

The background of the entire page is a solid red color. Overlaid on this is a large, semi-transparent watermark of the Rutgers University seal. The seal features a sunburst on the left, a laurel wreath on the right, and the text 'RUTGERS' and '1766' around the top arc.

RUTGERS UNIVERSITY PHYSICAL MASTER PLAN

RUTGERS 2030

VOLUME 1: NEW BRUNSWICK

JUNE 18, 2015

PREFACE

Rutgers University embarked on Rutgers 2030 in May 2013, the first comprehensive master plan in over a decade, and the first to incorporate Rutgers Biomedical and Health Sciences (RBHS), created from the integration of the University of Medicine and Dentistry of New Jersey (UMDNJ) with Rutgers University in July 2013. The physical master plan complements the Rutgers University Strategic Plan, prepared in conjunction with the Boston Consulting Group, and approved by the Board of Governors in February 2014, and the strategic plans of each of Rutgers' component institutions.

Rutgers 2030 envisions development at Rutgers over a 15-year time frame, 2015 to 2030, and is comprehensive in its scope; taking into account buildings, the natural and constructed landscape, transportation, and infrastructure. The report consists of three volumes:

- Volume 1: Rutgers University–New Brunswick
- Volume 2: Rutgers University–Newark
- Volume 3: Rutgers University–Camden

RBHS is considered primarily within Volume 1 although constituent elements are found across Rutgers.

The scope of input was broad, involving survey responses from approximately 8,000 members of the community, over thirty presentations and town hall meetings, and meetings with many administrators, faculty, and student groups.

This study would not have been possible without the leadership of Rutgers University President Robert L. Barchi and support of Chancellors Nancy Cantor, Richard Edwards, Phoebe Haddon, and Brian Strom. In addition, the Physical Master Plan Executive Steering Committee, Rutgers University Facilities and Capital Planning members, Deans, staff, faculty and students contributed invaluable insight to the development of the project.

The master plan consulting team included Robert A.M. Stern Architects, Sasaki Associates, VHB, Buro Happold, and Toscano Clements Taylor.

Volume 1: New Brunswick

Table of Contents

- 1 INTRODUCTION**
 - TAKING RUTGERS UNIVERSITY–NEW BRUNSWICK FORWARD
- 2 THE PLANNING CONTEXT**
 - 2.1 OPEN SPACE AND NATURAL SYSTEMS
 - 2.2 LAND USE
 - 2.3 MOBILITY
- 3 RUTGERS 2030**
 - 3.1 VISION AND PRINCIPLES
 - 3.2 CAMPUS FRAMEWORK
- 4 DISTRICT FRAMEWORKS**
 - 4.1 COLLEGE AVENUE
 - 4.2 COOK/DOUGLASS
 - 4.3 BUSCH
 - 4.4 LIVINGSTON
 - 4.5 RBHS
 - 4.6 INTERCOLLEGIATE ATHLETICS
- 5 PHASING AND IMPLEMENTATION**

3

RUTGERS 2030

3.1 VISION AND PRINCIPLES

Learning at Rutgers

Life at Rutgers

Navigating Rutgers

Stewardship at Rutgers

Personalizing Rutgers

3.2 CAMPUS FRAMEWORKS

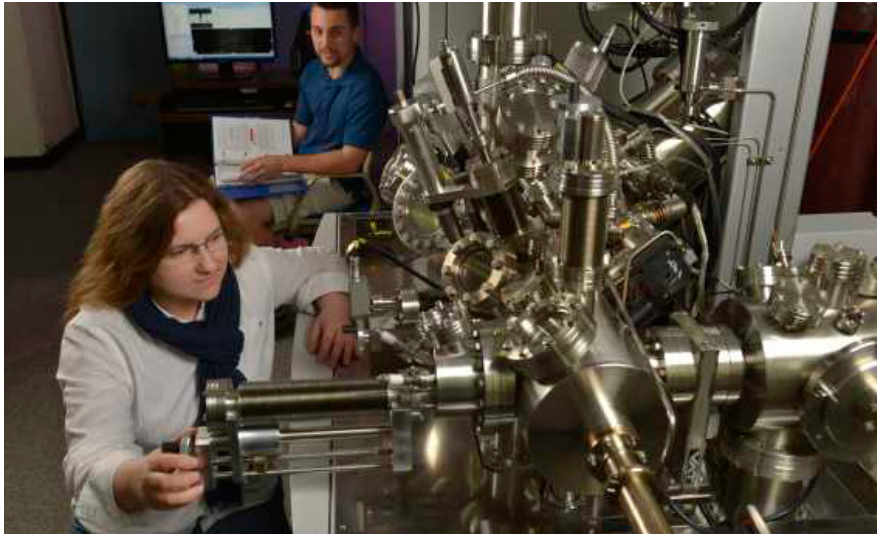
Sustainability Framework

Land Use

Open Space and Natural Systems

Mobility

Gateways and Signage



3.1 Vision and Principles

The vision for Rutgers 2030 coordinates the academic, research, and partnership aspirations of Rutgers and establishes a foundation for future planning decisions. It provides a vision for the next ten years and beyond, and accommodates the evolving teaching and research mission of the University while focusing on providing a better campus experience for resident students, commuter students, staff, faculty and visitors.

Rutgers 2030 includes recommendations for the functional, physical and psychological connections within and between campus districts as well as to the surrounding community and natural ecosystem. It is based on several overarching considerations responsive to the existing and future organization of activity:

- Rutgers 2030 is designed to support the teaching, research and partnership focus areas of Rutgers University–New Brunswick. In doing so, it provides a unified and coordinated vision for the four districts in New Brunswick - Piscataway: College Avenue, Cook/Douglass, Busch and Livingston.

- Rutgers 2030 responds to the unique history and traditions of each former campus, while providing a renewed vision—a vision responsive to the strategic plan for the University and the colleges, schools and administrative units that occupy them.
- Rutgers 2030 provides a vision for future land and space planning on each district. It is driven by and reflective of the goals and initiatives of the strategic plan and by the plans of the individual districts.

Rutgers 2030 is based on a strong commitment to sustainability and five primary principals that support the Strategic Plan:

Learning at Rutgers: Create a world-class learning environment at Rutgers, through new technology and learning environments that foster collaboration and innovation.

Life at Rutgers: Reinforce amenities that improve the experience at Rutgers for resident students, commuter students, faculty, staff, and visitors.

Navigating Rutgers: Enhance the experience of moving through and between the districts by developing a multi-modal transportation system.

Stewardship at Rutgers: Implement strategies for more efficient and effective utilization of land, facilities and resources.

Personalizing Rutgers: Utilize technology, consolidated services and amenities to enable students to better coordinate the choices they make with regard to class schedules, housing, and transportation.



3.1.1 LEARNING AT RUTGERS

Create a world-class learning environment at Rutgers, through new technology and infrastructure that fosters collaboration and innovation.

The campus and classroom analyses completed in support of Rutgers 2030 revealed several issues with regard to the learning environment at Rutgers. Key among the findings: changes in pedagogy and technology along with new methods of delivery undoubtedly require a transformation of the existing learning environment. While technology has been enhanced in most classrooms, the shift towards flexible learning environments is transforming current classroom technology standards. This finding, coupled with the dispersed nature of Rutgers' students and faculty, and the associated need to travel between locations, provides an opportunity for Rutgers to be a leader in this transformation.

The Strategic Plan offers guidance on learning at Rutgers; the University plans to assess institutional

opportunities and weaknesses in the face of three major challenges facing higher education:

- The impact of new communication, research, and teaching technologies on the University;
- The need to remodel the traditional structure of academic units to create an environment that is more responsive to the needs of tomorrow's faculty, students and staff; and
- The imperative to seek adaptive and flexible connections between the academy and the broader economy.

Information technology continues to transform the way we teach, making it possible to implement new pedagogical tools on a broad scale, including interactive and online courses, "flipped classrooms," learning technologies inspired by the video game industry, and simulation technology in which students practice skills virtually. At Rutgers, broadcast technology can enable professors to move virtually to students, rather than students moving to professors as they currently do. These changes have the potential to reduce travel to classes, thereby enhancing the

educational experience and reducing strain on the physical infrastructure.

The University will assist its faculty in adopting new teaching and research technologies, while continuing to support hands-on learning; student-faculty interactions; experiential learning in the field, lab, or archives; student-student interactions; and mentoring, which will set the Rutgers residential experience apart from its online competitors.

Rutgers 2030 suggests several planning concepts for future study:

UNIVERSITY LIBRARIES – the physical nature of libraries is radically evolving as a result of changes to the ways in which people are accessing information. The result: less emphasis on printed matter, and more reliance on digital information that is widely available on the internet or via digital sources maintained by libraries.

This suggests that Rutgers' libraries will need to change in response. The buildings themselves could be transformed to address the specific needs

and unique circumstances encountered at Rutgers. It is suggested that Rutgers study the future of the New Brunswick-Piscataway libraries with the aim of transforming them into learning commons—places where people, information, and ideas come together. The libraries could also address additional issues: What if the libraries were the location for “broadcasting” lectures across Rutgers New Brunswick? The idea would enable professors in high demand courses to deliver their lecture, say at Busch, and broadcast the lecture to College Avenue, Cook/Douglass or Livingston. The advantage: one professor could reach more students and those students would not necessarily need to travel across campus. This would have the benefit of enabling students to stay at their “home” district and would potentially decrease the demands placed on Rutgers buses.

CLASSROOM + LEARNING ENVIRONMENT STRATEGY – looking ahead, Rutgers must anticipate how changes in pedagogy will transform the learning environment. How might these changes improve learning outcomes? How might courses be tailored for different learning styles? How might courses be offered online or in blended models?

How might these changes result in new and different types of classrooms? How might they change the overall amount of space dedicated to classrooms? Like libraries, these questions require more study. Regardless, the learning environment strategy will require a combination of renovation in appropriate locations and, potentially, new learning environments that are positioned to be more accessible.

TECHNOLOGY – As new technologies emerge, Rutgers must keep pace in order to maintain its education potential and its role in providing graduates with computer literacy and readily applicable skills in the workplace. Rutgers must also prepare and respond to challenges presented by online learning, consider opportunities for a technology-rich and blended learning environment, and explore software options that would enhance the student experience. In exploring the application of new technologies, Rutgers also has the opportunity to address transportation and scheduling constraints.

3.1.2 LIFE AT RUTGERS

Reinforce amenities that improve the experience at Rutgers for all: resident students, commuter students, faculty, staff, and visitors.

The Strategic Plan for the University outlines several important priorities for the student experience to which Rutgers 2030 responds. Looking forward, Rutgers will need to:

- Deliver efficient, student-centered academic and career services and counseling;
- Create the infrastructure that has the greatest impact on the quality of life, including personalized student communities such as honors colleges, research units and societies and academic groups that make Rutgers a more intimate learning environment;
- Create and promote additional unique living and learning environments to engage students in scholarship and intellectual achievement outside the classroom;

- Create personalized learning environments such as living and learning communities, honors colleges, and interdisciplinary learning environments that help diminish the perceived scale of Rutgers;
- Cultivate existing first-year honors colleges on each campus and tailor them to the strengths and vision of each campus; and
- Develop additional programs and mechanisms for early and direct interaction of undergraduate students with faculty.

The Student Experience

Rutgers 2030 places people first. It focuses on the student experience and by extension, the experience of all staff, faculty and visitors to the campuses. The Master Plan proposes a number of strategies that are intended to transform the day-to-day experiences and quality of life for both resident and commuter students. These include:

- **Create learning environments** where the overall quality, comfort and access to technology and the

transit system will be enhanced.

- **Transformation of Rutgers Libraries** into learning commons offering access to technology, group study areas, and services / amenities that will support students in their academic pursuits.
- **Improve the transit experience**, beginning with software applications that will assist students in better managing their time and the need to travel as part of their daily routines.
- **Develop transit hubs as gateways** into and out of each campus, where amenities, convenience and comfort for the student population will be provided alongside complementary facilities such as housing and recreational facilities.
- **Expand the use of technology** that will assist students in making more informed choices with regard to their academic schedules and housing options.

Transforming the Student Experience is a key strategic priority outlined in the University's strategic plan. In response to student dissatisfaction with the academic experience, Rutgers will need to "deliver efficient, student-centered academic and career services and

counseling, and improve the infrastructure that has the greatest impact on students' daily lives.”¹ This includes making the University a more intimate, personalized learning group, by creating and supporting research units and societies, academic groups, student activities, and programs like the Honors College. Students need early and ongoing interaction with faculty and their peers, in order to develop the support networks and learning environments that they need to achieve academic success.

Improving the college experience for all students is thus critical to improve retention rates and ensure student success; this effort is dependent both on the campus and its facilities, as well as the complementary programming initiatives that maximize the benefits of the physical campus. As students graduate, having a distinctive and robust Rutgers experience will boost alumni engagement.

Rutgers 2030 includes strategies for improving campus centers, housing, dining and recreation in response to the above noted goals of the Strategic Plan and, more specifically, “to construct a campus environment that supports student social needs and improves student

satisfaction while encouraging academic growth and engagement.”² To that end, the following strategies are proposed:

TRANSIT HUBS – Rutgers Buses provide an essential service for the Rutgers community. Rutgers 2030 includes recommendations for improving bus services, but also takes into consideration the total experience for both resident and commuter students. A key recommendation is the goal of establishing transit hubs in each of the districts. In general, the hubs are associated with the student centers at College Avenue, Douglass and Livingston. Two transit hubs are proposed for Busch, one at Allison Road Classroom Building in response to current travel demand patterns, and the other at the Busch Student Center. The transit hubs are envisioned as gateways into and out of each district, where express bus services are provided across campus. In addition to the amenities offered in the student centers, other student services and high tech classroom facilities are proposed to be developed in close proximity to each hub.

STUDENT CENTERS – Rutgers 2030 includes recommendations for comprehensively considering campus life. Recommendations are provided for transforming the student centers at Busch and Douglass, and for creating an entirely new student center at College Avenue — envisioned to not only serve those students living and commuting to College Ave, but the entire Rutgers - New Brunswick community. At present, the student centers are a legacy of the former college model and do not provide for the entire Rutgers community.

HOUSING – over the long term, housing at Rutgers will need to be transformed and redeveloped in response to changing student needs and deferred maintenance considerations. The master plan anticipates this need for redevelopment, and identifies potential areas for strategic redevelopment. In each case, the intent is to better coordinate housing locations with the creation of transit hubs. In support of this strategy, future housing is proposed in close proximity to the hubs – within a five minute walk of a given hub. Rutgers 2030 illustrates a long-term redevelopment strategy for housing at Busch and Cook/Douglass. Limited housing is proposed for

College Avenue and Livingston, given the recent and ongoing housing investments in these campuses. In recommending new housing, the opportunity also exists to specifically address the desire for stronger living and learning communities across all campuses.

RECREATION – Rutgers 2030 focuses on improving recreational opportunities at Rutgers. An expansion is proposed for the College Avenue Gymnasium to address current and anticipated high demand for recreation at this location. At Busch, the Werblin Recreation Center will be expanded. The Livingston Recreation Center is expanded and the adjacent fields enhanced, in support of the outdoor recreation program. Recreation at Cook/Douglass is addressed by transformation of the existing Cook/Douglass Recreation Center and Cook Campus Center into the campus-wide location for Rutgers club and intramural sports and also through the creation of new recreational fields proposed at Cook.

ATHLETICS – 2014 was marked by Rutgers University–New Brunswick’s entrance to the Big Ten. As a member of the Big Ten, Rutgers’ existing facilities should be brought on par with its conference

members. Rutgers 2030 proposes a framework for Rutgers athletics facilities, integrating them into the campus fabric, identifying development opportunities, and transforming existing facilities into cohesive athletics districts at Busch and Livingston. Busch will retain its focus on football, soccer and lacrosse, while the existing facilities at Livingston will be redeveloped into an athletics complex hosting basketball, baseball, softball, tennis, track and field, field hockey, wrestling, volleyball and gymnastics. In both districts, pedestrian access and parking options are improved, providing easier access to sporting events that will form a new athletics tradition at Rutgers.

1. *A Strategic Plan for the New Rutgers*, February 2014: p 39.
2. *A Strategic Plan for the New Rutgers*, February 2014: p 33.



NEW JERSEY



RUTGERS

UNIVERSITY

SCARLET

RUTGERS UNIVERSITY

3.1.3 NAVIGATING RUTGERS

Enhance the experience of moving through and between the districts.

The proposed mobility improvements of Rutgers 2030 promote multi-modal connectivity and feature the concept of transit hubs. Enhancement of the pedestrian and bicycle networks, in conjunction with investment in the landscape, is critical to improving the overall transit experience, and the ease of navigating each campus as a cohesive whole.

Rutgers 2030 emphasizes the importance of landscape in defining a sense of place at Rutgers University–New Brunswick, an element of the campus environment that helps orient users. The landscape also provides users with cues that help them find their way, collapsing the psychological distance between destinations. At College Avenue, for example, Voorhees Mall serves not only as open space, but also serves to help users find their way and orient themselves in relationship to the rest of the district. Rutgers 2030 proposes landscape overlays for each campus, aimed both at creating active open spaces, and at providing a series

of visual cues that help users to successfully navigate each district. The landscape overlays are customized to retain each former campus' history and character, terrain, and topography.

The pedestrian and bicycle network is augmented where appropriate. The bicycle connectivity between Busch and Livingston is improved by a new bridge over Route 18, providing safer and more direct access, especially for students traveling between the districts for class. Bicycle connectivity between College Avenue and Cook/Douglass are improved by a new dedicated bicycle lane planned by the City of New Brunswick, along George and Neilson Streets. The new bicycle lane will help complete the bicycle network between College Avenue and Cook/Douglass. In areas where campus roads are proposed to be realigned or replaced, there are opportunities to create complete streets, with infrastructure dedicated to pedestrians, bicycles, and vehicles.

Access to information is also viewed as an important enhancement to the travel experience. Real-time technologies that keep students informed about Rutgers buses, including NextBus, are essential

for ensuring a better transit experience. Such technologies can help students make decisions about the best mode of transportation for them. The master plan recommends implementing this technology in the proposed transit hubs.



Interactive real-time display in London bus shelter

AT LEFT: STUDENTS BOARDING A RUTGERS BUS



3.1.4 STEWARDSHIP AT RUTGERS

Implement strategies for more efficient and effective utilization of land, facilities and resources.

The Master Plan embraces sustainability, making stewardship one of the guiding principles for future planning and design decisions. Recommendations focus on protecting natural systems and water resources, promoting compact land use patterns, enhancing the landscape and open space structure, and providing multi-modal connectivity.

One of the five themes identified in the strategic plan is *Creating a sustainable world through innovation, engineering and technology*:

“Rutgers will create living laboratories for sustainability by performing discovery and applied research, and by implementing models of sustainable practices on our campuses in New Jersey. The University will seek to provide students with opportunities to live and work in a sustainable environment, leverage the University’s field stations and extension services in support of both discovery and community outreach, and become a

national center for measuring sustainability outcomes for industries, businesses, and communities. Furthermore, Rutgers will form strategic alliances with business and government to address sustainability challenges.”³

Rutgers 2030 emphasizes the importance of more efficient utilization of existing space, and of rationalizing space needed to serve the mission of the University. Rutgers 2030 acknowledges and accommodates the need for new construction, in support of the University’s mission and goals, but proposes that the addition of buildings be offset by decommissioning or renovating existing buildings. The master plan also advocates for constructing new buildings within the district core, towards the creation of a more compact, high-activity district within the campus.

As noted in Chapter 2, the Space Utilization Study suggests that Rutgers University–New Brunswick is overbuilt. Rutgers University–New Brunswick has over 175 gsf of space per student, which places it well beyond its peers. This is, in part, due to the duplication of student centers, recreational facilities, classroom buildings and libraries – an outcome associated with

the former college model.

The goal set out in Rutgers 2030 is to rationalize the space usage, with the intent of reducing operating costs, energy consumption and associated greenhouse gas emissions. To that end, Rutgers 2030 proposes that historic or contributing buildings be maintained; existing buildings be renovated to address deferred maintenance and functional use issues; new buildings be provided to support the academic and research mission; and buildings be demolished that are no longer fit for their purpose or continued investment.

3. *A Strategic Plan for the New Rutgers*, February 2014: p 50.

Home Campus: Earliest Class Latest End Time

3 01:160:127 Impact of Chemistry

3 01:355:101 Expository Writing I VI X 3 01:082:105 Introduction to Art History III X

1 01:160:171 Introduction to Experimentation X 3 01:960:463 Regression Methods X

10 credits core curriculum areas: I II III IV V VI VII VIII IX

4 trips 1hr 2 early trips, loaded wed

	monday	tuesday	wednesday	thursday	friday
01:355:101	8-12	12-4 (15m)	8-12	12-4 (15m)	
01:082:105		12-4 (15m)	8-12	12-4 (15m)	
01:160:171	4-8		4-8		
01:960:463			8-12		8-12

6 trips 2hr 1 early trip

	monday	tuesday	wednesday	thursday	friday
01:355:101	8-12	4-8	8-12	12-4 (15m)	
01:082:105	12-4 (15m)			12-4 (15m)	8-12 (30m)
01:160:171		8-12	4-8		
01:960:463			8-12		12-4 (30m)

9 trips 3hr 2 tight class changes

Example of potential student-facing user interface for selecting classes

3.1.5 PERSONALIZING RUTGERS

Use technology and co-located services and amenities to enable students to better coordinate the choices they make with regard to class schedules, housing, and associated transportation.

Today much of the student experience at Rutgers is defined by the University's size: the New Brunswick campus is both geographically dispersed and immense in its size and resources. For incoming students, success at Rutgers often depends on identifying personal pathways through their undergraduate experience.

Rutgers needs to implement methods to coordinate first-year housing assignments, first-year course locations, and all classroom assignments in real time using software, in order to reduce student travel time and dependence on the bus transportation system during peak academic hours. The analysis conducted on current scheduling practices at Rutgers, combined with feedback received from the student community,

suggests that there is a significant opportunity to utilize technology to assist students in personalizing or structuring their experiences at Rutgers. In addition to technology, co-locating services, amenities, and classrooms in proximity to commuter parking and residence halls could provide further benefits to the student experience.

Rutgers 2030 promotes the point of view that robust and interconnected data management and software applications, in combination with corresponding physical development, are essential for an efficient and successful Rutgers. Technology is not only essential to the operation of the campus; it is also critical for the way in which Rutgers students organize their activities. Several points are worth noting:

TECHNOLOGY AND LEARNING – Technology could help bridge the distances and dispersed nature of activities at Rutgers. For example, technology could enable the University to broadcast lectures between “collaboration centers” on each campus—enabling faculty and students to “move ideas, not people.” Rutgers libraries and major classroom facilities could potentially be reimaged as collaboration centers

where ideas would be transferred between the districts in New Brunswick - Piscataway, as well as to Camden, Newark and beyond.

CLASSROOM UTILIZATION – In order to more efficiently utilize and schedule available instructional space, technology could be implemented with the intent of minimizing the total amount of space needed, and to better use existing space.

CLASS SCHEDULE AND TRAVEL – Technology could help students schedule their courses with an understanding of the associated travel required. Currently, students schedule their courses on the basis of the time offered, but not necessarily location. For many, the result can be a significant amount of travel time, given the dispersed nature of instructional facilities. The recommendation of the master plan is to develop scheduling software that will assist students in building their schedule while taking into account class time, location, and associated travel.

The inefficiencies in housing assignment and scheduling practices have a significant impact on travel demand and the student experience – an impact

unlikely to be solved by additional classroom capacity alone. To assess the full potential of revising current practices, it is recommended that Rutgers establish an internal task force to develop a software-based solution that would enable students to make more informed decisions about class schedules, housing decisions, and the need to travel between them. The task force would be charged with striking a balance between improved efficiency and pedagogical, policy and cultural changes, and exploring the costs and benefits associated with the different strategies. The cost of building additional housing, for example, might exceed the resulting reduction in travel demand.

As imagined, the software would coordinate the scheduling, housing, and bus systems on both sides – institutional and student user. On the institutional side, the scheduling software would also address opportunities for aligning course section locations and classroom assignments on the basis of where a majority of the enrolled students are located, in addition to other possible enhancements. On the user end, the software would guide housing choices based on anticipated class schedule, and provide scheduling options noting the associated number of bus trips per week.

Commercially available scheduling software packages include Schedule 25 and Ad Astra, with Schedule 25 being utilized by a majority of institutions in the Big Ten. As Rutgers considers potential software options, a sophisticated, robust software program may be beneficial. Schedule 25, Ad Astra and other software packages should be researched to determine if the programs are capable of accommodating the unique conditions at Rutgers. With respect to a software package that would allow students to make more informed decisions, one option is College Scheduler, which links to a university’s scheduling software, then provides students with a web-based interface to help them choose their classes and activities. Ohio State University, Pennsylvania State, and Wisconsin currently use College Scheduler. Regardless of which software package is chosen for this project, Rutgers Office of Information Technology should be involved early on to ensure seamless integration with other systems.

Based on the efficiency analysis, any software package utilized by Rutgers will need to coordinate the scheduling, housing, and bus systems, with the following capabilities:

- Link and coordinate student housing assignments

and course choices

- Take into account housing and classroom inventory
- Forecast and optimize travel associated with the class schedule, accommodating the complexity of travel times between locations
- Facilitate institutional course scheduling objectives and pedagogy
- Create an interface that shows students the amount of travel required as a result of their schedule and housing choices, thus allowing them to make informed decisions

Once the opportunities illustrated by the efficiency analysis are more fully understood and defined relative to the culture and policies of Rutgers, the task force could then consider issuing a Request For Proposal (RFP) for developing the type of software imagined. The scheduling software could offer innovative approaches to course delivery while simultaneously improving the student experience. The development of the software will be an iterative process, most likely requiring multiple rounds of fine-tuning to find the optimal balance between the involved systems. Actual travel reductions, while based on components

identified in the efficiency analysis, will be less than the illustrated inefficiencies. This reflects the fact that even well-coordinated systems cannot reach 100% efficiency.

Bus services will remain an essential and important aspect of the campus experience at Rutgers, given the distribution of activities and the distances between locations. While a software package will help coordinate the systems and reduce travel demand, bus services will always be required. In addition to reducing demand, the overall experience of using the system would benefit from physical improvements to several of the bus stops, as well as improvements to the pedestrian network connecting destinations on each campus. It may be helpful to consider providing wireless internet access on the bus system.

Coordinating the class schedule and housing assignments will positively impact the system, reducing its peak loads and improving the Rutgers bus experience. The full magnitude of this impact requires further study. Beyond managing travel demand, the transit experience should also be considered, from physical improvements to bus treatments and to individual bus stops, to better connectivity between

the bus, bicycle, and pedestrian networks. The cumulative impact of all of these changes will provide all students with an improved, more robust Rutgers experience.

HOUSING SELECTION – Similar to class schedule technology, software could be utilized to assist students in making housing choices that would take into account preferences including minimizing their need to travel between campuses. By giving students the knowledge necessary to make informed decisions, housing selection software could help ensure that they have the rich and rewarding Rutgers experience of their choice.



3.2 Campus Framework

Rutgers University–New Brunswick is comprised of four districts: College Avenue, Cook/Douglass, Busch and Livingston. Together they form an institution of unparalleled size, steeped in history and legacy, yet thriving with individual identities. The physical master plan for Rutgers University–New Brunswick responds to these unique characteristics by proposing strategies for improving connections between the districts, student centers, residence halls, dining, and recreation, in response to the above noted goals of the Strategic Plan.

The presence of the districts, combined with the natural setting of the Raritan River and its associated park system, create a unique sense of place in New Brunswick - Piscataway, supported by the ongoing planning and design initiatives of the local communities. Rutgers 2030 seeks to enhance the overall sense of place by providing a planning framework for the four districts relative to the functional role they each play in supporting the mission of the University, the open space structure of the Raritan River and local communities, and the connectivity within and between them.

The Rutgers University–New Brunswick districts are linked and coordinated in Rutgers 2030 by means a series of interrelated and coordinated framework plans including land use, open space and natural systems, and mobility frameworks. The framework plans provide guidance to New Brunswick - Piscataway on matters of density, development patterns, land uses and connections.

Rutgers 2030 takes a practical approach to linking the districts with transit serving as the primary means of connection between College Avenue and Cook/Douglass south of the river; Busch and Livingston north of the river. Pedestrian, bicycle and programmatic connectivity are promoted between College Avenue and Cook/Douglass via the New Brunswick's street grid, primarily along George and Neilson Streets. Similarly, stronger connections are proposed between Busch and Livingston such that they may be thought of as a co-joined, rather than as separate entities. This is achieved by means of a new bridge over Route 18, which will physically connect Busch and Livingston via an internal pedestrian, bicycle and vehicular route. Symbolically, the bridge will connect Rutgers Business

School at Livingston to Engineering, Pharmacy and RBHS at Busch. A proposed pedestrian and bicycle connection across the Raritan River will connect College Avenue to the municipal and county park system along the riverbanks, offering improved access to running paths, play fields, and other recreational facilities.

The master plan balances the administrative, academic, and operational strengths of “One Rutgers” with each district’s individual identity. College Avenue continues to serve as the overall hub for Rutgers–New Brunswick, in addition to its history as one of the original colonial colleges. Busch and Livingston have a shared vision as a center for the sciences, engineering, and business, with the research park and its potential partnerships and synergies, as well as with improved athletics facilities. Livingston’s vibrant student life amenities and Cook/Douglass’ academic activities are enhanced with better access to recreation and the natural environment.

AT LEFT: AERIAL VIEW OF THE CITY OF NEW BRUNSWICK, HIGHLAND PARK BOROUGH AND PISCATAWAY TOWNSHIP LOOKING NORTH. COOK/DOUGLASS IS AT BOTTOM AND CENTER. COLLEGE AVENUE, BUSCH, LIVINGSTON DISTRICTS ARE AT TOP.

1: A Strategic Plan for The New Rutgers, February 2014. Pg 33

The master plan will “construct a campus environment that supports student social needs and improves student satisfaction while encouraging academic growth and engagement.”¹ To that end, the following is a summary of key proposed enhancements:

CLASSROOM DISTRIBUTION + CAMPUS CONNECTIVITY – Unique to Rutgers University–New Brunswick is the high frequency of travel between the four districts for both academic and social reasons. Rutgers 2030 considers existing classroom inventory, course distribution, and teaching methods and proposes to match student course selection with housing selection, employing technology for broadcasting of classes, in order to reduce travel needs for academic purposes. Rutgers 2030 recommends a bus rapid system in downtown New Brunswick, express and local bus loops, and a comprehensive network of bicycle and pedestrian connections, with consideration for safety and accessibility. Transit hubs and enhanced bus tracking software help riders plan their travel and make the most out of their transit experience.

TRANSIT HUBS – Transit hubs are envisioned as the gateways into and out of each district. They offer the first impression for any arrival, a distinctive place that serves to orient visitors to their surroundings, and a place where classrooms and amenities are within a five minute walk. The hubs offer a consistent and recognizable identity for Rutgers across its four districts, and provide a place for students to meet or grab a snack while waiting for a bus in a protected environment. Rutgers buses will provide efficient and direct service between districts via a proposed express route that links the hubs.

CAMPUS CENTERS + AMENITIES – Rutgers 2030 includes recommendations for considering campus life in a comprehensive manner. Proposals include enhancement or expansion to existing student centers to provide a central location for much needed food service, event, meeting and programming space. Student centers are typically adjacent to the transit hub and often reflect the character and unique identity of each district.

HOUSING – Rutgers 2030 recognizes the need to continue to provide a robust residential experience for Rutgers students. Over the long-term, housing at

Rutgers will need to be transformed and redeveloped in response to changing student needs. The master plan identifies potential areas for redevelopment in order to locate housing nearer to transportation and amenities.

HEALTH, WELLNESS + RECREATION – Rutgers 2030 elevates health and wellness of the Rutgers community by improving access to underutilized resources like the Ecological Preserve on campus, and the Raritan River and adjacent county parks adjacent to campus. The natural resources available within and around the campus provide opportunities for integrating recreation and health centers, collaborating with Exercise Science and athletics, towards providing a well-rounded experience and enhancing the well-being of the Rutgers community.

ICONIC LANDSCAPES – Rutgers 2030 embraces the use of landscape design to define open spaces, establish a sense of place, and enhance wayfinding. The historic Voorhees Mall at College Avenue is complemented by landscape projects across campus. At Busch, the central mall is rejuvenated as a gathering space and visual landmark, tying into a

network of open spaces that provide a more inviting outdoor experience. Similarly, Cook-Douglass' existing Woodlawn and Passion Puddle landscapes are improved. At Livingston, walkways connect the academic quad west of the student center to the athletics complex and the Ecological Preserve.

PARTNERSHIPS – Rutgers 2030 capitalizes on existing and potential partnership opportunities for the University. The master plan proposes a research park between Busch and Livingston, aimed at partnerships with technology-intensive New Jersey businesses. A planned hotel and conference center will support athletics and the research park, in addition to executive education and academic conferences. Additional partnership opportunities are identified, including the Lot 8 Residential Building, the SAS Academic Building and Honors College projects at New Brunswick, and possible community partnerships at Livingston regarding the Ecological Preserve. Extending to and from the Ecological Preserve is a proposed pedestrian and bicycle bridge across the Raritan River, connecting Livingston with College Avenue. Proposed work at the Raritan River would involve stakeholders ranging from county and municipal partners to business partners and regional environmental organizations. Rutgers is

an institution with both regional and national impact, and the partnerships that the University's prominence can attract is supported by the physical master plan.

SUSTAINABILITY + STEWARDSHIP – Sustainability is central to the planning and design recommendations of Rutgers 2030, and is addressed at multiple scales. Regionally, the New Brunswick/Piscataway campuses all lie within the Raritan River Basin, and play an important role in the overall health of the river ecosystem. The master plan's land use and landscape strategies incorporate recommendations from the stormwater master plans developed for Busch, Livingston, and Cook/Douglass, in responding to the impact of proposed development. The master plan landscape framework also prioritizes stewardship of the University's forested and open areas, including the Ecological Preserve, Rutgers Gardens, and the agricultural research fields at Cook/Douglass.

Rutgers 2030 promotes the model of compact, walkable centers at each district, closely coordinated with the transit system and landscape strategy. Over the long term, the master plan proposes to rationalize land use, concentrating activity around transit hubs - the "town center", where key amenities are integrated

with transit, in close proximity to academic facilities and housing.

The University is also in the process of assessing its utilities distribution systems, extending its efforts from the solar farm and solar canopies completed in 2009 and 2012. Rutgers 2030 incorporates potential improvements, including new power plants at Busch and College Avenue.

PHASING + IMPLEMENTATION – Rutgers 2030 is an ambitious but achievable vision that will transform the University. The phasing and implementation strategy considers available funding sources, and aligns them with existing priorities through a phasing strategy that is responsible, immediate, equitable and effective. Rutgers 2030 outlines how projects can be prioritized in order to support a forward-looking vision that reflects the commitment of Rutgers University to be one of the nation's leading public institutions, preeminent in research, excellent in teaching, and committed to community.

3.2.1 SUSTAINABILITY FRAMEWORK

The concept of sustainability is central to the planning and design recommendations of Rutgers 2030. It is addressed at multiple scales in the master plan.

Rutgers 2030 acknowledges the important position that the New Brunswick campus occupies in the regional natural systems network of northern New Jersey. Rutgers University–New Brunswick is the steward of some of the most significant areas of forested and open agricultural lands in the heavily developed regional context of northern New Jersey. The master plan encourages the preservation and enhancement of these important remaining regional assets including: the Ecological Preserve at Livingston; the forested periphery of Busch; and the agricultural research fields and Rutgers Gardens at Cook/Douglass. These areas are protected by means of land use policy recommendations, specifically, growth boundaries which have been identified to contain future development and campus expansion in areas where infrastructure is in place, where land has been previously disturbed, and where pedestrian, bicycle and transit-oriented development can be facilitated.

The preservation of these lands is promoted in support of Rutgers' stewardship role and in support of the

educational, research and broader land grant mission of the University. This land is performing important ecological services in the region and serves as the habitat for wide range of wildlife. Rutgers also is the steward of public land that supports the agricultural and environmental mission of various colleges and departments. Preservation of the open farm land and gardens is promoted in support of the current mission of the University and in support of the mission that may be identified by future generations.

Rutgers 2030 acknowledges the important link between the space provided in campus facilities and the energy consumed whether these spaces are occupied or not. All space consumes energy at varying levels depending on the uses, the intensity of activity, the number of people involved, and the hours of operation. Rutgers 2030 recommends that the overall quantity of space be rationalized to serve the mission and take into consideration the energy profile of the space. Looking ahead, under-performing buildings should be upgraded or demolished. It is suggested that Rutgers develop targets for reducing energy use and emissions. As part of this accounting, future new buildings would need to be offset by reducing or eliminating consumption and emissions in existing

facilities. The aim is to cap and reduce the emissions associated with overall University activity.

Campus utilities and generation facilities are an important consideration in campus sustainability. Rutgers has already made significant progress with regard to renewable energy as is evidenced by the solar farms at Livingston. Key opportunities moving forward include the continued application of building integrated solar on both renovation and new construction projects as well opportunities for geothermal. The replacement of the energy plants at Busch and College Avenue, as proposed in the master plan, also represents an opportunity for significant reductions in energy use.

SUSTAINABILITY PLANNING

Few institutions have made as much impact on the science and practice of sustainability as Rutgers University. Programs like the Rutgers Energy Institute bring together schools, institutes, and research groups from across the university into multidisciplinary research teams engaging with schools like the Edward J. Bloustein School of Planning and Public Policy, which studies implementation of sustainable

strategies. Rutgers has also shown great initiative as with the multi-disciplinary and university funded Climate and Environmental Change Initiative which leveraged Rutgers' expertise in environmental research and education to investigate the effects of climate change both regionally and globally. Students also collaborate with partners outside of the university; the Rutgers Center for Green Building has worked with the New Jersey Meadowlands Commission to perform an environmental life cycle assessment of a LEED gold building.

Additionally, the EPA reported that from 2009-2014, University Facilities and Capital Planning at Rutgers reduced their operating costs by \$41 million and prevented 261,080 metric tons of CO² emissions through environmental initiatives.

Rutgers' tradition in sustainability excellence reveals the breadth of knowledge and expertise it has to draw from while pursuing a path of sustainable development. From the New Brunswick Campus's participation in the Sustainable Tracking, Assessment, & Rating System (STARS) program as a pilot institution, to exploring sustainable topics in both their master plan and University Strategic Plan, Rutgers has demonstrated

the value it places on sustainability. The master plan provides a framework for a University-wide and inclusive organizational structure, and builds upon the foundation that has been laid by recent efforts.

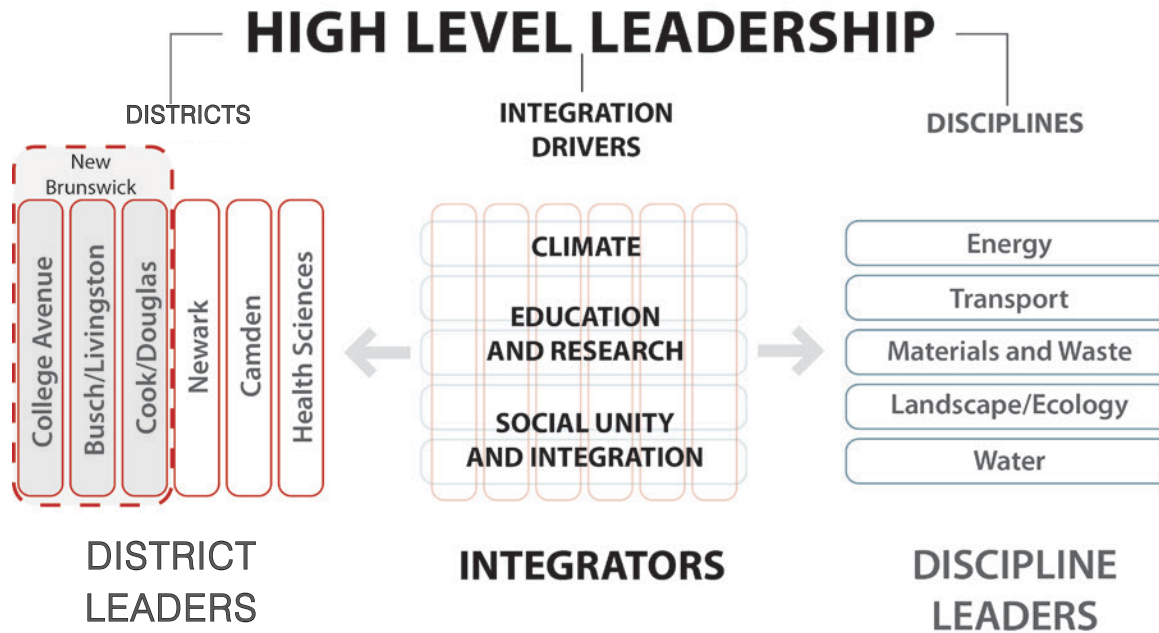
Past Initiatives - Efforts to foster a sustainable campus date back to 1980s. In the past ten years, key members of the University gathered together formally to align individual missions towards a common goal for a sustainable institution.

- **Committee for Sustainability, 2005:** The university established the Committee for Sustainability, comprised of faculty, staff, and students to engage the university community and advise senior administration on sustainability issues. A member of the President's Advisory Council on Health, Safety & Environmental Affairs, the committee was charged with:
 1. Recommending appropriate policies for sustainability;
 2. Assisting with identifying suitable projects for sustainable initiatives;
 3. Assisting with completing sustainability audits of the University;

4. Recommending appropriate goals; and
5. Assisting with preparing annual reports on achievements.

The committee published a report in 2007, highlighting University achievements and proposing a baseline for measuring the success of future efforts.

- **Sustainability Report, 2007:** Developed by the Committee for Sustainability as an annual report outlining University's achievements in sustainability. The document's purpose was to catalogue the University's performance and to make recommendations for new initiatives, activities, projects, courses, and research within the University.
- **Sustainability Plan, 2009:** Developed by Rutgers University Facilities and Capital Planning, the report inventories current sustainable practices and proposes phased goals and strategies for improvement.
- **University-wide Strategic Plan, 2014:** The University-wide Strategic Plan establishes a University-wide vision and includes a sustainable agenda as a strategic priority through the



District Leaders are geographically defined. These leaders are the primary contacts and assist with the implementation of sustainable policies within their unique environments.

Integrators are dedicated staff whose main objective is to facilitate connections between discipline leaders and campus leaders. Integrators facilitate collaboration and track the connections between faculty efforts. They are also stewards for the University’s carbon commitments.

Discipline Leaders are Heads of defined disciplines – Energy, Transport, Materials and Waste, Landscape/Ecology, and Water. These leaders are members of the faculty, staff and administration who promote efforts within their discipline and provide insight into sustainability opportunities.

PROPOSED ORGANIZATION STRUCTURE

enhancement of the physical campus and as a foundational element for an effective and efficient infrastructure and personnel management.

- **University Sustainability Committee, 2014:** Within 100 days of the release of the University-wide Strategic Plan, President Barchi issued a directive to establish the University Sustainability Committee, with a mission to organize and articulate sustainable practices and principles in education and research, and in University operations, with the goal of reducing Rutgers’ impact on the environment. The master plan team has worked with this committee as well as University Facilities and Capital Planning to develop the recommendations contained in this report.

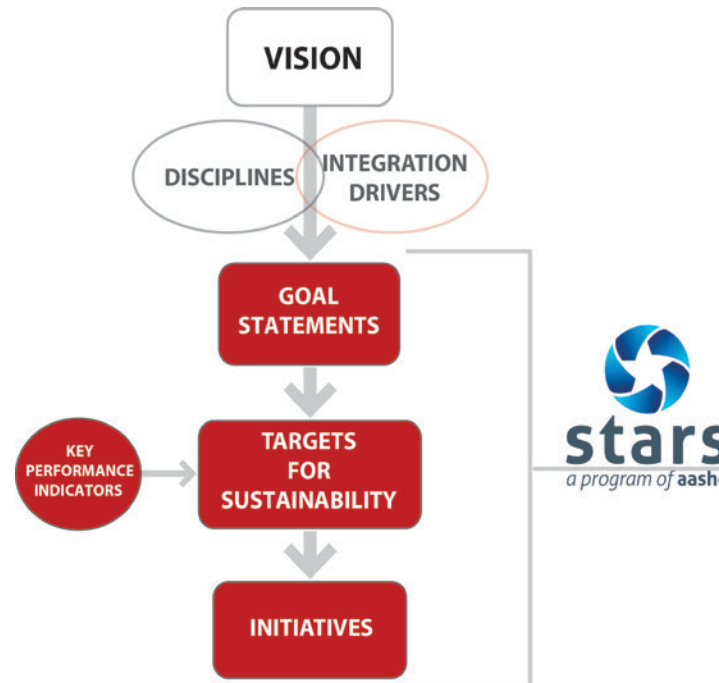
Looking Ahead - The master plan proposes to put in place four drivers that contribute to the success of initiatives stemming from the University Sustainability Committee.

- **High-Level Buy-in** : Commitment from the University leadership team in support of sustainable

initiatives;

- **Dedicated Staff** : Employ committed, qualified personnel who are wholly engaged in the process;
- **Organizational Structure** : A clear organizational structure for engagement is crucial to bringing together leaders from all campuses and divisions in order to align efforts towards University-wide goals;
- **Tracking and Communication of Success** - In order to achieve a lasting impact in its efforts, the master plan proposes an Implementation Framework to unify all goals under a single set of measures on which to gauge its success.

With these factors in place and under the leadership of the University Sustainability Committee, Rutgers is poised to establish a more sustainable campus and with measurable achievements.



Vision is the over-arching statement of aspiration. With the different missions of each campus a one size fits all approach is not effective. Having a guiding vision will allow each campus to adopt policies that work for them in spirit of the greater university vision.

Discipline Leaders, District Leaders, and Integration Drivers form the University Sustainability Committee.

Goal Statements are detailed descriptions of desired results

Key Performance Indicators are measurable values through which impacts on emissions can be assessed.

Targets for Sustainability are levels of performance to be achieved.

Initiatives are the programs, policies and actions proposed to meet the established targets.

PROPOSED IMPLEMENTATION FRAMEWORK

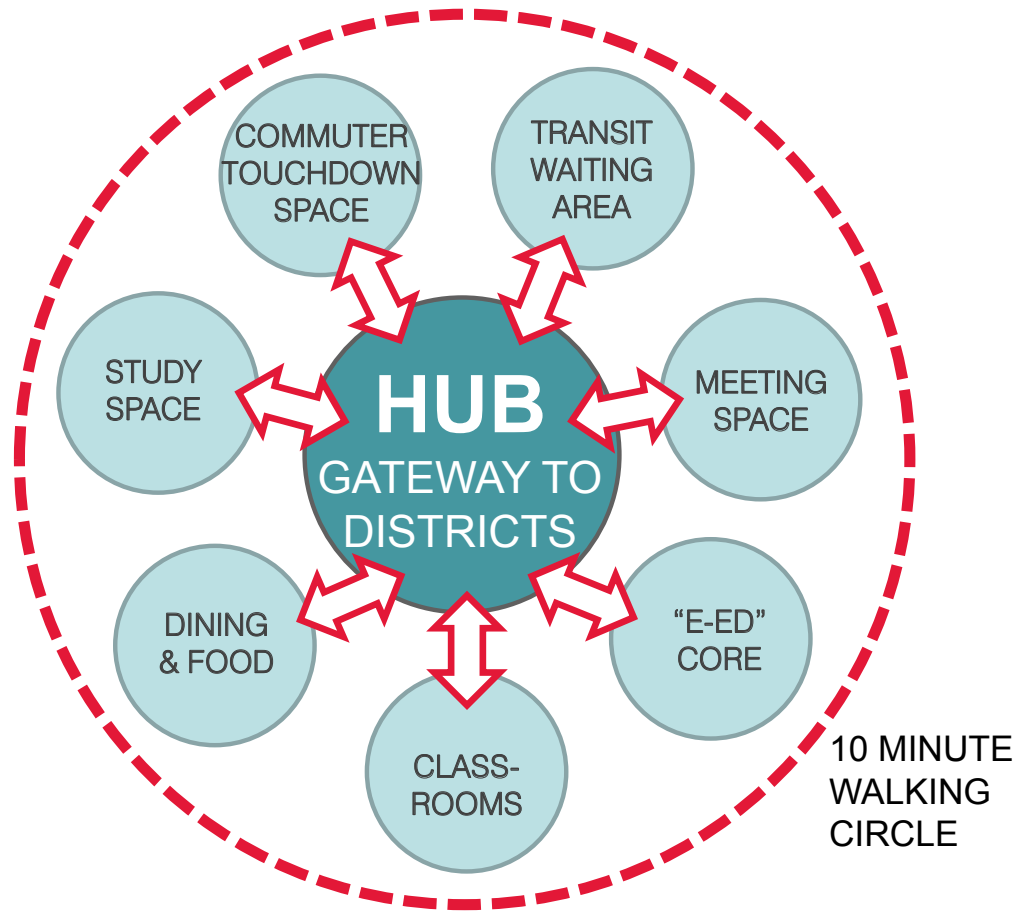


DIAGRAM OF ADJACENCIES AT PROPOSED HUBS

3.2.2 LAND USE

Extending over a four square mile area of New Brunswick and Piscataway, students at Rutgers University–New Brunswick are closely tied to a district rather than to the larger campus for most of their academic and recreational activities. Changes to the operational structure of the University in 2006 dispersed teaching, research and other activities across the campus. Today, the operational structure of Rutgers is not aligned with the physical development pattern of the campus. This has resulted in the need for a robust bus network to move students between districts. The associated travel impact on students is a noted issue and a key concern for the University.

While the proposed land use framework of Rutgers 2030 reinforces many existing patterns for some districts, a major transformation is proposed; the most significantly at Cook/Douglass and Busch. Each district is enhanced by opportunities for development in the areas of academics, research, campus life, active and passive recreation, and operations and support areas.

LAND USE GOALS

- Establish an identity and sense of place for each district;
- Support and enhance emerging district identities;
- Define a “center” for each district focused around the transit hubs; and
- Improve facilities to meet the needs of current and future Rutgers students.

TRANSIT GOALS

Rutgers 2030 puts forth an integrated land use and transportation strategy for reconciling the current misalignment between the operational model of the University, the physical distribution of activities, and the development pattern of the campuses. The strategy is twofold:

- **Express bus services** – direct and efficient express bus services are proposed to connect College Avenue, Busch, Cook/Douglass and Livingston which will operate as the portals into-and-out-of each district; and

- **Transit hubs** – The intent of each Hub is to create “town centers” in each district in close proximity to major classroom facilities, dining, libraries, and undergraduate housing as illustrated in the diagram below:



3.2.3 OPEN SPACE AND NATURAL SYSTEMS

Rutgers 2030 establishes an open space framework defined by a combination of natural, iconic, ceremonial, athletic and recreational spaces. The framework encompasses a wide range of natural and constructed open spaces across the campus: the Ecological Preserve at Livingston, Rutgers Golf Course at Busch, Voorhees Mall at College Avenue, Woodlawn at Douglass, Passion Puddle, agricultural fields and Rutgers Gardens at Cook. The open space and natural system framework at Rutgers University–New Brunswick is also considered in the context of the surrounding communities, the Raritan River basin, and the associated municipal and county parks system.

Rutgers 2030 provides guidance regarding the campus' natural environment and resources. The campus is located within an underlying, in many cases ignored, topography, with a network of stream corridors and riparian ecosystems. The Ecological Preserve at Livingston is considered as a natural feature at the center of the College Avenue, Busch and Livingston districts, linked to the riverine parks by means of new trails and amenities. A new pedestrian and bicycle bridge over the Raritan is proposed connecting College Avenue to Johnson Park and to

Livingston through trails at the Ecological Preserve. This link would create easy access to Johnson Park's running paths and playing fields for the College Avenue community, in addition to providing a recreational connection to the Ecological Preserve.

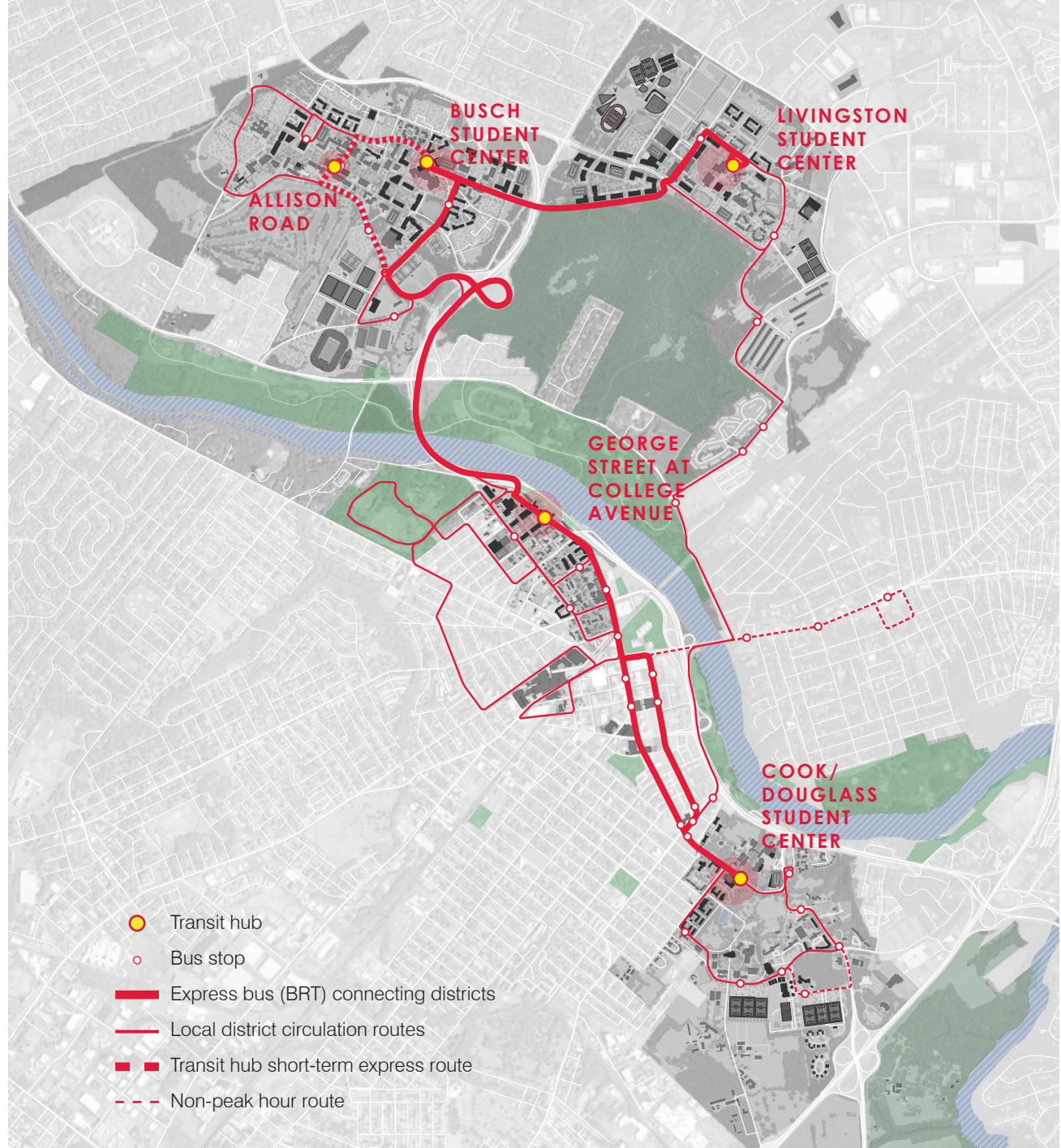
Extending from this new bridge is a boardwalk running along the Raritan River, connecting the Delaware and Raritan (D&R) canal and trail network at the north end of College Avenue to Boyd Park and the Rutgers Boathouse at Douglass. This boardwalk increases access to the river and connects two disconnected recreational areas within New Brunswick.

At the district level, the open space structure informs the placement of buildings while also establishing a hierarchy of open spaces, from large nature preserves to open spaces and quadrangles, plazas, and smaller scale courts. Rutgers 2030 provides recommendations for using landscape elements to establish a sense of place, and for improving the connections between each of the open space types and the broader campus context. The master plan addresses the differences between the open spaces.

Major pedestrian and bicycle connections are reinforced through the landscape, with hardscape, allées of trees, and adjacent open spaces. Strengthening of the visual qualities of central areas like the Busch Mall, and the Livingston Quad, in addition to providing better access to Passion Puddle and Woodlawn, enable users to orient themselves on campus and find their way to their destinations.

Rutgers' open spaces provide an important counterpoint to the campus' 20 million square feet of built space. The open space framework establishes an outdoor campus experience that complements the built environment to create an improved overall environment for the Rutgers community.

AT LEFT: RENDERING OF COLLEGE AVENUE PROPOSED QUADRANGLE WITH PEDESTRIAN AND BICYCLE BRIDGE OVER RARITAN RIVER.



PROPOSED BUS NETWORK

3.2.4 MOBILITY

The need for a robust mobility framework is evident in the geographic distance across campus, in addition to overcoming physical barriers like the Raritan River. Operational conflicts between the class schedule, the bus schedule, and housing assignments add complexity to the existing transportation network.

The Rutgers 2030 mobility framework provides a comprehensive and unified multi-modal system of pedestrian, bicycle, transit and vehicular connections within and between the New Brunswick districts and seeks to improve connectivity and supports all modes of transportation, according to the following goals:

MOBILITY GOALS

- Improve bicycle and pedestrian connectivity to ease congestion;
- Enhance the overall transit experience by improving transit stops, connections to amenities, and route infrastructure;
- Develop strategies for improving both residential and commuter access;
- Enhance the user experience on Rutgers buses

Improvements to transit networks proposed within

districts and between them, across several modes of transportation as described below:

RUTGERS BUS NETWORK - Direct, high-speed connections between districts are a central element of the mobility framework proposed in Rutgers 2030. Rutgers 2030 identifies two types of service for Rutgers buses: an express route between districts, and local routes within and between two districts. Both types of service utilize Route 18 and George Street as the major corridors, including potential bus rapid transit (BRT) lanes connecting College Avenue to Cook/Douglass.

NEW BRUNSWICK BUS RAPID TRANSIT (BRT)

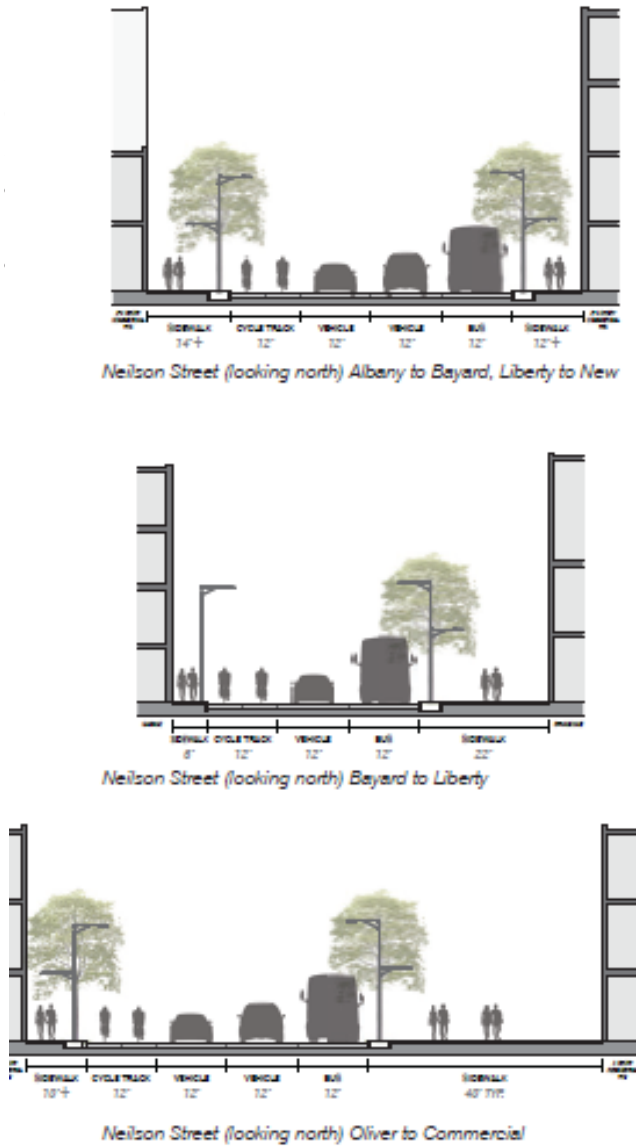
- Connections between Livingston and Busch, and between Busch and College Avenue generally experience limited congestion today. The connection between College Avenue and Cook/Douglass however, is much more problematic. Despite recent improvements to Route 18, traffic regularly backs up through New Brunswick, often as far as the Lincoln Highway (Route 27) and occasionally all the way to George Street near the John Lynch Memorial Bridge. This congestion not only slows traffic and increases the travel time between campuses, it makes the trip

very unreliable.

Previously, the City and NJDOT, in collaboration with other regional partners including Rutgers, examined the possibility of bus rapid transit (BRT) within the New Brunswick/Piscataway area. The most recent study, completed in 2008, recommended multiple corridors, including a route that would connect Busch, College Avenue and Cook/Douglass. The essential element was the creation of bus-only lanes through downtown New Brunswick to decrease bus travel time and increase reliability. Without a BRT lane, the bus system can perhaps be reconfigured to provide more direct connections, but there is no way to ensure reliably swift movement between Cook/Douglass and College Avenue.

Rutgers 2030 confirms that the route is still feasible within the existing right-of-way (see diagrams on the following page) and reflects the 2008 recommendation of a one-way pair with George Street southbound and Neilson northbound.

In addition to the BRT route, the 2008 study included bike accommodations – primarily in the form of a cycle track (a two-way bikeway separated from vehicular



BUS RAPID TRANSIT (BRT) STREET SECTIONS



BUS RAPID TRANSIT (BRT) THROUGH DOWNTOWN NEW BRUNSWICK

traffic) – to reflect the City's efforts to make Neilson Street a primary bike route through downtown New Brunswick. The master plan team confirmed that the BRT and bike lanes can both still be implemented with minimal shifts to curb lines. Any additional street width beyond the basic accommodation of one lane each for bus and vehicles and the bicycle accommodation on Neilson would be given to a combination of vehicle traffic and parking, depending on adjacent land uses and available right-of-way.

Rutgers 2030 also proposes a southbound bus-only lane from Bishop Place to the Northeast Corridor station at Somerset Street. This addresses the difficulty of southbound travel, particularly in the afternoon and evening. This requires relocating bicycle lanes to College Avenue at Somerset Street.

COMPLETE STREETS - Central to the support of pedestrian, bicycle, and transit on the campus, Rutgers 2030 establishes that the mobility of all modes of transportation is important and that all streets on the campus should be Complete Streets. Streets should accommodate all users, with some streets giving priority to vehicles while others to bicycles or mass transit. This approach seeks to broaden and

strengthen Rutgers' existing efforts to provide bicycle and pedestrian accommodations, ensuring that the network is complete and provides a high-quality experience for all users.

Where roads are owned by the University, in particular at Busch and Livingston, new roads should be constructed with bicycle and pedestrian accommodations. Existing roads should be reviewed to assess the feasibility for providing bicycle and pedestrian accommodations. In the long term, as roads are relocated or rebuilt, they should incorporate Complete Streets design principles.

While Rutgers does not have direct control of some roads through campus and roads off-campus, it is important to continue to work collaboratively with local jurisdictions to enhance bicycle and pedestrian accommodations. In some cases, it may be preferable to provide parallel facilities where modifications to existing roadways are too complicated or too costly.

BICYCLE NETWORK - Rutgers 2030 envisions a prominent role for bicycles in campus transportation. Bicycle use is growing nationally, particularly in urban areas, for many of the same reasons that it is well-

suited to Rutgers University–New Brunswick. There are many distances that are a long walk or may not be conveniently served by transit but can be rapidly traversed by bicycle.

The plan builds upon current efforts to increase awareness to bike riding, with bicycle safety orientation events and bike-sharing outreach programs. The plan includes improvements to both intra-district and inter-district bicycle networks. Busch is particularly well-suited to bicycle riding but has relatively low bicycle use today. Through improvements to bicycle parking and storage and better bicycle paths, increased use may be expected.

While inter-district distances are longer, in good weather a bicycle trip may be as fast and pleasant as a car or bus. The plan suggests that Rutgers works closely with its adjoining government partners to improve the bicycle network to aid both resident and commuter travel. The City of New Brunswick has taken a first step this summer with the construction of bicycle lanes between Cook/Douglass and College Avenue; future connections include enhancements to Route 18 and Route 27 bridges, and the proposed pedestrian and bicycle bridge over the Raritan.



Rutgers 2030 envisions three elements of improvements to bicycling on and around the campus:

- **Eliminate existing gaps and barriers within the bicycle network.** This includes the gap along College Avenue between the new bicycle lanes and the Route 18 bridge as well as the lack of a quality connection between Neilson Street to new bicycle lanes and the path adjacent to River Road in Highland Park, just east of the Raritan. The proposed plan calls for bike lanes to be completed on Bartholomew Road, between Bevier Road and Brett Road on the Busch campus, as part of an implementation of complete streets.
- **Install amenities to enhance the bicycling experience** and construct new facilities where appropriate. This includes expanded bicycle parking and storage as well as new bike lanes and paths, such as the new crossing of the Raritan and bike lanes on College Avenue.
- **Preserve and enhance existing facilities.** While much of the attention will be on improvements and enhancements to the quality of facilities, it is essential that what already exists be well-

maintained and, where appropriate, improved to reflect new standards and accommodate increasing use.

By improving the bicycle facilities within and to Rutgers University, Rutgers 2030 increases the options for travel within and to the campus. Many cities and some universities have implemented bike share programs. Rutgers should consider whether such a program is suitable at New Brunswick.

PEDESTRIAN NETWORK - While the existing pedestrian network is robust, the walking experience can be much improved. Walking distances may be long, way-finding unclear, quality landscaping lacking, and in some cases no walkway exists at all. Through careful changes to the campus structure, coupled with thoughtful landscape overlay and renewal, the plan aims to rationalize the pedestrian network greatly improve the pedestrian experience.

In addition to improving the overall wayfinding and quality of the experience, the plan will establish a hierarchy of paths within each district. This will ensure that the width and materials are suitable to its usage.

Such enhancements will also improve accessibility of the campus by removing barriers or improving site grades where appropriate.

Rutgers2030prioritizesimprovements to key pedestrian facilities on each district through the remaking of public spaces and landscape enhancements. Existing paths and walks are upgraded, and ongoing maintenance and enhancement is planned for secondary and tertiary paths.

PARKING - The parking system at Rutgers is complex. Land constraints have led to differing levels of supply on each campus. Housing inventory differs between districts leading to different levels of demand. As might be expected, there are a wide range of events associated with a large, prominent public research university. Athletic events, whose attendance is anticipated to increase with Rutgers' joining of the Big Ten, can place tremendous strain on parking and transportation.

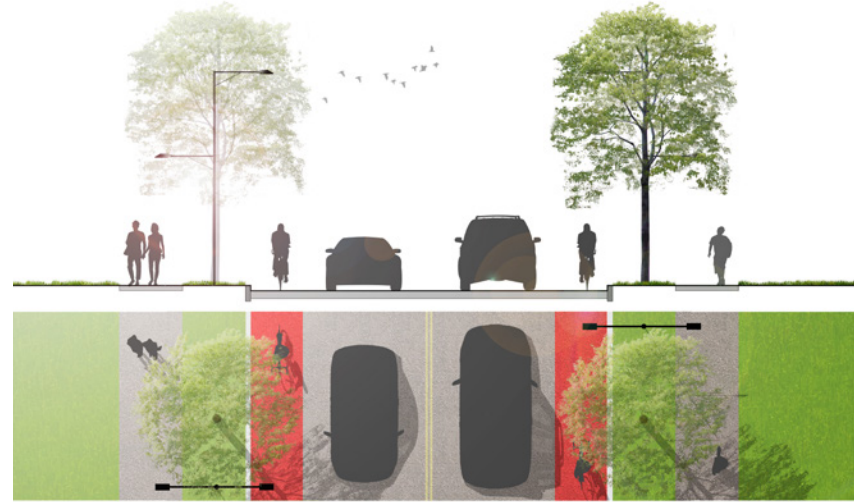
While the initial reaction to parking pressures is to desire additional parking, Rutgers, like many universities, recognizes the financial and land constraints of such

AT LEFT: RENDERING OF GREENING OF COLLEGE AVENUE, WITH COLLEGE AVENUE GYMNASIUM
AT LEFT AND PROPOSED QUADRANGLE AT RIGHT

Shared use: *Vehicles and bicycles share the road*



Typical bicycle lane: *Bicycle lane is adjacent to vehicular traffic*



Separated bicycle lane at hub: *Bicycle lane is separated from vehicular traffic*



Separated bicycle lane: *Bicycle lane is separated from vehicular traffic*



Street Sections: A central element of the bicycle network is the establishment of uniform street sections for the campus. These sections create Complete Streets, accommodating cars, bicycles, pedestrians, and buses.

a response. Ultimately, parking supply will be a major factor limiting reliance on automobile travel at Rutgers.

The implementation of Rutgers 2030 will displace and replace many existing parking spaces with new and expanded facilities. Replacement parking is clustered close to vehicular approaches to campus but within a five minute walk to hubs. Where availability of land is limited, new parking structures are proposed as the most efficient way to fulfill parking needs.

Rutgers' current parking fee structure (both for students and for employees) does not appear to generate sufficient revenues to support construction of new parking; significant fee increases would be required. Such increases, combined with continuing escalation in the overall cost of owning and operating a car, begin to reduce the viability of the automobile as a mode of transportation. This substantially increases the cost of attendance for students dependent on an automobile. Employees can be similarly affected by the increased costs to commute by car.

As with other elements of Rutgers 2030, the plan aims to improve the parking experience for Rutgers students, employees, and visitors. Commuter parking

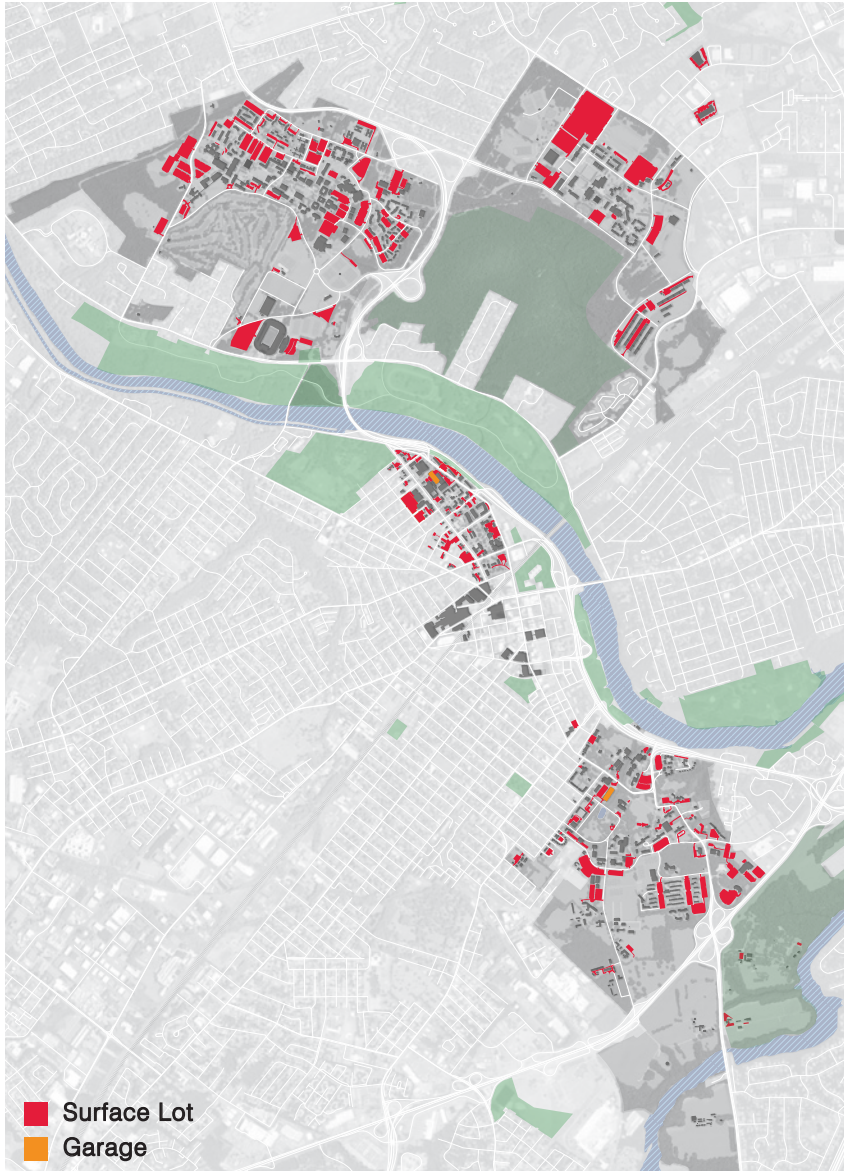
for students has often been inconvenient and the time between vehicle and class frequently noted as an issue. The master plan aims to relocate commuter lots closer to the core of each district, in some cases setting aside space specifically for commuters. Some of these spaces may be designated as hourly spaces for visitor parking.

As the building inventory changes under the master plan, many centrally-located surface parking lots will be replaced with buildings. Generally there are three options for addressing such losses: replace spaces in a parking structure nearby, replace in a remote surface lot, or forgo replacing the space completely. The current demand and projected growth in activity on campus indicates that every space lost should be replaced, even if at a future time Rutgers decides not to replace it.

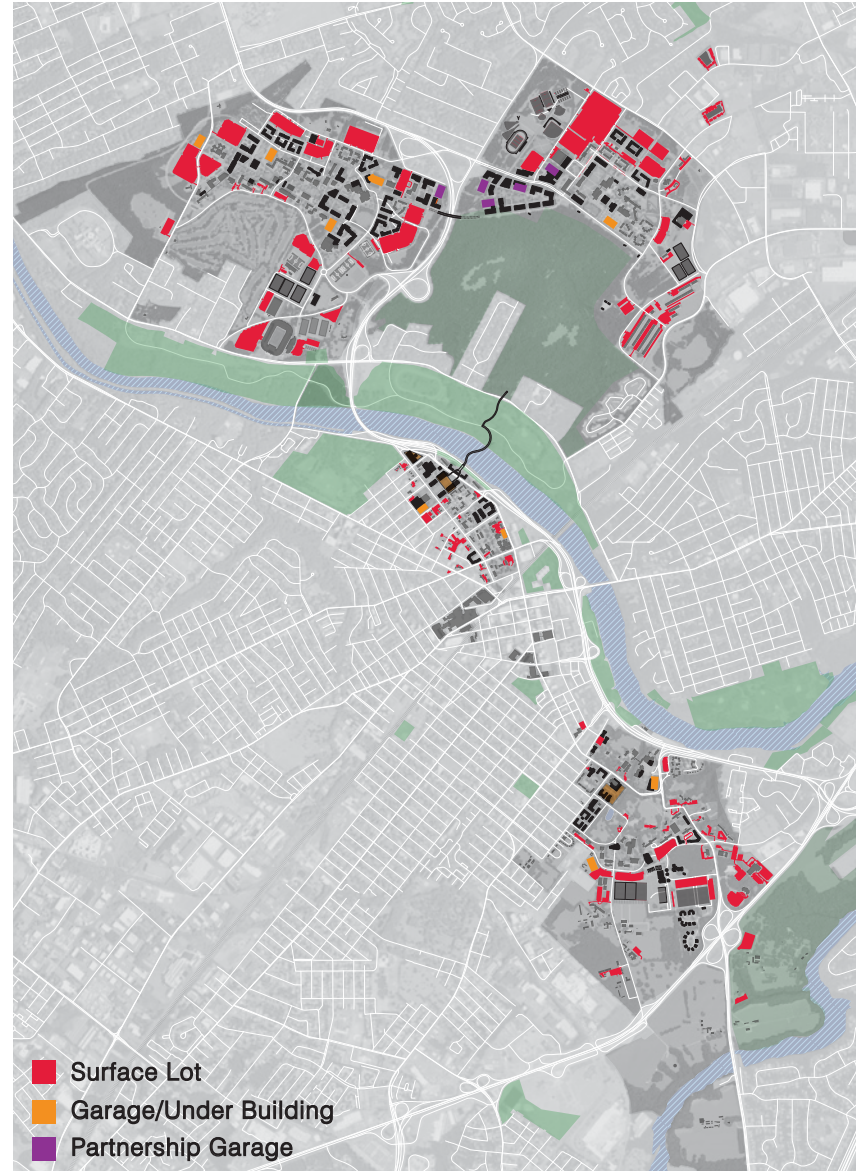
Overall, there are 20,500 spaces on campus today. Rutgers 2030 phases in replacement parking to ensure adequate supply with the goal of providing replacement parking in advance of taking parking offline.

The Rutgers 2013 plan embraces a set of integrated, incremental strategies to address parking needs. At the core of these strategies are several fundamental principles:

- Park once - Once a commuter has arrived on campus and parked, there should not be a need to use his or her car to drive to another Rutgers destination. Such trips should be made on foot, by bicycle, and/or a combination of transit connections. While anyone should be able to obtain an appropriately-priced parking permit if desired, there is no guarantee of parking at multiple locations.
- Provide choices - In addition to having a range of efficient transportation options, travelers should have access to reliable information about travel conditions and costs, to help them make rational decisions. These choices should extend to parking, allowing consumers to weigh convenience for price, if desired. A broader range of permit options, including pay-as-you-go and variably-priced metered parking, can make more efficient use of available parking supplies, reduce user costs, and promote the use of alternative modes for some trips. Lost revenues can be at least



EXISTING PARKING



PROPOSED PARKING

partially offset by higher premium parking fees and reduced infrastructure needs.

- Optimize resources - Before committing to long-term infrastructure investments, less costly and disruptive measures to manage demand and maximize use of existing capacity should be pursued. Such measures often involve frequent monitoring of real-time data.

Recognizing that not all commuters place the same value on a given parking space, and that demand (and therefore value) varies both by location and time-of-day, a range of parking choices is proposed. To ensure that cost is not an undue burden, inexpensive surface parking is provided at outlying locations. Enhanced bus, pedestrian, and bicycle connections provide safe and convenient access. By intercepting traffic before it enters the campus core, these lots also reduce traffic congestion and pedestrian conflicts, requiring less extensive roadway infrastructure, and allowing land in core areas to be devoted to more essential uses.

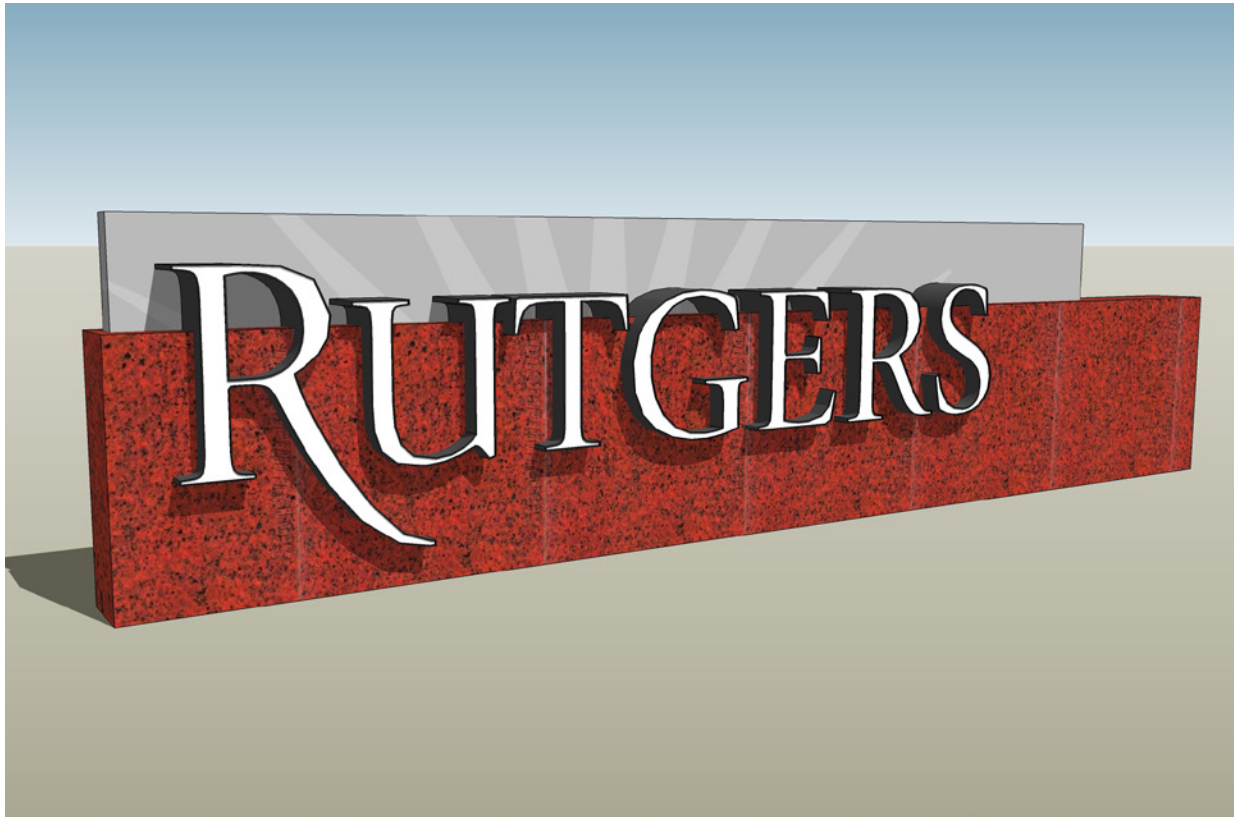
Remote lots are desirable for parking by residential students. Residents' cars remain parked for longer periods than do commuters', resulting in a lower turnover rate. In other words, a typical commuter

parking space can serve more users than a comparable residential space. More convenient parking is available to those who desire it, but at a higher price, reflecting the greater costs associated with building and maintaining attractive, functional decks on valuable land near the campus cores. Careful placement and design of these decks is needed to provide good pedestrian and vehicular access while minimizing traffic conflicts and visual impacts.

Many existing parking lots represent an older construction style. Surface lots have little shade and many do contribute to stormwater runoff beyond current standards. Most Rutgers parking structures too, do not meet current standards for quality. Rutgers 2030 envisions more pleasant parking facilities, to include shade and vegetation in lots, improved lighting, all in proximity to amenities.

As new facilities generate additional trips, thorough and committed planning will be needed to account for changes in inventory to ensure that reasonable access to all parts of the campus is maintained throughout all interim stages of implementation. To accomplish this, Rutgers 2030 recommends that each new facility planned give consideration to transportation and

parking at the earliest planning stages. This includes accounting for the cost of replacing displaced parking, as well as satisfying any increased travel demand generated by the new construction. Transportation-related impacts, whether to traffic, parking, bus service, or pedestrian and bicycle activity, should be identified and addressed in the planning of any project, and factored into both initial and ongoing costs. New capital projects must either cause no net loss of parking supply, or demonstrate reasonable alternatives to replace parking. However, since transportation is a complex, ongoing activity dependent on interactions beyond the influence of a single facility, a holistic approach is ultimately more effective, leading some universities to assess "impact fees" in support of more systemic programs and infrastructure improvements. Fully capturing the true costs of transportation and land use decisions can have significant effects on consumer behaviors, shifting the relative attractiveness of alternate travel modes, times, and destinations. It can also lead to more rational and cost-effective institutional investments, as well as environmental benefits. In any case, a dynamic transportation plan is needed to provide the flexible framework needed to manage this anticipated change and inherent uncertainty.



HORIZONTAL GATEWAY ELEMENT

Design concepts and rendering by ex;it.



VERTICAL GATEWAY ELEMENT

Design concepts and rendering by ex;it.

3.2.5 GATEWAYS AND SIGNAGE

Concurrent with the development of Rutgers 2030, Rutgers University collaborated with ex;it to develop a vision for signage, brand development for the University, and wayfinding master plan strategies that maximize opportunities across all campuses, resulting in a visitor-focused vision for the future of campus navigation. Rutgers, with its multiple campuses, diversity of place, and the creation of Rutgers Biomedical and Health Sciences (RBHS) division, necessitates a cohesive vision for the entire University, to unify and make consistent the various signs, gateways, emblems and logos that have come to represent Rutgers and its 250 years of history. Specific to the Rutgers 2030 physical master plan, gateway elements and signage both internal and external to campus grounds, are important considerations that complement the physical development and key initiatives proposed in the plan.

GATEWAYS

Gateways provide a unique opportunity to welcome visitors to the campus and create a symbolic ceremonial arrival as visitors transition from highway ramps, vehicular entrances and parking to an on-

campus pedestrian journey. Gateways visually connect and differentiate the different districts within the New Brunswick campus, relate campus to campus within the University organization, link primary and secondary entrances and enhance physical surroundings. In addition, gateways add to a sense of place and to the unique urban design character of the campus. All of the campuses of Rutgers University have multiple arrival points along the campus boundaries and gateway elements work to define the campus edge from the surrounding neighborhoods.

In addition to defining the campus edge, gateways mark the core of the district and campus, reinforcing it as the heart of the University. This provides an opportunity for a signature branded moment on each campus with focus towards the pedestrian experience. These gateway elements can be visual anchors or portals to gathering spaces and provide continuity in identification across Rutgers campuses.

VISION

All of the Rutgers campuses are diverse and eclectic in character so a flexible, modular concept, coupled

with architectural and/or landscape solution will be necessary. The best approach for many universities is to allow the unique urban character and context of each campus drive the design solution that respects the established Rutgers brand. Signage should complement and not compete with the holistic gateway design.

The design of gateway elements is intended to be a celebration of the Rutgers brand, and unique to the University. The design is bold in message and understated in form, creating a timeless design that works with the campus environment now and as it continues to develop. The gateway system is designed as a family of elements that include both vertical and horizontal configurations. Each configuration is scalable allowing for flexibility to work at the varying conditions across multiple locations. The design incorporates red granite with illuminated white lettering, recessed shield on a pre-cast panel with a tone-on-tone burst on a painted aluminum panel.

Horizontal elements are designed around the Rutgers logotype. The dimensional typography is designed to mount to an existing vertical element that is part

of the campus landscape, for example, as depicted at the George Street and Bishop Place entrance, or to stand on its own when an architectural feature is not present. The horizontal configuration is proposed for use at campus edges, where space allows. Used on its own, the horizontal configuration includes the Rutgers logotype and incorporates the burst extracted from the University seal in the backdrop.

Vertical elements are designed as the signature moment at the heart of the campus and the primary pedestrian gateway. This configuration includes the Rutgers logotype, the burst (extracted from the University seal) and the newly designed University shield. The vertical element consists of three forms, each representing the three campuses – Rutgers University–New Brunswick, Rutgers University–Newark and Rutgers University–Camden – and housing the brand elements.

DETERMINING PRIMARY ENTRANCES

A gateway serves as the first moment of the Rutgers brand experience in its physical environment. As the visitor anticipates their arrival, they look for the visual

“aha” moment to confirm that they have arrived. At Rutgers University–New Brunswick, Route 18 is the connecting spine of all four districts: Busch, Livingston, College Avenue, Cook/Douglass. These arrival ramps should be considered as primary gateway entrances.

The Rutgers brand can extend to the major arterial roads and highway ramps. As visitors approach campus, beautifully landscaped entrances punctuated by signage will create recognizable signals that welcomes one to the “Front Door” of the campus. All these locations offer opportunities to connect the University to the public transportation system as users arrive to the campus from train stations and begin their journey at Rutgers.

AT THE HEART OF EACH CAMPUS

The signature arrival element is located within the heart of each campus. This arrival moment radiates out and connects to each of the perimeter arrival moments along the line of a ray that emanates from the center of the burst. The strategic placement and prominence of these elements invites community gathering spaces. Therefore, there is a physical connection between

places— the tradition and history of the past and the vision and innovation for the future. These locations need to be carefully selected coordinated with the campus landscape and campus plan.

To date, ex;it has developed a comprehensive wayfinding master plan and University-wide signage standards for exterior and interior signage. Rutgers is currently working to implement these standards throughout new buildings and existing construction across all campuses. The RBHS division has been the first to receive the proposed exterior signage as part of the integration of UMDNJ with Rutgers. A phased implementation plan has been developed to allow for exterior campus signage to be replaced as the campus is developed and funding is made available. While a design direction has been approved and preliminary locations for gateway signage identified, final confirmation of signage placement will be coordinated with campus development in order to fully support the vision for each campus. As the signage program is implemented, it will enhance the user experience by creating a clear, strong first impression, and facilitate navigation of the campus, and visually relate all of Rutgers under one cohesive and recognizable identity.

THE RUTGERS SHIELD

The Rutgers shield is a fundamental expression of the university's identity. Introduced in celebration of Rutgers' 250th anniversary in 2016, the new shield—a simplified interpretation of its 1966 Rutgers bicentennial predecessor—honors the university's roots and affirms its values, while providing greater flexibility when used as 21st-century iconography in pageantry, publishing, and promotion.

SYMBOLISM IN THE RUTGERS SHIELD

The shield's elements convey where Rutgers University has been and who it is now. The shield is divided into thirds, representing Rutgers' deep connections to New Jersey's three regions—north, central, and south—and denoting the university's tripartite mission—teaching, research, and service.

Five symbolic elements both acknowledge Rutgers' past and signify that as it evolves, it will uphold core values that have been integral to its identity from the university's earliest days.

The sunburst conveys illumination—light as metaphor for knowledge—and it is the motif of Rutgers' seal and

the heart of its motto, "Sun of righteousness, shine upon the West also." Rutgers University's centuries-old seal and motto are both variants on those of Utrecht University, the Netherlands; its motto reads, "Sun of righteousness, enlighten us." Rutgers' 18th-century founders took inspiration and support from the Old World as they provided for "the education of youth ... in the liberal and useful arts and sciences" in the New World: America.

The crown represents the university's founding in 1766 as Queen's College, named in honor of Queen Charlotte, wife of Great Britain's King George III who reigned over the American colonies when its charter was signed. Queen Charlotte is an apt early namesake: current scholarship finds she cared deeply for education, and, against convention, ensured that her six daughters were educated as well as her nine sons. Inclusion and equality are Rutgers hallmarks.

Rutgers was founded in 1766 and the date confirms its standing as one of America's nine original colonial colleges. A decade later, as the American Revolution erupted, the college gave itself over to the cause of freedom, as all "who were able to bear arms immediately marched to oppose the enemy." Rutgers people today continue to passionately champion just causes.

The three stars represent the State of New Jersey, the third state to ratify the U.S. Constitution. Rutgers is devoted to serving its home state as New Jersey's land-grant school and is proud to be The State University of New Jersey.

The book is a timeless symbol of Rutgers University's enduring commitment to teaching, learning, academic inquiry, and scholarship. Across generations and disciplines, at its core, Rutgers University creates, shares, and applies knowledge for the enrichment of individuals and the betterment of the broader society.



THE FINAL RUTGERS SHIELD



PROPOSED GATEWAY AND SIGNAGE AT GEORGE STREET AND BISHOP PLACE.

Design concepts and rendering by ex;it.

SASAKI | RAMSA | VHB

