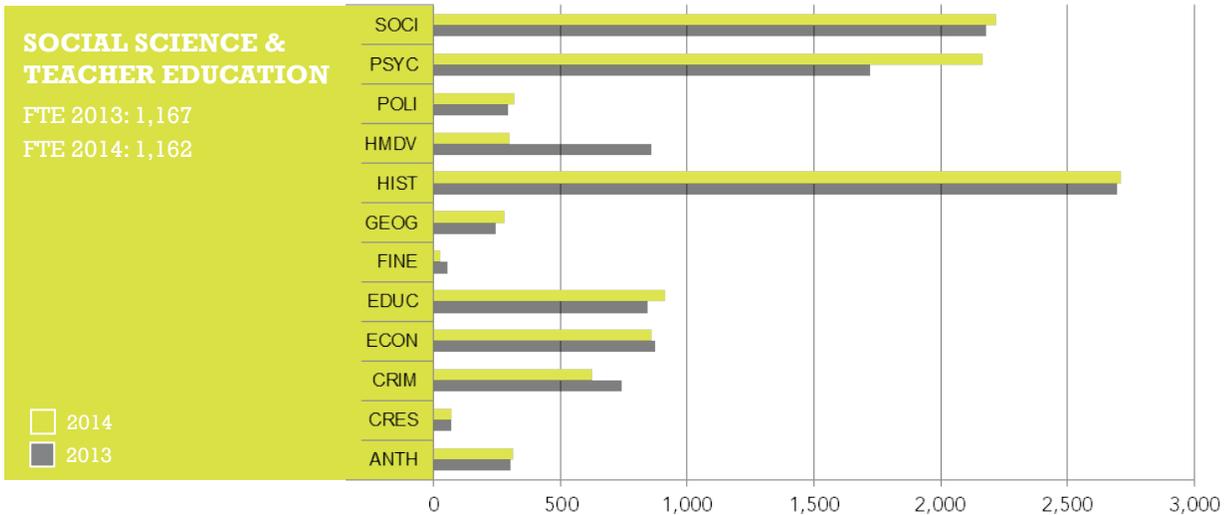
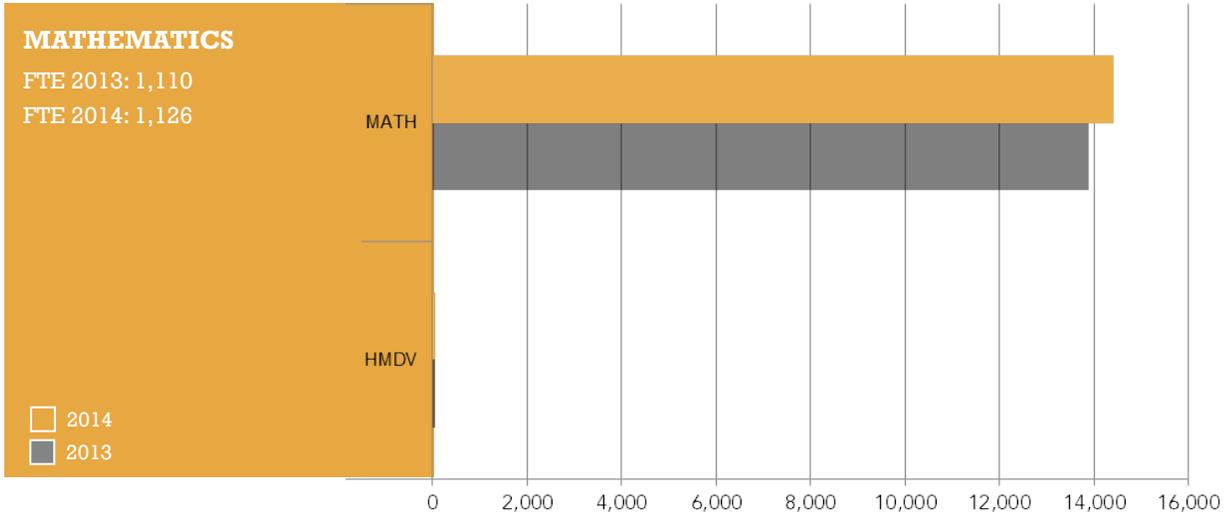


Contact Hour Delivery (WSCH) by Division & Area of Study 2013 & 2014



Contact Hour Delivery (WSCH) by Division & Area of Study 2013 & 2014 (cont.)





CONTINUING EDUCATION & WORKFORCE DEVELOPMENT

Continuing Education & Workforce development offers over 500 non-credit, adult education courses. The program which is housed primarily in the Hickory Ridge building on the main campus, at the Gateway campus, and embedded within local senior centers generates 16,000 individual enrollments per year and nearly 30,000 enrollments total. Successful outreach to the community within these programs has potential to generate future credit enrollments, specifically for ESL students who go on to enroll in credit programs and K-12 students who get to know the campus via the Kids on Campus summer programs. Courses are offered in the following areas:

Business

General Business & Communication Skills
Leadership & Supervision
Project Management
Entrepreneurship & Self-Employment
Event Planning
Child Care
Certifications, Licenses & Other Careers

Computers & Information Technology

Computer & Technology Basics
Office Applications
Databases
Accounting & Finance
Project Management
Web/Video/Graphics
Programming
Collaboration
Online Computer Security/Certifications

Health Care Careers

Medical Office Skills
Patient Care
Mount Airy College Center for Health Care Education

Adult Basic Skills

English as a Second Language

The Rider School

Motorcycle License-Earning Courses
Vehicle Advanced Driving Skills

Lifestyle & Leisure

Arts, Crafts & Photography
Dancing
Music
Finance & Investment
History & Culture
Home & Garden
Beer & Wine Appreciation
Languages
Special Interest
Aquatics
Wellness: Body, Mind & Spirit

In Addition:

Online Courses
60+
Test Preparation
Kids on Campus

FACULTY & STAFF SUPPORT AT HCC

In support of these academic divisions are faculty and staff. Faculty divisional offices are located in HVPA, HR, ST, DH, and HS buildings. Administrative offices are located in RCF, MH, N, ST, SA, and CL buildings.

E-LEARNING MODELS

Howard Community College offers the following e-learning options:

- Online courses
- Fast Track courses
- Open Entry courses
- Hybrid courses

While online courses may require students to meet on campus occasionally or to sit for exams, hybrid courses provide for a 50/50 percentage of time spent online and in the classroom. Fast Track courses concentrate coursework into fewer weeks and meet primarily on Fridays and the weekends. Open Entry courses are specific to Office Technology courses and are typically self-guided with deadlines for students to take exams and complete assignments. All General Education courses are offered online including science labs.

STUDENT ENGAGEMENT FOR E-LEARNING

There are both online and hybrid teacher certification

requirements which assist in the improvement and vetting of delivery methods and content. In turn, faculty have assessment tools available to evaluate students in the first weeks of an online course to determine learning style, life factors, teach ability, and knowledge of technology. This assessment, however, is not mandatory.

ACCREDITATIONS, RECOGNITION, AND AWARDS

HCC received its accreditation with Middle States Commission on Higher Education in 1975, and was recently reaccredited in 2011. HCC is also authorized by the Maryland Higher Education Commission (MHEC) for multiple programs and associate degrees. One of the college's original and most successful programs is nursing, with a resulting associate degree or practical certificate for employment. The program is fully accredited by the National League for Nursing Accrediting Commission.

Howard Community College was awarded the U.S. Senate Productivity Award in 2007. This recognition acknowledged HCC as a model organization for successfully implementing systematic processes for continuous improvement, and achieving outstanding results. The award, part of the Maryland Performance Excellence Awards Program, honors organizations that are evaluated rigorously by an independent board of examiners using the Baldrige Criteria for Performance Excellence – leadership; strategic planning; customer and market focus; measurement, analysis and knowledge management; workforce focus; process management; and results.

SCHOLARSHIP PROGRAMS

Established in 1978, the Howard Community College Educational Foundation, Inc. (HCCFEF) is a nonprofit, 501(c)(3) organization that raises funds to support student scholarships, programs and HCC facilities. Today, HCC offers scholarship opportunities including the James W. Rouse Scholars Honors and Leadership Program, Silas Craft Collegians Program, Frederick K. Schoenbrodt Honors Program and the STEM Scholars Program. In addition, the Pathway Scholarship is a needs-based scholarship program supported by Howard County and designed to help Howard County students afford college and attain their own pathway to success. The Pathway Scholarship serves a wide range of students including dually enrolled high school students, recent high school graduates, adult learners taking credit courses, veterans, and students with at least 15 credits remaining to finish their associate degree.



HCC unveiling Great College to Work For, 2014

Other Recent Notable Accolades:

- Great College to Work For (2014, 2013, 2012, 2011, 2010, 2009), The Chronicle of Higher Education
- Top 50 Fastest Growing Public Two-Year College (2011), Community College Week
- National Center of Digital Forensics Academic Excellence (CDFAE), member college selection by Department of Defense Cyber Crime Center (2011)
- Maryland Quality Award (Bronze) from the University of Maryland Center for Quality and Productivity (2002, 2003 and 2006)
- Senator Paul Simon Award for Campus Internationalization (2005), NAFSA: Association of International Educators
- Continuing Education and Workforce Development, named “one of the top continuing education units in North America” by the Learning Resources Network (LERN)



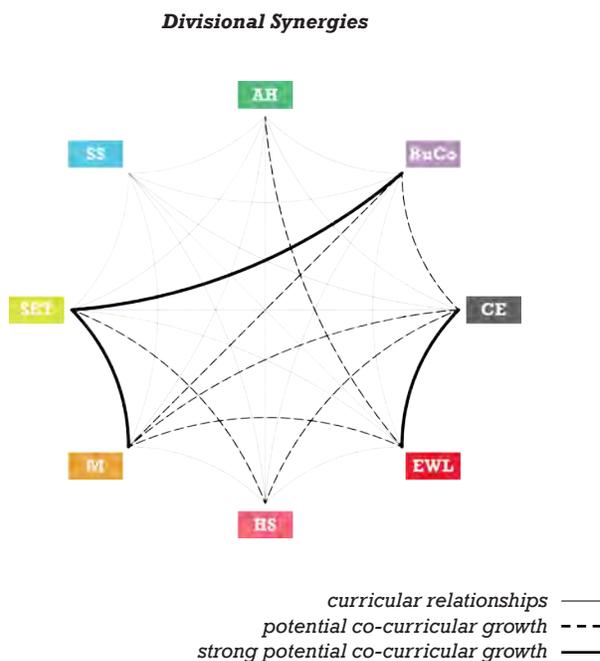
Course Delivery (WSCH) by Division

- | | |
|---|--|
| ■ Arts & Humanities | ■ Mathematics |
| ■ Business & Computer Systems | ■ Science, Engineering, & Tech |
| ■ English & World Languages | ■ Social Sciences & Teacher Ed |
| ■ Health Sciences | ■ Continuing Education |

** note: divisions which offer less than 500 WSCH per building are not noted*

CAMPUS FOCUS GROUPS

Master planning activities included focus group meetings with each of the divisions to assess the impact of the curriculum realignment, key areas of growth, potential new programs, as well as space needs related to growth. The following are a listing of pertinent program relationships, curricular relationships, and growth potentials which impacted master planning strategies:



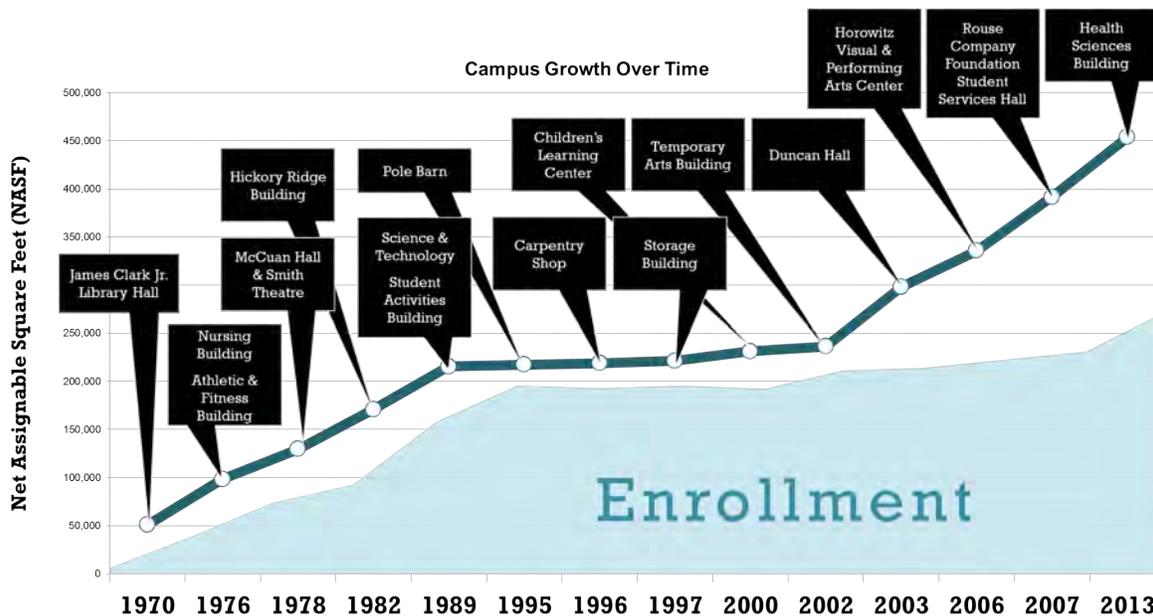
Programmatic & Curricular Relationships

- English & World Languages and Mathematics are core divisions supporting general education and developmental education courses.
 - Business & Computer Systems and Continuing Education share a common enrollment pool for educational enrichment.
 - Science, Engineering, and Technology and Health Sciences share affinities amongst the pre-medicine and nursing programs.
 - Arts & Humanities and English & World Languages share cross-divisional courses.
 - Mathematics and Business & Computer Systems share cross-divisional courses between computer science and accounting programs.
 - Health Sciences and Continuing Education share growth in training and accreditation programs for medical certification.
 - A percentage of ESL students go on to enroll in credit courses at HCC.
 - Mathematics and Science, Engineering, and Technology have the strongest cross-divisional sharing relationship.
- ### Future Growth Impact on Facilities Resources
- The general education curriculum realignment will impact offerings in terms of the type and quantities of courses offered. Space utilization analysis compared load and impact on space between 2013 and 2014 capturing the transition to the new general education curriculum and identified future space needs.
 - Health Sciences and Continuing Education share an increasing interest in training and accreditation programs for medical certification. Growth in these programs at the credit and non-credit levels is expected.
 - While the general education re-alignment resulted in the consolidation of many programs and the reduction of course offerings within the Social Science & Teacher Education division, the division saw modest growth between 2013 & 2014. The forthcoming Nursing & ST building renovation will give identity to these departments and promote future growth.
 - The Entrepreneurial program has the potential to grow and expand its collaboration amongst other cross-divisional programs. The College's articulation agreement with Babson College and the Maryland Entrepreneurial Center which is moving to a new location across Little Patuxent Parkway position the program within a statewide context and beyond.
 - The demand for developmental education will continue to grow. There will be an increased space demand but not in direct relationship to the increased enrollment in these courses. The pressure to deliver remediation curriculum within the first two semesters will require accelerated coursework in conjunction with college level reading, writing and math curriculum.
 - The Accelerated Learning Program for ESL students (ENGL 121) is a success and will continue to see growth.
 - The Science, Engineering, and Technology division will see overall growth when the new SET building opens in 2017. Bioengineering and Environmental Science are future programs to consider.
 - Key programs such as Athletic Training, Exercise Science, Life Fitness and Nutrition have potential to grow if bolstered by existing Wellness, Athletics, and Fitness programs.

04

**SPACE NEEDS
ASSESSMENT**

SPACE NEEDS ASSESSMENT



Historic Enrollment Growth Relative to Campus Building Additions (NASF)

SPACE NEEDS ASSESSMENT

In order to provide targeted growth recommendations, a part of the master planning process is to develop a space needs analysis. The analysis in the following section will address college wide enrollment projections, student credit hours, weekly student credit hours, full-time equivalents (FTEs), full-time day equivalents (FTDEs) and staff / faculty projections. The economy has experienced a major recession and recovery since the last master plan completed in 2010.

PROCESS

Understanding space needs is a quantitative and qualitative process. One needs to understand what types of spaces are essential related to existing facilities conditions and how divisions work together within their spaces and across campus. In order to make recommendations it is also necessary to validate needs related to data driven guidelines for space.

As a part of this assessment a series of group interviews were conducted with each academic division and non-academic group. Surveys were provided prior to each meeting in order to prepare attendees for an array of discussion points. The interviews were used to generate discussion on the campus's mission and vision, future program changes, technology across the campus, teaching and learning environments, and the needs for campus support and staff. Information generated from these interviews assisted with identifying synergies between divisions. In order to support new program growth this information was used in conjunction with computation for space needs.

ENROLLMENT PROJECTIONS

At Howard Community College the faculty, staff and administration work to serve the needs of an increasingly diverse student body and community. HCC enrolls more than 14,500 credit students and 15,700 non-credit continuing education students. One out of every four graduates from Howard County public schools attends Howard Community College. The recent economic downturn saw a significant increase in enrollment for Howard Community College, similar to the trend for most community colleges. More recently enrollments have steadied and are now leveling. In order to assist Howard Community College in understanding future growth patterns, enrollment projections were modeled based on credit hours derived from fall semester schedules provided by Howard Community College for 2010, 2011, 2012, 2013, and 2014.

FULL-TIME AND PART-TIME CREDIT HEADCOUNT ENROLLMENT

- Headcount projections are based upon historic growth trends and account for a post-recession reversion back to a more linear growth pattern.
- Total student enrollment grew 6% between fall 2010 and fall 2014. Total student enrollment will grow another 25% by fall 2025.
- Total transfer enrollment grew 7% between fall 2010 and fall 2014. Total transfer enrollment will grow another 25% by fall 2025.
- Total career enrollment grew 27% between fall 2010 and fall 2014. The average annual percentage growth in this time was 6%. Career enrollments will grow another 23% by fall 2025.

Full-Time and Part-Time Credit Headcount Enrollment

	Actual Fall '10	Actual Fall '11	Actual Fall '12	Actual Fall '13	Actual Fall '14	2010-2014 % Change	Projected Fall '20	2014-2020 % Change	Projected Fall '25	2014-2025 % Change
FT Headcount	3,661	3,712	3,705	3,693	3,733	2%	4,465	20%	5,183	39%
PT Headcount	5,907	6,369	6,447	6,530	6,451	9%	7,026	9%	7,544	17%
Total Student Enrollment	9,568	10,081	10,152	10,223	10,184	6%	11,491	13%	12,727	25%
% Full-time	38%	37%	36%	36%	37%	-4%	39%	6%	41%	11%
% Part-time	62%	63%	64%	64%	63%	3%	61%	-3%	59%	-6%
Transfer Total										
FT Headcount	3,202	3,201	3,202	3,139	3,165	-1%	3,812	20%	4,396	39%
PT Headcount	4,383	4,748	4,853	4,893	4,981	14%	5,344	7%	5,757	16%
Total Transfer Enrollment	7,585	7,949	8,055	8,032	8,146	7%	9,156	12%	10,154	25%
% Full-time	42%	40%	40%	39%	39%	-8%	42%	7%	43%	11%
% Part-time	58%	60%	60%	61%	61%	6%	58%	-5%	57%	-7%
Career Total										
FT Headcount	341	381	395	424	478	40%	535	12%	614	29%
PT Headcount	921	982	979	1,093	1,129	23%	1,199	6%	1,359	20%
Total Career Enrollment	1,262	1,363	1,374	1,517	1,607	27%	1,734	8%	1,973	23%
% Full-time	27%	28%	29%	28%	30%	10%	31%	4%	31%	5%
% Part-time	73%	72%	71%	72%	70%	-4%	69%	-2%	69%	-2%
Undeclared										
FT Headcount	118	130	108	130	90	-24%	88	-2%	101	13%
PT Headcount	597	639	615	544	341	-43%	344	1%	365	7%
Total Undeclared Enrollment	715	769	723	674	431	-40%	433	0%	466	8%
% Full-time	17%	17%	15%	19%	21%	27%	20%	-2%	22%	4%
% Part-time	83%	83%	85%	81%	79%	-5%	80%	1%	78%	-1%

STUDENT CREDIT HOURS (SCH) AND FULL-TIME DAY EQUIVALENTS (FTDES)

- Student credit hours (SCH) is defined as a unit of measurement representing an hour (50 minutes) of instruction over a 15-week period in a semester. It is applied toward the total number of hours needed for completing the requirements of a degree, diploma, certificate, or other formal award. Increased enrollments will in turn drive increased generation of student credit hours.
- Total student credit hours (SCH) grew 14% between fall 2010 and fall 2014. SCH will grow another 24% by 2025 to a total of 109,780 student credit hours.
- The average credit hours (CH) per headcount is expected to remain steady as nationwide trends indicate that students will become increasingly part-time.
- On-campus day SCH increased 13% between fall 2014 and fall 2025. This number will grow by another 24% by 2025 to a total of 78,650 on-campus day student credit hours.
- Full Time Day Equivalents (FTDE) are calculations used as the primary basis for space allocation and represent enrollments of students taking classes between 8am & 5pm.
- The anticipated increase in on-campus day SCH will result in a 26% increase in total on-campus FTDE's.
- Distance learning FTDE's will also growth, 38% by 2025.
- Total on-campus FTE's will grow 25%, totaling 6,691 by 2025.

Enrollment Summary

	Actual Fall '10	Actual Fall '11	Actual Fall '12	Actual Fall '13	Actual Fall '14	2010-2014 % Change	Projected Fall '20	2014-2020 % Change	Projected Fall '25	2014-2025 % Change
Total Student Credit Hours (SCH)*	79,582	83,404	85,859	87,213	88,292	11%	99,431	13%	109,780	24%
Average CH per Headcount	8.3	8.3	8.5	8.5	8.7	4%	8.7	0%	8.6	-1%
Total FTE	5,305	5,560	5,724	5,814	5,886	11%	6,629	13%	7,319	24%
On-Campus Day SCH	58,698	61,902	61,964	62,082	63,255	8%	71,022	12%	78,650	24%
On-Campus Day FTDE	1,957	2,063	2,065	2,069	2,109	8%	2,367	12%	2,622	24%
Distance Learning Day FTDE	55	69	179	204	249	350%	297	19%	345	38%
Total On-Campus Day FTDE	2,012	2,132	2,244	2,274	2,358	17%	2,665	13%	2,966	26%
Annualized On-Campus Day FTDE	4,024	4,264	4,489	4,548	4,716	17%	5,329	13%	5,933	26%
Total On-Campus SCH	77,904	81,323	80,472	81,068	80,714	4%	90,897	13%	100,358	24%
Total On-Campus FTE	5,194	5,422	5,365	5,405	5,381	4%	6,060	13%	6,691	24%
Headcount	9,568	10,081	10,152	10,223	10,184	6%	11,491	13%	12,727	25%

(*includes On-Line SCH)

WEEKLY STUDENT CONTACT HOURS (WSCH)

- Weekly student contact hours (WSCH) are calculated for on campus daytime courses. Adjustments in WSCH per division were seen between 2013 and 2014 due to the recent general education re-alignment.
- The WSCH/SCH ratio is a relationship between student credit hours (SCH) and weekly student contact hours (WSCH) which reflects the number of lab courses being offered. This number has grown over the last ten years as courses become increasingly lab based and require specialized equipment and technology.
- An increase of 18% weekly student contact hours (WSCH) is projected, with 88,033 by 2025.
- The largest growth will be seen in the Science, Engineering, & Technology and Health Sciences divisions. The Mathematics division will also see growth as it heavily supports the SET curriculum as well as the general education curriculum. In addition, a new Mathematics building is planned to come on board within the next 5 years.
- Science, Engineering, & Technology will see a 33% increase in SCH and a 21% increase in WSCH.
- Health Sciences will see a 27% increase in SCH and a 23% increase in WSCH.
- Mathematics will see a 24% increase in SCH and a 18% increase in WSCH.

Daytime | On Campus | Student Credit Hours (SCH)

	Actual Fall '10	Actual Fall '11	Actual Fall '12	Actual Fall '13	Actual Fall '14	2010-2014 % Change	Projected Fall '20	2014-2020 % Change	Projected Fall '25	2014-2025 % Change
Arts & Humanities	7,348	7,559	7,045	7,001	7,252	-1%	7,457	3%	8,258	14%
Business/Computer	4,661	5,061	5,436	5,328	5,724	23%	6,427	12%	7,117	24%
English/World Languages	12,464	12,514	12,484	12,574	12,566	1%	14,109	12%	15,624	24%
Health Sciences	4,360	4,753	4,634	5,026	4,960	14%	5,682	15%	6,292	27%
Mathematics	11,107	11,439	11,561	11,047	11,423	3%	12,826	12%	14,203	24%
Social Sciences/Education	9,703	10,513	10,712	10,828	10,725	11%	11,719	9%	12,977	21%
Science & Technology	9,055	10,063	10,092	10,278	10,605	17%	12,784	21%	14,157	33%
	58,698	61,902	61,964	62,082	63,255	8%	71,022	12%	78,650	24%

Daytime | On Campus | Weekly Student Contact Hours (WSCH)

	Actual Fall '10	Actual Fall '11	Actual Fall '12	Actual Fall '13	Actual Fall '14	2010-2014 % Change	Projected Fall '20	2014-2020 % Change	Projected Fall '25	2014-2025 % Change
Arts & Humanities	8,260	8,402	7,962	7,848	7,990	-3%	8,372	5%	9,243	16%
Business/Computer	5,323	5,702	6,085	6,120	6,570	23%	7,176	9%	7,923	21%
English/World Languages	13,268	13,484	13,642	13,958	14,005	6%	14,915	7%	16,467	18%
Health Sciences	5,230	5,503	5,524	5,708	5,737	10%	6,379	11%	7,043	23%
Mathematics	12,830	13,193	13,751	13,921	14,449	13%	15,388	7%	16,989	18%
Social Sciences/Education	9,826	10,530	10,645	10,886	10,796	10%	10,764	0%	11,884	10%
Science & Technology	13,346	14,913	14,701	14,805	15,322	15%	16,744	9%	18,487	21%
	68,082	71,726	72,309	73,246	74,867	10%	79,734	7%	88,033	18%
WSCH/SCH Ratio	1.16	1.16	1.17	1.18	1.18	2%	1.12	-5%	1.12	-5%

- Weekly student contact hours (WSCH) totals for lectures and labs currently represent a 40% lecture and 60% lab relationship. This relationship should be reviewed going forward as there will be an increase in courses occurring in lab spaces with the opening of the Science, Engineering, and Technology building.
- Total student credit hours (SCH) for Continuing Education decreased 8% between fall 2010 and fall 2014. SCH will grow 12% by 2025 to a total of 11,930 student credit hours.
- The anticipated increase in on-campus day continuing education SCH will result in a 12% increase in total on-campus continuing education FTDE's.

Daytime | On Campus | Weekly Student Contact Hours (WSCH) | Lecture

	Actual Fall '10	Actual Fall '11	Actual Fall '12	Actual Fall '13	Actual Fall '14	2010-2014 % Change	Projected Fall '20	2014-2020 % Change	Projected Fall '25	2014-2025 % Change
Arts & Humanities	3,304	3,361	3,185	3,139	3,196	-3%	3,349	5%	3,697	16%
Business/Computer	2,129	2,281	2,434	2,448	2,628	23%	2,870	9%	3,169	21%
English/World Languages	5,307	5,394	5,457	5,583	5,602	6%	5,966	7%	6,587	18%
Health Sciences	2,092	2,201	2,209	2,283	2,295	10%	2,551	11%	2,817	23%
Mathematics	5,132	5,277	5,500	5,568	5,779	13%	6,155	7%	6,796	18%
Social Sciences	3,930	4,212	4,258	4,354	4,318	10%	4,306	0%	4,754	10%
Science & Tech	5,338	5,965	5,880	5,922	6,129	15%	6,698	9%	7,395	21%
	27,233	28,690	28,923	29,298	29,947	10%	31,895	7%	35,215	18%

Daytime | On Campus | Weekly Student Contact Hours (WSCH) | Lab

	Actual Fall '10	Actual Fall '11	Actual Fall '12	Actual Fall '13	Actual Fall '14	2010-2014 % Change	Projected Fall '20	2014-2020 % Change	Projected Fall '25	2014-2025 % Change
Arts & Humanities	4,956	5,041	4,777	4,709	4,794	-3%	5,023	5%	5,546	16%
Business/Computer	3,194	3,421	3,651	3,672	3,942	23%	4,306	9%	4,754	21%
English/World Languages	7,961	8,090	8,185	8,375	8,403	6%	8,949	7%	9,880	18%
Health Sciences	3,138	3,302	3,314	3,425	3,442	10%	3,827	11%	4,226	23%
Mathematics	7,698	7,916	8,250	8,353	8,669	13%	9,233	7%	10,194	18%
Social Sciences	5,895	6,318	6,387	6,532	6,477	10%	6,458	0%	7,131	10%
Science & Tech	8,008	8,948	8,821	8,883	9,193	15%	10,047	9%	11,092	21%
	40,849	43,035	43,385	43,948	44,920	10%	47,843	7%	52,822	18%

Daytime | Continuing Education Data

	Actual Fall '10	Actual Fall '11	Actual Fall '12	Actual Fall '13	Actual Fall '14	2010-2014 % Change	Projected Fall '20	2014-2020 % Change	Projected Fall '25	2014-2025 % Change
Total SCH	11,825	11,615	12,124	10,744	10,693	-8%	11,351	6%	11,930	12%
WSCH (Eligible)	11,564	11,348	11,786	10,314	10,148	-11%	10,772	6%	11,322	12%
FTE	1,452	1,446	1,439	1,377	1,394	-4%	1,480	6%	1,555	12%
FTDE	122	122	176	139	119	-2%	126	6%	133	12%
WSCH Lecture	2,964	3,792	3,442	2,964	2,485	-34%	2,638	6%	2,772	12%
WSCH Lab	1,153	1,474	1,339	1,153	966	-34%	1,026	6%	1,078	12%
WSCH Other	7,447	6,082	7,005	6,197	6,697	10%	7,109	6%	7,472	12%
WSCH Distance Learning	261	267	338	430	545	104%	579	6%	608	12%

FACULTY & STAFF PROJECTIONS

Faculty and staff projections are based on focus group meetings conducted with departments and cross checked with the Howard Community College multi-year staffing plan. Faculty and staff growth is needed to support future enrollment growth however numbers were adjusted to reflect realities of budget constraints and past growth statistics.

- Historically, growth for full-time and part-time faculty has been slow due to operational constraints. This is not expected to change in the near future.
- The student/faculty ratio will grow from 15 to 17 FTE students per FTE faculty by 2025.
- By 2025, the total full time equivalent (FTE) staff is expected to be 615.

Faculty

	Actual Fall '10	Actual Fall '11	Actual Fall '12	Actual Fall '13	Actual Fall '14	2010-2014 % Change	Projected Fall '20	2014-2020 % Change	Projected Fall '25	2014-2025 % Change
Credit Faculty										
Full-Time	154	173	177	181	189	23%	209	10%	226	20%
Part-Time	519	551	553	645	640	23%	659	3%	676	6%
Total Headcount	673	724	730	826	829	23%	868	5%	902	9%
Total FTE Faculty	284	311	315	342	349	23%	373	7%	395	13%
Student/Faculty Ratio	18.30	17.45	17.02	15.79	15.42	-16%	16.23	5%	16.93	10%
Noncredit Faculty										
Full-Time	0	0	0	0	0		0		0	
Part-Time	135	128	112	99	133	-1%	145	9%	145	9%
Total FTE Credit Faculty	34	32	28	25	33	-1%	36	9%	36	9%
Total Faculty										
Full-Time	154	173	177	181	189	23%	209	10%	226	20%
% Full-Time Faculty FTE	49%	50%	52%	49%	49%	2%	51%	3%	52%	6%
Part-Time	654	679	665	744	773	18%	809	5%	821	6%
Total Headcount	808	852	842	925	962	19%	1,018	6%	1,047	9%
Total FTE Faculty	318	343	343	367	382	20%	411	7%	432	13%

Staff (Budgeted)

	Actual Fall '10	Actual Fall '11	Actual Fall '12	Actual Fall '13	Actual Fall '14	2010-2014 % Change	Projected Fall '20	2014-2020 % Change	Projected Fall '25	2014-2025 % Change
Full-Time	397	398	408	433	436	10%	521	19%	604	35%
Part-Time	39	40	44	36	40	3%	42	6%	45	12%
Total Staff Headcount	436	438	452	469	476	9%	563	18%	648	36%
Total FTE Staff	407	408	419	442	446	10%	531	19%	615	38%
Budgeted Staff/Faculty Ratio	1.28	1.19	1.22	1.20	1.17	-9%	1.29	11%	1.42	22%

LIBRARY COLLECTION

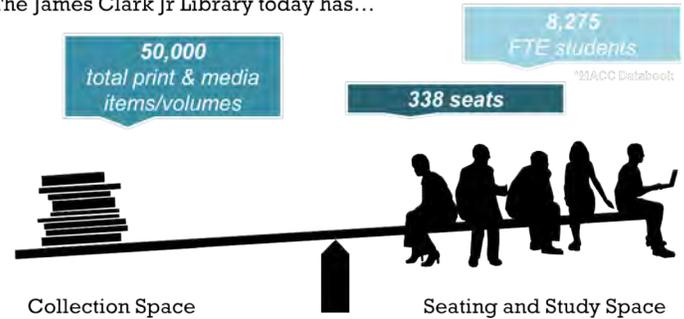
Space allocation reflects a surplus in square footage for stack library space. The library staff has an ongoing collection weeding project in which 30% of the collection has been weeded and less than 50,000 books remain. The removal of this percentage of the collection has freed up space for some additional study space. Interviews with library staff, teaching and learning services, and AV/instructional media groups indicated that the study carrels, group study rooms, and digital media labs are consistently used and require additional space to accommodate students.

Libraries are largely comprised of three types of space, the collection, staff support, and public or study spaces. As libraries increasingly shift from repositories for passive acquisition of knowledge to catalysts for knowledge creation, the proportion of the three types of space commonly found in the library will shift. Spaces for student study, collaboration, and digital media creation will need to grow.

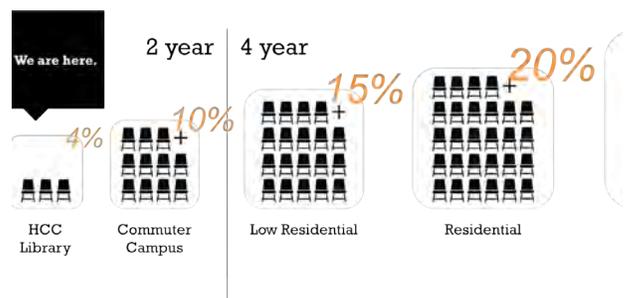
The James Clark Library today can seat 6% of its on-campus FTE population. National benchmarks indicate that 10% is typical of commuter campuses. However, Howard Community College supports a large daytime population which indicates that the seating capacity should perhaps support a larger portion of FTE students. To support 10% of the FTE population today, the library would require an additional 13,500 NASF. To support 10% of the projected 2020 FTE population, the library will require 26,845 NASF.

The library is unable to expand in its current location. To accommodate growth, future building projects should include student study and collaboration spaces which act as satellite hubs to the library. The level of direct library staff oversight in satellite locations should be analyzed in relation to future building projects.

The James Clark Jr Library today has...



Benchmarks for student study seating capacity...



Library Collection

	Actual Fall '14	Projected Fall '20	2014-2020 % Change	Projected Fall '25	2014-2025 % Change
Books	47,000	50,000	6%	52,500	12%
Bound Periodicals	220	240	9%	250	14%
Microfilm Reels	0	0	0%	0	0%
Records	0	0	0%	0	0%
Maps	8	10	25%	10	25%
Microforms (non-reel)	0	0	0%	0	0%
Unbound Newspapers	70	70	0%	70	0%
Reference Books	8,620	5,000	-42%	4,000	-54%
Slides	0	0	0%	0	0%
Unbound Periodicals	210	220	5%	230	10%
Audio Tapes	2	0	-100%	0	-100%
Computer Diskettes	0	0	0%	0	0%
Compact Disks & DVD	230	230	0%	230	0%
Video Tapes	1,800	500	-72%	0	-100%
Total	58,160	56,270	-3%	57,290	-1%

Student Study Space Calculations

	Target % of FTE Population		
	2014	2014	2025
Target Seats	338	538	669
Space Need (NASF)	8,450	13,452	16,726

PHYSICAL SPACE INVENTORY

The Columbia Campus physical space inventory was reviewed and updated to reflect recent renovations. It reflects a current total of 453,851 NASF. The following tables are summaries of NASF by building and HEGIS category.

Physical Space Inventory

HEGIS CODE	HEGIS CATEGORY	1	2	3	4	5	6	7	8
		1970 Clark Library	1976 Nursing Building	1976 Athletic & Fitness	1978 McCuan Hall	1982 Hickory Ridge	1989 Science & Technology	1989 Student Activities	1995 Pole Barn
100	CLASSROOM	0	6,373	404	0	10,146	0	0	0
110	Classroom		6,373	404		9,990			
115	Classroom Service					156			
200	LABORATORY	17,540	9,454	0	5,147	19,249	24,511	0	0
210	Class Laboratory	14,027	8,118		4,664	17,866	18,944		
215	Class Laboratory Service	1,614	1,336		483	30	5,567		
220	Open Laboratory	1,332				1,353			
250	Research Laboratory	567							
300	OFFICE	13,524	2,293	1,439	12,338	10,987	9,053	3,819	0
310	Office	11,493	2,100	1,131	9,911	9,409	7,728	3,484	
315	Office Service	1,909		175	1,455	914	511	80	
320	Testing & Tutoring					261			
350	Conference Room	122	193	133	972	403	814	255	
400	STUDY	16,517	420	0	0	0	0	0	0
410	Study	3,900	420						
420	Library Stacks	4,876							
430	Open-Stack Study Room	7,741							
440-55	Processing/Service	0							
500	SPECIAL USE	0	666	26,353	1,784	0	0	0	0
520	Athletic or Physical Education			22,127					
525	Athletic or Physical Education Service			4,226					
530	Media Production		390		1,784				
535	Media Production Service		276						
580	Greenhouse								
600	GENERAL USE	498	0	0	12,081	312	0	4,762	0
610	Assembly				6,222				
615	Assembly Service				4,567				
620	Exhibition				655				
625	Exhibition Storage				133				
630	Food Facility								
635	Food Facility Service								
640	Day Care								
645	Day Care Service								
650	Lounge					312		4,027	
655	Lounge Support								
660	Merchandising								
665	Merchandising Service								
670	Recreation							735	
680	Meeting	498			504				
700	SUPPORT	1,308	0	0	0	544	2,483	0	1,839
710	Telecom	1,308							
720	Shop						1,737		
725	Shop Service					70	746		1,839
730	Central Storage					474			
750	Central Service								
760	Hazmat Storage								
800	HEALTH CARE	1,551	0	0	0	0	0	0	0
900	RESIDENTIAL	0	0	0	0	0	0	0	0
050	INACTIVE AREA	0	0	0	0	0	0	0	0
060	ALTER. OR CONV.	0	0	0	0	0	0	0	0
070	UNFINISHED AREA	0	0	0	0	0	0	0	0
090	OTHER ORG. USAGE	0	0	0	0	0	0	0	0
Total NASF:		50,938	19,206	28,196	31,350	41,238	36,047	8,581	1,839

Table Definitions:

- Total NASF (Net Assignable Square Footage) is the sum of floor space within interior walls of rooms that is assigned to, or available for assignment to, occupants for use, excluding non-assignable spaces defined as building service, circulation, mechanical, and structural areas.
- Total GSF (Gross Square Footage) is the sum of all areas on all floors of a building included within the outside faces of its exterior walls, including all vertical penetration areas, for circulation and shaft areas that connect one floor to another.
- The Efficiency (%) is a measure of building efficiency and is the ratio of NASF to GSF.

Physical Space Inventory (continued)

HEGIS CODE	9 1996	10 1997	11 2000	12 2003	13 2006	14 2007	15 2003	16 2013	Subtotal 2015
	Carpentry Shop	Storage Building	Children's Center	Duncan Hall	Horowitz VPA	Rouse (RCF) SSH	Temp Buildings	Health Sciences	On Campus Permanent
100	0	0	0	9,685	0	0	2,251	3,344	32,203
110				9,685			2,251	3,344	32,047
115									186
200	0	0	1,977	34,450	34,062	0	2,642	40,500	189,532
210			1,977	27,815	29,553		2,612	40,500	166,076
215				630	4,509		30		14,199
220				6,005					8,690
250									567
300	0	1,946	345	10,384	1,314	38,362	0	13,555	119,359
310		1,399	345	8,360	1,314	22,547		10,662	89,883
315		547		295		7,157		1,618	14,661
320						6,738			6,999
350				1,729		1,920		1,275	7,816
400	0	0	0	1,365	411	1,300	0	3,275	23,288
410				1,365	411	1,300		3,275	10,671
420									4,876
430									7,741
440-55									0
500	0	0	0	462	199	0	0	188	29,652
520									22,127
525									4,226
530				462	199			188	3,023
535									276
580									0
600	0	621	7,628	4,214	1,475	16,269	0	990	48,850
610									6,222
615									4,567
620					1,303				1,958
625					172				305
630						8,759			8,759
635						4,210			4,210
640			6,013						6,013
645			1,454						1,454
650				1,080				990	6,409
655				312		200			512
660						1,660			1,660
665		621				1,440			2,061
670									735
680			161	2,822					3,985
700	1,455	0	0	1,260	0	0	0	527	9,416
710									1,308
720	762			904					3,403
725	693			356					3,704
730									474
750						0		527	527
760									0
800	0	0	0	0	0	0	0	0	1,551
900	0	0	0	0	0	0	0	0	0
050	0	0	0	0	0	0	0	0	0
060	0	0	0	0	0	0	0	0	0
070	0	0	0	0	0	0	0	0	0
090	0	0	0	0	0	0	0	0	0
	1,455	2,567	9,950	61,820	37,461	55,931	4,893	62,379	453,851

MARYLAND SPACE PROJECTIONS

Exhibited in this section are tables which illustrate the implementation of the master plan relative to the current space need, current space inventory, space needs in ten years, space inventory in ten years and associated surpluses and deficits on a per project basis. These computations are based on MHEC calculations and formulas for space allocation.

Within the next ten years the Master Plan recommends the completion of five building projects:

- Mathematics & Entrepreneurial Center
- Athletics Facility
- Plant Operations Building
- Campus Hub
- General Academic Building
- Continuing Education Building
- Student Life Building

Enrollment & Employment Statistics

	ACTUAL	PROJECTED
	Fall 2013	Fall 2023
FTDE-Credit	5,165	6,605
FTDE-Noncredit	682	753
FTDE-Total	5,165	6,605
WSCH-Lecture-Credit	35,122	44,914
WSCH-Lecture-Noncredit	5,217	5,761
WSCH-Lecture-Total	35,122	44,914
WSCH-Lab-Credit	52,683	67,371
WSCH-Lab-Noncredit	6,377	7,040
WSCH-Lab-Total	52,683	67,371
FTE Credit	6,710	8,581
Bound Volume Equivalents	77,100	95,810
FT-Faculty	189	242
FT-Library	5	6
PT-Faculty	689	881
FTE-Faculty	366	468
FT-Staff	425	543
Planning Headcount -Total	2,978	3,808
Actual Headcount - Total	10,184	12,807

Table Definitions:

- Projections are based upon MHEC guidelines and reflect the MHEC FY16 CIP Book submission.
- FTDE & WSCH are used as the basis for determining spaces needs. Full-time and part-time faculty counts are factored in to generate assessment of specific space types.
- Bound Volume Equivalents is a calculation driven off of FTE totals.
- Planning Headcount is a calculation driven off of FTDE, FTE faculty, and FT staff totals.

The current campus space inventory is 453,851 NASF which does not meet the campus's current space needs. This deficit will persist even with the completion of the five proposed building as a part of the Master Plan. By 2025 Howard Community College will still have a space deficit of 293,933 NASF.

Computation of Spaces Needs

HEGIS CODE	HEGIS CATEGORY	Current Need Based on Enrollment			Ten-Year Projected Need		
		Need Current	Inventory Current	Surplus/ (Deficit)	Need 10 Years	Inventory 10 Years	Surplus/ (Deficit)
100	CLASSROOM	38,985	32,203	(6,782)	49,855	27,917	(21,938)
200	LABORATORY	328,835	189,532	(139,870)	420,514	261,009	(160,072)
210	Class Laboratory	307,142	180,275	(126,867)	392,773	247,952	(144,821)
220	Open Laboratory	21,693	8,690	(13,003)	27,741	12,490	(15,251)
250	<i>Research-No Allowance</i>		567			567	
300	OFFICE	135,759	119,359	(16,400)	172,999	148,543	(24,456)
310	Office	132,426	112,360	(20,066)	168,946	141,544	(27,402)
320	Testing & Tutoring	3,333	6,999	3,666	4,053	6,999	2,946
350	<i>Conference Room-Included w/310</i>						
400	STUDY	43,075	23,288	(19,787)	54,694	32,468	(22,226)
410	Study	32,281	10,671	(21,610)	41,281	19,851	(21,430)
420-30	Stack/Study	7,710	12,617	4,907	9,581	12,617	3,036
440-55	Processing/Service	3,084	0	(3,084)	3,832	0	(3,832)
500	SPECIAL USE	80,580	29,652	(50,928)	97,860	62,019	(35,841)
520-25	Athletic	70,650	26,353	(44,297)	85,050	56,920	(28,130)
530	Media Production	8,930	3,299	(5,631)	11,810	3,299	(8,511)
580	Greenhouse	1,000	0	(1,000)	1,000	1,800	800
600	GENERAL USE	68,045	48,850	(27,397)	81,827	69,867	(20,162)
610	Assembly	19,330	10,789	(8,541)	22,210	15,789	(6,421)
620	Exhibition	3,333	2,263	(1,070)	4,053	2,263	(1,790)
630	Food Facility	25,015	12,969	(12,046)	31,987	18,969	(13,018)
640	Child Care		7,467			7,467	
650	Lounge	8,934	6,921	(2,013)	11,424	13,938	2,514
660	Merchandising	3,433	3,721	288	4,153	3,721	(432)
670	<i>Recreation-No Allowance</i>		735			735	
680	Meeting Room	8,000	3,985	(4,015)	8,000	6,985	(1,015)
700	SUPPORT	37,305	9,416	(27,889)	47,384	38,116	(9,268)
710	Data Processing	3,374	1,308	(2,066)	4,454	3,553	(901)
720	Shop/ Storage	28,202	7,581	(20,621)	35,613	32,766	(2,847)
730	<i>Included w/ 720</i>						
740	<i>Included w/ 720</i>						
750	Central Service	5,165	527	(4,638)	6,605	1,517	(5,088)
760	Hazmat Storage	564	0	(564)	712	280	(432)
800	HEALTH CARE	1,233	1,551	318	1,521	1,551	30
900	No Allowance		0			0	
050-090	No Allowance (Includes SCUP)		0			0	
	Total NASF:	733,817	453,851	(288,735)	926,654	641,490	(293,933)

PROPOSED SPACE ALLOCATION COMPUTATION

The following tables represent proposed buildings and their associated space programs. The 2020 gains/losses column (in yellow) indicates the changes to the physical space inventory in the next five years. The 2025 gains/losses column (in yellow, far right) indicates the changes to the physical space inventory by 2025. In this ten year span, six new buildings will come on board adding 187,639 NASF to the physical space inventory.

Facility Inventory Changes

HEGIS CODE	HEGIS CATEGORY	Subtotal	17	New SET Building Online		Nursing & ST Renovation		18	New Math
		2015	2017	CL	S&T	NST	NST	2020	Bldg Online
		On Campus Permanent	SET Building	Losses	Losses	Gains	Losses	Math/EC Building	HR Losses
100	CLASSROOM	32,203	0	0	0	9,677	(10,377)	0	(1,599)
110	Classroom	32,047				9,677	(10,377)		(1,599)
115	Classroom Service	156							
200	LABORATORY	189,532	59,910	(5,309)	(19,600)	15,190	(31,675)	34,100	(14,897)
210	Class Laboratory	166,076	44,800	(3,156)	(14,491)	14,574	(31,195)	34,100	(13,544)
215	Class Laboratory Service	14,199	13,310	(2,153)	(5,109)	616	(480)		(1,353)
220	Open Laboratory	8,690	1,800						
250	Research Laboratory	567							
300	OFFICE	119,359	11,310	(61)	(3,003)	24,399	(11,802)	5,183	0
310	Office	89,883	8,120	(61)	(2,473)	24,399	(11,802)	5,183	
315	Office Service	14,661	2,790		(242)				
320	Testing & Tutoring	6,999							
350	Conference Room	7,816	400		(288)				
400	STUDY	23,288	1,000	0	0	1,360	(420)	2,000	0
410	Study	10,671	1,000			1,360	(420)	2,000	
420	Library Stacks	4,876							
430	Open-Stack Study Room	7,741							
440-55	Processing/Service	0							
500	SPECIAL USE	29,652	1,800	0	0	1,195	(666)	0	0
520	Athletic or Physical Education	22,127							
525	Athletic or Physical Education Service	4,226				1,195	(666)		
530	Media Production	3,023							
535	Media Production Service	276							
580	Greenhouse	0	1,800						
600	GENERAL USE	48,850	3,400	0	0	6,017	0	1,600	0
610	Assembly	6,222	1,800					1,600	
615	Assembly Service	4,567							
620	Exhibition	1,958							
625	Exhibition Storage	305							
630	Food Facility	8,759							
635	Food Facility Service	4,210							
640	Day Care	6,013							
645	Day Care Service	1,454							
650	Lounge	6,409				6,017			
655	Lounge Support	512	400						
660	Merchandising	1,660							
665	Merchandising Service	2,061							
670	Recreation	735							
680	Meeting	3,985	1,200						
700	SUPPORT	9,416	1,830	0	0	4,440	(2,483)	300	0
710	Telecom	1,308	560			1,085		300	
720	Shop	3,403				3,355	(2,483)		
725	Shop Service	3,704							
730	Central Storage	474							
750	Central Service	527	990						
760	Hazmat Storage	0	280						
800	HEALTH CARE	1,551	0	0	0	0	0	0	0
900	RESIDENTIAL	0	0	0	0	0	0	0	0
050	INACTIVE AREA	0	0	0	0	0	0	0	0
060	ALTER. OR CONV.	0	0	0	0	0	0	0	0
070	UNFINISHED AREA	0	0	0	0	0	0	0	0
090	OTHER ORG. USAGE	0	0	0	0	0	0	0	0
Total NASF:		453,851	79,250	(5,370)	(22,603)	62,278	(57,423)	43,183	(16,496)

Facility Inventory Changes (continued)

HEGIS CODE	Subtotal	19	New A&F	20	New Plant Ops	21	Prior to New	22	Subtotal
	2020	2022	Bldg Online	2023	Bldg Online	2024	Gen Academic	2025	2025
	On Campus Gains/Losses	Athletics Facility	Old A&F Losses	North Garage + Plant Ops	Stor/PB Losses	Campus Hub	TA Losses	General Academic	On Campus Gains/Losses
100	29,904	0	(404)	0	0	0	(1,583)	0	27,917
110	29,748		(404)				(1,583)		27,761
115	156		0						156
200	227,251	2,400	0	0	0	0	(2,642)	34,000	261,009
210	197,164	2,400	0				(2,612)	32,000	228,952
215	19,030		0				(30)		19,000
220	10,490		0					2,000	12,490
250	567		0						567
300	145,385	3,000	(1,439)	4,231	(2,634)	0	0	0	148,543
310	113,249	3,000	(1,131)		(2,634)				112,484
315	17,209		(175)						17,034
320	6,999								6,999
350	7,928		(133)	4,231					12,026
400	27,228	0	0	0	0	3,240	0	2,000	32,468
410	14,611	0		0		3,240		2,000	19,851
420	4,876								4,876
430	7,741								7,741
440-55	0								0
500	31,981	56,401	(26,363)	0	0	0	0	0	62,019
520	22,127	56,401	(22,137)						56,391
525	4,755		(4,226)						529
530	3,023								3,023
535	276								276
580	1,800								1,800
600	59,867	7,600	0	0	0	0	0	2,400	69,867
610	9,622	1,600							11,222
615	4,567								4,567
620	1,958								1,958
625	305								305
630	8,759	6,000							14,759
635	4,210								4,210
640	6,013								6,013
645	1,454								1,454
650	12,426							600	13,026
655	912								912
660	1,660								1,660
665	2,061								2,061
670	735								735
680	5,185							1,800	6,985
700	13,503	300	0	28,969	(4,656)	0	0	0	38,116
710	3,253	300							3,553
720	4,275			23,969	(4,656)				23,588
725	3,704			5,000					8,704
730	474								474
750	1,517								1,517
760	280								280
800	1,551	0	0	0	0	0	0	0	1,551
900	0	0	0	0	0	0	0	0	0
050	0	0	0	0	0	0	0	0	0
060	0	0	0	0	0	0	0	0	0
070	0	0	0	0	0	0	0	0	0
090	0	0	0	0	0	0	0	0	0
	536,670	69,701	(28,206)	33,200	(7,290)	3,240	(4,225)	38,400	641,490

STRATEGIES FOR SPACE REALIGNMENT

In order to accommodate future campus growth new facilities will need to be constructed. This will allow specific divisions to expand in a strategic and considered way. The net assignable square footage (NASF) for each building project has been devised as a part of the space needs and is in alignment with projects currently identified in the proposed capital budget.

PROPOSE SPACE PROGRAM

Phase 1 (2015-2020)

Project 1. Mathematics & Entrepreneurial Center (3 floors)

Class Lab	34,100 NASF
Office	5,183 NASF
Study Space	4,000 NASF
Assembly	1,600 NASF
IT	300 NASF
<hr/>	
Subtotal NASF	43,183 NASF

Project 2. Athletics Facility (1.5 floors)

Athletic Requirement	56,401 NASF
Class Lab	2,400 NASF
Office	3,000 NASF
Assembly	1,600 NASF
Food Facility	6,000 NASF
IT	300 NASF
<hr/>	
Subtotal NASF	69,701 NASF

Project 3. Plant Operation Building (1 floor)

Office & Conference	4,231 NASF
Shop	23,939 NASF
Shop Service	5,000 NASF
<hr/>	
Subtotal NASF	33,200 NASF

Phase 2 (2020-2025)

Project 4. Campus Hub (1 floor)

Study & Tutor Space	3,240 NASF
<hr/>	
Subtotal NASF	3,240 NASF

Project 5. General Academic Building (3 floors)

Class Lab	32,000 NASF
Open Lab	2,000 NASF
Lounge	600 NASF
Meeting	1,800 NASF
<hr/>	
Subtotal NASF	38,400 NASF

Project 6. Continuing Education Building (3 floors)

Continuing Education Spaces	30,100 NASF
Study Spaces	1,200 NASF
Distance Learning	1,500 NASF
<hr/>	
Subtotal NASF	32,800 NASF

Phase 3 (2025+)**Project 8. Student Life Building with Academic Component (3 floors)**

Student Life Spaces	21,000 NASF
Food Venue	3,500 NASF
Lounge Space	1,200 NASF
Meeting Spaces	2,400 NASF
<hr/>	
Subtotal NASF	28,100 NASF

05

**ENVIRONMENTAL
SCAN**



ENVIRONMENTAL SCAN

INTRODUCTION

The purpose of the environmental scan is to review and assess factors and trends that will influence current and future academic programs and facilities needs at Howard Community College. To help the college focus their recruiting and facility investment efforts, the team completed an investigation of the current and projected enrollment trends, retention rates, and persistence profile at HCC. Efforts included understanding the current target recruitment profiles and forecasted changes in demographics. Desired goals were cross-referenced with the objectives expressed by the college's academic plan, in order to align the enrollment management strategy and facility development plans with the college's mission and strategic goals. This assessment focused on factors within the catchment area, what we term as the "community" of Howard Community College. The following key questions were asked:

- **What is your community today, and what will it be tomorrow?**
- **Based on the demographics and dynamics of your community, What educational resources will support tomorrow's student?**
- **What are the national trends that should be understood and could be utilized by HCC?**

Information gathered as a part of environmental scan provides a path for our master planning effort, driving informed decisions on all relevant factors. Thorough review and analysis of the environmental Scan is crucial in ranking the short and long terms goals of the HCC master plan.

RELATED DOCUMENTATION

The environmental scan produced by the HCC Office of Planning, Research, and Organizational Development as well as the recently published 4th edition of the HCC Commission on the Future are two documents which were reviewed prior to the compilation of this report. This environmental scan both validates and builds upon the data and recommendations provided within these two Howard Community College published documents.

The environmental scan provided by the Office of Planning, Research, and Organizational Development is to inform about "the social, economic, political, environmental, and technological issues that could impact, and affect the environment within which HCC operates. It is a comprehensive document with expanded data and analysis on the following topics: Enrollment Overview and Market Position, Demographic and Economic Characteristics for Howard County, Regional and State Industry Sector and Occupational Outlook, Institutional Effectiveness and Student Outcomes, Human Resources, and Finance.

The HCC Commission on the Future conducts an internal environmental scanning and strategic planning venture known as the Commission on the Future. Topics from the 2012-2013 document include: Global Competency and Civic Engagement; Health Care Professionals; Leading Edge Organization Partnerships; Science, Technology, Engineering, and Mathematics (STEM); Sustainability; and Workforce development.

Commission on the Future Objectives:

- Increase HCC's responsiveness to the emerging learning needs of Howard County.
- Establish a process that will serve as a model for continued citizen participation in helping the college prepare for the future.
- Create a widely understood and shared vision for the future of HCC.
- Promote an understanding of the mission of HCC.

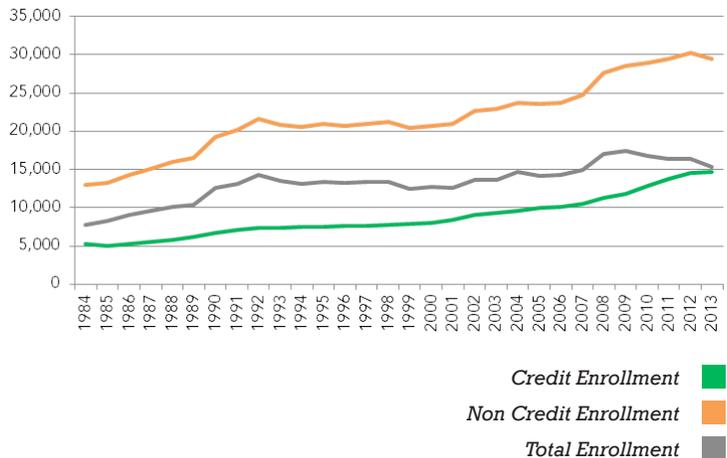
What is your community today, and what will it be tomorrow?

CURRENT ECONOMIC CLIMATE FOR THE COMMUNITY COLLEGE

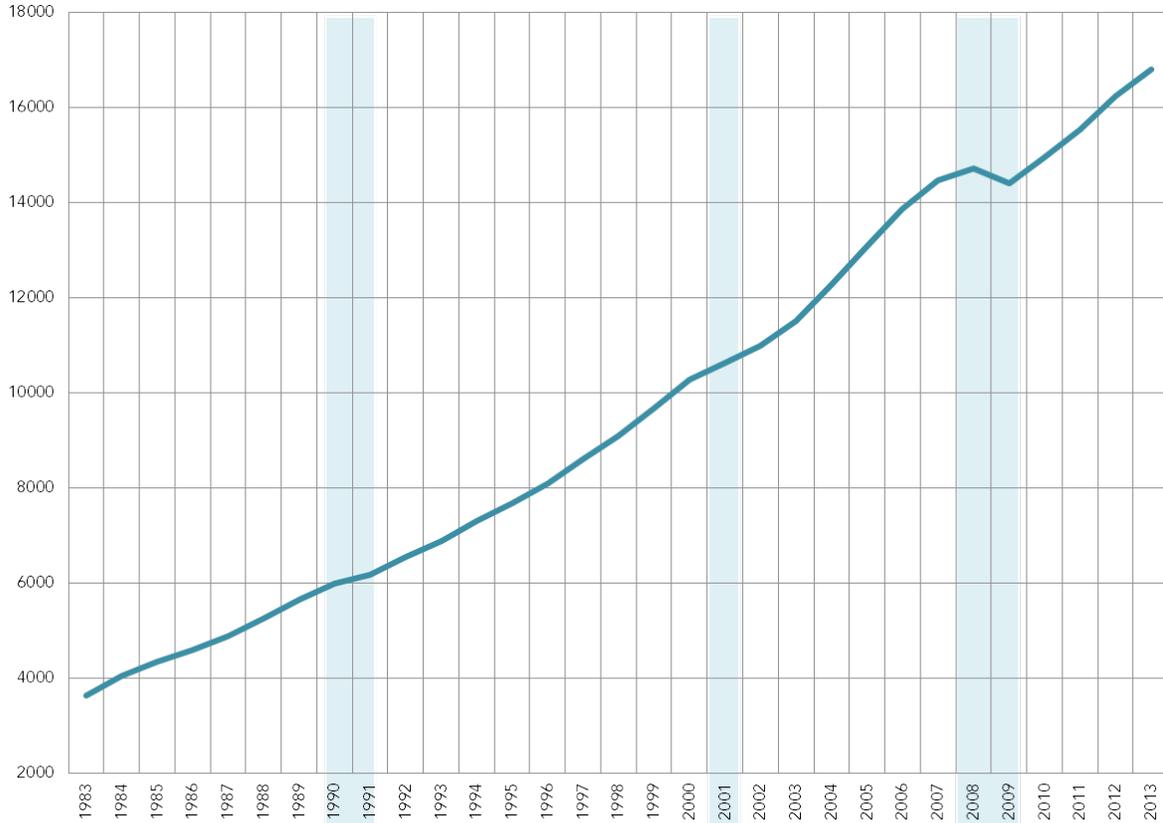
According to the U.S. Census Bureau, there was a decline in college enrollments between 2012 and 2013 of approximately 463,000 students. Despite this decline, four-year school enrollments still experienced small, 1.2% gain. Thus it was the community colleges which saw a 9.6% decline. The overall enrollment decline was equally divided between students younger than twenty-one and students older than twenty-five. These figures indicate that the surge in enrollments for community colleges that occurred between 2006 and 2011 has subsided as the economy continues to strengthen post-recession.

In times of economic prosperity, students tend to travel further and spend more on their education. Compounded by the aging population and continued decline of graduating high school seniors nationwide, the next five years of enrollments will see a change in trend lines. Community college enrollments typically react inversely to economic change. Noted are spikes in the percent annual change in HCC Full-Time Equivalent Students (FTE) versus the dips in percent annual change of Gross Domestic Product (GDP) occur during the economic downturns of 1990, 2001, and 2008.

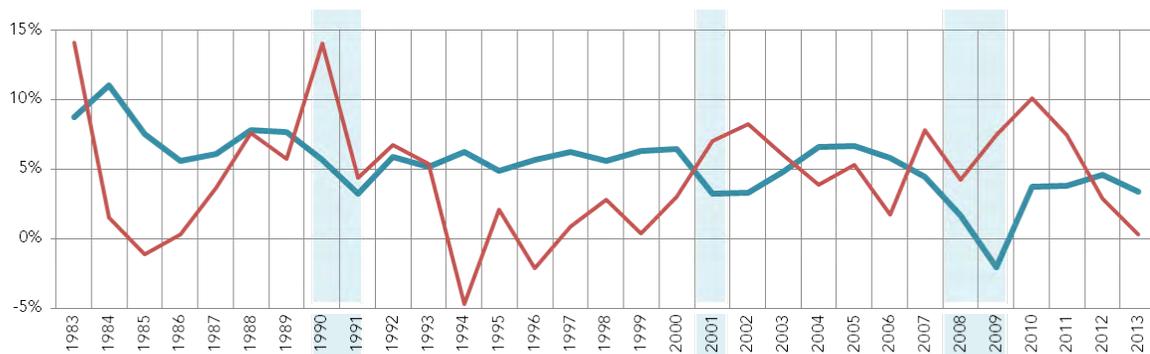
Howard Community College Headcount Enrollment, 1984-2013



History of U.S. Gross Domestic Product (GDP), 1983-2013



History of Percent Annual Change of U.S. GDP vs Howard Community College FTE, 1983-2013



GDP Annual Percentage Change ■
 FTE Annual Percentage Change ■
 Economic Downturns ■

Sources: US Census Bureau & World Bank Database

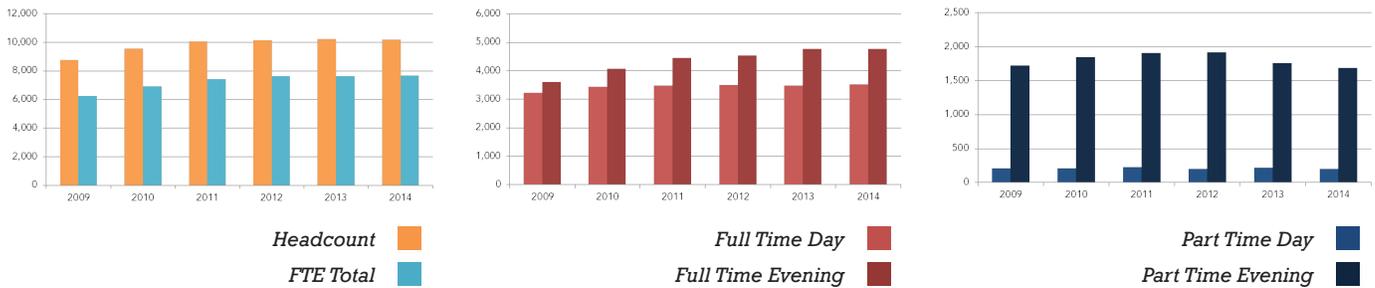
RECENT CHANGES IN ENROLLMENT

Enrollment between 2009 and 2011 surged as was on trend nationwide. Between 2012 and 2014, there has been continued overall growth but an expected leveling in annual percent change. While the proportional percentages of daytime to evening and part-time to full-time remains consistent as compared to 2009, there has been a modest increase in full-time day enrollment compared to relatively little change in part-time day enrollment. In the evening, full-time enrollment saw little change while there was a decline in part-time evening enrollment. In the fall of 2012, HCC's enrollment was 36% full time and 64% part time. This is consistent with the overall percentage of full-time to part-time percentages for the sum total of the sixteen Maryland Community Colleges.

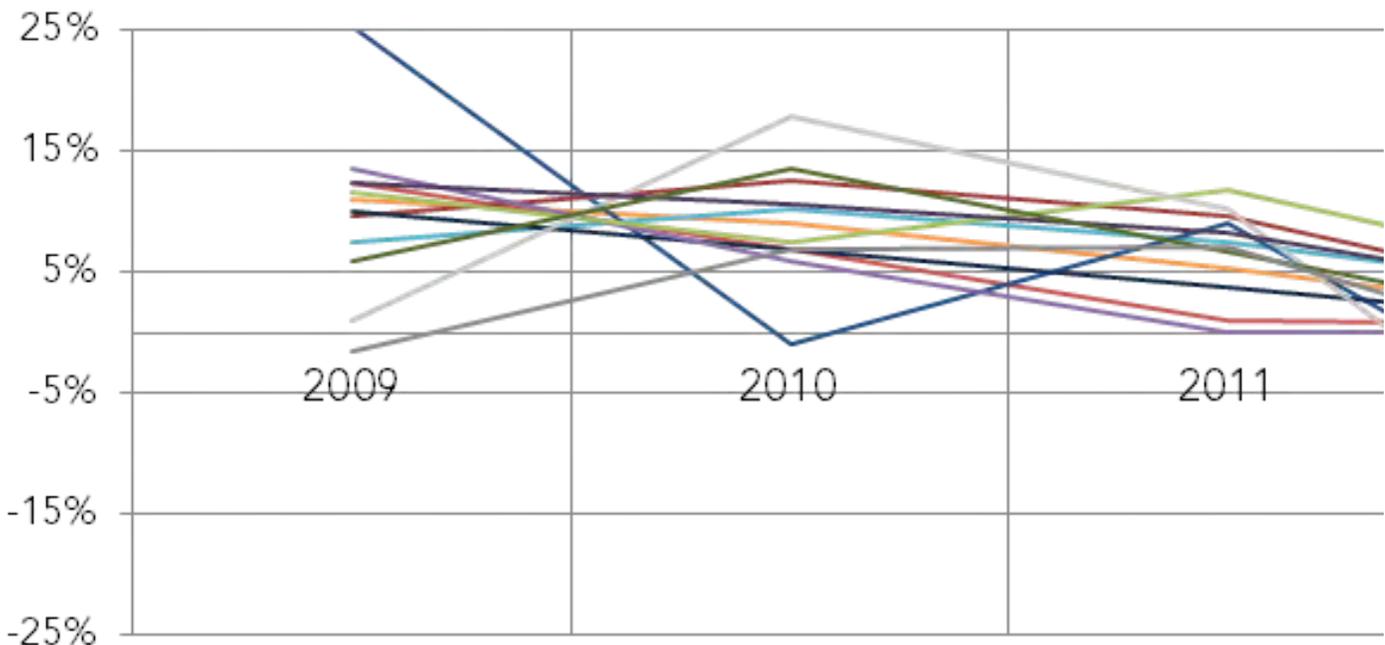
At 80% of the total enrollment, the transfer programs represent the largest portion of credit enrollments. Between 2012 and 2014, enrollment in transfer programs has seen small growth. In comparison, there has been slightly more, modest growth in occupational programs. Interestingly between 2013 and 2014, there was a significant decrease in the population of undeclared students which likely reflects policies related to the curriculum re-alignment enacted in Fall 2014.

While credit headcount has seen continued growth (with spikes at predictable intervals), non-credit headcount has remained less consistent, with dips occurring in some years. In the last 10 years, credit enrollments have grown from 40%

Howard Community College Enrollment Characteristics 2009-2014

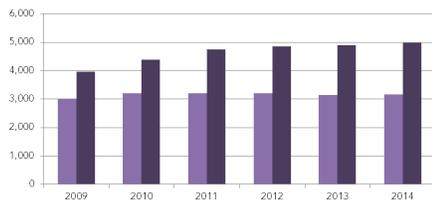
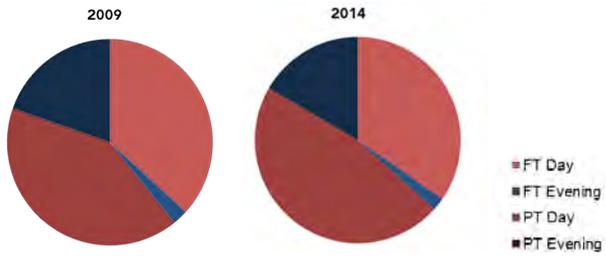


Howard Community College Enrollment Percent Annual Change, 2009-2014

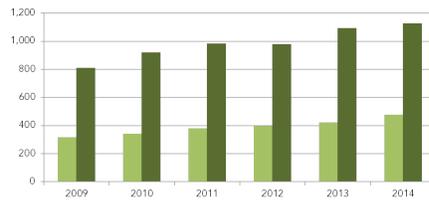


to 50% of the total enrollments. The decline in enrollment in 2013 is due to a leveling of credit enrollment and a dip in non-credit enrollment.

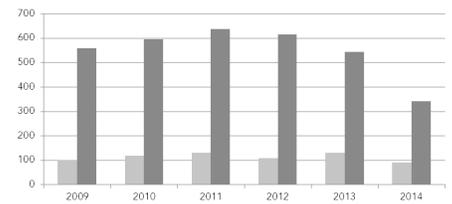
Howard Community College Enrollment Comparison, 2009 & 2013



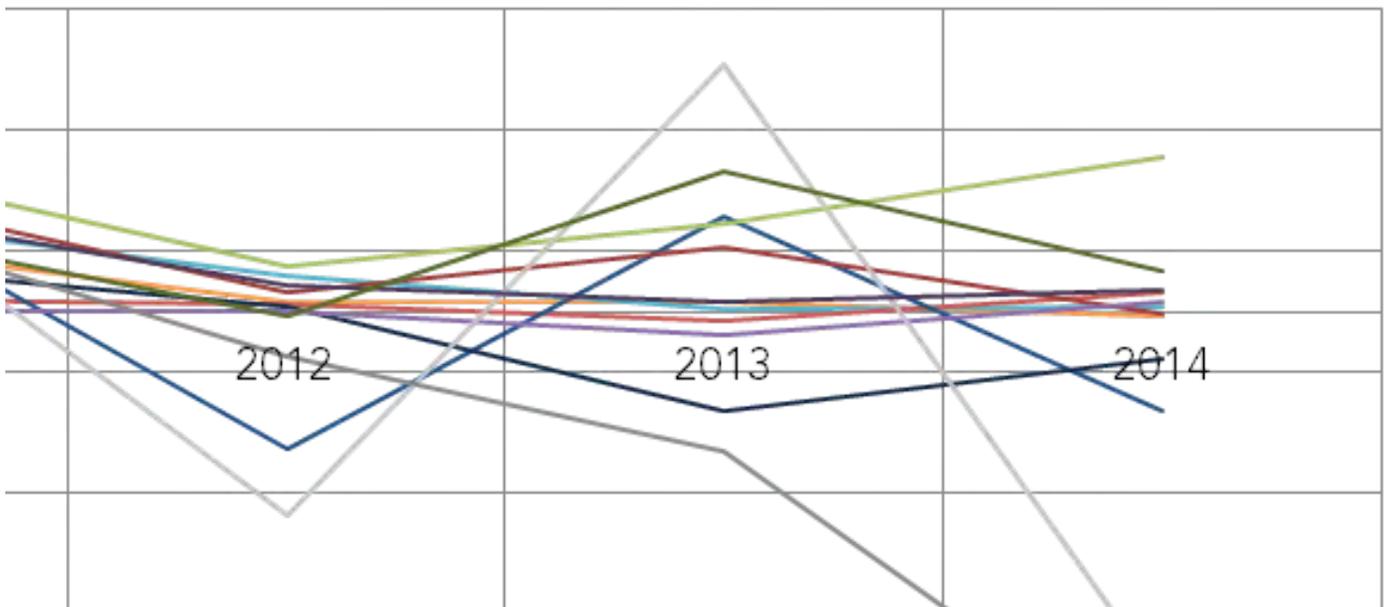
Full Time Transfer (Purple)
Part Time Transfer (Dark Purple)



Full Time Occupational (Light Green)
Part Time Occupational (Dark Green)



Full Time Undeclared (Light Gray)
Part Time Undeclared (Dark Gray)



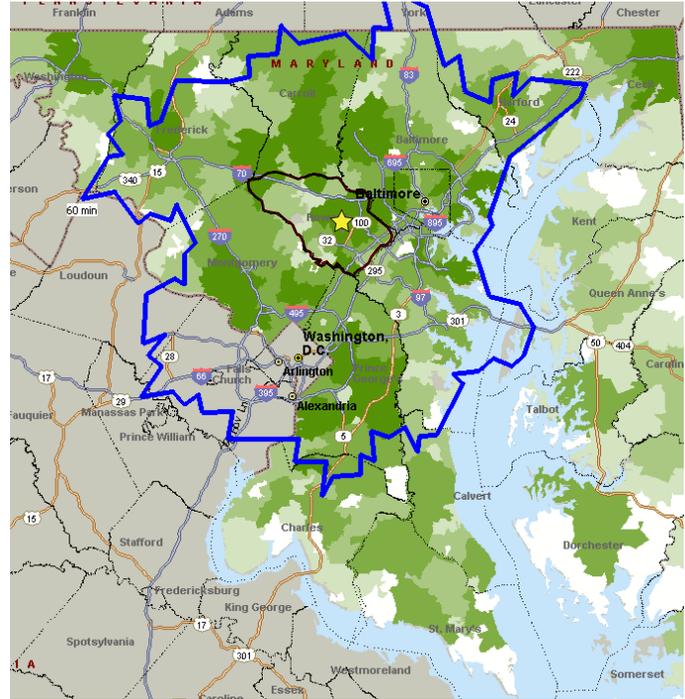
Sources: HCC Databook, Mini-Profile of HCC Fall Credit Enrollment Statistics, MHEC Databook, Undergraduate Enrollment by Institution

ENROLLMENT IN THE CONTEXT OF HOWARD COUNTY AND MARYLAND

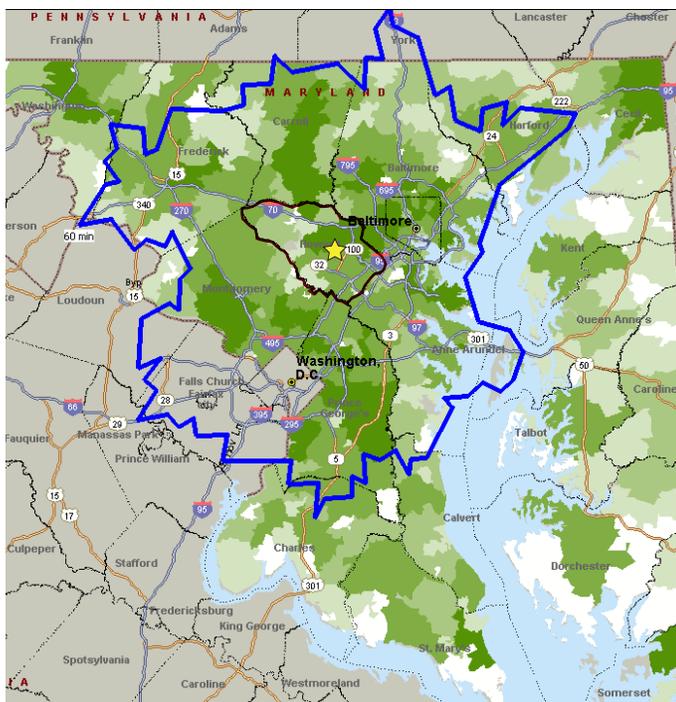
The population of Howard County is projected to increase 21% between 2005 and 2030. The highest volumes of 15-17 year olds in Central Maryland today are located in Gaithersburg, Potomac, Germantown, and Hagerstown – largely outside of Howard Community College’s current catchment area. Central Maryland is projected to experience some of the largest growth in the 18-20 age cohort between 2014 and 2019. The highest concentration of 21-24 year olds are currently in College Park, Baltimore, Parkville, Salisbury, and Towson, the area around Howard Community College is expected to see some of the largest growth in the 21-24 age cohort between 2014 and 2019. In addition, there are high to moderate volumes of populations age 25+ with some college courses but no degree in the areas surround Howard Community College.

Keys		1,600 to 5,424		3,500 to 12,000	
HCC Main Campus	★	600 to 1,599	200 to 599	1,500 to 3,499	50 to 149
Howard County	■	200 to 599	50 to 149	150 to 499	0 to 51
1 Hour Radius	■	52 to 199	0 to 149	0 to 149	0 to 149

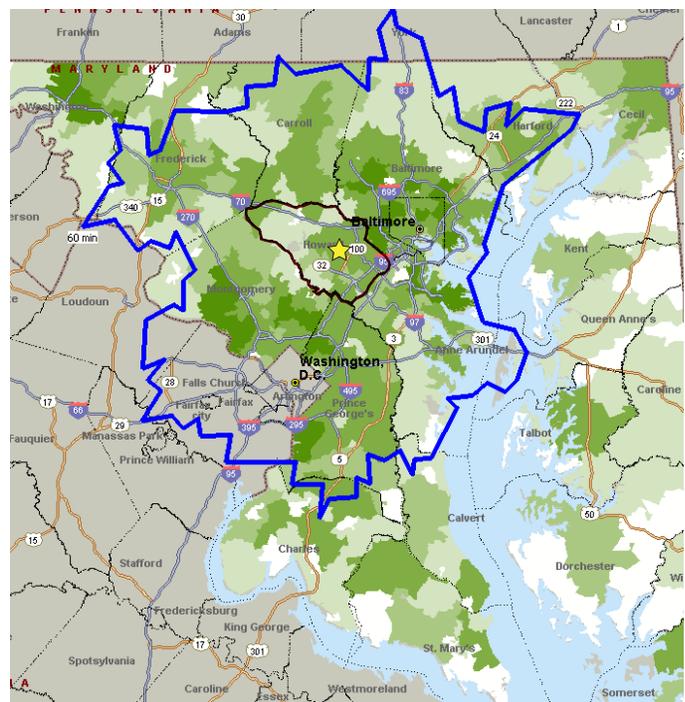
Highest Volumes of 15-17 Year Olds, 2014



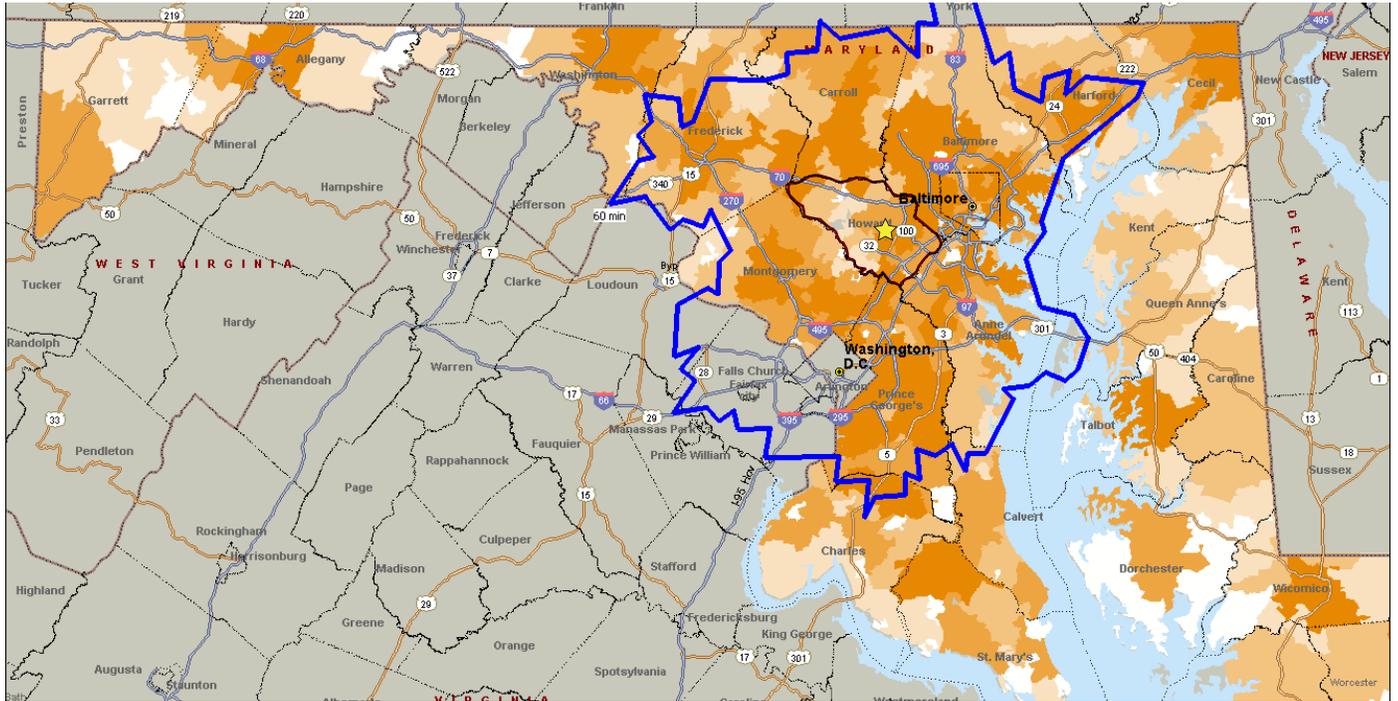
Highest Volumes of 18-20 Year Olds, 2014



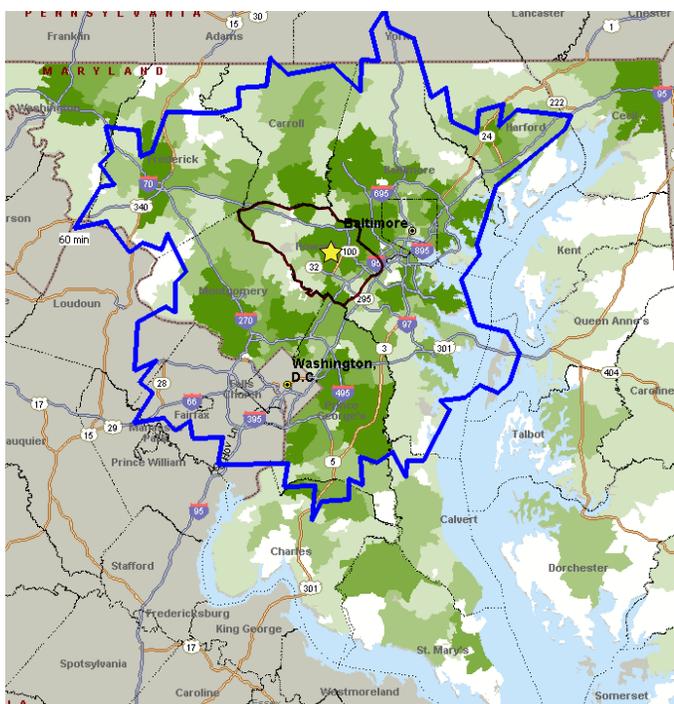
Highest Volumes of 21-24 Year Olds, 2014



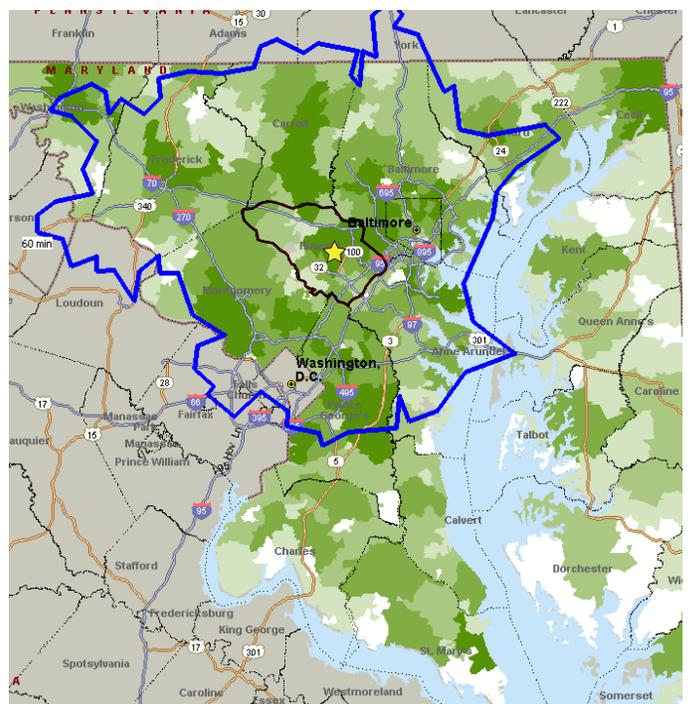
Populations with Some College & No Degree, 2014



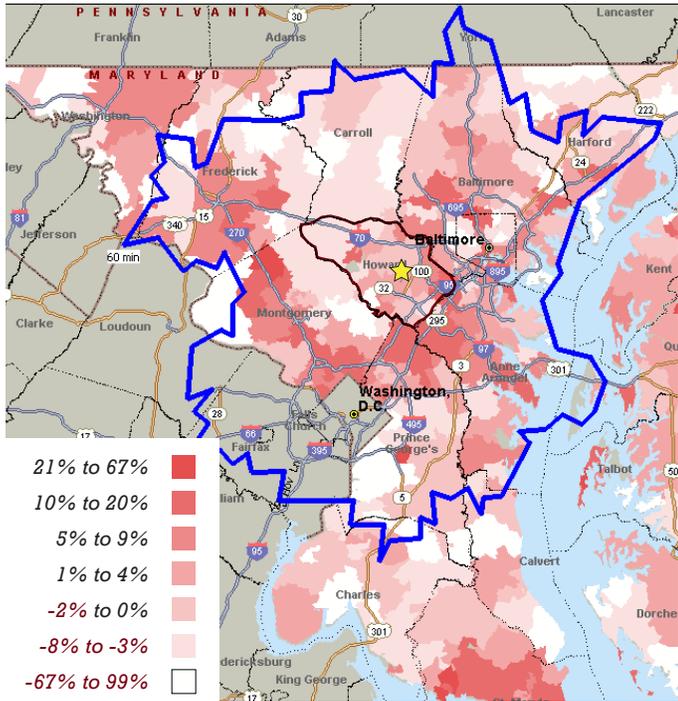
Highest Volumes of 15-17 Year Olds, projected 2019



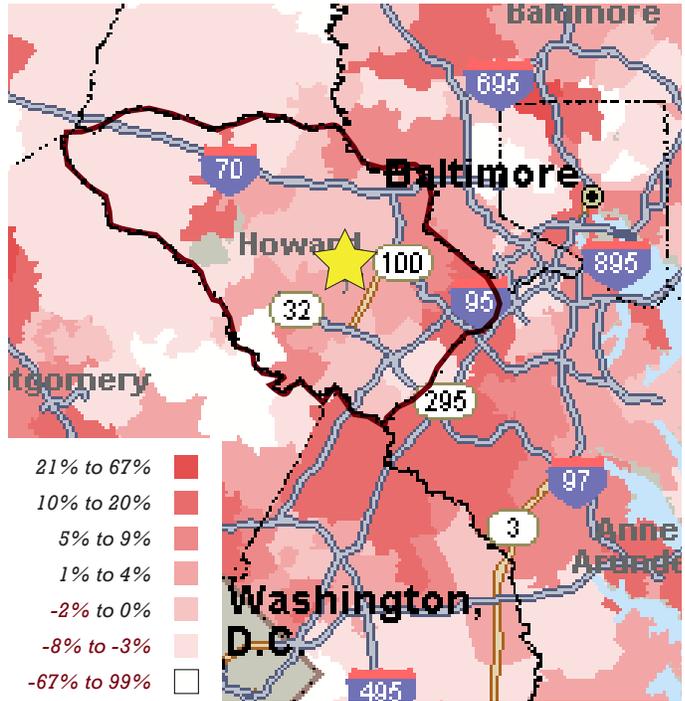
Highest Volumes of 18-20 Year Olds, projected 2019



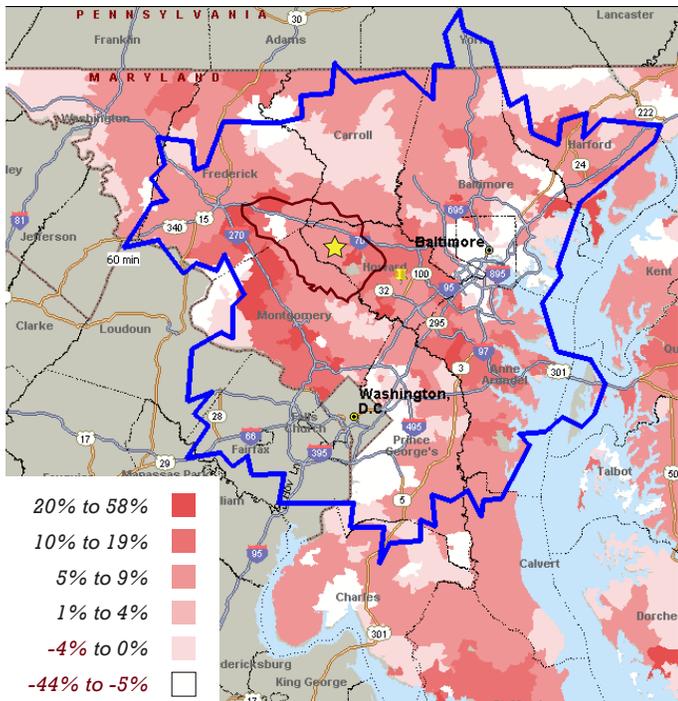
Largest Growth in 15-17 Year Olds, 2014-2019



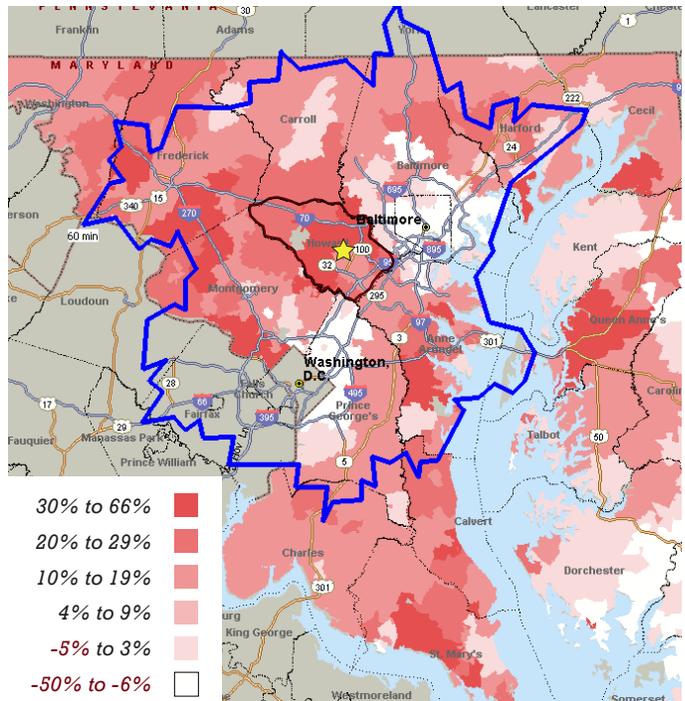
Largest Growth in 15-17 Year Olds in Howard County, 2014-2019



Largest Growth in 18-20 Year Olds, 2014-2019



Largest Growth in 21-24 Year Olds, 2014-2019



HCC Main Campus ★
 Howard County ■
 1 Hour Radius ■

HCC CAPTURE RATE WITHIN HOWARD COUNTY & MARYLAND

The mappings on the following pages indicate opportunities for targeted recruitment efforts. Currently HCC captures 7% of the Howard County population who are 18 years or older. Of the total students attending Howard Community College, 80% live in Howard County. Other in-state residents live largely in counties adjacent to Howard County.

Maryland residents attending a post-secondary institution are heavily populated along the DC-Baltimore corridor in Montgomery, Howard, Baltimore, Baltimore City, Anne Arundel, and Prince George's Counties. Of these counties, Howard Community College is the smallest in population but captures an equivalent percentage of its population compared to the other counties. While Howard Community College captures 39% of its resident student population, Anne Arundel County, Baltimore County, and Montgomery Counties exceed this percentage.

Currently Howard Community College's foreign population far outnumbers its out of state population. While 1% of HCC's Fall 2012 First-time degree/certificate seeking students were from out of state, 4% were from foreign countries.

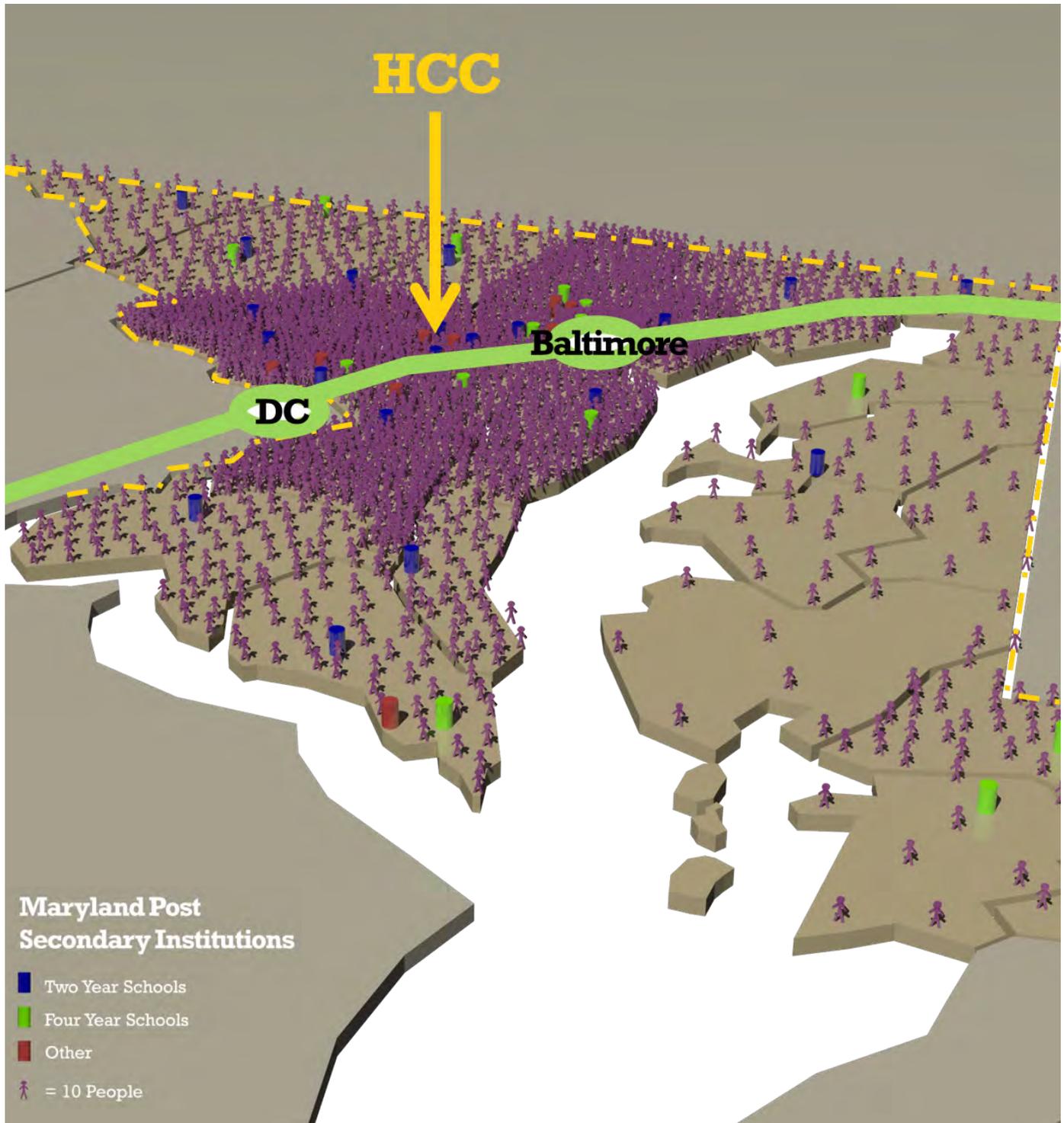
FUTURE CATCHMENT

Howard Community College's current catchment zone is primarily within Howard County and largely capturing a daytime student enrolled in transfer studies. While part-time students do outweigh full-time students, the margins are close. The occupational programs have seen growth in recent years and may continue to grow as further emphasis is placed nationwide on the creation of a middle-skills workforce. With other strategic efforts by the college to bolster international programs and studies, the percentage of foreign students to out of state students may continue to grow.

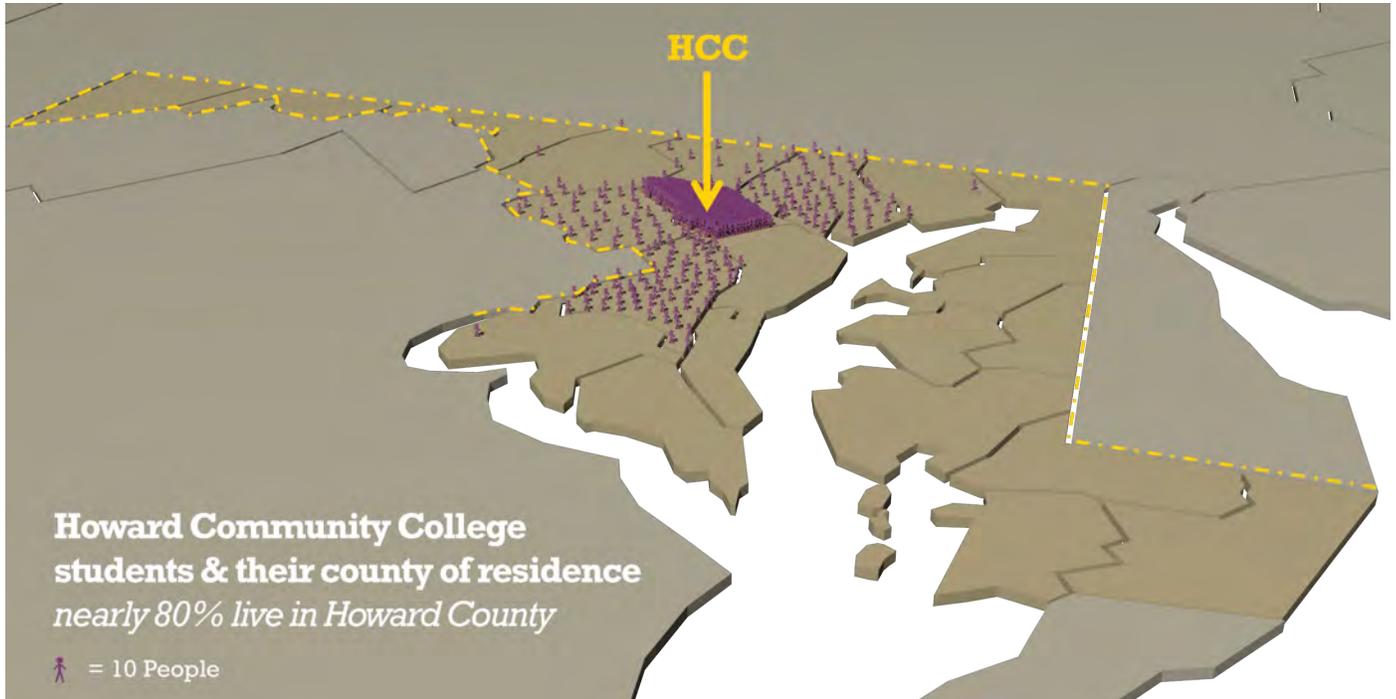
Maryland Residents Attending a Post-Secondary Institution, 2013

County	Population	Students per Population	Total Students	In County CC Students	Percentage Attending Local CC	Square Miles	Students per Sq MI
Anne Arundel County	550,488	5%	27,811	14,490	52%	588	47
Baltimore City	621,342	5%	28,976	805	3%	92	315
Baltimore County	817,455	5%	42,876	18,018	42%	682	63
Howard County	299,430	6%	18,962	7,424	39%	254	75
Montgomery County	1,004,709	5%	48,029	22,259	46%	507	95
Prince George's County	881,138	4%	37,320	12,826	34%	498	75

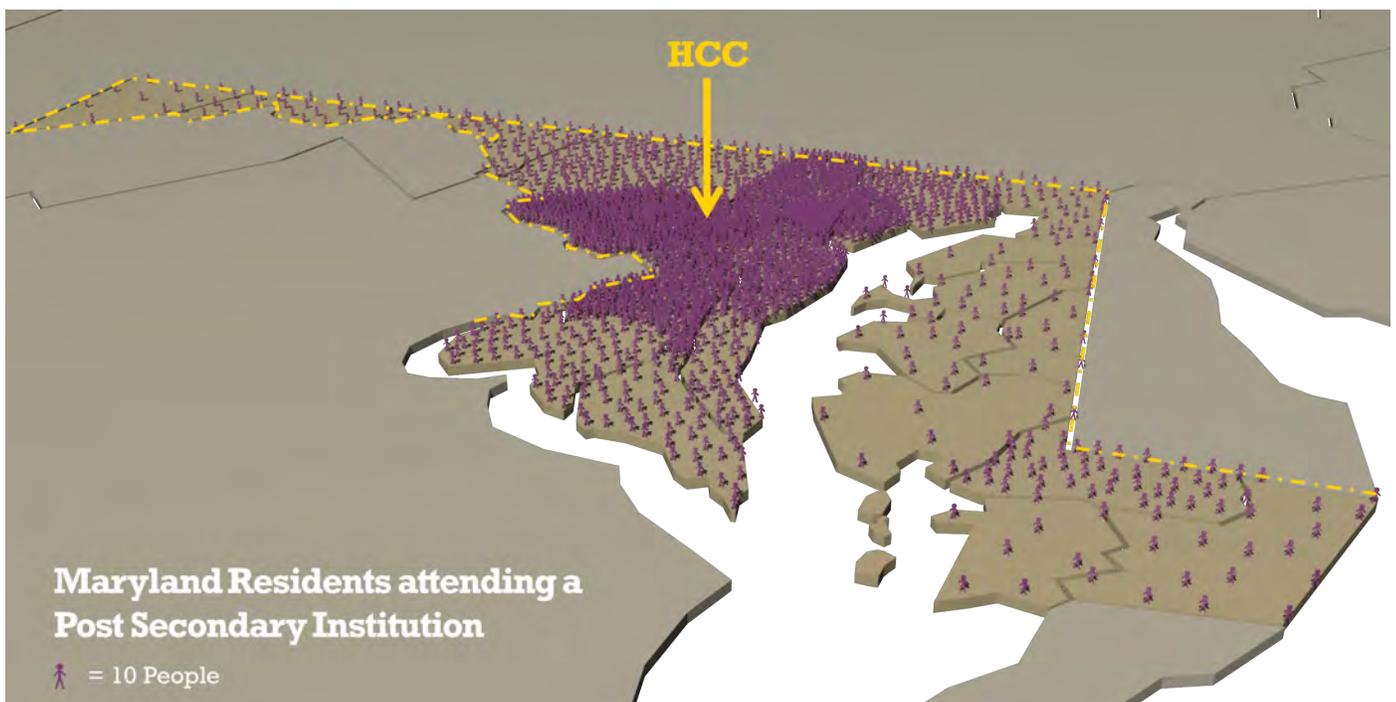
Maryland Residents Attending a Post Secondary Institution by County of Residence



Howard Community College Students by County of Residence



Maryland Residents Attending a Post Secondary Institution by County of Residence



What educational resources will support tomorrow's student?

UNDERSTANDING THE CHANGING POPULATION

Population Demographics - Age

The aging population is an ongoing concern for college enrollments. As the population of those 65+ continues to expand, there will be a dip in college bound high school students in the coming 5 years. As seen in previous mappings, the population of 20 to 44 year olds will grow. This is significant as the median age of full-time HCC students is 19 and part-time students is 24.

Population Demographics - Gender

Howard Community College is 43% male and 57% female. In 2012, Maryland community colleges in total were 40% male and 60% female. The national average is 57% female.

Population Demographics - Race

Howard County's population is projected to go from being 59% white in 2010 to 50% white in 2020 which mirrors trends nationwide.

ALIGNING PEOPLE WITH RESOURCES

As the Howard County population seeking higher education becomes increasingly diverse in the coming years, Howard Community College will need to expand programs and services to serve an increasingly emigrant and first time in college population. Critical services in acquiring language and study skills should be bolstered and expanded. These services reinforce student success leading to increased transfers, graduation, and job placement.

Major Employers in the State of Maryland, 2013 & 2014:

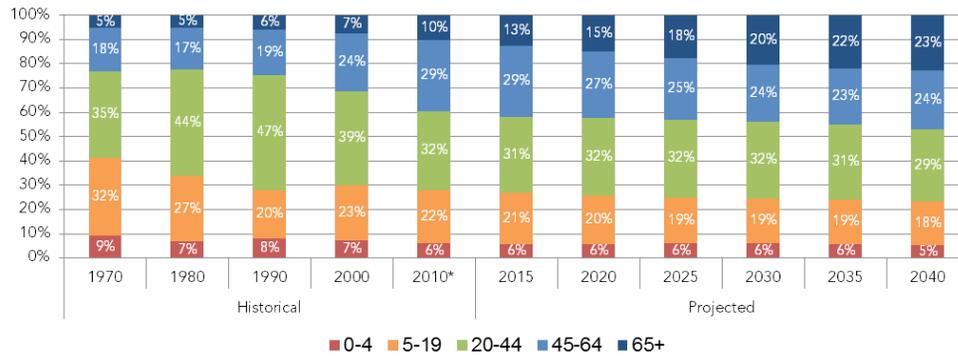
- Booz Allen Hamilton
- Exelon
- Fort George G. Meade
- Johns Hopkins Hospital & Health
- Johns Hopkins University
- Lockheed Martin Corporation
- McCormick & Company

Major Employers in Howard County, 2013 & 2014:

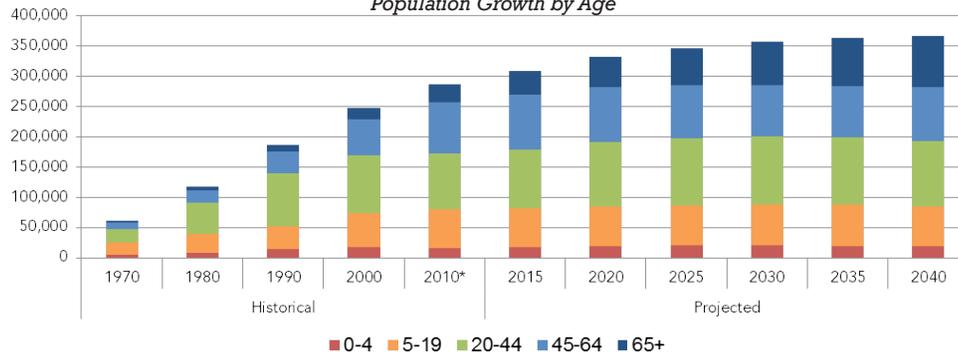
- National Institutes of Health
- Northrop Grumman Corporation
- Major Employers in Howard County in 2013
- University of Maryland Medical System
- University System of Maryland
- Verizon Maryland
- Giant Food
- The Columbia Association
- Wells Fargo
- MICROS Systems
- Nielsen Audio
- Maxim Healthcare Services
- Northrop Grumman
- Magellan Health Services

Maryland Population Characteristics Historical & Projected

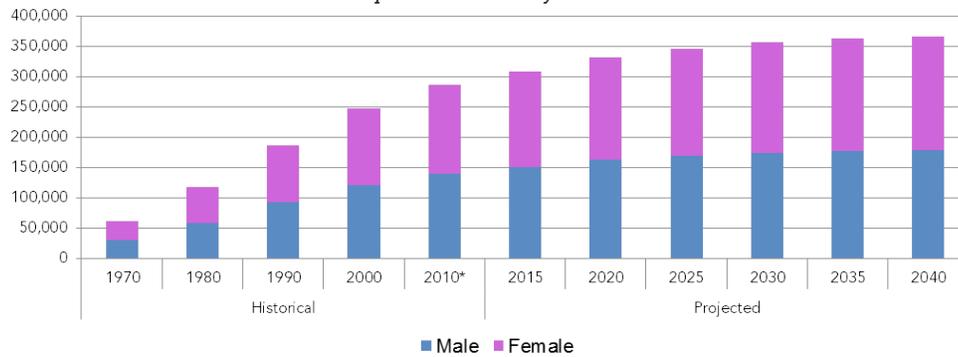
Population Growth Percentage of Age



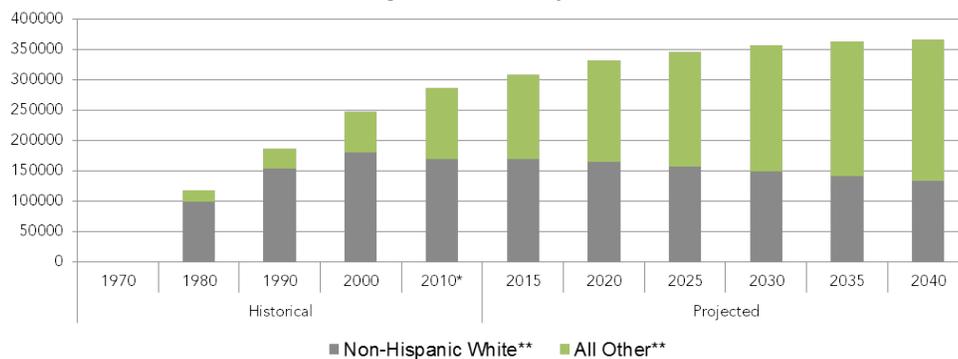
Population Growth by Age



Population Growth by Gender



Population Growth by Race



Source: U.S. Census Bureau, MHEC Databook 2014

LABOR OUTLOOK

The Maryland Department of Labor reported projections for 2012-2022 Workforce Development and Adult Learning shows key growth for the following industries which will impact key existing Howard Community College programs:

- Professional, Scientific, and Technical Services
- Educational Services
- Hospitals & Ambulatory Health Care Services

Due to the State of Maryland’s legislation that access to healthcare is a “right” of all Maryland citizens the state has a flat rate structure. This regulation means Maryland is well positioned related to the recent Affordable Care Act (ACA). Maryland’s hospitals are on solid ground and will continue to hire and employ health professionals. For Howard Community College this means that new program developments and continued enrollment in the nursing program align with a robust healthcare sector in Maryland.

VALUE PROPOSITION

HCC should continue to consider and market the value proposition of a two-year education. Howard Community College offers a affordable alternative to entry into the higher education landscape. In addition to competitive tuition rates, HCC delivers intimate class settings which are ideal for first time in college students. Faculty are connected to local business and industry which affords the HCC student a real world perspective as part of their education. Continuing to create industry connections amongst faculty and students leads to higher transfer rates and job placement.

The recent general education curriculum realignment clarified pathways to key transfer institutions and better aligned strategies for completion and remediation requirements. The chart below represents the number of students transferring to public four-year institutions in Maryland from Howard County as well as the sum of all community colleges in Maryland. Those highlighted represent the largest numbers from HCC as well as those where HCC’s market share was between 8% and 10%.

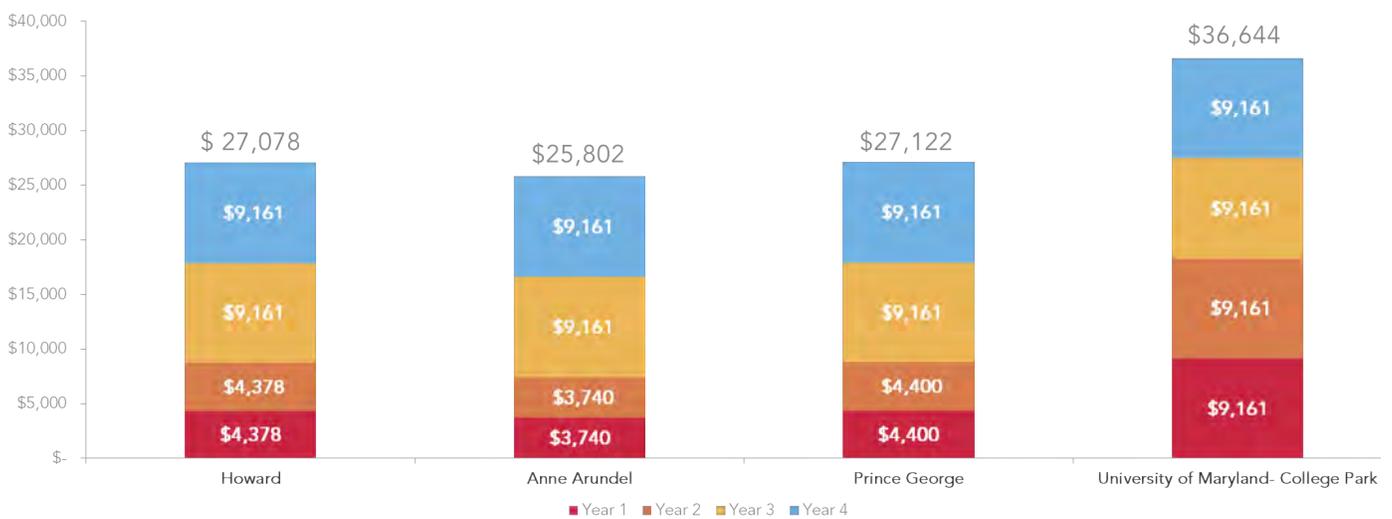
Howard Community College Key Transfer Institutions, 2011-2012

	BSU	CSU	FSU	SU	TU	UB	UMB	UMBC	UMCP	UMES	UMUC	MSU	SMC	Total
HCC	11	6	12	43	175	40	17	198	174	7	91	12	5	791
Total MD CC's	302	224	412	902	2,154	498	194	1,200	1,777	168	1,577	319	80	9,807
	4%	3%	3%	5%	8%	8%	9%	17%	10%	4%	6%	4%	6%	8%

- BSU** Bowie State University
- CSU** Coppin State University
- FSU** Frostburg State University
- SU** Salisbury University
- TU** Towson University
- UB** University of Baltimore
- UMB** University of Maryland - Baltimore
- UMBC** University of Maryland - Baltimore County
- UMCP** University of Maryland - College Park
- UMES** University of Maryland - Eastern Shore
- UMUC** University of Maryland - University College
- MSU** Morgan State University
- SMC** St. Mary's College of Maryland

Below is a tuition cost comparison of three Maryland community colleges including Howard Community College as well as the tuition cost for University of Maryland College Park. Years 1 and 2 represent actual tuition at each of the community colleges. Years 3 & 4 represent the tuition cost if those students were to transfer to University of Maryland College Park to pursue a bachelors degree.

Tuition Cost Comparison of Area Institutions



What are the national trends that should be understood and could be utilized by HCC?

INDUSTRY PARTNERS

Based upon current programs and curriculum initiatives HCC is in tune with most national trends for community colleges. By planning and building the new Health Sciences (HS) and Science Engineering & Technology (SET) Buildings they recognize the direction of industry and are creating opportunities for the success of their students and their local economy.

As HCC continues to grow one key engagement area should be with industry partners. This will benefit both credit and continued education populations. Expanding the development of the Center for Entrepreneurial and Business Excellence (CEBE) as a business incubator and accelerator by creating a new home within the New Math Building on North Campus will strengthen ties between Howard Community College, Howard County and the Maryland Center for Entrepreneurship (MCE). The Maryland Center for Entrepreneurship (MCE), recently relocated opposite HCC on Little Patuxent Parkway is an excellent partner for Howard Community College as the state of Maryland looks to continue development with start-ups, accelerators and industry.

Incubators offer startups a workplace, guidance and resources. They are home to angel investors, venture capitalists, and others who are able to mentor entrepreneurs. Many also offer accounting, marketing, legal and other back office services along with workspace. Accelerators are different to incubators. Accelerators typically acquire equity in a startup. Accelerators can then help a company achieve short-term goals like raising money, research and development or launching a product. As Howard Community

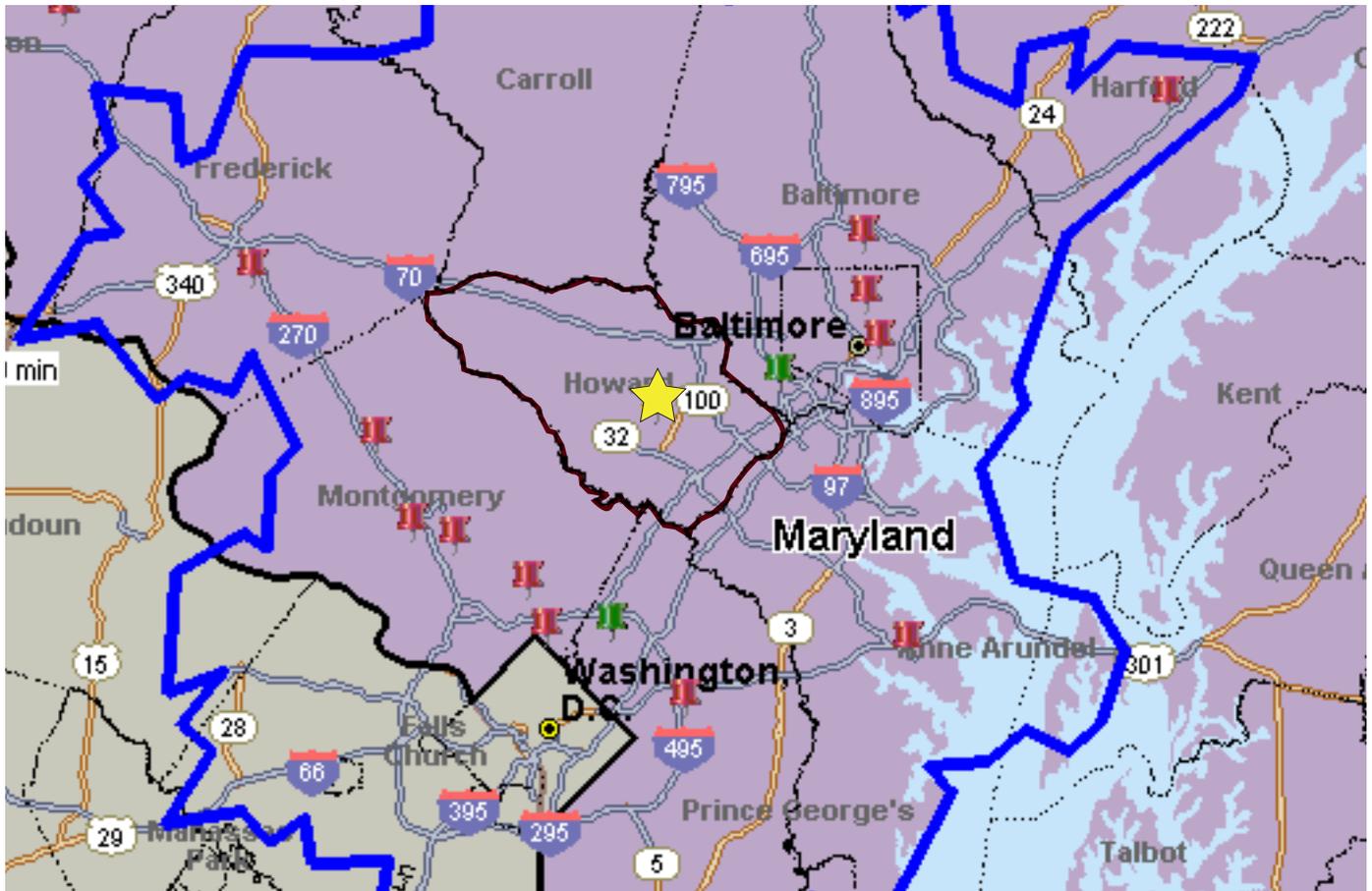
College begins to develop an accelerator partnering with local business and industry will be critical in order to create a strategic group.

The biggest benefits of being part of a group are the ability to tap into a strong network and being part of a support system for other entrepreneurs. Traditional incubators and accelerators are typically insular, but the most forward thinking places create ties between educational institutions and other like-minded market industries. Howard Community College is positioned to lead.

Incubators at Community Colleges

Miller Business Innovation Center (MBIC) *Salt Lake Community College*

The Miller Business Innovation Center is the largest publicly-funded business incubator in Utah. It acts like an accelerator program for innovative enterprises seeking high growth. Its various offerings include: "entrepreneur launch pad" forum for collaboration, "soft landing incubator" for foreign companies, "virtual incubator" remote office service, as well as other education and operational support.



Incubator Locations in Maryland

- Incubators
- Incubators associated with a College/University
- ★ HCC Main Campus
- Howard County
- 1 Hour Radius

Center for Entrepreneurial Innovation
Gateway Community College

This facility located in Phoenix, Arizona was completed in early 2013 with a formal grand opening on March 7, 2013. Its various services include: counseling and progress reviews with on-site counselors from CEI and the Maricopa Small Business Development Center (SBDC), pro bono mentoring, executives-in-residence for high-level strategic guidance and commercialization assistance, domestic and international student research teams. In addition the center features Fahrenheit Labs, a program for emerging student companies.

Technical Innovation Center (TIC)
Hagerstown Community College

Located nearby, the Technical Innovation Center is a technology-based business incubator. It's various offerings include: bookkeeping set-up and clerical support, facilities, customized support services, cash-flow planning and financial analysis, market evaluations including sales forecasting and strategizing, manufacturing assistance, presentation and proposal development assistance, SBIR/STTR development assistance.

TARGETING THE MISSING MIDDLE

As the job market recovers and online learning expands, competition for enrollment amongst community colleges as well as four year institutions will swell. Traditionally, target populations of 2-year and 4-year institutions have remained fairly discrete. However, as the cost of education continues to rise, the lines between market sectors will continue to blur.

Community colleges are poised to respond and offer educational offerings to new segments of the population. Community colleges are already well positioned and engaged with their local community, far more so than 4-year schools. In addition, they are already directly engaged at the high school level.

However, this engagement typically targets two types of students; the high achiever and the low performer. These two populations groups are least likely to enroll and graduate from the community college. Dual enrollment offers college coursework for students with high GPAs who traditionally will go on to enroll at a 4-year school. This population is limited in size as these programs require prerequisite coursework.

Additionally, community colleges offer math and English remediation for low performing students who are not on track to be college ready. While these students might enroll at a community college after high school graduation, their persistence rate once enrolled is very low.

These two target groups represent the bottom and top 10% of the high school population. This leaves a very large middle of the population which community colleges in general have done very little to engage. Howard Community College has however done a good job in going after this middle and should continue to target this population. These students are more likely to respond to the community college value proposition (cost effectiveness for small class size and student services, professors who are working professionals) and contribute to the local workforce upon graduation.

Furthermore, the demand for middle-skills jobs is projected to remain strong. In 2012, 48% of all jobs were middle-skill. Middle-skill jobs account for 48% of Maryland's labor market, but only 39% of the state's workers are trained to the middle-skill level.

The Educational Advisory Board has outlined Three Guiding Principles for Optimizing K-12 Partnerships for the Missing Middle:

- Cultivate college navigation skills by shifting resources from academic remediation to student transition support. Current high school interventions focus almost entirely on academic college readiness at the expense of noncognitive readiness. Students must be able to navigate complex college forms and processes during the intake process to set themselves up for future success.
- Broker accelerated career pathways for technically minded high school students. Most dual credit course offerings are concentrated in traditional general education disciplines such as math and English, unappealing to hands-on learners interested in career and technical education. Progressive college leaders have expanded dual credit offerings to include accelerated CTE pathways from high school to stackable credential programs.
- Develop a “school of choice” brand by advertising the high quality of a community college education. Most community college advertising campaigns focus entirely on the low cost of student tuition, especially in comparison to four-year and for-profit competitors. However, this strategy does not resonate with students seeking a high-quality academic experience—small class sizes, dedicated faculty, and opportunities for accelerated learning. Community colleges can elevate their brands by marketing these qualities of their institutions to prospective high school students.

ACCELERATING ADVANCED MANUFACTURING & CTE INITIATIVES

In October of 2014, the white house released executive actions to strengthen advanced manufacturing based on a report by the Advanced Manufacturing Partnership (AMP) Steering Committee, a working group of the President's Council of Advisors in Science and Technology.

The Advanced Manufacturing Partnership Steering Committee, announced by President Obama in September 2013, is a "renewed, cross-sector, national effort to secure US leadership in the emerging technologies that will create high-quality manufacturing jobs and enhance America's global competitiveness. The steering committee, whose members are among the nation's leading lights in industry, academia, and labor, is a working group of the President's Council of Advisors on Science and Technology."

Executive actions include investments in emerging, cross cutting manufacturing technologies, training our workforce with the skills for middle-class jobs in manufacturing, and equipping small manufacturers to adopt to cutting-edge technologies. The following are highlights from the report which include the three recommendations most relevant to Howard Community College:

Shifting the Public's Misconception of Manufacturing

Recommendation #6: Launch a national campaign to change the image of manufacturing, and support National Manufacturing Day's efforts to showcase real careers in today's manufacturing.

Examples of campaign initiatives include factory tours, development of makerspaces, and creating company sponsorship of curriculum initiatives. These examples highlight the importance of promoting the value of promising careers and education pathways in technical fields.

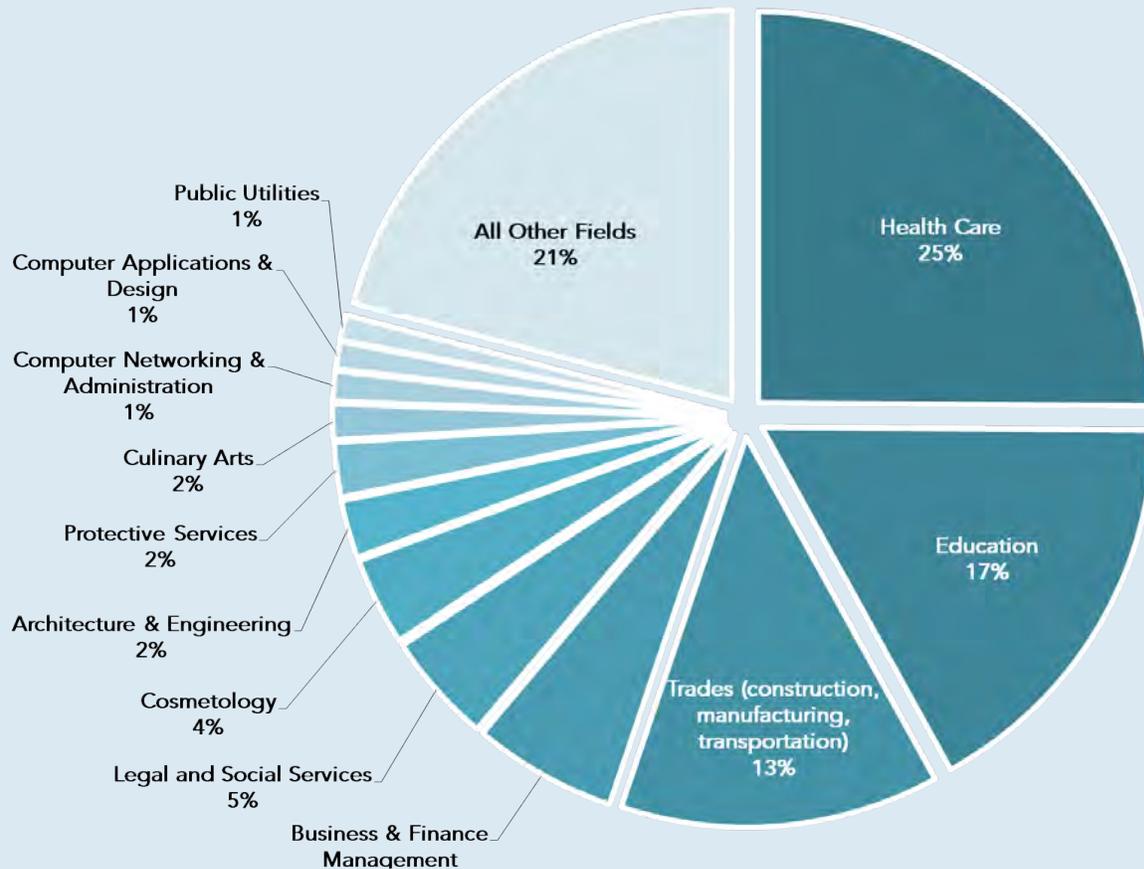
Connecting More Americans with Skills for Successful Careers in Manufacturing

Recommendation #7: Incent private investment in the implementation of a system of nationally recognized, portable, and stackable skill certifications that employers utilize in hiring and promotion, by providing additional funds that build on investments being made through the Department of Labor and Department of Education Trade Adjustment Assistance Community College and Career Training (TAACCCT).

Recommendation #8: Make the development of online training and accreditation programs eligible to receive federal support, for example through federal jobs training programs.

Example of initiatives already underway include:

- The Departments of Defense, Energy, and Agriculture and NASA are committing to invest over \$300 million in three emerging manufacturing technologies including advanced materials like composites and bio-based materials, advanced sensors, and digital manufacturing. These are reported as critical for lasting U.S. competitiveness in advanced manufacturing.
- Department of Labor will launch a \$100 million American Apprenticeships Grant Competition to spur new apprenticeship models and scale effective ones in high-growth fields like advanced manufacturing.
- Deploying \$1 billion to strengthen manufacturing curriculum at community college across the country to train America's workforce through the TAA-CCCT fund, led by the Departments of Labor and Education.

Credentialed Adults by Field, 18+ for 2012

According to a 2014 study by Acenture, conducted in collaboration with The Manufacturing Institute, more than 50% of companies plan to increase U.S. based production by at least 5% in the next 5 years and nearly 25% are planning to grow U.S. based manufacturing roles by almost 10% in the next five years. This growth is dependent on public-private partnerships and apprenticeships in which employers recognize acquired credentials and accreditations.

In addition, a 2012 study conducted by the National Center for Education Statistics (NCES) based on data from the U.S. Census Bureau Survey of Income and Program Participation, categorized the number of credentialed adults, 18 or older in the United States by subject. Credentialed Adults are those who have a work license or certification. Of these credentialed adults:

- 25% achieved credentials in Health Care
- 17% achieved credentials in Education
- 13% achieved credentials in Trades which include construction, manufacturing, and transportation.

These categories loosely align with Maryland's own ten career clusters in which HCC has existing career pathways to align with each cluster. Career and technical education (CTE) pathways should continue to be developed to align with regional and national initiatives.

Howard Community College is already participating in the Trade Adjustment Assistance Community College and Career Training Grant Program (TAACCCT). The TAACCCT provides community colleges and other eligible institutions of higher education with funds to expand and improve their

ability to deliver education and career training programs that can be completed in two years or less, are suited for workers who are eligible for training under the TAA for Workers program, and prepare program participants for employment in high-wage, high-skill occupations. Through these multi-year grants, the Department of Labor is helping to ensure that the nation's institutions of higher education are helping adults succeed in acquiring the skills, degrees, and credentials needed for high-wage, high-skill employment while also meeting the needs of employers for skilled workers. The Department is implementing the TAACCCT program in partnership with the Department of Education.

In 2014, TAACCCT awarded the 16 community colleges in Maryland, including Howard Community College, monies with an industry focus on the Cyber-Security Economic Sector (Information Technology, Professional, Scientific and Technical Services, Education Services). Cyber-Technology Pathways Across Maryland (CPAM) is a statewide effort, consisting of 14 of Maryland's 16 Community Colleges. The strategies include:

- Build a statewide Career Pathways System that is accessible and easy to navigate.
- Develop a statewide system of requirements, processes and services for the target population and help participants build skills in the industry and future career path in cyber-security.
- Build a connected statewide information and communication system to assist participants in making informed choices and provide data driven analysis to continuous improvement and longer-term planning.
- Employ technology to strengthen quality programming across the state.
- Build strategic partnerships that engage employers, leverage resources, expertise and networks to meet participants' needs for support and respond to employers' changing skill needs over time.

06

**FACILITY CONDITION
ASSESSMENT**



FACILITY CONDITION ASSESSMENT

Howard Community College contracted CannonDesign to conduct a thorough Facility Condition Assessment (FCA), a component of a larger campus master planning effort, for nine of the College's buildings.

The objective of this assessment and report is to provide a snap-shot of current conditions of the subject buildings with problem areas identified, quantified and estimated. Extensive inspection methods requiring scaffolding, high-reach equipment, and/or destructive testing were not employed. Street and roof level observations were made to determine the current conditions. All exterior and roof areas of the nine buildings were accessible at the time of this assessment. The results are summarized and detailed findings are included in the following report.

This report is a professional opinion, based on the areas of the buildings that were accessed. The report intent is

not to provide a design analysis in any detail needed to prepare construction documents. Wherever possible, the assessors visually reviewed the conditions, function of existing envelope systems, barrier-free access immediately adjacent to entrances, estimated remaining functional life and estimated costs for repairs or replacement. It should be understood that there are limitations to such an assessment. Inferences and assumptions are often required when information is unavailable, possibly inaccurate or outdated and/or cannot be confirmed by direct observation or validated by the Owner. Consequently, no guarantee or warranty can be offered or implied based on the content of this report.

The following pages contain a general building summary of all buildings on campus followed by the detailed report for the nine buildings which were assessed pertaining to exteriors and roof areas.

A. General Building Summary:

CLARK LIBRARY

Year of Construction: **1970**
Renovation: **2010**
GSF: **75,294**
Floors: **2**

The Clark Library was the first campus building and contains classrooms, offices, and the library. The building has had regular maintenance over the last five years and should continue with this level of care.



NURSING BUILDING

Year of Construction: **1976**
Renovation: **NA**
GSF: **33,097**
Floors: **2**

The Nursing building contains instructional space and faculty and staff offices. The building has had regular maintenance over the last five years and should continue with this level of care. The building will be undergoing renovation in the next two years.



ATHLETIC & FITNESS CENTER

Year of Construction: **1976**
Renovation: **2001**
GSF: **48,064**
Floors: **1.5**

The Athletic & Fitness Center houses the pool, gymnasium, a classroom, locker rooms, a weight room, and departmental offices. The building has had regular maintenance over the last five years and should continue with this level of care. However, the building has high usage and is no longer able to meet the demands of the HCC community as well as its athletic programs.





MCCUAN HALL

Year of Construction:	1978
Renovation:	2009
GSF:	49,860
Floors:	3

McCuan Hall is home to the president’s office as well as other key administrative staff offices. The building has had regular maintenance over the last five years and should continue with this level of care.



HICKORY RIDGE BUILDING

Year of Construction:	1982
Renovation:	NA
GSF:	60,000
Floors:	3

The Hickory Ridge building was built as an office building and repurposed for classroom use. It contains classrooms and offices and supports two divisions with limited square footage. While this building has had regular maintenance, it continues to show signs of high use.



SCIENCE & TECHNOLOGY BUILDING

Year of Construction:	1987
Renovation:	NA
GSF:	48,048
Floors:	2

The Science and Technology building contains instructional space and faculty and staff offices. The building has had regular maintenance over the last five years and should continue with this level of care. The building will be undergoing renovation in the next two years.

STUDENT ACTIVITIES BUILDING

Year of Construction: **1997**
Renovation: **NA**
GSF: **8,112**
Floors: **3**

The Student Activities building contains a student activities center, a game room, the loading dock, and physical plant offices. The building has had regular maintenance over the last five years and should continue with this level of care. The building will be undergoing renovation in the next two years.



CHILDREN'S LEARNING CENTER

Year of Construction: **2000**
Renovation: **2008**
GSF: **12,036**
Floors: **1**

The Children's Learning Center serves as the campus daycare and contains classrooms, offices, and support spaces. The building has had regular maintenance over the last five years including a renovation of previously shelled space and should continue with this level of care.



DUNCAN HALL

Year of Construction: **2002**
Renovation: **NA**
GSF: **87,830**
Floors: **3**

Duncan Hall serves as the home for English & World Languages as well as Business & Computer Systems. The building has had regular maintenance over the last five years and should continue with this level of care. It is recommended that selective upgrades be made to address the existing parapet.





HVPA

HOROWITZ VISUAL & PERFORMING ARTS

Year of Construction:	2006
Renovation:	NA
GSF:	78,090
Floors:	2

Horowitz Visual & Performing Arts is home to specialized instructional spaces for the Arts & Humanities division as well as theater and performance spaces frequented often by visitors to campus. The building has had regular maintenance over the last five years and should continue with this level of care.



RCF

ROUSE STUDENT SERVICES HALL

Year of Construction:	2007
Renovation:	NA
GSF:	103,770
Floors:	4

The Rouse Company Foundation building is home to student services and student support offices. The building also contains the bookstore and dining. The building has had regular maintenance over the last five years and should continue with this level of care.



HS

HEALTH SCIENCES

Year of Construction:	2013
Renovation:	NA
GSF:	112,692
Floors:	3

The Health Sciences building is the newest building on campus. It houses the Health Sciences department labs, classrooms, and offices. It contains a large, tiered lecture hall as well as conference rooms.

B. Exteriors & Roof Areas Detailed Assessment:

Between February 18th and 21st, 2014, CannonDesign performed a visual assessment of the roof and parapet conditions for nine of the campus buildings. These buildings were selected by Howard Community College for review as a part of the facility condition assessment.

The exterior envelopes of the nine buildings assessed are in an overall fair to poor condition and at this time it appears many do require significant work to improve the conditions, remedy problems and improve the FCI status. Several systems and components have been identified as requiring replacement or repair, but the use of the facility is not currently impeded by these needs. The goals of continuing the use and maintaining the property value can be achieved with some major capital work and continual maintenance that has been conducted over the years.

FACILITY CONDITION INDEX (FCI)

The overall rated condition of each facility is indicated using an FCI between 0.00 to 1.00. The graphic below provides the various ranges for condition ratings.

Facility Condition Index (FCI)

$$FCI = \frac{\text{Deferred Maintenance Deficiencies}}{\text{Current Replacement Value (CRV)}}$$



The Current Replacement Value (CRV) is defined at the end of this section, and is typically established in current-year US dollars, with any regional, unique or specific adjustments made and noted. CRV is intended typically to estimate the cost to construct a facility of same function, size, level of quality (unless otherwise defined by the Owner) on the same parcel of land, not including the actual cost of the parcel itself usually (unless otherwise required by the Owner). In this assessment, the systems and components covered were limited to exterior envelope and certain accessibility and code issues that may exist and were observed as requiring some level of action.

The following report details conditions observed during the assessment to support the Facility Condition Index (FCI) ratings above. The majority of issues identified are classified as Priority 1 – (0-1 year) to Priority 4 – Recommended (5-10 years) and should be considered as primary scope items to include in any renovation project in the future.

COST SUMMARY DEFINITION

The anticipated estimated costs needed to repair or replace existing systems and components at the facilities according to the details of the report are included in order to assist with the beginning stages of the project planning process. Cost estimates consist of burdened general contractor (GC) construction based on regional construction costs for materials and prevailing wage rates for labor. A contingency factor is included within each unit price and averages out to approximately 15%.

Additional mark-ups such as GC/Construction Manager (CM) General Conditions/General Requirements, GC/CM OH&P, escalation and soft costs (i.e. fees for architect/engineer-of-record design, bidding, permits, special municipal requirements, increases for weather enclosures, etc.) are excluded. These mark-ups will need to be applied during the project planning phase dependent on project delivery method.

FCI RATING DEFINITIONS

The following rating criteria was applied to establish recommended actions and establish current operating status. Recommendations are made to suggest repair, restoration and/or replacement of building systems and components that have reached or exceeded their useful life cycle and/or are not currently performing adequately. Priorities are designated to provide a point of reference for maintenance and/or capital project planning and budgeting.

The life cycle durations are derived using a blend of several industry standard reference publications such as the Building Owners and Managers Association (BOMA), American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), manufacturer's data as well as historical experience. In certain instances, Owner-supplied data may also factor into the life cycle duration in the report.

PRIORITY DEFINITIONS

Priority 1 – Currently Critical (0-1 year):

Conditions in this category require immediate action.

- Life safety hazards
- Current building code violations and ability to resist all loads
- Return a facility or equipment to operation

Priority 2 – Potentially Critical (1-2 years):

Conditions in this category, if not corrected expeditiously, will become critical within a year.

- Potential life safety hazard
- Rapid deterioration which will lead to loss of facility operation
- Accessibility to buildings and areas within buildings including workspaces

Priority 3 – Necessary – Not Yet Critical (2-5 years):

- Repairs which provide a rapid return on investment to include energy efficiency projects.
- Building or site improvements not completed due to inadequate funding or other reasons
- Repairs which will preclude predictable deterioration, potential downtime, and/or higher short-term maintenance costs, or replacement of building components which have exceeded their predicted us.

Priority 4 – Recommended (5-10 years):

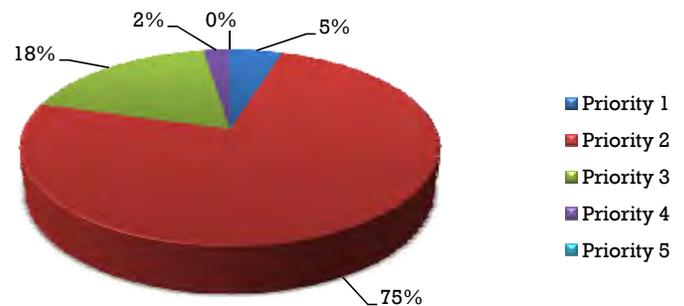
Conditions in this category include items that represent a sensible improvement to existing conditions. These are not required for the most basic functions of the facility; however, Priority 4 projects will improve overall usability and/or reduce long-term maintenance costs.

Priority 5 – Does Not Meet Current Codes/Standards – “Grandfathered”:

Conditions in this category include items that do not conform existing codes, but are “grandfathered” in their condition. No action is required at this time, but should substantial work be undertaken in contiguous areas, certain existing conditions may require action.

PRIORITY BREAKDOWN

The charts below delineate results of the Facility Condition Assessment by Priorities and by Uniformat System percentages of the total estimated costs of identified deficiencies.



FACILITY CONDITION ASSESSMENT SUMMARY

The Facility Condition Assessment resulted in an overall Current Replacement Value (CRV) and Facility Condition Index (FCI) for all facilities shown in the table.

Building - Exterior Facade Only	Building FCI	Building CRV	Building Deficiencies	Building Square Footage
Athletic and Fitness Center	0.68	\$5,498,208	\$3,752,507	48,064
Children's Learning Center	0.39	\$1,161,385	\$448,603	12,036
Duncan Hall	0.17	\$5,978,160	\$987,494	105,035
Hickory Ridge Building	0.33	\$2,581,187	\$854,223	60,000
Horowitz Visual & Performing Arts Center	0.17	\$6,972,189	\$1,207,328	78,000
Rouse Company Foundation Student Services Hall	0.08	\$10,398,437	\$825,577	103,770
Science and Technology Building	0.09	\$3,815,911	\$361,858	67,997
Student Activities Building	0.13	\$1,670,256	\$221,800	14,508
Storage Building	0.08	\$892,334	\$70,887	4,700

COST & PRIORITY SUMMARY

The table below includes estimated cost totals per Uniformat System with a CRV for each system based on 5-years and 10-years deficiencies.

System		Priority 1 Critical 1 Year	Priority 2 Potentially Critical 2 to 3 Years	Priority 3 Necessary 3 to 5 Years	Priority 4 Recommended 6 to 10 Years	Priority 5	Total
A	STRUCTURE	\$ -	\$ 138,600	\$ -	\$ -	\$ -	\$ 138,600
B	SHELL	\$ 426,800	\$ 6,366,900	\$ 1,585,700	\$ 194,100	\$ -	\$ 8,573,500
C	INTERIORS	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
D	SERVICES	\$ -	\$ -	\$ -	\$ 19,000	\$ -	\$ 19,000
E	EQUIPMENT & SERVICES	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
F	SPECIAL CONSTRUCTION & DECONSTRUCTION	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
G	SITWORK	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Z	GENERAL	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total		\$ 426,800	\$ 6,505,500	\$ 1,585,700	\$ 213,100	\$ -	\$ 8,731,100

PROJECTED FUNDING NEEDS

The table below includes estimated costs totals per Uniformat System with CRV for each based on 5-years and 10-years identified deficiencies.

Division	Description	Grand Total			10 - Year	
		CRV	5 - Year Deficiencies	FCI	Deficiencies	FCI
A	STRUCTURE	\$ 396,000	\$ 138,600	0.35	\$ 138,600	0.35
A10	FOUNDATIONS	\$ 396,000	\$ 138,600	0.35	\$ 138,600	0.35
A20	SUBGRADE ENCLOSURES	\$ -	\$ -	0.00	\$ -	0.00
A40	SLABS-ON-GRADE	\$ -	\$ -	0.00	\$ -	0.00
A60	WATER & GAS MITIGATION	\$ -	\$ -	0.00	\$ -	0.00
A90	SUBSTRUCTURE RELATED ACTIVITIES	\$ -	\$ -	0.00	\$ -	0.00
B	SHELL	\$ 38,443,300	\$ 8,379,400	0.22	\$ 8,573,500	0.22
B10	SUPERSTRUCTURE	\$ 1,590,700	\$ 112,300	0.07	\$ 112,300	0.07
B20	EXTERIOR VERTICLE ENCLOSURE	\$ 29,028,000	\$ 6,170,700	0.21	\$ 6,274,300	0.22
B30	EXTERIOR HORIZONTAL ENCLOSURE	\$ 7,824,600	\$ 2,096,400	0.27	\$ 2,186,900	0.28
C	INTERIORS	\$ -	\$ -	0.00	\$ 19,000	0.00
C10	INTERIOR CONSTRUCTION	\$ -	\$ -	0.00	\$ -	0.00
C20	INTERIOR FINISHES	\$ -	\$ -	0.00	\$ -	0.00
D	SERVICES	\$ 38,300	\$ -	0.00	\$ 19,000	0.50
D10	CONVEYING	\$ -	\$ -	0.00	\$ -	0.00
D20	PLUMBING	\$ 19,000	\$ -	0.00	\$ 19,000	1.00
D30	HEATING, VENTILATING & AIR CONDITIONING	\$ -	\$ -	0.00	\$ -	0.00
D40	FIRE PROTECTION	\$ -	\$ -	0.00	\$ -	0.00
D50	ELECTRICAL	\$ 19,300	\$ -	0.00	\$ -	0.00
D60	COMMUNICATIONS	\$ -	\$ -	0.00	\$ -	0.00
D70	ELECTRONIC SAFETY & SECURITY	\$ -	\$ -	0.00	\$ -	0.00
D80	INTEGRATED AUTOMATION	\$ -	\$ -	0.00	\$ -	0.00
E	EQUIPMENT & FURNISHINGS	\$ 8,500	\$ -	0.00	\$ -	0.00
E10	EQUIPMENT	\$ 8,500	\$ -	0.00	\$ -	0.00
E20	FURNISHINGS	\$ -	\$ -	0.00	\$ -	0.00
F	SPECIAL CONSTRUCTION & DECONSTRUCTION	\$ -	\$ -	0.00	\$ -	0.00
F10	SPECIAL CONSTRUCTION	\$ -	\$ -	0.00	\$ -	0.00
F20	FACILITY REMEDIATION	\$ -	\$ -	0.00	\$ -	0.00
F30	DEMOLITION	\$ -	\$ -	0.00	\$ -	0.00
G	SITWORK	\$ 82,900	\$ -	0.00	\$ -	0.00
G10	SITE PREPERATION	\$ -	\$ -	0.00	\$ -	0.00
G20	SITE IMPROVEMENTS	\$ 82,900	\$ -	0.00	\$ -	0.00
G30	LIQUID & GAS SITE UTILITIES	\$ -	\$ -	0.00	\$ -	0.00
G40	ELECTRICAL SITE IMPROVEMENTS	\$ -	\$ -	0.00	\$ -	0.00
G50	SITE COMMUNICATIONS	\$ -	\$ -	0.00	\$ -	0.00
G90	OTHER SITE CONSTRUCTION	\$ -	\$ -	0.00	\$ -	0.00
Z	GENERAL	\$ -	\$ -	0.00	\$ -	0.00
Z10	GENERAL REQUIREMENTS	\$ -	\$ -	0.00	\$ -	0.00
Z70	TAXES, PERMITS, INSURANCE & BONDS	\$ -	\$ -	0.00	\$ -	0.00
Z90	FEES & CONTINGENCIES	\$ -	\$ -	0.00	\$ -	0.00
Grand Total		\$ 38,969,000	\$ 8,518,000	0.22	\$ 8,731,100	0.22

PROPOSED BUNDLED PROJECTS

The following pages contain of summary of costs per project. The project costs include Architect/Engineer-of-Record design; bidding/negotiation phase; construction (materials, labor, permits, equipment, miscellaneous expenses), General Contractor fees/overhead/profit, locale fees where applicable and a 25% contingency.

- Bundle A:** ATHLETIC FACILITY ONLY:
(AF.01 THROUGH AF.18), or divide each into individual systems-based projects with other campus facilities
- Bundle B:** Exterior concrete, masonry, parapet, coping, roofing, flashing:
(AF.01, .11, .12, .13, .15, .16); (CLC.01, .03, .06, .07, .08); (DH.01, .02, .03, .04, .09); (HRB.08); (HVPAC.01, .02, .03, .04); (RCFSSH.01, .02, .03, .05, .07); (STB.01, .02, .03, .08, .09); (PO.01, .05); (SA.01, .02, .08, .09)
- Bundle C:** Curtain wall, storefront, window systems:
(AF.04, .05, .06); (CLC.02, .04); (DH.06); (HRB.03); (HVPAC.05); (RCFSSH.04); (STB.04, .05); (PO.02); (SA.03, .04, .05, .06)
- Bundle D:** Sealant/backer rod:
(AF.17); (CLC.09); (DH.08); (HRB.07); (HVPAC.08); (RCFSSH.08); (STB.07); (PO.06); (SA.10)
- Bundle E:** Metal systems:
(AF.02, .03, .10, .18); (DH.05); (HRB.01, .02); (STB.06, .10); (PO.04); (SA.07)
- Bundle F:** Doors, hardware:
(AF.07, .08, .09); (CLC.05); (DH.07); (HRB.04, .05); (HVPAC.06, .07); (RCFSSH.06); (PO.03, .07)
- Bundle G:** Soffits, awnings:
(AF.14); (CLC.10, .11, .12); (HRB.06)

Fully Loaded Project Costs

Howard Community College		
Location:		
Project #	Record #	Cost
Priority 1 - Currently Critical (0-1 Years)		
DH. 01	260350	\$39,531
DH. 02	260774	\$506,063
RCFSSH.01	260379	\$57,500
	Total Priority Costs	\$603,095
Priority 2 - Potentially Critical (1-2 Years)		
AFC.01	260623	\$199,238
AFC.02	260632	\$3,743,250
AFC.03	260633	\$12,972
AFC.04	260639	\$107,312
AFC.05	260335	\$168,188
AFC.06	260637	\$50,543
AFC.07	260663	\$75,469
AFC.08	260337	\$25,562
AFC.09	260680	\$3,255
AFC.10	260673	\$32,344
AFC.11	260645	\$200,021
AFC.12	260656	\$1,700,764
AFC.13	260642	\$5,599
AFC.14	260678	\$28,930
AFC.15	260674	\$14,375
AFC.16	260659	\$21,563
AFC.17	260662	\$8,984
CLC.01	260341	\$396,147
CLC.02	260733	\$7,153
CLC.03	260731	\$15,094
CLC.04	260732	\$15,094
CLC.05	260345	\$5,031
CLC.06	260738	\$153,352
DH.03	260344	\$600,820
HVPAC .01	260366	\$1,320,487
HVPAC .02	260368	\$37,375
HVPAC.03	261058	\$230,029
HVPAC.04	260811	\$11,500
RCFSSH.02	260377	\$831,907
RCFSSH.03	261001	\$86,250
STB.01	260387	\$396,146
STB.02	260906	\$56,229
PO.01	261222	\$79,229
SA.01	260960	\$51,578
SA.02	260394	\$132,049
	Total Priority Costs	\$10,823,836
Priority 3 - Necessary Not Yet Critical (2-5 Years)		
AFC.18	261204	\$109,847
CLC.07	260734	\$1,680
CLC.08	260740	\$6,469
CLC.09	260741	\$1,797
DH. 04	260778	\$39,615
DH. 05	260775	\$54,280
DH. 06	260349	\$128,775

Priority 3 - Necessary Not Yet Critical (2-5 Years)		
DH. 07	260780	\$19,531
DH. 08	260781	\$11,500
DH. 09	260785	\$19,406
HRB.01	260753	\$254,438
HRB.02	260760	\$25,444
HRB.03	260363	\$861,465
HRB.04	260364	\$14,375
HRB.05	260763	\$4,883
HRB.06	261215	\$44,417
HRB.07	260754	\$1,797
HVPAC.05	260367	\$71,542
HVPAC.06	260369	\$14,016
HVPAC.07	260840	\$14,648
RCFSSH.04	260378	\$60,810
RCFSSH.05	260877	\$5,175
STB.03	260910	\$93,952
STB.04	260389	\$71,542
STB.05	260390	\$646,099
STB.06	260912	\$12,938
STB.07	260911	\$16,172
STB.08	260908	\$1,797
PO.02	261241	\$3,370
PO.03	261230	\$2,875
PO.04	261237	\$10,080
PO.05	261242	\$2,013
PO.06	261243	\$1,078
SA.03	260964	\$62,635
SA.04	260400	\$44,706
SA.05	260965	\$3,450
SA.06	260951	\$6,739
SA.07	260956	\$11,859
SA.08	260952	\$1,438
SA.09	260953	\$2,875
SA.10	260955	\$1,509
	Total Priority Costs	\$2,763,033
Priority 4 - Recommended (5-10 Years)		
CLC.10	260744	\$5,298
CLC.11	260745	\$40,250
CLC.12	260743	\$2,066
HRB.08	260360	\$21,128
HVPAC.08	260837	\$35,938
RCFSSH.06	260885	\$19,531
RCFSSH.07	260874	\$102,235
RCFSSH.08	260882	\$23,359
STB.09	261217	\$25,885
STB.10	260961	\$27,313
PO.07	261249	\$3,255
	Total Priority Costs	\$306,257
Priority 5- Does Not Meet Current Code/Standard ("Grandfathered")	None identified	
	Total Priority Costs	\$0
Total Action Costs (Priorities 1-5):		\$14,496,221

ENERGY SAVINGS RECOMMENDATIONS

Proposed projects that would reduce energy consumption, lower water usage and provide more comfortable interior environments through new systems are summarized as follows:

Energy Savings Recommendations			Howard Community College			
Proposed Improvement	Priority 1	Priority 2	Priority 3	Priority 4	Priority 5	Total costs
Windows, Doors	\$0	\$326,042	\$671,543	\$0	\$0	\$997,585
Wall / Roof Insulation	\$0	\$5,644,035	\$861,465	\$27,313	\$0	\$6,532,812
Total action costs	\$0	\$5,970,077	\$1,533,008	\$27,313	\$0	\$7,530,397

Project Title	Project #	Item #	Cost
Install new insulated metal wall panel system	AFC.02	260632	\$3,743,250
Replace aluminum curtainwall systems	AFC.04	260639	\$107,312
Remove all existing aluminum ribbon-type window systems	AFC.05	260335	\$168,188
Replace aluminum storefront systems	AFC.06	260637	\$50,543
Replace standing-seam metal roof system, install air-moisture barrier and new insulation	AFC.11	260645	\$200,021
Replace roof system, flashing, walking pads, curbs, tapered insulation	AFC.12	260656	\$1,700,764
Replace metal wall panel system	HRB.03	260760	\$25,444
Install new thermally-broken, insulated glazed energy-efficient systems	HRB.04	260363	\$861,465
Install new thermally-broken, insulated glazed energy-efficient aluminum window systems.	STB.04	260390	\$646,099
Install insulation and provide finished cover on the interior exposed areas	STB.07	260961	\$27,313
Total Cost:			\$7,530,397

DETAILED ASSESSMENT BY BUILDING

Each of the nine building assessment sub-sections are organized as follows and keyed on the bottom left of each page for reference.

- 1.0 Facility Condition Assessment Results and Recommendations
- 2.0 Facility Condition Index Detail
 - 2.1 5 and 10 Year Deficiencies and System Condition Index (SCI)
 - 2.2 Priority Breakdown Charts and Graphs
- 3.0 Capital Project Planning
 - 3.1 10-Year Project Listing
 - 3.2 Proposed Projects
 - 3.3 Bundled Projects

DEFINITIONS

Abbreviations

ADA – Americans with Disabilities Act with current modifications.

CRV – Current Replacement Value is the sum of the replacement costs and repair costs of each building system component in a building, divided by the replacement of all existing components that comprise a building.

FCA – Facility Condition Assessment in an analysis of building systems and their components, with condition, remaining life cycle, replacement cost, priority ranking, impact and risk of failure, often also with Action costs to repair and/or replace.

FCI – Facility Condition Index is an industry-standard index that objectively measures the current condition of a facility, allowing comparison both within and among institutions. To determine FCI for any given set of Assets, the total cost of remediating deferred maintenance Requirements is divided by the current replacement value. Generally, the higher the FCI, the poorer the condition of the facility. An Administrator may configure FCI to include and exclude Requirements based on Category and recommended Action date.

SCI – System Condition Index measures the condition of the Systems within an Asset. SCI uses costs from all Requirements that are included in FCI in order to measure the relative health of a System and facilitate comparison within a single Asset. SCI follows the same calculation settings as the FCI.

Terminology

% Repair is the percentage of a system's replacement cost that is required to return the system to "like new" condition at the end (or over the course) of the system's lifetime.

Action is a strategy for correcting a Requirement that includes the scope of work to be done and an estimate of its cost, often with specific line item details.

Adjustment Factor is a number assigned to an itemized list of System or Action costs that signifies additional complexity and/or resources involved in construction. The adjustment factor is multiplied against the line items to modify the total cost.

Assembly is a group of parts or components that fit together to form a self-contained unit and/or system.

Asset is a free-standing structure, a portion of a structure, or any part of facility infrastructure that is distinguishable from its surroundings by date of construction, construction type, and/or the Systems that involve it.

Asset size is the total area in a building for all floors to the outer surface of exterior walls. GSF or GSM (Gross Square Foot or Gross Square Meters) is the standard figure used in defining construction costs for facilities. Some Asset types such as piping may be measured in linear units, area, volume or numbers ("Each", "Lump Sum", etc.).

Capital Improvement is a change or addition. Capital Improvements include upgrades and mission-specific adaptations to an Asset's assemblies, finishes, fixtures, equipment, Systems, and/or program. A Capital Improvement can also allow a facility to comply with existing codes by remediating a "grandfathered" condition.

Capital Renewal is a major repair or replacement to an existing System or Component that is needed to continue operations or functions.

Component is a distinguishable element within a System.

Deferred Maintenance is work that is postponed to a future time for execution on a planned or unplanned basis. Deferred Maintenance includes existing major repairs and replacements; it does not include maintenance that is planned in the future within a predictable or deliberate timeframe or cycle, capital improvements, or "grandfathered" code issues. This is included in the numerator of the FCI calculation.

Deferred Maintenance and Capital Renewal (DM+CR) / Current Replacement Value (CRV) is a measure of the percentage of a building that has reached the end of its useful life and needs to be replaced, or in a condition that must be remediated (Numerator / Denominator).

Facility is a structure, building and/or infrastructure system that supports other structures' operations.

FCI Category is a Requirement Category that, when assigned to a Requirement, makes that Requirement's cost eligible for inclusion in the numerator of the FCI calculation. FCI categories can be configured by an Administrator.

Grandfathered is a term used to apply to conditions, components and/or systems that have been allowed to exist or persist which do not necessarily comply with current codes or regulations. The Authority Having Jurisdiction (AHJ) typically allows these types of conditions to continue until a major renovation or replacement activity is planned and executed.

Ranking Strategy is a prioritization of Asset and Requirement properties according to how an organization allocates funds for the correction of Requirements. A Ranking Strategy can be applied to a Budget Scenario in order to set the budgetary priorities.

Recommended Action Date is the date by when a Requirement should ideally be corrected. The date is automatically assigned to a Requirement based on its remaining useful life. Requirement Priorities may have a time frame for correction. For example, a Priority 1 Requirement should be corrected within 1 year. Each Priority may add a set number of years (the “Year Offset”) to the Inspection Date, resulting in the Recommended Action Date. Requirements may be included or excluded from the FCI based on the Recommended Action Date. Typically, the more severe Priorities have earlier action dates. Priorities may also have a “null” year offset, resulting in no Recommended Action Date and permanent exclusion from FCI. Users can override the Recommended Action Date by assigning an Override Action Date.

Renovation is a type of Action that extends the service life of a facility or portion of a facility as well as modernizes it to more current requirements and/or standards, codes, regulations, etc.

Replacement is a type of Action that removes existing facility equipment or Systems and installs newer items of higher or equal quality, but that will not substantially change the function or capacity.

Resource is the appropriate type of labor for a specific organization.

Requirement is a facility need or a deficient condition that should be addressed, including Deferred Maintenance, code issues, functional requirements, and capital improvements. A Requirement can affect an assembly, piece of equipment, or any other System. It is assigned a Category, Priority, and System in order for its costs to be categorized appropriately and time frame for Action assigned.

Requirement Category is the type of condition that must be addressed for a Requirement. Each Requirement is assigned a Category so that the issues affecting a facility can be organized and accounted for planning and/or budgeting. The category also may affect the Requirement’s costs measured in the FCI. For example, Requirement categories that are FCI categories are included in the FCI calculation.

Requirement System is the assembly made up of components that contributes to a Requirement.

Requirement Priority is the severity of a Requirement and the time frame during which it should be scheduled for correction (if correction is applicable).

Repair is a type of Action that restores a facility or a system to a condition so that it may effectively be used for its designated functional purpose.

Soft costs include expenses that are necessary to prepare and complete the non-construction needs of a construction project, but not directly associated with construction or equipment costs (for example, design fees, permits, inspections, consultants, environmental studies, and regulatory demands). Soft costs differ according to location, region, economic conditions and a variety of other factors.

System is an assembly, finish, fixture, piece of equipment, or other set of component that makes up an Asset. The total value of all Systems is included in the denominator of the FCI calculation.

System Replacement Cost is the expenditure required to bring a System to its optimal condition so that it meets the current acceptable standards of construction and complies with regulations.

Uniformat II Category is an element of the Uniform Classification System for organizing preliminary construction information into a standardized classification structure. These elements are common to most buildings and usually perform a given function regardless of the design specification, construction method, or materials used. There are four levels of classifications.

07

**SITE CONDITIONS
AND ASSESSMENT**



View toward RCF from Lot "A"

SITE CONDITIONS AND ASSESSMENT

Howard Community College campus consists of 119 acres located in the heart of Columbia. As a central component of the city, the campus embodies many of the tenets that guided development of the larger community: preservation of environmentally sensitive areas and integration of the built and natural environments. The campus is virtually land locked with collector roads on the north and south sides, the hospital complex to the west, and stream valley, utility infrastructure, and dense residential development to the east.

The Site Conditions and Assessment contains observations and recommendations for the following topics:

OVERVIEW

FORESTS

ECOLOGY

ZONING

SLOPES

SIGNAGE

LAND USE / COVER

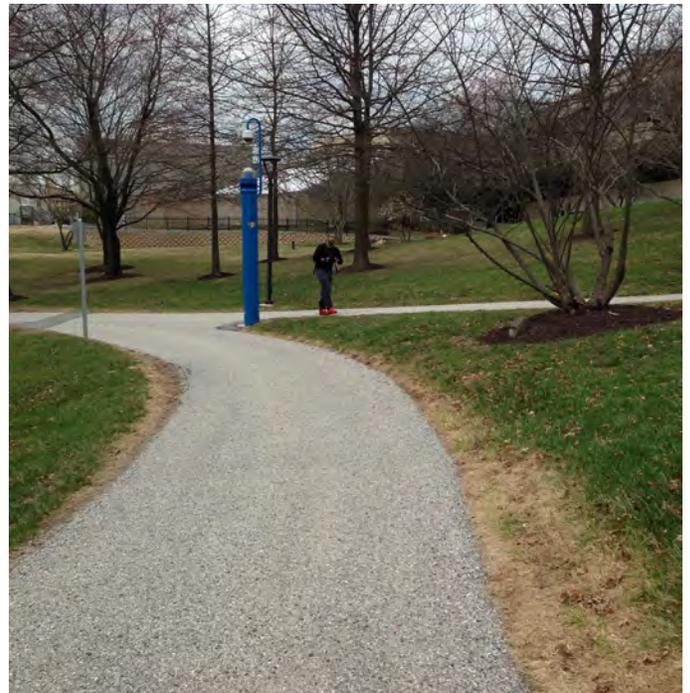
VEHICULAR CIRCULATION

UTILITIES

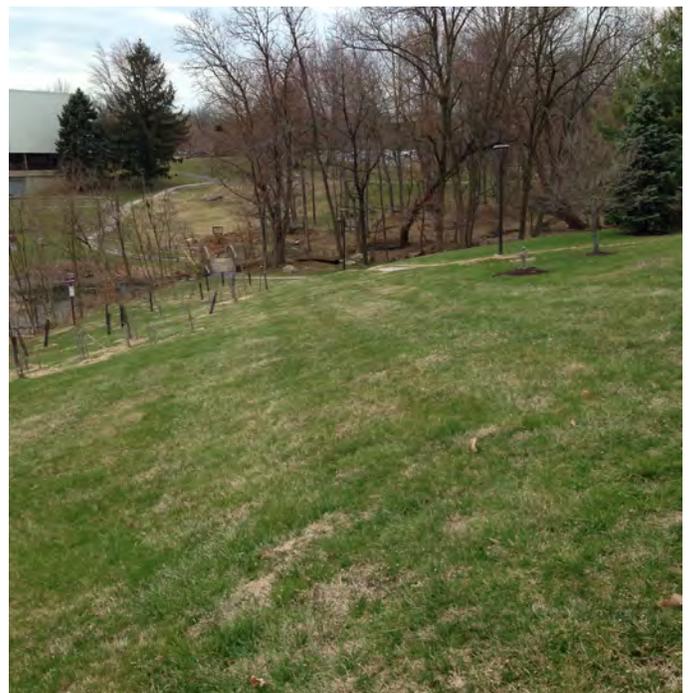
STORMWATER MANAGEMENT

CONSIDERATIONS

FUTURE SUSTAINABILITY CONCEPTS



Pedestrian Pathway



Topographic Landscape



Map of Existing Woods & Forest Conservation Easements

FORESTS

Existing Conditions

Several significant areas of forest exist on the campus. The largest of these are located in the southern part of campus, most notably east of the athletic fields. Forests on campus consist of oaks, hickory, red maple, cherry, beech, black gum, tulip poplar and sassafras. The forested areas are, for the most part, protected by 21.3 acres Forest Conservation Areas of different sizes scattered throughout the campus.

Conspicuously devoid of Forest Conservation Easements is a 7.5-acre area in the southeast corner of campus which is composed largely of mature forest but is zoned NT and therefore ineligible to be designated a Forest Preservation Area. There is a large spoil pile from previous grading operations within this area which otherwise contains mature woods, streams, wetlands and their associated buffers.

The understories of many forest edges contain invasive species including multi-flora rose, poison ivy, and honeysuckle. Selective cutting and pulling of invasives rather than mowing and bush hogging as suggested by the 2010 Master Plan has begun in an attempt to allow some natural regeneration of the forest floor. Additionally, some replanting of native species has begun in selected areas, most notably in the wooded lowlands north of Mary Ellen Duncan Hall. This program needs to continue in earnest as the remaining invasives will quickly undo periods of neglect.

The Forest Conservation Areas radically limit the permitted activities within them in the interest of protecting the forest ecosystem and, combined with other natural and man-made development restriction areas, place demonstrative limits on the amount and location of buildable land on the existing campus.

Master Plan Recommendations

Proposed development will give rise to the need to extinguish portions of some existing Forest Conservation easements and other easements in their entirety. The sum of all existing easement areas that will be lost / extinguished is approximately 1.13 Ac. The proposed campus plan however more than offsets these losses with potential added Forest Conservation easement areas of approximately 2.72 Ac. The new Forest Conservation easement areas are all adjacent to existing easements which have the beneficial effect of increasing contiguous forest cover on the campus. Larger contiguous forest areas support a greater number and diversity of plant and animal species since the larger tracts create forest interior conditions in addition to the edge conditions.

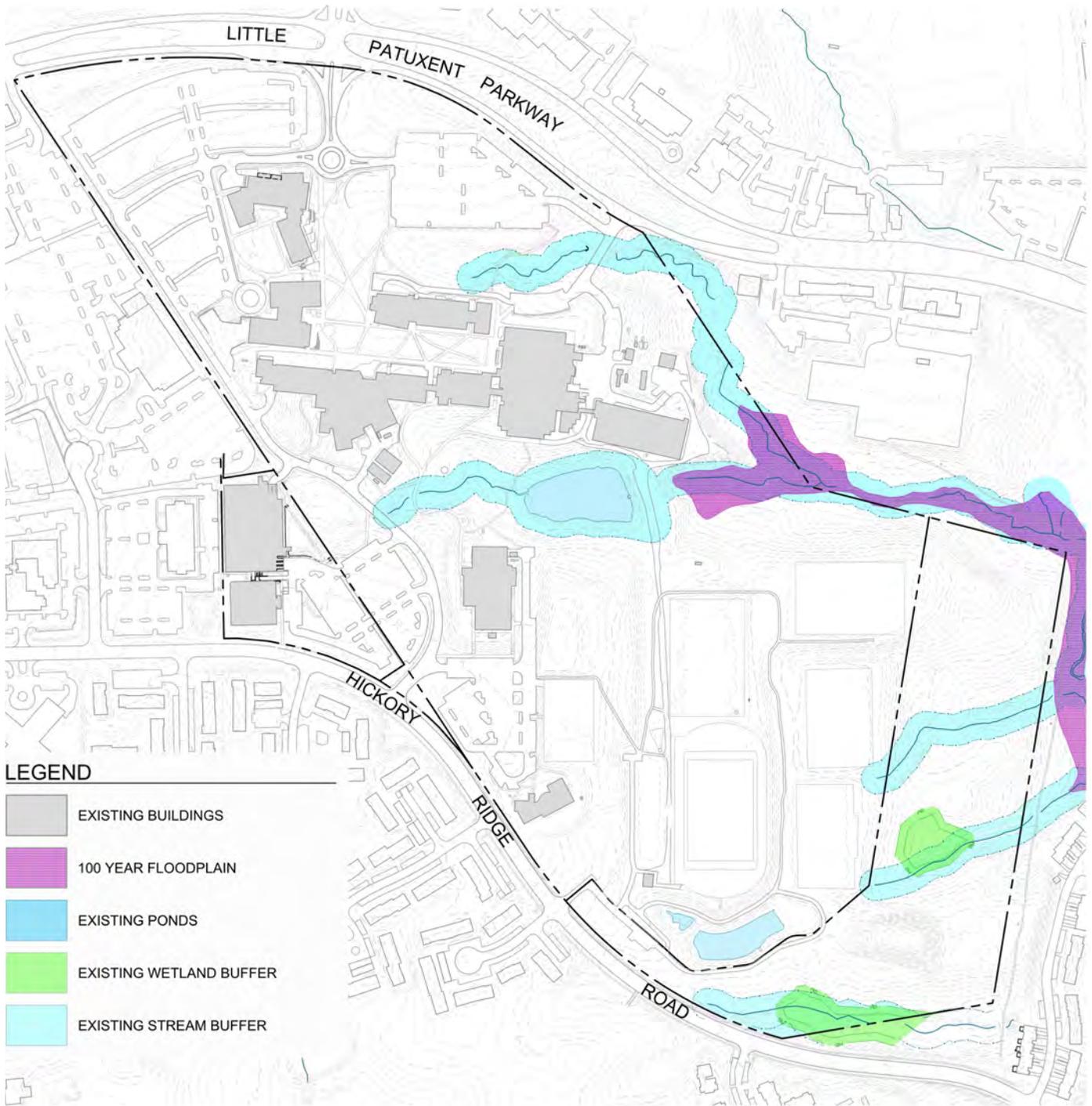
While some of the new areas already contain existing forest, the majority of the new forest Conservation areas will need to be afforested with DNR-approved quantities and mixtures of native tree species. There will be processing involved to get DNR to permit extinguishing of existing Forest Conservation easements that make way for orderly future development, and each requested loss will need to be offset with additional easement area and, if required, the planting of afforestation areas not currently in a forested condition. Howard Community College has amply demonstrated its commitment to the preservation and enhancement of the forest resources on the campus, and the afforestation areas, in addition to representing "living laboratory" opportunities across multiple disciplines, provide a means to increase the overall quantity of forest cover on the campus by more than doubling the easement areas lost.



Pedestrian Bridge Over Stream



Pedestrian Walkway through Forest



Map of streams, floodplain, wetlands & buffers

ECOLOGY

Existing Conditions

The following are findings related to Streams, Wetlands, and Buffers:

- Campus is located at the headwaters of the Little Patuxent River. Several branches of Symphony Stream run through or along east side of campus
- 50' Stream Buffer per Howard County
- Several delineated wetlands and numerous seeps in the wooded stream buffers areas
- 25' buffer upslope of wetland boundaries

Master Plan Recommendations

The existing vegetation on campus assists stormwater management from a technical perspective by drawing excess water from saturated soils, but the site flora also serve a powerful purpose from the viewpoint of human experience. The shade trees and ornamental plants define the experience as students and faculty stroll across the Howard Community College grounds. These plants define pedestrian corridors and also frame the architecture and natural vistas contributing to the emotional attachment associated with collegiate life. In congruence with the “campus as arboretum” concept, sustainable stormwater management practices provide chances to introduce unique herbaceous and shrub species that would augment the robust Howard Community College plant palette. Future development efforts on campus would benefit from a strategy that involves not only retaining mature species but introducing a very select palette of especially well adapted and attractive species as a component of a comprehensive ecological plan.

As the campus grows in the future, increased use of a native plant palette offers an opportunity to create a unified and distinctive campus landscape, decrease the use of water for irrigation, and manage stormwater sustainably.



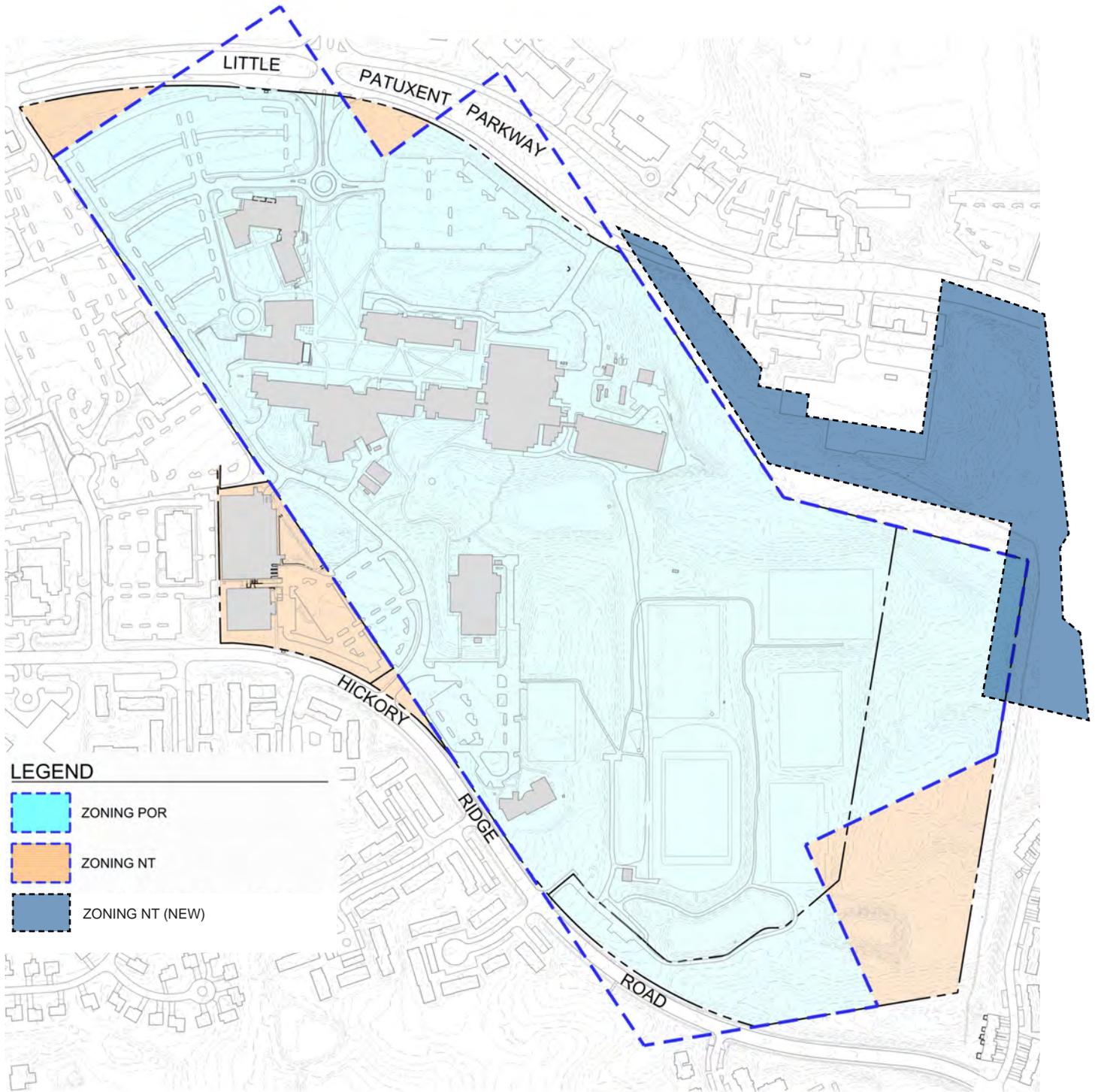
Stream



Stream through Landscape



Rain Garden - Howard County Stormwater Solutions



Zoning map

ZONING

Existing Conditions

Findings related to Floodplains include: FEMA Map Panels 24027C0135D and 24027C0155D Dated November 6, 2013 show a 100-yr floodplain associated with the stream along the eastern campus boundary east of the athletic fields. The floodplain turns and reaches west into the campus up to the outfall pipe from the campus pond. Development is prohibited in the 100-year floodplain except road crossings and necessary utilities, which require acquisition of Army Corps of Engineers permits.

Two Howard County zoning districts comprise the campus:

POR – Planned Office Research District

- Max. building height: 50'
 - Structure with an additional 1 ft. in height for every 2 ft. of setback above the minimum: 80' max. height
- Min. structure or use setbacks
 - From residential districts or uses: 75'
 - From age-restricted housing (R-SA-8 or R-A-15 Districts): 50'
 - From any other district: 0'
 - Except adjoining open space: 10'
- From public street right-of-way: 30'

NT – New Town District

- Governed by terms of Final Development Plan FDP-72A
- Except for portion of NT Zone containing Hickory Ridge Building and the West Garage, campus NT Zone areas are designated SFLD (Single Family Low Density) in the FDP, but allocated as Open Space and restricted from all further development of residential uses
- Athletic fields added to FDP as a permitted use
- Afforestation and reforestation planting is permitted, but preservation of existing forest cannot count toward required Forest Conservation area

Master Plan Recommendations

All future development shall adhere to these regulations.



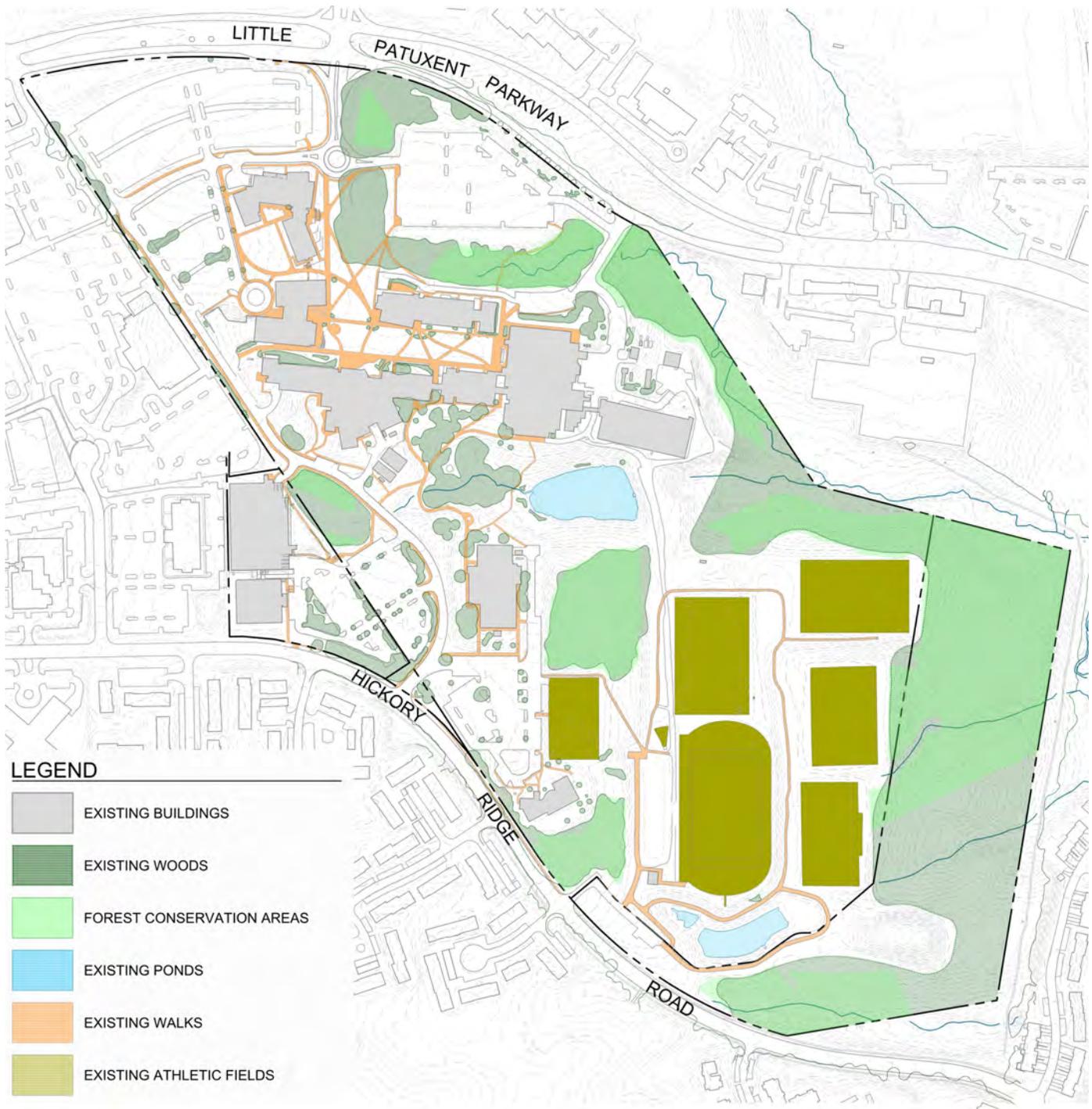
Main Quad view from Library to RCF



Landscape along DH



Athletic Fields Boundary



Map of land cover categories

LAND USE / COVER

Existing Conditions

The developed portions of campus are characterized by a mosaic of campus buildings and paved pathways interspersed with open lawns and smaller, vegetated landscaping beds. Aside from the roadway system connecting Little Patuxent Parkway to Hickory Ridge Road and the main parking areas on campus, vehicular circulation is mostly absent within the core campus. While the west side of the campus is situated adjacent to the intensely developed Howard County General Hospital and associated medical office buildings, the east side of campus is characterized by a large contiguous block of forested area that extends to adjoining properties at the north and south ends of the HCC property.

Of particular note is the large floor single floor area of the Athlete and Fitness Center which was imposed upon what had originally been a sloping site in a time predating full recognition of accessibility issues. The building takes no advantage of the terrain and is therefore relatively difficult to access being situated at the bottom of cut slopes that wrap around the entire south end and extend well across the west side. The north end of the building exterior appears to be composed of fill. Additional concerns include:

- Existing roads break up pedestrian circulation to Hickory Ridge Building and the Children's Learning Center
- ADA accessibility from the north to the south parts of campus is a huge challenge because of the stream valley that bisects campus
- Many of the walks around campus have muddy tire tracks on both sides from maintenance vehicles (gators, golf carts, and small trucks). Consideration should be given when creating walkways to making the paths wide enough that a person and a maintenance vehicle can pass one another without going off the path.
- Pedestrian access to the athletic fields is, for the most part, limited to one path that traverses the hill west of Field 1 and Field 2. Even then it is too steep for ADA accessibility. Consideration might be given to creating an arrival feature that celebrates the entrance to the athletic complex, takes advantage of the hill to provide spectator seating, and creates multiple access ways (ADA accessible and shorter conventional stairways) down to the fields.

- Consideration should also be given to creating other connections from the athletic fields to the northern campus core.
- There are paths of preference worn through the trees south of the Children's Learning Center out to Hickory ridge Road. A new pedestrian connection out to the intersection of Hickory Ridge Road and High Beam Court should be installed.
- The area around the bus stop along Hickory Ridge is heavily worn. Consideration should be given to creating a mini transit plaza to accommodate riders with paving, benches, and trash and cigarette receptacles to deposit butts prior to entering the smoke-free campus.
- There is a general lack of continuity of pedestrian paths on the east side of Campus Drive where circulation would be preferred.

Master Plan Recommendations

The campus will continue to be characterized by a mosaic of buildings, paved pathways, and green open spaces; however, the concentration of development at South Campus will help establish a more holistic campus experience. By focusing much of the development at this location, the psychological divide between North and South campus will be reduced, in addition to a more meaningful connection with the athletic fields. Landscape conditions will also be improved, creating a more pleasant visitor experience and means of improving campus wayfinding.



Entrance to HVPA



Map showing slope categories

SLOPES

Existing Conditions

Steep Slopes – approximately 6.9 acres or 5.6% of the 123-acre campus is composed of 25% or greater slopes occurring throughout the campus with the largest contiguous areas adjacent to the central pond and stream valleys. In general, Howard County does not permit development of naturally occurring slopes greater than 25%.

Considerations to accessibility (ADA) include:

- ADA accessibility from the north to the south parts of campus is a huge challenge because of the stream valley that bisects campus
- Only a small number of accessible spaces for the athletic fields and they are isolated from all other parking

Master Plan Recommendations

The campus should be a place where all are welcome; therefore, all future projects and development shall abide by the latest ADA regulations. Further still, a major component of this master plan will be addressing the barrier between North and South campus by implementing an accessible pedestrian link between these two areas.



Pond and Sloped Landscape



Sloped Pedestrian Walkway



Pond



Map of paths & sidewalks relative to slopes

SIGNAGE

The HCC Signage Master Plan shall be integrated with the Facilities Master Plan and addressed on a project-by-project basis in order to assure uniformity with capital projects and campus planning.

Further still, steps should be taken to implement a strategy for signage that is clear, consistent, and correct. This will not only result in a system that is easier and more intuitive to navigate, but also a more enjoyable user experience.



Building Entrances

- ▶ **Accessible Entrance**
Properly identified wheelchair accessible door with either push-button-to-automate or auto-open entry.
- ▶ **Sign Directing to Accessible Entrance**
Sign, typically located at the mouth of a ramp or a path, directs to accessible doors.
- ▶ **Non-accessible entrance. No signage**
Not identified as being accessible and lacks signage to re-direct to the nearest accessible entrance.
- ▶ **Identified entrance, Non auto-open**
This entrance is identified as the accessible entrance but does not have a push-button or auto-open entry.
- ▶ **Non auto-open entrance**
This entrance would otherwise be accessible if door had a push-button or auto-open entry, though it is not identified as being accessible.

Signage Assessment



Map of pedestrian paths & transit stops

VEHICULAR CIRCULATION

Existing Conditions

It will be expensive and challenging to relocate Campus Drive west as contemplated by the 2010 Master Plan because the twin 48" culverts flowing beneath the West Garage entrance road will need to be extended. Additionally, a portion of a Forest Conservation easement south of the parking garage entrance will need to be extinguished (and replaced elsewhere) to make way for the road and its supporting fill slopes.

Master Plan Recommendations

The entrance along Hickory Ridge Road will not be moved, however, it will be improved. A new roundabout will help establish entrance as the second 'front door' to the campus while improving traffic efficiencies. Campus Drive will be rerouted in order to open up a significant area for the development of academic buildings. This adjustment also addresses campus safety by removing pedestrian conflict zones.



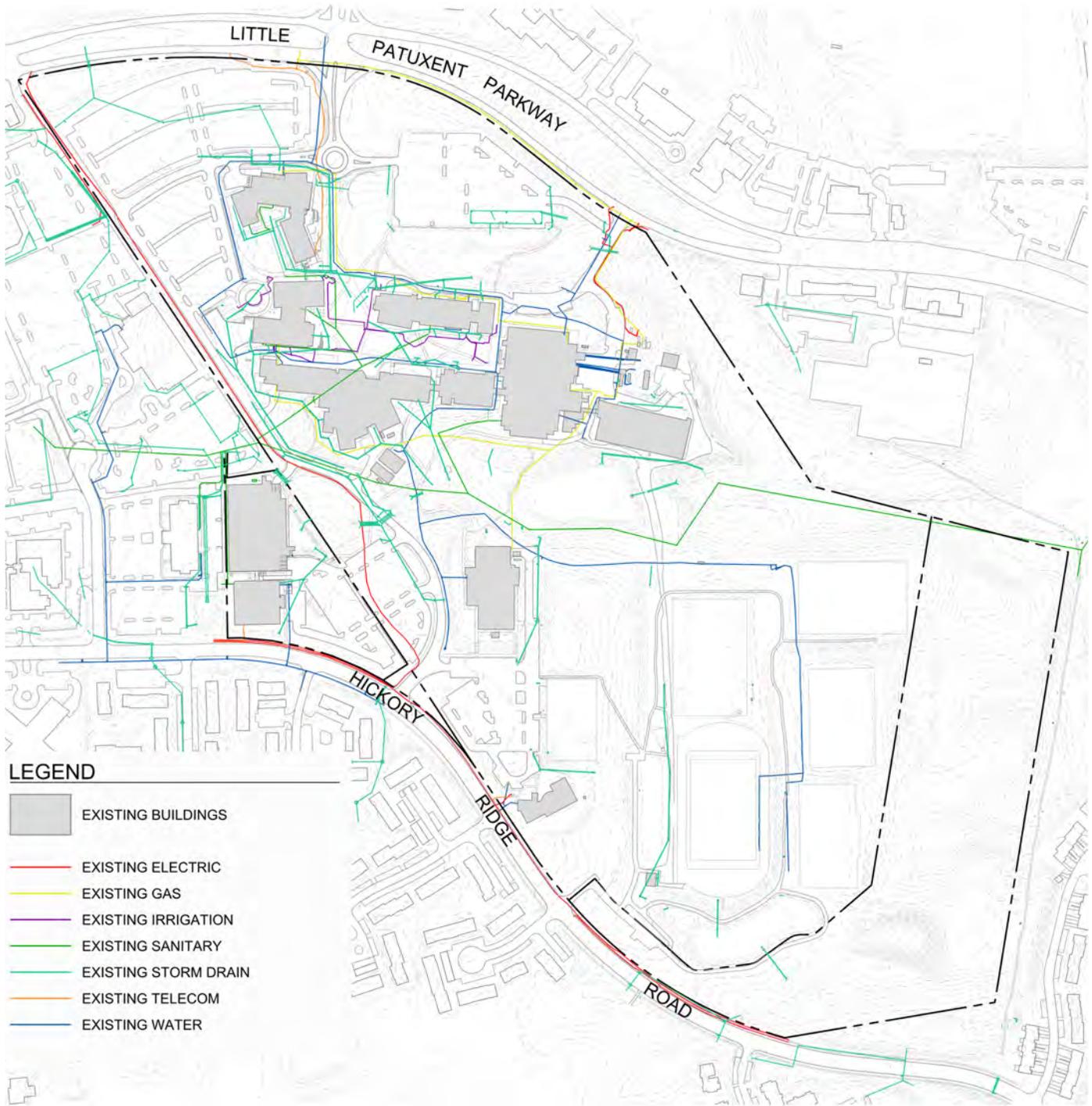
HCC Entrance at Little Patuxent Parkway



Walkway along Little Patuxent Parkway



Pedestrian Crossing



Map of utilities

UTILITIES

Existing Conditions

Sanitary

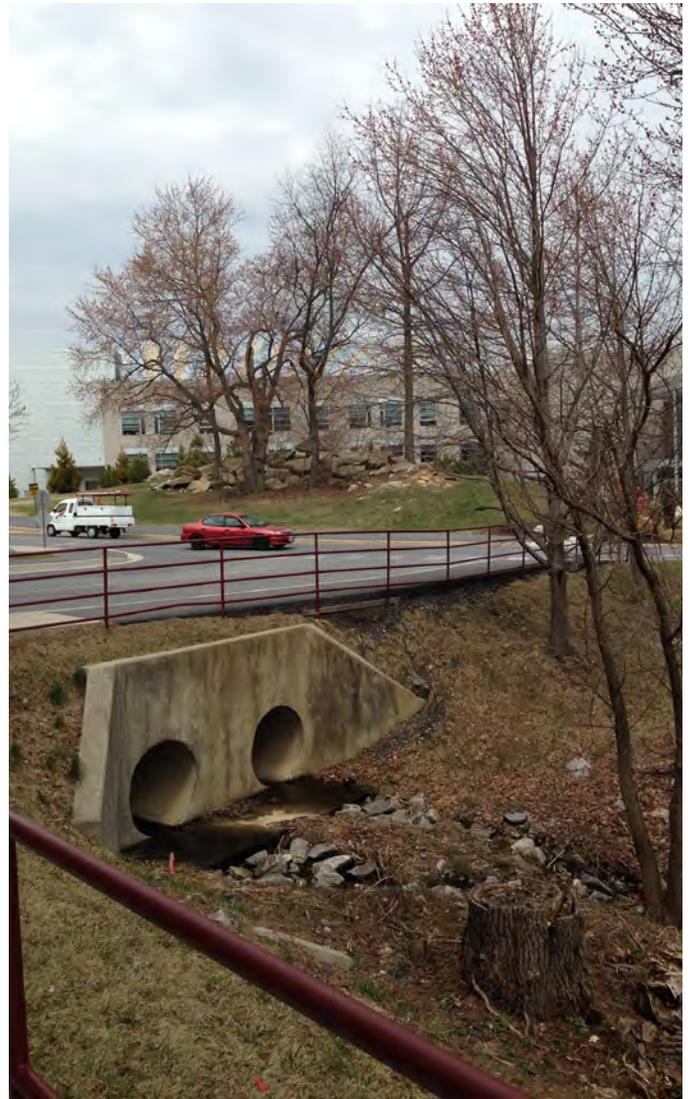
- 10" public line flowing east through campus serves hospital complex to the west. Most of this line is within an easement except where the line goes around the south side of the central pond
- 6" & 8" private lines flowing to 10" public main connect all campus buildings

Water

- 8" line from Little Patuxent Parkway on west side of main entrance feeds a large loop that serves campus quad buildings
- Branch from the loop serves Athletic & Fitness Center and fields
- Hickory Ridge Building and Children's Learning Center are each served by independent connections to public main in Hickory Ridge Road
- Branch from the campus loop that serves the Athletic & Fitness Center and fields runs on east side of Campus Drive to a fire hydrant near Parking Lot J
- Recommend exploration of extending water system to make new connection to 6' public main in Hickory Ridge Drive. This will likely provide more flexibility for future south campus development connected to the internal water system which largely exists.

Master Plan Recommendations

There are a series of minor alterations to utilities as they relate to various campus development initiatives. For further description, refer to the Phasing Plan (Chapter 10) of this master plan.



Storm Drain at Campus Drive

STORMWATER MANAGEMENT

Existing Conditions

- Having been designed prior to the significant changes to Maryland Stormwater Management Regulations in 2007, the most existing systems are “macro” in scale and treat large drainage areas. These primarily consist of piped storm drains flowing to a large bioretention basin south of and underground quantity storage chamber beneath Parking Lot A, a wet pond in the central campus, a dry basin on east side of West Garage, and a wet pond south of the athletic fields.
- The problem of erosion and degradation of the central stream area identified in 2010 Master Plan update is currently being addressed with a restoration project to correct stream bank erosion and establish a more natural, stable, and sustainable geometry.
- As identified in 2010 Master Plan, the stream channel downstream (east) of Faculty Drive continues to be deeply incised and the outfall of 42” culvert beneath the road is undermined. The stream channel degradation is caused by surges of runoff from upstream being forced through the channel at high velocity. This area collects runoff in part from Parking Lot F which is the single largest expanse of impervious surface on campus. Runoff from this parking lot is somewhat disconnected, i.e. doesn’t flow directly to storm drain inlets, but opportunity may exist to reduce the overall quantity of runoff that eventually makes it the degraded stream. The long grass islands in the middle of Parking Lot F are graded as depressions and could rather easily be converted to micro-bioretention facilities rather than simple grass “channels.”
- Several “experimental” or demonstrations infiltration systems have been installed in older areas of campus, most notably the rain garden at the north side of the Nursing Building.
- New Health Sciences Building has multiple small Environmental Site Design (ESD) features spread around the building and represents a prototype of the method required by current Maryland stormwater regulations.

Master Plan Recommendations

The existing site drainage and stormwater management infrastructure on the Howard Community College campus predominantly reflects traditional runoff conveyance techniques involving curb inlets, basins, and piping throughout the campus that conveys runoff to Symphony Creek and the central pond originally constructed primarily to control the release rate, aka quantity management. There are several existing stormwater management facilities, most notably south of Parking Lot A, that are “in-line” between the runoff sources and the ultimate destination of Symphony Creek which together with the central pond, were originally conceived to temporarily store runoff and release it at controlled rates to the receiving watercourse.

The Maryland Department of the Environment (MDE) administers the state’s stormwater management requirements. Over the past 15 years, Maryland stormwater regulations have moved steadily away from centralized management and toward water quality management in addition to quantity control. The current (2009) regulations favor a distributed approach that seeks to replicate natural hydrology by dealing with runoff as close to its source as possible. The various techniques employed for this are collectively referred to as “Environmental Site Design” (ESD) features, and the regulations require that ESDs be employed as the primary objective. Traditional Best Management Practices (BMPs) are only permitted as a backup strategy after all opportunities for ESDs have been explored and employed. ESD practices include green roofs, permeable pavements, micro-bioretention, infiltration swales, and other techniques that are designed to keep stormwater from immediately entering traditional storm utility infrastructure or natural conveyance systems.

The “ESD ethic” attempts to handle rainwater where it falls. This approach is a departure from older site engineering conventions that involve locating one monolithic stormwater facility (or several) – the big central pond, for example – in a low spot on the project site. The ESD approach is visually and physically manifested in multiple smaller facilities scattered around new development areas to capture, treat and/or infiltrate smaller volumes of water in each facility.

In order for the college to achieve compliance with state stormwater regulations, many open areas around proposed buildings will need to be designated specifically for

stormwater management. Spaces such as the edges of parking lot edges, plazas, walkways and areas traditionally given over to grass or landscaping are all potential locations for ESD installations.

Because of the emphasis on infiltration of storm runoff, the characteristic of the underlying soils play a critical role in determining both the type and size of the facilities needed to manage storm runoff from impervious surfaces like new roofs, roads, parking areas, and walkways. The hydrologic soil group classification is important from a stormwater management perspective because it informs the engineering of sustainable practices when those practices involve infiltration through soils with poor infiltration characteristics. USDA soil mapping reveals that the vast majority of the campus is composed of Type B and Type C soils (Type A possessing the fastest and Type D possessing the slowest infiltration rates).

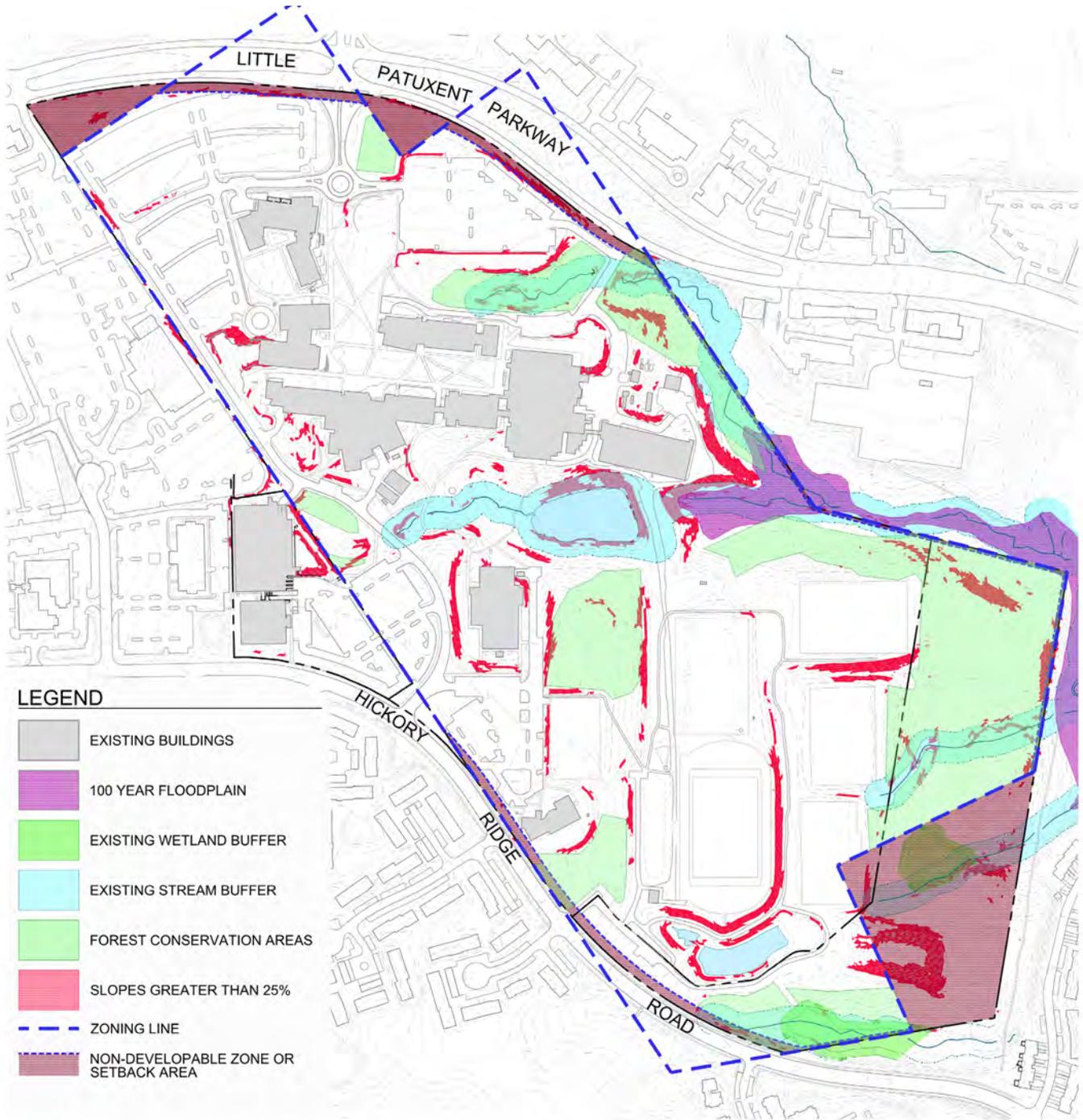
The existing north campus quad and the stream valleys for Symphony Creek and its tributaries are mapped as Type D soils while the bulk of the south campus is characterized as Type B. A small finger of Type C soil extends west into campus near the southeast corner and another area of C soils underlies most of the northern surface parking. Because Type D soils are the least infiltrateable, proposed infiltration facilities for new development in the north campus will require additional engineering efforts, such as underdrains, to counteract the soil's poor drainage properties. Development on the south campus will likely need fewer and/or smaller facilities relative to the size of the developed land areas for which the runoff is managed.

Another important design parameter involves the dimensions of the space for the preferred ESD practice and the size of the associated drainage area being managed. Some devices, such as rain gardens, are only recommended for drainage areas of 2,000 square feet or less. The Howard Community College campus would clearly require the management of larger drainage areas, especially rooftop surfaces for large college buildings. Micro-bioretenion practices are feasible for such applications, and a common school of thought favors these – shallow depressions with a rich diversity of plant materials in specialized soil that filter collected runoff – because they tend to offer more treatment capacity in smaller spaces than other techniques.

In open areas where there is plenty of room bioretention facilities are sometimes amorphous and very natural in appearance, but they just as easily can be designed to fit in long, linear spaces. Regardless of shape, the facilities will vary in size and depth with form determination often governed by the depth of receiving storm drain lines since underdrains are typically linked to existing infrastructure and rely on gravity to convey effluent. As campus development progresses, designers for each individual project must take time early in the process to examine estimated drainage areas in conjunction with nearby storm drain lines to determine what length, width, and side slope dimensions might be necessary for an infiltration facility.

Sometimes ESD practices require well-defined edges rather than natural borders. When conceived in concert with the architectural design, planners can fashion ESD practices that integrate well with the campus pedestrian experience and/or complement the architecture. Prime examples of such facilities are the rain garden in front of the Nursing Building and the tiered facility off the southeast corner of the Health Sciences Building. Such treatments can not only contribute to corridor definition for pedestrian circulation but also provide places for students to appreciate the plantings and their restorative abilities for the environment and the human psyche.

Maryland Department of the Environment (MDE) guidelines promote the use of native species in bioretention swales, open channels, filter strips and other similar devices. The state manual defines “natives” as “those species which lived in Maryland before Europeans explored and settled in America.” Sustainable stormwater practices in the mid-Atlantic region may have trees such as Red Maple (*Acer rubrum*), River Birch (*Betula nigra*), and various native oaks near the “outer” or “high” zone of an infiltration area. The middle zone of a bioretention facility may have shrubs such as Bottlebrush Buckeye (*Aesculus parviflora*), Highbush Blueberry (*Vaccinium corymbosum*), and some small holly varieties (*Ilex glabra*, *Ilex verticillata*). The middle and low zones could be full of herbaceous plants, including Joe Pye Weed (*Eupatorium purpureum*), Blue Flag (*Iris versicolor*), and Switchgrass (*Panicum virgatum*), just to name a few. The green spaces around future buildings and parking structures in the master plan should all be considered candidate spaces for a wide-ranging plant palette associated with stormwater management facilities and could be closely linked to the biology- and environment- related curriculums as well.



Map of remaining developable land bays

CONSIDERATIONS

- Better separation of pedestrian and vehicular circulation – currently roads interrupt pedestrian flow, particularly around the Hickory Ridge Building
- Address lack of pedestrian path continuity on east side of Campus Drive
- Limited pedestrian access points to athletic field
- Reconsider entrance and approach from Hickory Ridge road in keeping with the vision and spirit of HCC
- Continue adherence to 2010 Campus Landscape Standards to create a more unified campus
- Comprehensive planning and re-imagining of the existing Quad
- Add pedestrian access points to campus from Hickory Ridge Road
- Review possibilities for transportation plazas at bus stops
- Strategic implementation of stormwater treatment facilities within existing campus infrastructure. Example: grass strips in middle and south side of Parking Lot F.

FUTURE SUSTAINABILITY CONCEPTS

Rainwater Harvesting

Current MDE stormwater regulations classify rainwater harvesting as a qualified Environmental Site Design (ESD) practice. In practice however, there are several caveats that need to be considered. Because stormwater regulations require that rainwater harvesting cisterns be empty and ready to accept runoff from as many storms as possible, they must be designed to empty within 72 hours. That means that in order to be a viable means of stormwater management, the use of the collected water must be consistent and persistent. The three most common uses for harvested storm water are irrigation, cooling tower makeup water, and graywater flushing. Of these, only graywater flushing is typically the only use that is consistent and persistent enough to alone comprise a viable and approvable stormwater management strategy, though in specialized cases where at least some cooling capacity is required in a facility year round, this use may also be an option. While irrigation represents one of the easiest water recycling methods to implement, it suffers from a fundamental flaw as a consistent and persistent use; at the times when demand for irrigation is highest, the cisterns are frequently low on supply because of a lack of rain. Conversely, when rain storms are close enough together and/or intense enough to provide adequate volumes of water, the need for irrigation is typically at its lowest. This is not to say that irrigation should be discounted as use for harvested rainwater. It simply means that irrigation alone will not qualify a rain water harvesting facility as an approvable stormwater management strategy. It would have to be combined with another more consistent and persistent use. Because of concerns about cross contamination of municipal water supplies, Howard County does not currently permit graywater flushing. In general, plumbing codes across Maryland have not caught up with current sustainability initiatives. Municipal water authorities are rightly concerned about public health issues arising from cross connection of graywater and potable water and subsequent contamination of municipal water supplies and delivery infrastructure. While this may be bigger than one institution is able resolve alone, this frontier is one where the combined efforts of multiple entities could make a significant impact on water consumption.



Rainwater Harvesting



Peak Shaving - Photovoltaic Panels on Rooftops



Green Roofs



Geothermal Piping (located beneath open spaces)

Cogeneration and Peak Shaving

Because of the significant emergency power needs of campus buildings, emergency generators are a necessary part of the facilities. Recently, many campuses from health care to academics are rethinking their electrical generation strategies in order to provide electrical power sustainably and at the most economical prices. Solar panel installations can help reduce electrical consumption from the grid, and college campuses with many large and otherwise unused rooftop areas provide abundant opportunities for photovoltaic installations that can provide significant amounts of electricity. Another strategy being employed involves larger emergency generators networked together and/or more centrally located reducing the amount of energy purchased from the utility company during peak hours when the charges are highest in addition to providing backup power during outages. Solar panels also have this advantage since they tend to produce their highest outputs during peak demand times. As new buildings are designed, rooftop solar installations should be considered, especially for facilities like the new athletic center that is likely to have a very large available rooftop area and new parking garages where solar arrays can be placed above the rooftop parking levels to provide power generation and some shading for upper level cars.

Green Roofs

Green roof provide multiple benefits for both the building over which they exist and the exterior environment into which they are placed. In addition their ability to isolate the buildings below them from dramatic temperature swings typically associated with rooftops thus reducing needs for mechanical heating and cooling inputs, they reduce the volume of runoff released from a building site because they retain the majority of the first flush of rainfall within the planting media. Even after the media has been saturated, they delay the release of storm runoff to the receiving systems and watercourses this helping a developed site more closely mimic the natural environment. Delaying the release of runoff is a classic technique for managing stormwater quantities. Finally, green roof systems are able to clean water through the filtration by the plants, the growing media, and the drainage layers that underlie them. Because of these benefits, green roofs constructed in accordance with MDE standards qualify as an Environmental Site Design feature that can reduce the required area at ground level devoted to managing runoff.

As a largely developed campus with somewhat limited space for new stormwater management facilities, green roofs should play a major role in future building projects on the campus. In certain cases, these will have to take priority over solar arrays since the two are, for all practical purposes, mutually exclusive.

Geothermal

In recent years geothermal heating and cooling systems have proven attractive alternatives to more conventional systems because of thermal efficiency. For the relatively large buildings that are contemplated by this master plan, these systems would require a large number of interconnected wells. Typically the installation of a geothermal field constitutes a major disturbance involving closely spaced wells in a regular pattern, each bringing large volumes of extremely wet mud to the surface. While the number and depth of the wells is highly dependent on the underlying geology and well beyond the scope of this document, it is safe to conjecture that owing to the dense development of the campus and the limited number and size of open spaces that could withstand the disturbance of a well field installation, geothermal will not likely become the major means of heating and air conditioning for many of the future projects. The area that might be considered for installation of geothermal is the athletic fields. Together, the fields represent nearly 16 acres, all of which is largely free of other utilities that would interfere with well fields. Because of the cost of the wells and the possible costs of temporary loss of the geothermal field area during installation, a cost benefit analysis to determine the length of payback should be performed for any project considering this option.

Another possible option for installation of a geothermal loop is the central pond on campus. Water bodies that are deep enough enjoy relatively stable temperatures at the bottom where overlapping loops of geothermal pipes lay as an alternative to drilling wells.

08

**TECHNOLOGY
AND INFRASTRUCTURE
ASSESSMENT**



Duncan Hall Room 122

TECHNOLOGY AND INFRASTRUCTURE ASSESSMENT

Leveraging internal expertise in technology development and familiarity with this dynamic region, CannonDesign's Technology Design group assisted Howard Community College with developing a comprehensive understanding of its current infrastructure, forecasted infrastructure needs, anticipated timeline for modification, and decision-making framework.

A particular framework of concern for HCC's Information Technology division is the deployment of wireless networks throughout campus. There is an increased demand placed upon the existing wireless network which has exceeded the technologies ability to provide throughput connection. The expectation for connectivity through wireless networks will need to be managed. Current wireless does not have robust capabilities and is residential in nature for both speed and bandwidth. Continuous advancements in wireless technology for the foreseeable future will continue to increase bandwidth available to wireless devices further propogating the use of the WLAN.

HCC's current deployment of wireless includes 802.11n and 802.11ac technology in a shared environment. Wireless access points have been positioned to provide coverage throughout the buildings. Wireless equipment which has been deployed is manufactured by Cisco and includes Wireless LAN controllers and a variety of Cisco Wireless Access Points. Cisco Prime is used to manage the wireless network and provides live monitoring of the WLAN.

A wireless improvement project was completed in Septemeber 2014 to address coverage, density and power levels of the WLAN. Physical site survey was completed as part of the project to identify new locations of wireless access points and identify relocation of existing wireless devices. Survey resulted in adding 61 additional WAP's to provide additional throughput focused on classrooms. 39 WAP's were purchased to replace legacy equipment and an additional 10 WAP's were installed to provide enhanced coverage in the College Quad and areas outside AF, CLC and Hickory Ridge.

As part of the Wireless improvement project WLAN management and configuration changes were implemented to improve wireless bandwidth and accessibility by reducing overhead and streamlining authentication. Reconfiguration of Wireless controllers allowed for seamless roaming between WAP and allowing Laptop Carts to become untethered to dedicated rooms.

Mitigation of rogue access points affect on the WLAN has been addressed through use of Cisco's wireless intrusion prevention system (WIPS).

The information provided by HCC's Information Technology division and gathered by the CannonDesign site survey indicates the current data network is in good condition. This data network has three separate networks (Data / Voice / Security). These can be combined and VLANS established. Additional management of network and resources would be required. The following was observed:

- The network backbone has been upgraded from 1GB to 6GB with the potential to go to 10GB in the future. This will support the increasing bandwidth demand of the WLAN.
- Existing Motorola PON solution will be migrated as part of the SET building project. The new PON solution will be rolled out to all buildings on campus with the 4 network cores at DH, RCF, Hickory Ridge and the NOC being connected via PON.
- Upgrade to the PON infrastructure will replace existing network electronics to edge devices. New cabling will be at minimum of Cat6a copper cabling where specifically required and fiber for connection of the PON infrastructure. Infrastructure will meet ANSI / TIA / EIA standards.
- Future upgrades to include connectivity between edge switches and workstation to support 10GB. Upgrade connection between edge switches / PON network and core to 10GB. Multiple 10GB links may be required until

40 GB/100GB becomes available. This will improve capacity alleviating the bottleneck on the network electronic side.

- Confirm capacity of existing fiber to support 10 GB backbone between TR's. Distance limitation of 100' with 62.5 micron multi mode fiber to support 10 GB at 900nm.
- Utilize 10 GB edge switches with 802.11ac wave 2 WAPs. There are multiple methods/protocols that manufacturers use to provide wireless. 802.11ac wave 2 Wireless access points will be available in 2015. Future wireless protocols in development are 802.11ax which anticipates 10Gb wireless connectivity.
- WAPs have been located to accommodate throughput demands in addition to coverage. Wireless access points are a shared resource. Utilize a wired connection for dedicated computers where possible. Administration software is being used to manage access point power and load sharing. Assume 1-to-1 computing as a minimum.
- Set user expectations for wireless (ex. downloading video will be problematic).
- Be aware of other wireless technologies that operate in the 802.11 ranges. They may have a negative impact on the wireless network. (Example Miracast provides wireless video capability which can operate in the 2.4 GHz or 5 GHz ranges.)

CannonDesign utilized industry standards as a basis of design when surveying Telecommunications Rooms (TR) taking into consideration the existing facility and requirements of the equipment in the rooms. The Telecommunications Industry Association/Electronics Industries Association (TIA/EIA) publishes a compilation of telecommunications standards that provide guidelines for effective and adaptable telecommunication installations. These guidelines provide the basis of design in Telecommunications Room design and include the following:

- ANSI/EIA/TIA 568-C – Commercial Building Telecommunications Standard.
- ANSI/EIA/TIA 569-B – Commercial Building Telecommunications Standard for Buildings and Spaces.
- ANSI/EIA/TIA 606-A – Administrative Standards for Telecommunications Infrastructure.
- ANSI/EIA/TIA 607-A – Commercial Building

Grounding, Earthing and Bonding Requirements for Telecommunications.

- ANSI/EIA/TIA 758-A – Customer-Owned Outside Plant Telecommunications Standard.
- ANSI/EIA/TIA 862 – Building Automation Systems Cabling Standard for Commercial Buildings.
- ANSI/EIA/TIA 942 – Telecommunications Infrastructure Standard for Data Centers.

The basic building blocks for a successfully designed telecommunications infrastructure are the spaces, pathways and cabling system which stores, secures, and allows the applications to function. The standards will help develop the optimal spaces to ensure an organized deployment.

Telecommunications Rooms should be located throughout buildings based on the layout. Existing building conditions and program provide locations of Telecom Rooms and often are not ideal for the needs of technology and associated equipment. The design goal is to program space that can outlive the life of the building. The TR serves as the recognized connection point between the backbone and horizontal pathways, cabling, and distributed equipment. Locating effective TR space in an existing building is the first challenge in developing a telecommunications space program. It involves adherence to specific items that have conflicting needs when compared to the program layout of academic buildings. Therefore, concessions are expected. Current standards require a minimum of 1 TR per floor and each TR to serve a maximum of 10,000 square feet. TRs should have corridor access, should be stacked vertically and located away from areas susceptible to flooding. CannonDesign's experience is that these limitations will be observed with discretion based on the high costs associated with these requirements and the physical layout of program space which cannot be modified to implement these standards. However, precaution should be taken to provide protective measures to ensure proper operation for the life of the building. For instance, the 90 meter maximum horizontal distance allowed by EIA/TIA standards will be limited to 80-85 meters and TR coverage will be determined based on those parameters at a minimum. This will keep us within Ethernet guidelines, but will not reduce the effectiveness of the solution.

A Telecommunication Rooms' primary function is to house the intra-building fiber optic backbone and horizontal cross-connect that serves that floor area. Stacking

telecommunications rooms is ideal, but not practical in an existing environment since department program space has priority in the layout of the area. It is necessary for the TR to function efficiently and effectively in the background. Pathways provide an efficient means of connecting TRs so that corridors will have minimal disruption for any future moves, adds, or changes (MACs) to the cable plant.

Grounding

A Telecommunications Grounding Busbar (TGB) shall be provided in each TR to enable signal equipment grounding. Each TGB will be connected to the Telecommunications Main Grounding Busbar (TMGB) in the Main TR with a Telecommunications Grounding Backbone (TBB) sized per IEEE and EIA standards. In addition, TRs shall have a hard floor surface, not conducive to static. An anti-static floor surface is preferred, with a ground conductor terminated to the TGB.

Electrical requirements

Lighting within the room shall be a minimum of 50 footcandles. Emergency lighting should be provided. Lighting shall be located at minimum 12 inches from data cabling to avoid presence of electromagnetic interference

(EMI). Uninterruptible Power Supply is recommended to provide battery backup to PoE data switches which support VoIP devices. This will provide the ability to make telephone calls in case of emergency until either the batteries run out or the emergency generator power takes over. Dedicated outlets shall be provided at the data rack to minimize tripping hazards.

HVAC requirements

Continuous, dedicated environmental control should be provided to support the active components. One air change per hour is required with positive pressure to minimize dust. The temperature should be maintained between 64-78 degrees F with a relative humidity of 30-55%.

Pathways

Ladder trays should be provided to support cabling that enters from above the data racks with proper dropout devices and conduit sleeves. Fire rated assemblies or fire stopping should be provided to maximize access to ceiling space, and to allow distribution into available cable trays. The cable should be protected utilizing surface mounted raceway where wall cavities are not accessible and cabling cannot be concealed.

1. HICKORY RIDGE

- a. 1st Level TR HR117
 - i. (2) independent split HVAC systems
 - ii. Cat 5 Data cable
 - iii. (4) 2 post data racks
 - iv. No grounding
 - v. Telco Demarc
 - vi. Existing wire management and cable tray. Non typical means off support above accessible ceiling
 - vii. No fire stopping

- b. Level 2 Telecom Room HR211
 - i. Cat 5 data cable pulled back and terminated on wall
 - ii. one (1) floating data rack
 - iii. No wire management
 - iv. No grounding
 - v. Emergency power unknown
 - vi. Transformer and power panels located in the same room
 - vii. No fire stopping

- c. Level 3 Telecom Room HR311
 - i. Cat 5 data cable pulled back and terminated on wall
 - ii. (2) floating data racks
 - iii. No wire management
 - iv. No grounding
 - v. Emergency power unknown
 - vi. Transformer and power panels located in the same room
 - vii. No fire stopping

- d. Wireless coverage provided 802.11n

- e. Recommendations:
 - i. Replace Cat 5 cabling with Cat 6 at minimum. Utilize Cat 6a to WAP's
 - ii. Provide dedicated room for Telecom equipment. Currently shared with Electrical room.
 - iii. Provide HVAC in all rooms
 - iv. Add fire stopping



2. HOROWITZ VISUAL PERFORMING ARTS CENTER (MVPA)

- a. Basement - HVPA B1
 - i. No HVAC no immediate need
 - ii. (1) Data rack for distribution. Minimal copper cable.
 - iii. Fiber distribution to Duncan
 - iv. Voice cross connect panel
 - v. Existing wire management and cable tray.
 - vi. Existing grounding bus bar.

- b. Level 1 – HVPA 1B Room # 128
 - i. No HVAC. Ventilation fan above closet door. Unplugged at time of survey. Room was hot.
 - ii. (1) Data rack for distribution.
 - iii. Voice cross connect panel
 - iv. Some wire management. No cable tray. Unapproved method of supporting cables.
 - v. No grounding bus bar.
 - vi. Emergency power

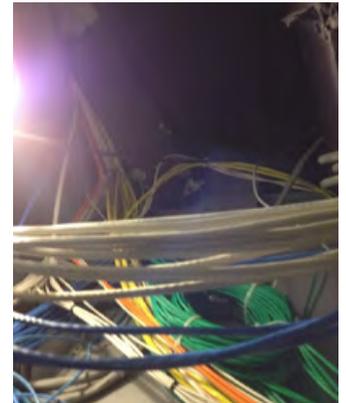
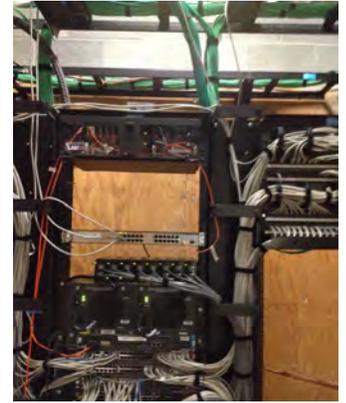
- c. Level 1 - HVPA 1A Room #157
 - i. HVAC split system
 - ii. (3) data rack for horizontal distribution
 - iii. Room to expand as needed
 - iv. Voice cross connect panel
 - v. Existing wire management and cable tray.
 - vi. Existing grounding bus bar.

- d. Level 1 - HVPA TH1
 - i. Closet next to Theater shop. No access at time of walk through. Per HCC No rack in room, no emergency power, no TGB, no wire management.

- e. Level 2 - HVPA 2A
 - i. HVAC split system
 - ii. (3) data rack for horizontal distribution
 - iii. Room to expand as needed
 - iv. Voice cross connect panel
 - v. Existing wire management and cable tray.
 - vi. Existing grounding bus bar.

- f. Wireless access point for coverage

- g. Recommendations:
 - i. Telecom rooms are in good shape.
 - ii. Add wire management in HVPA 1B



3. DUNCAN HALL

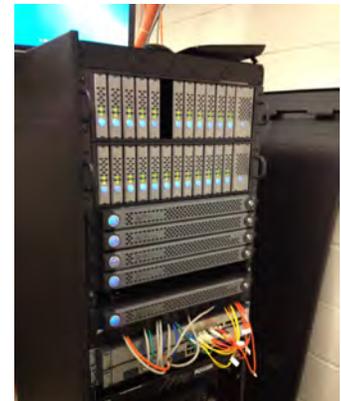
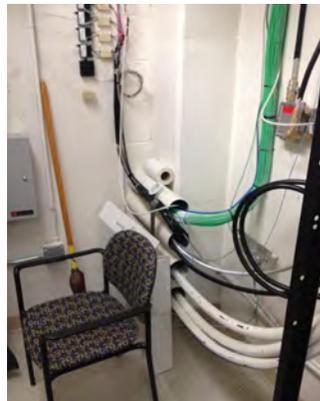
- a. Basement Telecom Room - DH0 Room# 003
 - i. Data closet with (2) Cisco 6500's
 - ii. Cat 6 data cable
 - iii. (4) data racks 3 distribution and 1 server rack
 - iv. cable runway around room, horizontal and vertical wire management
 - v. Grounding bus bar provided
 - vi. Emergency power unknown
 - vii. Voice cable terminated with surge protection
 - viii. HVAC provided in this room
 - ix. Noted paint on copper cable
 - x. Pelco Video Surveillance equipment
 - xi. Fire stopping not observed

- b. Level 2 Telecom Room - DH2 Room# 214
 - i. Cat 6 data cable
 - ii. (4) data racks distribution
 - iii. cable runway around room, horizontal and vertical wire management
 - iv. Grounding bus bar provided
 - v. Emergency power
 - vi. Limited access to rear of racks
 - vii. HVAC provided in this room
 - viii. Fire stopping not observed
 - ix. Non recommended means of support for copper cable into TR

- c. Level 3 Telecom Room - DH3 Room# 314
 - i. Cat 6 data cable
 - ii. (4) data racks distribution
 - iii. cable runway around room, horizontal and vertical wire management
 - iv. Grounding bus bar provided
 - v. Emergency power
 - vi. Limited access to rear of racks
 - vii. HVAC provided in this room
 - viii. Fire stopping not observed
 - ix. Non recommended means of support for copper cable into TR

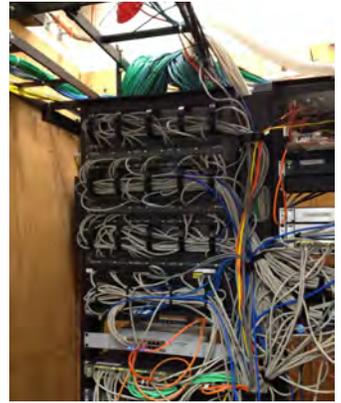
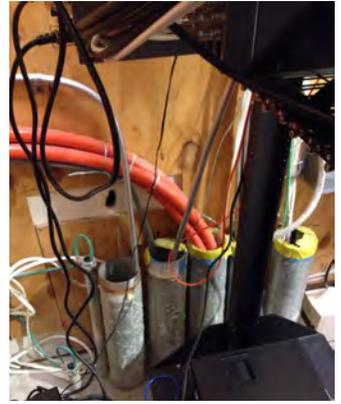
- d. Wireless coverage provided 802.11n

- e. Recommendations:
 - i. Utilize Cat 6a to WAP's
 - ii. Add fire stopping



4. ROUSE COMPANY FOUNDATION STUDENT HALL

- a. Basement Level - RCF Room # RCF 001E
 - i. GPON Headend for Distribution
 - ii. Dual Cisco 6500 with 10GB links between
 - iii. Fiber optic distribution and backbone cable
 - iv. cable runway around room, horizontal and vertical wire management
 - v. Grounding bus bar provided
 - vi. Emergency power
 - vii. HVAC provided in this room
 - viii. Fire stopping not observed
 - ix. Voice copper cabling termination panels with surge protection
- b. Level 1 Telecom Room - RCF Room# T12
 - i. Cat 6 data cable,
 - ii. (2) data racks distribution
 - iii. cable runway around room, Additional horizontal and vertical wire management needed on racks
 - iv. Grounding bus bar provided
 - v. Emergency power
 - vi. HVAC provided in this room
 - vii. Fire stopping not observed
- c. Level 1 Telecom Room - RCF Room# T11
 - i. Cat 6 data cable
 - ii. (2) data racks distribution
 - iii. cable runway around room, Additional horizontal and vertical wire management needed
 - iv. Grounding bus bar provided
 - v. Emergency power
 - vi. HVAC provided in this room
 - vii. Fire stopping not observed
- d. Level 2 Telecom Room - RCF Room# T21
 - i. Cat 6 data cable
 - ii. (2) data racks distribution
 - iii. cable runway around room, Additional horizontal and vertical wire management needed
 - iv. Grounding bus bar provided
 - v. Emergency power
 - vi. HVAC provided in this room
 - vii. Fire stopping not observed
 - viii. Cover plate missing on security junction box
- e. Level 2 Telecom Room - RCF Room# T22
 - i. Cat 6 data cable
 - ii. (2) data racks distribution
 - iii. cable runway around room, Additional horizontal and vertical wire management needed
 - iv. Grounding bus bar provided
 - v. Emergency power
 - vi. HVAC provided in this room
 - vii. Fire stopping not observed
- f. Level 3 Telecom Room - RCF Room# T31
 - i. Cat 6 data cable
 - ii. (2) data racks distribution
 - iii. cable runway around room, Additional horizontal and vertical wire management needed
 - iv. Grounding bus bar provided
 - v. Emergency power
 - vi. HVAC provided in this room
 - vii. Fire stopping not observed
- g. Level 3 Telecom Room - RCF Room# T32
 - i. Cat 6 data cable
 - ii. (2) data racks distribution
 - iii. cable runway around room, Additional horizontal and vertical wire management needed
 - iv. Grounding bus bar provided
 - v. Emergency power
 - vi. HVAC provided in this room
 - vii. Fire stopping not observed
- h. Level 4 Telecom Room - RCF Room# T41
 - i. Cat 6 data cable minimal data drops on Level 4
 - ii. (2) data racks distribution
 - iii. Cable runway around room, Additional horizontal and vertical wire management needed
 - iv. Grounding bus bar provided confirm meets TIA-607A
 - v. Emergency power
 - vi. HVAC provided in this room
 - vii. Fire stopping not observed
 - viii. Conference room sound system rack, wall mounted
- k. Recommendations
 - i. Add fire stopping
 - ii. Add wire management, cosmetic clean up of cabling.
 - iii. Missing pathways (conduit sleeves / cable tray through walls / vertical wire management)



5. HEALTH SCIENCE BUILDING

- a. Basement Level Telecom Room - HS Room# 001
 - i. GPON Service entrance room from RCF
 - ii. Motorola GPON distribution with fiber to the desk top
 - iii. Cat 6 data cable for security cameras and voice
 - iv. (6) data racks distribution minimal use with GPON infrastructure.
 - v. cable runway around room, horizontal and vertical wire management
 - vi. Grounding bus bar provided, static floor grounded
 - vii. Emergency power
 - viii. HVAC provided in this room
 - ix. Fire stopping provided
 - x. Sumitomo blown fiber utilized for backbone distribution

- b. Level 1 Telecom Room - HS Room# 161
 - i. Motorola GPON distribution with fiber to the desk top
 - ii. Cat 6 data cable for security cameras and voice
 - iii. (4) data racks
 - iv. cable runway around room, horizontal and vertical wire management
 - v. Grounding bus bar provided
 - vi. Emergency power
 - vii. HVAC provided in this room
 - viii. Fire stopping provided

- c. Level 2 Telecom Room - HS Room# 261
 - i. Motorola GPON distribution with fiber to the desk top
 - ii. Cat 6 data cable for security cameras and voice
 - iii. (4) data racks - 2 for classroom capture equipment
 - iv. cable runway around room, horizontal and vertical wire management
 - v. Grounding bus bar provided
 - vi. Emergency power
 - vii. HVAC provided in this room
 - viii. Fire stopping provided
 - ix. Security junction box missing cover plate

- d. Level 3 Telecom Room - HS Room# 361
 - i. Motorola GPON distribution with fiber to the desk top
 - ii. Cat 6 data cable for security cameras and voice
 - iii. (4) data racks -
 - iv. cable runway around room, horizontal and vertical wire management
 - v. Grounding bus bar provided
 - vi. Emergency power
 - vii. HVAC provided in this room
 - viii. Fire stopping provided

- e. Recommendations:
 - i. Building is new. Telecom Rooms has capacity for current and future requirements.
 - ii. Direction needed with GPON deployment for future wireless deployment.



6. McCUAN HALL

- a. Lower Level Telecom Room - HS Room# 001
 - i. Room shared with Campus TV studio
 - ii. Cat 6 data cable
 - iii. (1) 4 post data rack distribution and network electronics
 - iv. cable runway over racks and at pathway entrance, horizontal and vertical wire management
 - v. No Grounding bus bar provided
 - vi. Emergency power unknown
 - vii. HVAC provided in this room
 - viii. Fire stopping provided, additional needed

- b. Level 1 Telecom Room - MH1 Room# 167
 - i. Cat 6 data cable
 - ii. (1) 2 post data rack floating (not anchored) distribution and network electronics
 - iii. Some wire management. Additional needed. Non approved methods of supporting cable.
 - iv. No Grounding bus bar provided
 - v. Emergency power unknown
 - vi. HVAC needed
 - vii. Fire stopping not observed
 - viii. Comcast service entrance point

- c. Level 2 Telecom Room - MH1 Room# 267
 - i. Cat 6 data cable
 - ii. (1) 2 post data rack floating (not anchored) distribution and network electronics
 - iii. Some wire management. Additional needed
 - iv. No Grounding bus bar provided
 - v. Emergency power unknown
 - vi. HVAC needed
 - vii. Fire stopping not observed

- d. Recommendations:
 - i. Provide HVAC in all rooms
 - ii. Add wire management, cable tray
 - iii. Anchor racks to floor.

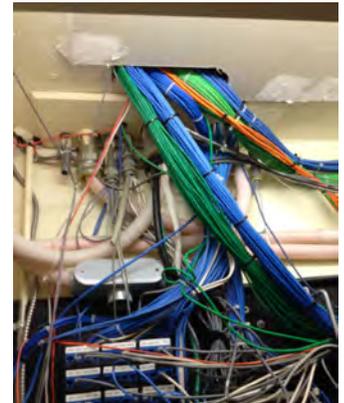
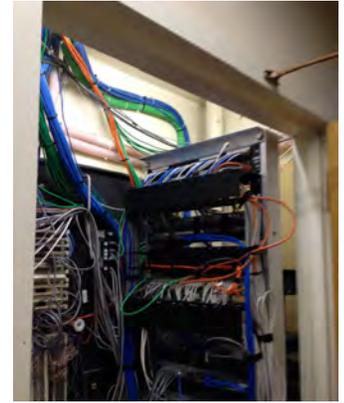


7. NURSING BUILDING

- a. Level 1 Telecom Room - NU1
 - i. Cat 6 data cable
 - ii. (1) 2 post data rack distribution and network electronics - No access to back of rack
 - iii. No cable management
 - iv. No Grounding bus bar provided
 - v. Emergency power unknown
 - vi. No HVAC provided in this room
 - vii. Fire stopping provided, additional needed
 - viii. Copper voice cable distribution

- b. Level 2 Telecom Room - NU2
 - i. Cat 6 data cable
 - ii. (1) 2 post data rack distribution and network electronics - No access to back of rack
 - iii. Wall mounted data patch panels
 - iv. No cable management
 - v. No Grounding bus bar provided
 - vi. Emergency power unknown
 - vii. No HVAC provided in this room
 - viii. Fire stopping provided, additional needed
 - ix. Copper voice cable distribution

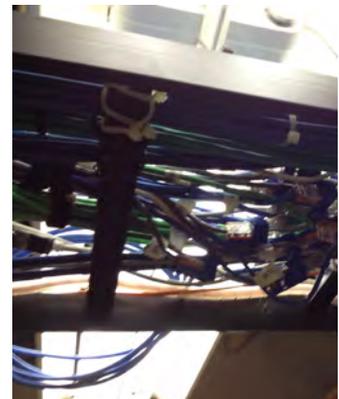
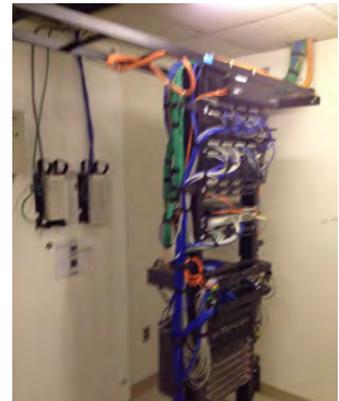
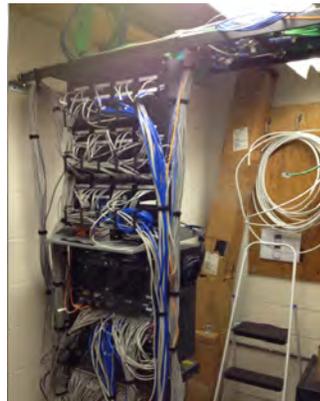
- c. Recommendations:
 - i. Not ideal locations for Telecom Rooms. Rooms are located off of janitors closet and are small with no environmental control. Recommend relocation to a more conducive environment. HVAC needed in this location.
 - ii. Add fire stopping



8. SCIENCE AND TECHNOLOGY BUILDING

- a. Basement Level Telecom Room - ST Room # 020G
 - i. Cat 6 data cable, cabling spliced in cable tray
 - ii. (1) 2 post data rack distribution and network electronics
 - iii. Cable runway above rack with horizontal wire management. Vertical management needed. Non standard methods of supporting cables above ceiling
 - iv. No Grounding bus bar provided
 - v. Emergency power unknown
 - vi. HVAC provided in this room
 - vii. Fire stopping provided, additional needed
 - viii. Copper voice cable distribution
- b. Basement Level Telecom Room ST Room # 016
 - i. Cat 6 data cable, cabling spliced in cable tray
 - ii. (1) 2 post data rack distribution and network electronics
 - iii. Cable runway above rack with horizontal wire management. Vertical management needed. Non standard methods of supporting cables above ceiling
 - iv. No Grounding bus bar provided
 - v. Emergency power unknown
 - vi. HVAC provided in this room
 - vii. Fire stopping provided, additional needed
 - viii. Copper voice cable distribution
- c. Level 1 Telecom Room ST1
 - i. Cat 6 data cable
 - ii. (1) 2 post data rack (floating) distribution and network electronics - Minimal access to back of the rack
 - iii. Cable runway above rack with horizontal wire management. Vertical management needed.
 - iv. No Grounding bus bar provided
 - v. Emergency power unknown
 - vi. No HVAC provided in this room
 - vii. Fire stopping provided, additional needed
 - viii. Copper voice cable distribution
- d. Level 2 Telecom Room ST2
 - i. Cat 6 data cable
 - ii. (1) 2 post data rack (floating) distribution and network electronics - Minimal access to back of the rack

- iii. Cable runway above rack with horizontal wire management. Vertical management needed.
 - iv. No Grounding bus bar provided
 - v. Emergency power unknown
 - vi. No HVAC provided in this room
 - vii. Fire stopping provided, additional needed
 - viii. Copper voice cable distribution
- e. Recommendations
 - i. Level 1 and Level 2 Telecom Rooms are not ideal locations for Telecom Rooms. Rooms are small with no room for expansion, limited access to rear of rack and lack HVAC. Recommend relocation to a more conducive environment. HVAC needed in this location.
 - ii. Add fire stopping



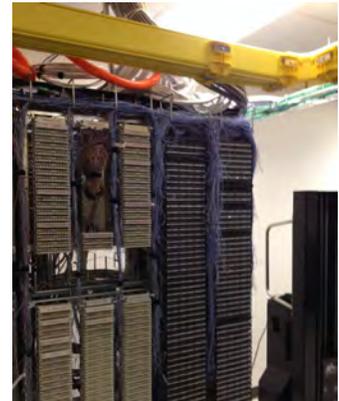
9. STUDENT ACTIVITIES BUILDING

- a. Level 1 Telecom Room - SA1
 - i. Cat 6 data cable
 - ii. No racks, wall mounted patch panels and network electronics
 - iii. No wire management
 - iv. No Grounding bus bar provided
 - v. Emergency power
 - vi. No HVAC in this closet
 - vii. Fire stopping provided
- b. Level 2 Telecom Room - SA2
 - i. Cat 6 data cable
 - ii. No racks, wall mounted patch panels and network electronics
 - iii. No wire management
 - iv. No Grounding bus bar provided
 - v. Emergency power
 - vi. No HVAC in this closet
 - vii. Fire stopping provided
- c. Recommendations:
 - i. Provide wall mount rack for electronics and cabling. Heat load is minimal and environmental control can be accomplished with passive methods.



10. CLARK LIBRARY

- a. Level 1 Telecom Room - CL Room # 183
 - i. Cat 6 data cable, Some GPON fiber
 - ii. (7) 2 post data rack distribution and network electronics, Pelco Security DVR's
 - iii. Cable runway above rack with horizontal and vertical wire management.
 - iv. Emergency power
 - v. Redundant HVAC provided in this room
 - vi. Fire stopping provided
 - vii. Copper voice cable distribution
 - viii. Minimal Room for expansion
- b. Level 1 - Network Operations Center
 - i. Raised Floor
 - ii. Redundant HVAC
 - iii. Redundant core Cisco 6513's, routers and firewall
 - iv. Separate network for Hybrid NEC PBX /VoIP system
 - 1. Administration telephones are IP devices
 - 2. remaining phones are analog / digital utilizing the existing voice copper backbone
 - v. Separate network for Security (video surveillance systems)
 - vi. GPON network management servers
 - vii. Redundant Internet service providers (Comcast / Fiberlight)
 - viii. Application servers
 - ix. Multiple rows of racks with cable runway and horizontal and vertical wire management
 - x. Emergency power
 - xi. Grounding provided
- c. Level 2 Telecom Room - CL Room # 261
 - i. Cat 6 data cable, Some GPON fiber
 - ii. (3) 2 post data rack distribution and network electronics, Pelco Security DVR's
 - iii. Cable runway above rack with horizontal and vertical wire management.
 - iv. Grounding provided
 - v. Emergency power
 - vi. HVAC provided in this room
 - vii. Fire stopping not observed
 - viii. Copper voice cable distribution
 - ix. Minimal room for expansion



- d. Recommendations
 - i. Telecom Rooms have received recent work and are in good condition. NOC has room to expand.
 - ii. Add fire stopping

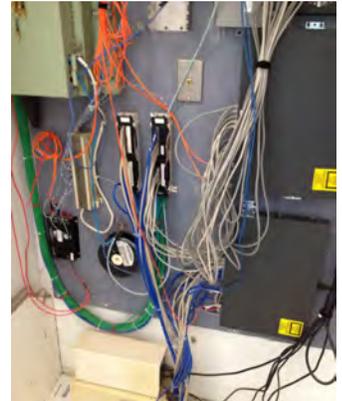
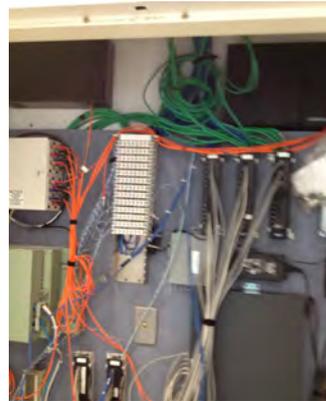
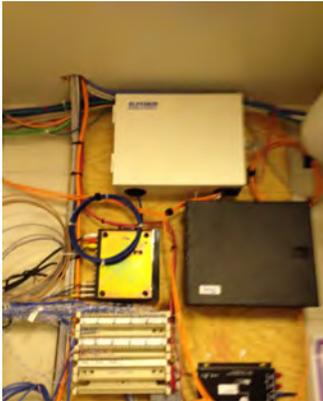
11. ATHLETIC AND FITNESS CENTER

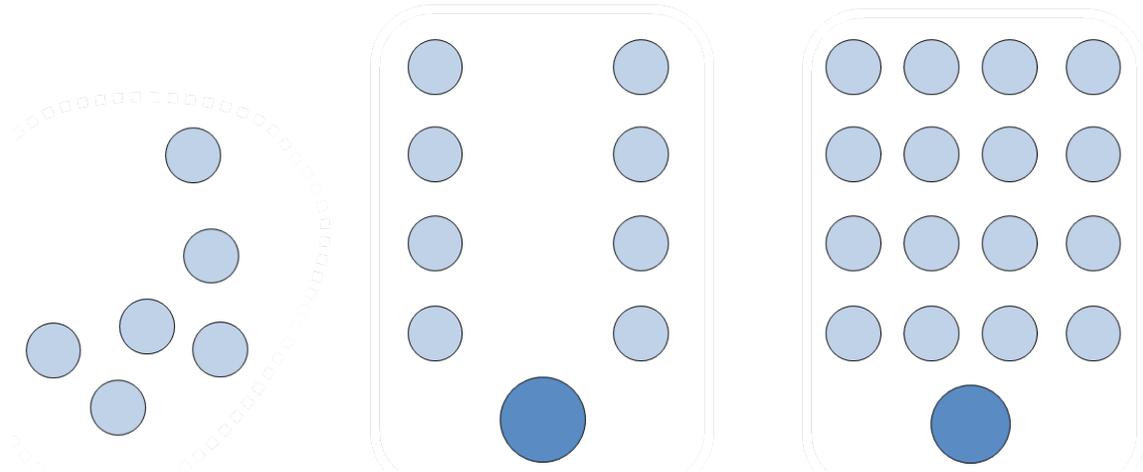
- a. Level 1 Telecom Room #108 Leased space with CLC
 - i. Single rack
 - ii. No wire management
 - iii. No HVAC
 - iv. No grounding
 - v. Fire stopping not observed
 - vi. Cable pathways needed (conduit / sleeves / raceway / cable runway).
- b. Recommendations:
 - i. Leased space from HCC. Missing cable pathways (sleeves, conduits, raceways)
 - ii. Security panel needs cover plate on junction box.

12. CHILDREN'S LEARNING CENTER

(Leased to 3rd party company)

- a. Telecom Room #111
 - i. No rack, wall mounted components
 - ii. (2) data switches
 - iii. No grounding
 - iv. No air conditioning (not needed)
 - v. No wire management
- b. Wireless not provided
- c. Recommendations: None at this time

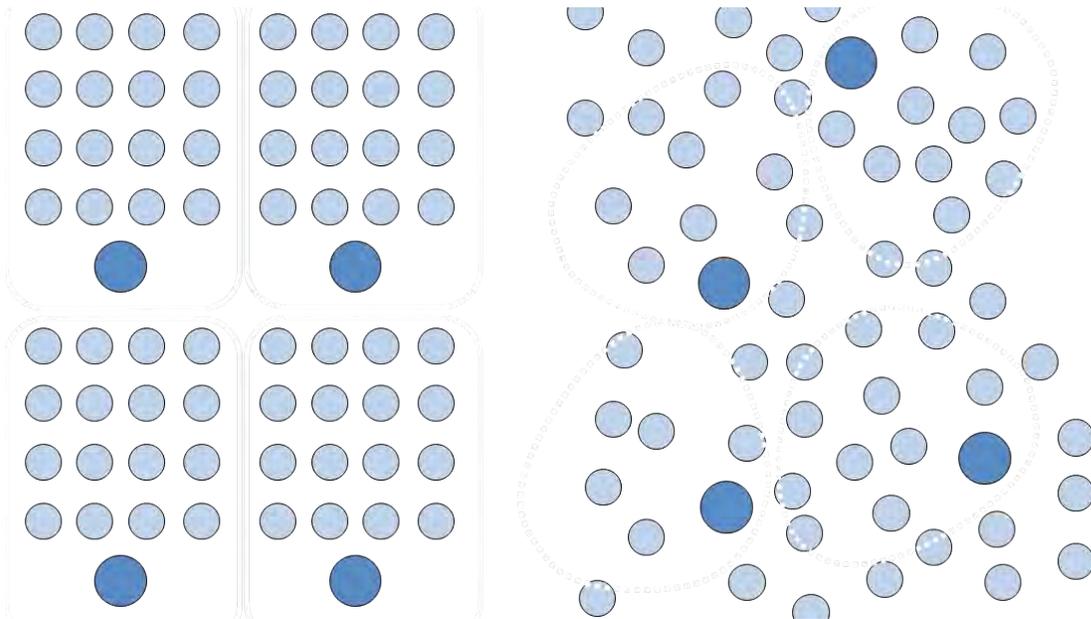




Greek

Medieval

*14th Century
One Room SchoolHouse*



*Industrial Age
Factory Model*

Digital Age

Evolution of Learning

FUTURE LEARNING ENVIRONMENTS

In addition to the Infrastructure Assessment, CannonDesign conducted interviews and visioning sessions on future learning environments. Specifically, the existing stock of instructional spaces were surveyed in terms of technology access, seat count, and proportional dimensions of each space and then classified into three tiers. In collaboration with representatives from the Instructional Media and AV department, the team established a set of technology and spaces standards for instructional spaces moving forward. While the future of learning environments is evolving, the more prevalent technologies will be mobile. This mobility will require flexibility and thoughtful planning for these environments.

The following are **challenges** identified for the implementation flexible learning environments:

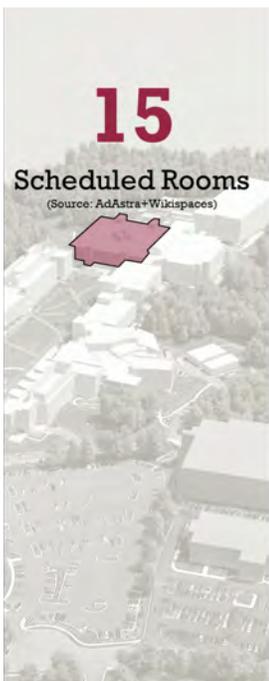
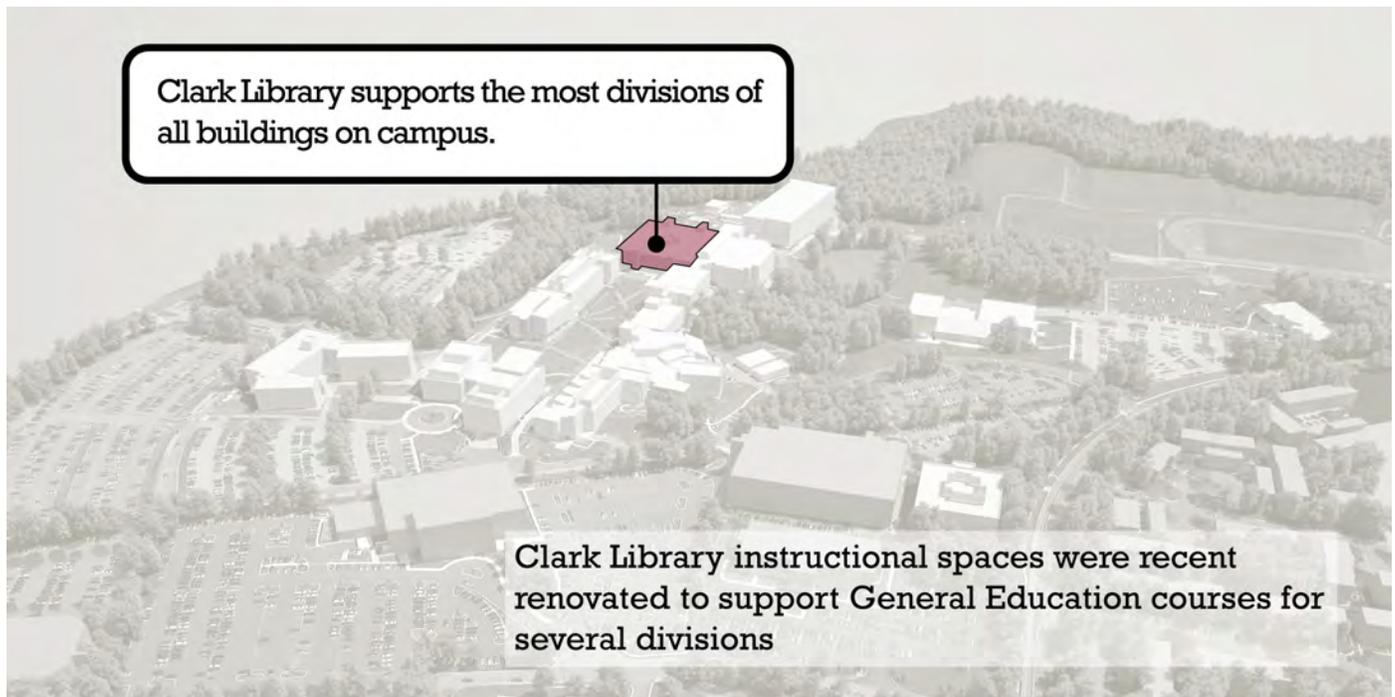
- Inconsistent instructional technology across campus
- Providing the most flexible model core instructional space
- Better alignment of physical campus with virtual campus
- Reflect today's pedagogy in classroom design/fit-out
- Network security concerns in an 'open' campus
- Limited network capacity
- Cultural lag in supporting extended learning

The following are **goals** identified for the future of learning at HCC:

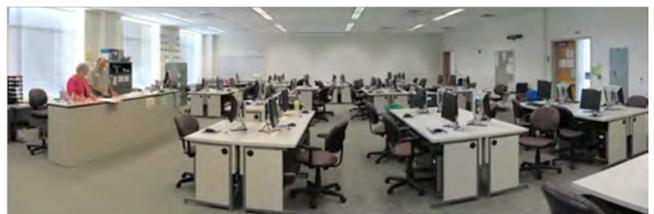
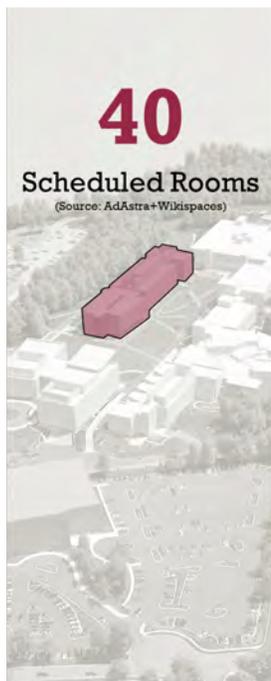
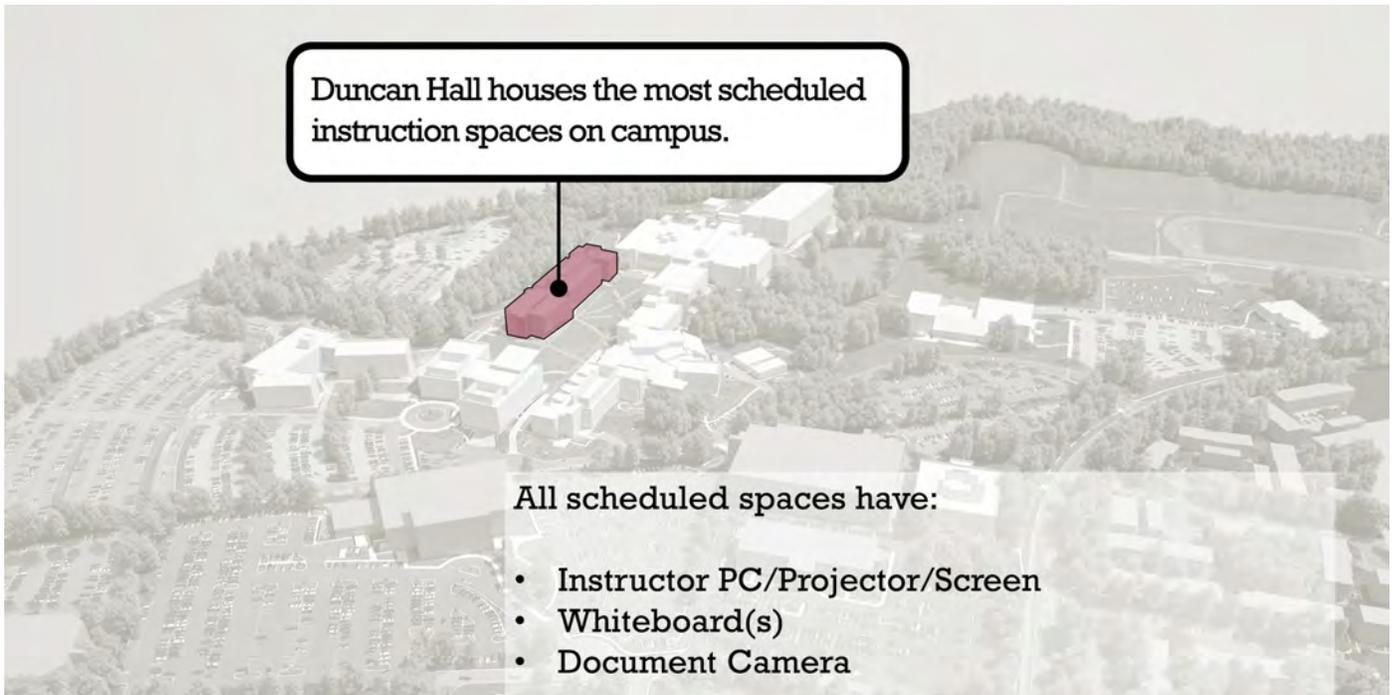
- Students and faculty to be untethered – not limited by time or space
- Make large classroom spaces feel smaller, more intimate
- Create conversations and extrapolate faculty needs
- Approach is from a teaching and learning point of view
- Educate faculty on how to better serve the students
- The learning environment as clearing house for faculty support and resource repository

Derived from the 2013 and 2014 fall schedules, there are 172 spaces which are scheduled for instruction. These spaces vary in size, seat number, curriculum typology, and especially in technology standards and HEGIS classification. As indicated within the AV/instructional media wikispaces platform and confirmed by consultant walkthrough, the majority of instructional spaces on campus are equipped with some level of technology to support teaching and learning. The level of technology varies from space to space as indicated in the following instructional technology analysis summary by building:

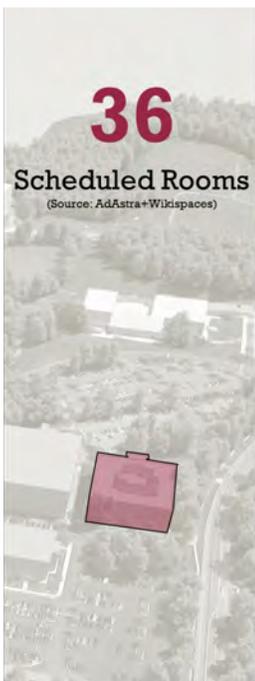
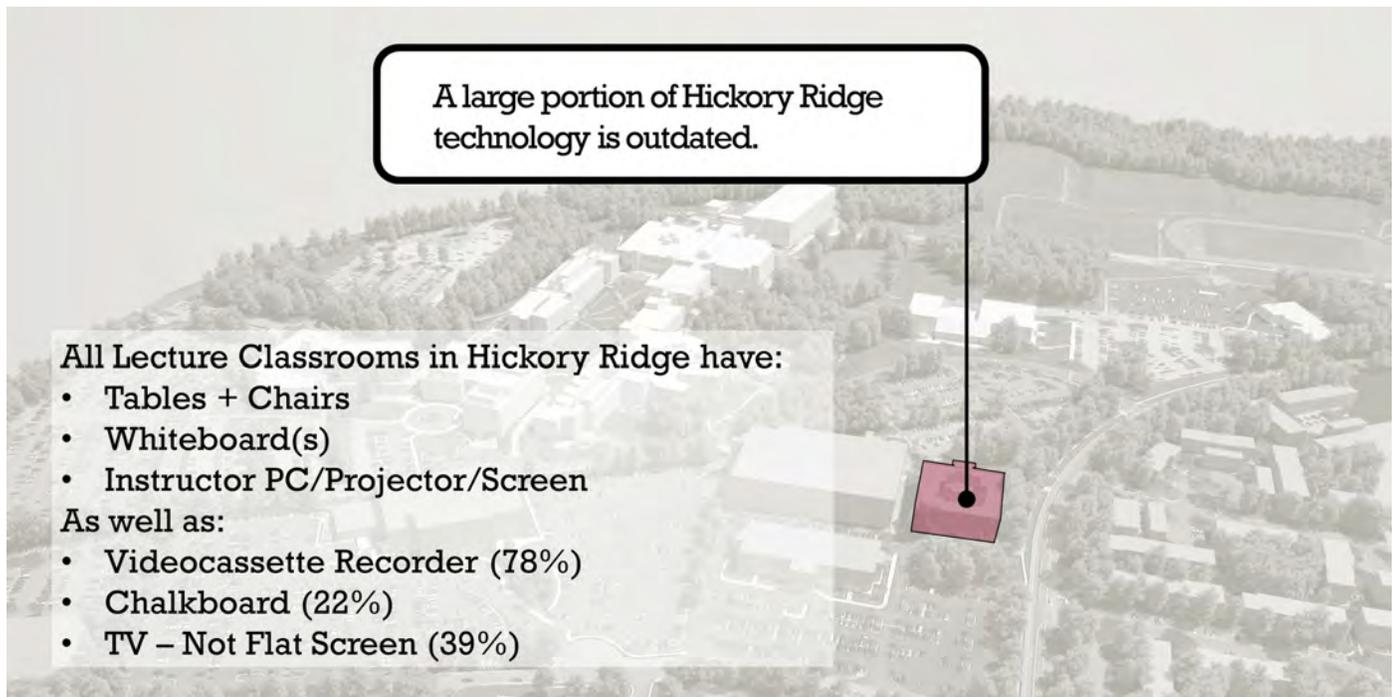
Clark Library



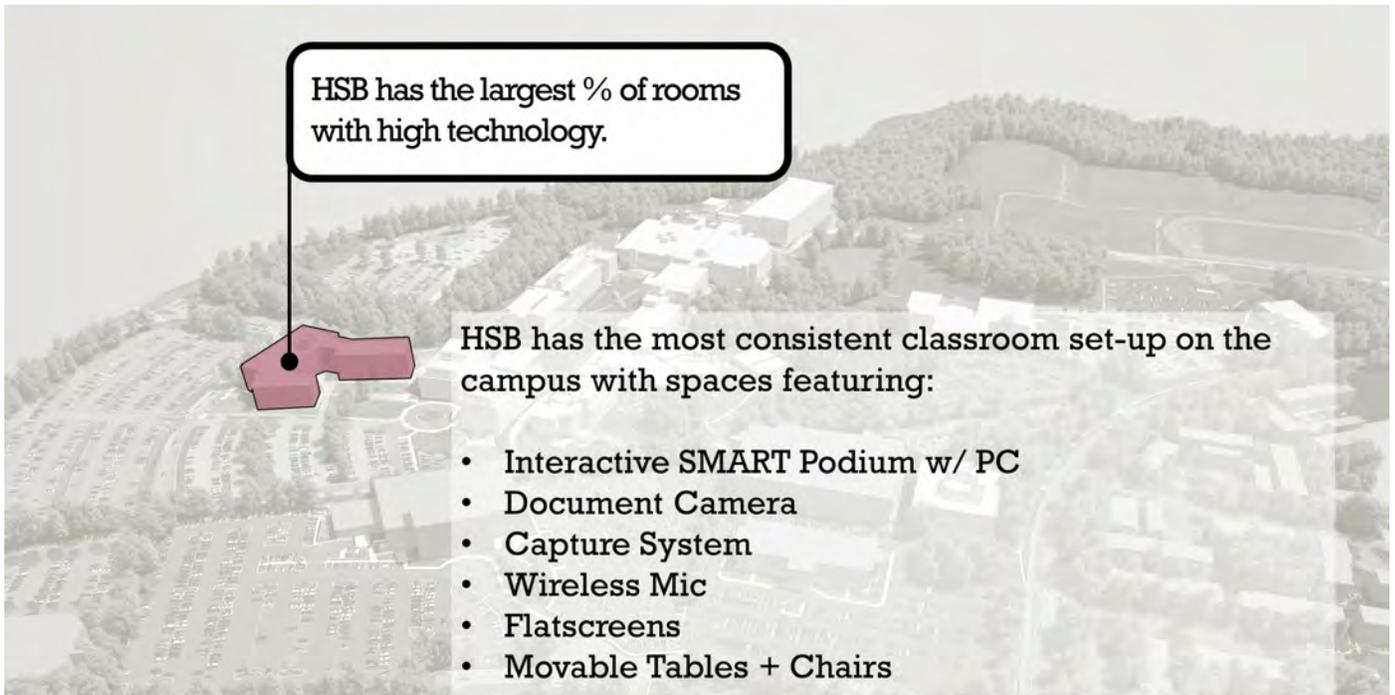
Duncan Hall



Hickory Ridge



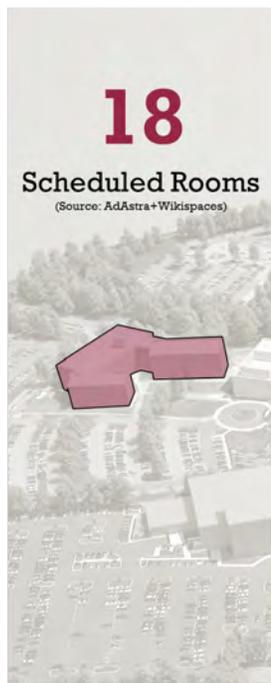
Health Sciences



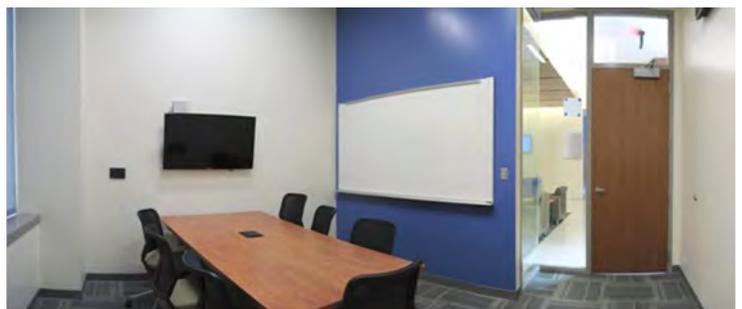
HSB has the largest % of rooms with high technology.

HSB has the most consistent classroom set-up on the campus with spaces featuring:

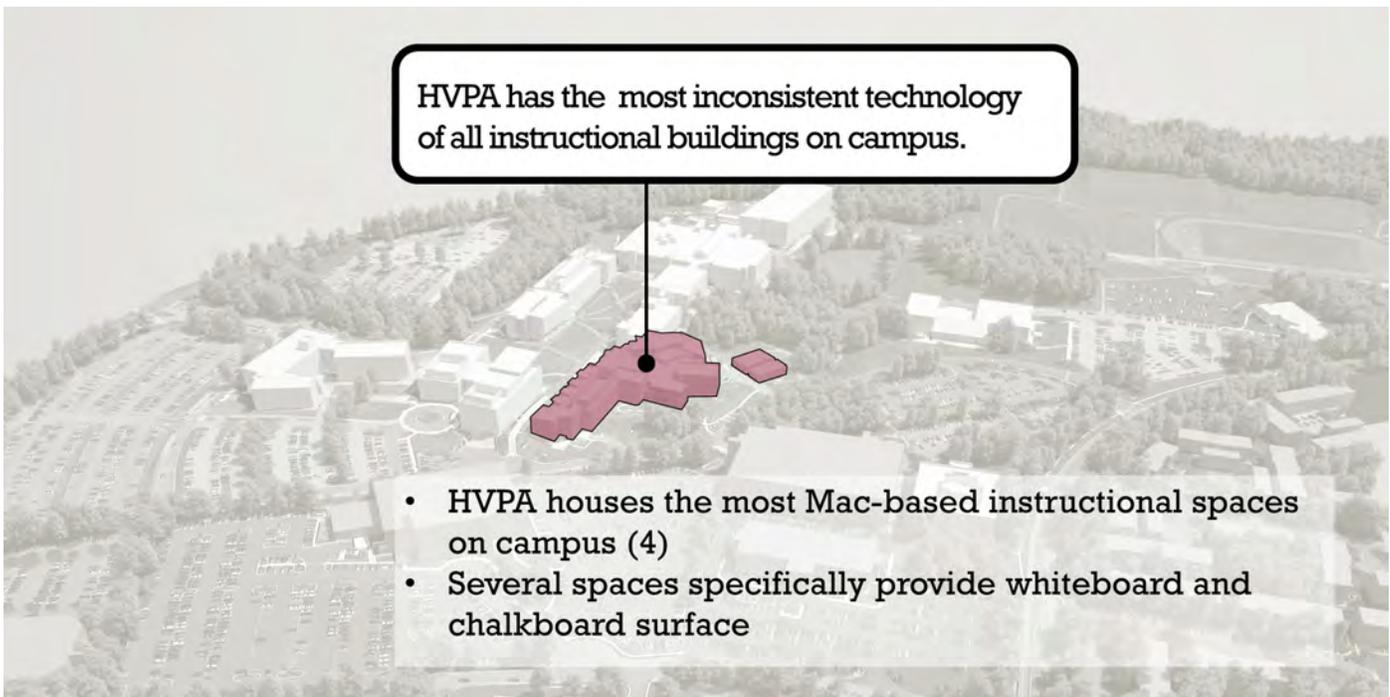
- Interactive SMART Podium w/ PC
- Document Camera
- Capture System
- Wireless Mic
- Flatscreens
- Movable Tables + Chairs



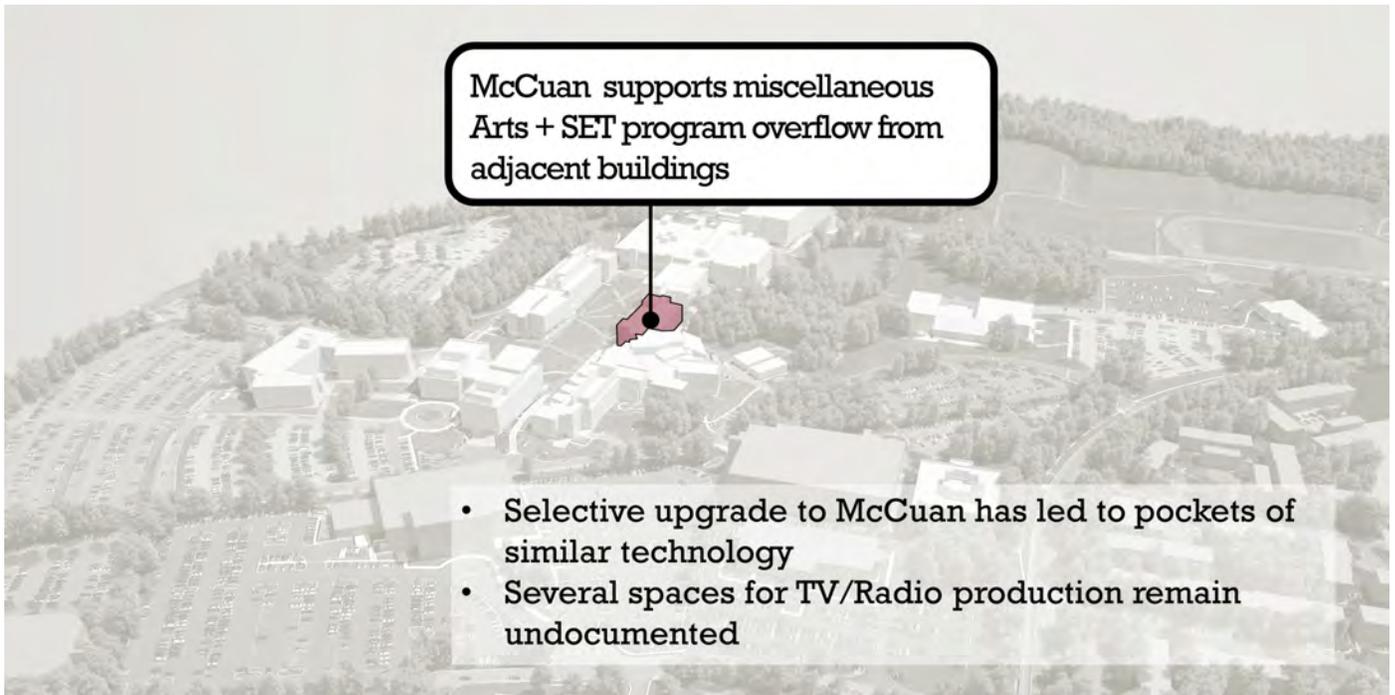
18
Scheduled Rooms
(Source: AdAstra+Wikispaces)



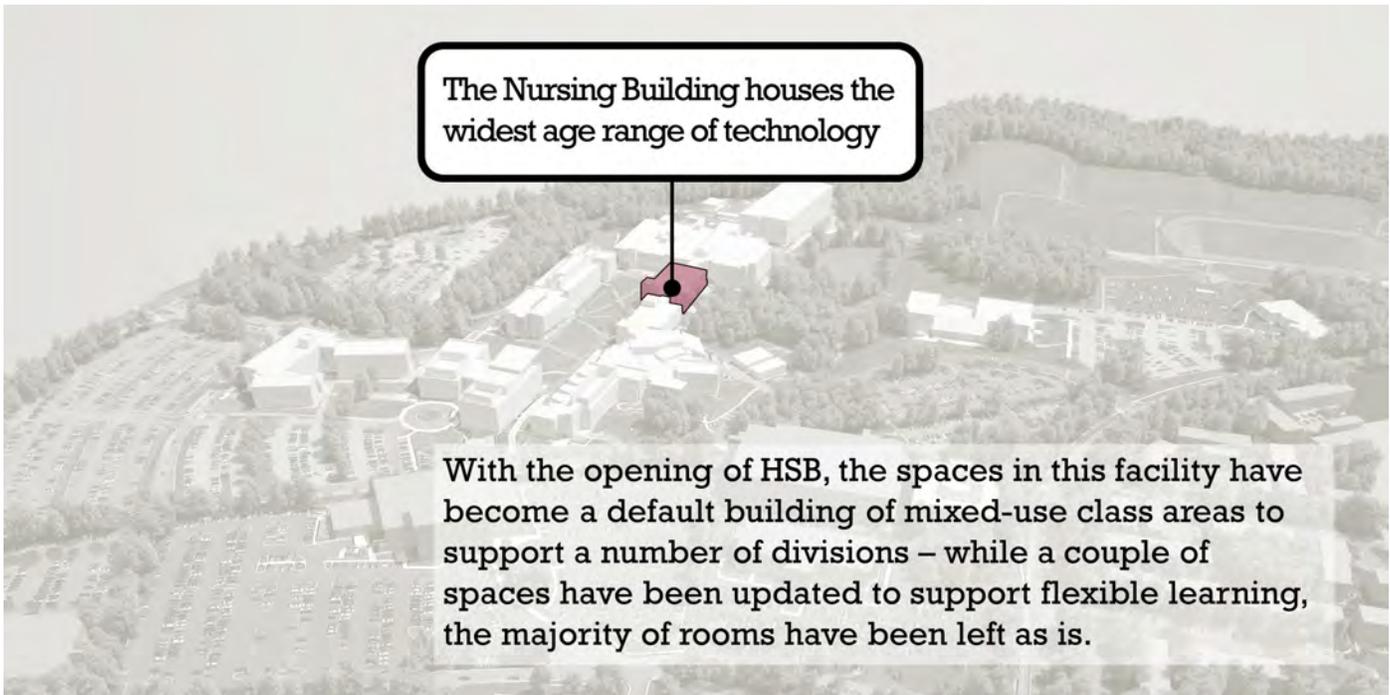
Horowitz Visual & Performing Arts + TA Buildings



McCuan Hall



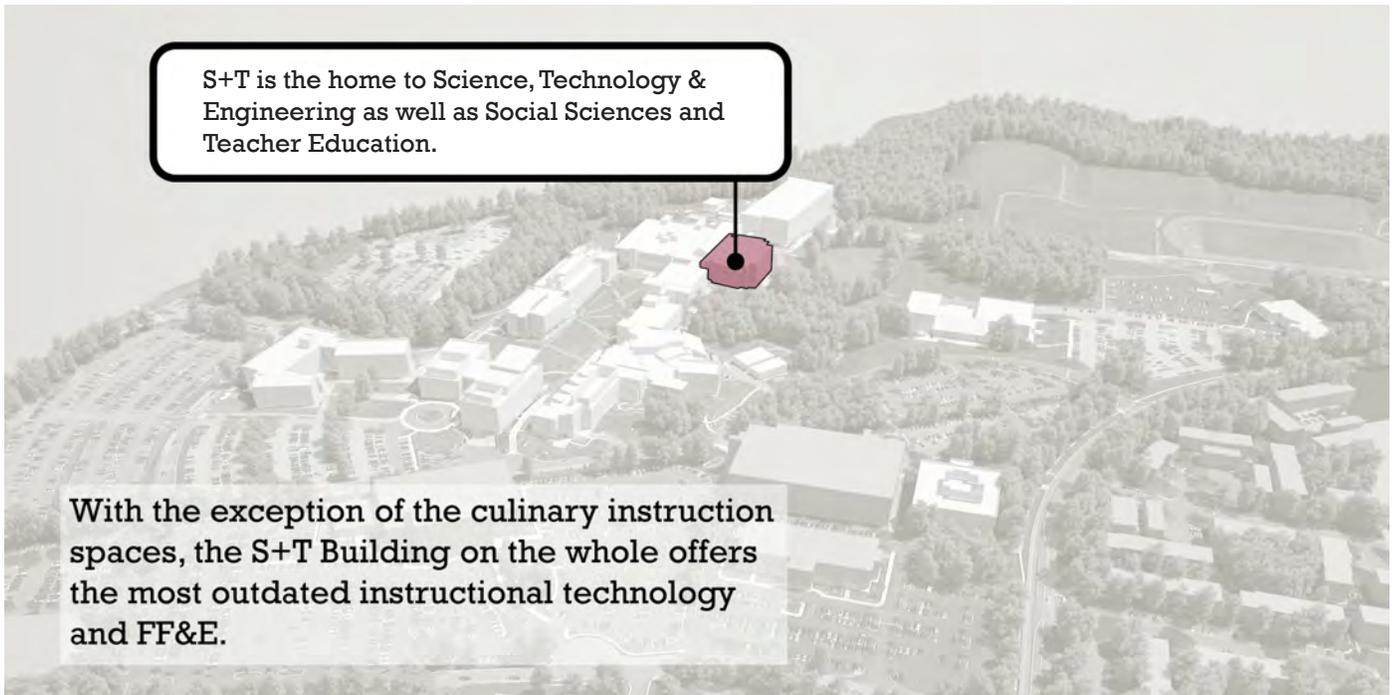
Nursing Building



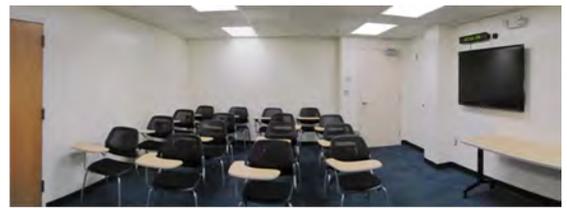
15
Scheduled Rooms
(Source: AdAstra+Wikispaces)

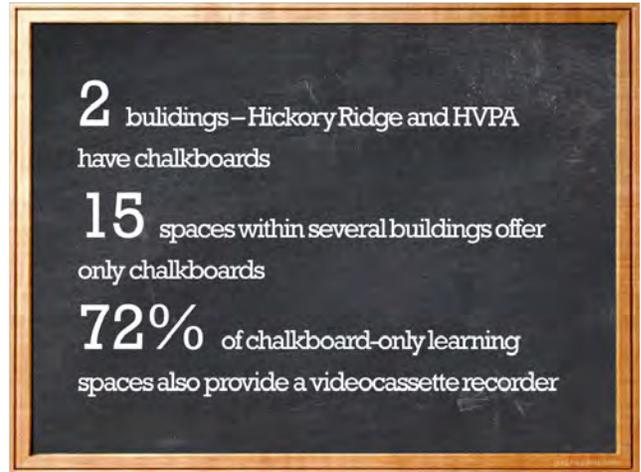
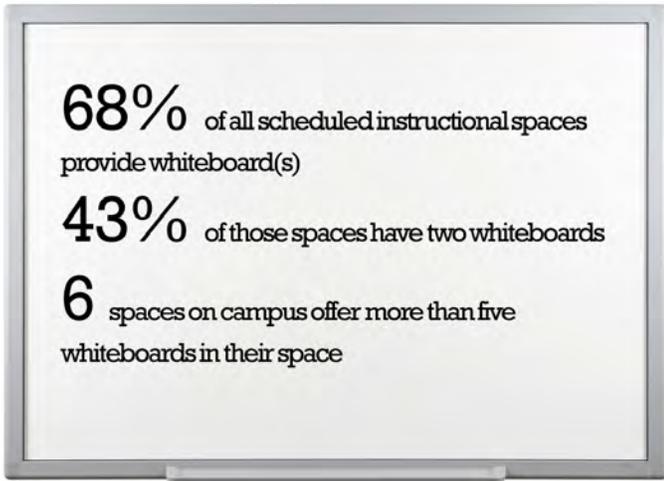


Science & Technology



18
Scheduled Rooms
(Source: AdAstra+Wikispaces)





The flexible learning studios which have been deployed thus far are popular amongst students and faculty. There is increased demand to schedule within these classrooms. Of note, when surveyed, the most popular feature within these spaces and the fixture which is considered “key” to delivering curriculum content are the movable whiteboards which are standard within the flexible learning studios.

Spectrum of Models for Flexible Learning Environments:

SCALE-UP: Student Centered Activities for Large Enrollment Undergraduate Physics
North Carolina State University

TEAL: Technology Enabled Active Learning Environment
Massachusetts Institute of Technology

TILE: Transform, Interact, Learn, Engage
University of Iowa

“ALC”: Active Learning Classroom
University of Minnesota

TEST KITCHEN
University of Berkeley

The Herman Miller Learning Studio which has been deployed at Howard Community College is successful. The following are key characteristics which contribute to successful curriculum delivery:

- modular seating for 25 students
- 7 fixed whiteboards, including 2 that are interactive
- 4 projectors
- document camera
- cart with 25 laptop computers
- instructor station with dual monitors
- touch screen panel

Howard Community College has incorporated these standards into its proposed breakdown of major instructional spaces. This breakdown identifies three tiers of instructional spaces so that standard technology can be identified, purchased and deployed throughout campus when new instructional spaces are built or renovated. The breakdown is as follows:

BREAKDOWN OF THE MAJOR INSTRUCTIONAL SPACES: As defined by Howard Community College

Classroom HEGIS 110

A space which can be used for multiple disciplines to instruct without the permanent installation of specialized equipment which would interfere with instruction.

- *Description:* Room oriented towards one well defined instructional front.
- *Space:* Minimum square footage necessary to orient the room towards the instructional front. Not easily reconfigured due to space limitations.
- *Technology and Equipment*
 - *Instructors:* Computer and document camera connected to usually one or two projectors. Wall mounted Whiteboards.
 - *Students:* Tablet armchairs, fixed seating or tables and chairs oriented towards the front of the room. Limited reconfiguration due to lack of square footage per student or the furniture is fixed in location.

Computer Lab HEGIS 210

A space with permanently installed computers but by the nature of the configuration of both the room and the software, could be used to teach multiple disciplines.

Laboratory HEGIS 210

A space with permanently installed, specialized equipment used to teach a specific and narrow range of subjects.

Flexible Learning Lab HEGIS 210

A space with permanently installed, specialized equipment which requires an alternative curriculum delivery method.

Low Technology Flexible Learning Lab

- *Description:* Equipment can be easily moved into different configurations by the users. May have one side which can be identified as an instructional front, but multiple walls may be used for instruction. Fixed equipment is mainly geared towards instructor presenting material to students.
- *Space:* Sufficient square footage to allow for easy reconfiguration of room by users.
- *Technology and Equipment:*
 - *Instructors:* Computer and document camera connected to one or more projectors from multiple stations. Both wall mounted and mobile whiteboards.
 - *Students:* Mobile whiteboards and reconfigurable furniture. Wireless connectivity for laptops which are not permanently located in the space.
- *Rooms:* **N212, CL155**

High Technology Flexible Learning Lab

- *Description:* Equipment can be easily moved into different configurations by the users. May have one side which can be identified as an instructional front, but multiple walls may be used for instruction. Fixed equipment located in room which allows for collaborative group sessions using technology.
- *Space:* Sufficient square footage to allow for easy reconfiguration of room by users.
- *Technology and Equipment:*
 - *Instructors:* Instructors computer and document camera connected to one or more projectors on one or more walls. Wall mounted Whiteboards.
 - *Students:* Technology permanently located in the room which may include large displays with computers for group work, mobile whiteboards and laptops.
- *Rooms:* **DH202, DH307, HS112, HS163, HS363, N206, N224**

09

**VEHICULAR AND
PEDESTRIAN
CIRCULATION**



Little Patuxent Parkway Entry

VEHICULAR AND PEDESTRIAN CIRCULATION

INTRODUCTION

This section includes an assessment of multi-modal access and circulation and traffic and parking demand based on anticipated campus growth and development.

The scope of study consists of the following:

Multimodal Transportation

- Vehicular
- Transit
- Pedestrian
- Bicycle

Transportation Demand Management

- Vehicular Assessment
- Transportation Modal Survey
- Planned Transportation Facilities

Parking Assessment

- Supply and Demand

Master Plan Recommendations

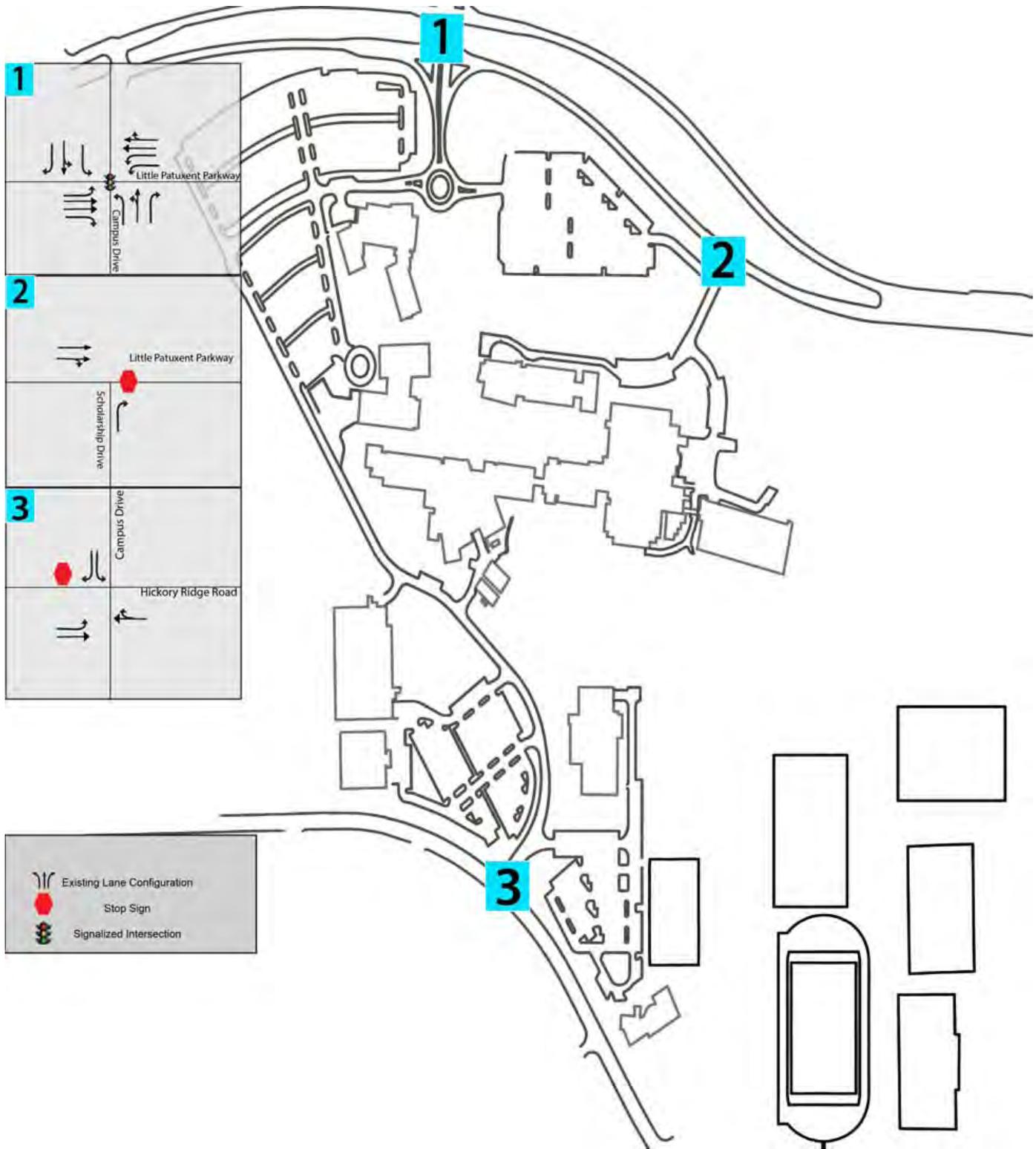
- Vehicular
- Pedestrian
- Bicycle
- Transit
- Parking



Lot "F"



Pedestrian Pathway alongside Parking



MULTIMODAL TRANSPORTATION

Vehicular

There are three entrances to the HCC. There is a signalized intersection at Little Patuxent Parkway and Campus Drive situated along the northern boundary of the campus. A secondary entrance along Little Patuxent Parkway is at Scholarship Drive (east of Campus Drive) which supports right-turn-in and right-turn-out access only. Along the southern boundary of the campus, access is provided via the Hickory Ridge Road/Campus Drive intersection. This entrance is not signalized. There is also a driveway to the Athletic Fields located south and east of the Campus Drive access along Hickory Ridge Road. This access does not provide a connection to the campus core and is therefore not considered as one of the campus entrances.

The following provides roadway classification and Average Daily Traffic (ADT) for the roadways that provide access to the HCC campus. Roadway classification was obtained from the Howard 2030 Plan and Average Daily Traffic (ADT) was obtained from the Howard County Traffic Count database:

- Little Patuxent Parkway is a four-lane divided intermediate arterial servicing 25,580 vehicles daily. The roadway provides access between U.S. Route 29 and provides access to Campus Drive and Scholarship Drive. The posted speed limit is 35 miles per hour.
- Hickory Ridge Road is a two-lane median divided major collector. The collector extends from Little Falls Parkway to the west to Broken Land Parkway to the east. The posted speed limit is 30 MPH and the collector services 16,831 vehicles daily.
- Campus Drive is the north-south internal campus connector that connects the entrance at Little Patuxent Parkway to the entrance at Hickory Ridge Road. Campus Drive supports connections to the west garage and a number of surface lots. The posted speed limit is 20 MPH.
- Scholarship Drive is an internal roadway that provides access from Little Patuxent Parkway to parking lots A and K, the east garage and the campus loading area. The posted speed limit is 20 MPH.



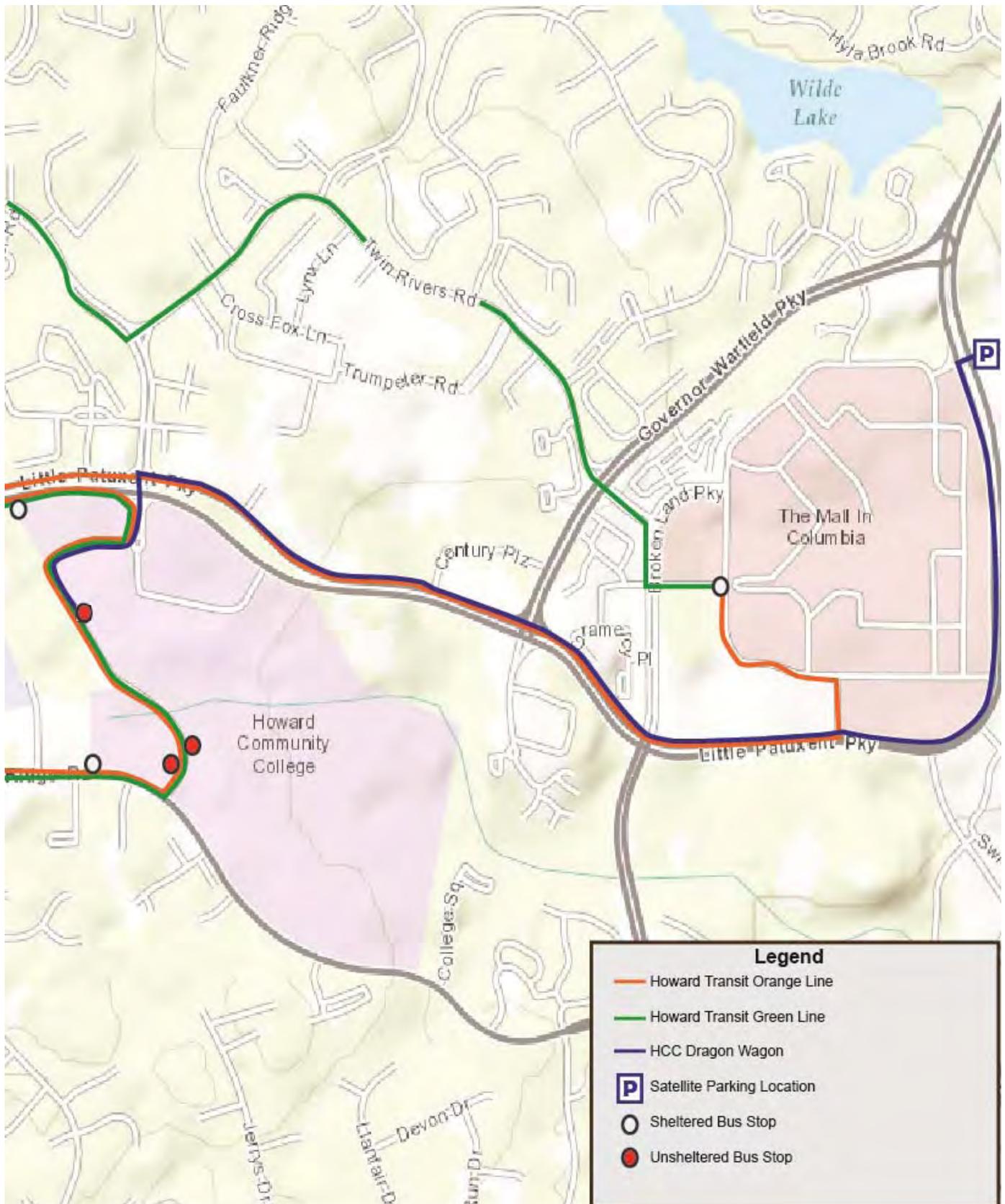
Little Patuxent Parkway



Hickory Ridge Road



Campus Drive



Transit Services and Stops

Transit

Public transit within Howard County is offered by Howard Transit. Howard Transit operates eight bus routes in the eastern portion of the county. Each of the eight routes have Weekday hourly headways with the exception of the Green Route, which offers 30 minute headways. Two of the eight routes provide service to the HCC including the Green Route and the Orange Route. Both the Green and Orange routes enter the campus at Little Patuxent Parkway and Campus Drive and depart at Hickory Ridge Road.

Bus routes, key destinations and service headways for the Green and Orange lines are shown in Table 1. Generally, the infrequent service to HCC makes use of public transit inconvenient and an unattractive means of transportation to campus for potential users. Additionally, routes do not provide direct/express service to campus and real time information is not available.

Howard Transit also operates HT Ride, a special para-transit curb-to-curb service for individuals with disabilities and seniors.

The Maryland Transit Administration (MTA) operates commuter bus route 915, which provides AM and PM peak hour service between Columbia and Washington D.C. The route provides peak period morning inbound, departing from Columbia (between 5:10 AM to 7:22 AM) and evening outbound, leaving Washington, D.C. (between 2:40 PM to 6:05 PM) service only. This route is not practical for most of the HCC population as it is directed away from Columbia during the morning and to Columbia during the evening.

There is a bus stop located along the south side of Little Patuxent Parkway adjacent to the campus entrance and another bus stop along the north side of the Hickory Ridge Road/ Campus Drive intersection. Both stops are just within a five minute walk from the campus core, are serviced by both the Green and Orange lines and are equipped with amenities such as shelters and benches for riders waiting for the next bus.

Within the campus, there is a central bus stop which is unsheltered and located on campus drive. There are several unsheltered bus stops along Campus Drive near parking lots I and J. Figure 3 illustrates the location of the bus stop on campus plus the additional off-campus bus stops.

Shuttle Service – HCC provides the Dragon Wagon shuttle that transports patrons between the satellite parking lot, located at Sterrett Place, and the main campus. Use of the shuttle is permitted for any individual whom presents a Howard Community College identification card. The shuttle operates from Monday through Friday from 8:00 AM to 6:30 PM and departs from the satellite lot every 30 minutes. The shuttle stops at the RCF Hall on campus. Service is continuous throughout the fall semester however is discontinued about mid-way through the spring semester when on-campus parking demand decreases.

Pedestrian

Pedestrian circulation surrounding the HCC is limited. As per Plan Howard 2030, for decades sidewalks were not an integral part of roadway improvements in the County. In 2007, a Pedestrian Master Plan was developed that looked to create safe and reliable pedestrian connections. Today, the pedestrian and bicycle transportation network lacks continuity between the HCC and neighboring communities and is undesirable due to the dominance of vehicular traffic and high travel speeds along Little Patuxent Parkway and Hickory Ridge Road. Today these conditions limit the use of this mode as a viable transportation alternative. In future Howard County is working toward a master plan to develop a consistent pathway.

Existing pedestrian facilities such as sidewalks, crosswalks, and connections along Little Patuxent Parkway and Hickory Ridge Road to/from HCC and along the western periphery (i.e. along campus Drive) were assessed during existing field observations. There are no sidewalks along the south side (campus side) of Little Patuxent Parkway until approximately 150 feet west of the Campus Drive intersection, where a sidewalk begins which leads into the campus. Sidewalks are provided along the north side of the roadway with crosswalks located on the north and west leg of the Little Patuxent Parkway and Campus Drive intersection.

The campus entrance at Scholarship Drive is intended to provide vehicular access to the East Garage. No sidewalk or pathway is in-place to support pedestrian or bicycle access. Pedestrians that walk from the East Garage (after parking) are, however, provided a direct connection to the campus core and do not have to cross campus traffic.

Within the campus, from the main entrance along Little Patuxent Parkway, a 6-foot wide standard concrete sidewalk is in place along the west side of Campus Drive. This sidewalk connects to the existing trail along the western periphery of the campus. The sidewalk/trail supports connections between parking facilities situated in the north and west quadrant to/from the campus core (quad area). Crosswalks are also provided along Campus Drive at key pedestrian crossings including to/from Lot F and the campus core and to/from the West Garage. These crosswalks comply with Manual on Uniform Traffic Control Devices (MUTCD) standards and are in good condition. While crosswalks are in place to facilitate pedestrian access, at either approach of the crosswalk to/from the West Garage and crosswalk near the HPVA building/temporary classrooms there are no stop lines on the pavement to accompany the stop signs. This situation makes the appropriate stopping location somewhat ambiguous for motorists and can also make it difficult to identify crosswalks during the evening or in bad weather. The crosswalk markings along the north leg of the Hickory Ridge/ Campus Drive intersection are in poor condition.

Adjacent to the West Garage there are no stop lines marked within the pavement for stop signs. This can be hazardous as there is no stopping buffer between vehicles and the crosswalk.

No sidewalk connection is provided along the east side of Campus Drive. Outside of the quad area, or campus core, pedestrian routes are intermittent and difficult to navigate.



Pedestrian Pathways

Bicycle

The campus has a bike path along Campus Drive which connects existing bike routes on Little Patuxent Parkway and Hickory Ridge Road. During field observations, there was very limited usage of the bike path by pedestrians or bicyclists. The existing bike route is designated as a

“sharrow” meaning a shared lane marking. This type of marking indicates cyclists’ safest path of travel and reminds motorists of requirements to share the road. The proposed “neighborhood greenway” route is indicated as part of long term improvements within the Howard County Bike Plan.



On Road Recommendations

- Bike Lane
- Sharrow
- Paved and Striped Shoulder
- Shared Roadway
- ◆◆◆◆◆ Shared Roadway with Safety Treatment
- Neighborhood Greenway
- Colored Bike Lane
- Study Further

Spot Improvements

- 🚲 Bike Link
- 🌉 Bridge
- 🏠 Tunnel
- ⚡ Crossing Improvement
- ⚠️ CA Intersection Improvements Recommendations

Separated Facilities (Trails)

- Cycletrack 1 way
- Cycletrack 2 way
- Shared Use Path
- Upgraded Shared Use Path
- Sidewalk with Bikes Permitted

Interjurisdictional Connections

- ↔️ Agreed Connection
- ↔️ Desirable Connection

Existing Howard County and CA Trails

- Primary and Secondary
- Tertiary

TRANSPORTATION DEMAND MANAGEMENT

Transportation Modal Survey

A transportation modal survey was administered through the PROD office to students and faculty/staff. The survey was conducted to understand the existing travel patterns and assess perceptions on parking and transportation to and around campus. The survey data also allowed for HCC to gauge how satisfied students and faculty/staff were satisfied with transportation service and facilities on campus.

The survey consisted of questions that identified respondents travel behavior, willingness of students and faculty/staff to modify their travel behavior and determine residential location and time of arrival to the campus.

Vehicular Assessment

A number of data collection methods were employed to quantify vehicular traffic at each campus entrance. Daily traffic volumes entering and leaving the campus were collected using Automated Traffic Recorders on Campus Drive approaching Little Patuxent Parkway and Hickory Ridge Road, and along Scholarship Drive. Data was recorded for a four day period (Monday February 24 through Friday February 28). Average Daily Traffic (ADT) collected indicated Wednesday was the peak travel day.

Peak period vehicular turning movement counts, pedestrian and bicycle counts were also collected on Wednesday, March 12 during the morning (8:00 AM to 11:00 AM) and evening (4:00 PM to 7:00 PM). The morning peak hour was 8:30 to 9:30 AM and the evening peak hour was 5:00 to 6:00 PM. The percentage of inbound and outbound traffic by campus entrance during the morning peak hour and during the evening peak hour is shown in the following chart:

Existing Vehicle Queue Observations – Vehicle queues along the Campus Drive and Little Patuxent Parkway intersection and Hickory Ridge Road and Campus Drive intersection were observed on Wednesday, March 26. A summary of observations are as follows:



Little Patuxent Parkway/Campus Drive

- Morning Peak Period
 - There was a maximum of 15 vehicles queued at the westbound left turn lanes (each lane) to access Campus Drive during the morning. During three occasions queues would exceed the allotted storage and overflow into the through lanes ranging from 4 to 5 vehicles. One left turn cycle was an adequate amount of time to clear the entire left turn queue regardless of queue length.
 - All other approaches on this intersection experienced minimal queuing which did not impact traffic operations
- Evening Peak Period
 - Throughout the evening peak period observations westbound left turning traffic experienced minimal queuing with an average of 7 vehicles per each lane, with a maximum queue length of 14 vehicles observed. Overflow of the left turn bays did not occur in the evening. However, right turning traffic would exceed the right turn bay frequently and lead to overflow volume into the outer through lane.
 - All other approaches on this intersection experienced minimal queuing.



Hickory Ridge Road/Campus Drive

- Morning Peak Period
 - During field observations it was observed that queues of 4 to 6 vehicles would develop on the Campus Drive southbound left turn direction. Queues would last approximately 2 to 3 minutes and clear out during gaps of east/west traffic.
 - Eastbound left turning traffic experienced 2 to 4 vehicles queued during observations. Throughout field observations the queue lengths did not overflow out of the left turn bay.
- Evening Peak Period
 - Southbound left queues on average were 5 vehicles, with 6 vehicles observed as the maximum queue length. Queues would empty out approximately in 2 to 3 minutes.
 - All other approaches experienced minimal queues

Planned Transportation Facilities

The Future Background Conditions scenario examines planned transportation, traffic changes and multi-modal improvements anticipated surrounding HCC. The changes and improvements are expected within the ten year horizon for the FMP and are independent of any HCC related population growth or campus development. During the planning process, HCC coordinated with local agencies/ organizations such as Howard County Department of Transportation and the Columbia Association to understand planned initiatives that will improve multi-modal accessibility surrounding Howard Community College.

- Transit Services – Howard Transit service will be improved with an increase in the frequency of public transportation serving HCC. The county plans to split one of the existing routes into two routes which will therefore allow for 15 to 30 minute service to HCC. This will be a significant improvement to frequency of existing service which can be between 30 minutes to one hour headways. The county is also examining the opportunity to eliminate portions of some routes that currently service underutilized stops. In addition, in order to help the intent to facilitate increased frequency, the county is considering removing the section of the green and orange bus routes that enter the HCC campus. HCC should continue to coordinate with the county on the future routing and stop modifications. A number of amenities are also being implemented at bus stops such as shelters, walkways, and ADA access upgrade. The specific location of bus stop improvements was unknown at the time of this study.
- Pedestrian / Bicycle – A multi-use trail from Cedar Lane to South Entrance Road will be installed along Little Patuxent Parkway. The trail will provide a much needed east-west connection and is one of the desired connections identified in the Columbia Association’s 2012 Active Transportation Action Agenda. The trail is a required improvement by the Howard Hughes Corporation as part of the Downtown Columbia Redevelopment. The design is under review by the county and construction is expected in 2015.
- The Howard County Bicycle Master Plan identifies a number of improvements near the HCC campus including installation of sharrows along Campus Drive and Harpers Farm Road, mix-use trail proposed to

connect HCC to the Town Center, the Hospital and connect Hickory Ridge Road to the east-west shared-use path just west of College Square. The County’s Bicycle Master Plan also recommends a new trail/bikeway along Campus Drive from Little Patuxent Parkway to Hickory Ridge Road. Per the plan, this improvement is considered a mid-term improvement (slated for a 20 year timeframe) and is beyond the ten year FMP timeframe.

Howard County’s pathway project also identifies several pedestrian facility improvements such as incorporating missing crosswalks and ADA ramps at all approaches of the Little Patuxent Parkway/ Campus Drive entrance. The improvement will also include new pedestrian call buttons.

- Roadway Improvements – There are no known roadway improvements within the vicinity of the HCC campus.
- Development Projects and Regional Traffic Growth – The final development plan for the Downtown Columbia Mall Neighborhood, Merriweather-Symphony Woods and Warfield was completed in May 2012. Growth associated with the aforementioned projects was accounted for from the Baltimore Metropolitan Council regional growth projections for this area.

With respect to regional traffic, ten-year regional traffic growth projections were estimated using employment projections from the Baltimore Metropolitan Council for Traffic Analysis Zones (TAZs) 1283-1305 and 1326-1329 encompassing the HCC campus and surrounding West Columbia area. The ten-year total growth percentage was applied to existing traffic volumes along Little Patuxent Parkway and Hickory Ridge Road to estimate 2024 total future traffic volumes. The Future Background conditions analysis serves as the baseline for comparing existing to no-build (i.e. no growth or campus development) conditions and future traffic conditions assuming full build-out of the FMP. Between 2010 and 2025, a 1.42% annual increase in population, retail and non-retail employment is anticipated. The 1.42% per year was applied to existing peak hour turning movement counts (shown in Figure 6) to develop future background traffic projections along Little Patuxent Parkway and Hickory Ridge Road.

PARKING ASSESSMENT

Supply

Parking inventory surveys were conducted to identify the number, type and availability of spaces on campus. Utilization surveys were also conducted on Tuesday, March 11 and Wednesday, March 19 to quantify parking demand at various times in a typical day. Utilization surveys were conducted every two hours between the hours of 8:00 AM and 8:00 PM of the surface lots, garages and the satellite parking lot (located at Little Patuxent Parkway and Sterrett Place).

As of the spring 2014 semester, the campus parking supply was as follows:

- 1,217 Structured Spaces
(498 East Garage and 719 West Garage)
- 1,734 Surface Lot Spaces
 - 122 Handicap Spaces
 - 42 Low Emission Spaces
 - 3 Carpool Spaces

Demand

Utilization surveys indicated parking demand was greatest on the Wednesday observation day at noon. The following table lists parking occupancy for the peak day (Wednesday, March 19). On-campus parking spaces were at 86% occupancy (2,564 spaces occupied) at the noon survey period.

Chart: Parking Supply by Location

Surface Lots	
A	373
B	108
C	87
E	60
F	506
H	127
I	163
J	178
K	26
L	74
On Street (Faculty Drive, Near East Garage)	14
Athletic Fields	10
Children Learning Center	17
On Street (Campus Drive near West Garage)	6
Food Services and Book Store Deliveries Location	5
Parking Garages	
West Garage	719
East Garage	498
Total Campus	2971
Satellite Parking	114
Total Available Supply	3085

**satellite parking is provided in an effort to alleviate parking issues*

Parking demand gradually decreased after that time. HCC acknowledges demand for parking spaces is typically higher during the fall semester and as such the occupancy numbers presented in the table could potentially be greater during the fall months.

MASTER PLAN RECOMMENDATIONS

Vehicular

The FMP includes the following changes to site access and internal roadway circulation:

- Revised roadway adjacent to Lot F – The FMP proposes to relocate vehicles to the periphery of the campus in order to reduce pedestrian/vehicular conflict points for pedestrians walking from Lot F to the core of campus. The parking aisles in Lot F have also been rotated so that pedestrians would walk parallel to vehicles instead of across parking circulation aisles.
- Move roadway adjacent to West Garage – The FMP relocates the campus ring road to the periphery of the existing Lots H and I (to be eliminated) in order to reduce pedestrian vehicular conflict points for pedestrians walking from the parking area.
- New Entry Roundabout from Hickory Ridge Road – The FMP creates a gateway access from Hickory Ridge Road. The new entry design provides vehicular access to Campus Drive to the north and the athletic lots and facilities to the south. The roundabout would improve traffic operations on Campus Drive compared to existing conditions. The roundabout would not adversely impact traffic operations at Hickory Ridge Road. The roundabout should be designed with an 80 foot inscribed diameter in order to accommodate buses and 30 foot delivery vehicles.

Pedestrian

The FMP will allow for a number of internal connections between buildings such as a new east-west throughway between the Patrick and Jill McCuan Hall (MH) building and the Nurse Building (N) and a pedestrian bridge from the West Garage expansion to/from the proposed Continuing Education building. The pedestrian bridge would provide an above-grade crossing over the realigned portion of Campus Drive and therefore allow pedestrians to safely traverse without conflict with through traffic along Campus Drive.

In addition, a bridge connection is planned to support pedestrian access to/from the north and south sections of the campus. The pedestrian bridge will be an important connection as the southern sections of the campus are

Developed (as identified in the future FMP land use programming). The pedestrian bridge will also support ADA access.

The proposed modification to the campus ring road will also reduce existing pedestrian/vehicular conflicts between pedestrians to/from Lots F and the campus core and through vehicles. This area will be landscaped and pedestrians walking from the modified Lot F will enter a new quad which will allow access to the existing quad area.

With the FMP, the realignment of Campus Drive, focus of vehicular zones to the periphery of the campus, and designation of north-south pedestrian connections such as the new pedestrian bridge will improve circulation for pedestrians traversing the campus.

Bicycle

Based on the transportation survey, less than 1% (0.3%) of the student population currently uses a bicycle to get to campus. There is an opportunity for increased ridership associated with the proposed multi-use trail along Little Patuxent Parkway from Cedar Lane to South Entrance Road.

The installation of bicycle racks is recommended at high campus activity areas including the quad, student union and athletic fields. New bicycle racks should also be considered for inclusion as part of construction of new buildings on campus. In addition, HCC should continue to work with the Columbia Association and Howard County to explore the viability of bikeshare stations on campus that would connect to key destinations within the downtown Columbia area such as the Town Center.

Transit

There are no proposed transit facilities included as part of the FMP. The Dragon Wagon shuttle should continue to provide access to any satellite parking facility, as needed. As noted in the Planned Transit Facilities section, the bus stop located on campus may potentially be eliminated by the County in the future (based on the County's effort to improve overall route efficiencies and increase route frequency). The final decision on the re-routing of the stop was unknown at the time of the study. HCC should continue to coordinate with the County on

the future routing so users destined to/from the HCC campus could benefit from the improved service and still be provided convenient access to the campus core from bus stops. The routes are anticipated to continue to service the stop just west of the main campus entrance on Little Patuxent Parkway and Hickory Ridge Road.

Drop-off/Pick-up – In the future, the designated drop-off/pick-up area will be maintained at the roundabout fronting the RCF Student Service Hall.

Parking

The projected future parking demand for the campus was calculated by increasing the existing peak demand of 2,578 spaces by the population growth rate of 28%, anticipated by 2024 by the Maryland Higher Education Commission (MHEC).

Future parking needs for the campus should consider peak parking demand plus an additional peak parking factor to account for daily variances in parking demand and in order to minimize excess circulation searching for the final few spaces. The peak parking factor is typically 10% to 15% greater than the parking demand. Thus, the future parking supply for the campus should be in the range of 3,232 to 3,380 for the first five years of the plan and 3,630 to 3,795 in the last five years.

10

**MASTER PLAN
RECOMMENDATIONS**



Proposed 2025 Master Plan Vision

- Existing Building
- Proposed Building
- Demolished Building
- Existing Parking Garage
- Proposed Parking Garage

MASTER PLAN RECOMMENDATIONS

INTRODUCTION:

Based on the synthesis of information described in detail within the previous section of this report, several concept alternative strategies were developed. Each of these alternatives was evaluated to determine the strategies that were most advantageous to the College, with each alternative considered on its own merits, as well as in concert with the others. This process was inherently iterative and resulted in a combination of planning concepts that represented the College's preferred direction for further refinement.

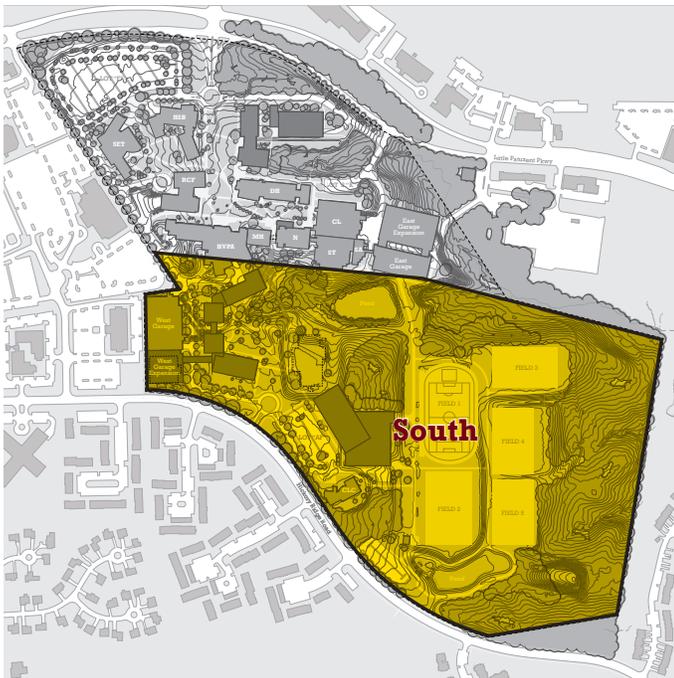
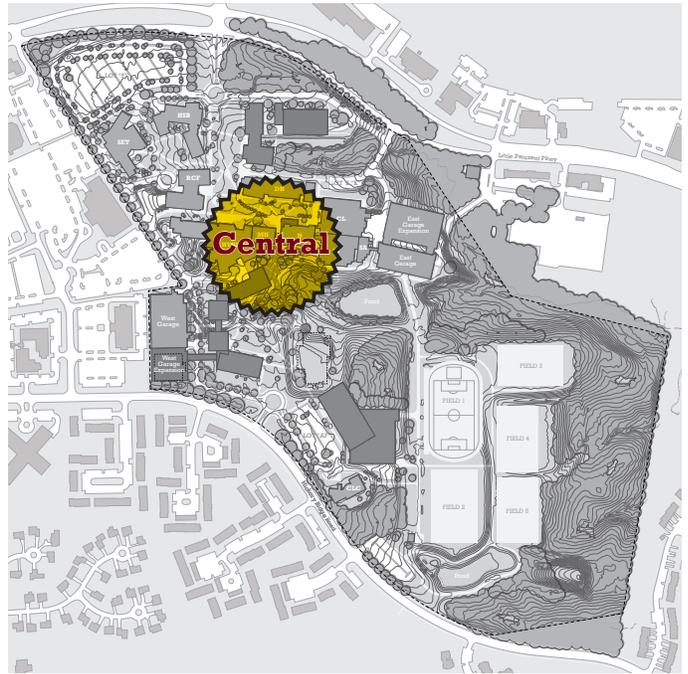
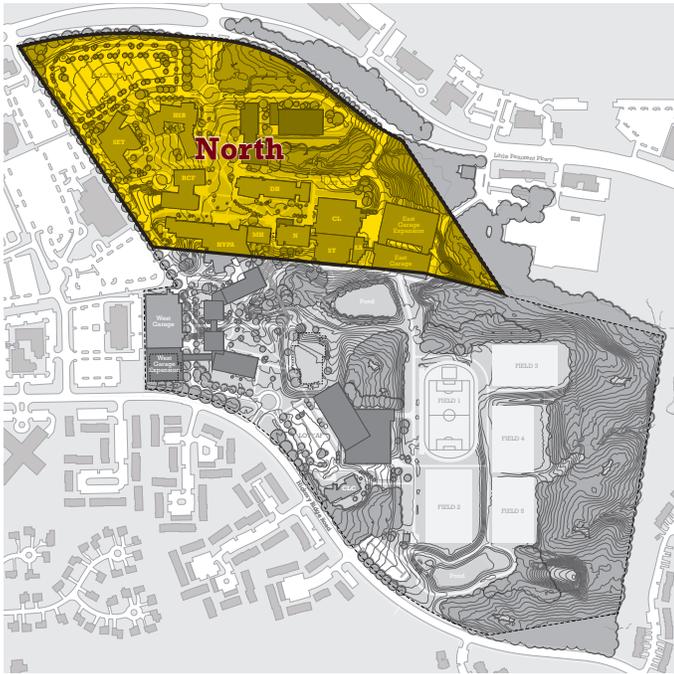
At the core of each of each of the alternatives were the campus planning principles – Celebrate, Reconfigure, Extend, Enhance, and Create – which guided the decision making throughout the process. These goals were addressed in varying degrees through a series of organizational strategies that included:

- Eliminating all pedestrian & car conflict zones through a campus road re-alignment extending to south campus.
- Strategic placement of new parking structures relative to road re-alignment.
- Use of buildings as gateways to frame entry points and create a sense of arrival.
- Placement of a campus hub and pedestrian bridge to physically and programmatically tie north and south campuses together.
- Strategic placement of new buildings on south campus to eliminate feeling of “distance” while also preserving existing pond and surrounding natural habitat.

- Comprehensive analysis and design of future storm water management and other sustainable initiatives.
- Definition of new green open spaces which build on framework of existing campus quads.
- Celebration of commitment to athletics, recreation, and wellness through placement of athletics facility and closer proximity to fields.

Through assessing the benefits and challenges with respect to these strategies and goals, what first began as three concept alternatives, was restructured into two preferred options, before ultimately refined to a singular recommended campus master plan.





Campus Zones Key

RECOMMENDED CAMPUS MASTER PLAN

While historically the focus of most campus development has been concentrated at the North Campus – with recent construction of the new Health Sciences (HS) and the forthcoming Science, Engineering, and Technology (SET) facilities – this master plan explores the latent opportunities of future development at South Campus, with an emphasis on the connection between North and South, reducing the ‘distance’ between them and ultimately creating a comprehensive strategy for a single, unified campus.

North

With limited area left for development due to recently completed projects, the strategy for this area of campus includes limited, but precise, projects aimed at enhancing already established spatial concepts:

- The proposed Mathematics and Entrepreneurial Center Building completes the remaining edge of the quad near the Little Patuxent Parkway entrance, which not only provides spatial definition for this quad, but also helps establish an improved campus gateway and strengthened arrival sequence.
- The proposed North Garage and Plant Operations Building, will accommodate the demand for an additional 750 cars, but also be largely disguised by the surrounding landscape as to not deter from the visual character of the campus.
- Parking Lot “F” will be reconfigured as a result of the road realignment, simultaneously improving pedestrian safety while also enhancing access, with a key pedestrian pathway connecting this parking lot with the center of campus.

Central

The keystone of the master plan that eliminates notions of North and South boundaries and facilitates a singular, cohesive campus.

- The cluster of buildings at the center of campus – HVPA, MH, N, CL/ST/SA, and the East Garage – present a significant challenge towards bridging the North/South divide, effectively creating a physical barrier at the center of campus. Furthermore, significant topographic conditions prevent accessible passage through this area. The solution, therefore, is twofold. First, eliminate a

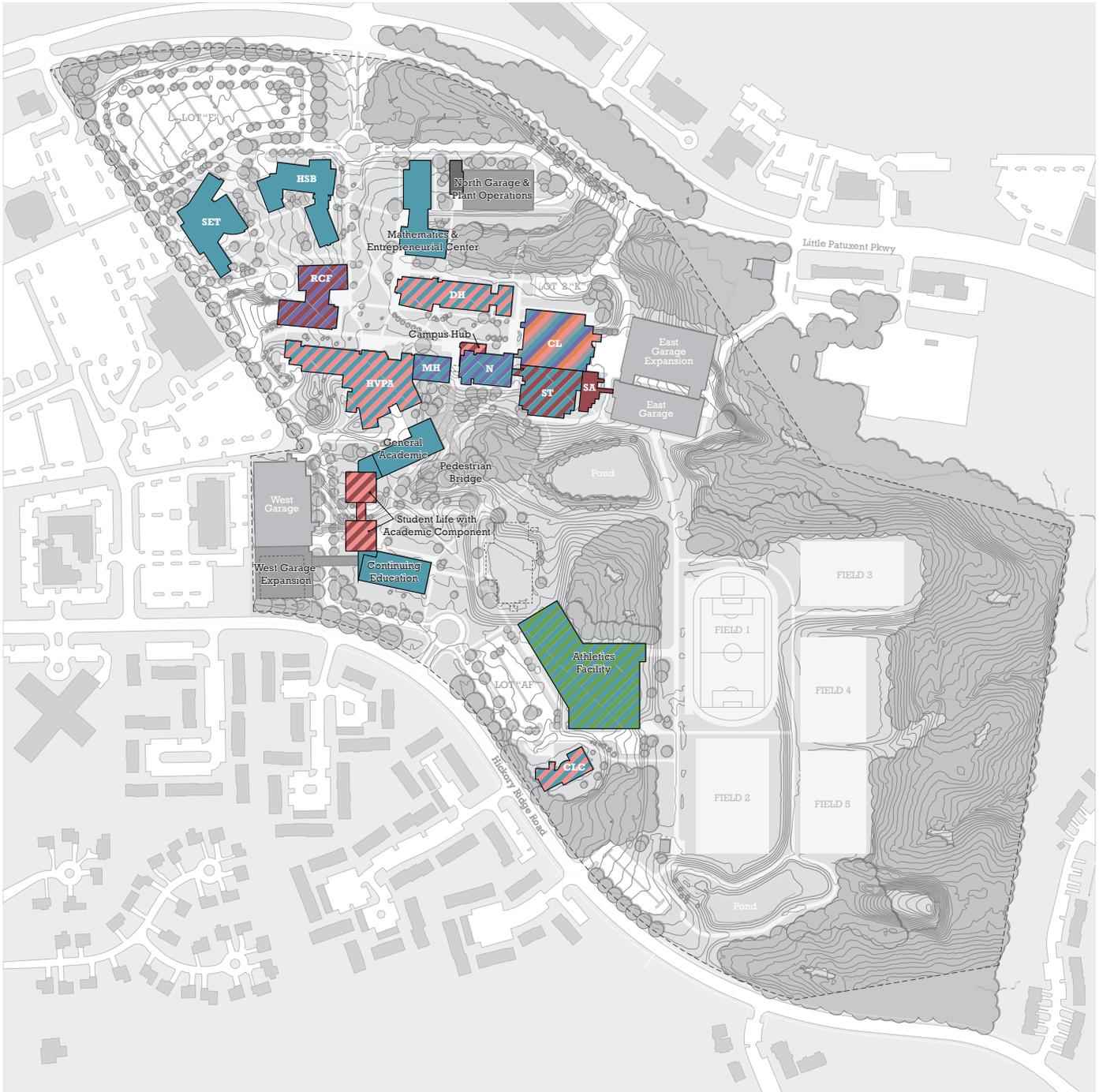
section of built structure between MH and N to facilitate a more discernible link between North and South Campus. Second, construct an elevated walkway that provides an accessible link between North and South Campus without interfering with landscape conservation and stormwater management systems below. The result is a single, continuous, pedestrian link across the entire campus, extending between Lot “F” at the north edge of campus and Athletics & Fitness to the south.

- The proposed pedestrian bridge is envisioned to be integrated with the new General Academic building at level two, assisting with efficiency and functionality.
- The existing pond and surrounding nature are not only preserved, but through strategic development surrounding this area, are repositioned as featured landscape elements that help shape the image and identity of the College.

South

An area that will experience the most significant adjustments as it transitions from an area filled primarily with parking lots, roadways, and isolated buildings, to a more appropriately organized campus setting that supports an academic and student life elements.

- The revised entry sequence from Hickory Ridge Road not only establishes a more attractive arrival sequence for visitors, but simultaneously improves traffic efficiencies while opening up a significant area of developable land for academic and student facilities. Pedestrian safety is also maintained with a bridged connection between the parking garage and proposed development.
- The proposed Student Life and Continuing Education buildings together produce the center piece of South Campus development, fostering a strong identity as well as a new campus quad.
- A renewed commitment to athletics, recreation, and wellness is evident with a new Athletics Facility located prominently near the Hickory Ridge Road campus entrance and closer to the playing fields to the east.
- The site of the former Athletics & Fitness facility will be left for future development opportunity beyond the life of this master plan.



Building Use

- | | |
|--|--|
| ■ Academic | ■ Library |
| ■ Athletics | ■ Special Use |
| ■ Administration | ■ Support |
| ■ Dining & Student Life | |

BUILDING USE

The overall goal of the recommended master plan is to confirm that all of the College's divisions and supporting functions are allocated the appropriate amount of space and are placed in their correct locations. Beyond these technical requirements, considerations were also made in order to support synergies and collaboration would improve efficiencies and stimulate creativity and innovation. Towards these goals, (7) new buildings (in addition to parking structures), are envisioned as part of this master plan. It is important that in addition to the inherent spatial qualities these buildings serve (described in the previous section), that their programmatic functions serve the greater mission of the master plan.

Mathematics & Entrepreneurial Center

This building will be a new home for the Mathematics department which requires space to grow its program and support the HCC population. This position on campus will create increased connectivity via adjacency to the Science, Engineering, and Technology building. The building will also be the home for the Entrepreneurial program and business incubator currently located in Duncan Hall. Expansion of this program within a cross-discipline incubator space will allow the program to grow beyond the confines of the business program and integrate with Mathematics and other adjacent STEM programs, fostering collaboration, creativity and innovation. In addition, Howard County is planning to locate the Center for Entrepreneurial & Business Excellence (CEBE) a short walking distance to the north, across Little Patuxent Parkway, which will help incite further collaboration between Howard County and HCC.

Campus Hub

Although in terms of size, this is a relatively small addition to the Nursing Building; its impact will be far reaching. Located at the heart of campus, the Campus Hub will not only serve as an important beacon, connecting North Campus with South Campus, it will also provide greatly desired student support space – specifically a place for tutoring, which has currently outgrown its location in RCF. Further still, it will serve as a pilot example for creating student services at satellite locations and a strategy for how to contribute to a more integrated and collaborative learning environment at the College.

General Academic Building

While this building is not home to any specific department, its impact will be felt across the entire campus community. By positioning a general program facility at this location, it stands to facilitate further integration between North and South Campus. Not only will it attract a larger cross section of the student body, in doing so, the barrier of alienation currently experienced at this area of campus can be overcome.

Student Life Building

This building will serve to activate the new development at South Campus and create a foundation for student life at the heart of campus from which to expand upon. This facility can also support the addition of a second dining option on campus as well as an academic component.

Continuing Education

In addition to requirements related to the Continuing Education program, this facility has the potential to support further conference and meeting space for the College.

Athletics & Fitness

The existing Athletics and Fitness facilities is aging and cannot sufficiently provide for the needs of a modern day Athletics and Recreation program. The proposed facility will replace the existing structure and go beyond the traditional notions of programming and strive to serve the student body in a more holistic manner, including wellness. The Physical Therapy, Exercise Science, Athletic Training, and Nutrition programs will be linked with the development of this facility in order to further academic synergies.



Open Space

- Campus Quadrangle
- Green Edges
- Naturalized Open Space
- Plaza Area

OPEN SPACE

One of the key aspects of this master plan is to extend many of the spatial principles already established in the area of North Campus to the largely undeveloped South Campus. This will require a dramatic shift in how open space is conceptualized and experienced at Howard Community College – from a primarily car-oriented environment, to a more attractive, organized, and safe pedestrian-oriented environment. While much of the open space at HCC has long been characterized by its signature quadrangle at the center of campus, in order to accomplish the goals set forth as part of this master plan, a complete range of open space typologies must be considered – individually as well as in concert with one another. Together, these spaces provide a robust spatial framework around which the campus is organized

Campus Quadrangles:

The 'quadrangle' is a quintessential landscape vocabulary of a college campus. These areas are central to the visual vocabulary of 'campus' and serve to strengthen the pedestrian experience, support intuitive way-finding and orientation, and play a major role in defining the spatial organization and pattern of the campus landscape.

Plaza Areas:

These areas serve to connect functional areas, support patterns of concentrated pedestrian traffic, and provide for shared service/emergency and pedestrian corridors where needed. Installation of seasonal site furniture, temporary art exhibits, and areas for student activities programming can be identified along their edges. They should be 'see-and-be-seen' areas, where spontaneous interaction and meetings are made.

Naturalized Open Spaces:

These areas are most closely associated with provision of green infrastructure; areas that provide space for stormwater retention, infiltration, and groundwater recharge. Additionally, these spaces can also be designed as pedestrian amenities and/or visual resources for adjacent areas.

Green Edges:

These areas are maintained along the campus edges and along important campus entry corridors to establish positive image and arrival experience for campus faculty, staff, students, and visitors. Furthermore, these areas can provide excellent opportunities for broadening existing forest conservation areas and added protection along stream buffer areas.

Each of these spaces is strategically utilized at various locations around the campus as part of the comprehensive open space plan aimed at improving the quality and character of the pedestrian and sustainable landscape. Perhaps most evident among these typologies in the recommended plan is the quadrangle, with the addition of two signature spaces, one at the north and the other at the south. With the addition of the new academic building at the north campus entrance, the existing open space is redefined as a more clear campus quad and signature gateway to the HCC campus. To the south, a completely new quad – defined by the proposed Student Life Center – establishes an important identity and gateway for this new area of campus.

Less obvious, but no less important, are the smaller spaces that help support the larger vision of the open space network. Green Edges, for example, strategically placed alongside these spaces, not only play an important role in defining their limits, but can also help expand and even disguise unwelcomed views. A prominent example of this can be found along the north edge of campus, along Little Patuxent Parkway, where otherwise unusable land is reclaimed as a Green Edge while at the same time disguising views of the proposed North Garage. Additional areas where Green Edges are used to replace forest conservation include the wooded area alongside the athletic fields, with the further benefit of managing stormwater runoff.

In fact, sustainability is an important aspect of all of these open space typologies, as well as at the heart of many of the strategic moves throughout the recommended campus master plan. Nowhere is this concept more integrated than at the central core of campus, where the Naturalized Landscape and Plaza Area come together in a single experience. Allowing this to occur is the proposed pedestrian bridge, which at its core, is about allowing for an accessible connection between North and South Campus. In doing so, however, it creates further opportunities as a gathering place alongside important student amenities such as the proposed Student-Life Center and Campus Hub. Further still, the elevated location of the bridge allows for the natural landscape – in this case, an important aspect of the campus stormwater management system – to continue to operate. This design solution, therefore, not only addresses several functional requirements of the master plan, but has the added potential of establishing a new and distinctive visual character on campus.

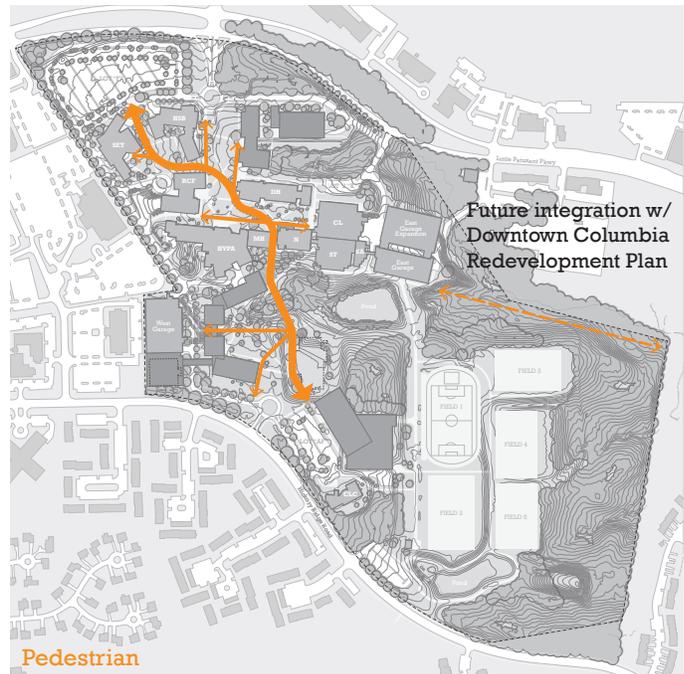
CIRCULATION

Although vehicular traffic will continue to play a necessary role in the everyday function of the campus, principles established as part of this master plan identify alternative strategies that go beyond traditional approaches towards improving traffic efficiencies or pedestrian access, and explore opportunities to enhance the visual character, safety, and overall campus experience in the process. Towards this goal, the planning strategy will be to transform ambiguous relationship of existing circulation typologies and establish a more balanced environment with distinct circulation patterns.

Pedestrian

High-quality pedestrian-oriented pathways that run through the campus are a key element to this master plan. Not only do they lay out a functional framework for a compact, walkable campus, they directly contribute to the visitor experience, establishing a sense of place and create an identity for the campus. One of the main challenges, and primary goal of the new pedestrian network, will be breaking down the existing mental and physical barrier created by the cluster of buildings at the center of campus. When experiencing the campus on the ground, relatively short distances can sometimes feel much further than they actually are due to portions of the landscape obstructing views. This can have an effect on one's position and orientation within the campus, and can even have an impact on campus safety. This is ultimately what has led to the current geographic understanding of two separate pieces of campus: 'North Campus' and 'South Campus', which if not addressed, will increasingly become a disservice to the College in the future. Allowing people to flow freely through this location, the perceived separation between north and south can be significantly reduced. This seemingly trivial modification will have a transformative effect on the ground experience of the campus, reducing the perceived distance between places on campus while creating a more accessible, understandable, and enjoyable environment.

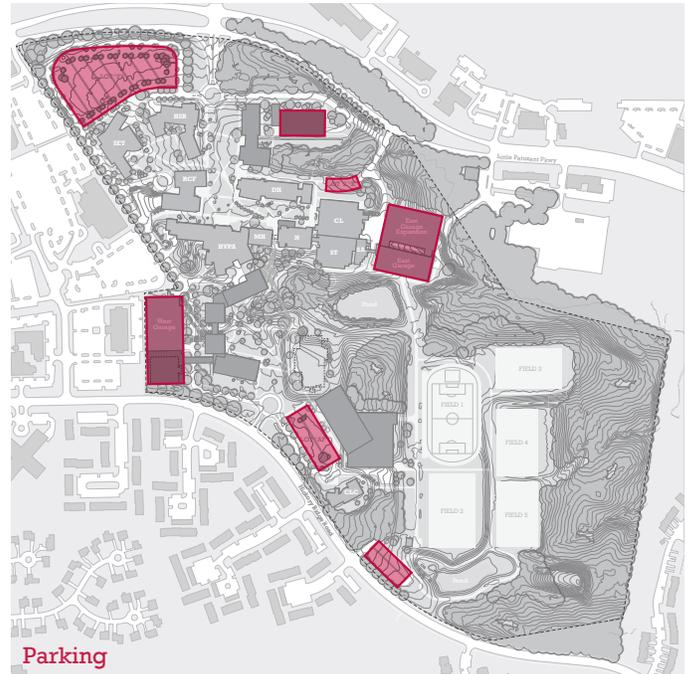
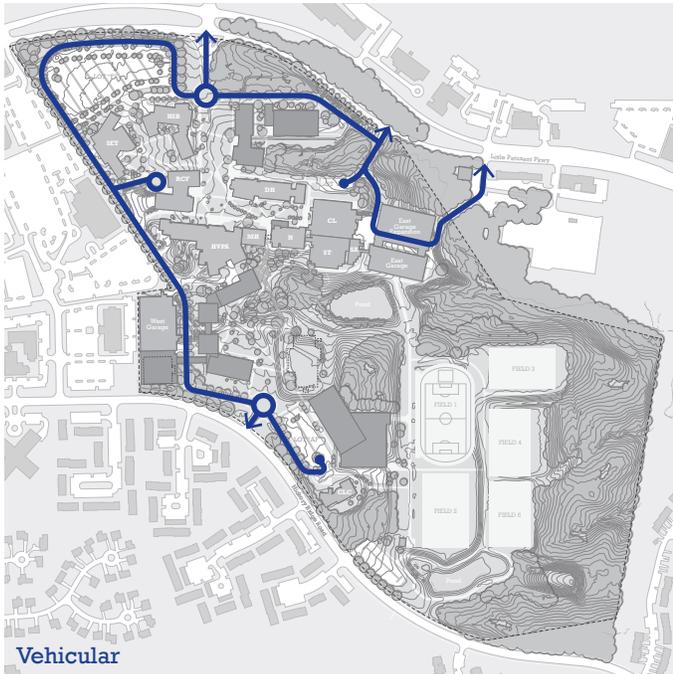
The key element that will allow for this connection, and ultimately an entirely new experience of the campus, is a pedestrian bridge linking the main quad with the new development at South Campus. A small section of building between McCuan Hall and the Nursing Building will be removed in order to facilitate this new piece of the pedestrian circulation network. A small structure alongside the Nursing Building – the Campus Hub – will serve as an important campus wayfinding gesture to this new route as



well as signal a student life presence at the heart of campus. Moreover, this pedestrian bridge will negotiate the sloping landscape, allowing for an accessible route that would not otherwise be possible, to the new development area of South Campus. Further still, stormwater management will not be interrupted; in fact, this functional element will serve as a visual resource and serve as an outstanding example of how planning principles can be integrated with the naturalized landscape in order to have a transformative effect on how the campus is experienced. A connection to the upper level of the proposed General Academic Building will provide an additional level of functionality and contribute to a more dynamic pedestrian network.

Vehicular

A major effort of this master plan will be to reduce the number of conflict zones between vehicles and people, while improving efficiencies in the process. The primary strategy toward this goal is moving vehicular elements to the perimeter of campus. This not only establishes a clearer and more efficient network, most importantly, it frees up the center of campus for higher and better uses, and ultimately, a safer campus environment. There are currently numerous conflict zones created by the existing geography of vehicular roadways and pedestrian pathways, this master plan sets forth a plan that all but eliminates this conflict, which is particularly evident in the proposed arrangement of South



Campus, but is also evident at Lot “F” where the roadway has been re-routed further away from the academic buildings and student activity.

The master plan strategy of moving vehicular functions to the perimeter of campus has the added benefit of improving traffic flow efficiencies. This is a particularly important consideration relative to peak commuting times, when the current campus configuration can experience impressive levels of gridlock. The proposed plan addresses this issue in a significant manner, while at the same time, improving safety and the visual character of the campus. Nowhere is this more noticeable in the master plan than at South Campus; not only does the adjusted roadway allow for critical campus development to take place, but the reconfigured entrance along Hickory Ridge Road has the ability to completely transform the image of the College. The proposed roundabout at this location, similar to the entrance at the north of campus establishes an important gateway to the campus. Providing service to buildings will be maintained largely as is currently configured, remaining disguised from public view as much as possible, however, an additional roadway from Little Patuxent Parkway toward the east edge of campus will provide additional support for Plant Operations.

Parking

With limited developable land, accommodating for additional parking as a result of future growth will always be a challenge. This master plan sets forth a plan that accommodates this need, but does not significantly impact the visual character of the campus, pedestrian safety, or compromise proximity to destinations. While the proposed campus plan reveals a significant reduction in the amount of surface parking – particularly at South Campus – a net increase of will be accommodated, which be largely accomplished through the expansion of parking structures. This includes significant expansions of the East and West parking garages, which are conveniently located at the perimeter of campus as to not interfere with the master plan initiatives toward vehicular efficiency and pedestrian safety. Additionally, a future garage is proposed at North Campus. This location was chosen for its perimeter-campus location, like the other garages, but also because of the natural landscape/topography at this location, the visual impact will be minimal. In terms of surface lots, Lot “F” will be reconfigured to accommodate additional parking spaces while also improving pedestrian circulation to the main campus. Lot “I” and “J” will be reconfigured as a result of the proposed Athletics & Fitness Center. Together, surface parking and parking garages form a network that allows uses to never be further than short walk from academic facilities.



Proposed 2025 Master Plan Vision

- Existing Building
- Proposed Building
- Demolished Building
- Existing Parking Garage
- Proposed Parking Garage

Proposed Phasing & Probable Cost

The proposed master plan for Howard Community College will be separated into three phases which recognized the capital funding cycles for the state of Maryland. Below are listings of the proposed projects:

PHASE 1 (2015-2020)

- Project 1: Mathematics & Entrepreneurial Center with Lot F Road Realignment \$ 30,415,415
- Project 2: Athletics Facility with South Campus Traffic Circle & Road Realignment \$ 43,155,374
- Project 3: North Parking Garage and Plant Operations Building \$ 24,632,724

PHASE 2 (2020-2025)

- Project 4: Campus Hub & Pedestrian Bridge \$ 2,498,500
- Project 5: General Academic Building with Pedestrian Bridge Connection \$ 21,124,705
- Project 6: Continuing Education Building \$ 17,741,250

PHASE 3 (2025+)

- Project 7: West Parking Garage Expansion \$ 18,265,000
- Project 8: Student Life Building with Academic Component \$ 21,361,615



PROJECT 1: MATHEMATICS & ENTREPRENEURIAL CENTER

- Existing Building
- Proposed Building
- Demolished Building
- Existing Parking Garage
- Proposed Parking Garage

Phase 1: 2015-2020

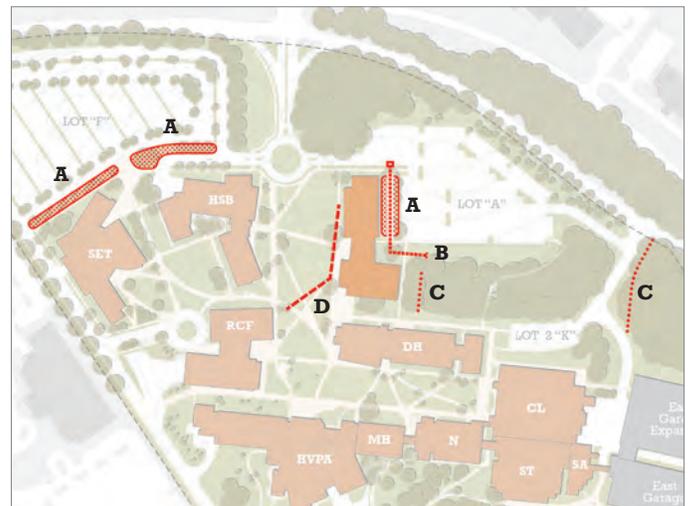
PROJECT 1: MATHEMATICS & ENTREPRENEURIAL CENTER

with Lot F Road Realignment

- 1 Move campus drive to opposite side of Lot "F"
- 2 Adjust parking orientation for Lot "F" to improve efficiencies and pedestrian connection to campus.
- 3 Construct Mathematics and Entrepreneurial Center, adjust parking Lot "A" accordingly.

Parking	Existing	Project 1	Delta	ADA
Lot A	373	305	(68)	
Lot B	-	-	-	
Lot C	-	-	-	
Lot E	-	-	-	
Lot F	506	526	20	11
Lot H	127	127	0	
Lot I	163	163	0	
Lot J	178	178	0	
Lot L	74	74	0	
Lot CLC	17	17	0	
Lot AF	-	-	-	
East Garage	1,261	1,261	0	23
West Garage	719	719	0	22
North Garage	-	-	-	
Fields	-	-	-	
TOTAL	3,418	3,370	(48)	56

Parking Summary



Site Utilities Summary

- A** Storm Water Management Area
- B** Storm Drain Utility
- C** Adjust Forest Conservation Area
- D** Sanitation Utility



PROJECT 2: ATHLETICS FACILITY

- Existing Building
- Proposed Building
- Demolished Building
- Existing Parking Garage
- Proposed Parking Garage

Phase 1: 2015-2020

PROJECT 2: ATHLETICS FACILITY

with South Campus Traffic Circle & Road Realignment

- 1 Move Campus Drive toward western perimeter of campus, adjust parking as required
- 2 New entry and roundabout
- 3 **Construct new Athletics Facility and** demolish existing Athletics & Fitness building, adjust parking as required.

Site Utilities Summary

Phase 2 of the master plan will require relocation of several major utilities. Because the realignment of the road through south campus, the major storm drain system that conveys runoff from the adjacent hospital complex to Symphony Creek will have to be extended and realigned. In anticipation of future master planned phase build-outs, this extension of the storm drain culvert system should be accomplished to provide a complete closed system that connects the existing pipes beneath the West Garage entrance road at the upstream end down to the existing pipes that discharge to the western end of Symphony Creek.

The master plan contemplates a connected series of buildings forming the western end of a reconfigured south campus. These buildings form a flattened V with a central bridging building spanning the upper valley above Symphony Creek and a proposed utility corridor. The rerouted storm drain culvert will pass through this corridor as will rerouted telecom lines. BGE electric feeders beneath the current road alignment will need to be relocated, most likely in the realigned roadway reconnect with lines in Hickory Ridge Road. The electric and telecom realignments should also be implemented during Phase 2 in order to prepare the area for future projects and minimize the number of times that the valley needs to be disturbed.

It is also recommended that Phase 2 include a secondary water connection to campus from the main in Hickory Ridge Road to provide the campus with redundant connections.

- A** Move Electrical Utility
- B** Move Storm Drain
- C** New Forest Conservation Area
- D** Move Telecommunications
- E** Adjust Forest Conservation Limit
- F** Storm Water Management Area
- G** Sanitation Utility

Parking	Project 1	Project 2	Delta	ADA
Lot A	305	305	0	
Lot B	-	-	-	
Lot C	-	-	-	
Lot E	-	-	-	
Lot F	526	526	0	11
Lot H	127	220	(70)	
Lot I	163			
Lot J	178	0	(178)	
Lot L	74	0	(74)	
Lot CLC	17	0	(17)	
Lot AF	-	126	126	5
East Garage	1,261	1,261	0	23
West Garage	719	719	0	22
North Garage	-	-	-	
Fields	-	-	-	
TOTAL	3,370	3,157	(213)	61

Parking Summary



Site Utilities Summary



PROJECT 3: NORTH PARKING GARAGE AND PLANT OPERATIONS BUILDING

- | | |
|--|-------------------------------|
| Existing Building | 1 Plant Operations |
| Proposed Building | 2 North Parking Garage |
| Demolished Building | |
| Existing Parking Garage | |
| Proposed Parking Garage | |

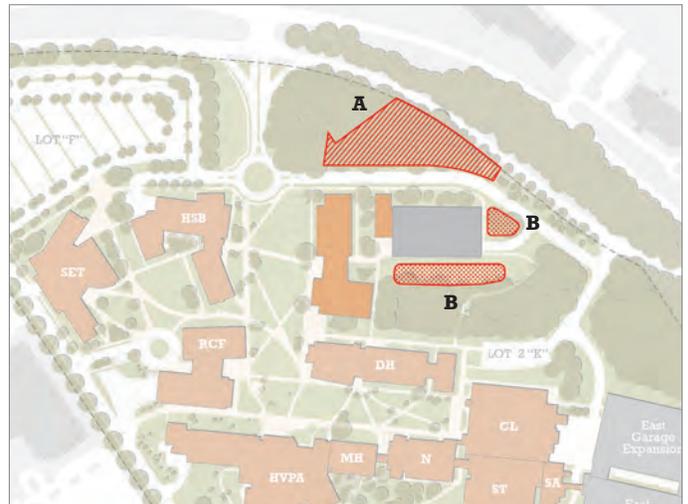
Phase 1: 2015-2020

PROJECT 3: NORTH PARKING GARAGE AND PLANT OPERATIONS BUILDING

- 1 Move Campus Drive toward western perimeter of campus, adjust parking as required
- 2 New entry and roundabout
- 3 **Construct new Athletics Facility and demolish existing Athletics & Fitness building, adjust parking as required.**

Parking	Project 2	Project 3	Delta	ADA
Lot A	305	0	(305)	
Lot B	-	-	-	
Lot C	-	-	-	
Lot E	-	-	-	
Lot F	526	526	0	11
Lot H	220	220	0	
Lot I				
Lot J	-	-	-	
Lot L	-	-	-	
Lot CLC	-	-	-	
Lot AF	126	126	0	5
East Garage	1,261	1,261	0	23
West Garage	719	719	0	22
North Garage	-	750	750	8
Fields	-	-	-	
TOTAL	3,157	3,602	445	69

Parking Summary



Site Utilities Summary

- A** New Forest Conservation Area
- B** Storm Water Management Areas



PROJECT 4: CAMPUS HUB & PEDESTRIAN BRIDGE

- Existing Building
- Proposed Building
- Demolished Building
- Existing Parking Garage
- Proposed Parking Garage

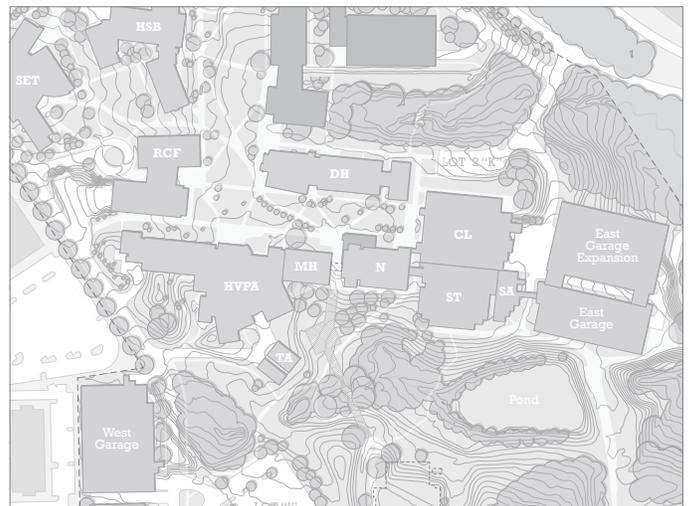
Phase 2: 2020-2025

PROJECT 4: CAMPUS HUB & PEDESTRIAN BRIDGE

- 1 Campus Hub
- 2 Demolish portion of enclosed walkway between Nursing & MH in order to facilitate pedestrian link between North and South campus.
- 3 Pedestrian Bridge to allow accessible pedestrian access between North and South campus without encroaching on environmental protection area.

Parking	Project 3	Project 4	Delta	ADA
Lot A	-	-	-	
Lot B	-	-	-	
Lot C	-	-	-	
Lot E	-	-	-	
Lot F	526	526	0	11
Lot H	220	220	0	
Lot I				
Lot J	-	-	-	
Lot L	-	-	-	
Lot CLC	-	-	-	
Lot AF	126	126	0	5
East Garage	1,261	1,261	0	23
West Garage	719	719	0	22
North Garage	750	750	0	8
Fields	-	-	-	
TOTAL	3,602	3,602	0	69

Parking Summary



Site Utilities Summary

N/A



PROJECT 5: GENERAL ACADEMIC BUILDING

- Existing Building
- Proposed Building
- Demolished Building
- Existing Parking Garage
- Proposed Parking Garage

Phase 2: 2020-2025

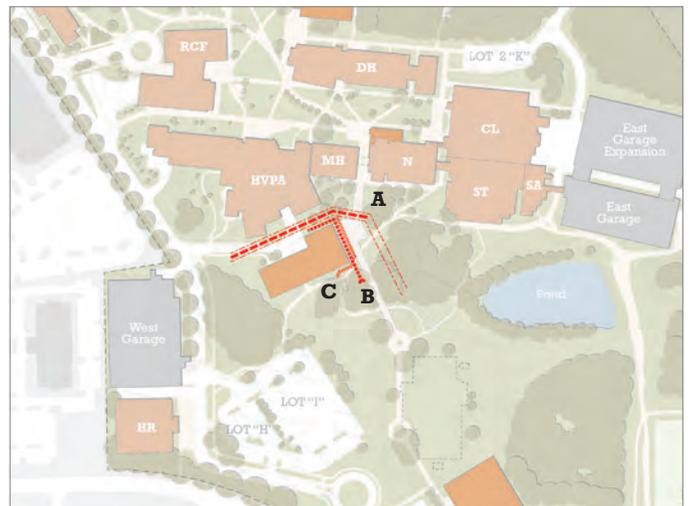
PROJECT 5: GENERAL ACADEMIC BUILDING

with Pedestrian Bridge Connection

- 1 General Academic Building, connected to pedestrian bridge at level 2.

Parking	Project 4	Project 5	Delta	ADA
Lot A	-	-	-	
Lot B	-	-	-	
Lot C	-	-	-	
Lot E	-	-	-	
Lot F	526	526	0	11
Lot H	220	220	0	
Lot I				
Lot J	-	-	-	
Lot L	-	-	-	
Lot CLC	-	-	-	
Lot AF	126	126	0	5
East Garage	1,261	1,261	0	23
West Garage	719	719	0	22
North Garage	750	750	0	8
Fields	-	-	-	
TOTAL	3,602	3,602	0	69

Parking Summary



Site Utilities Summary

Phase 5 of the master plan will require realignment of water, sanitary sewer, and storm drains to make way for the building.

- A** Move Sanitation Utility and 20' easement
- B** Storm Drain Utility
- C** Water Utility



PROJECT 6: CONTINUING EDUCATION BUILDING

- Existing Building
- Proposed Building
- Demolished Building
- Existing Parking Garage
- Proposed Parking Garage

1 Continuing Education

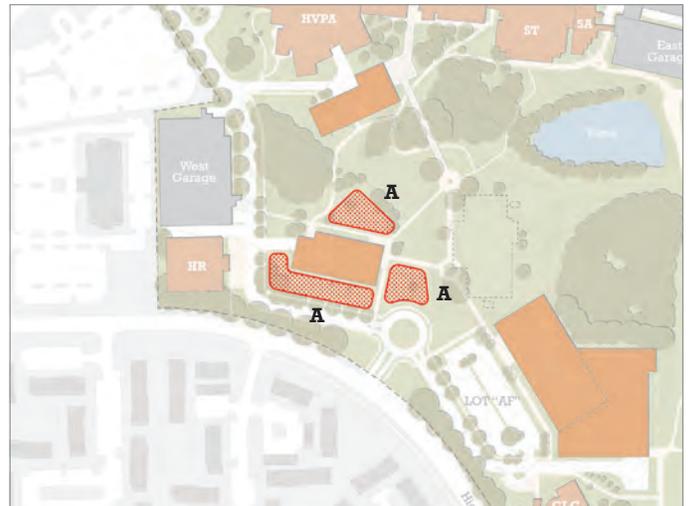
Phase 2: 2020-2025

PROJECT 6: CONTINUING EDUCATION BUILDING

1 Continuing Education

Parking	Project 5	Project 6	Delta	ADA
Lot A	-	-	-	
Lot B	-	-	-	
Lot C	-	-	-	
Lot E	-	-	-	
Lot F	526	526	0	11
Lot H	220	0	(220)	
Lot I				
Lot J	-	-	-	
Lot L	-	-	-	
Lot CLC	-	-	-	
Lot AF	126	126	0	5
East Garage	1,261	1,261	0	23
West Garage	719	719	0	22
North Garage	750	750	0	8
Fields	-	-	-	
TOTAL	3,602	3,382	(220)	69

Parking Summary



Site Utilities Summary

A Storm Water Management Area



PROJECT 7: WEST PARKING GARAGE EXPANSION

- Existing Building
- Proposed Building
- Demolished Building
- Existing Parking Garage
- Proposed Parking Garage

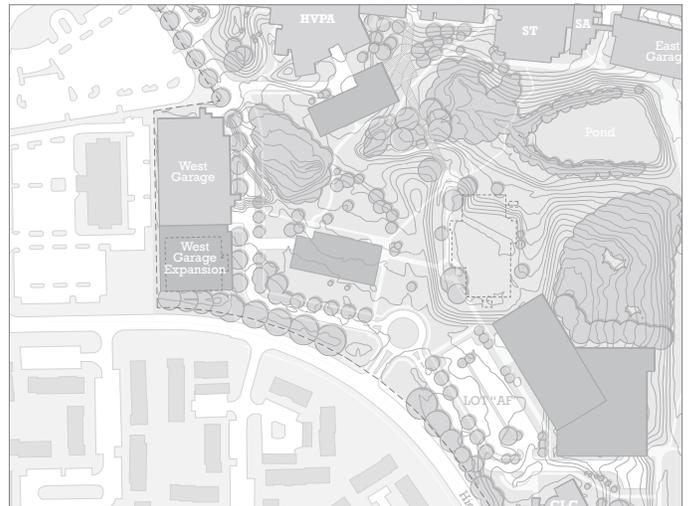
Phase 3: 2025+

PROJECT 7: WEST PARKING GARAGE EXPANSION

1 West Garage Expansion

Parking	Project 6	Project 7	Delta	ADA
Lot A	-	-	-	
Lot B	-	-	-	
Lot C	-	-	-	
Lot E	-	-	-	
Lot F	526	526	0	11
Lot H	-	-	-	
Lot I	-	-	-	
Lot J	-	-	-	
Lot L	-	-	-	
Lot CLG	-	-	-	
Lot AF	126	126	0	5
East Garage	1,261	1,261	0	23
West Garage	719	1,469	750	22
North Garage	750	750	0	8
Fields	-	-	-	
TOTAL	3,382	4,132	750	69

Parking Summary



Site Utilities Summary

N/A



PROJECT 8: STUDENT LIFE BUILDING WITH ACADEMIC COMPONENT

- Existing Building
- Proposed Building
- Demolished Building
- Existing Parking Garage
- Proposed Parking Garage

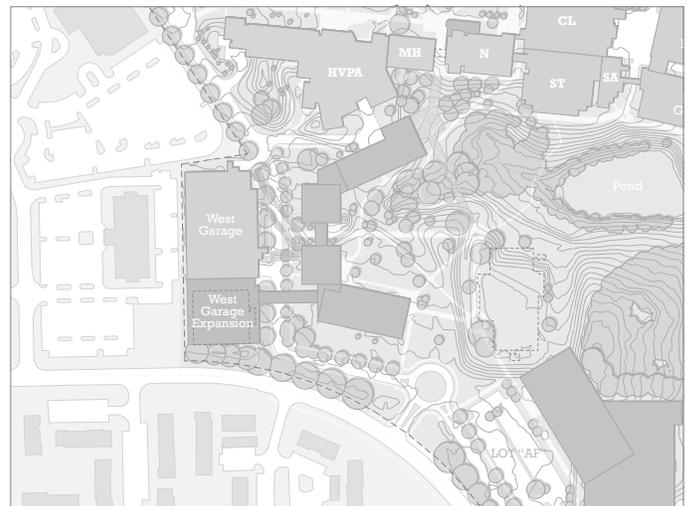
Phase 3: 2025+

PROJECT 8: STUDENT LIFE BUILDING WITH ACADEMIC COMPONENT

- 1 Student Life Building with Academic Component
- 2 Pedestrian Bridge to West Garage Expansion

Parking	Project 7	Project 8	Delta	ADA
Lot A	-	-	-	
Lot B	-	-	-	
Lot C	-	-	-	
Lot E	-	-	-	
Lot F	526	526	0	11
Lot H	-	-	-	
Lot I	-	-	-	
Lot J	-	-	-	
Lot L	-	-	-	
Lot GLC	-	-	-	
Lot AF	126	126	0	5
East Garage	1,261	1,261	0	23
West Garage	1,469	1,469	0	22
North Garage	750	750	0	8
Fields	-	-	-	
TOTAL	4,132	4,132	0	69

Parking Summary



Site Utilities Summary

N/A

CONSULTANT TEAM

CannonDesign
Site Resources, Inc.
Symmetra Design

CANNONDESIGN