Arizona State University

MEMORANDUM

July 25, 2018

TO: Ron Shoopman
Chairman, Arizona Board of Regents

FROM: Michael M. Crow
President, Arizona State University

CC: Arizona Board of Regents
John Arnold
Nancy Tribbensee

RE: FY2018 At-Risk Compensation

Enclosed is my FY2018 Performance Assessment as it relates to the Arizona Board of Regents At-Risk Compensation program. This performance and incentive-based compensation model has been in place for several years following the chairmanship of Regent Rick Myers. This represents a report on the metrics established for both FY2018 and the period between FY2015 and FY2018, with multiple year objectives. Separate reporting is occurring relative to Enterprise Executive Committee metrics.

Unlike previous years, I will not elaborate on each of the metrics that are included in the attached 3-ring binder report which reviews all of our progress. Rather, what I will do here is comment on the meaning, purpose and impact of each of those objectives.

FY2018 ANNUAL INCENTIVES

To begin with, I will review those specific objectives that were established for FY2018 as At-Risk compensation goals. These goals are:

FY2017-2018 Goal #1:

Develop and present a strategy for the Ira A. Fulton Schools of Engineering to move to enrollment of 25,000 students and world-class research status. In developing this strategy, President Crow will explore opportunities to partner with Northern Arizona University and the University of Arizona.

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The importance of this objective is to facilitate in Metropolitan Phoenix and Greater Arizona the plan to grow America's largest and most successful engineering school. It is a well-known fact that engineering schools are critical to the economic competitiveness of 21st century urban economies and there is no exception to that here in Phoenix. Utilizing advanced learning technologies, new designs and overall new structure, new recruiting techniques and new recruiting mechanisms not only have we successfully designed and outlined a plan to grow to 25,000 students and world-class research status, we are well on our way. Part of moving in that direction is also going to involve enhancing our coordination with Northern Arizona University and University of Arizona.

This goal was accomplished, the plan is attached, and we have made progress towards the plan with more than 21,000 present students and growing to the 25,000, dramatic increase in all indicators and metrics, as well as the beginnings of very significant possibilities for cooperation and coordination all moving forward.

At the moment, the Arizona State University Ira A. Fulton Schools of Engineering is the largest operating engineering school in the United States. With that, its quality has been enhanced, its research has been expanded, its diversity has been greatly enhanced both based on gender and ethnicity, and we have identified areas for collaboration with other Arizona public universities. This plan is complete and is on the path to implementation.

FY2017-2018 GOAL #2:

Provide a master plan for the financing, relocation, and development of athletic facilities within the Novus Innovation Corridor.

As Regents are aware, the Novus Innovation Corridor, which contains the Athletic Facilities District established by the Legislature several years ago, has a very significant purpose and that is providing the capital revenue source for the expansion and enhancement of all ASU athletic facilities without burdening the university's operating budget. Novus Innovation Corridor is underway with Phase 1 now complete (State Farm facilities), Phase 2 nearly complete (Sun Devil Stadium renovation), Phase 3 getting underway (mixed-use educational and commercial facilities) and Phase 4 already under planning. As we move into Phase 4 through future phases in the Novus Innovation Corridor, some ASU athletic facilities will be required for replacement and/or renovation. We have already moved and replaced the baseball facility, we have moved and established a new golf course, and what we do with this plan that is presented is outline the rank order priorities and approximate costs associated with the Sun Devil Athletic Facilities master plan presentation. Most importantly, beyond the Novus Innovation Corridor plan, is the specific sub-unit plan for the Athletics Facilities Village. That plan, which is detailed, does contain the replacement locations for ASU athletic facilities associated with those that would be necessary for movement as a part of the overall athletic facilities development and, thus, we view this plan as complete.

The principle objective here was to determine feasibility and we now know that from a space perspective, a cost perspective, etc. that these projects are feasible, and we are moving from this feasibility study into the implementation phase of the new Athletic Facilities District.

FY2017-2018 GOAL #3:

Present a report detailing the fully encapsulated enterprise structure of ASU, including the roles, functions, responsibilities of Enterprise Partners and other university affiliated entities, including summary charts of ownership entities and percentages, fundamental operating agreement terms and sources and uses financial statements for each entity.

The purpose here is to outline clearly for Regents the new operating entity that ASU has designated ASU Enterprise Partners. ASU Enterprise Partners is the modernization of the historic ASU Foundation structure. In the past decade and a half, we have basically been folding all of our new structures within the ASU Foundation structure, thus, in some ways, diverting the ASU Foundation structure away from its core purpose of fundraising and endowment management for ASU. Enterprise Partners is our newer structure which serves as the mechanism by which the university is able to operate and behave as a full-fledged enterprise much like a private university from time to time as required.

You will see in the overall presentation the structure, the board, the financial structure, the mechanisms by which the Enterprise is moving forward, the expansion of net assets, the evolution of the new SkySong Innovations unit to replace Arizona Technology Enterprises, the functioning of the University Realty unit and its activities, and all of the other remaining activities associated with Enterprise Partners. We have a fully functioning unit that is doing quite well here and this details for the Regents under this goal what we have been achieving.

FY2015-2018 MULTIPLE-YEAR INCENTIVES

Secondly, I am reporting on the completion of the 3-year goals established in FY2014 for the period FY2015-FY2018. I reported on the progress towards these goals in each of the previous years along with the complexities associated with each one. Here is the update and it is important to remember that these goals were not necessarily seen as attainable when they were laid out, in fact, many of them were considered to be not attainable at the time that we outlined these goals:

FY2015-2018 GOAL #1:

Achievement of the 2018 fiscal year strategic plan metric goal of a Freshmen Retention Rate of 85.2%; additional incentive to exceed goal by attaining a Freshmen Retention Rate of 86%.

This goal has been accomplished as detailed at the 85.2% rate, for all students in state and out of state. You will note also in this presentation the details of the progress that have been made in this retention area overall. This is perhaps one of the most significant areas of progress made at Arizona State University in the last 15 years. In particular, progress for in-state students far exceeds the 85.2% with a total of 87.8%. This represents an almost unbelievable transformation of ASU retention while intensifying rigor and quality at the same time, something that our faculty and staff have every right to be proud of.

The trailing issue here is the fact that out-of-state students transfer more readily back to their home state. This is something that we have noticed for lots of different reasons. It's rather complicated and it is something that we are working on, but it does affect our overall retention rate perhaps more than other universities. The in-state student indicator is a fabulously positive indicator.

FY2015-2018 GOAL #2:

University attaining the projected 2018 fiscal year strategic plan metric goal for total research expenditures of $562.5 million; with an additional incentive for exceeding the goal by attain total research expenditures of $607.4 million for the 2018 fiscal year.

This goal has been achieved by exceeding the $562.5 million goal and reaching $600 million for the year ending June 30, 2018. This is a monumental achievement for ASU by every possible indicator and should be noted as a fantastic performance of our faculty and our team that supports our faculty.

FY2015-2018 GOAL #3:

Achievement of the projected 2018 fiscal year strategic plan metric goal in Bachelor's Degrees awarded of 16,246.

The goal has been met with over 18,000 degrees being awarded. This is an area where we are far exceeding where we thought we were going to be three years ago partly because of improvements in retention and graduation rates on campus, expansion of enrollment on campus and expansion of all of our online activities, including significant numbers of graduates coming from our online efforts.

FY2015-2018 GOAL #4:

Achievement of the projected 2018 fiscal year strategic plan metric goal of 100,184 total enrolled at the university.

This goal has been accomplished with total enrollment in the fall of 2017 well above the goal of 100,184 with our enrollment at 103,567. What we found is that we are increasing enrollment on the West campus, the Downtown campus and the Polytechnic campus, particularly among the first-time, full-time freshmen dramatically, which is positive. In addition, our online enrollments continue to grow and we still have steady growth on the Tempe campus.

FY2015-2018 GOAL #5:

Achievement of the projected 2018 fiscal year strategic plan metric goal number of degrees in high demand fields of 9,450.

We came close to attaining this goal, but we did not get there. With our estimated number of 9,371, we fell about 80 below the targeted goal but were able to increase by more than 1,600. There is some chance that we will have accelerated beyond the 10,000 number for FY2019 but nonetheless we did not meet the target for FY2018. We are up as the charts indicate from 5,100 to approximately 9,300 from the period when we began thinking about this in 2008-2009. The most important thing here is that we have figured out how to attract more students to these critical areas (teaching, nursing, science, math, engineering). But along the way, we also did one other thing. We changed and greatly upgraded the admission and performance requirements associated with our Teachers College. This drove down the number of qualified students for Teachers College and the number of graduates for Teachers College throwing us somewhat off of our goal. Subsequently, we have figured out how to advance against that goal and are attracting better students. So the results have improved, but I wanted you to have a sense of why things have gone the way they have in this particular case.

UNIVERSITY INITIATIVES PERFORMANCE INCENTIVES

Just like the previous memos, we also have three University Initiatives Performance incentives for the period FY2015-2018. The difference between these and the earlier goals is that these are not a part of the Regents metrics for measurement of the progress of the universities. These are additional objectives.

FY2015-2018 GOAL #1:

Attain top three ranking in the PAC 12 for academic performance of ASU student athletes.

This has been something that has been close to my own personal set of objectives for athletics and I am happy to report that we have achieved that status by every metric that we can put in place that is out there and being measured. You will see from the Sun Devil Athletics report that we have made substantial academic progress against our own historic performances and we have moved to the second position in the PAC 12 only behind Stanford for the APR (Academic Progress Rate) as measured by the NCAA, ranked 2nd in the PAC 12 for graduation success rate as indicated as well as 2nd in the PAC 12 for Academic All-Americans, 2nd in the PAC 12 for Scholar Athletes of the Year, 2nd in the PAC 12 for NCAA post-graduate scholarships, 1st in the PAC 12 for Arthur Ashe Athletes, etc. I am 100% confident that we have altered the culture at ASU Athletics to being a high performing student scholar athlete program.

FY2015-2018 GOAL #2:

Increase fundraising to more than $165 million per year over the 3-year average of FY16, FY17 and FY18.

This goal will seem, when you see the numbers, as if it was easy for us to achieve. There was no indication that we would be able to achieve the goal necessarily at the level that we have been able to achieve it, and it was achieved through fantastic new efforts by our deans, long term development efforts that began to pay off and large numbers of new philanthropic contributors,

particularly from the Foundation sector both in and out of Arizona. We have substantial momentum in this space and will come close to a $2 billion campaign, something that has only been achieved by 30 universities in the history of the U.S., so we are happy about that. We are now exceeding the three-year average of more than $200 million per year of philanthropy. Our FY2018 closing number as of July 2018 for the year ending June 30, 2018 is $253 million, a record fundraising year in the history of Arizona State University.

FY2015-2018 GOAL #3:

Launch and operate America's largest engineering school successfully with 90% student retention.

We have achieved this goal. We have the largest engineering school and we have student retention at the highest level in our history. This, while at the same time dramatically increasing diversity – both gender and ethnic. Our retention is at record levels, our performance is at record levels, our growth is at record levels and so I believe that this is successfully completed.

While this of course is not the only or overall evaluation of the university in its entirety in terms of all of our performance, I am very happy with the progress that the university has made against these metrics and with the Performance At-Risk Compensation program plan that led to our focus on these various activities.

I look forward to reviewing these materials with the Board and Executive Committee at the upcoming meeting.

2017-2018 At-Risk Compensation Goal

FY2017-2018 Goal 1

Develop a plan and present a strategy for the Ira A. Fulton Schools of Engineering to move to enrollment of 25,000 students and world-class research status. In developing this strategy, President Crow will explore opportunities to partner with Northern Arizona University and University of Arizona.

FY 2018 Goal 1

At-Risk Compensation Goal:

Develop a plan and present a strategy for the Ira A. Fulton Schools of Engineering to move to enrollment of 25,000 students and world-class research status

Goal Accomplished

Report Follows

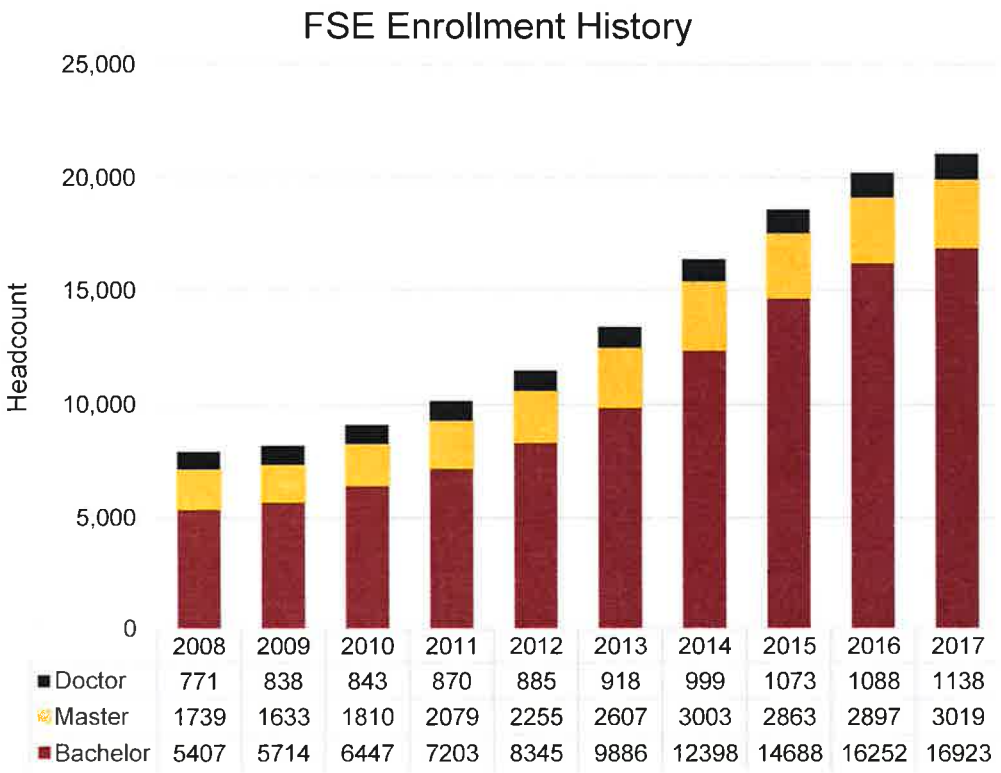

Ira A. Fulton Schools of
Engineering
Arizona State University
Growing the nation's largest engineering school
Enrollment Pathways to 2025

Quality and quantity

Ira A. Fulton Schools of Engineering
Arizona State University

FSE is the largest engineering school in the U.S.

- Fall 2017 total enrollment surpassed 21,000
- **Fall 2018 enrollment expected to increase 5-8% as we move towards 25,000 students**
- FSE engineering enrollment #1 in the US*
  - Ahead of Texas A&M and Georgia Tech



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Doctor	771	838	843	870	885	918	999	1073	1088	1138
Master	1739	1633	1810	2079	2255	2607	3003	2863	2897	3019
Bachelor	5407	5714	6447	7203	8345	9886	12398	14688	16252	16923

*Source: 2017 American Society of Engineering Education (ASEE) rankings

Largest engineering schools by enrollment

(engineering programs only)

ASU	16,801
Texas A&M	16,636
Georgia Tech	14,156
UIUC	13,433
Purdue	12,383
UCF	11,006
Virginia Tech	10,425
Penn State	10,187
Michigan	10,096

*Source: 2017 American Society of Engineering Education (ASEE) rankings

Quality of student body – Fall 2017

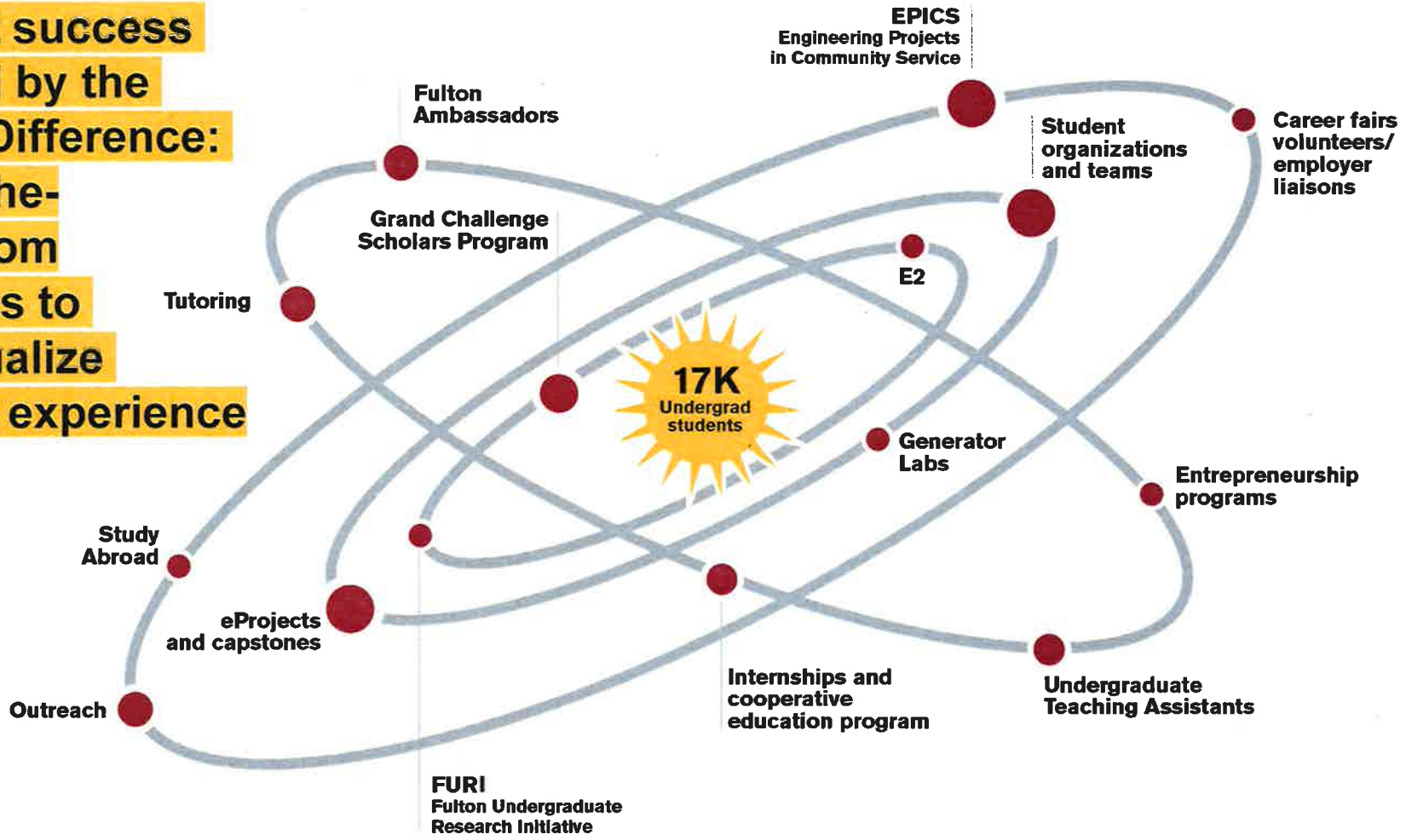
Characteristics of the freshman class

- Nearly 25% of Fulton Schools of Engineering freshmen are in Barrett, the Honors College
- Average ACT is up to 26.4, second highest of any college at ASU

Characteristics of our undergraduates (*increases* relative to Fall 2016)

- 192 National Merit Scholars (8% *increase*)
- 143 National Hispanic Scholars (*14% increase two years in a row*)
- 12 Gates Millennium Scholars (*6% increase*)
- 19 Flinn Scholars (the most of any college at ASU)
- 3 Goldwater Scholars (10 since 2010)
- 2 National Achievement Scholars

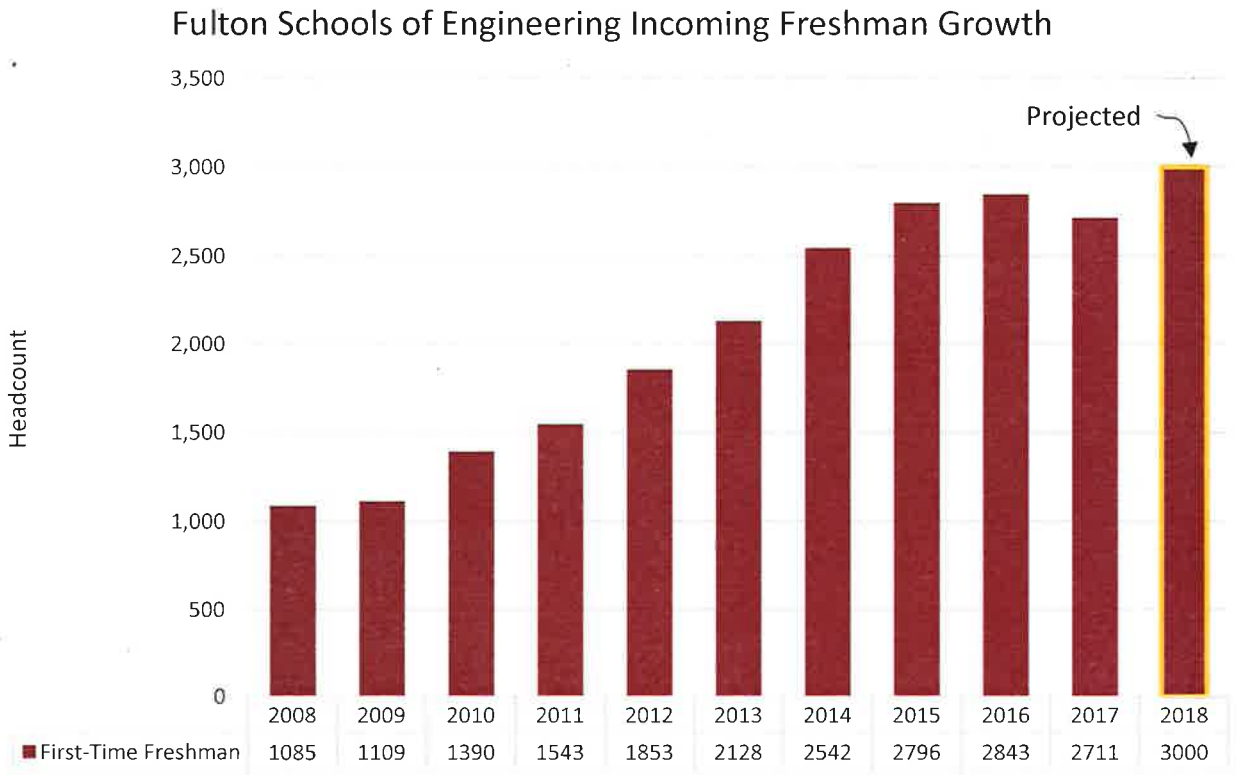
Student success enabled by the Fulton Difference: out-of-the-classroom activities to individualize student experience



Fulfilling the access mission

Ira A. Fulton Schools of Engineering
Arizona State University

Freshman enrollment

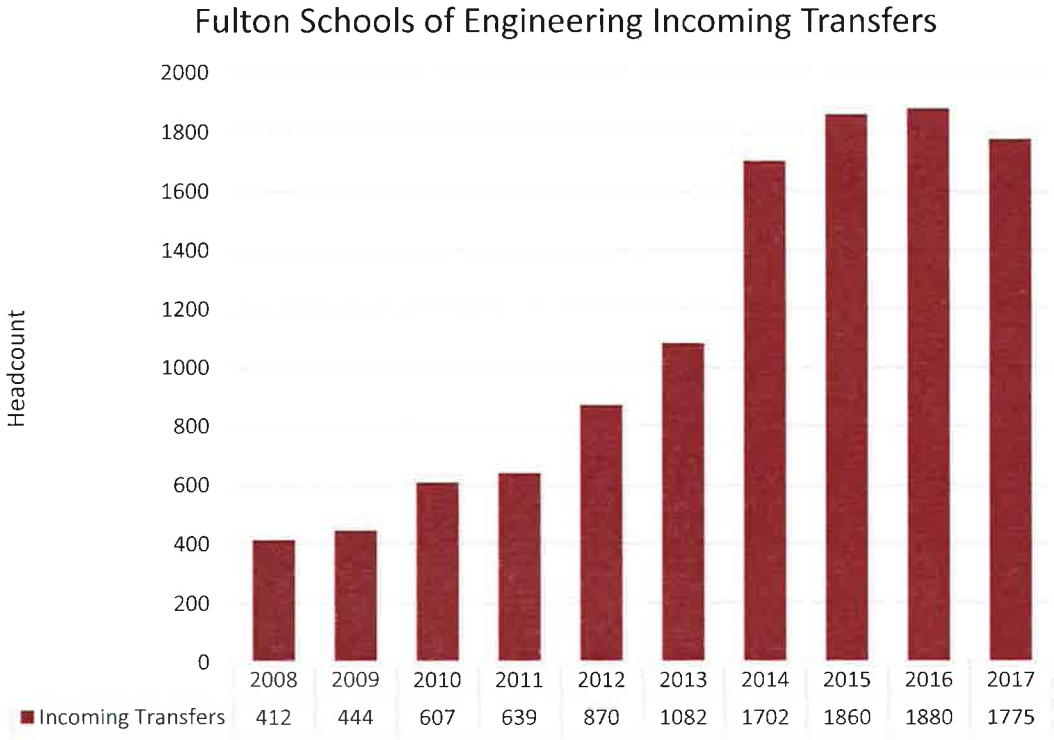


Fall 2018 freshman enrollment projected to increase 10-12%

Fulton Schools welcomed 2,711 freshmen in Fall 2017, including

- More than 550 women
- More than 900 underrepresented minorities - highest in history

Transfer student enrollment



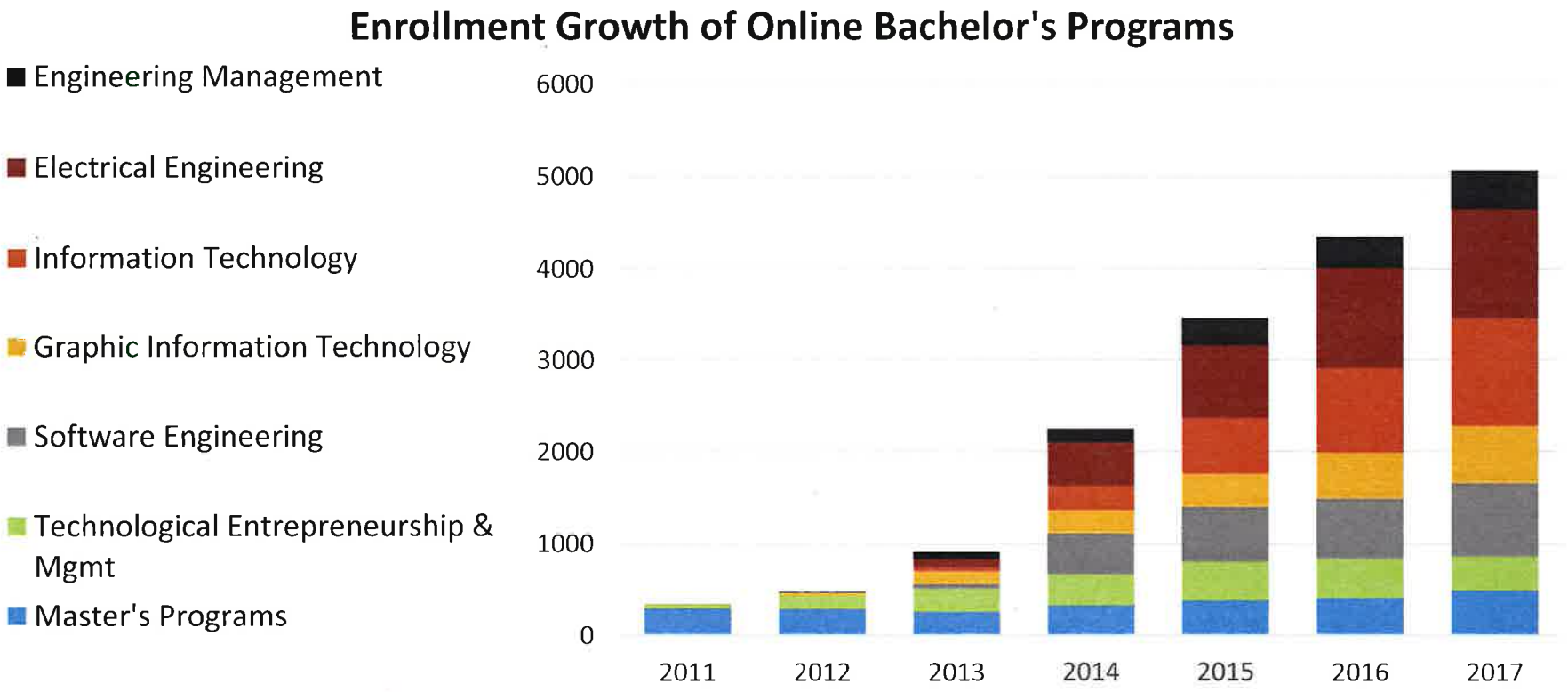
Fulton Schools welcomed 1,775 new transfer students in 2017

30% of transfers are from Arizona Community Colleges

Online programs are attracting students from all over the US and a dozen countries

Online program enrollment

Online programs continue to grow, attracting diverse students including underrepresented minorities and veterans



Enabling student success

Ira A. Fulton Schools of Engineering
Arizona State University

Freshman retention

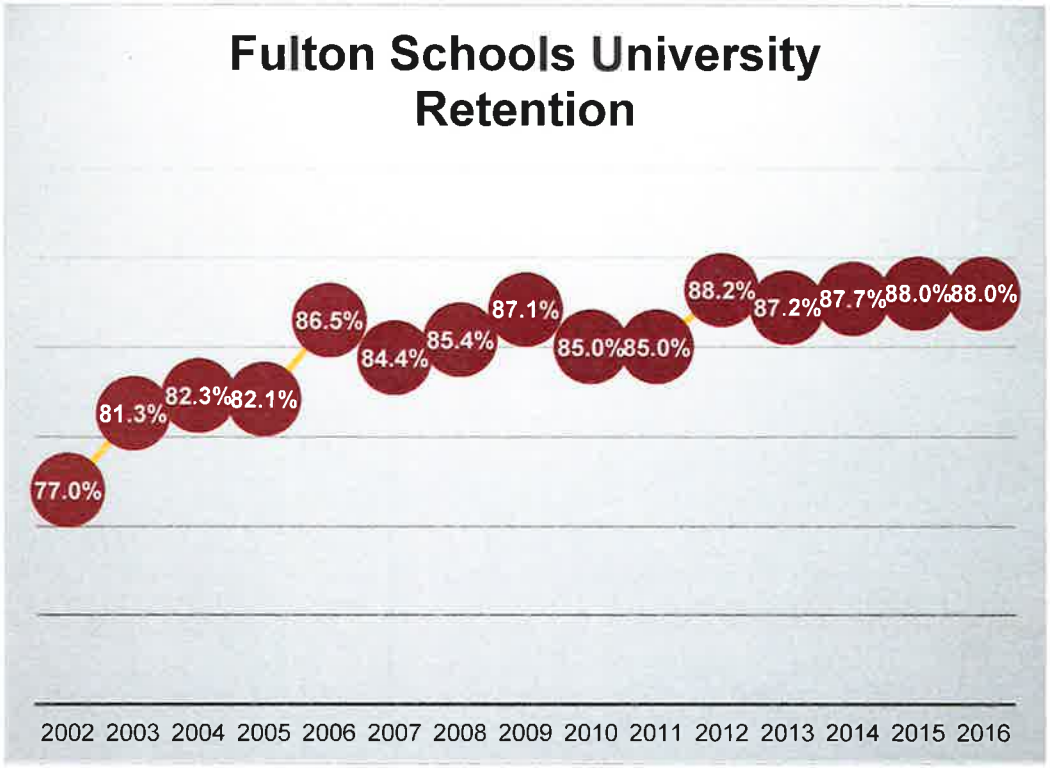
Seven* programs over 90%

- Electrical Engineering, Software Engineering, Industrial Engineering, Materials Science and Engineering, Information Technology, Technology Entrepreneurship and Management, Graphic Information Technology

Record retention of female students

Retention of under-represented groups is up 0.5%

Civil Engineering freshman retention up 7%



*19 FSE programs with 10 or more freshman; of these 7 over 90% retention. (of the 23 total FSE undergraduate programs, 10 over 90% retention)

(Exploratory majors removed to be consistent across years)

Graduation rates

Four-year graduation rate:
43.7 percent

Five-year graduation rate:
63.9 percent

Six-year graduation rate:
65.3 percent

Degrees granted

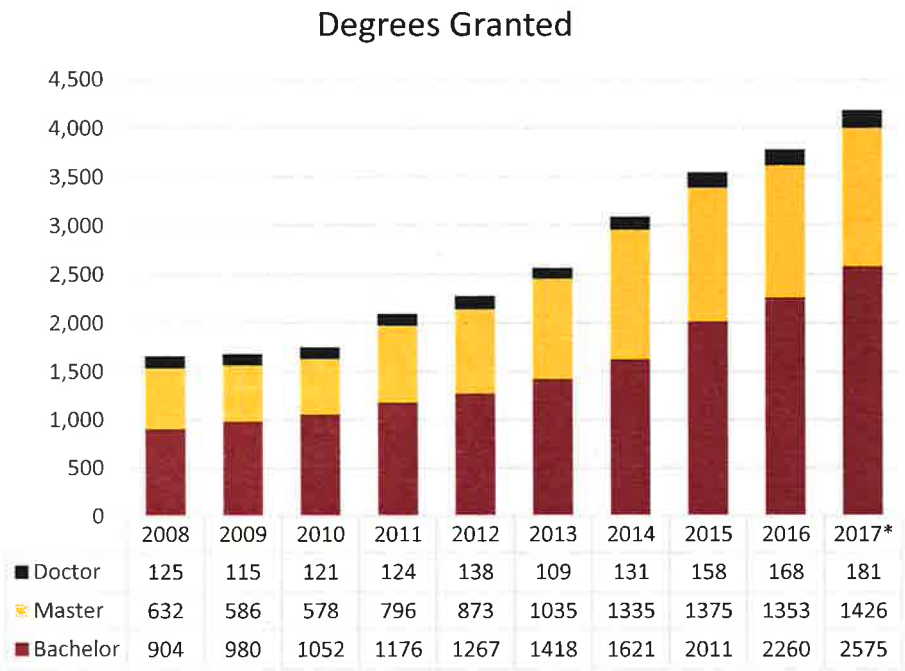
Supply of graduates helps fuel Phoenix being named #3 city for tech jobs (TIME Money June 2017)

#7 for bachelor's degrees granted in U.S.

#9 for bachelor's degrees granted to Hispanics

#18 for bachelor's degrees granted to women

Degrees granted continue to increase particularly at the bachelor's level



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017*
Doctor	125	115	121	124	138	109	131	158	168	181
Master	632	586	578	796	873	1035	1335	1375	1353	1426
Bachelor	904	980	1052	1176	1267	1418	1621	2011	2260	2575

Rankings from 2016 American Society for Engineering Education Profiles

*2017 data not yet finalized

On-campus growth scenarios

Scenarios to inform strategies:

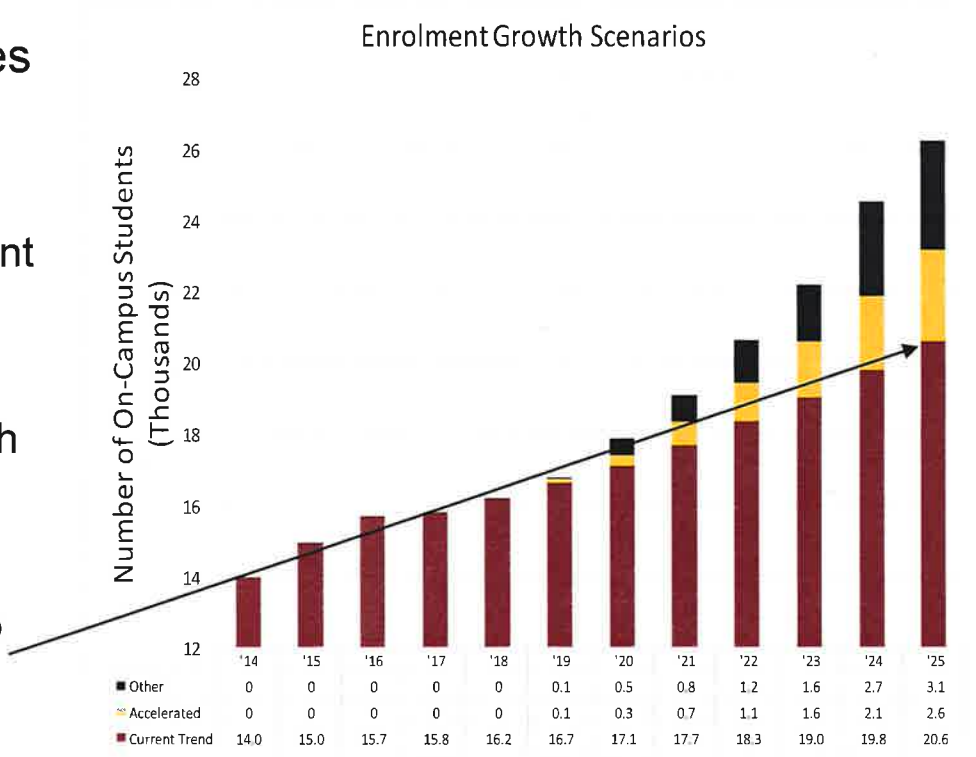
- Scenario 1: Projection based on **current** growth for **on-campus** enrollment
- Scenario 2: Projection based on **accelerated** growth for **on-campus** enrollment
- Scenario 3: Projection based on **rapidly accelerated** growth for **on-campus** enrollment

Sustaining current on-campus growth

Projection based on **current** growth rates for **on-campus** students:

- First-time freshman growth of 5%/year
- Retention within FSE maintained at current rate of ~76%
- Master's growth of ~1%/year
- PhD growth tracks faculty growth and with ~4 PhD students/faculty

Given the above assumptions: leads to 20,600 <u>on-campus</u> students by 2025



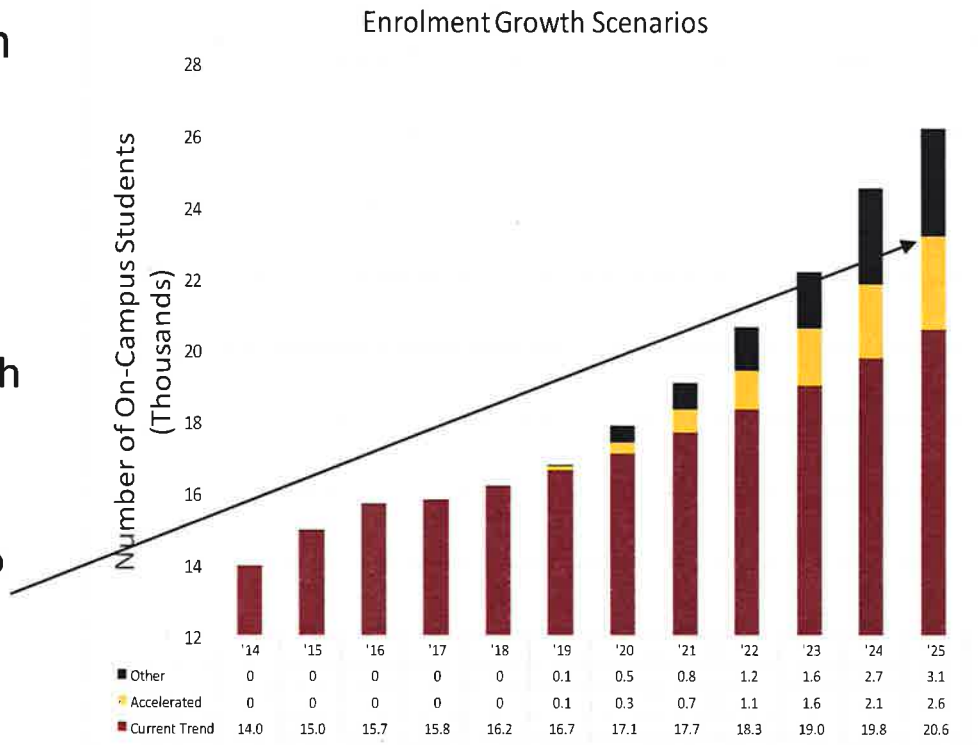
Personnel and physical infrastructure needed to scale current programs and accommodate nearly 5k new on-campus students by 2025

Accelerating on-campus growth

Projection based on **accelerated** growth rates for **on-campus** students:

- First-time freshman growth of 5%/year
- Retention within FSE **increased** to 85%
- Master's growth **increased** to 10%/year
- PhD growth tracks faculty growth and with ~4 PhD students/faculty

Given the above assumptions: leads to 23,200 <u>on-campus</u> students by 2025



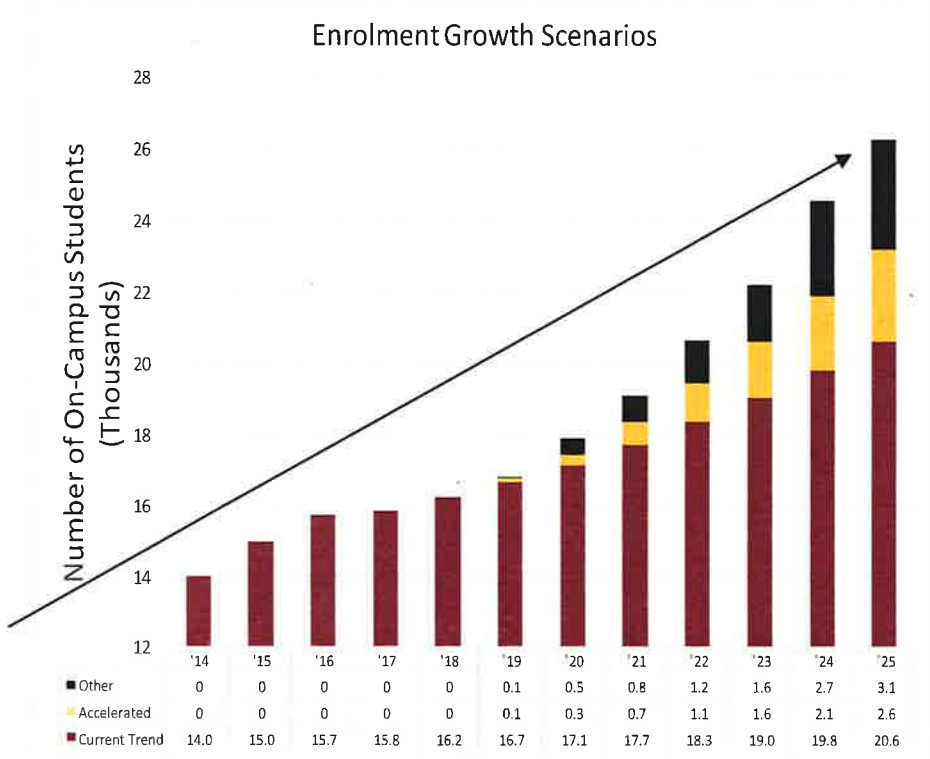
Personnel and physical infrastructure needed to substantially increase recruitment and retention, and scale current programs and accommodate nearly 8k new on-campus students by 2025

Path to 25,000 on-campus students by 2025

Projection based on **accelerated** growth rates for **on-campus** students:

- First-time freshman growth of 5%/year
- Retention within FSE **increased** to 85%
- Master's growth **increased** to 10%/year
- PhD growth tracks faculty growth and with ~4 PhD students/faculty

Achieving 25,000 on-campus students by 2025 requires an additional 2,000 students (e.g., new Master's and UG programs, merger with other ASU programs…)



Personnel and physical infrastructure needed to substantially increase recruitment and retention, merge programs, and scale current programs and accommodate nearly 10k new on-campus students by 2025

On-campus growth by degree for 25,000 by 2025

Undergraduate growth to 19,300 by 2025

- First-time freshman growth of 5% per year
- Retention within FSE increased to 85%

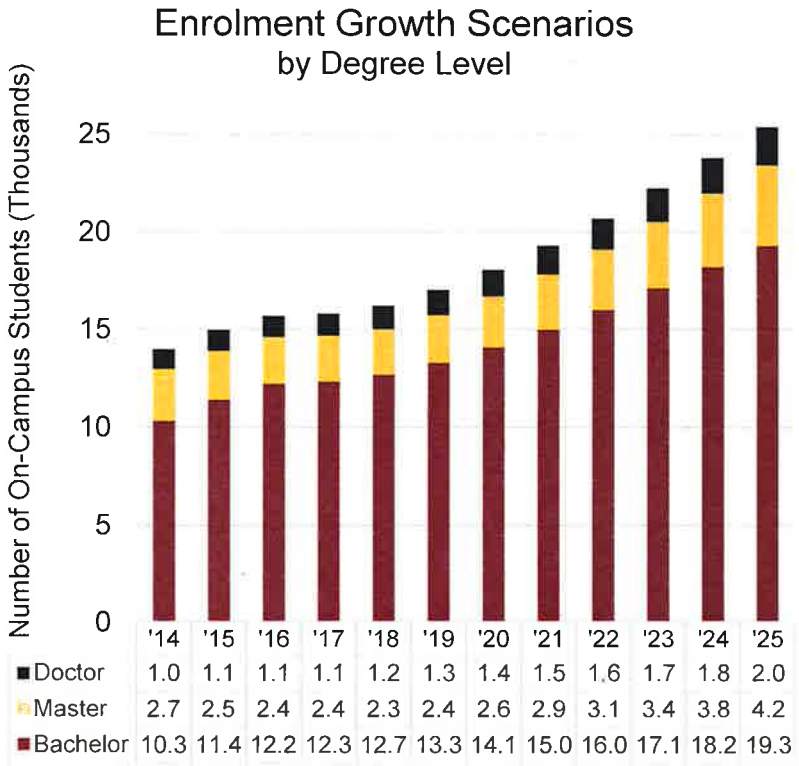
Master's growth to 4,160 students

- Master's growth increased to 10% per year

New programs to draw an additional 2,000 students

PhD growth to 1,960 students

- Growth proportional with faculty hiring



Summary of on-campus growth scenarios

Scenario 1: Projection base on **current growth rates** of **on-campus** enrollment leads to approximately 20,600 on-campus students by 2025

Results in an additional ~5,000 on-campus students; implies expansion to other campuses and additional infrastructure

Scenario 2: Projection based on **accelerated growth** of **on-campus** enrollment leads to approximately 23,200 on-campus students by 2025

Results in an additional ~8,000 on-campus students; implies expansion to other campuses, large increases in recruitment and retention, additional infrastructure

Scenario 3: Projection based on **rapidly accelerated growth** for **on-campus** students leads to 25,000 on-campus students by 2025

Results in an additional ~10,000 on-campus students; implies campus expansion, large increases in recruitment and retention, additional infrastructure, and launch of new programs

Actual scenarios would combine elements of the above: improvements in recruitment and retention combined with new program offerings and supporting infrastructure

Digital immersion

Ira A. Fulton Schools of Engineering
Arizona State University

Online FSE degree programs

Bachelor's degrees:

- Electrical Engineering
- Engineering Management
- Graphic Information Technology
- Information Technology
- Software Engineering
- Technological Entrepreneurship and Management

6 programs enrolling ~4,600 total students

To date: explosive growth of undergraduate online programs; low growth in Master's programs. New paradigms should accelerate Master's degree growth, e.g., Master of Computer Science via the Coursera partnership

Master's degrees

- Construction Management (MS)
- Electrical Engineering (MBA/MSE)
- Electrical Engineering (MSE)
- Engineering Science (Software Engineering) (MSE)
- Industrial Engineering (MBA/MS)
- Industrial Engineering (MS)
- Information Technology (MS)
- Master of Computer Science (MCS)
- Master of Engineering - Engineering Management (MEng)
- Master of Engineering - Quality, Reliability & Statistical Engineering (MEng)
- Master of Engineering - Systems Engineering (MEng)
- Materials Science and Engineering (MS)
- Sustainable Engineering (MSE)
- Technology (Graphic Information Technology) (MSTech)

14 programs enrolling ~500 total students

Online growth scenarios

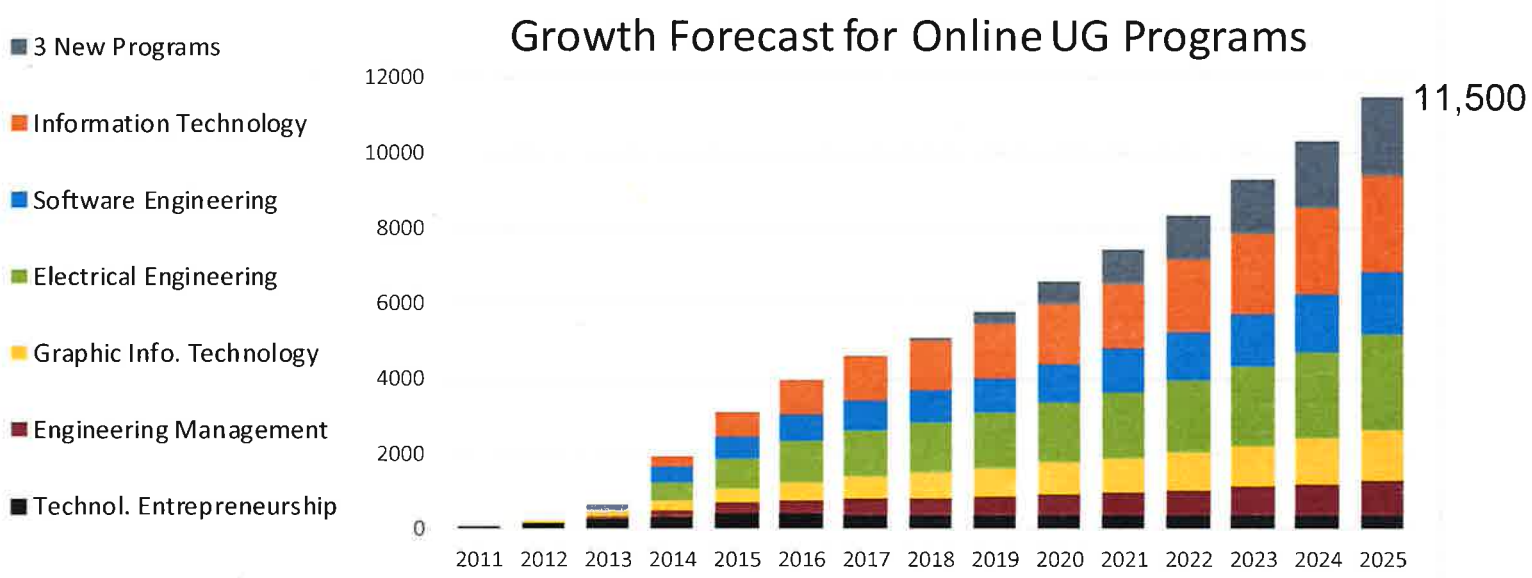
Scenarios to inform strategies for undergraduate programs:

- Scenario 1: Projection based on 10% growth per year through 2025 for the five online undergraduate programs experiencing growth; 3 new programs added with rapid scale up over years 1-4 and subsequent 20% growth to 2025

- Scenario 2: Projection based on initial 10% growth per year relaxing to slower growth through 2025 for the five online undergraduate programs experiencing growth; 3 new programs with rapid scale up over years 1-4 and subsequent growth of around 10% through 2025

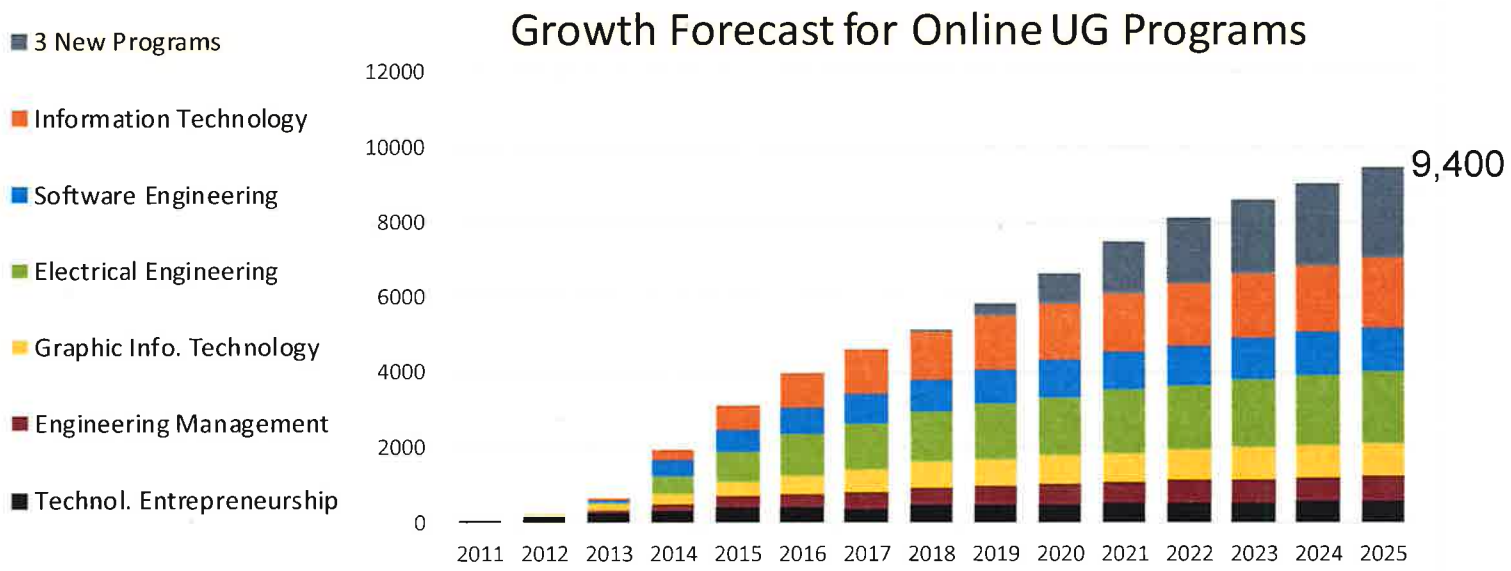
Online UG program growth

Scenario 1: 10% growth per year through 2025 for the five online undergraduate programs experiencing growth; 3 new programs added with rapid scale up over years 1-4 and subsequent 20% growth to 2025



Online UG program growth

Scenario 2: initial 10% growth per year through relaxing to slower growth through 2025 for the five online undergraduate programs experiencing growth; 3 new programs added with rapid scale up over years 1-4 and subsequent growth of around 10% through 2025



Strategies to 2025

Ira A. Fulton Schools of Engineering
Arizona State University

Strategies to 2025

Campus-centric strategies…

Expand online undergraduate offerings to new degrees

Expand existing on-campus undergraduate programs to multiple campuses

Replicate high-demand Master's degrees and degree concentrations on other campuses

- For example, Master of Computer Science currently launching online in Fall 2018

Degree-centric strategies…

Create new degrees for both on-campus and online delivery

- Bachelor of Arts in Computer Science

Develop new offerings such as certificates, micro-degrees and MOOCs

Extend global reach by leveraging experience in the Global Freshman Academy to deliver FSE content to populations around the world

Focus recruiting and retention efforts on underserved populations for engineering and technology degrees

Summary of overall growth scenarios for on campus and online programs

Given current levels of performance, student enrollment will grow to nearly 21,000 on-campus students by 2025

- Other scenarios grow on-campus enrollment beyond 21,000, that will require significant improvements over current performance levels of recruitment and retention as well as initiation of new programs

Undergraduate online student growth could grow to 7,000-9,500 students for existing programs and as large as 9,500-11,500 with addition of new programs

- Projection of Master's programs not easily forecast; large growth possible with new Master's of Computer Science coming online in Fall 2018

Total enrollment projections range from 28,000 to potentially 35,000 students by 2025

- Actual growth strategies are a combination of the considered scenarios: improvements in recruitment, retention, expansion of existing programs and creation of new programs


ASU
Ira A. Fulton Schools of
Engineering
Arizona State University
engineering.asu.edu

Advancing towards world-class research status

Fulton Schools Research - 2018

Early Stage Discovery

45+ young investigator awards from NSF CAREER, AFOSR YIP, DARPA YFA, ONR YIP, NASA and NIH over past three years.

More than **$44M awards for 19 DARPA projects** in last two years supporting areas such as biological technologies, microsystems, & complex remote systems.

Translational Research

NSF Engineering Research Centers: Leading **QESST** & **CBBG** plus partnering on **NEWT** & **FREEDM**

NSF I/UCRCs (Industry/University Cooperative Research Programs): PSERC, Connection One, SenSIP, WET, Center for Embedded Systems, Efficient Vehicles and Sustainable Traffic Systems, BRAIN

Launched new Clinical & Industry collaborations: IoT Collaboratory & ASU-Mayo Center for Innovative Imaging

WearTech is a demonstration **Velocity** Science and Technology Center

Continued 20+ years **SRP** relationship with $2.5M annual funding

Mission-Focused Impact

$18 million from **USAID** to establish the U.S.-Pakistan Centers for Advanced Studies in Energy (USPCASE) to improve power production in Pakistan

Lead **DHS Center for Accelerating Operational Efficiency**. CAOE develops and applies advanced analytical tools and technologies to enhance planning, information sharing and real-time decision-making in homeland security operations.

~345 tenured and tenure-track faculty + 50 research faculty + > 100 post-docs + > 1000 PhD students

Attributes of a world-class research enterprise

Global research leadership in at least two research areas

- Lead large-scale, federally funded research centers
- Houses and operates unique instrumentation / testbeds
- Captures imaginations as a thought leader with active "moonshot" projects

Stands out among academic peers

- Places doctoral graduates and postdocs in faculty positions at top 50 universities
- Attracts faculty from top 25 global engineering programs
- Well-recognized faculty including NAE members, high-impact publications
- Secures funding from a balanced portfolio of federal, industry and foundation sources

Recognized by industry

- Preferred Partner for Fortune 500 Engineering & Technology companies
- Partners on large scale projects; delivers research at the speed of industry
- Holds large numbers of patents licensed by industry
- Significant and successful start-up companies spun out from faculty research
- Produces highly skilled workforce

Measures and vision for global research leadership

Leadership Measure	Benchmarking FSE Today	2025 Vision
Lead large-scale federally funded research centers	**Leading 2+ NSF ERCs** related to sustainable engineering (QESST, CBBG, NEWT, FREEDM)	Embrace ASU's institutional leadership in Sustainability and leverage our place with one foci on **Future Engineering of Smart and Sustainable Cities for Extreme Environments** • Engineering for energy, water, materials, data and climate that promotes well-being in Extreme Environments • Be the 'go to' resource for government, industry, philanthropy with shared interests • Leverage opportunities to collaborate with UA and NAU
House and operate **unique** instrumentation and testbeds	**Unique testbeds** for surface and subsurface geotechnical engineering **Algae testbed** at AzCATI for bio-energy, bio-pharmaceuticals and food production **Silicon pilot line** to fabricate solar cells **Good but not unique materials** facilities (exception: 4D X-ray tomography)	
Conceive, initiate, lead and execute new research agenda (i.e., moonshots)	**Current Moonshot:** CO_2 capture from the atmosphere and CO_2 reuse	

Measures and vision for academic peer recognition

Leadership Measure	Benchmarking FSE Today	2025 vision
FSE PhD and postdocs from FSE become faculty at top 50 universities	Informal tracking, provide some organized mentoring; Mentoring 3 PhD/TT	Place PhD & post-docs in faculty position at top 50 universities; Mentor 5 PhD per TT faculty
FSE faculty come from top 25 global engineering programs	15% T/TT from Top 25 US Schools 38% T/TT from Top 25 Global Schools	Increase faculty diversity; 25% T/TT from Top 25 US Schools
NAE members	1.7% T/TT are National Academy members	4% T/TT are National Academy members
High impact journal publications	Informal tracking	Increase H-index by 20% from 2018
Ability to secure federal, industry and foundation funding	Leading ERC & DHS Centers; Faculty average $375k/TT/year	Lead high visibility Federal Centers; Achieve >$650k/TT/year
US News & World Report	FSE ranked 45th with 2 Top 20 and 9 Top 50 Ranked Graduate Programs	FSE ranked in Top 30 with 5 programs in Top 30 and 2 Top 10 graduate programs

Measures and vision for industry recognition

Leadership Measure	Today	2025 vision
Preferred Partner status of Fortune 500 Engineering & Technology companies	Numerous individualized partnerships	Preferred Partner status with 3 Fortune 500 engineering and technology companies
Partners on large scale projects	Episodic (function of faculty/center relationship)	Routine, enabled through **Velocity**
Capacity to deliver research at the speed of industry	55 Research faculty/scientists in FSE & 1000 active PhDs	125 research faculty/scientists & 2000 active PhD students
Large numbers of patents licensed by industry	61 of ASU 100 patents in 2017 were from FSE	Focus faculty on more licensable technologies
Number and success of start-up companies	FSE routinely has 4-6 startups per year by faculty	Encourage 12-15 startups per year by graduate students & research faculty
Production of highly skilled graduate-level workforce	1426 MS + 181 PhD graduates in 2017	Increase MS by 50% and double PhD graduates

Velocity Roadmap 2025

Through the Velocity roadmap, the region will emerge as a **science and technology center and dynamic job creation engine** that:

Creates 200,000 high-wage jobs in innovation- and technology-driven industries.

Adds hundreds of billions of dollars worth of capital investment in the community.

Generates new, powerful economic activity, returning more than $15 billion in new tax revenue to state and local governments.

Improves the education system, resulting in a highly trained workforce and more robust pay scale for employees

Source: Applied Economics Report (2014)

Impact our place

A world class engineering college is central to the comprehensive success of **every great metropolis**

Fulton Schools **attracts high-tech companies and creates value** by producing ideas, talent, discoveries and translational outputs

Rapid scaling of FSE impacts envisioned through a new private-public partnership called ***VELOCITY:***

Velocity will increase the speed of innovation in Arizona and transform the Fulton Schools of Engineering

Creating Value and Economic Impact:

Every direct startup job creates an additional 1.75 jobs in Arizona

Fulton Schools originated 7 of the 8 selected ASU startups surveyed in FY16 for economic impact in Arizona

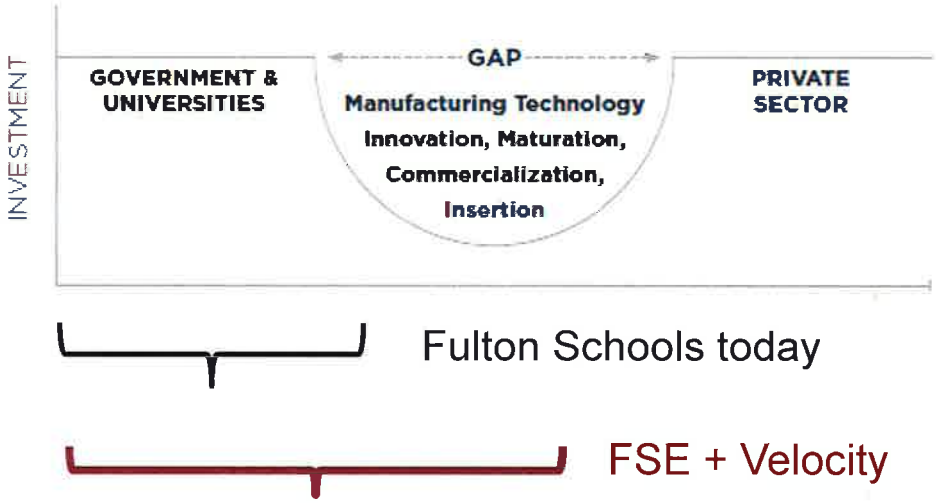
- **~ 940 additional jobs added**
- **~ $90M in additional revenue**
- **~ $60M in additional wages**
- **~ $8M in additional tax revenue**

The Fulton Schools of Engineering contributed 61 of the 100 patents generated by ASU for FY17 (top 20 world ranking)

Source: Seidman Research Institute Study of ASU's technology transfer impact and Skysong Innovations

Science and Technology centers key to *Velocity*

Velocity provides a blueprint to diversify Maricopa County's economy through investment in ***research based centers in emerging markets***



WearTech

WearTech, a demonstration *Velocity* S&T center, is an example how Fulton Schools leverages specific metro Phoenix investments including ASU BioDesign, T-Gen and partnerships with the Mayo Clinic and others.

Need and Opportunity:

- Enhancing human mental and physical performance is needed in multiple sectors (manufacturing, security, sports, education)
- Ability to leverage > $1.3 billion into healthcare research over past decade.
- Biosciences workforce in Phoenix has grown rapidly
- Leverage existing ASU faculty-related companies generating > $30M/year in neural stimulation

WearTech captures both medical and consumer applications

- WearTech is unique - focused on a broad range of consumer products and medical products that span multiple domains from Athletics to Teaching to Medical Rehabilitation
- FSE has strong industrial (medical and device) collaborations with these and other sectors

Find us at https://azweartech.com/

Strategies, Priorities & Resourcing

Global Research Impact

Encourage and support **moonshot concepts** and initiating or pursuit of **prize competitions**

Expand research **facilities** by 2x to help facilitate a 300% increase in research expenditures

Expand **research capacity** through growing FSE faculty from 340 to 450 T/TT faculty to match peers and supporting promotion of post-docs to research professor status

Recognition Among Peers

Improve **tracking** and **publicity** on recruitment or placement of faculty and high impact journal publications

Recruit and internally support nominations for 2 National Academy members per year

Lead & partner on high visibility research centers (MURI, MRSEC, ERC, STC, EFRI) through inspirational ideas and project management infrastructure

Initiate and participate in Academy and Program Reports in DC that **define or evaluate national research needs**

Impacting Industry

Continue garnering government and industrial support for **Velocity**

Support & complete demonstration **WearTech** Science and Technology Center as a prelude to Velocity

Create **unique** testbed facilities for research translation

Support **business develop capabilities** to partner with Fortune 500 companies on Federally funded research

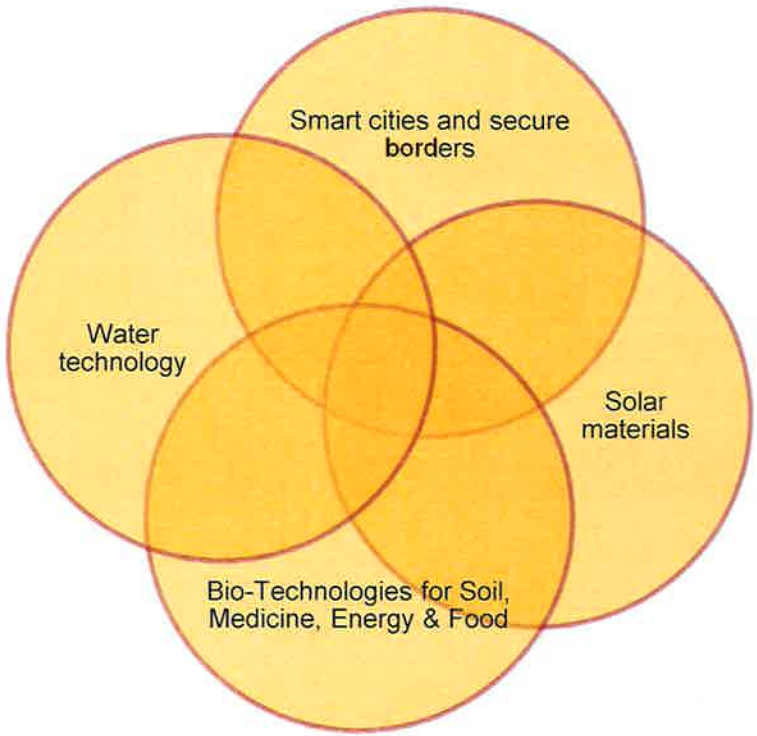
Improve placement of MS & PhD graduates in Fortune 500 companies and start-ups

Future technology for desert cities

Embrace ASU's institutional leadership in Sustainability and leverage our place with focus on **Future Engineering of Smart and Sustainable Cities for Extreme Environments**

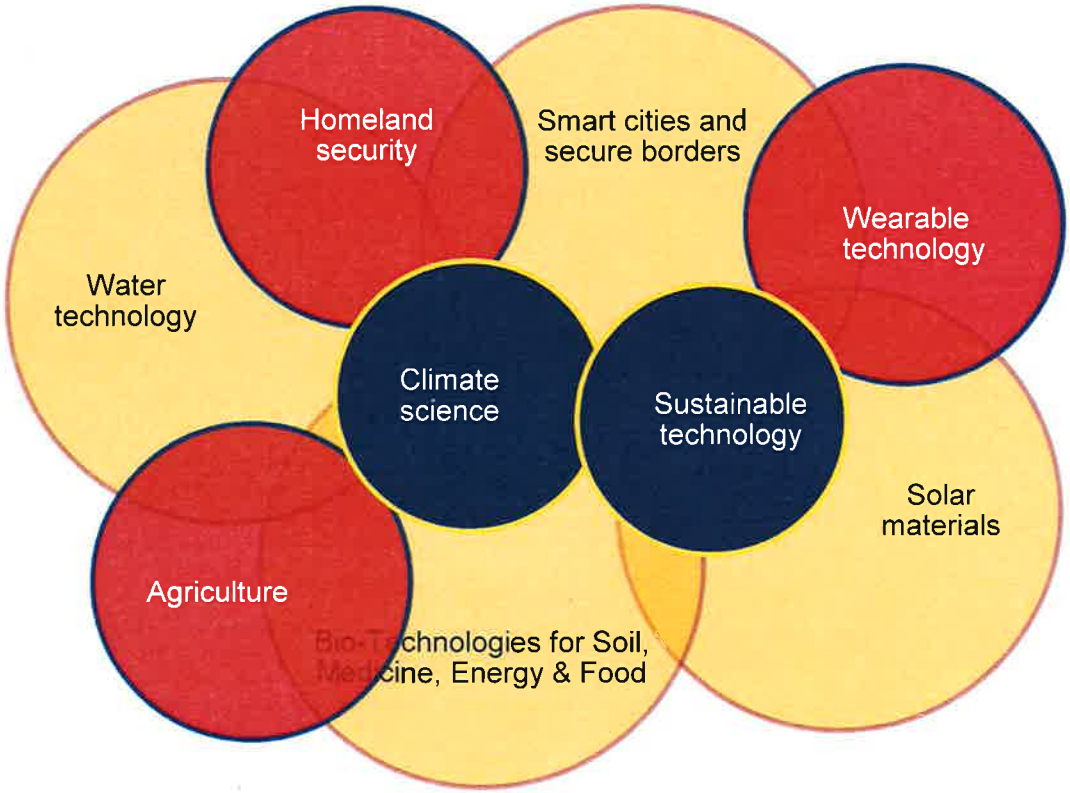
Leveraging our place

- Engineering for energy, water, materials, data and climate to promote human well-being in extreme environments
- "Go-to resource" for governments, industry, philanthropy with shared values
- Opportunities to collaborate with NAU and UA



Opportunities for regional collaboration

Future Engineering of Smart and Sustainable Cities for Extreme Environments



Arizona State University

University of Arizona

Northern Arizona University

(colors correspond to identified research strengths at each institution)

ASU engineering research strengths

Energy

Carbon-reducing energy technologies, renewable and alternative energy sources, biotechnology, low/high-power energy storage, power electronics, electric power systems, batteries and hydrogen fuel cells

Health

Advanced biosensors, bioassays and lab-on-a-chip devices; novel biological materials, neural engineering, biomedical informatics, drug-delivery systems, healthcare systems analysis and modeling, rehabilitation technologies

Sustainability

Restoring and improving urban infrastructure, access to clean water and clean air, advanced construction techniques and management, environmental fluid dynamics, transportation planning, biogeotechnical engineering

Security

Cybersecurity and digital forensics, secure communications, data mining to identify, monitor and reduce threats, developing self-healing systems

Source: https://research.engineering.asu.edu/research-themes/

UA engineering research strengths

Sustainability and infrastructure

Water treatment and reuse, bioremediation, biofuels and renewables, energy efficiency and storage, autonomous systems, traffic and transit systems, cost estimation, data management, infrastructure networks

Biomedical systems and devices

Sensors, imaging, biomaterials, wearable devices, mobile diagnostics and testing

Defense and homeland security

Explosives detection, active flow control for air and space flight, robotics, cybersecurity, wireless communication, space object behavioral sciences

Advanced manufacturing and materials

Materials testing in extreme environments, nanotechnology and metamaterials design, computational modeling to predict properties and build stronger materials, mining logistics

Source: https://engineering.arizona.edu/research

NAU research strengths

Astronomy and planetary science

World's first International Dark Sky Place, partnerships with regional, national, and international observatories, impact cratering, Mars, star and planet formation, planetary atmospheres

Emerging technologies

Big data, cybersecurity, informatics, and cyber-physical systems, UAV tracking of wildlife, assistive technologies

Changing climate

Forestry, ecology, sustainability, and climate science, carbon cycling, ecosystem ecology, habitat fragmentation

Health through bioscience research

Bioengineering and biosciences, genetics and genomics, Native American health and wellness, evolution, ecology, and epidemiology of disease-causing bacteria

Source: https://nau.edu/research/areas-of-emphasis/


ASU
Ira A. Fulton Schools of
Engineering
Arizona State University
engineering.asu.edu

2017-2018 At-Risk Compensation Goal

FY2017-2018 Goal 2

Provide a master plan for the financing, relocation, and development of athletic facilities within the Novus Innovation Corridor.

FY 2018 Goal 2

At-Risk Compensation Goal:

Provide a master plan for the financing, relocation, and development of athletic facilities within the Novus Innovation Corridor.

Goal Accomplished

Report Follows

Athletic Facilities Master Plan

July 12, 2018

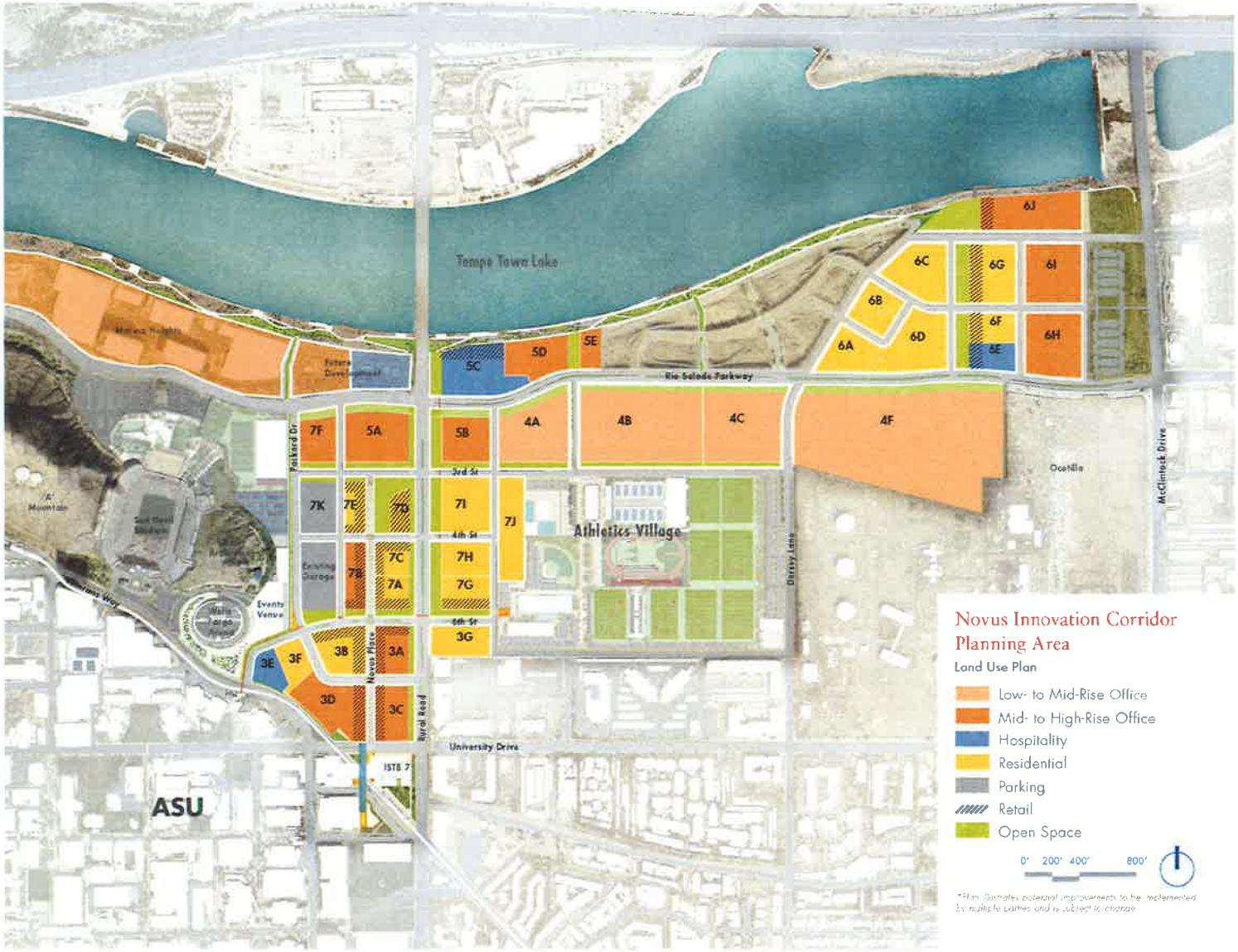
Arizona State University

Planning Principles

- The Novus Innovation Corridor Master Development Plan and the Sun Devil Athletics Facilities Master Plan are integrated in terms of siting, development timing and plans of finance.
- The Athletic Facilities Master Plan addresses the facility needs for all currently offered sports, and provides additional student recreation fields as well.
- The athletic facilities are accommodated within the Novus Innovation Corridor Master Development Plan.
- Each athletic facility will have a project-specific plan of finance that is supported by anticipated gifts, venue operations, Novus assessment revenue and other available revenue.
- Each athletic facility project will be submitted to ABOR for approval in accordance with ABOR policy.

Sun Devil Athletic Facilities Master Plan

	Estimated Project Cost
Athletic Facilities Plan - Phase 1	
Multipurpose Arena/Wells Fargo Arena Renovation	$ 160.0
Indoor Tennis Facilities	8.1
Outdoor Tennis Facilities	7.8
Wrestling Training Facility	2.6
Gymnastics Training Facility	2.6
Soccer/Lacrosse Competition and Practice Fields	1.8
Phase 1 Subtotal	**$ 182.9**
Athletic Facilities Plan - Phase 2	
Football Fieldhouse and Practice Fields	$ 28.5
Soccer and Lacrosse Competition Grandstands	10.2
Carson Center Renovation	9.5
Athletic Village Site Development	8.9
Track and Field Competition Stadium	8.5
Maintenance Yard	6.1
Sports Performance Center Expansion	2.2
Phase 2 Subtotal	**$ 73.9**
Athletic Facilities Plan - Phase 3	
Mona Plummer Aquatic Renovation	10.6
SDA Facilities Master Plan Project Cost Total ($ in millions)	**$ 267.4**



Novus Innovation Corridor Planning Area

Land Use Plan

- Low- to Mid-Rise Office
- Mid- to High-Rise Office
- Hospitality
- Residential
- Parking
- Retail
- Open Space

0' 200' 400' 800'

*Plan illustrates potential improvements to be implemented by multiple parties and is subject to change

NOVUS Innovation Corridor ASU

Athletics Master Plan

NOVUS Innovation Corridor ASU

2017-2018 At-Risk Compensation Goal

FY2017-2018 Goal 3

Present a report detailing the fully encapsulated enterprise structure of ASU, including the roles, functions, responsibilities of Enterprise Partners and other university affiliated entities, including summary charts of ownership entities and percentages, fundamental operating agreement terms and sources and uses financial statements for each entity.

FY 2018 Goal 3

At-Risk Compensation Goal:

Present a report detailing the fully encapsulated enterprise structure of ASU

Goal Accomplished

Report Follows

ASU Enterprise Partners
Arizona State University

ABOR Enterprise Report

ASU Enterprise Partners

MISSION

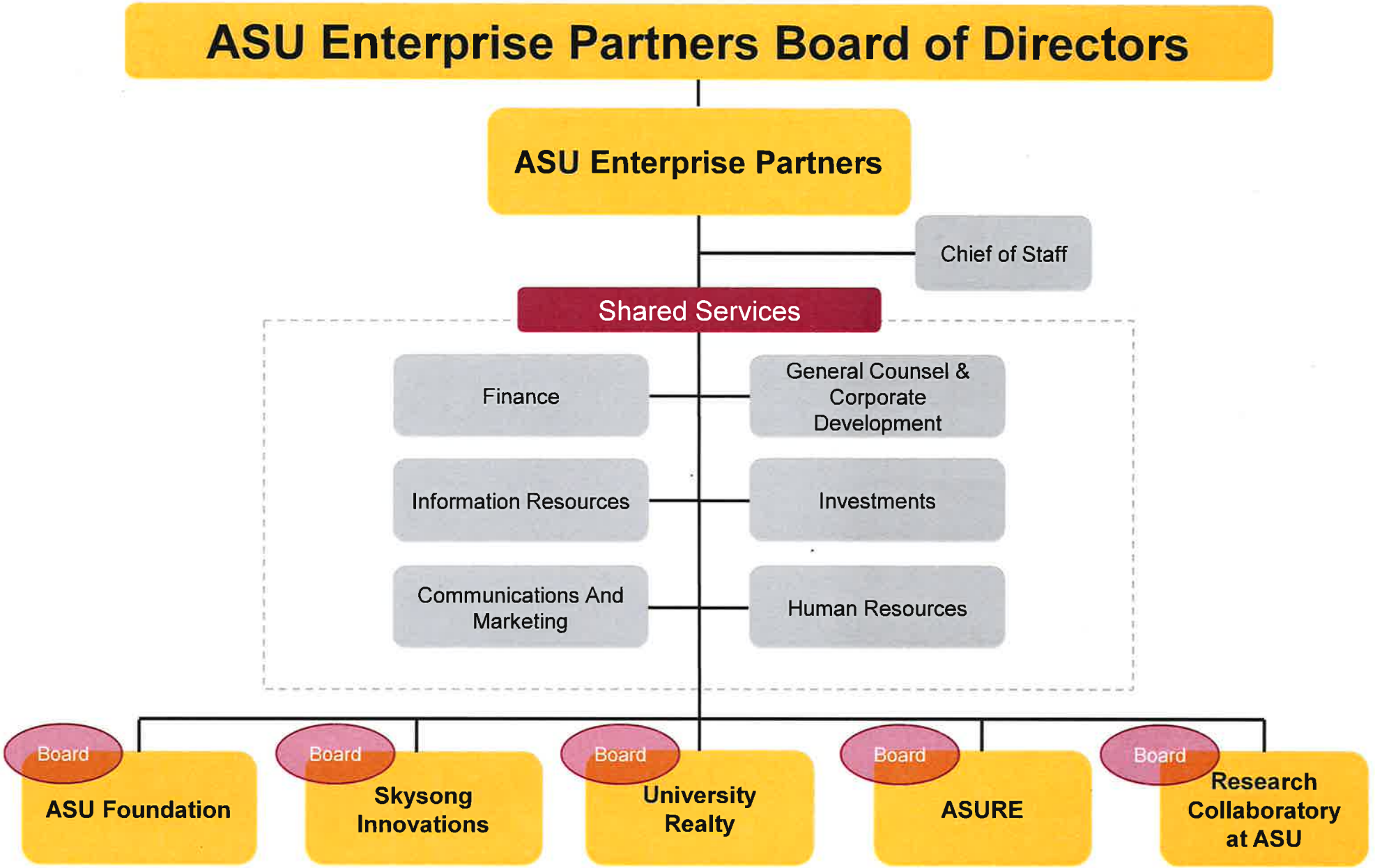
ASU Enterprise Partners
Arizona State University

Five Subsidiaries, One Purpose

ASU Enterprise Partners' mission is to advance the success of Arizona State University as A New American University.

ORGANIZATIONAL STRUCTURE

ASU Enterprise Partners
Arizona State University



ENTERPRISE PARTNERS

ASU Enterprise Partners
Arizona State University

ASU Enterprise Partners is a private, nonprofit organization.

As a 501(c)(3), Enterprise Partners is not privately owned. It is commonly controlled through shared board membership with the Enterprise. Director appointments are made by the Enterprise Partners Board of Directors.

EP Board of Directors

William Post
Juanita Francis
Michael Crow
José Cárdenas
Tony Corey
Virginia DeSanto
Stephen Evans
Ira Fulton
John Graham
Jay Heiler
Robert Johnson
Anne Mariucci
Morgan Olsen
Harry Papp
R.F. "Rick" Shangraw
Gary Trujillo
Greg Vogel
Scott Wald
Keith Wirtz
Roger Wittlin

ENTERPRISE PARTNERS

ASU Enterprise Partners
Arizona State University

ASU Enterprise Partners
501(c)(3)
20 member Board of Directors

Finance
- Payroll and benefits management
- Accounting, budgeting and reporting
- Audit and tax management
- Risk management
- Treasury management

Information Services
- Information technology service and support
- Gift processing
- Data analytics and reporting.
- Donor data management

Communications And Marketing
- Communications and marketing services
- Public relations
- Corporate branding

Legal Services
- Board and committee governance management
- Legal counsel
- Internal control and compliance management
- Merger and acquisition support

Investments
- Investment management

Human Resources
- Recruiting and hiring employees
- Staff education and training

Key Financial Information (000's)		
	FY17	FY18 thru April
Assets	$1,097,297	$1,188,677
Liabilities	$269,368	$276,522
Net Assets	$827,929	$912,155
Revenue	$226,144	$210,551
Expense	$147,592	$126,324
Net Income	$78,553	$84,227

Value Propositions:

- Enterprise Partners provides a single point for coordination on all initiatives with ASU.
- Enterprise Partners offers an entrepreneurial platform.
- Enterprise Partners provides a framework for expansion.
- Enterprise Partners protects the purity of traditional philanthropy under the ASU Foundation.
- Enterprise Partners provides subsidiaries with strong governance oversight from Board members with applicable expertise.
- Enterprise Partners ensures coordination between subsidiaries.
- Enterprise Partners operates as a single point of entry for the university to affiliated entities.
- Enterprise Partners creates synergies among affiliated entities.
- Enterprise Partners pursues new revenue sources to meet the increasing needs of the university.
- Enterprise Partners drives efficiencies and economies of scale.

ASU FOUNDATION

ASU Enterprise Partners
Arizona State University

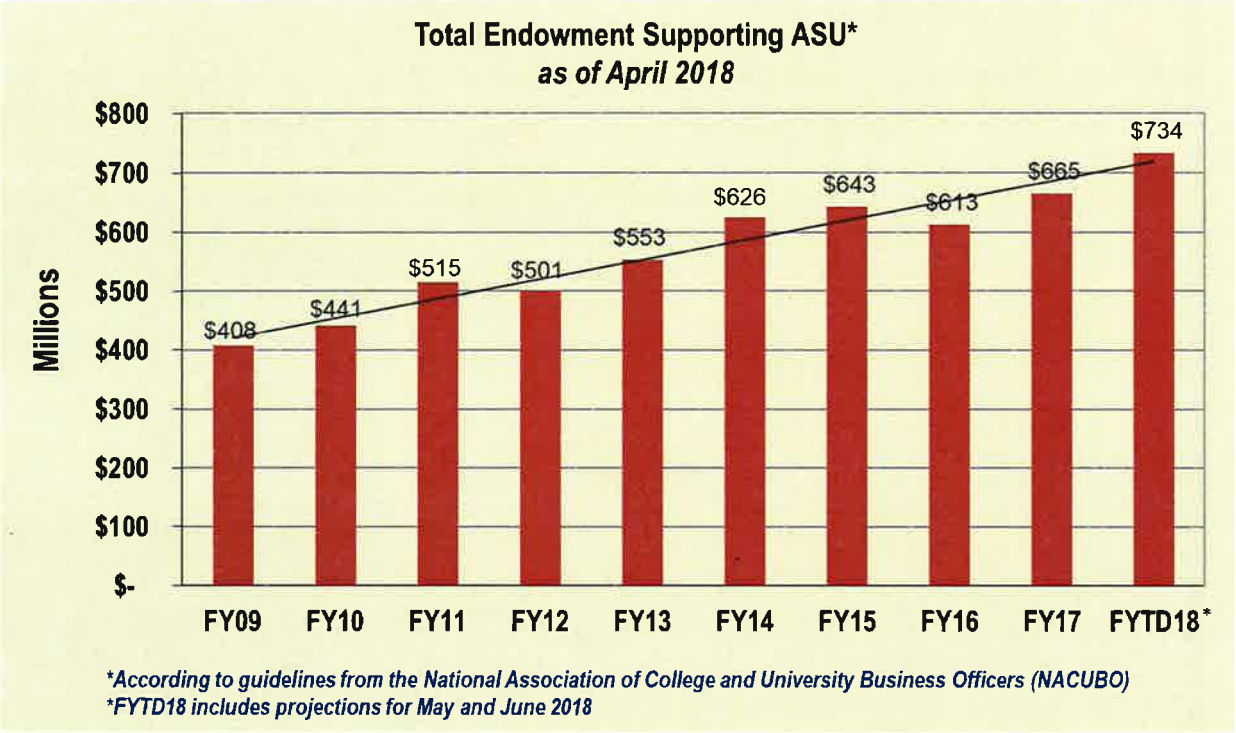
Our Mission: To advance, through philanthropy, the success of Arizona State University as a New American University.

ASU Foundation for A New American University
13 member Board of Directors

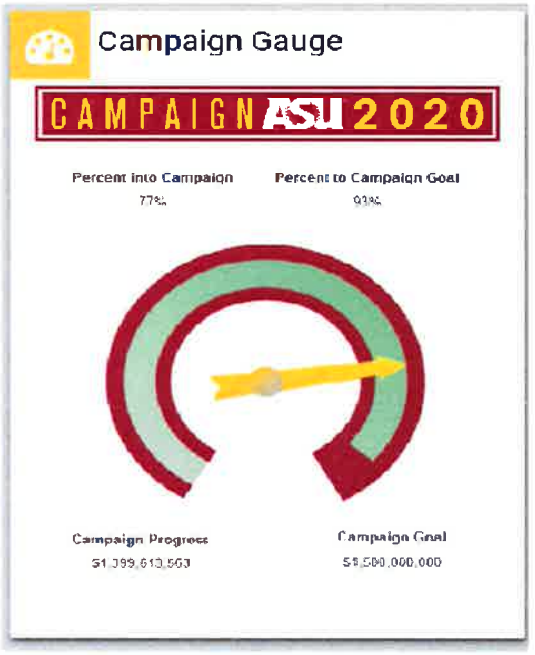
Value Propositions:

- ASUF engrains philanthropy in the culture of Arizona State University by promoting a university citizen mindset.
- ASUF models high-functioning volunteer engagement programs for the university.
- ASUF is innovative in how we operate.

Key Financial Information (000's)		
	FY17	FY18 thru April
Assets	$927,299	$1,009,569
Liabilities	$172,001	$177,797
Net Assets	$755,299	$831,771
Revenue	$184,840	$184,470
Expense	$133,290	$107,997
Net Income	$51,550	$76,473



*According to guidelines from the National Association of College and University Business Officers (NACUBO)
*FYTD18 includes projections for May and June 2018



ASU FOUNDATION

ASU Enterprise Partners
Arizona State University

SKYSONG INNOVATIONS

ASU Enterprise Partners
Arizona State University

Our Mission: To serve ASU researchers and entrepreneurs by providing the expertise and resources they need to reach the market potential of their ideas.

Value Propositions:

- Skysong Innovations executes rapid and efficient deals on reasonable terms, with an emphasis on speed to market, flexibility and, where appropriate, shared risk.
- Skysong Innovations builds new and better ways to support our faculty and students, connecting to investors and meeting the needs of outside partners.

Key Financial Information (000's)		
	FY17	FY18 thru April
Assets	$11,516	$10,539
Liabilities	$2,775	$3,034
Net Assets	$8,741	$7,505
Revenue	$9,130	$8,542
Expense	$9,130	$8,542
Net Income	$0	$0

Key SI Metrics		
	FY17	FY18 To Date
Invention Disclosures	277	290
New Patents Filed	183	180
US Patents Issued	85	116
Start-ups	15	17

UNIVERSITY REALTY

ASU Enterprise Partners
Arizona State University

Our Mission: To advance the success of Arizona State University as a New American University.

University Realty, LLC
10 member Board of Directors

Key Financial Information (000's)		
	FY17	FY18 thru April
Assets	$159,678	$168,389
Liabilities	$118,204	$109,909
Net Assets	$41,475	$58,480
Revenue	$35,240	$22,880
Expense	$13,661	$5,874
Net Income	$21,579	$17,006

Assets Under Management	Q4 FY2018
Investments	$ 59,840,000
Properties for ASU	118,080,000
REAP Program	5,570,000
Gifted Properties	17,600,000
Total	$ 201,090,000

Value Propositions:

- University Realty analyzes, accepts and monetizes commercial office, industrial, retail, and multi-family buildings, as well as vacant land received from philanthropic real estate gifts.
- University Realty strategically invests, acquires and disposes of real estate at logical points in real estate cycles.
- University Realty provides full-service, ground-up development including acquisitions and entitlements of land, master-planning and building design, construction, and financing of office, industrial, and multi-family projects.
- University Realty generates fees on new development with specialized like-minded real estate developers.
- University Realty provides investment oversight of the Foundation's endowment real estate investments.
- University Realty provides real estate needs for Skysong Innovations-related start-up companies and other EP enterprises.

UNIVERSITY REALTY

ASU Enterprise Partners
Arizona State University

CORE MISSION

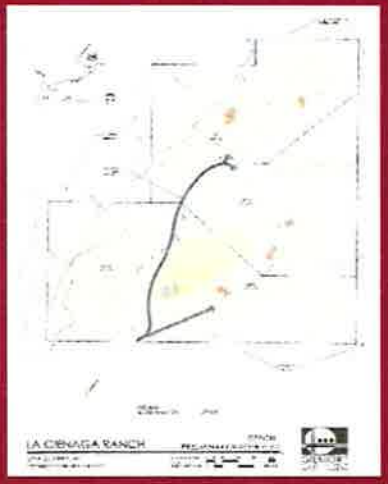

Washington, D.C.


Fulton Center

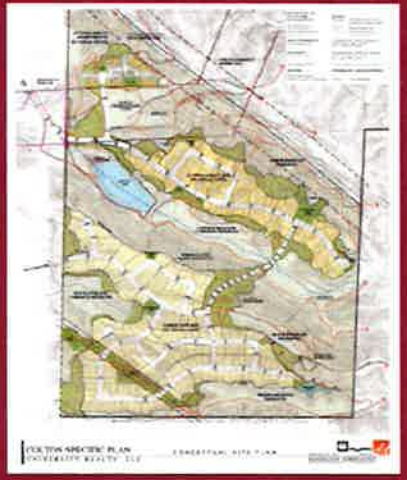

Brickyard


Herald Examiner Building

PHILANTHROPY



La Cienega Ranch


Rancho del Prado


McDowell Warehouse


Hardy Warehouse

INNOVATION


SkySong 1, 2, 3, 4, 5


Novus Phase 3

LIFE-LONG LEARNING


Mirabella at ASU

ASURE

ASU Enterprise Partners
Arizona State University

Our Mission: ASURE is ASU's applied research and development arm. ASURE specializes in delivering program, process, and strategies to rapidly drive ASU innovation into fully executed solutions.

ASU Research Enterprise

5 member Board of Directors

Key Financial Information (000's)		
	FY17	FY18 thru April
Assets	$146	$163
Liabilities	$981	$1,436
Net Assets	-$835	-$1,273
Revenue	$1,779	$1,095
Expense	$1,779	$1,095
Net Income	$0	$0

Value Propositions:

- ASURE develops programs and processes to rapidly drive ASU innovations into fully executed solutions.
    - Experienced Veteran staff of program developers, systems engineers, contract managers
- ASURE is uniquely capable of conceiving innovative solutions that meet specific requirements of stakeholder community.
- ASURE has the capacity to communicate/conduct all levels of classified work.
- ASURE provides unique workspaces that foster solution brainstorms.
- ASURE's provides an alternate organizational home for managing non-faculty research personnel.
- ASURE conducts specialized contracts, complex consortia, unique business models.

Key Update:

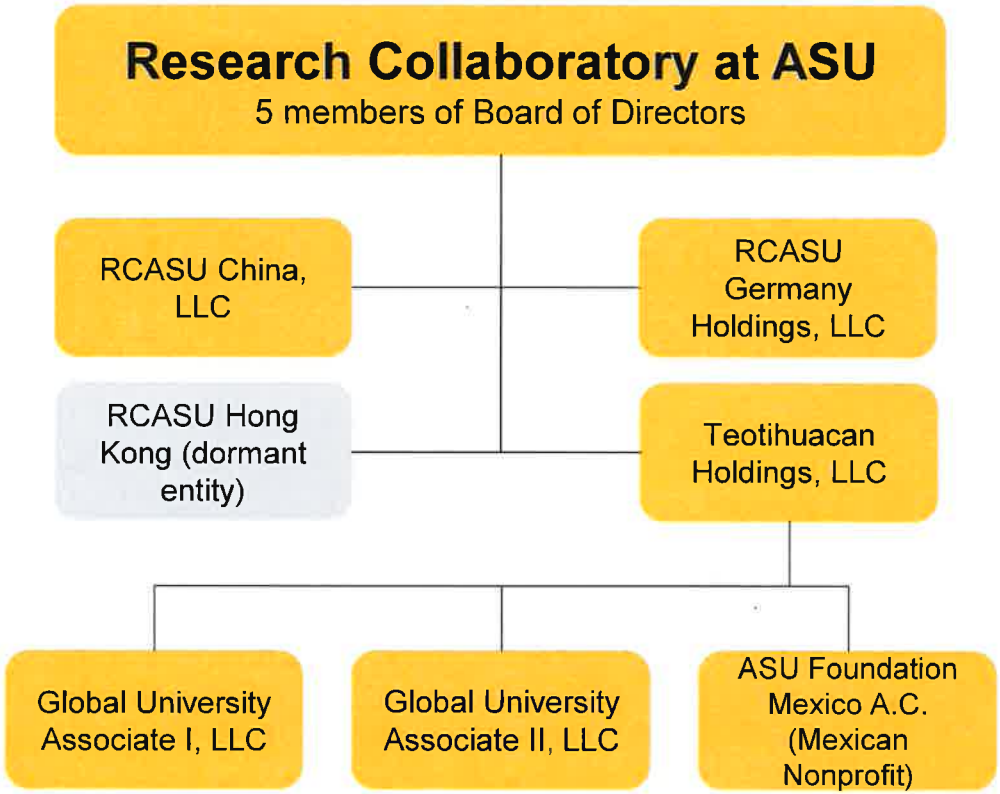
GSA

ASURE was awarded a contract with the General Services Administration (GSA) Multiple Award Schedule (MAS or Schedules). The contract is effective 4/17/2018 through 4/16/2023 with up to three 5-year options.
This provides ASURE with the opportunity to sell on Schedule to federal acquisition professionals. It is a preferred contracting vehicle by the federal government because it reduces paperwork, allows for fast contract startup and is more efficient. It also enables ASURE to serve as a prime contractor rather than a subcontractor.

RESEARCH COLLABORATORY AT ASU

ASU Enterprise Partners
Arizona State University

Our Mission: To broaden ASU's ability to engage faculty, staff, and students in testing, launching, and implementing new ideas; to obviate organizational challenges to launching new ideas by providing expert governance, legal support, and financial reporting; to expand ASU's ability to respond to nontraditional opportunities with agility; to foster an environment that encourages the development of new ideas that contribute to the common good; to enable the actualization of ASU's design aspirations to leverage its place in the local and global community, to uphold its commitment to social embeddedness, and value entrepreneurship.



Key Financial Information (000's)		
	FY17	FY18 thru April
Assets	$1,628	$1,729
Liabilities	$60	$251
Net Assets	$1,568	$1,478
Revenue	$1,530	$635
Expense	$998	$635
Net Income	$532	$0

Value Propositions:

- RCASU provides core expertise and framework for handling organizational needs to launch new ideas.
- RCASU operates with flexibility and dexterity in utilizing ASU's resident expertise while removing administrative and management barriers.
- RCASU utilizes reach and efficiency in solving legal, financial, and governance issues globally.
- RCASU convenes power to bring together disparate resources and organizations toward a common goal.
- RCASU has accrued know-how in handling myriad situations and contexts.


ASU
Enterprise
Partners
Arizona State University

Enterprise Performance Incentives

FY2015-2018 Goal 1

Achievement of the 2018 fiscal year strategic plan metric goal in the Freshman Retention Rate of 85.2%; additional incentive to exceed goal by attaining at Freshman Retention Rate of 86%.

FY 2015 - 2018 Goal 1

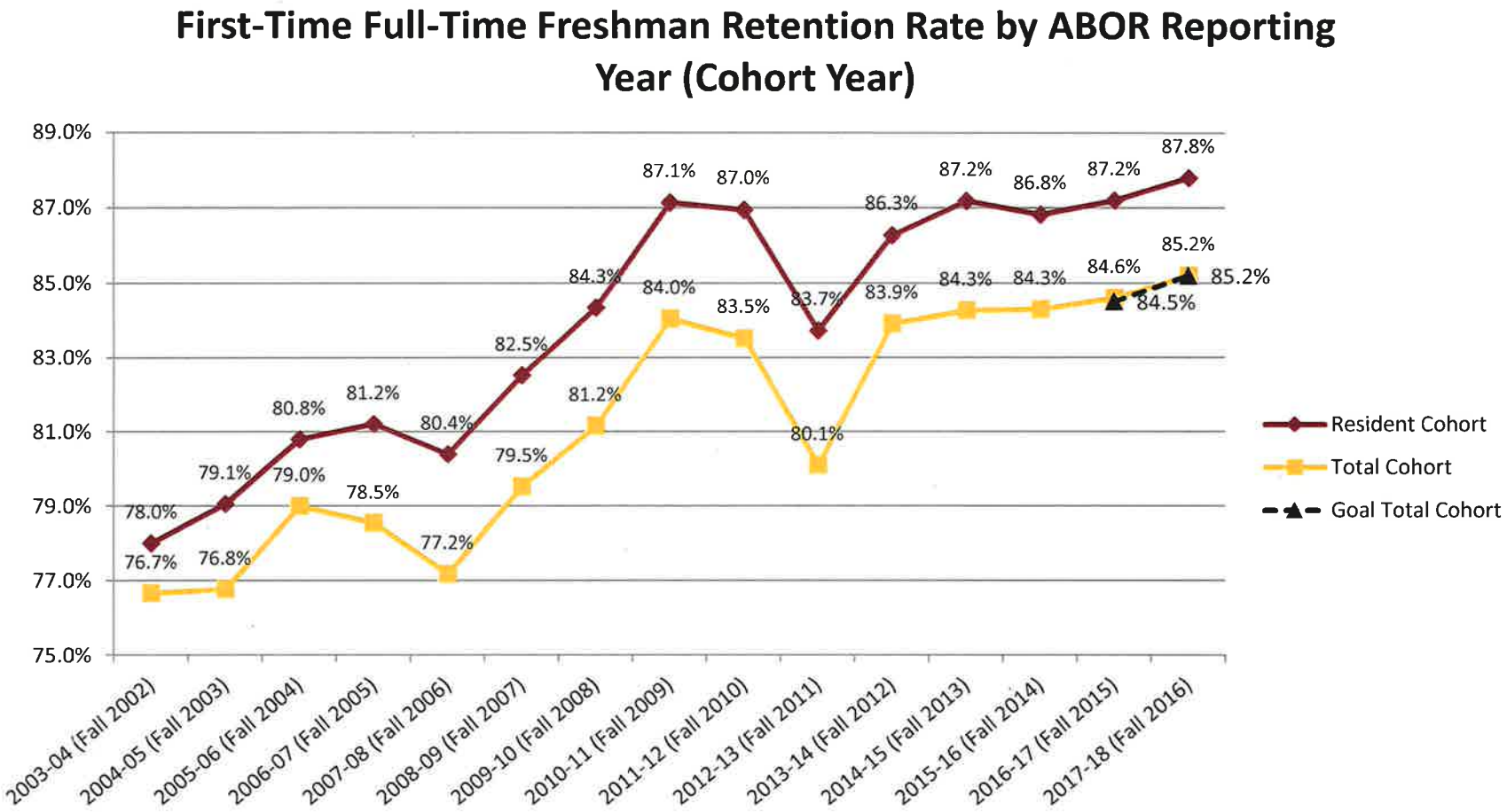
Enterprise Performance Incentives:

Achievement of the 2018 fiscal year strategic plan metric goal in the Freshman Retention Rate of 85.2%; additional incentive to exceed goal by attaining at Freshman Retention Rate of 86%.

Goal Accomplished

Report Follows

Achieving Freshman Retention Goal: 85.2%



Achieving 2018 Metric:
85.2% Freshman Retention

Context:

- ASU's persistence and graduation rates are a function of expanded accessibility compared with institutions that admit only A and A+ students.
- ASU admits all Arizona students who have the ability to do university level work (A and B students).
- By doing so, the freshman class of 12,340 now matches the socioeconomic and ethnic diversity of Arizona. In 2002, 17.2% of freshmen were underserved minorities, increasing to 35.2% by 2018. Additionally, 34.2% of our undergraduates now receive Pell Grants. This access model impacts retention.
- ASU students who enter with at least a GPA of B+ retain at rates above 90%; but the overall rate is 85.2%.
- To meet our goals, the success of the 20% of students below a B+ must be made comparable to those above.

Achieving Higher Freshman Retention

Continuing to implement an integrated and interdependent set of student success tools and strategies:

- The financial literacy platform, iGrad, continues to provide access to personalized student financial learning and planning, emphasizing college and life/career financial planning for students and their families.

- Use of the GetSet platform to encourage growth mindsets continues to expand. This online platform matches students to peer mentors who had similar circumstances and successfully navigated the same challenges and obstacles. It can improve a sense of belonging, motivation, resiliency, and determination in a highly personalized way. In Fall 2017, 8,500 unique students engaged in using GetSet, an increase of 2,000 over the prior year. Students who entered ASU at higher academic risk gained the greatest improvement in retention when they used GetSet. Overall, the Fall to Spring retention rate for GetSet users was higher than for non-users by about 5 percentage points, whereas those most at risk gained over 8 percentage points.

- The Learn Explore Advance Design (LEAD) program for students with at-risk profiles enrolled over 800 students in AY 2017-18. For the targeted population, retention of those participating in LEAD in Fall 2016 was about 80% vs 77% for those who did not participate .

- The Civitas Learning predictive analytics platform continues to provide a daily risk assessment of each student, allowing real-time action by academic advisors and other service providers.

- Data from the Civitas Learning platform and other data sources are integrated through Salesforce, which has become the communication network for academic advisors and other student support staff. It enables systematic case management and personalized student centric assistance, shifting interaction with students from a transactional mode to a proactive mode. Systematic interventions are implemented based on real-time data.

- The ePortfolio platform grew exponentially, enabling students to store, share, and showcase their in and out-of-class work & achievements, building the ingredients for a top-notch resume and portfolio (Digication). In a very short period of time, this voluntary program has grown to nearly 90,000 unique student users.

Achieving Higher Freshman Retention

Continuing to implement an integrated and interdependent set of student success tools and strategies (cont.):

- Curricular innovations are expanding. New approaches will continue to drive improved learning, and by so-doing, improve student success, leading to improved retention and graduation. These innovations require active/engaged learning and a level of personalization not normally found in traditional pedagogies. Additionally, adaptive learning-based pedagogy is blended with interactive learning that cause students to apply their knowledge; extend it to unfamiliar situations; and formulate solutions to complex problems. Three freshman math and eight other large enrollment freshman classes are now offered in this adaptive/active format. Next year, 19,500 students will enroll in these classes.
  - Notable outcomes compared to lecture-based courses include: higher pass rates (9-16 percentage points) and higher mastery levels (B or better) (19-24 percentage points)

- ASU is designing a comprehensive mobile app that will serve all students, including graduate and undergraduate, digital and campus immersion, with student-centered functionality. The app will meet the dynamic expectations of students to receive timely and relevant communications via a contemporary digital experience in order to personalize interactions and enhance engagement with the university. Capabilities include:
  - ASURITE Authentication
  - Access to My ASU, Blackboard and ASU Libraries
  - Location and Wayfinding
  - In-app and Push Notifications, can be personalized to user
  - Personalized Schedules
  - Portal to all other ASU apps
  - The app will store data on outreach, engagement and interests for continuous process improvement and the design of new and innovative outreach strategies. This data will be leveraged to improve retention and graduation through predictive analytics.

Enterprise Performance Incentives

FY2015-2018 Goal 2

University attaining of the projected 2018 fiscal year strategic plan metric goal for the total research expenditures of $562.5 million; with an additional incentive for exceeding the goal by attaining total research expenditures of $607.4 million for the 2018 fiscal year.

FY 2015 - 2018 Goal 2

Enterprise Performance Incentives:

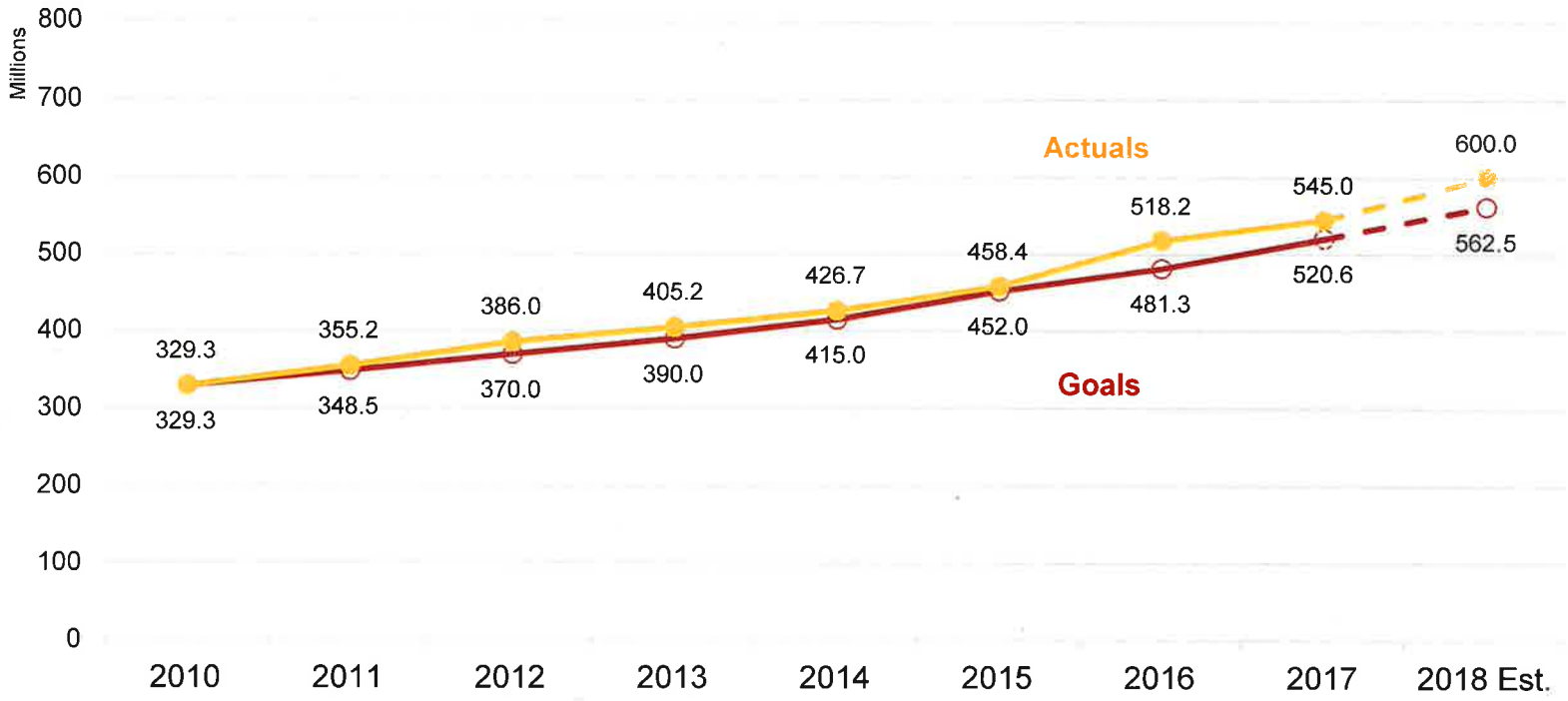
University attaining of the projected 2018 fiscal year strategic plan metric goal for the total research expenditures of $562.5 million; with an additional incentive for exceeding the goal by attaining total research expenditures of $607.4 million for the 2018 fiscal year.

Goal Accomplished

Report Follows

Total Research Expenditures

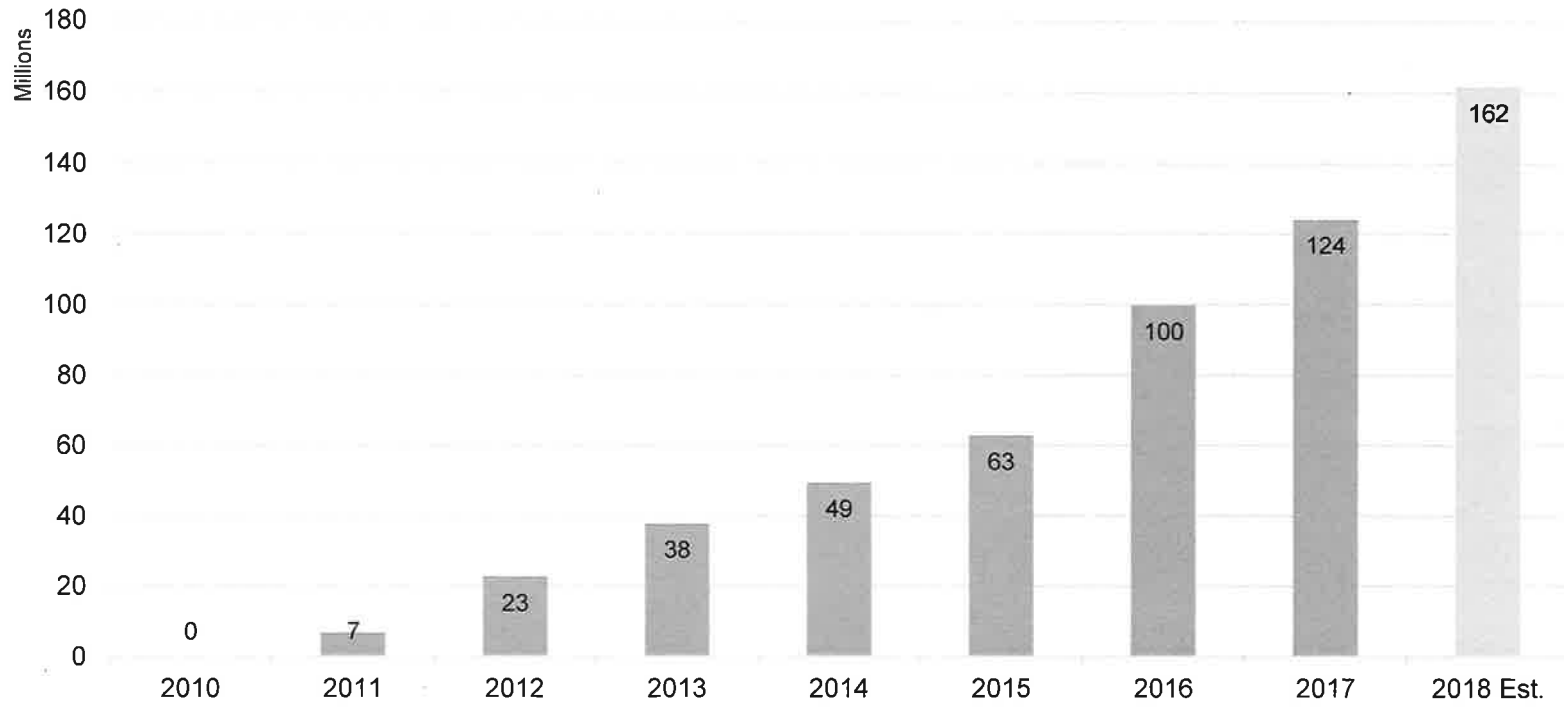
Research Expenditures vs. Goals



ASU has met or exceeded its goal in each year of the Enterprise Plan.
ASU's Research Expenditures have increased by 65% in the first 7 years of the Enterprise Plan.

Total Research Expenditures

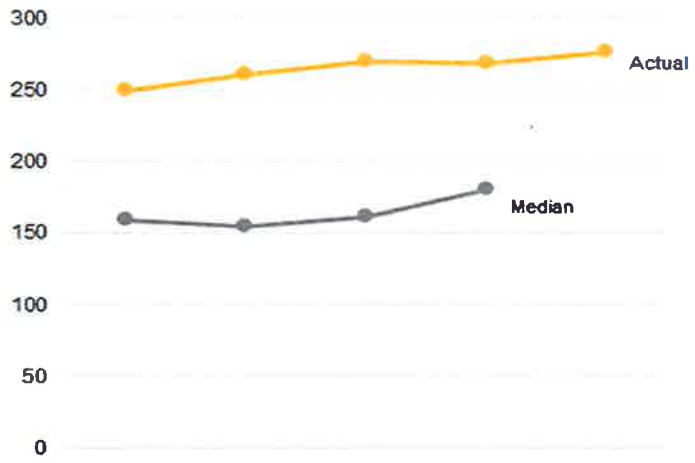
Cumulative Outperformance vs. Goals



ASU has outperformed its research expenditure goals by more than $130M.

Invention Disclosures

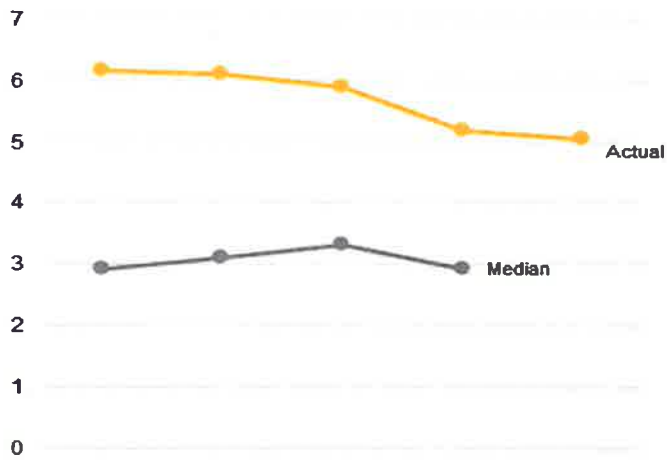
Invention Disclosures Transacted



2013	2014	2015	2016	2017
250	261	270	269	277
179	179	183	191	195
71	82	87	78	82

2013	2014	2015	2016	2017
159	155	161	181	

per $10M in Total Research Expenditures



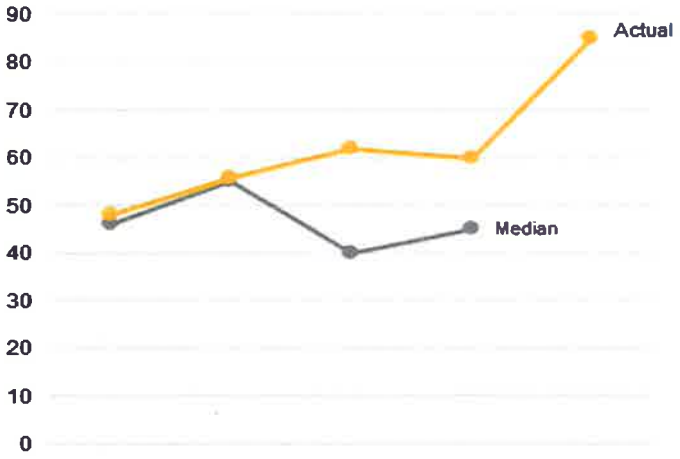
2013	2014	2015	2016	2017
6.2	6.1	5.9	5.2	5.1
4.6	4.4	4.0	4.0	3.7
1.6	1.7	1.8	1.2	1.3

2013	2014	2015	2016	2017
2.9	3.1	3.3	2.9	

ASU significantly outperforms the median of its peer institutions in invention disclosures received.

U.S. Patents

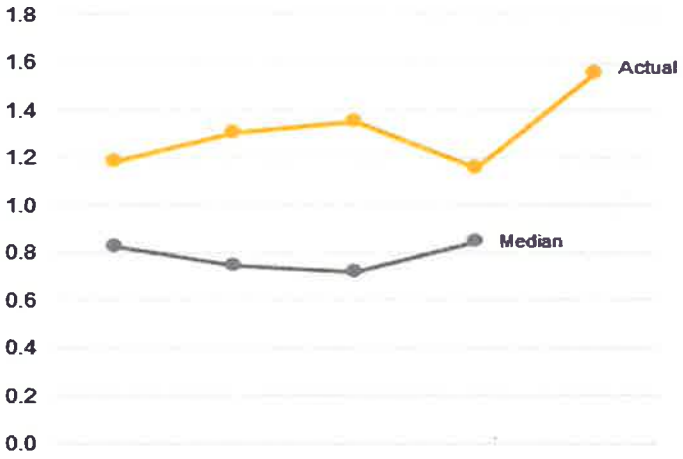
U.S. Patents Issued



2013	2014	2015	2016	2017
48	56	62	60	85
21	21	24	30	33
27	35	38	30	52

2013	2014	2015	2016	2017
46	55	40	45	

per $10M in Total Research Expenditures



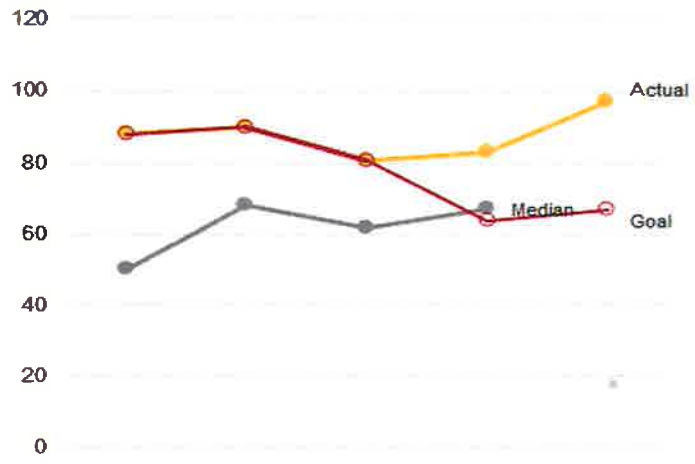
2013	2014	2015	2016	2017
1.2	1.3	1.4	1.2	1.6
0.5	0.5	0.5	0.6	0.6
0.6	0.8	0.8	0.5	0.9

2013	2014	2015	2016	2017
0.8	0.7	0.7	0.8	

ASU significantly outperforms the median of its peer institutions in both U.S. patents issued.

Licenses and Options Executed

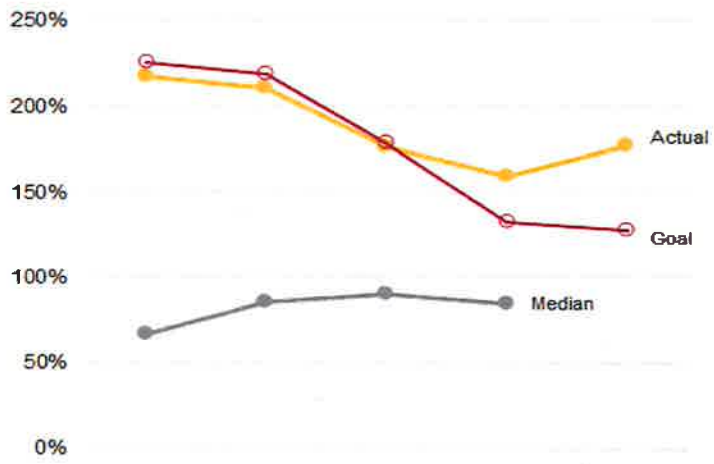
Licenses and Options Executed



2013	2014	2015	2016	2017
88	90	81	83	97
88	90	81	64	67
0	0	0	19	30

2013	2014	2015	2016	2017
50	68	62	67	

per $10M in Total Research Expenditures



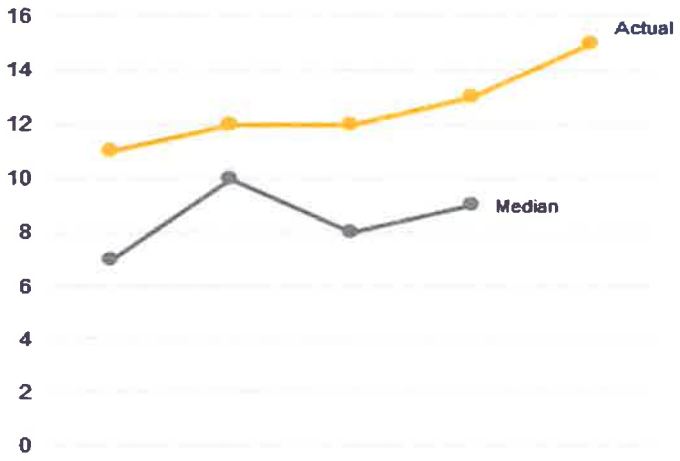
2013	2014	2015	2016	2017
2.2	2.1	1.8	1.6	1.8
2.3	2.2	1.8	1.3	1.3
-0.1	-0.1	0.0	0.3	0.5

2013	2014	2015	2016	2017
0.7	0.9	0.9	0.8	

ASU has met its goal for licenses and options executed in each year of the ABOR Enterprise plan. ASU significantly outperforms the median of its peer institutions in license and options executed.

Startup Companies

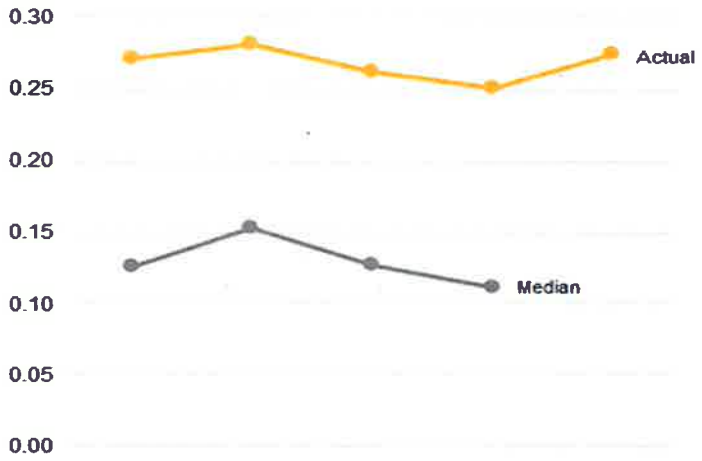
Startup Companies



2013	2014	2015	2016	2017
11	12	12	13	15
4	4	4	5	5
7	8	8	8	10

2013	2014	2015	2016	2017
7	10	8	9	

per $10 Million in Total Research Expenditures



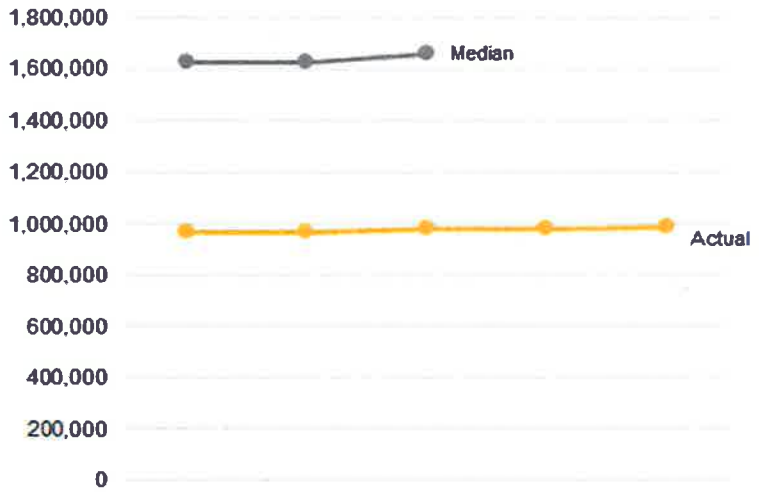
2013	2014	2015	2016	2017
0.3	0.3	0.3	0.3	0.3
0.1	0.1	0.1	0.1	0.1
0.2	0.2	0.2	0.1	0.2

2013	2014	2015	2016	2017
0.1	0.2	0.1	0.1	

ASU significantly outperforms the median of its peer institutions in startup companies launched.

Net Assignable Research Square Feet

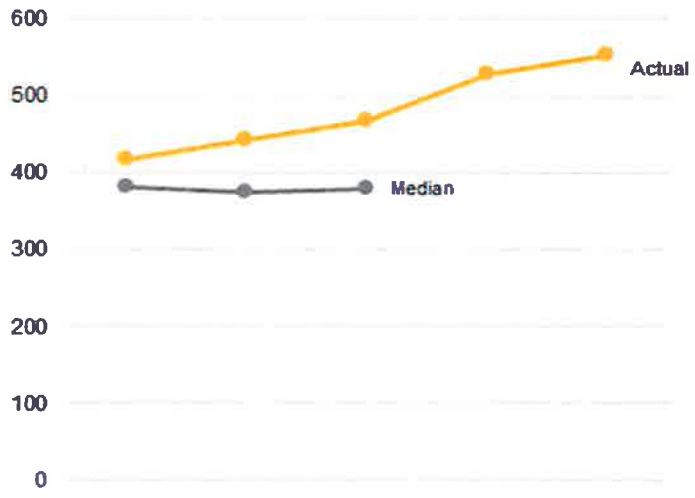
Net Assignable Square Feet (NASF)



2013	2014	2015	2016	2017
968,595	968,595	982,738	982,738	987,284

2013	2014	2015	2016	2017
1,625,880	1,625,880	1,661,207		

Total Research Expenditures per NASF



2013	2014	2015	2016	2017
418.3	441.5	466.5	527.3	553.6

2013	2014	2015	2016	2017
380.3	374.3	378.9		

ASU outperforms the median of its peer institutions in research expenditures per square foot of research space.

Enterprise Performance Incentives

FY2015-2018 Goal 3

Achievement of the projected 2018 fiscal year strategic plan metric goal in Bachelor's Degrees awarded of 16,246.

FY 2015 - 2018 Goal 3

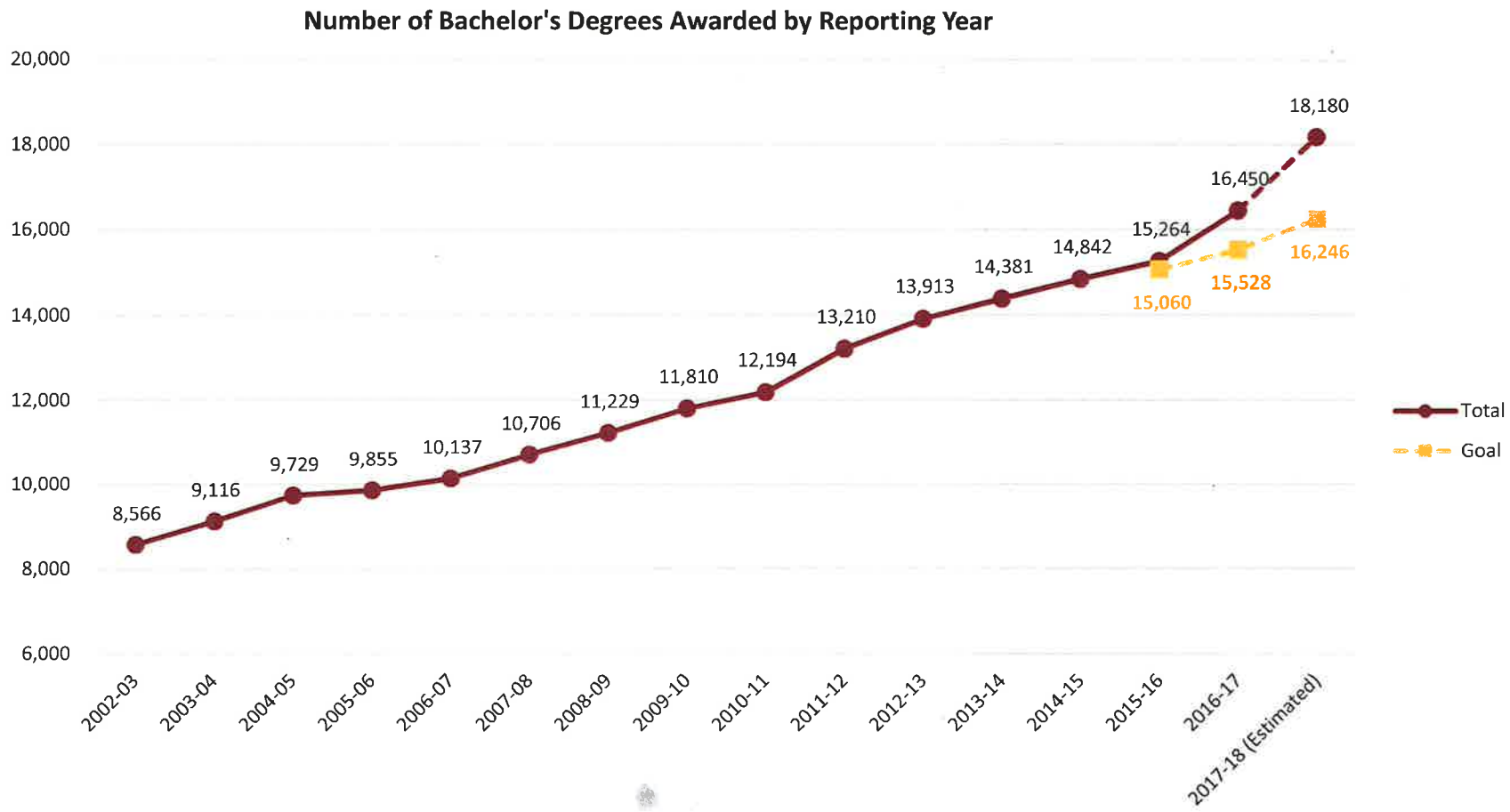
Enterprise Performance Incentives:

Achievement of the projected 2018 fiscal year strategic plan metric goal in Bachelor's Degrees awarded of 16,246.

Goal Accomplished

Report Follows

Achieving Degree Goal: 16,246 Bachelor's Degrees



Achieving 2018 Metric: 16,246 Bachelor's Degrees

Social Benefits of Increasing Bachelor's Recipients in Arizona

- Obtaining a college degree remains the single greatest determining factor in social mobility – ability to improve one's socio-economic position.
- University graduates produce cutting edge ideas, products, and processes that move creativity and discovery into the marketplace, boosting personal as well as societal success.
- Increasing the number of college graduates will increase earnings and tax revenue, reduce unemployment, improve health status, increase voting and civic participation, and decrease use of social services.

Achieving 2018 Metric: 16,246 Bachelor's Degrees

Strategies to Realize Goals

- Continued growth in the freshman class (81% increase since 2002)
- Continued growth in transfer pathway programs with community college partners. Fall semester new transfers increased by 95% since 2002.
- Continue to add more than 10 new degree program offerings each year.
- Continue to increase Online program offerings. More than 80 undergraduate degree programs and concentrations are offered online.
- Continue to increase graduation rates:
  - 4 year rates: overall increase from 29.6% for the 2002 cohort to 49.9% for the 2013 cohort; for resident students, increased from 28.4% to 52.6%
  - 6 year rates: overall increase from 55.8% for the 2002 cohort to 63.1% for the 2011 cohort; for resident students, increased from 57.0% to 67.1%

Enterprise Performance Incentives

FY2015-2018 Goal 4

Achievement of the projected 2018 fiscal year strategic plan metric goal of 100,184 total students enrolling in the University.

FY 2015 - 2018 Goal 4

Enterprise Performance Incentives:

Achievement of the projected 2018 fiscal year strategic plan metric goal of 100,184 total students enrolling in the University.

Goal Accomplished

Report Follows

Arizona State University
ABOR Metrics Progress Report

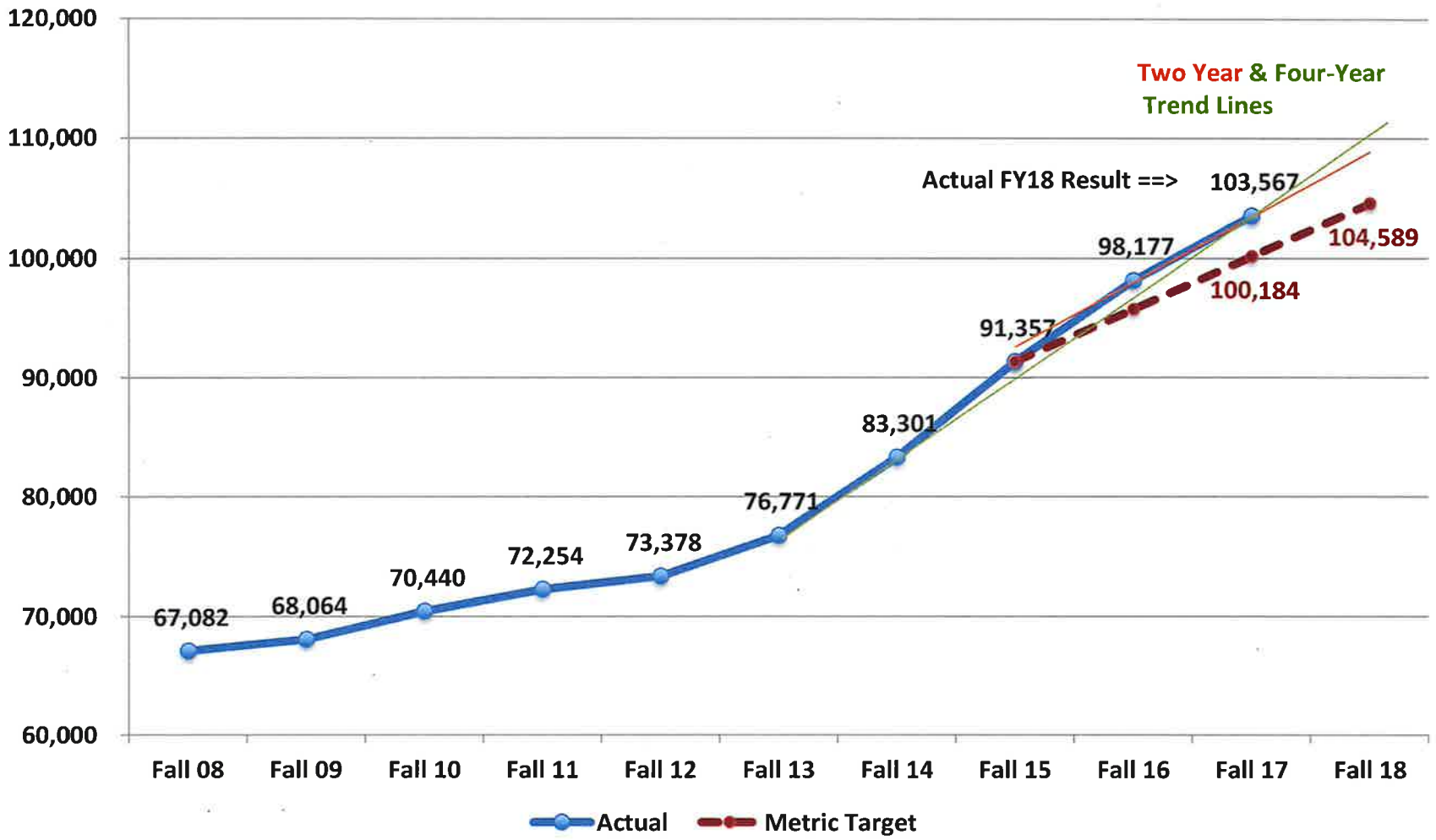
Total Enrollment in FY18 (Fall 2017)

Total Degrees Awarded in High Demand Fields in FY18

As of June 2018

Total Enrollment

Actual Fall 2008 to Fall 2017 & Metric Targets to Fall 2018



Enrollment Growth Philosophy

ASU seeks enrollment growth in order to be of greater service to:

- Rising high school seniors to have access to a world class research university
- Transfer students from community colleges
- College completers through online programs
- Areas outside the urban centers through programs in Lake Havasu, Safford, and Yuma
- Industry programs such as the Starbucks partnership

Continued efforts to improve retention rates

- Use of predictive analytics for early intervention and better advising
- Innovations in course design and sequencing

Enterprise Performance Incentives

FY2015-2018 Goal 5

Achievement of the projected 2018 fiscal year strategic plan metric goal number of degrees in high demand fields of 9,450.

FY 2015 - 2018 Goal 5

Enterprise Performance Incentives:

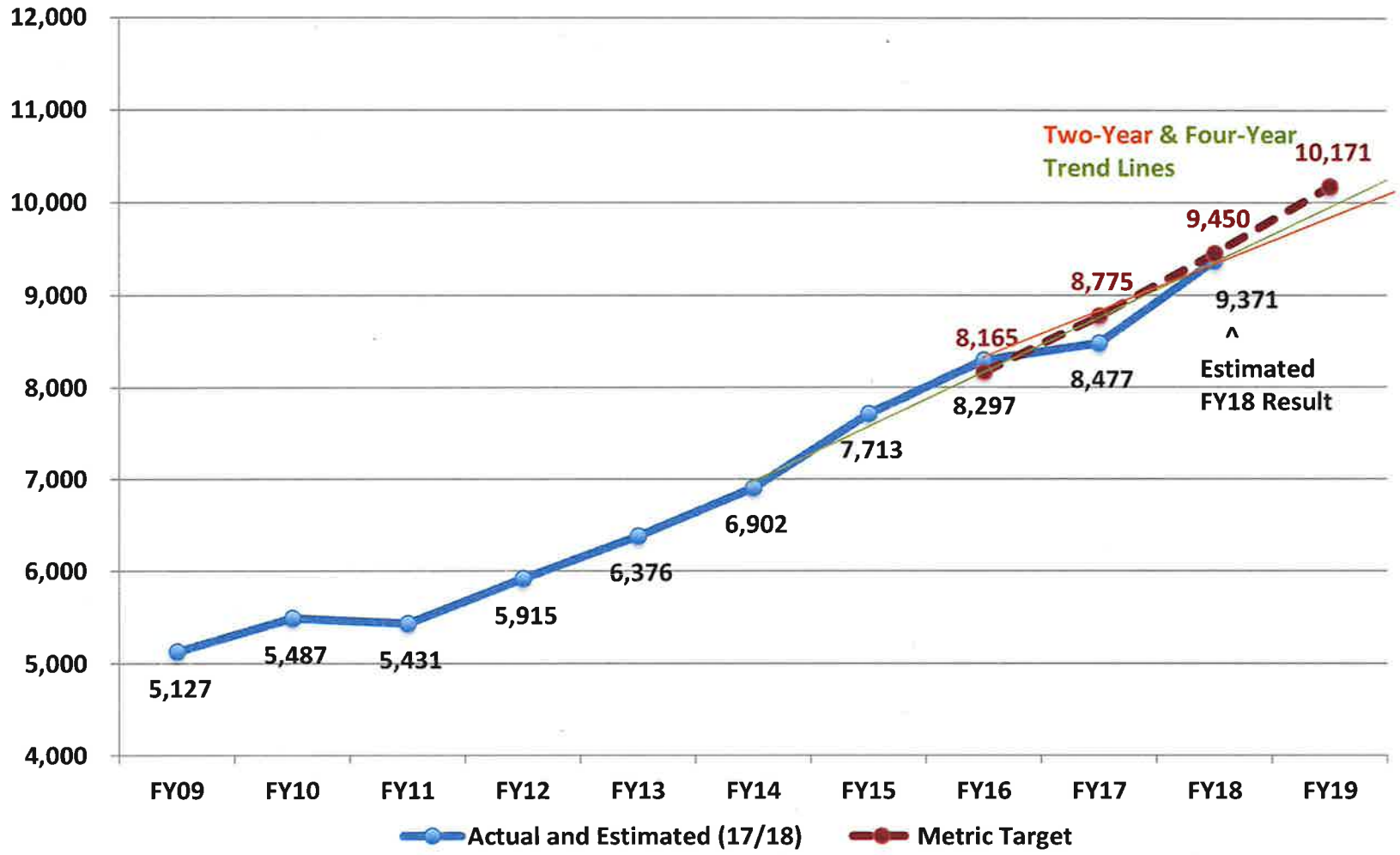
Achievement of the projected 2018 fiscal year strategic plan metric goal number of degrees in high demand fields of 9,450.

Goal Not Met

Report Follows

Degrees Awarded in High Demand Fields

Actual 2008/09 to 2016/17, Estimated 2017/18 & Metric Targets to 2018/19



High-Demand Degree Strategies

- High demand degrees have been defined as those from the STEM fields (natural sciences, engineering and technology, and mathematics), the health professions, and education.

- Student demand has shifted towards all of these fields (except education) as concerns about career prospects have become more of a focus in the choice of majors.

- ASU believes that this shift will continue, and current enrollment patterns confirm that. Achieving the targets require the ability and willingness to provide sufficient capacity to meet demand.

High-Demand Degree Strategies

- On-campus investments in the sciences and engineering in faculty, laboratory classrooms and in themed student housing.

- New online programs, particularly in engineering and in bio-medical sciences, will further enlarge capacity for enrollment.

- New varieties of healthcare programs have been introduced to provide more opportunities beyond nursing. Examples include: Science of Healthcare Delivery, Health Policy, Health Management, Healthy Lifestyle Coaching, and Biomedical Informatics.

High-Demand Degree Strategies

- The lack of growth in Education degrees over the last few years is responsible for the slight underachievement of the overall target, but they are showing an uptick in FY18.

- Education degree demand growth will require improvements in teaching salaries and career opportunities. It is hoped that steps taken in Arizona in the last year and continue and will help.

- Programs to cover tuition for graduates who stay in Arizona to teach seek to contribute to education degree growth.

- Efforts by Teachers College to redesign teaching career paths and classroom staffing structures seek to enhance the attractiveness of teaching as a career.

University Initiatives Performance Metric

FY2015-2018 Goal 1

Attain top three ranking in the PAC 12 for academic performance of ASU student athletes.

FY 2015 - 2018 Goal 1

University Incentives Performance Metric:

Attain top three ranking in the PAC 12 for academic performance of ASU student athletes.

Goal Accomplished

Report Follows

SUN DEVIL ATHLETICS 2018 ABOR Report

ARIZONA STATE UNIVERSITY

GOAL: Top-3 Ranking

Attain top-three ranking in the Pac-12 for academic performance of ASU student-athletes.

The primary metrics of academic performance for Sun Devil Athletics are:

1) overall and team grade point averages;
2) contemporary academic progress – measured by the NCAA Academic Progress Rate;
3) graduation success – measured by the NCAA Graduation Success Rate; and
4) academic achievement as demonstrated through conference and national academic awards that SDA student-athletes receive.

OVERALL AND TEAM GRADE POINT AVERAGES

3.16 GPA for 2017-18 Academic Year (all-time high)

12th Consecutive semester

Cumulative GPA above a 3.0 (end of Spring 2018 semester)

All women's teams with a CUM GPA above a 3.0 in both the fall & spring semester

6 teams achieved a cumulative GPA at/above 3.5 (Triathlon, Golf, Tennis, Gymnastics, Beach Volleyball and Soccer)

5 men's teams with a spring CUM GPA above a 3.0

(Cross Country, Ice Hockey, Golf, Wrestling and Swimming & Diving)

71% of student-athletes

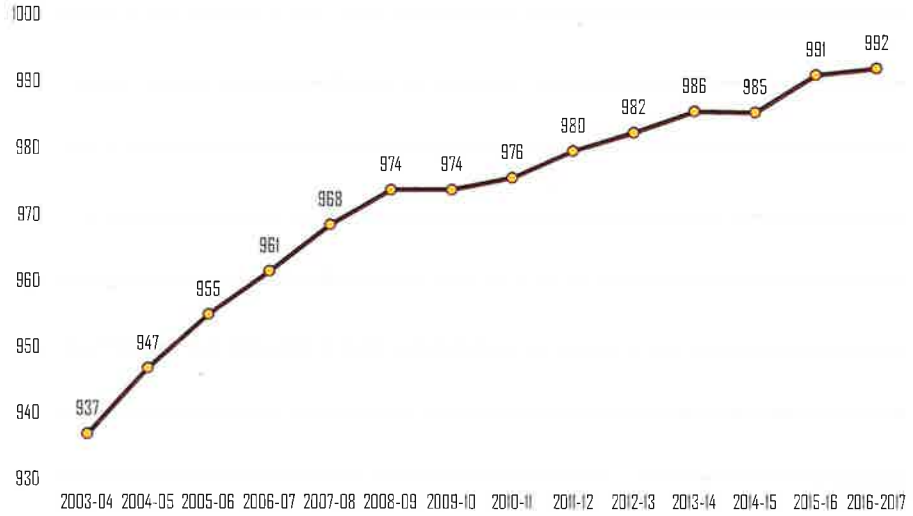
earned a 3.0 or higher semester or cumulative GPA as of the end of spring 2018 semester

NOTE: GPA Data is unavailable for comparison of Pac-12 Conference institutions.

ACADEMIC PROGRESS RATE (APR)

NCAA rate of retention & academic eligibility

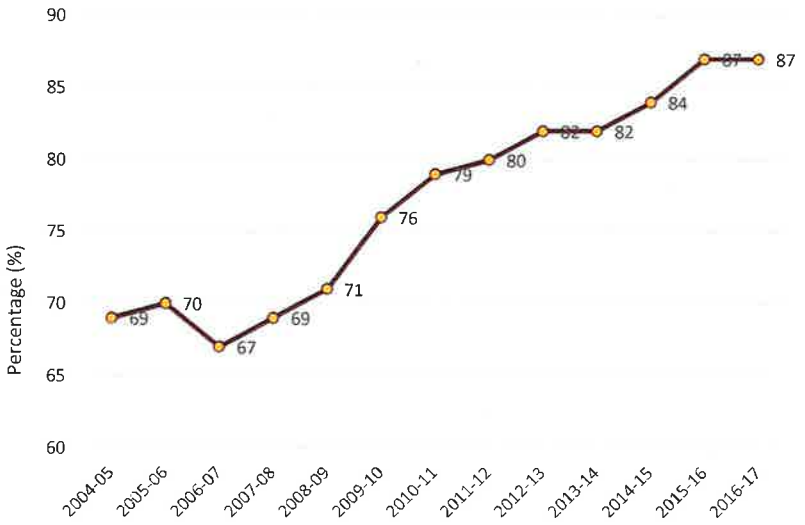
992 or 99.2% - Ranked 2nd in Pac-12 only to Stanford (2nd consecutive year)



- 992 Multi- Year Academic Progress Rate – All-time high
- 2nd in the Pac-12 for most teams (6) with NCAA Public Recognition
  - Men's Golf, Women's Golf, Gymnastics, Beach Volleyball, Women's Tennis, and Volleyball
- Women's tennis is the only team in the entire Pac-12 conference to have 100% (1000) over the 13 years of the APR program
- Nine Sun Devil teams are first in the Pac-12 Conference among their peer sport teams
- 17 of 21 teams that report APR data earned a 1000 (100%) APR single season score for 2016-17, while seven of those had a perfect 1000 for the entire four-year reporting window

GRADUATION SUCCESS RATE (GSR)

Currently ranked 4th in Pac-12 (ranked 2nd in 2017)



- Sun Devil Athletics has either tied or surpassed its all-time best GSR each year since 2006
- Highlights from 2018
  - Ranked 3rd in Pac-12 for graduation rates of African American student-athletes (83%)
  - Ranked 2nd in Pac-12 for African American female student-athletes GSR (95%)
  - Ranked 3rd in Pac-12 for African American male student-athletes GSR (79%)
- ASU expects to report an 88% (all-time high) in October 2018 when the NCAA official GSR reports are released

ACADEMIC ACHIEVEMENT

CONFERENCE AND NATIONAL ACADEMIC AWARDS

CoSIDA Academic All-Americans – 76 since 2000 - 2nd in Pac-12
(Ranked 13th nationally in Division 1)

- Roberta Liti (Women's Golf) & Madison Stark (Soccer)

Pac-12 Scholar Athletes of the Year - 33 total - 2nd in Pac-12

- 2017-2018 winner Roberta Liti (Women's Golf)

NCAA Post-Graduate Scholarships – 32 total – 2nd in Pac-12

- Madison Stark (Soccer) & John Reniewicki (Men's Track & Field)

Ethnic Minority & Women's Enhancement Graduate Scholarship

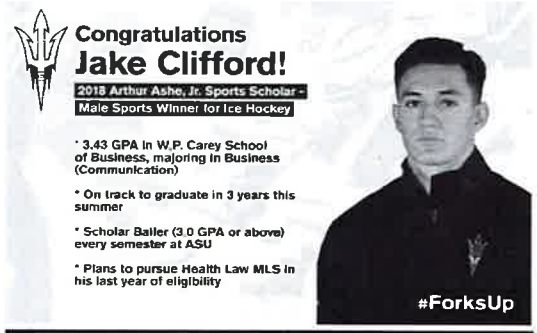
- Kristiana Warth (Women's Track & Field)

Arthur Ashe Scholar Athletes – 1st in Pac-12

- 29 awards earned in 2017-2018
- Jake Clifford named the 2018 Arthur Ashe Jr. Male Division I Hockey Scholar Athlete of the Year

NCAA Elite 90 Award – 4 total - 2nd in Pac-12

- 2018 winner Roberta Liti (Women's Golf)



ACADEMIC ACHIEVEMENT

CONFERENCE AND NATIONAL ACADEMIC AWARDS

Pac-12 All-Academic Team Awards

Women's Swimming & Diving – 12 honorees
Men's Swimming & Diving – 11 honorees
Soccer – 11 honorees
Football – 10 honorees
Gymnastics – 9 honorees (all -time high)
Women's Basketball – 8 honorees (1st in Pac-12)
Women's Track & Field – 8 honorees
Wrestling- 7 honorees
Beach Volleyball – 6 honorees
Water Polo (MPSF) – 6 honorees
Women's Lacrosse – 5 honorees
Baseball – 5 honorees
Women's Volleyball – 4 honorees
Cross Country – 4 honorees (top of the conference)
Women's Golf – 4 honorees
Men's Track & Field – 2 honorees
Women's Tennis – 2 honorees

ACADEMIC ACHIEVEMENT

ACHIEVEMENT-CONFERENCE AND NATIONAL ACADEMIC AWARDS

Other Academic Team Awards

-17 College Swimming and Diving Coaches Association of America (CSCAA) Scholar All-American honorees

-5 College Triathlon Coaches Association Academic All-Americans

-4 Women's Golf Coaches Association All-American Scholars (leads Pac-12)

-3 National Wrestling Coaches Association All Academic (most in single year); Team ranked in top-30 nationally

-Women's Golf boasts 5th-best GPA of all Division I women's golf programs

-1 USTFCCCA Academic All-American (Track & Field)

University Initiatives Performance Metric

FY2015-2018 Goal 2

Increase fundraising to more than $165 million per year of the 3-year average of FY16, FY17 and FY18.

FY 2015 - 2018 Goal 2

University Incentives Performance Metric:

Increase fundraising to more than $165 million per year of the 3-year average of FY16, FY17 and FY18.

Goal Accomplished

Report Follows

ASU Foundation
ARIZONA STATE UNIVERSITY

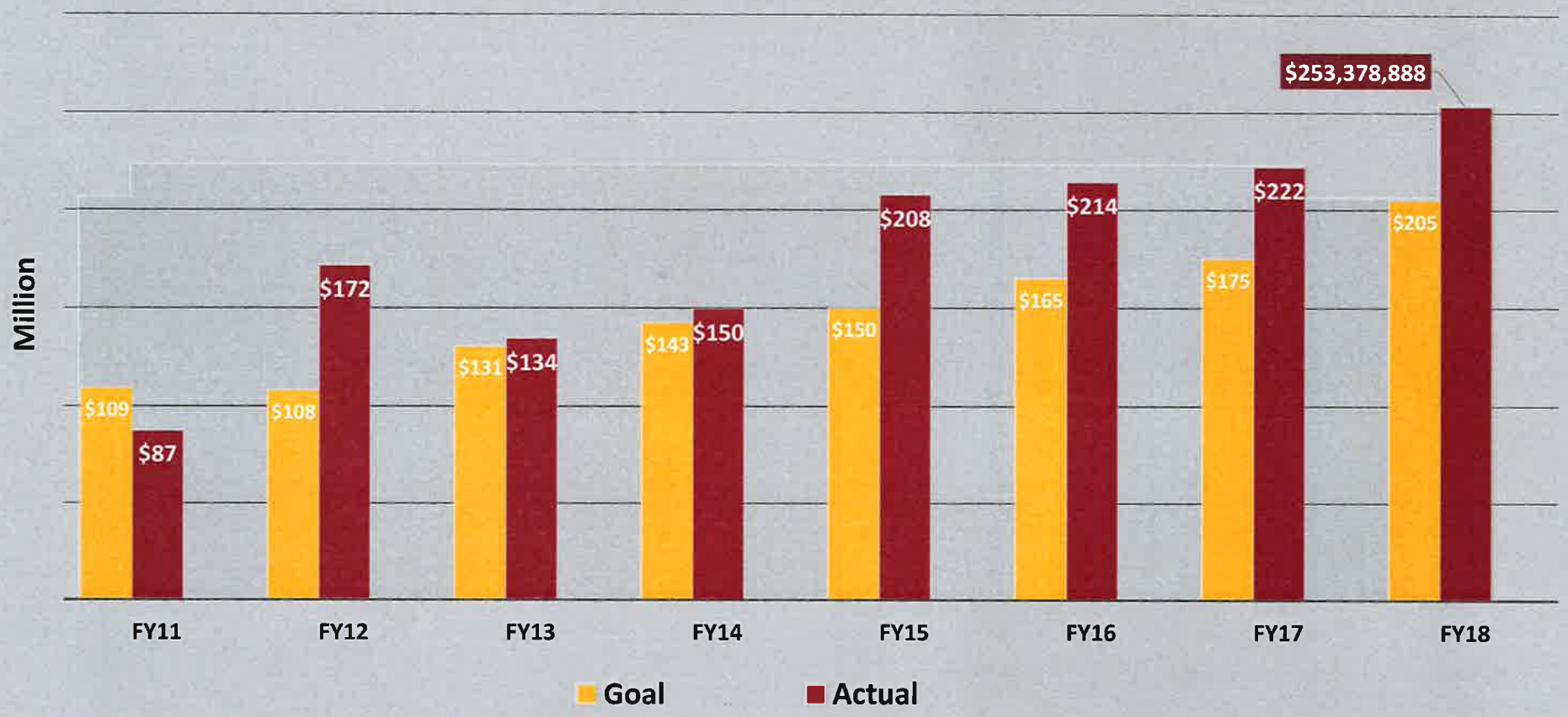
New Gifts and Commitments
Three-Year Average

NOTE: FY18 total alone is $253,378,888

ASU Foundation
ARIZONA STATE UNIVERSITY

ASU Foundation
Arizona State University

Fiscal Year Goal vs. Actuals



ASU Foundation
ARIZONA STATE UNIVERSITY

- The strategic importance of the incentive to the university or enterprise strategic plan:
  - Resource raising is a key component to the University's 2025 strategic outcomes as it advances Arizona State University as The New American University. The ASU Foundation has completed its 2025 strategic plan to support the University's strategic outcomes for 2025, which will continue to provide more year-over-year support to the University.

- Data or other evidence demonstrating achievement:
  - For the third year in a row, the ASU Foundation has brought more than $212M+ in new gifts & commitments from ASU investors, while launching the public phase of Campaign ASU 2020.
  - Since FY11, the ASU Foundation has seen steadily increasing new gifts and commitments which has improved our three year average from $120M to $213M+, exceeding the ABOR fundraising target.

University Initiatives Performance Metric

FY2015-2018 Goal 3

Launch and operate America's largest engineering school successfully with 90% student retention.

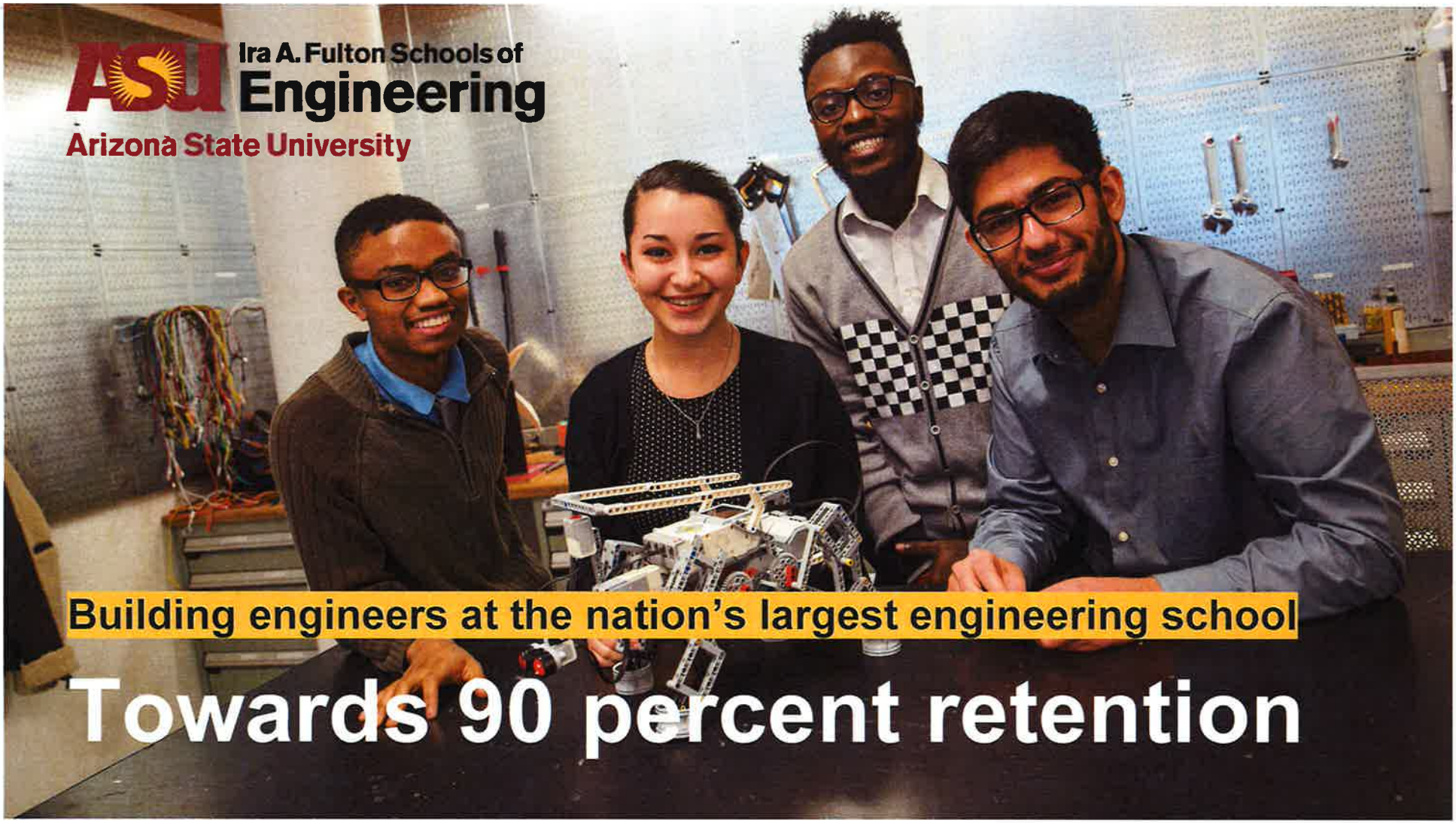
FY 2015 - 2018 Goal 3

University Incentives Performance Metric:

Launch and operate America's largest engineering school successfully with 90% student retention.

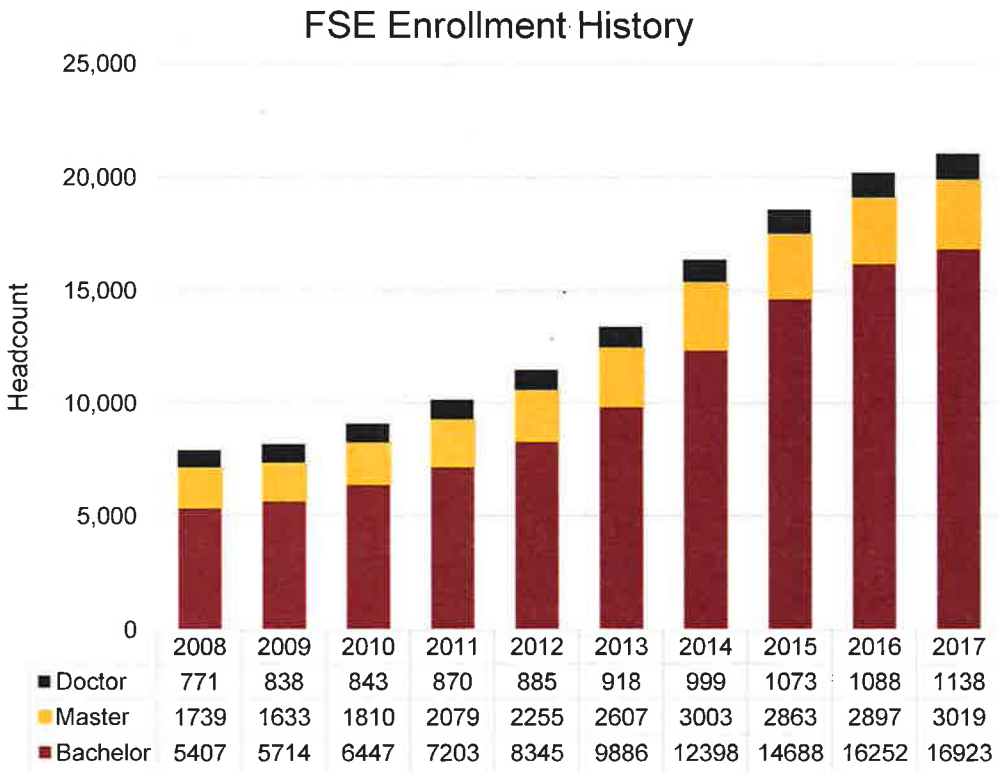
Goal Accomplished

Report Follows


Ira A. Fulton Schools of
Engineering
Arizona State University
Building engineers at the nation's largest engineering school
Towards 90 percent retention

FSE is the largest engineering school in the U.S.

- Fall 2017 total enrollment surpassed 21,000
- **Fall 2018 enrollment expected to increase 5-8% as we move towards 25,000 students**
- FSE engineering enrollment #1 in the US*
  - Ahead of Texas A&M and Georgia Tech



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Doctor	771	838	843	870	885	918	999	1073	1088	1138
Master	1739	1633	1810	2079	2255	2607	3003	2863	2897	3019
Bachelor	5407	5714	6447	7203	8345	9886	12398	14688	16252	16923

*Source: 2017 American Society of Engineering Education (ASEE) rankings

Largest engineering schools by enrollment

(engineering programs only)

ASU	16,801
Texas A&M	16,636
Georgia Tech	14,156
UIUC	13,433
Purdue	12,383
UCF	11,006
Virginia Tech	10,425
Penn State	10,187
Michigan	10,096

*Source: 2017 American Society of Engineering Education (ASEE) rankings

Quality of student body – Fall 2017

Characteristics of the freshman class

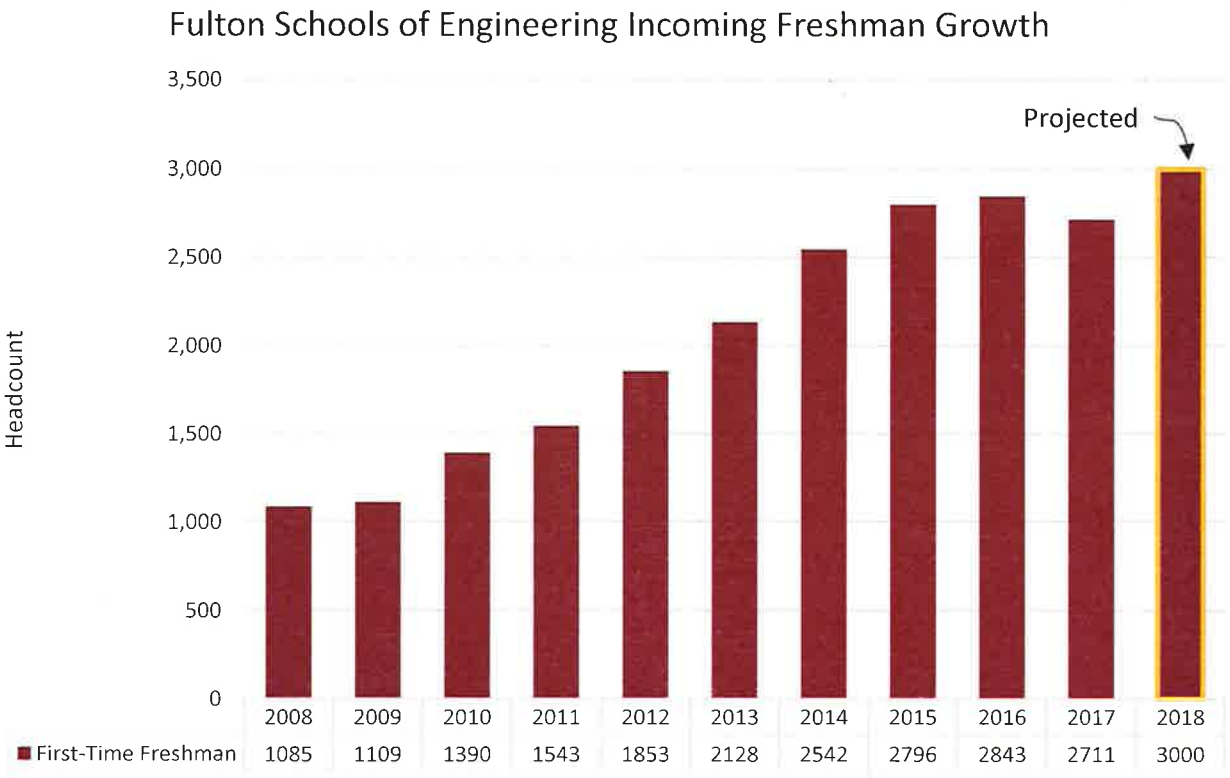
- Nearly 25% of Fulton Schools of Engineering freshmen are in Barrett, the Honors College
- Average ACT is up to 26.4, second highest of any college at ASU

Characteristics of our undergraduates (*increases* relative to Fall 2016)

- 192 National Merit Scholars (*8% increase*)
- 143 National Hispanic Scholars (*14% increase two years in a row*)
- 12 Gates Millennium Scholars (*6% increase*)
- 19 Flinn Scholars (the most of any college at ASU)
- 3 Goldwater Scholars (10 since 2010)
- 2 National Achievement Scholars

Increasing access

Freshman enrollment

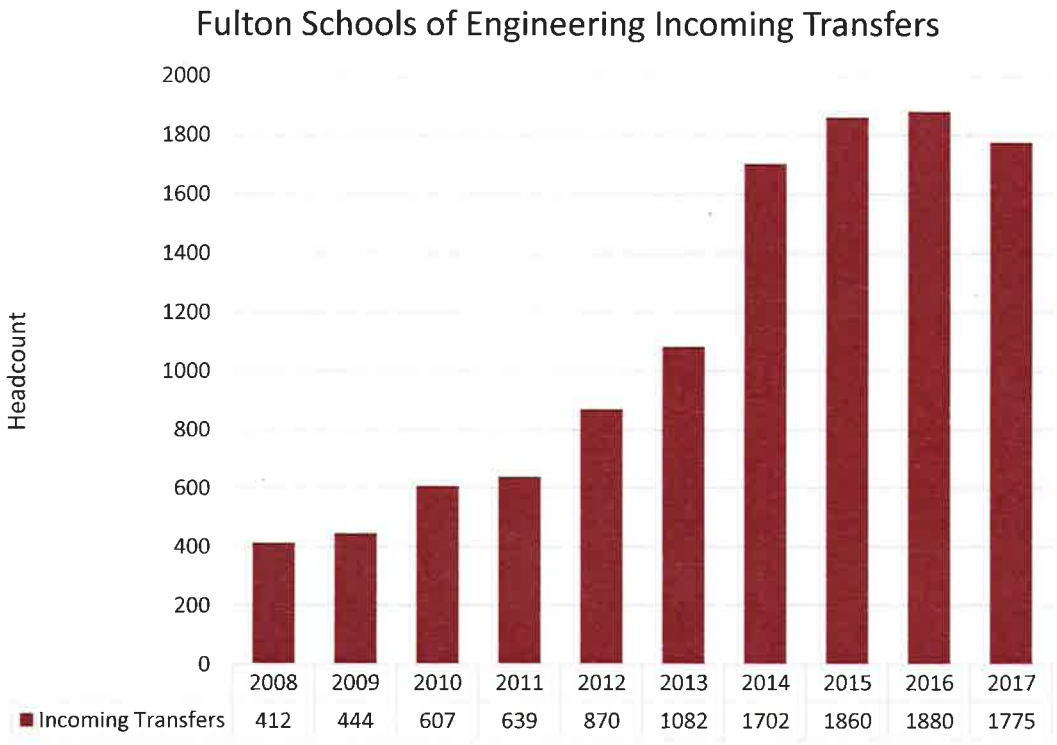


Fall 2018 freshman enrollment projected to increase 10-12%

Fulton Schools welcomed 2,711 freshmen in Fall 2017, including

- More than 550 women
- More than 900 underrepresented minorities - highest in history

Transfer student enrollment



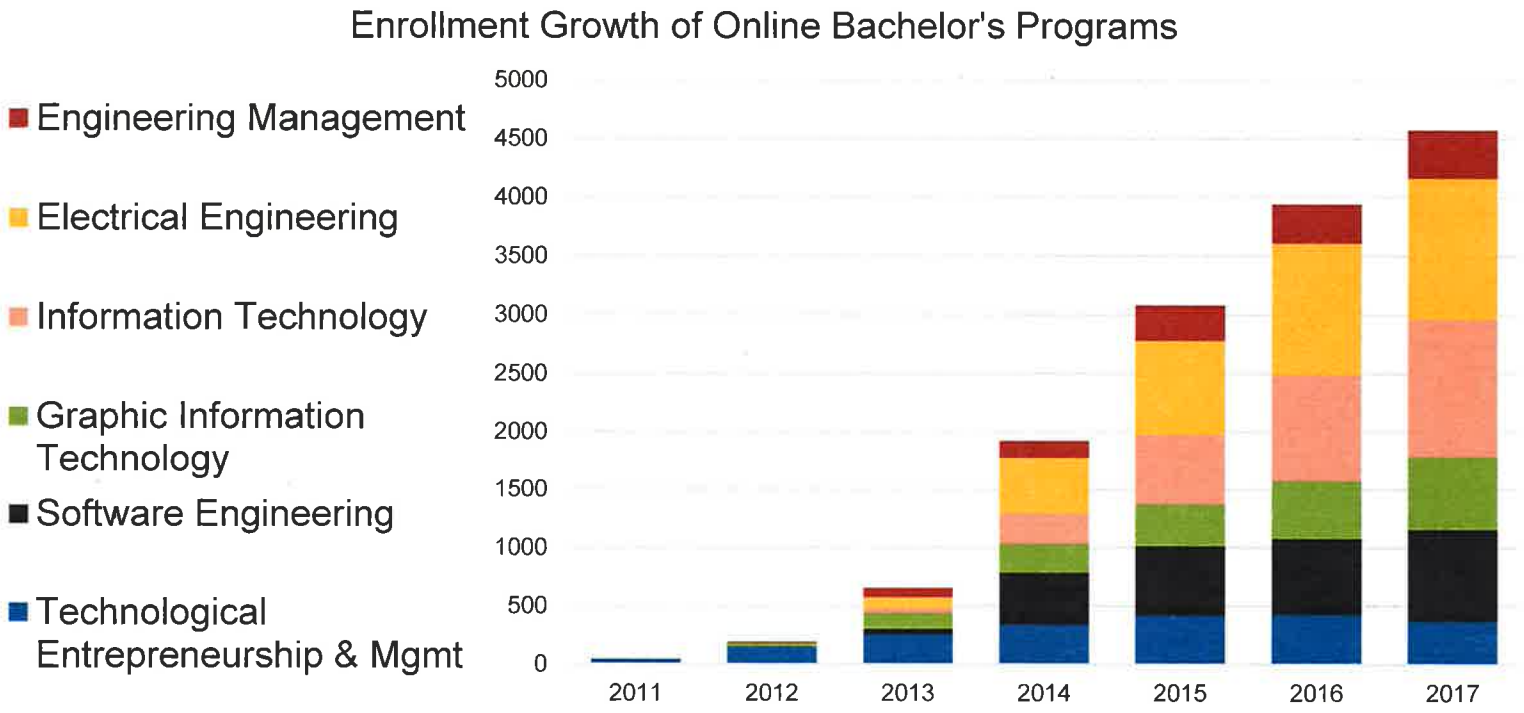
Fulton Schools welcomed 1,775 new transfer students in 2017

30% of transfers are from Arizona Community Colleges

Online programs are attracting students from all over the US and a dozen countries

Online program enrollment

Online programs continue to grow, attracting diverse students including underrepresented minorities and veterans



Increasing student success

Retention rates

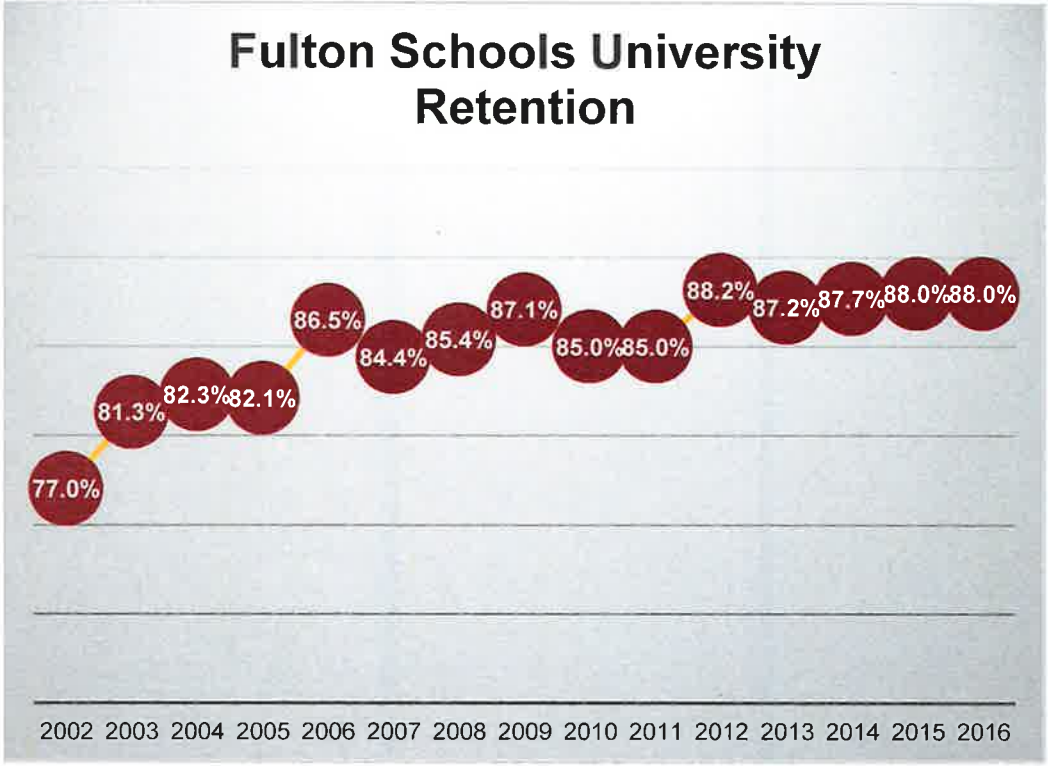
Seven* programs over 90%

- Electrical Engineering, Software Engineering, Industrial Engineering, Materials Science and Engineering, Information Technology, Technology Entrepreneurship and Management, Graphic Information Technology

Record retention of female students

Retention of under-represented groups is up 0.5%

Civil Engineering freshman retention up 7%



*19 FSE programs with 10 or more freshman; of these 7 over 90% retention. (of the 23 total FSE undergraduate programs, 10 over 90% retention)

(Exploratory majors removed to be consistent across years)

Graduation rates

Four-year graduation rate:
43.7 percent

Five-year graduation rate:
63.9 percent

Six-year graduation rate:
65.3 percent

Degrees granted

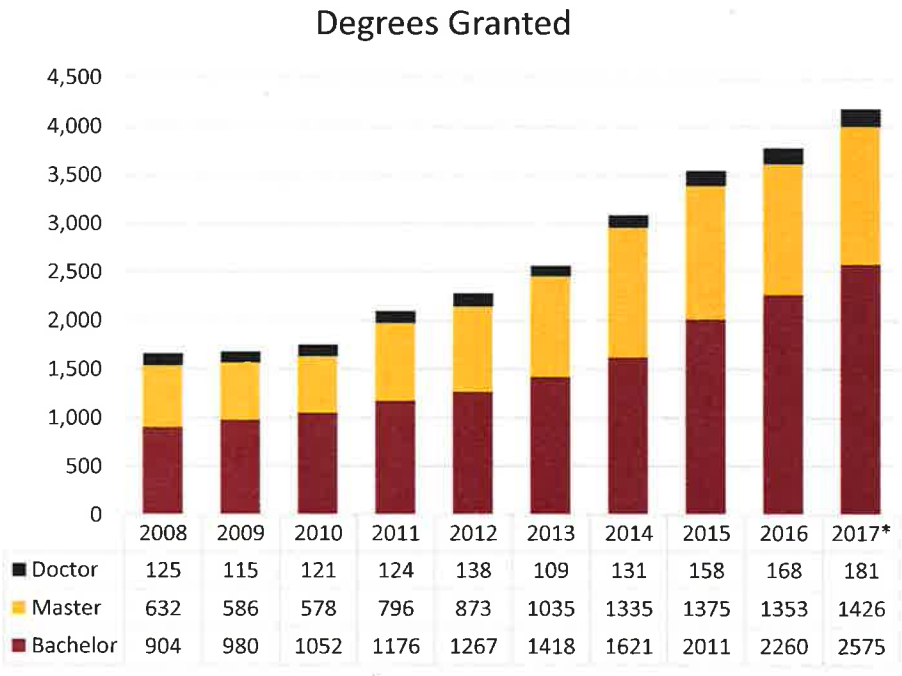
Supply of graduates helps fuel Phoenix being named #3 city for tech jobs (TIME Money June 2017)

#7 for bachelor's degrees granted in U.S.

#9 for bachelor's degrees granted to Hispanics

#18 for bachelor's degrees granted to women

Degrees granted continue to increase particularly at the bachelor's level



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017*
Doctor	125	115	121	124	138	109	131	158	168	181
Master	632	586	578	796	873	1035	1335	1375	1353	1426
Bachelor	904	980	1052	1176	1267	1418	1621	2011	2260	2575

Rankings from 2016 American Society for Engineering Education Profiles

*2017 data not yet finalized

Retention & success strategies

Leveraging university level initiatives

Mindset Initiative – GetSet

- GetSet is a digital tool that promotes the development of growth mindset through the engagement of trained peers to create personalized messaging

- GetSet is being integrated into Fulton Schools ASU 101 sections with influence messaging aligning with curriculum delivered in the course

- Planning has begun for a forum promoting teaching practices which incorporate the principles of growth mindset

Fulton Schools retention initiatives

Improve Instruction in Freshmen Classes

- Utilize instructional specialists and lessons learned from online programs to "flip" large classes creating smaller break-out sessions
- Utilize Undergraduate Teaching Assistants to improve instructional effectiveness
- Provide JTFD (Just in Time Faculty Development) workshops to faculty conveying best practices in engineering education
- Work with Math to improve student success in Calculus sequence via technology enhanced learning and elements of competency based instruction

Fulton Schools retention initiatives

Enhance ASU 101

- Integrate E2 camp with ASU 101 for all freshmèn and strengthen affinity by expanding and reinforcing the "Engineers from Day One" mindset
- Integrate participating advisors, faculty, and peers into a refined and enhanced ASU 101 course
- Foster a stronger relationship between student and advisor by increasing presence and support provided by academic advisors teaching sections of the course

Fulton Schools retention initiatives

Improve experience of first-time freshman living in the Fulton Schools Residential Communities

- Collaborate with ASU Housing to ensure all Fall 2018 first-time freshman are housed within residence halls designated for Fulton Schools students
- Ensure cohesive and comparable residential experiences in the Fulton Schools Residential Community at Tempe and Polytechnic campuses
- Leverage the unique features of the Tooker House residential community to meet the needs of the Fulton Schools students
- Expand off-campus "Peer Mentor" group to increase interactions with off-campus/commuter students and improve off-campus student engagement

Fulton Schools retention initiatives

Increase Research Opportunities for Freshmen

- Retention for students in higher CI groups can potentially be increased via participation in faculty driven research

- Engage higher CI students in a freshmen research exploration course

Fulton Schools retention initiatives

Comprehensive Support

- Expand Fulton Schools study groups in collaboration with the School of Mathematical and Statistical Sciences
- Have retention specialists reach out to students who are at-risk for attrition, i.e., early withdrawal, non-engaging and academic difficulty – enhancing engagement with Advisor Portal
- Improve tutoring delivery to support students in-person at Tempe and Polytechnic campuses and online

Fulton Schools retention initiatives

Engineering Futures supports persistence of first-generation and/or low CI students

- Scholarship funding
- Special engagement programming with E2, guest speakers, and student service support
- Enrollment in course designed toward building a sense of belonging and identity within engineering
- Mentorship engagement
  - In 2017-2018 (pilot year), 93 first generation students were mentored by senior level and 4+1 MS students

Engineering Futures update

Aim: Support persistence of first-generation and lower CI-score students, women and those with socio-economic need in engineering

- 2016-2017 pilot of 100 students in first course included 54 percent first-generation students
- 2017-2018 scholarship provided to first-time freshman in spring and second-fall term; 10 students completed course; 125 students engaged in mentoring with upper class student
- 2018-2019 plans include expanding scholarship participation (three semesters of financial and academic support), cohort enrollment in key first-semester courses

Engineering Futures update

Aim: Support persistence of first-generation students, women and those with socio-economic need in engineering

- Fall 2017 capacity for the program is 200, double that of last year
- Fall 2017 freshman students will enroll in the same classes as their peers, to facilitate engineering affinity building and peer support
- Master's students from our 4+1 accelerated programs served as peer mentors to enhance student retention
- Course feedback was overwhelmingly positive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