# Our Challenge

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The second decade of the 21st century finds America at a crossroads. Two decades of economic globalization and decreased national investment in science and technology have produced both challenge and opportunity. America’s traditional industrial manufacturing base has eroded. “We do not make things anymore,” is a common refrain. The growing fear is that we will also stop inventing things in America.

However, along with this sense of concern, there is also a sense of opportunity. There is a national consensus that America needs to learn to make things again, to reinvent itself, to unleash the forces of creativity, inventiveness, and entrepreneurship. To do so we need to invest in education, science, and technology and to establish strong new alliances between industry, academia, and government. We must focus on creating the conditions for rapid growth of new technologies and for viable, sustainable growth of manufacturing activities. Higher education must embrace its role in this transformative process. Engineering education is key to a successful transition from a reactive to proactive economic, research, and industrial environment.

Engineering disciplines are dedicated to continual reinvention. Engineers invent products and the technologies required to make them. Engineers create products that raise the standard of living and improve the quality and length of life. Engineers, through the invention of new industries, have the potential to be powerful economic drivers. The School of Engineering at Rutgers recognizes this historic opportunity, and its mission, vision, and strategic goals position it to be a major participant.

Unique Position
The School of Engineering is already a vibrant and ready resource for regional and national economic development with proven successes across a spectrum of industries. Its talent pool in education, research, and technologies is internationally recognized. It has strong and accomplished leadership and a core of highly motivated and visionary faculty members. The school’s richly diverse students and faculty are committed to globally sustainable engineering. It has well-established ties to the industrial, financial, and legal communities in New Jersey and in the surrounding states, many through its research and education centers of excellence. Its location is a clear advantage: New Jersey is at the geographic epicenter of research and development activities in major industries including pharmaceuticals, finance, transportation, defense, and energy.

Academic Profile
The School of Engineering is Rutgers' oldest academic unit. Constituted in 1914, its accomplishments in the engineering sciences and engineering education date from 1864 with the establishment of the Rutgers Scientific School. The School of Engineering has a history of achievement and innovation from a diverse and motivated faculty body; a broad array of research interests with defined and emerging research thrusts in infrastructure and transportation, pharmaceutical manufacturing, sustainability, biomedical and health sciences, and wireless communications supported by consistent external research funding; and a highly qualified and growing population of New Jersey, out-of-state, professional, and international students. Today, the School of Engineering includes seven academic departments, nine undergraduate programs, and five nationally recognized research centers. It is spread across 11 buildings on two campuses. The School of Engineering’s full-time faculty, administrators, and support staff are housed in more than 300,000 square feet of office, classroom, and laboratory space.

Following six years of rapid enrollment growth, there are about 3,600 undergraduate students and 1,000 graduate
students, of which 400 are doctoral students. About 24% of the student population is women. The school can demonstrate success recruiting the “best and brightest.” Consistent improvement in student preparedness and achievement is indicated by the SAT scores of each entering class, a 100-point improvement in average scores in just the past four years. Retention rates exceed many of the School of Engineering’s peer institutions.

Students are supported by a dynamic teaching staff of 147 tenured and tenure-track faculty members, including 43 new hires since 2009. Targeted faculty hires support strategic areas of research and innovative educational programming. In 2012, the School of Engineering received a $3 million endowed chair.

The school’s faculty continue a tradition of progressive research that is recognized and supported by the Department of Defense, the Department of Transportation, the National Institutes of Health, the National Science Foundation, and other significant sources. The School of Engineering has achieved major success in core research areas and is establishing new areas of excellence in energy and cyberinfrastructure. The school reported research expenditures of $60 million to U.S. News & World Report in 2014.

The School of Engineering has several nationally recognized centers: Center for Advanced Infrastructure and Transportation, Ceramics, Composites, and Optical Materials Center, Engineering Research Center - Structured Organic Particulate Systems, and Wireless Information Network Laboratory. Their reach into the private sector is extensive.

The School of Engineering builds on collaborative relationships with national and regional industry by providing opportunities in student research and internships. Engineering students regularly assume roles in major companies such as Bechtel, Ford, General Electric, Procter and Gamble, Google, Lockheed Martin, and L’Oreal. Committed alumni play an active role in maintaining personal and professional connections.

America needs to learn to make things again, to reinvent itself, to unleash the forces of creativity, inventiveness, and entrepreneurship.
Executive Summary
The 2014 Rutgers University Strategic Plan identified the School of Engineering as a major strategic priority in moving the university forward on a path toward excellence. The School of Engineering Strategic Plan, following suit, embraces and endorses this overriding goal, and it serves as the foundation upon which this plan is built.

To prepare for its strategic plan, the School of Engineering conducted a comprehensive review of its strengths and vulnerabilities. The perspective was that of a single unit composed of independently performing but centrally supported departments and affiliated research organizations. All shared a framework of common values articulated in the school mission statement that supports superior performance in education, research, and service.

Five school-wide goals were identified that transcend internal and external boundaries and recognize the value of a multidisciplinary, collaborative approach to teaching and research. Successfully meeting these goals requires leveraging specific strengths and targeting areas of development where there is opportunity for significant improvement or impact.

By mapping the School of Engineering’s goals and related core focus areas to the foundational elements and key initiatives of the University Strategic Plan, the school has ensured that its preliminary planning is closely aligned with the university’s and that it is in a strong position to meet the challenges set by the university.

The goals and core focus areas identified through this process will guide program development in the areas of student learning and faculty excellence, research innovation, industry partnerships, alumni development, and critical infrastructure improvement.

The School of Engineering will be recognized as a top engineering school and an innovative leader in undergraduate and graduate education and research. It will emphasize the primacy of teaching excellence to produce a qualified supply of well-trained, diverse, and experienced engineers ready to make a positive impact on industry, driving global, national, and regional economic growth.

A continued focus on strong recruitment programs and cooperative degree opportunities with international universities will add to a highly qualified and diverse student body that includes underrepresented minorities, students from financially challenged backgrounds, women, and international students.

To promote faculty excellence, the School of Engineering will continue a broad multiyear hiring plan to add to the successful hires completed since 2009. Faculty searches
Engineers, through the invention of new industries, have the potential to be powerful economic drivers.

will be strategically targeted to align with educational and research initiatives. Endowed chairs, competitive start-up funding, and aggressive recruitment efforts will support the hiring plan. The school will foster a culture of excellence and accomplishment by consistently recognizing faculty contributions and achievements.

The School of Engineering will maintain a regional and national leadership role in technology innovation and development. To advance highly specialized and relevant research, the research program will focus on large-scale, high-visibility collaborative initiatives that play to its strengths and guide resource investment in strategically important technology areas.

The School of Engineering has achieved a high level of engagement with the State of New Jersey’s manufacturing leaders through industry/research partnerships with state and regional corporations in pharmaceuticals, materials, transportation, wireless communications, and other technologies. To drive economic growth in New Jersey, it will enhance industrial expertise in key technology and manufacturing areas and steward established industry partnerships through the New Jersey Advanced Manufacturing Institute.

The School of Engineering will engage alumni through an active communications program emphasizing the theme of “Staying Connected.” Engaged, involved alumni create a support network that will benefit the school by recruiting excellent students, giving new engineering professionals internship and employment opportunities, providing financial support, and advancing a “culture of giving” to fellow alumni.

The School of Engineering is committed to providing a sustainable and advanced infrastructure of classrooms, laboratories, offices, and common spaces through a combination of new construction and renovation projects. Infrastructure planning supports the School of Engineering’s commitment to excellence in education and research.

Strategic Goals
To realize its vision and advance its mission, the School of Engineering will meet five strategic goals:

GOAL 1: To be recognized as one of the nation’s top engineering colleges preparing exceptional undergraduate and graduate students with the ability to solve problems, create opportunity, make meaningful societal advances, and lead through innovation.

GOAL 2: To advance highly specialized, relevant research that is supported by funding from leading agencies in the areas of advanced manufacturing and computing, healthcare science, energy, and materials.

GOAL 3: To drive economic growth in New Jersey through strategic alliances with industry and through public-private initiatives that deliver new technologies and processes to industry and new products to the marketplace.

GOAL 4: To cultivate an actively engaged Rutgers engineering community whose students, faculty, staff, alumni, and partners are committed to the School of Engineering’s principles and advancement.

GOAL 5: To provide a capstone to the School of Engineering’s excellence in education, research, and real-world student experience with a new engineering complex of sustainably designed classrooms, laboratories, offices, and common space.

The School of Engineering will work to meet these goals through itemized action plans that include benchmarks, quantitative metrics, and comprehensive assessments. Planning efforts will be consistent with the University Strategic Plan.
**GOAL 1**
Be recognized as one of the nation’s top engineering colleges preparing exceptional undergraduate and graduate students to solve problems, create opportunity, make meaningful societal advances and lead through innovation.

**GOAL 2**
To advance highly specialized, relevant research that is supported by funding from leading agencies in the areas of advanced manufacturing and computing, healthcare science, energy, and materials.

**GOAL 3**
Drive economic growth in New Jersey through strategic alliances with industry and through public-private initiatives that deliver new technologies to industry and new products to the market place.

**GOAL 4**
Cultivate an actively engaged Rutgers engineering community whose students, faculty, staff, alumni and partners are committed to the school’s principles and advancement.

**GOAL 5**
Provide a capstone to the school’s excellence in education, research, and real-world student learning, with a new engineering complex of sustainably designed classrooms, laboratories, offices, and common space.

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**Core Focus**
- **Student Learning**
- **Faculty Excellence**
- **Research Innovation**
- **Industry Partnership**
- **Alumni Engagement**
- **Infrastructure**

**Key Initiatives**
- Relevant curriculum
- Research experience
- Recruitment
- Quality
- Diversity
- Internships
- Career support
- Global reach
- Lifelong learning

- Strategic growth
- Culture of accomplishment
- Diversity
- Recognize achievement
- Mentoring

- Focus areas of strength
- Collaborative growth
- New areas
- Multi-disciplinary opportunities
- Superior proposals

- Cultivate industry partners
- Invest in resources
- Encourage faculty capability
- Establish NJAMI

- “Staying connected” network and outreach
- Philanthropic awareness
- Communicating success
- Alumni participation
- Engagement through RES

- Secure engineering in campus master plan
- Maximize use of existing facilities
To be recognized as one of the nation’s top engineering colleges preparing exceptional undergraduate and graduate students with the ability to solve problems, create opportunity, make meaningful societal advances, and lead through innovation.

Core Focus - Transforming the Student Experience

Leadership Vision
The University Strategic Plan acknowledges that the university’s future success will depend on how well it serves its students. New higher-education models must be implemented that provide students with not only the ability to interpret and apply learning but to do so in an environment that is responsive to their personal and academic needs in an institutionally streamlined environment.

The School of Engineering faces the particular challenge of a crucial, national STEM shortfall. Mindful of this reality, the School of Engineering seeks to build on and further its reputation as a leader in undergraduate and graduate engineering education by offering a progressive experience that is attuned to student needs related to education and career readiness.

With a goal to attract a highly qualified diverse student population, the school will pursue a recruitment strategy that builds on successes in attracting women, underrepresented minorities, international students, and students from financially challenged backgrounds to engineering fields. New programs and opportunities will support these efforts, as well as provide improved academic support and consistent advising structures to better serve all students and yield positive outcomes.

Guiding students toward productive and satisfying careers will produce lifelong learners continually growing and contributing in their professions. University Career Services is an important partner to the School of Engineering in preparing work-ready students with practical experience obtained through internships and co-op programs. Building relationships at the school level with leading corporations headquartered around the nation assists in students securing competitive career opportunities.

Expanding the school’s existing, revenue-generating professional education program extends the reach of Rutgers engineering beyond undergraduate and graduate student populations and engages professionals from a variety of industries in the School of Engineering, continuing education, and lifelong learning.

Goal 1.1 - Undergraduate Education

Strategy
The School of Engineering will offer an enhanced engineering program that will encompass engineering academics, various curricular and extracurricular activities, research participation, and professional development in preparing the next generation of ethical innovators for a complex, diverse, and global workplace.

Initiatives
- Develop a curriculum that is both relevant and robust to prepare students for the work environment of today and tomorrow by enabling their ability to solve problems, communicate effectively, and collaborate across workplace disciplines.
To be recognized as one of the nation’s top engineering colleges preparing exceptional undergraduate and graduate students with the ability to solve problems, create opportunity, make meaningful societal advances, and lead through innovation.

- Provide meaningful engineering research, design, and professional development experiences to students at various points along their academic career.
- Increase opportunities for student research and interaction with tenured faculty.
- Support an educational culture that doesn’t end with graduation.

**Actions**
- Enhance the learning of fundamental engineering concepts among first-year engineering students using the Freshman Engineering Design model, which advocates multidisciplinary, hands-on group design projects. Concurrently, students will be introduced to the different engineering programs, lab facilities, and computing tools.
- Incorporate a coordinated program of research and industry internships and co-op programs into the standard engineering curriculum. This program will bring together students, faculty, alumni, and industry partners to enrich the undergraduate experience.
- Expand the offering of on-campus research and applied engineering project opportunities and cultivate a working model for students to propose multidisciplinary capstone design projects based on their undergraduate involvement in research, internships, and co-ops.
- Maintain a thriving legacy of undergraduate research by supporting existing programs such as the Aresty program, senior design, engineering honors programs, and Slade scholars.

**Goal 1.2 • Academic Support**

**Strategy**
The School of Engineering will review and improve the effectiveness of its academic student support and first-year program structure. Improved communication among advising agents, engineering departments, and student organization advisors will ensure delivery of accurate and
up-to-date academic, career planning, community service, and personal advising to enhance each student’s advising experience.

**Initiatives**
- Coordinate training and provide updates on academic procedures to build a platform for consistent advising. Coordinate advising efforts and communication with department undergraduate directors and advisors.
- Incorporate nontraditional approaches to improved advising.
- Improve communication by maintaining an up-to-date website that serves as an information clearinghouse for all students on advising offerings and process.
- Provide a continuum of support for both undergraduate and graduate international student communities.

**Actions**
- Identify and recruit stakeholders to establish a uniform approach to standard student academic issues.
- Identify common challenges and best-practice approaches to advising process.
- Develop video webinars and comprehensive web-based tools for effective advising, student videos on FAQs, assessment tools, and web content targeted to specific segments of the student population.
- Establish a Council of Student Organization Advisors that will design and implement guidelines for all student organization advisors to provide a centralized structure for support initiatives.

**Goal 1.3 ▼ Graduate Education**

**Strategy**
The School of Engineering will offer an advanced educational master’s and doctoral program to students from New Jersey, elsewhere in the United States, and around the world, providing an opportunity to conduct research in the heart of one of the nation’s most robust industrial corridors. Students will achieve success both academically and in their investigative pursuits through faculty mentoring and a connected learning environment that supports discovery and innovation.

**Initiative**
- Prepare qualified and competitive graduate students for placement in industry, academia, and government through exposure to accomplished faculty mentors who are leaders in their fields of scholarship and research.

**Actions**
- Continue to set high standards for student admission and performance.
- Improve student research opportunities by providing funding assistance in the form of assistantships, scholarships, and fellowships.
- Support student outcomes to reflect improved degree completion timelines.
Goal 1.4 • Recruitment

Strategy
The School of Engineering will recruit New Jersey’s and the nation’s top-performing students, who will make it their first choice for undergraduate and graduate education. In a competitive environment, recruitment and retention of motivated and capable master’s and doctoral students will require a well-funded and comprehensive effort.

Initiatives
- Develop an aggressive recruitment and communications program that focuses on cultivating, attracting, and retaining highly qualified undergraduate students.
- Target and recruit promising female undergraduates, as well as students from diverse populations.
- Expand the reach of the School of Engineering to attract a large pool of academically competitive graduate students.
- Expand opportunities for graduate research, especially in strategic areas.

Actions
- Recruit academically competitive undergraduates through existing Rutgers University programs, such as the university’s Honors College.
- Recruit promising female undergraduates by expanding the School of Engineering’s cooperative program with Douglass Residential College which provides a living-learning community for undergraduate women engineering students on Busch campus.
- Cultivate an awareness of opportunity in the engineering disciplines among a pre-college population using programs such as TARGET (The Academy at Rutgers for Girls in Engineering and Technology).
- Capitalize on existing relationships with national and international institutions to enhance the pipeline for graduate programs.

Goal 1.5 • Undergraduate and Graduate Diversity

Strategy
The School of Engineering will attract a highly qualified diverse student population to engineering fields through a recruitment strategy that builds on successes in attracting women, underrepresented minorities, international students, and students from financially challenged backgrounds.

Initiatives
- Develop, expand, and support initiatives that foster and ensure a diverse and inclusive student community.
- Develop an internal and external public awareness program to promote the School of Engineering as a supportive environment for women and students from groups underrepresented in STEM disciplines.
Goal 1.6 | International Students

**Strategy**
The School of Engineering will establish partnerships with international universities to strengthen its global reach through joint degree, student and faculty exchange, and international service learning programs and support student programs for international students. Partnerships will increase international enrollment in the undergraduate population and encourage qualified international enrollment in the graduate population.

**Initiatives**
- Increase the number of international partnering universities.
- Support a growing population of international students enrolled in cooperative degree programs.
- Offer study abroad options.
- Recognize the achievement of international students and visiting scholars.

**Actions**
- Pursue additional agreements with key international university partners to increase international enrollment in the undergraduate population and encourage qualified international enrollment in the graduate population.
- Increase opportunities for undergraduate study abroad and successful engagement with global partners.
- Provide programming to ease the transition of international students by offering easy access to information through a webpage for international student advising, establish socials for international students, and schedule engineering orientation seminars specifically targeted to this population.
- Promote international activities and accomplishments through programs sponsored by Rutgers Global Advancement and International Affairs, participation in International Education Week, and other recognition events.

- Become a leader among peer institutions in the percentage of doctoral degrees awarded to women.

**Actions**

- Recruit and retain undergraduate students among groups that have been historically underrepresented in engineering and the sciences by establishing an open community of learning that is supported by faculty, departments, and administrative offices, including undergraduate education, academic services, and student services.
- Establish programs designed to address the concerns and needs of a diverse student population that focus on women, underrepresented minorities, international students, and students from financially challenged backgrounds.
- Support expanded Educational Opportunity Fund programming.
- Promote graduate programs to organizations with focused outreach, such as the National Society of Black Engineers, the Society of Hispanic Professional Engineers, the Society of Women Engineers, and others.
- Increase the enrollment and retention of women through targeted scholarship opportunities and through outreach and mentorship programs for graduate women.
Goal 1.7 ▶ Career Support

Strategy
The School of Engineering will improve career placement for its graduates by developing programs with University Career Services and building on its successes in engaging industry representatives that include members of a vibrant and successful alumni base.

Initiatives
- Increase the number of internships to provide practical experience and knowledge by strengthening existing industry relationships and cultivating new industry partners.
- Establish research industry internship, and co-op programs that bring faculty, industry, and alumni together. Solicit support for senior capstone projects from relevant industry partners.
- Formalize an alumni mentoring program for undergraduate students.
- Develop programs that enhance career, cultural, educational, and recreational opportunities for students by capitalizing on our proximity to New York, Philadelphia, and Washington.

Actions
- Provide hands-on internship and co-op opportunities for students entering the business world or graduate school to ensure practical experience that prepares them to be immediate and valued contributors to an organization.
- Prepare students for transition to the workplace through early training in the preparation of résumés, interviewing, and other tools necessary to make them strong competitors for internships and career positions.
- Capitalize on successful alumni who remain engaged with their alma mater for career counseling, mentoring, and networking programs before and after graduation.
- Identify and cultivate key industry partners already benefiting from Rutgers trained employees to yield higher placement rates for engineering graduates.
- Cultivate regional connections as well as national ones to position Rutgers graduates.

Goal 1.8 ▶ Lifelong Learning and Professional Education

Strategy
The School of Engineering will support an educational culture that doesn’t end with graduation and encourages professionals in the engineering sciences to remain engaged through continuing and professional education opportunities and graduate degree programs.

Actions
- Lifelong Learning and Professional Education leadership will launch continuing professional education programs, including degree and for-credit certificate programs in off-site and online environments.
- Improve communication to industry about the professional learning opportunities that the School of Engineering can offer.
- Develop industry-specific marketing programs.
- Explore opportunities for global education and outreach.

FACUlTY EXCELLENCE

Core Focus ▶ Enhancing and Supporting Excellence in Teaching, Research, and Scholarship

Leadership Focus
Faculty excellence is the key to meeting the strategic and aspirational goal of earning recognition as one of the nation’s top engineering colleges. The School of Engineering is committed to continuing to build on its long-standing commitment to faculty excellence. The quality of its engaged, distinguished, and diverse faculty drives excellence across the university as a whole and in the School of Engineering in particular.
The School of Engineering will be led by a highly qualified, enthusiastic faculty who are recognized leaders in their fields and committed to success through deep collaboration at all levels, multidisciplinary learning, and the full engagement and mentoring of students.

In preparing outstanding students ready to meet the challenges of a complex world, the School of Engineering will advance global excellence in engineering education through innovation and invention that is socially, economically, and sustainably responsible.

The School of Engineering will establish recruitment policies that identify opportunities for academic hires with backgrounds in relevant industries.

Strategic recruitment of faculty isn’t limited to research and instructional need. Encouraging the strategic recruitment of individuals who will increase the diversity of the School of Engineering faculty is consistent with an academic environment representative of New Jersey’s diversity, shifting national demographics, and a global perspective.

Goal 1.9 • Providing Superior Education

Strategy
The School of Engineering’s faculty of dynamic thought leaders will be supported and recognized for their commitment to mentoring and advancing educational opportunities for students who will be the next generation of engineers and innovators.

Initiatives
- Recognize and support excellence in teaching, advising, and mentoring through the establishment of specific faculty awards.
- Strategically target hires to support specific educational and research initiatives that are representative of faculty members’ diversity of thought.
- Enhance the diversity of the faculty.

Actions
- Support faculty in providing an excellent and equitable engineering education by providing forums for faculty to discuss issues related to pedagogy, academic advising, and professional development and ethics.
- Implement and advance effective teaching practices for diverse student audiences in the sciences and engineering.
- Encourage faculty to master research-based, time-effective tips for cultivating positive learning environments in and out of the classroom.
- Recognize superior practice in teaching.

Goal 1.10 • Advancing a Culture of Achievement

Strategy
Cultivating a culture of faculty accomplishment and excellence will enhance the profile of the School of Engineering internally and externally and support the
recruitment and retention of well-qualified teaching and research faculty, including those who have attained the highest honor and recognition in their fields. The School of Engineering will continue to recognize career development and achievement through established programs that include the annual Engineering Faculty of the Year and Outstanding Engineering Faculty and other awards. Communications, publicity, and marketing programs will raise the visibility of the School of Engineering’s faculty activity among peer institutions. Showcasing student accomplishment will demonstrate the value of the student/faculty experience.

**Initiatives**
- Build on successfully endowed chairs and establish new ones in key areas of research and scholarship to enrich the engineering community, attract nationally and internationally recognized scholars, and increase the School of Engineering’s academy representation.
- Foster a culture of excellence and accomplishment by consistently recognizing meaningful contributions and achievements of faculty.
- Develop a faculty mentoring program with supportive, active mentors who will contribute significantly to junior faculty career development and job satisfaction.

**Actions**
- Collaborate with the university to develop recruitment strategies to attract exceptional achievers, including members of the National Academy of Engineering.
- Continue to support scholarly activity with incentive funding in existing and emerging research areas.
- Nurture faculty development at critical points in their careers through successful mentoring that incorporates best-practice techniques from traditional, peer, and group mentoring models to encourage productivity, professional advancement, and facilitate smooth career transitions.
Core Focus ▲ Research Innovation

Leadership Vision
The School of Engineering, as part of New Jersey’s leading research university, is a regional and national leader in research and technology innovation and development. Current research pursuits support core activities in each of the school’s seven academic departments, as well as in several affiliated centers that advance leading-edge technologies to solve the increasingly complex social, technological, and industrial challenges confronting a global community.

The largest of these, the Center for Advanced Infrastructure and Transportation, Engineering Research Center for Structured Organic Particulate Systems, and Wireless Information Network Laboratory, focus on large-scale, high-visibility research initiatives that play to the School of Engineering’s existing areas of strength and improve and promote institutional leadership standing.

To maintain its leadership role in research innovation, as well as to further its longstanding commitment to varied and ambitious research programs, the School of Engineering will leverage the strength of its affiliated research centers and professional staff to encourage collaboration on high-profile, large-scale funding initiatives requiring multidisciplinary and multi-institutional participation and collaboration.

At the same time, the school will identify and invest in research opportunities in strategically targeted technology areas, emphasizing those opportunities that represent the diversity of thought in its faculty, staff, and students.

The School of Engineering will additionally support opportunities for academic hires with backgrounds in relevant industries, while providing administrative support and seed money to faculty for developing next-generation strengths. By vigorously promoting and advancing the research innovations and related accomplishments of its students and faculty, the School of Engineering will enhance its position as a leader in research innovation.

Goal 2.1 ▲ Research Opportunity

Strategy
The School of Engineering will continue to develop, encourage, and support a robust research program that provides opportunities and incentives for collaboration and participation in innovative, large-scale, prominent multidisciplinary, and multi-institutional initiatives. The merger with the medical school and associated research institutes provides the School of Engineering with opportunities to launch research initiatives that will be a focus for the university’s move toward large interdisciplinary research initiatives.
Initiatives
- Invest resources in strategically aligned areas of research.
- Grow synergistically.
- Evaluate opportunities to expand into new areas, especially in bioengineering and health sciences, and project the School of Engineering’s strengths in areas of emerging significance.
- Increase support from agencies and industry.

Actions
- Focus on high-visibility initiatives that play to areas of strength and result in relevant and well-funded research to improve institutional standing and create new opportunities for successful research faculty.
- Evaluate, define, and refine the school’s research investment strategy in new areas.
- Designate faculty leaders to assess joint research opportunities in promising areas, establish connections with professional schools and well-established centers, and provide guidance in the development of cooperative and large-scale research proposals.
- Provide incentive/seed funding to improve the positioning of interdisciplinary research teams.
- Provide qualified professional support to meet pre- and post-award needs to increase the success rate of external grant funding from government agencies.

Goal 2.2 • Research Infrastructure

Strategy
The School of Engineering will concentrate research activities by providing a physical infrastructure that promotes operation and growth. The accomplishments of the School of Engineering’s strongest existing research centers will secure its position in high-profile research areas, including infrastructure and transportation, pharmaceuticals and manufacturing, and wireless-networking technologies.

Goal 2.3 • Research Excellence

Strategy
The School of Engineering will position itself among the university’s leading achievers by consistently highlighting its research innovations. It will showcase excellence within the school by aggressively advancing the accomplishments of its students and faculty in the development and application of new or improved technologies.

Initiative
- Achieve national and international recognition of major research developments by the School of Engineering’s faculty, staff, and students.

Actions
- Increase the internal and external media coverage of engineering research activity.
- Support opportunities to promote faculty research successes through sponsored seminars, workshops, and presentations.
- Organize targeted workshops or symposia around emerging areas to coalesce faculty and researchers from different departments within the School of Engineering and domain experts outside Rutgers.
To drive economic growth in New Jersey through strategic alliances with industry and through public-private initiatives that deliver new technologies and processes to industry and new products to the marketplace.

Core Focus • Enhancing Industry Partnerships

Leadership Vision
The location of the School of Engineering along one of the nation’s most active industrial and pharmaceutical corridors has given it a unique advantage in facilitating productive relationships with state and regional manufacturing leaders. Although the School of Engineering has achieved a high level of engagement by establishing viable industry/research partnerships with corporations in pharmaceuticals, materials, transportation, communications, and other technologies, it must continue to support and expand these relationships and forge links with strategically appropriate new partners.

Partner industries interested in innovative research participate as members in the School of Engineering’s affiliated research centers, in order to inform, contribute, and benefit fully from developments in new technologies. In addition, industry experts serve as advisors to the school’s seven academic departments.

As a part of Rutgers, New Jersey’s major research university, the School of Engineering plays a critical role in the state’s economy. It contributes to economic growth by training the future employees of New Jersey’s most active corporations and manufacturers and by engaging in collaborative research initiatives that lead to the transfer of new processes and products to the marketplace. The research university’s entrepreneurial role in contemporary society is in large part defined by its ability to form and maintain complex, successful relationships with private industry, government agencies, and other entities.

In order to continue to drive economic growth and technological innovation in New Jersey, the School of Engineering will capitalize on its geographically advantageous location to enhance and reinforce its existing collaborative public-private relationships and strategic alliances with industry partners, as well as cultivate new ones.

The School of Engineering will work to expand its role as a resource for companies invested in research and development as it continues to establish industrial expertise in key technology and manufacturing areas, especially those aligned with core research areas of strength. At the same time, the school will steward existing, well-established partnerships through the New Jersey Advanced Manufacturing Institute.

The School of Engineering will seek new partners that share an interest in collaborative innovative research. It will strive to develop productive new partnerships quickly and flexibly by working within the university to streamline the partnership process.

By maintaining a keen focus on opportunities with state and regional industry partners, the School of Engineering will further its standing as both a driver of the regional economy and as a leading partner in the innovative research and development that produces the processes and products that positively affect the global community.

Goal 3.1 • Building New Relationships and Cultivating New Partners

Strategy
The School of Engineering will increase links and consistently engage with regional and national industries.
Additionally, the School of Engineering will increase its visibility and better articulate a compelling value proposition as a research partner of choice.

**Initiatives**
- Foster a collaborative environment of research opportunity for industry.
- Increase industry center membership among a broad range of corporate interests and tactically expand departmental industry advisory board membership.
- Develop a large, diverse candidate graduating class and communicate this to targeted companies.

**Actions**
- Increase direct interaction with industry by appointing faculty teams to visit prospective partner companies, establishing an industry sabbatical program for faculty, and hosting industry team campus visits to explore mutual research and development interests.
- Develop an informational website that will provide a portal for industry inquiry, registration, and involvement.
- Maximize the potential for successful public/private relationships and guide interaction with future industry partners by understanding the capabilities, interests, and goals of potential partners; articulating a compelling, responsive value proposition of the School of Engineering's role as a partner; and exceeding expectations.
- Identify employers who employ or are interested in hiring School of Engineering graduates.

**Goal 3.2 • Investing in Technology and Resources**

**Strategy**
The School of Engineering will deliver new processes and technologies to industry and new products to the marketplace by developing a value proposition to guide strategic investment in resources and key technology areas and promoting entrepreneurial thinking in faculty.

**Initiatives**
- Successfully align resources with strategically targeted areas of technology that support industrial expertise in key manufacturing areas.
- Increase the perception of engagement with industry as desirable and prestigious.
- Promote a culture of service to the outside world that prominently includes private enterprise.

**Actions**
- Help faculty learn how to take advantage of business development expertise in companies with which the school will engage.
- Offer annual faculty partnership training sessions.
- Encourage faculty to establish New Jersey-based spin-off/start-up companies as a result of research initiatives.
- Recognize successful technology transfers as models of collaboration and partnership across the school.
- Encourage improvement in the agility of the university contracting organization.

**Goal 3.3 • The New Jersey Advanced Manufacturing Institute**

**Strategy**
The School of Engineering will establish the New Jersey Advanced Manufacturing Institute as a multi-industry business development entity that is supported by federal, state, and private investment and that is the result of strong strategic business partnerships and practical learning opportunities.

**Action**
The school will identify faculty and industry leadership to develop a comprehensive business, research, and engagement program for NJAMI.
To cultivate an actively engaged School of Engineering community whose students, faculty, staff, alumni, and partners are committed to the school’s principles and advancement.

Core Focus • Alumni Engagement

Leadership Vision
The School of Engineering will nurture a community of scholars, drawing from students, faculty, administrators, and alumni. Members of this community will benefit by engaging in joint initiatives that focus on opportunities for personal and professional growth, such as donor-funding opportunities, career-networking opportunities, service learning and continuing education programs, and special events.

As the School of Engineering grows in achievement and stature, so does the value of a Rutgers engineering degree. Recognizing the invaluable contributions that actively engaged alumni make not only through committed financial support but also by serving as mentors, advisors, and unofficial representatives of the excellence of a Rutgers engineering education in their professions and communities, the School of Engineering will cultivate and “re-engage” alumni through an active communications program, that emphasizes a theme of “staying connected.”

The School of Engineering will offer innovative social, educational, and professional opportunities for re-engagement that are geared to a broad constituency. A support network of successful alumni benefits the school in many ways: Alumni recruit excellent students; host new engineering professionals through internships and employment opportunities; participate financially; and help advance a culture of giving to their fellow alumni. Alumni support is essential to fulfilling the school’s mission and realizing its vision.

Goal 4.1 • Building Community

Strategy
The School Engineering will cultivate and engage a community that shares a commitment to school principles and advancement. Developing and promoting mission-critical programs that encourage donor investment at a range of levels will result in well-defined opportunities for alumni/student interaction, encourage school/industry partnerships, and shape the School of Engineering’s future alumni base.

Initiatives
- Increase the recruitment and involvement of alumni as mentors and ambassadors and elevate the profile of the Rutgers Engineering Society.
- Advance the “staying connected” theme as emblematic of a network of students, faculty, and alumni.
Create philanthropic awareness and encourage a culture of giving among recent alumni and current students by communicating the benefits of “staying connected” to the school.

Increase alumni participation and achieve positive changes in the giving rate.

**Actions**

- Enlist accomplished alumni from industry to participate in programs to illustrate varied paths to success through an engineering education.
- Establish an alumni mentoring program to enrich the education experience.
- Develop and implement a communication plan that informs local, national, and international alumni of its goals, accomplishments, and major events.
- Capitalize on unique outreach opportunities and target events to garner support from new alumni donors and partners.
- Invite motivated alumni to advance the School of Engineering by supporting student scholarships and fellowships, endowed professorships, special outreach programs, and physical improvements to the learning environment.
To provide a capstone to the School of Engineering’s excellence in education, research, and real-world student experience, a new engineering complex will serve as a gateway facility re-centering the core of the school with a clear and distinct flagship building that is a sustainable and advanced infrastructure of classrooms, laboratories, offices, and common space.

Core Focus • Infrastructure Improvement

Leadership Vision
The School of Engineering strives to provide an aesthetically and functionally outstanding learning environment. The school is committed to furnishing its community of students, faculty, and staff with sustainable and advanced space that is designed to both serve current needs and accommodate the continued and projected growth of its student population, which has increased 34% since 2007.

At the core of this commitment are new construction and renovation initiatives that will provide a state-of-the-art infrastructure of classrooms, laboratories, offices, and common spaces that will fully support a campus-wide culture of learning, research, and innovation.

A phased building construction plan for the school is part of the long range Busch Campus Master Plan. An improved and enhanced infrastructure will result from the reallocation of existing space, renovation of selected facilities, and replacement of aging and substandard space, including the 1961 Engineering Building. These new facilities will provide exceptional classroom learning spaces, as well as instructional labs that support aggressive research programs and showcase trends in engineering technologies.

A new 100,000-square-foot Engineering Gateway Building, targeted for opening in 2017, is central to the establishment of a new 21st century engineering complex on the Busch campus. This world-class facility will offer leading-edge classroom and laboratory spaces, as well as up-to-the-minute equipment and resources that promote learning, research, and technological innovation and discovery. It will house academic departments and programs and foster industry-school relations through the resident New Jersey Advanced Manufacturing Institute.

Through this dynamic program of infrastructure improvement, the School of Engineering will be able to maintain and enhance its reputation as one of the nation’s top engineering colleges.

Goal 5.1 • A New Engineering Complex

Strategy
The School of Engineering will participate in university/school planning to establish a new engineering complex
on the Busch campus. A master plan for engineering will include renovation to existing buildings, reallocation of space including labs, classrooms, and offices, and a new, state-of-the-art facility that will serve as a gateway and focal point anchoring engineering on the Busch campus. This sustainable and advanced space will provide an infrastructure of classrooms, laboratories, offices, and common spaces and accommodate the continued and projected growth of our student population.

**Initiatives**
- Collaborate with University Facilities and the Rutgers Foundation on the execution and funding of the Busch Campus Master Plan.
- Provide active input to design and fund the Engineering Gateway Building.
- Review and compile short- and long-term project lists.
- Track the annual funding and completion of identified and approved renovation projects.

**Actions**
- The School of Engineering will designate faculty and administrative teams to play an integral role in the planning and implementation of the school’s master facilities plan working in partnership with university divisions, including the Rutgers Foundation for fundraising and Rutgers Facilities for planning and construction.
- Engineering will track and support valid facility renovations proposed and undertaken by departments that are consistent with strategic areas of instruction and research.
- In order to meet instructional and research demands, the school will implement a standardized, school-wide approach to space allocation that is based on a comprehensive inventory of assignable space.
Metrics For Success

Student Experience
- Academic profile of incoming class (SAT, GPA, class rank).
- Number of scholarship recipients and national achievement awardees.
- Number of engineering honors students.
- Student/faculty undergraduate ratio reduced to 23/1; target fall 2018.
- Retention rate and time to degree completion.
- Number of engineering honors students.
- Number of scholarship recipients and national achievement awardees.
- Number of women and URM graduate students; target 30% women/15% minority by 2018.
- Number of international students; percent of population undergraduate and graduate.
- Number of students participating in study abroad.

Career Support
- Number of students participating in experiential learning programs (internships/co-ops).
- Percent of seniors who graduate with internship experience; target above 80%.
- Number of participating companies; target 5-10 additional each year to reach 225-250.

Faculty Excellence
- Faculty ranking in the top half among peer institutions across a range of benchmarks (research awards, publications, conference presentations).
- Number of women and members of underrepresented groups; percentage of total faculty.
- Number of Academy members; successful recruitment of senior faculty positions.
- Number of faculty participating in mentoring program.

Research Innovation
- Research expenditures per faculty in the top half among peer institutions.
- Number of multi-disciplinary and collaborative research initiatives/awards.
- Number of awards from funded annual incentive pool.
- Number of research-supported graduate students and doctoral graduates.

Industry Engagement
- Number of faculty participating in business development/entrepreneurship workshops.
- Number of faculty participating in industry visits, sabbaticals, seminars.
- Number of companies hosted annually; target 5+ per year.
- Growth in research center industry membership.
- Number of industry-sponsored internships, co-ops, and senior design projects.
- Increase in industry-sponsored research.

Alumni Engagement
- Increase in engineering giving rate.
- Event attendance.
- Membership in Rutgers Engineering Society.
- Number of alumni actively engaged in student-mentoring, scholarship, or other programs.

Infrastructure Improvement
- Engineering’s inclusion in the long range Busch Campus Master Plan.
- Completion of the plan’s first phase, construction of the Engineering Gateway Building.
- Planned reallocation of existing laboratory space in the engineering complex.
- Prioritization and funding plan for renovation projects.
- Renovation of potential high-use facilities, e.g. microfabrication.