RUTGERS UNIVERSITY

TRANSPORTATION MASTER PLAN

JULY 19, 2017

Executive Summary

On June 18, 2015 Rutgers University's Board of Governors approved a new physical master plan, entitled *Rutgers 2030*. *Rutgers 2030* is the first comprehensive master plan to incorporate the Rutgers Biomedical and Health Sciences (RBHS) and was the first comprehensive physical master plan in over a decade for the University. *Rutgers 2030* complements the Rutgers University Strategic Plan, and the chancellor-led strategic plans for Rutgers University–Camden, Rutgers University–Newark, Rutgers University–New Brunswick, and Rutgers Biomedical and Health Sciences.

Rutgers 2030 envisions development at Rutgers University over a 15 year time frame, 2015–2030, identifies additional development opportunities beyond 2030, and is comprehensive in its scope; taking into account buildings, the natural and constructed landscape, and infrastructure. *Rutgers 2030* provides a vision and road map to enhancements that will drive the success of the University into the coming decades.

The vision and road map established by *Rutgers 2030*, with the proposed development, redevelopment and relocations on the campuses have a direct correlation with transportation access, mobility and other transportation related elements such as the university transit service, use of alternate modes of travel, parking demand, among other elements. Integral to the growth envisioned in *Rutgers 2030* is how to move people within and among the campuses. Access to, and circulation among and within the campuses is a vital component of the campus experience for students, faculty, staff, and visitors alike. For New Brunswick, the overall size of the campus, spread out locations of various districts, traffic congestion hot spot locations impacting access to and between these districts and geographical features such as the Raritan River, which separates the campus districts are some of the key challenges. For Newark, the congested downtown environment as well as the physical seperation between the Rutgers- and RBHS-Newark are the key challenges. As such, while transportation and mobility are not a "core deliverable" of the University, they are crucial to meeting academic and research goals.

There are many transportation related challenges resulting from distances and connectivity between various campus districts, and these challenges are compounded by regional traffic congestion issues experienced during the peak periods, creating transit service reliability issues and deteriorating user experience. The Rutgers University Transportation Master Plan (RUTMP) focuses on establishing a framework to achieve a holistic resolution of these challenges. It also focuses on advancing various transportation related objectives identified by *Rutgers 2030*, such as transit hubs and place-making initiatives focused on enhancing student experience such as the Raritan River Multimodal Bridge and Raritan Riverwalk; and by developing conceptual recommendations based on preliminary assessment of various elements (structural and geometric requirements, access considerations, visual /aesthetic effects, and environmental regulatory requirements).

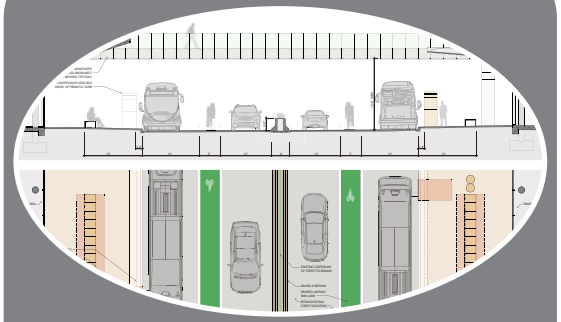
The overarching goal of this Rutgers University Transportation Master Plan is to set forth a plan to create a transportation environment that enhances mobility alternatives— transit, bicycling, and walking as well as addressing parking — for students, faculty, staff and visitors.

The transportation planning process examined, in detail, the goals, recommendations, and projects specified in *Rutgers 2030* and generated this Transportation Master Plan that assesses existing performance of various transportation elements, estimates the extent of proposed growth and change, identifies the current as well as long-term transportation needs on the Newark and New Brunswick campuses and develops conceptual recommendations to address these needs. The Transportation Master Plan team carefully structured a data-driven analysis and stakeholder outreach based approach as shown in the figure on the following page.

Transportation Master Plan Approach

Review *Rutgers 2030* Plan Assemble and Assess Transportation Data

Estimate Proposed Growth by Location and Type and Determine Transportation Implications



Develop and Refine Transportation and Infrastructure Requirements to Advance Rutgers 2030 Plan Vision

Assemble and Review Data

- Transit
- Bicycle and Pedestrian
- Parking

Understand Growth and Change

- Number of Classroom Seats
- Number of Housing Units/Beds
- Parking Spaces

Recommend Conceptual Transportation/Infrastructure Improvements

- Transit
- Bicycle and Pedestrian
- Parking

Recommendations were centered around the following themes:

- Transforming the student experience
- Improving campus connectivity
- Accommodating all travelers
- Navigating Rutgers efficiently

The recommendations are organized by campus and by travel mode: transit; automobiles and parking; and bicycle and pedestrian improvements. See Section 3 of this report for further details on the Transportation Master Plan approach, themes and stakeholder engagement efforts.

It should be noted that the conceptual recommendations contained in this plan are at the master planning level. Further in-depth analysis, review, and design of these recommendations are essential as each of these recommended projects moves through the project development pipeline toward implementation.

The Transportation Master Plan is organized by individual districts on the New Brunswick Campus including the RBHS-Downtown New Brunswick and RBHS-Piscataway Districts as well as the Rutgers University-Newark and RBHS-Newark Campuses.

The Transportation Master Plan components include:

Transit Operations and Infrastructure

Existing Transit Operations: assessed existing transit operations based on field observations as well as data analysis using bus boarding video counts; observed actual bus arrival times at key transit stops; identified user wait times; and analyzed NextBus data to understand transit travel times along various routes accompanied by actual travel time runs to determine congestion hotspots and their impacts on transit operations.

Existing Transit Ridership: estimated daily transit ridership between campus district pairs based on class schedules and registration data as well as review of actual transit boardings.

Future Transit Ridership Projections: estimated based on a quantification of the growth and change anticipated by *Rutgers 2030* on various districts and campuses coupled with transit ridership impact assessment of various policy applications such as Course Schedule Planner (CSP) and other technological investments (like synchronous classrooms).

Advancement of *Rutgers 2030* Transit Infrastructure Vision: assessed geometric, functional and access requirements to develop concept plans and cross-sections for the proposed transit hubs in *Rutgers 2030*.

Determination of Transit Infrastructure Improvement Needs: identified conceptual bus-only infrastructure needs based on an assessment of reliability issues plaguing existing transit operations caused by external factors, such as traffic congestion, that lead to other issues such as overcrowding on buses.

Development Transit Service Improvement Concepts: determined transit service modifications that can improve transit reliability and reduce transit travel time considering the anticipated growth and change proposed by *Rutgers 2030* and proposed bus-only infrastructure improvements.

Identification of Coordination Requirements: identified stakeholders and regulatory agency coordination to advance improvement concepts.

Bicycle Pedestrian Infrastructure and Street Treatments

Existing Bicycle and Pedestrian Facilities: identified existing facilities such as bicycle lanes, bicycle parking and repair locations, sidewalks and shared use paths etc.

Gaps in Bicycle and Pedestrian Networks: determined gaps in bicycle and pedestrian networks that may impact the extent of activity by these modes under existing conditions.

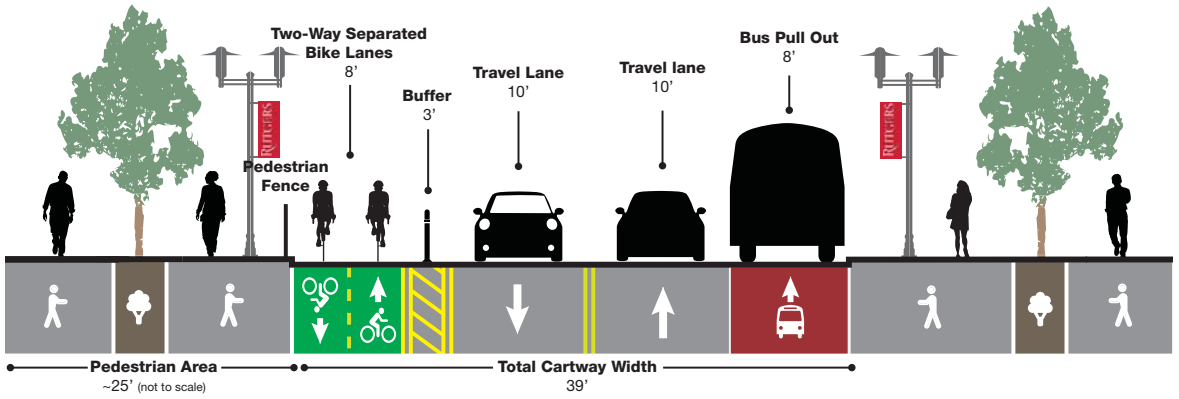
Existing Bicycle and Pedestrian Activity: observed existing activity levels during the peak afternoon period on weekdays along with bicycle and pedestrian counts at several key intersections.

Development of Street Treatments: developed consistent street treatments across the campuses based on identification of available roadway widths promoting safe accommodation of multiple modes of travel.

Advancement of *Rutgers 2030* Bicycle and Pedestrian Infrastructure Vision: assessed structural, geometric, functional, access and environmental regulatory requirements to develop concept plans and cross-sections for the new Raritan River Multimodal Bridge and Raritan Riverwalk proposed in *Rutgers 2030*.

Bicycle and Pedestrian Improvement Concepts: determined location-specific improvement concepts to promote vibrant bicycle and pedestrian activity as envisioned by *Rutgers 2030*.

Identification of Coordination Requirements: identified stakeholders and regulatory agencies to advance improvement concepts.



Autos and Parking

Intersection Traffic Counts: determined traffic volumes at key intersections during weekday AM and PM peak periods that can be further used to advance roadway improvement concepts into project development and design.

Existing Parking Utilization: identified the number of parking spaces by district and campus and assessed existing parking utilization based on weekday afternoon peak period parking utilization surveys.

***Rutgers 2030* Impacts on Parking:** determined impacts on existing parking due to the proposed development in *Rutgers 2030* by quantifying number of parking spaces that will either be relocated or will be lost.

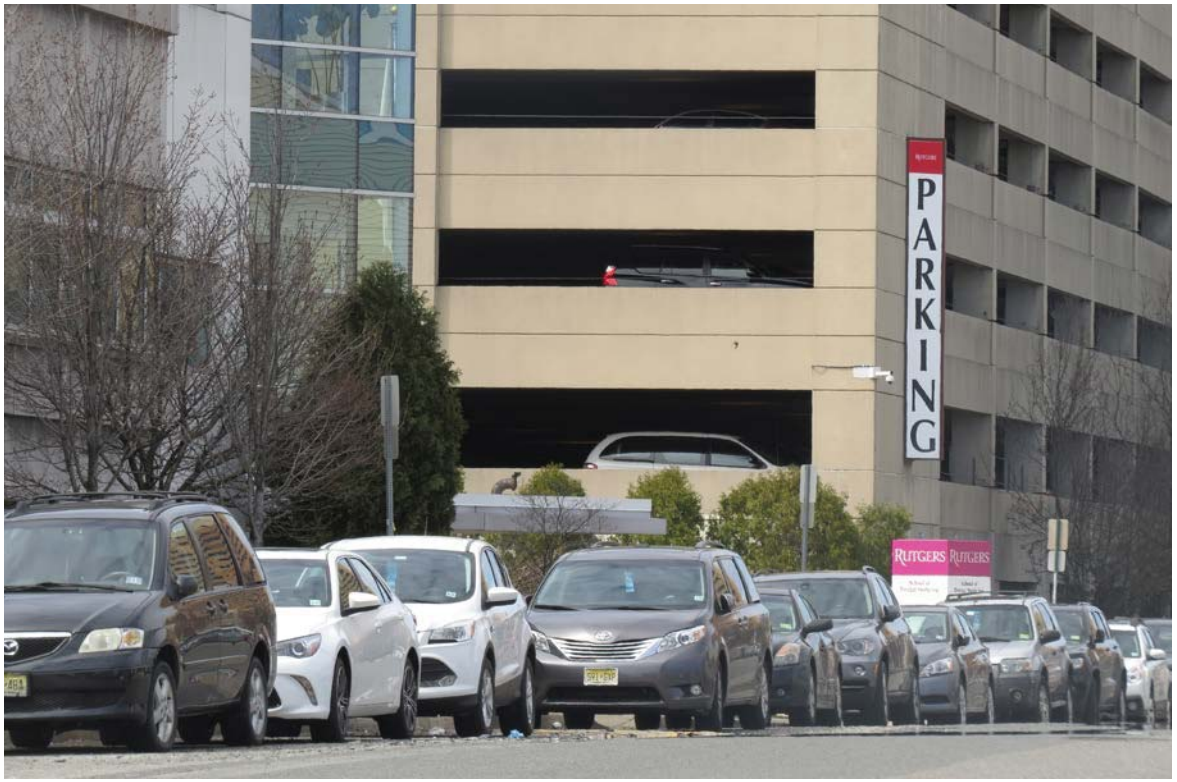
Future Parking Demand and Supply: estimated future parking demand based on the identified growth and change related to the *Rutgers 2030* proposed development and determined how to meet the anticipated demand by providing strategically located parking supplies.

Parking Garage Sizing and Location Recommendations: determined the sizing and location for each of the newly proposed parking garages based on future demand estimation and *Rutgers 2030* vision.

Parking Garage Access: identified appropriate access requirements to streamline vehicular access to the new parking garages to complement the vibrant bicycle and pedestrian friendly district and campus cores envisioned by *Rutgers 2030*.

Parking Garage Construction Sequencing: recommended appropriate construction sequencing to ensure availability of sufficient parking supply to meet the parking demand through the construction phase.

Identification of Coordination Requirements: identified stakeholders to implement construction of new parking garages.




4206
THE STATE UNIVERSITY OF NEW JERSEY
Revolutionary for 250 Years
4192
THIS VEHICLE MAKES
WIDE RIGHT HAND TURNS
RUTGERS
STOP

Transit: Summary of Conceptual Recommendations

Rutgers University-New Brunswick College Avenue, Cook/Douglass, Busch and Livingston Districts	RBHS-Downtown New Brunswick and RBHS-Piscataway	Rutgers University-Newark	RBHS-Newark
• Initiate coordination with the City of New Brunswick, the County of Middlesex and the New Jersey Department of Transportation (NJDOT) to advance improvement concepts • Advance conceptual plans and cross-sections prepared for all 5 transit hub locations proposed by *Rutgers 2030* to the next phase (final design and engineering) in the implementation process • Advance conceptual plans for bus-only infrastructure elements (such as Huntington Street Roundabout, NJ Route 18 bus-on-shoulder and bus-only ramp etc.) necessary to improve reliability of transit operation by bypassing congestion hotspots to the next phase of project development • Implement conceptual plans for transit service routing improvements on all districts upon completion of supporting infrastructure improvement needs	• Initiate transit shuttle service connecting the RBHS Downtown New Brunswick District with potential remote parking locations (such as Busch and/or Livingston Districts) to address surplus parking demand in Downtown New Brunswick	• Provide a new commuter hub • Assess signal coordination improvement potential for University Avenue and Washington Street corridors • Continue conducting user surveys at regular intervals to assess future transit service modification needs (recent transit service reorganization is working well) • Conduct a detailed origin-destination survey to understand opportunities for improved coordination with Newark Light Rail • Initiate coordination with the City of Newark and NJ TRANSIT to advance improvement concepts	• Provide transit bus stop shelters at the School of Dental Medicine stop and the International Center for Public Health (ICPH) stop • Assess potential for providing bus priority treatments for transit service along W. Market Street /Market Street to improve transit travel time and bypass peak period congestion related delays • Initiate coordination with the City of Newark and NJ TRANSIT to advance improvement concepts

Bicycle and Pedestrian: Summary of Conceptual Recommendations

Rutgers University-New Brunswick College Avenue, Cook/Douglass, Busch and Livingston Districts	RBHS-Downtown New Brunswick and RBHS-Piscataway	Rutgers University-Newark	RBHS-Newark
• Implement street treatment typologies for consistent application across the campus with short-term and long-term applications improving bicycle connectivity within and between districts and pedestrian connectivity within individual districts • Advance conceptual plans for the following to the next phases (stakeholder coordination, permitting, design and engineering) towards implementation: ▪ Raritan River Multimodal Bridge ▪ Raritan Riverwalk ▪ College Avenue multimodal improvements ▪ Hamilton Street pedestrian improvements ▪ Albany Street Bridge improvements for bicycles and pedestrians	• Implement street treatment typologies for consistent application across the campus with short-term and long-term applications improving bicycle connectivity within and between districts and pedestrian connectivity within individual districts	• Implement street treatment typologies for consistent application across the campus with short-term and long-term applications improving bicycle connectivity between Rutgers University – Newark and Newark Penn Station as well as Rutgers University – Newark and RBHS-Newark • Advance conceptual plans for the following to the next phases (stakeholder coordination, permitting, design and engineering) towards implementation: ▪ Pedestrian upgrades at the intersection of University Avenue and James Street ▪ Pedestrian upgrades at the intersection of University Avenue and New Street ▪ Bicycle and pedestrian improvements along Central Avenue and at Central Avenue/Park Place and Broad Street intersection	• Implement street treatment typologies for consistent application across the campus with short-term and long-term applications improving bicycle connectivity between Rutgers University – Newark and RBHS-Newark • Advance conceptual plans for the following to the next phases (stakeholder coordination, permitting, design and engineering) towards implementation: ▪ Bicycle and pedestrian upgrades along 12th Avenue and at the intersection of 12th Avenue and W. Market Street ▪ Bicycle and pedestrian upgrades along South Orange Avenue


RUTGERS
University Deck I
Entrance
RUTGERS
Parking for students
with valid permits
and pre registered
visitors only
FDC
RUTGERS
GARAGE
FULL

Parking: Summary of Conceptual Recommendations

Rutgers University-New Brunswick College Avenue, Cook/Douglass, Busch and Livingston Districts	RBHS-Downtown New Brunswick and RBHS-Piscataway	Rutgers University-Newark	RBHS-Newark
• Provide nine new parking garages with over 5,300 parking spaces as follows: ▪ College Avenue District – Morell Street Garage: 440 spaces – George Street Garage: 375 spaces – Student Quadrangle Underground Garage: 375 spaces ▪ Cook/Douglass Districts – Mason Gross Garage: 625 spaces – West Parking Garage: 470 spaces ▪ Bush District – North Parking Garage: 1,000 spaces – South Parking Garage: 750 spaces – West Parking Garage: 750 spaces ▪ Livingston District – Athletics Multiuse Facility Garage: 540 spaces • Relocate nearly 3,000 surface parking spaces as a part of *Rutgers 2030*	• Eliminate the need for using leased parking spaces in downtown New Brunswick for RBHS • Build 6-level structured parking under the proposed new RBHS expansion space in the RBHS - Downtown New Brunswick District to provide 700 spaces • Assess additional need for parking related to increased student presence downtown, to be assessed in subsequent phases of development • Accommodate additional parking need for the RBHS - Downtown New Brunswick District with remote parking on Busch and/or Livingston District	• Provide a new parking garage on Warren Street next to Bradley Hall with1,000 spaces • Provide 400 new surface parking spaces identified as a part of the *Rutgers 2030* development	• Accommodate parking need for the proposed private development in the new 12th Avenue Garage with 1,050 spaces • Accommodate the parking need for the RBHS development (except the University Hospital and Ambulatory Care Center expansions) by building a parking garage on Parking Lot #1 with 2,250 spaces • Parking need for the proposed University Hospital and Ambulatory Care Center expansions is estimated roughly to be 3,000 spaces (locations not identified) - identify locations for additional parking in the subsequent phases of development • Any additional parking need to be addressed in the subsequent phases of project development