January 23, 2017

OPERATIONAL AND FINANCIAL REVIEW ENTERPRISE PLAN

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Overview

1. Introduction

The ASU Enterprise Plan was first outlined for the Board of Regents in our annual Strategic Enterprise Framework Report in February 2010. The 2010 report represented a major policy shift by declaring that ASU would operate as an enterprise and would complete its five-year evolution away from an institution that was dependent on State decisions. At that time and in the years that followed, the Board has approved or supported a number of policy changes including greater independence in management activities such as personnel policies, the principle that all tuition decisions other than those for on-campus resident students would be guided by market considerations, and following the increases in response to the recession, limits on increases in resident tuition rates for the next ten years. The primary tactical and strategic elements of the plan have been consistent in the six reports delivered since then and, with its success, most every metric outlined at that time has been achieved to date.

There is a great deal more that has to be achieved to continue to accomplish the role and metrics assigned to ASU by ABOR. We are confident that by continuing to follow the Enterprise Plan and making the annual adjustments to circumstances that characterize any business plan, we will be able to do so.

To understand what animates ASU's Enterprise Plan, it is important to understand that ASU views the ASU Charter as a promise to the citizens of Arizona that ASU will fulfill the requirements of the Arizona Constitution to provide public education, and that this responsibility is not conditional upon the actions of the legislature. Instead, it is ASU's responsibility to find the means to accomplish the Charter's goals by behaving as a public enterprise that also seeks public investment. The ASU Enterprise Plan outlines the current thinking about strategies and tactics, but assumes that constant innovation and adjustments will be needed.

The key goals of the ASU Enterprise Plan are to:
- Demonstrate leadership in accessibility by providing sufficient capacity at ASU to allow any qualified (as historically and currently defined) Arizona resident to attend and succeed

- Maintain a tuition and financial aid policy that assures access to ASU is not limited by a resident student's financial circumstances
- Offer a world-class educational environment of colleges and schools of national standing that teach the most current knowledge in all fields using the most effective pedagogical methods
- Build the human and technology systems needed to support students in ways that result in retention and graduation rates in which individual effort (rather than family income, ethnic background, and prior preparation) is the determinant of success
- Maintain and strengthen a faculty committed to interdisciplinary scholarship that is a substantial contributor to new knowledge and has the tools and facilities to participate in major research and creative activities for the benefit of the educational experience of their students and the good of society
- Extend ASU's visibility and reputation in order to attract more and stronger students and faculty from around the world and to offer ASU as a design model of how higher education can be made available to a more diverse population and be of greater service to individuals, to Arizona, and to the wider society

For both practical and ethical reasons, the resources deployed to accomplish these goals must be used in a cost effective fashion. ASU does not have the capacity to throw money at its goals, and so our Enterprise Plan has to be built around innovative approaches to delivering services and ruthless focus of spending on the priorities (recognizing that these will be both near-term and longer-term) that will deliver results. It is important to understand how ASU's costs relate to those of other universities in order to judge our efficiencies, while at the same time understanding that simply having low costs is not the measure of success. Achieving targeted but tight spending levels that will allow the goals to be met is a key element in the planning.

2. Scale of Growth and Investment Needed

ASU's metric targets for 2025 make up over 50% of the Regent-assigned three-university totals in enrollment, degrees, and research and 60% to 70% of the total growth required to achieve the goals. The ASU Enterprise Plan presented here is scaled to reach these ambitious targets. We believe that we have developed tactics that will allow us to build the scale needed, and have identified the kinds and level of investments that will be required.

Developing the enrollment numbers, programs, levels of student success, and faculty that are required, and building the financial resources that are going to be needed will be challenging. The challenges arise because the scale involved is daunting and there are many uncertainties regarding demographics, politics, resources and social movement between now and 2025.

The tactics that we outline today must be regularly tested against the real-world results they produce and landscape that emerges. What seems clear is that course corrections and even major changes will occur in the tactics, and that we will need innovations that are not yet conceptualized. ASU has been operating and has thrived in similar circumstances over the last decade, and its track record should provide some measure of confidence about achieving its future goals.

<u>Growing Degrees Awarded</u>

Higher degree production means more opportunities for Arizona residents to enjoy more satisfying lives. It also provides a key input to a more diversified and stronger Arizona economy, and encourages more out-of-state students to remain in Arizona which will contribute to the economy's growth.

In the last ten years, ASU increased the number of degrees awarded annually by just under 9,000 (70%). In the next ten years, ASU must continue its patterns of growth in order to reach degree attainment goals that have been established by the Board: an increase of 10,100 or 46% (from 21,953 in 2015/16 to 32,100 in 2024/25). The growth achieved in the last ten years is the equivalent of creating an entire University of Arizona, almost an entire Purdue, or almost one and a half Northern Arizona Universities, and the growth targets require doing it again. While the ASU numbers are daunting, the need

is not only critical but even greater than our targets. The ACHIEVE60AZ initiative suggests that Arizona will need to attract or produce tens of thousands of more degree holders annually beyond the ABOR targets.

Bachelor Degrees Actual and Metric Goals

Total Graduate Degrees Actual and Metric Goals
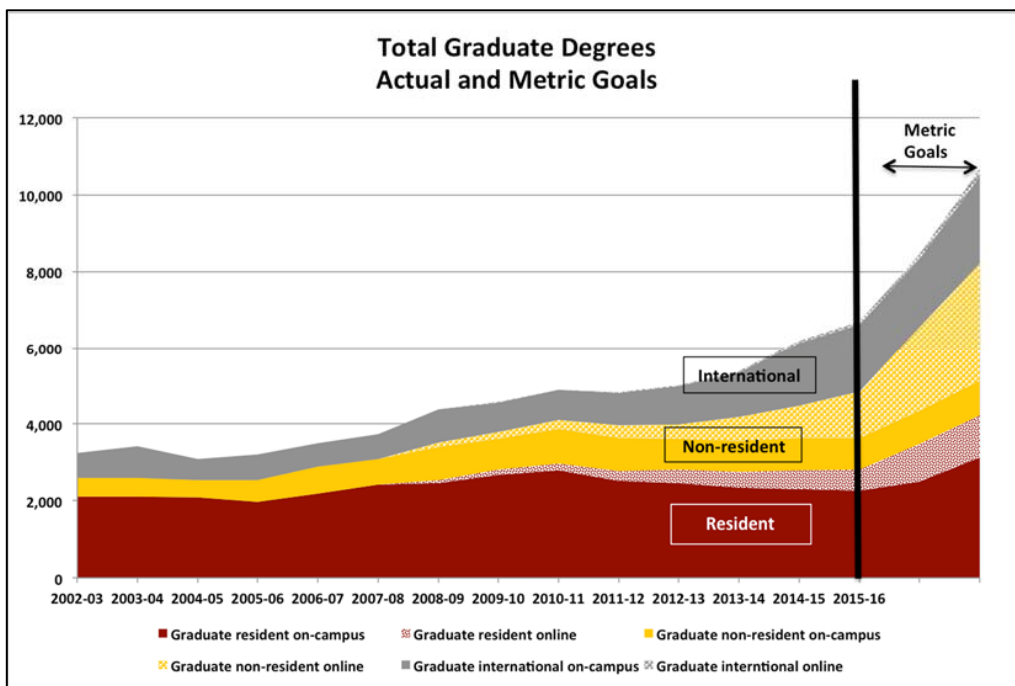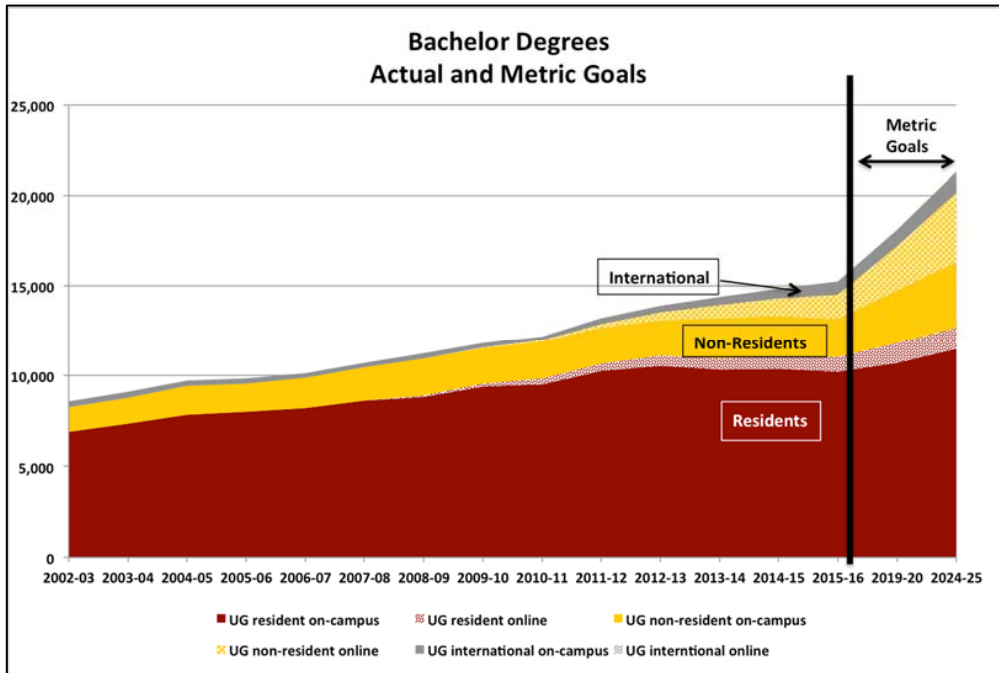
Growing Enrollment

Enrollment growth has the multiple imperatives of providing opportunity for all qualified Arizona students, driving an overall increase in degree awards, and producing the revenues needed to support the institution in the absence of adequate State investment.

The enrollment growth expectation of 27,000 students over the next eight years (from 72,400 on-campus students in Fall 2016 to 87,000 in Fall 2024 and 25,800 online students in Fall 2016 to 38,000 in Fall 2025) will also be challenging. But in the last eight years, ASU has increased its overall enrollment in all programs by even larger numbers than those forecast in both on-campus and online programs (just under 35,000 students overall) - evidence that this kind of growth is achievable.

Total Graduate Enrollment
Actual and Metric Goals
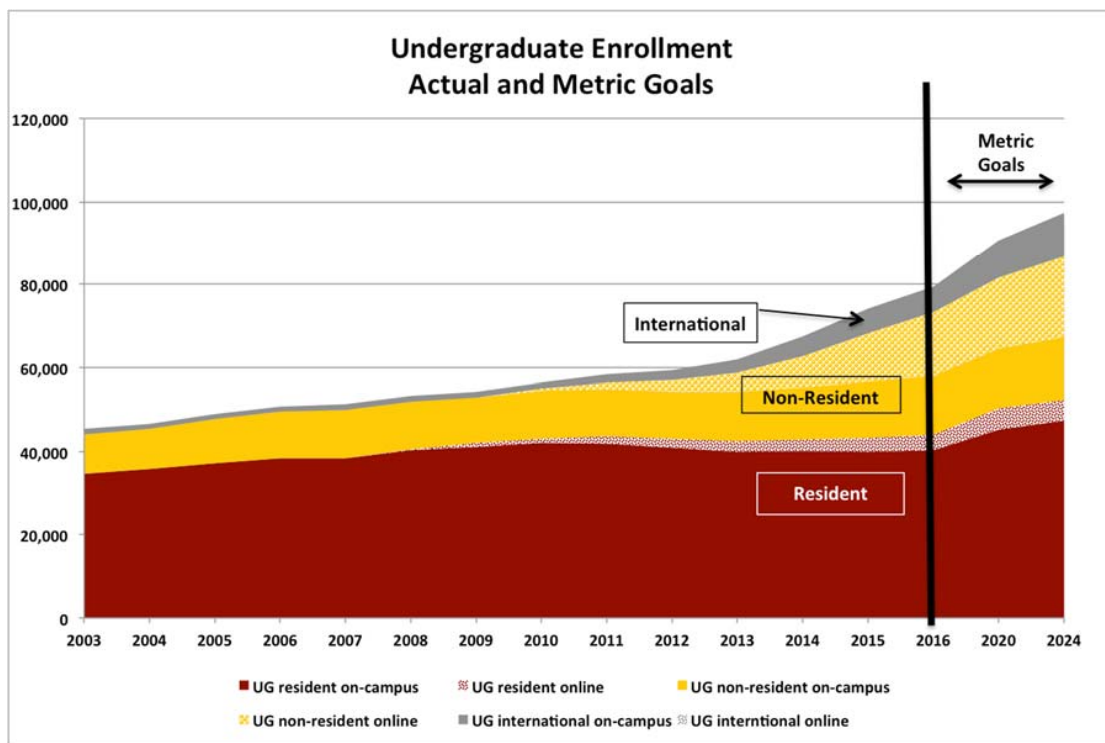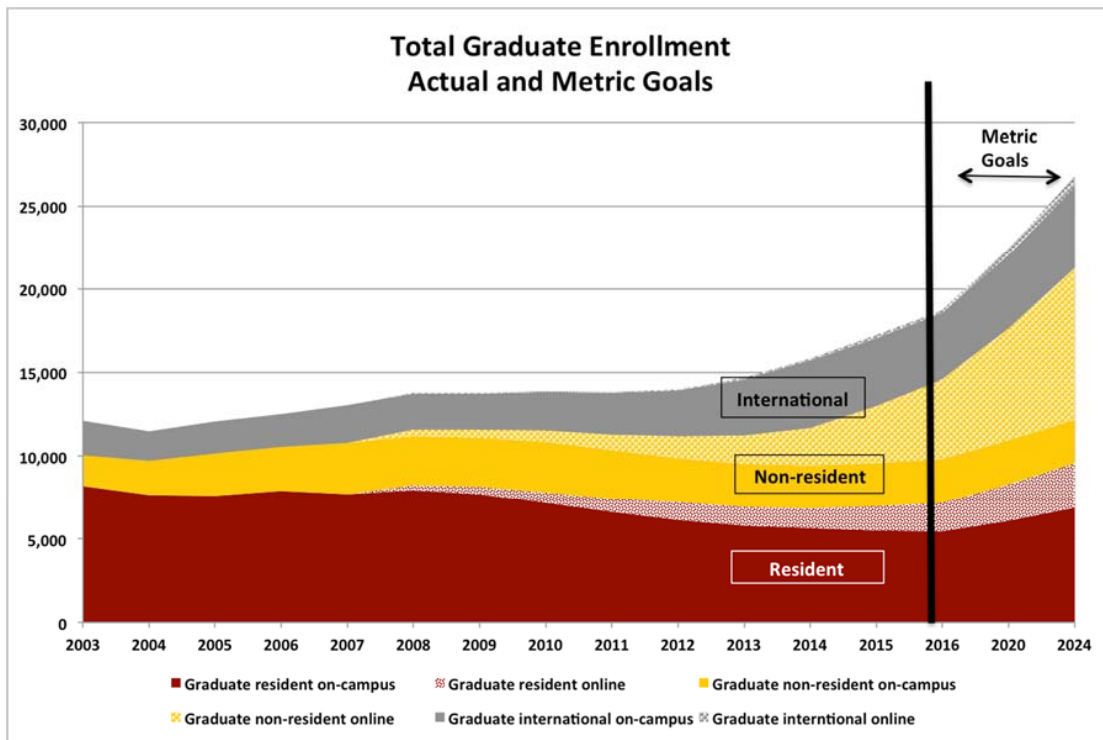
Increasing Research

In addition to its importance to the quality of the education for our students, research expenditures bring funding from outside the state to Arizona, provide new well-paid jobs, and produce innovations capable for spinning off new businesses.

Between 1998 and 2006, research expenditures doubled from $92 million to $202 million. In the next seven years (2006 to 2013) they doubled again to $405 million. Our recent history shows the fastest rate of growth of any institution with this research scale. Hitting the ABOR metric target for 2025 of $815 million will require yet another doubling from the 2013 level, and substantial progress has already been made; in FY2016 $500 million was achieved. The 2025 target, therefore, requires a slightly slower rate of growth (about 70%) over the next nine years, but a somewhat higher overall growth number ($330 million vs. $260 million).

Research expenditures have doubled every six to eight years
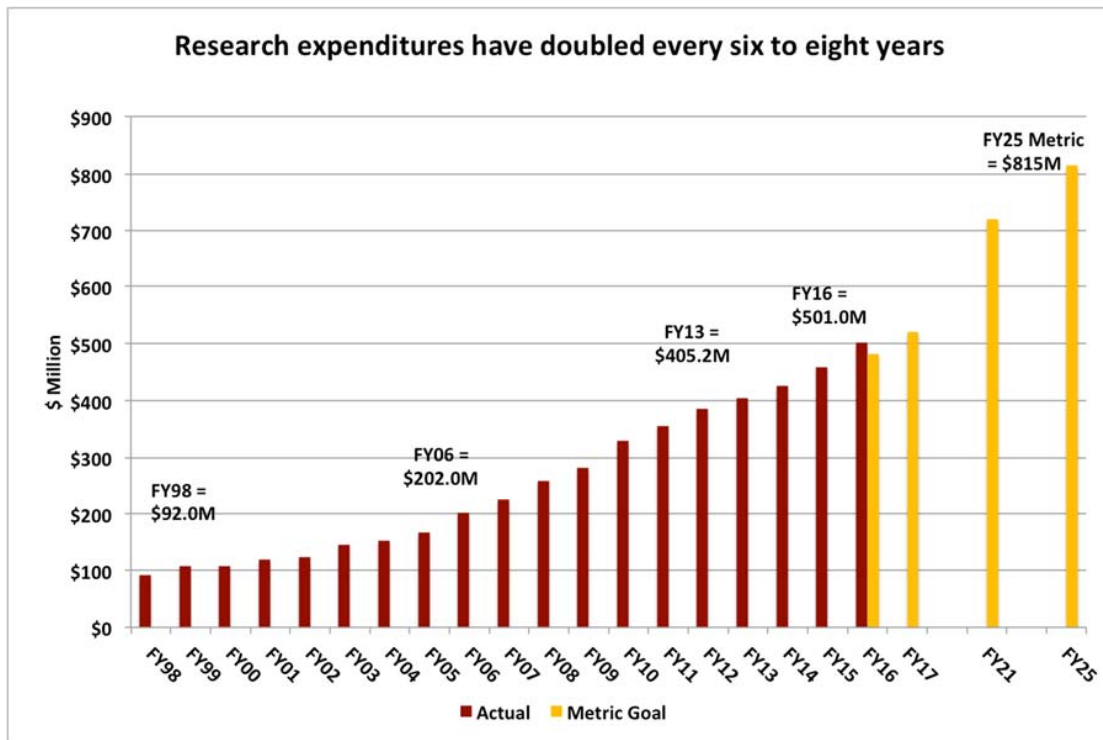
The Required Resources

The scale of investment that is needed to achieve these educational and research goals is substantial. Over the eight years between now and 2025, ASU will need to:

- Increase the size of its 3,400 person faculty by approximately 25% to 30% (800 to 1,000 positions). Particular emphasis is needed on growing the tenured and tenure track faculty.
- Increase the number of academic support staff at a slightly slower rate than that of the faculty (about 750 to 900 positions), and increase the number of externally-funded research staff, post-doctoral students and research assistants to match or exceed the planned 70% increase in research volume (over 1,000 positions)
- Construct approximately 825,000 net square feet of new teaching and office space (an increase of about 15%). About 90,000 SF of this is underway.
- Construct approximately 475,000 net square feet of new research space (an increase of about 50%). About 100,000 SF of this is underway.
- Increase student residences by 7,500 beds (mostly via public/private partnerships); 2,600 of which are underway. We currently have 15,000 students

living in ASU and third-party housing and 5,000 students living off campus with partners for whom we provide student Community Ambassadors.

- Build other auxiliary space (e.g. parking, and multi-purpose space in athletic facilities). It is important to note that residence halls and other auxiliaries are structured to be self-supporting, but to not be a planned source of revenue for the education and research mission. This approach is aimed at providing excellent services in support of education without adding unnecessarily to our students' cost burden.

- Provide the funding needed to keep the ASU technology infrastructure up-to-date and secure and to build new technology platforms of the future

- Provide funding from operations and borrowing to make reasonable efforts to address a large proportion of the problems with past under-investment in ongoing repair and maintenance of the physical plant. (To be clear, there are not enough funds in this plan to eliminate the deferred maintenance backlog, but there are enough to make a real dent.)

- Operate at a positive net margin to allow a continued modest increase in net assets throughout the planning period.

Simply deploying these new resources in the current model will not be sufficient to reach the goals. No existing university organizational structures at ASU or elsewhere are adequate to manage this scale of ambition. Over the last ten years, ASU has evolved its operations to drive effectiveness via centralization of campus management, departmental consolidations, and other changes and new organizational changes will have to be ongoing. We will also need innovations supporting student success, new educational modalities to reach under-served and new populations of students, greater faculty collaboration to drive the competitiveness for large-scale research projects, and more external partnerships.

3. Sources of Incremental Revenue

The plan presented aligns with the scale of the resource needs outlined above. The main elements of the plan are consistent with the approach outlined in the last six years of ASU Enterprise Plans. The risks and challenges associated with achieving success with these plans remain significant.

Overall, the financial plan calls for an increase in gross revenue of about $1.0 billion (35%) between FY17 and FY21, and by a total of $1.7 billion (65%) over the entire planning period of FY17 to FY25. The current gross revenue number is $2.7 billion ($2.4 billion net of scholarship allowance), up $1.1 billion since FY08.

The major elements of the plan are:

- Resident on-campus undergraduate enrollment must be at levels that will result from continuing to honor the current admission standards without turning away any qualified student. While the gross revenue increase from resident students is forecast at about $130 million, this group is not assumed to be a major source of incremental net revenue because the planning assumes that tuition rate increases will follow the very modest patterns of the last five years at ASU, and that financial aid will be increased at the rate needed to assure accessibility. We anticipate, however, that a larger proportion of that aid will be dedicated to need-based awards (rather than merit-only awards) as the demographics of resident students continues to shift. It is worth noting that the predicted annual future gross revenue growth averages less than two-thirds that of the previous eight years.

Average Annual Resident UG Tuition and Fee Increases
Actual FY03 to FY17
Planning Range FY18 to FY25

Average Annual Resident UG Tuition and Fee Rate Increases
Actual FY03 to FY17
Planning Range FY18 to FY25
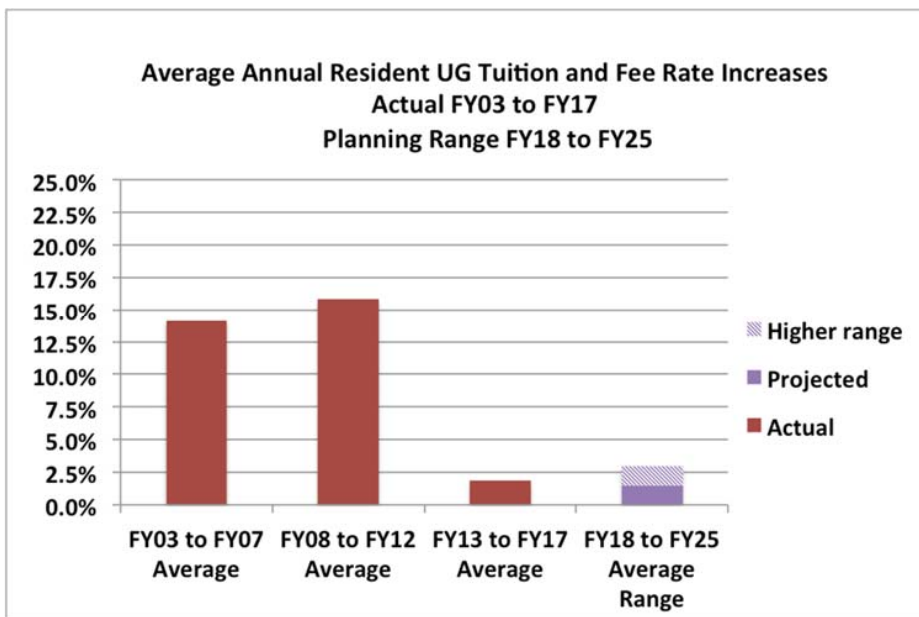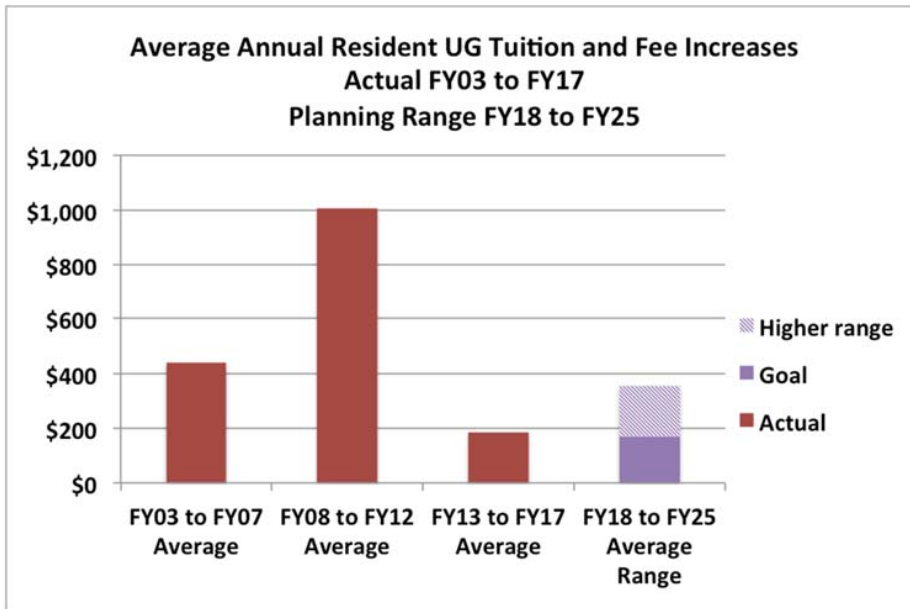
- Domestic non-resident and international student on-campus undergraduate enrollment are assumed to grow at rates that are a bit lower than those seen over the last five years, but which will still be challenging in an increasingly competitive marketplace. These students will be a major source of incremental net revenue available for investments since we assume the ability to continue to

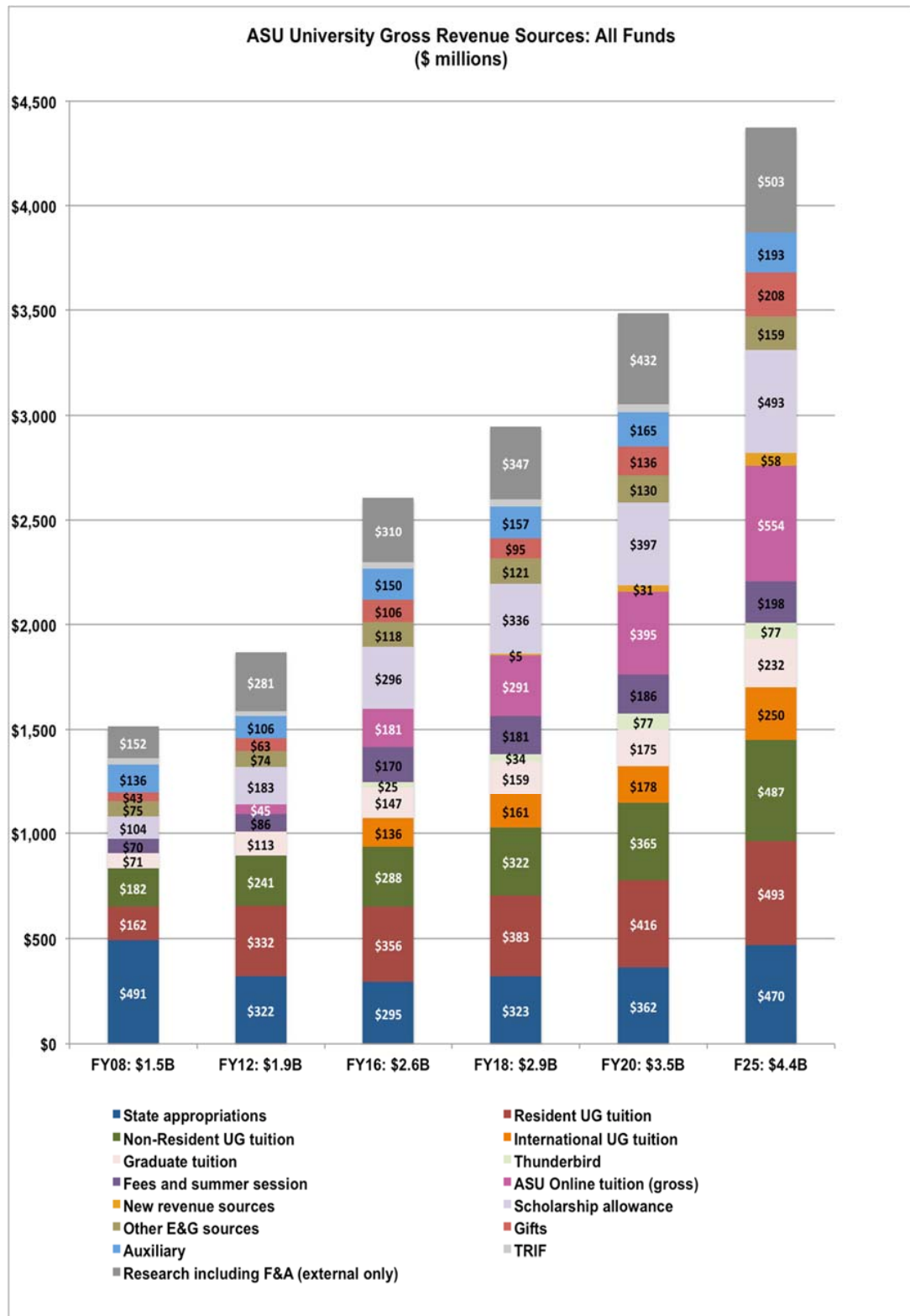raise tuition rates by an average of 3% annually without changing the proportion of tuition used for financial aid. The forecast gross revenue growth is about $310 million, a (lumpy) average of 8% a year, which is half that of the previous eight years. This is based on increases averaging 3% a year, but the actual eventual results will be a reflection of the market price that ASU can establish as a result of its perceived market value among this group. If we can establish a higher price in these competitive markets than what is assumed in the projections, we will do so.

- On-campus graduate enrollment presents a substantial opportunity for growth at a somewhat faster level than the rate of growth of the past eight years, which averaged 8.5% per year. Substantial efforts will be made to increase enrollment in this critically important area for economic development, but because of the past experience in building on-campus resident enrollment, the forecast for gross revenue growth is $85 million.

- ASU Online enrollment growth is based on aggressive marketing of a best-in-class educational experience, continuous introduction of new programs of study aligned with career-related demand, market level pricing, and improved retention. The recent Us News and World Report ranking of ASU Online as the #4 program in the country will help in this effort. This will also be a substantial source of incremental net revenue for institutional investment. Since its inception in FY 2012, ASU Online gross revenue has grown to $180 million in FY 2016 and is expected to reach $230 million in FY2017. The forecast includes additional growth in annual gross revenue of about $250 million by FY 2025.

- Major new growth in enrollment is expected from new digitally-delivered programs. Some of this growth will be from building partnerships with commercial and governmental employers offering training and educational benefits to their employees. Some will be from enrollment resulting from partnerships with distinguished international universities. And some will be enrollment in existing on-campus and online programs that comes from innovative online pathways that allow students who would otherwise be seen as unqualified to attend and have a second chance to become prepared and qualified. In addition to the crucial goal

of providing a means of broadening educational opportunities to under-served groups, all of these programs can be structured in a way to deliver a reasonable net margin towards investment needs. This is the most speculative component of the enrollment revenue forecast; it includes about $100 million in gross new revenue by FY 2025.

- The history of recent state investment has not been positive or predictable. While ASU will continue to press for the State to provide a fair share of the cost of education for residents, this Enterprise Plan does not rely heavily on that circumstance changing drastically. However, it does include the forecast that the State can be persuaded to maintain its current share of per-resident funding as resident enrollment grows and costs increase. This assumption amounts to an average annual increase of about $20 million.

ASU University Gross Revenue Sources: All Funds
($ millions)

FY08: $1.5B
- State appropriations: $491
- Resident UG tuition: $162
- Non-Resident UG tuition: $182
- $71
- $70
- $104
- $75
- $43
- $136
- Research including F&A: $152

FY12: $1.9B
- State appropriations: $322
- Resident UG tuition: $332
- Non-Resident UG tuition: $241
- $113
- $86
- $45
- $183
- $74
- $63
- $106
- Research including F&A: $281

FY16: $2.6B
- State appropriations: $295
- Resident UG tuition: $356
- Non-Resident UG tuition: $288
- $136
- $147
- $25
- $170
- $181
- $296
- $118
- $106
- $150
- Research including F&A: $310

FY18: $2.9B
- State appropriations: $323
- Resident UG tuition: $383
- Non-Resident UG tuition: $322
- $161
- $159
- $34
- $181
- $291
- $5
- $336
- $121
- $95
- $157
- Research including F&A: $347

FY20: $3.5B
- State appropriations: $362
- Resident UG tuition: $416
- Non-Resident UG tuition: $365
- $178
- $175
- $77
- $186
- $395
- $31
- $397
- $130
- $136
- $165
- Research including F&A: $432

F25: $4.4B
- State appropriations: $470
- Resident UG tuition: $493
- Non-Resident UG tuition: $487
- $250
- $232
- $77
- $198
- $554
- $58
- $493
- $159
- $208
- $193
- Research including F&A: $503

Legend:
- State appropriations
- Resident UG tuition
- Non-Resident UG tuition
- International UG tuition
- Graduate tuition
- Thunderbird
- Fees and summer session
- ASU Online tuition (gross)
- New revenue sources
- Scholarship allowance
- Other E&G sources
- Gifts
- Auxiliary
- TRIF
- Research including F&A (external only)

ASU OFR Business Plan February 2017

- Growth in philanthropy plays a more important part in the ASU Enterprise Plan than has been the case in the past. Over the last five years, the ASU Foundation has increased its annual total of new gifts and commitments from $88 million to $216 million. The fund-raising effort that kicked off in early 2017 is expected to bring that number to $250 million, and more importantly, in contrast with the past pattern, build a structure that helps to avoid the irregularity of the results seen in the past and which allows that level of success to be achieved regularly.
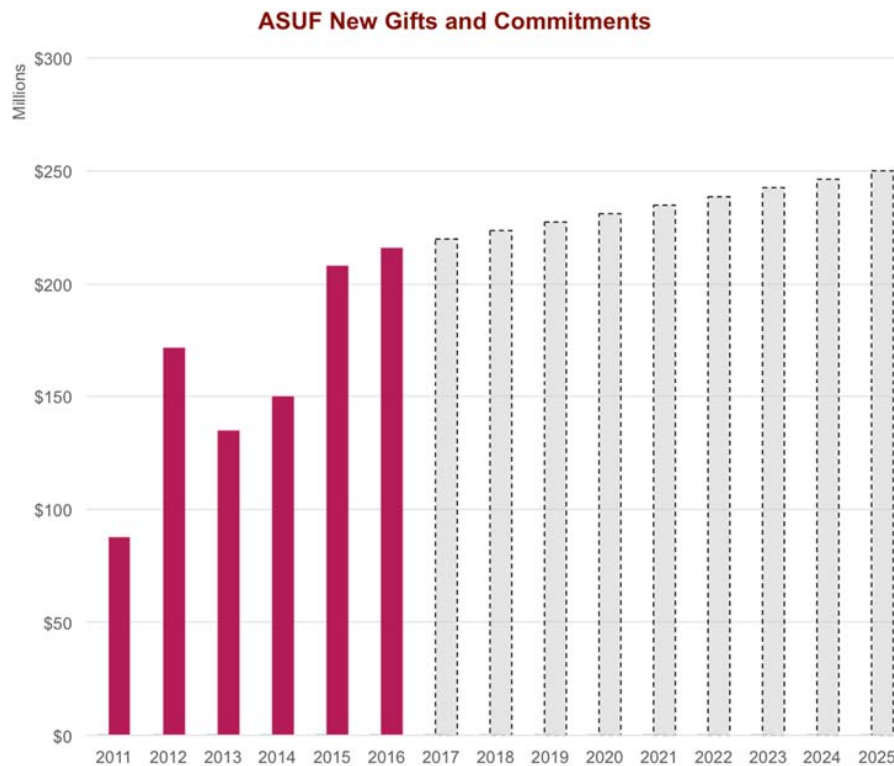
ASUF receives these gifts as endowments and multi-year commitments. The overall amount of money received annually from ASUF has grown from $54 million to $88 million. These funds support both new programs as well as general purpose university growth needs. The financial plan forecast reflects support from gifts and other assets roughly doubling to $210 million in FY2025 including expectations of gifts to support capital projects.

ASUF Direct Support To/For ASU
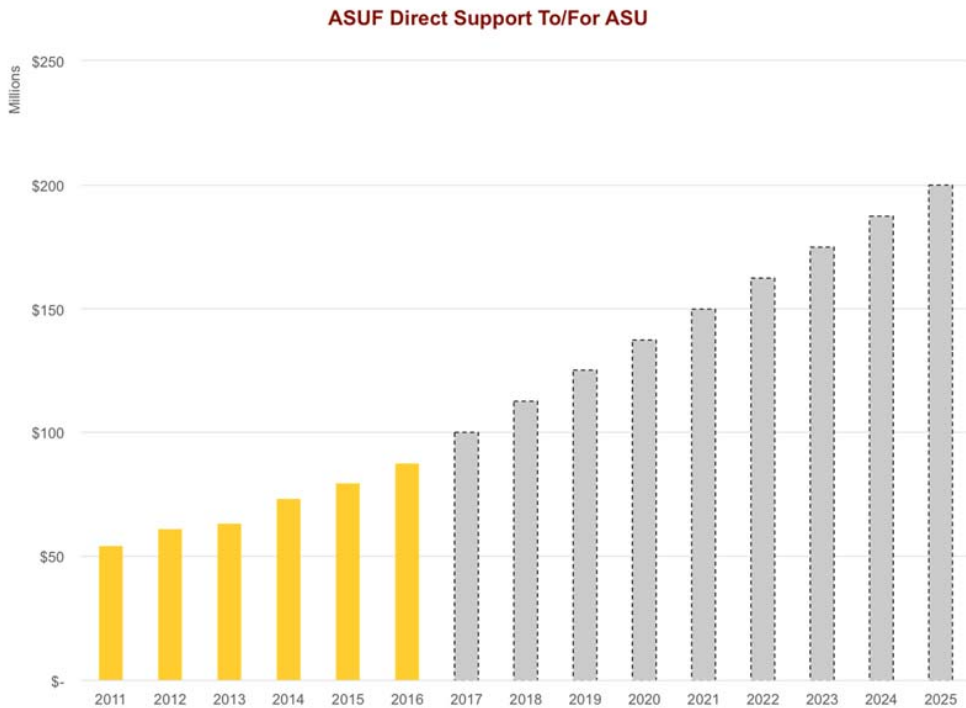
- Research revenue is forecast to grow to the level needed to achieve the $815 million expenditure metric target. This is extremely valuable to the institution's quality and economic development support mission. The majority of the funds are used for the restricted purposes designated by the funding entity. However, the component designated for indirect cost reimbursement is available to help cover costs of new research support and facilities included in the general operating investment needs.

This Overview section provides an overview of the goals and financial underpinnings of the ASU Enterprise Plan. The following section provides more detail about the tactics, challenges and risks in its achievement.

4. Tactics and Strategies: Serving Arizona Residents

ASU has maintained a consistent admissions standards policy towards Arizona residents and has therefore assured that the University is accessible without financial barriers to any student qualified to do university-level work at a research university. ASU has also broadened its means of access by expanding program opportunities away from the metro Phoenix area, offering programs outside the Valley (Tucson, Lake Havasu, Yuma, and Safford/Thatcher), and adding a robust set of online degree programs. As a result, resident undergraduate enrollment has grown by almost 10,000 students (from 34,854 in Fall 2003 to 44,221 in Fall 2016). With that growth, we have seen demographic changes that reflect the diversity of the State. For example, the proportion of students receiving Pell Grants at some point in their academic career, which was as low as 3% in the 1990's, has grown in the last ten years from less than 30% to 50%. Ten years ago, there were 8,800 non-white and non-Asian resident students enrolled; there are now 16,700. The proportion has grown from 23% to 34%.

To achieve our goals, these trends will have to continue and even accelerate. The last twelve years have demonstrated that ASU can exceed the population trends with 27% enrollment growth vs.15.5% population growth. By 2025, ASU expects to be enrolling 55,000 resident undergraduates, with about 6,000 of them in ASU Online programs. Given the State's forecasts of the growth in the population of college age students over that time (roughly 13.5%) and the increasing diversity of the population, seeking a growth of 25% in resident undergraduates will require continuing to outpace the rate of population growth.

The tactics for accomplishing this are tied to:
- Maintaining affordability
- K-12 outreach and other pipeline efforts
- Community college partnerships
- Continuous improvement in retention

Maintaining Affordability for Arizona Residents

ASU already offers an education that is valued in the out-of–state and international marketplaces at close to $30,000 to its residents at a small fraction of that price. But ASU can be successful in serving Arizona resident students, whether they join us as traditional freshmen, as transfers from community colleges, or as returning adults seeking to complete a degree or to upgrade their existing credentials, only if we are able to maintain this affordable tuition policy. The two elements of doing so are:

- Limiting resident tuition increases to 0% to 3% annually
- Finding sufficient funding for institutional financial aid to recognize merit, but more importantly to assist students with financial need

With these parameters, ASU budgeting plans can be based on no more than $4.7 million in new resident net tuition revenue on average per year. In the context of a $1.5 billion budget for the cost of education and a $330 million annual expenditure on financial aid, this is a small amount. Salary increase pools alone, at 2% per year, require over $20 million in new funding.

This revenue limitation is layered onto the fact that the base level of resident tuition and fees covers only two-thirds of the educational cost before financial aid, and 43% after aid. The State investment makes up a bit over half of the shortfall between net tuition and educational costs, but that still leaves a gap of over $200 million between the revenue generated by maintaining affordability and costs of education. Many of the Enterprise Plan's financial strategies and tactics described in this report have been devised to address this gap.

Per Resident FTE: FY 2017 Forecast

Average ASU E&G cost of education (per OFR)	$16,535
Average gross tuition and fees *	$11,097
Average net tuition and fees after institutional aid (excluding Pell)*	$7,058
State investment per resident FTE*	$5,524
Educational cost not covered by net tuition or state investment*	$3,953
Resident FTE (Fall 2016)	51,481
FY 2017 shortfall	$203,500,000

Based on ABOR State budget submission methodology

State Funding for Resident Students
ASU, NAU and UA Total
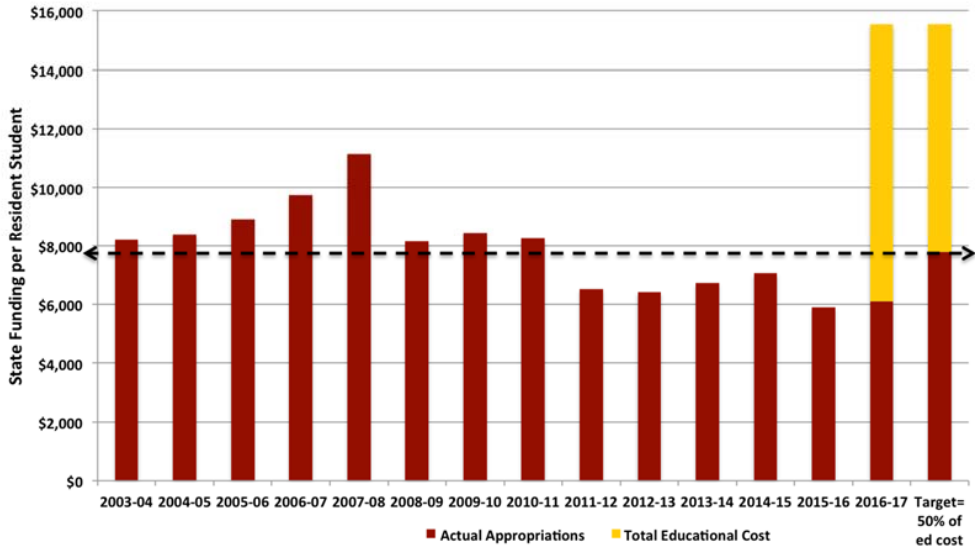
To put this gap in perspective, an additional $200 million would be sufficient to both double the amount of need-based aid awarded to resident students **and** to increase the ranks of the tenure/tenure track faculty by 30% (adding over 750 faculty members). That level of aid would allow us to be even more successful in attracting under-represented Arizona students, and that number of new faculty would benefit every student, raise our competitiveness and potential market price outside Arizona, and speed the expansion of the research enterprise.

The demographics of Arizona suggest that from a business planning perspective this gap may only widen in the foreseeable future. Not only are the younger generation in the State increasingly from population groups that tend towards the lower income spectrum, but overall average real household income is lagging. To be successful in improving participation rates and graduation rates once enrolled it is likely that the pressure on financial aid costs will rise and the average level of net tuition generated by resident students will decline.

Percentage of Arizona High School Graduates				
	Total High School Grads*	% White*	% Non-White*	Median Real Household Income **
2000-01 actual	48,212	58.30%	41.70%	$54,743
2005-06 actual	56,847	53.50%	46.50%	$54,912
2010-11 actual	67,118	46.90%	53.10%	$50,981
2015-16 projected/actual	67,549	43.70%	56.30%	$52,248
2020-21 projected	69,507	42.90%	57.10%	
2025-26 projected	71,534	41.60%	58.40%	
2030-31 projected	61,069	43.70%	56.30%	

*source: Knocking at the College Door, WICHE, December 2016

**source: Federal Reserve Bank of St. Louis website

It is, of course, possible that the level of State investment will rise to offset some of this pressure. The current ABOR proposal to provide funding sufficient to cover 50% of resident educational costs would eat into this $200 million gap by $115 million at ASU. But, while planning to work diligently to persuade the political forces in the State to do this, the Enterprise Plan cannot simply assume a successful outcome of those efforts and we must look to additional means to assure the resources for access.

In addition to preparing to address the financial pressures of a more financially needy resident student population, on-campus programs will be bolstered to provide targeted academic support for specific groups of students, using data analytics to find patterns of problems. Cultural competency programs to help faculty and other students understand the best practices for inclusion are being developed by the Provost's Office and the Office of Student Services. This is discussed in greater detail in Section 5.

The means of creating the needed resources, beyond seeking reasonable levels of State investment, have been consistently identified in the Strategic Enterprise Framework reports since 2010. They are:

- Increasing enrollment of domestic non-resident students and international students
- Building an online educational program capable of attracting large numbers of students, particularly from non-traditionally aged populations
- Improving fund-raising capacity and results
- Seeking partnership investments

These may seem simple and straight-forward, but they are actually quite complex to develop, manage, and make effective and are further discussed in Section 7.

All of these efforts have been successful in allowing ASU to serve the residents of Arizona well. Unlike public universities in many other states, ASU has not had to limit resident enrollment, reduce class offerings, or increase admissions standards.

ASU has also maintained the commitment to financial aid to residents, keeping the average tuition paid after all forms of aid to between $3,700 and $4,100 for the last five years despite a cumulative $915 increase in stated tuition and mandatory fees. The required ASU annual investment in institutional financial aid is now over $325 million, an increase of $145 million in the last five years.

K-12 Pipeline Tactics

Improving the college-going rates from Arizona's high schools is a critical requirement. Currently, only 46.5% of Arizona high school graduates meet the eligibility requirements admission to our three public universities, and the proportion for Hispanic, African-American, and American Indian graduates is about 35%. This necessitates both a multi-pronged strategy and an ongoing investment of resources.

One of our tactics has been the development of the ASU Preparatory Academy to demonstrate that a strong curriculum and an abiding faith in the ability of all students to succeed will lead to success. ASU's investments in the Prep Academy have been limited to some capital costs for school facilities. Partnerships with the Phoenix Union and Higley School Districts and the regular level of state school funding is all that has been needed to operate the programs. ASU will work to help other schools understand and

adopt the curriculum and pedagogy in order to scale the success we have seen is possible.

Development of the ASU Prep Digital Academy, can also be a tool for expanding the pipeline and increasing the number of college eligible students locally, nationally and internationally. Work is actively underway to create digital curriculum that integrates high school and university courses and provides rich support structures which together will deliver either a high school diploma or provide supplemental courses for on-ground schools looking for enhanced curriculum. The effort needed to build this program comes from the combined work of ASU Prep (content and support expertise) and EdPlus (instructional design and technology expertise). The funding is being derived from a combination of grants and a re-prioritization of existing internal resources in the two units..

Beyond efforts to improve the preparation level of students coming from Arizona high schools, efforts are required in the schools to help overcome the under-investment in many districts in guidance counselors and other support services. To better support students most in need, particularly first-generation, low-income students, ASU is looking to build on its existing array of on-ground college counseling services for high schools. These include programs that encourage students to apply to college, help students navigate affordability, and offer coaching through the application process. ASU has intensive partnerships with five districts that currently reach over 60,000 students and 9,000 family members. This needs to grow and the goal is to operate in fifteen large districts in Arizona before later expanding across the state and nationally, and to reach 120,000 students and 30,000 family members.

Programs include:
- Expanding the number of high school schools that are part of the SPARK program, which places student ambassadors with similar backgrounds to the students they serve in schools to provide information about college preparation, encouragement, and role models
- Reaching more parents in English and Spanish early in their student's secondary school career to promote understanding that college in Arizona is attainable and affordable

- Refinement of digital and social media tools like me3, a digital app for mobile phones with a game-based interface for career advising and college major planning
- Specialty programs such as the Hispanic Mother-Daughter college prep activities

Resource requirements for programs such as these are relatively modest since they concentrate on using ASU students or recent graduates as the primary advocates and mentors.

Community College and Other Resident Transfer Efforts

Increasing the numbers of transfer students from Arizona's community colleges will be another crucial tactic in achieving the resident undergraduate enrollment and degree award goals, and there are challenges that must be overcome. Perhaps the most difficult is the fact that after many years of growth, community college enrollments across the state have dropped annually over the last five years. The reported community college headcount totals (just under 300,000) can be misleading when considering the scale of the projection for resident transfers since only a small percentage of the community college population is intending to transfer to a university. Interestingly, the data from the ASSIST project shows that the proportion of students in the community colleges intending to transfer and taking courses that put them on that path has been growing (10.8% in the last measured cohort versus 9.3% seven years earlier). But despite that, there has been a decline in the actual rate of transfer of these students after four years—from 18.5% in the cohort that entered in 2004 to 15.5% in the 2010 cohort. The decline has been particularly acute since the cohort that entered in 2009. (It is not clear whether the timing of the recession is linked to this.)

ASU has consistently been the transfer home for 58% to 60% of the transfers from Arizona community colleges to Arizona public universities over the last decade. This means that about 6,200 students transfer to ASU annually with credit from the community colleges, (though not necessarily directly from being enrolled in the community colleges--about 3,800 on average transfer from any given community college cohort). With a declining number of students in the community colleges, the pressure on resident transfer enrollment has been real. Total resident transfer new enrollments,

however, have grown over the last decade—from just over 6,100 in 2008 to about 6,750 in 2015 and 2016 (although down from a short peak in 2013 and 2014 of about 6,900).

The fact that a significant proportion of ASU's resident transfers are not coming directly from the community colleges or are coming with credits from institutions other than the Arizona community colleges is important to note. The advent of ASU Online is the most important reason for this. Online programs provide a new pathway for residents, often older, with some college credits to restart their education, and in 2016, almost 1,100 residents were new transfers to ASU Online (some from the community college and others not).

Between the numbers of community college students beginning their studies with intent to transfer and the number of people with some college credits and higher ambitions there is a very large market for additional resident enrollment and additional service to the State's economic and civic health. ASU aspires to grow its numbers of entering resident transfer students by 1,800 by 2025. Among the tactics,

- More aggressive efforts with community college leadership to allow ASU to be more present and active in educational planning and support during the period of enrollment at the community college
- Targeted financial aid programs for online transfers
- Experiments with incentive-based financial aid tied to degree completion for students coming from community colleges
- Expanded ASU Online programs in fields with high relevance to employment opportunities and other measures of student demand

Resource requirements for new financial aid programs are likely to be in the range of over $20 million per year by 2025. The three universities, the Board, and the leadership of the community colleges must find more open means of communicating about the challenges in the relationship between the universities and the community colleges (driven perhaps by a sense of competition for students). These issues may have stood in the way of a more comprehensive way to make community college to university pathways work in ways that do a better job of increasing community college transfers. ASU can make strides but cannot do this alone.

5. Tactics and Strategies: Student Success

Enrollment growth alone cannot, of course, be a goal. The students who matriculate at ASU have to be given every opportunity to proceed efficiently through their academic careers and graduate with a degree that has provided each student with an excellent education in his or her chosen field, prepared the student more broadly to function in and to contribute to society, and to be the kind of life-long learner that is required for success in today's world of work. Going further, ASU's goals for both enrollment and student success need to be the same for every student. This means that the student body should reflect the economic, ethnic and gender diversity of our state and that rates of success are equivalent across socio-economic characteristics.

Progress to Date

ASU has achieved major improvements to graduation rates for all of its undergraduates, depicted below.

Four-Year and Six-Year Graduation Rates
First-Time Full-Time Freshmen

Graduation Year
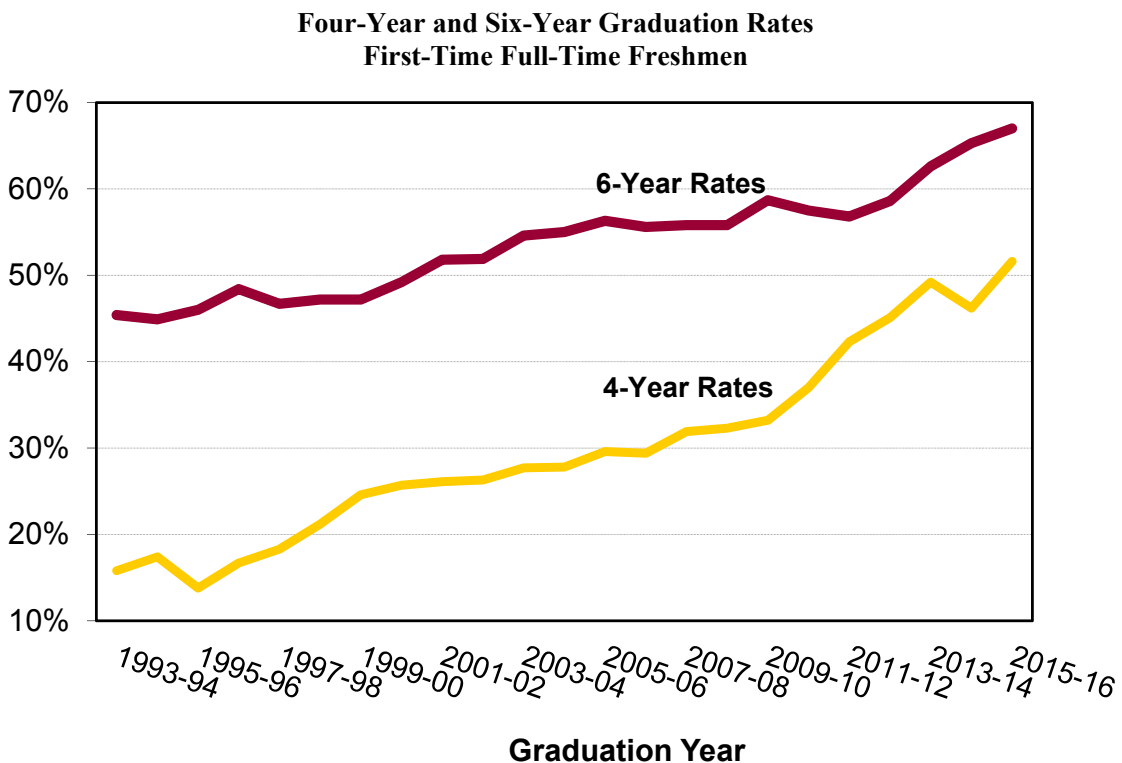
Focusing on the more recent progress, the student cohort that entered as freshmen in Fall 2002 achieved a first year retention rate of 76.7%. Thirty percent graduated within four years and 56.2% within six years. Starting in 2007, ASU introduced a new approach to student success with a range of retention and time-to-degree programs including a program of advising and predictive analytics that has been collectively referred to as "eAdvisor." This approach has been copied by many universities and became the basis for a private sector industry of student success tools.

Student success improved dramatically following these innovations as seen in the table below. Students entering in 2012 persisted into the second year at a rate of 83.8% and graduated within four years at the rate of 51.6%, 21.6 points higher than the 2002 cohort. The six-year rate is forecasted at 67.8%, 11.6 points higher. For Arizona students, these measures of success are still higher -- 86.2%, 53.3% and 70.5% respectively. Additionally, some students transfer successfully from ASU to another four-year institution. Accounting for these students (based on the Voluntary System of Accountability or VSA methodology), more than 74% of the students who entered ASU as freshmen in 2012 will graduate within 6 years and it is estimated as many as 80% will graduate within eight years.

Retention and Graduation

Cohort (ALL)	% Retention	% 4-year Graduation	% 6-year Graduation	% 6-year Graduation + VSA**	% 8-year Graduation + VSA**
2002	76.7	30.0	56.2		
2005	78.5	32.6	57.7		
2008	81.2	42.4	62.6		
2012	83.8	51.6	67.8*	74.0*	80.0*
2014	84.1				
Cohort (AZ)					
2002	78.0	28.8	57.3		
2005	81.2	32.4	60.4		
2012	86.2	53.3	70.5*		
2014	86.8				

*forecasted
** includes students who transfer from ASU to another university and graduate

To put this in human terms, the Fall 2005 resident cohort included about 5,500 students. If those students had been able to benefit from the student success innovations now in place, almost 400 fewer would have been lost to attrition, 1,100 more students would have graduated in four years in 2009 (saving themselves thousands of dollars each), and over 600 more would have graduated in six years in 2011. Carrying this forward five more cohorts, the last graduating in 2016, these new policies have contributed to more than an additional 10,000 Arizona citizens with a college degree.

It also is instructive to examine ASU's progress against aspirational peers. The chart below plots ASU's improvement in graduation success (left-hand scale) against AAU public universities in the Association of American Universities (AAU) (a group with 62 very high quality public and private research universities in the United States and Canada). The right hand scale shows the median SAT of admitted students. ASU had 4-year graduation rates at least 20 points below the AAU peers as recently as 2009. The gap is now closed to 10 points. Moreover, ASU has accomplished this by maintaining the commitment to access at the heart of the ASU Charter. Had it chosen to have the same increasing admission standards as most AAU public universities, ASU's graduation rate would be much higher; but Arizona would suffer a workforce with far fewer university graduates than it has at this time.
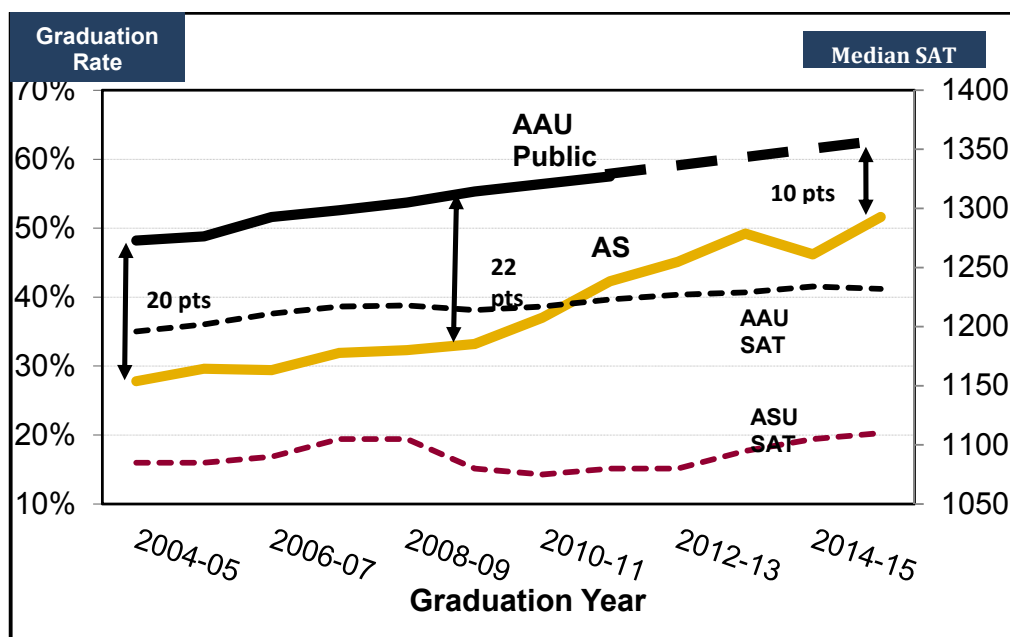
ASU accepts students with A and B averages in high school, and, in fact has as many A students as many public universities with higher admission requirements. We know from our work with the University Innovation Alliance that our best-prepared students graduate at rates that exceed the rates at schools with only A students, and at a better rate than those of the highly selective University of California system (70% versus 62%).

Four Year Graduation Rates at UIA Campuses, 2015
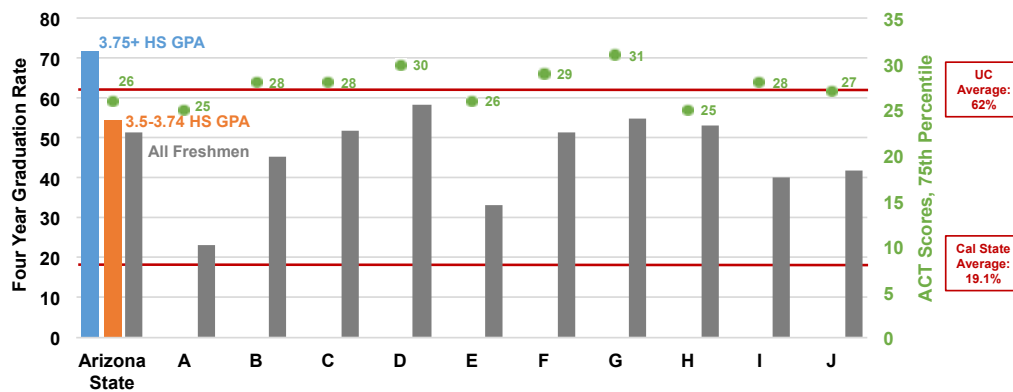
For Fall 2011 cohort or most recently available. Source: University IR offices.

Closing the achievement gap for students from underrepresented groups is another standard by which we measure ourselves. Due to the student success innovations, much progress also has been made in this regard. The improvement is shown in the table below. Before reviewing, it is important to remind the reader that graduation results closely follow retention success in the first year, but four to six years later.
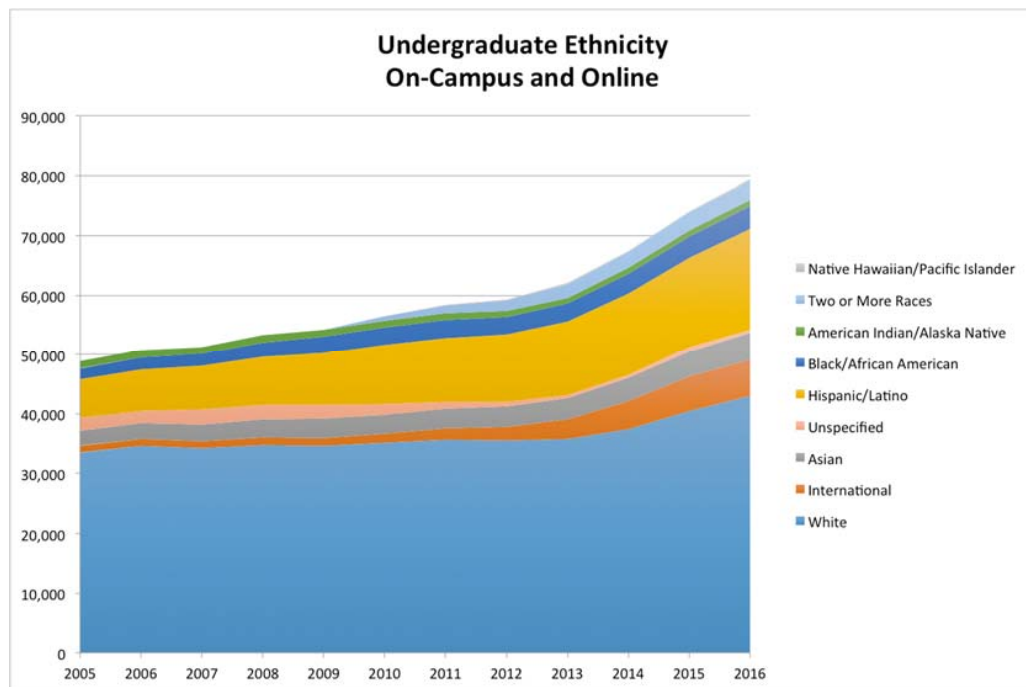
Retention and Graduation by Ethnicity
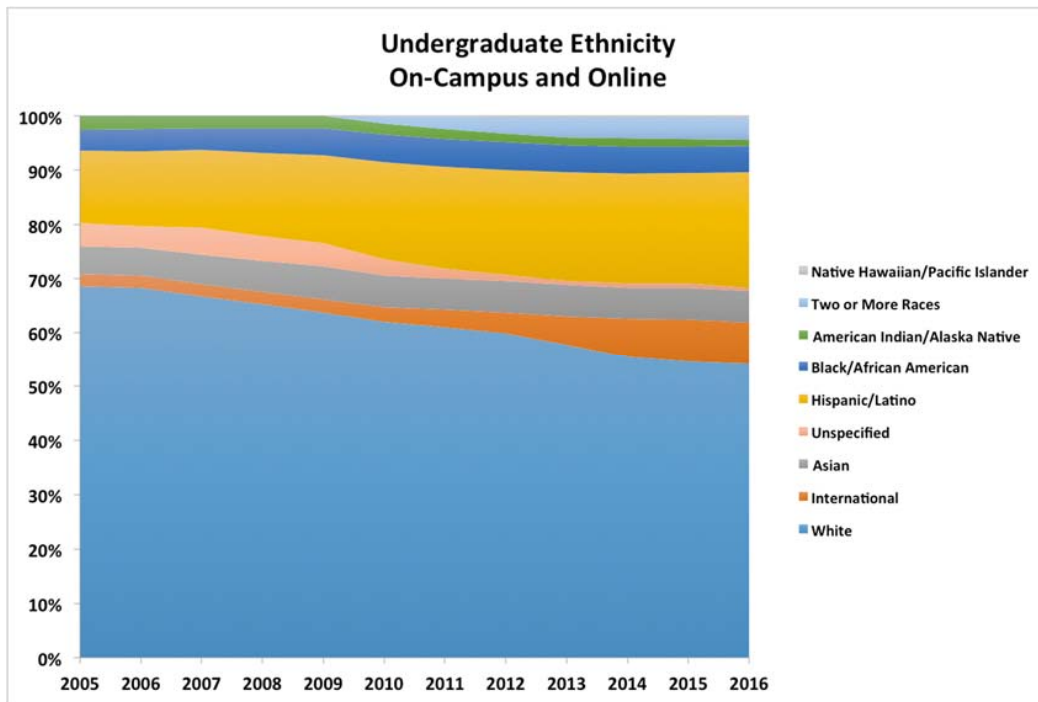## Cohort: First-time Full-time Freshmen

	2002	2005	2009	2014
1st year retention %				
American Indian/AK Native	61.8	67.9	70.8	82.3
Asian/Pacific Islander	85.4	83.1	87.9	91.5
Black	70.6	71.4	78.4	80.4
Hispanic	74.2	76.6	81.2	81.9
Two or more races	---	---		80.4
White	77.0	79.2	80.2	83.3
6th year graduation %				
American Indian/AK Native	25.0	25.4	40.5	---
Asian/Pacific Islander	64.0	66.1	70.5	---
Black	37.3	38.8	52.2	---
Hispanic	49.5	50.5	62.3	---
Two or more races	---	---	---	---
White	57.9	60.4	66.9	---

Since retention is the starting point to graduation, much insight can be discovered by focusing here. Starting in 2002, improvement in retention in general, and by ethnicity, changed slowly. Retention improved significantly for American Indians & Alaskan native students from 2002-05, but not much progress was demonstrated by other groups. The innovations started in 2007 were mostly implemented fully by 2009, spurring further improvements. Advancements were made to the American Indian Student Support Services, but beyond this, the innovations were not designed for a particular ethnic or minority group. However, there was a strong and intentional focus on the challenges first generation students confront, whether they be economic, social or academic. The innovations seemingly paid off. The 2009 cohort shows wide-spread improvement among minority students. Over time, the providers of student support become more and more adept with the policies, and by the time of the Fall 2014 cohort, the retention gap is nearing elimination. This portends much improved graduation rates when the 2014 class reaches the traditional graduation milestones.

As for graduation, a similar pattern emerges, but with much less data since the later cohorts have not reached graduation. There was little if any improvement in the 6-year graduation rate of underrepresented students who started at ASU in 2002 (and before) to 2005. However, the 2009 cohort experienced significantly higher 6-year graduation rates among all ethnic groups. While the gap has not been eliminated, it has been closed significantly. And we forecast the best is yet to come given the much higher retention rates of the 2014 cohort.

It is important to note that at the same time these performance improvements were being achieved, the numbers and proportions of minority students in the undergraduate population was rising. Hispanic student representation rose by 160%, from 6,464 in 2005 to 16,895 in 2016. This is an increase from 13% of the student body to 21%. Overall non-Asian minority enrollment grew at the same 160% rate, from 9,628 (20%) to 25,229 (32%).

Undergraduate Ethnicity On-Campus and Online

Legend:
- Native Hawaiian/Pacific Islander
- Two or More Races
- American Indian/Alaska Native
- Black/African American
- Hispanic/Latino
- Unspecified
- Asian
- International
- White

Undergraduate Ethnicity
On-Campus and Online

Legend:
- Native Hawaiian/Pacific Islander
- Two or More Races
- American Indian/Alaska Native
- Black/African American
- Hispanic/Latino
- Unspecified
- Asian
- International
- White

A similar pattern of improvements in retention and graduation gaps is observed when examining the progress of low-income students. For this purpose, the concentration is on resident students for whom it is possible to significantly reduce the unmet need of cost of attendance through institutional aid and Pell grants. One of the most important aid programs for resident students at ASU is the Obama Scholars Program. Using a variety of aid sources, ASU covers resident students' estimated direct costs of attending ASU (minus the Expected Family Contribution) for up to eight full-time, consecutive fall and spring semesters. Students must meet the Freshmen Admission Requirements and be Pell-eligible with a total family income of $42,000 or less. Besides tuition and mandatory fees, room, board and books also are covered. Based on persistence rates through three years, Obama Scholars' 4- and 6-year graduation rates will exceed those of the overall cohort. In this case, the achievement gap has been more than closed.

Predicted Four-and Six-Year Graduation Rates
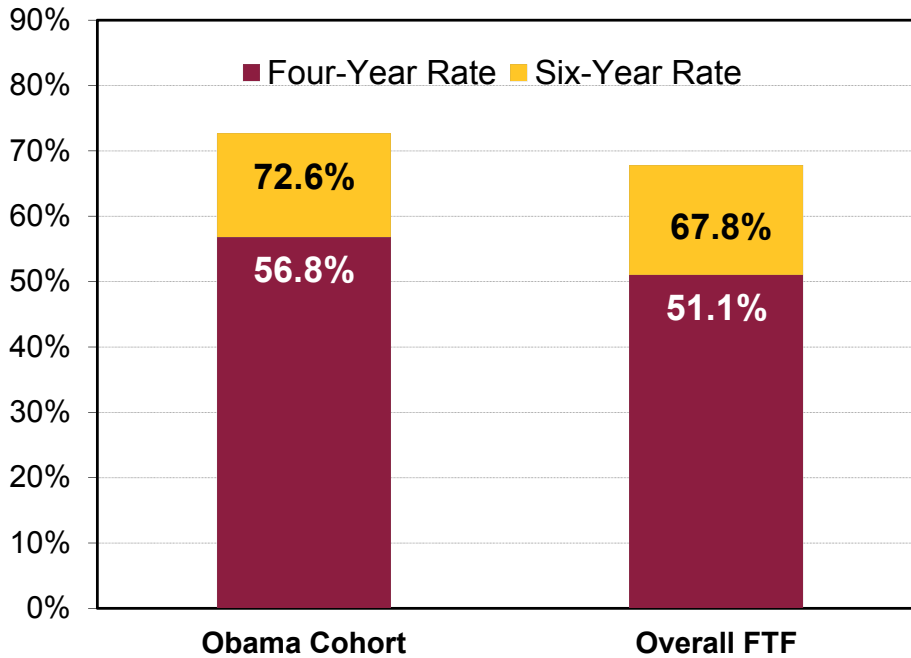
This pattern of improvement is also seen in an examination of all Pell recipients. The 2009 cohort of Pell students has significantly improved their 6-year graduation rate at all levels of incoming academic risk relative to 2001 and 2002. Moreover, the graduation gap between Pell and non-Pell students, on average has closed significantly since the 2001-02 cohort.

AZ 6-year Graduation Cohort 2001&02				AZ 6-year Graduation Cohort 2009			
Risk Level	Pell	Non-Pell	Gap	Risk Level	Pell	Non-Pell	Gap
Very Low	71.1%	76.5%	-5.4	Very Low	78.3%	85.2%	-6.9
Low	56.8%	61.8%	-5.1	Low	66.7%	65.2%	1.5
Mid-range	51.2%	53.5%	-2.3	Mid-range	60.5%	65.1%	-4.6
High	39.9%	46.3%	-6.4	High	57.1%	55.9%	1.2
Very High	32.2%	41.2%	-9.0	Very High	50.8%	51.8%	-1.0

At the same time that retention and graduation results were improving, the numbers of Pell students at ASU was growing. Pell students made up 23% of the undergraduate enrollment in 2005 (11,154 students). In 2016, 26,868 students were receiving Pell grants and almost 33,000 were enrolled who had received Pell awards at some point in their enrollment. This constitutes 41.5% of the undergraduates.

Future Innovations

Progress has been impressive, but continued improvements in retention and graduation will play a crucial role in ASU's ability to achieve its enrollment and degree targets. The metric targets for overall retention and graduation (for all resident and non-resident students) are 90% and 75%. About 10% to 15% of the overall growth in degrees in the metric goals is dependent on fully achieving these rates. Perhaps more importantly, work remains to completely close the gap between different categories of students based on family income, ethnicity, or the school they attended.

In recent years, we have seen the rate of improvement in retention start to slow and that could have an impact on the speed of improvement in graduation rates. The innovations ASU started in 2007 revolutionized practices across the industry and are now widely adopted. But without new innovations, our progress towards the metric goals might slow.

As a consequence, new efforts are being launched. ASU will move on multiple fronts and attack performance issues with specific subsets of students identified by increasingly sophisticated data analytics. Among the most extensive initiatives are:
- Redesigning courses with suboptimal success rates while maintaining rigor
- Refining and improving the technology systems that support student success
- Continuing to improve staff training and on-campus support facilities and activities
- Sharing innovations among universities

Course Redesign

A common reason for attrition or delayed time to degree is failure in the first courses taken and in courses that were critical to a student's major. eAdvisor made sure that students took the courses early in their major curriculum and in the right sequence to be successful, but these were often either introductory math courses with which students

historically had trouble or large lecture courses where the problems of an individual student were hard to recognize early enough. Additionally, even for students who performed well in these classes, the large lecture format promoted more passive and less active learning. To attain high learning skills such as critical thinking necessary for jobs of the future, learning scientists have found that active and interactive learning is usually necessary.

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A number of the largest introductory courses at ASU with relatively low pass rates are being redesigned as blended active/adaptive courses. Blended courses are designed such that content normally delivered through a passive lecture is instead delivered through courseware so students proceed through learning objectives in a more personalized and participatory manner. Often, as they proceed on their individualized pathway, they are assessed on their understanding. In some courses that are especially hierarchical, such as mathematics, a student cannot advance to the next learning objective without being proficient in the prior objective. The other half of the course is more oriented to interactive problem-solving, discussions, and team work guided by the faculty member, with less or no emphasis on lecturing. For this to be most productive, students first will have confronted and mastered the content necessary for these exercises in their adaptive learning courseware.

Initial efforts over the past three years have shown that this approach substantially increases success rates in mathematics courses. Student success in one introductory math course has improved from ~65% to ~85%. Student success in an introductory biology course also has improved, from ~75% to 90%. An introductory course in chemistry also has been highly successful. It is important to realize that success is not just measured by grade performance. If anything, academic standards have increased in these courses and students have demonstrated success beyond grades. In two of the courses, pre- and post-tests were conducted in the blended course and the traditional lecture hall version of the course, several times taught by the same instructor. Students in the blended classes generally achieved higher post-test scores and the highest growth between pre- and post-test. In short, adaptive learning substantially increases students' attainment of expected learning outcomes.

Similar course redesign efforts to combine active and adaptive approaches is also underway in several of the largest economics and psychology classes at ASU. Tens of thousands students will learn in these blended classes in their first years of study when the next phase of the build out is complete. It is anticipated that the more students encounter learning experiences such as these in their first few years, the more they will acquire higher thinking skills that will form a foundation for their upper division course work.

An even more ambitious effort using this approach soon will be undertaken involving a collection of "connected" courses that create an intellectual "chassis" for select majors. When content is delivered adaptively in these "connected" courses within the chassis, the courseware will be able to recognize when a student has either forgotten or not mastered a basic concept from an earlier course that is required for success in the current course. When this is discovered, the technology automatically directs the student back to a tutorial and exercises that specifically address the particular shortcoming, extending even as far back as four courses, thus allowing the faculty member to intervene exactly where needed, if needed. Students in majors such as engineering are particularly likely to benefit from these connected courses because of the interlocking skills needed to succeed in topics like calculus, physics for engineers, chemistry for engineers, and introduction to engineering.

Redesign of courses is not the only strategy we have developed for improving student outcomes. We also continue to find new ways of supporting teaching. We created the Provost's Teaching Academy to provide assistance for incoming assistant professors. We have recently partnered with the Association of College and University Educators (ACUE), who offer a series of on-line teaching modules, and are looking to reconfigure our teaching support program to include a combination of these two initiatives. In the pilot program offered with ACUE, 26 faculty members participated, with 88% indicating they would recommend it to colleagues.

Student Success Tools

At the time that eAdvisor was built (starting in 2007), no software products existed to track early indicators of students' success. While game-changing eAdvisor technologies

helped identify students at risk earlier in their academic careers, students were not actively engaged with the tools throughout each semester. Additionally, previous policies focused on interventions once a demonstrated failure was *detected*, frequently too late for either the student or advisor to rectify a problem. A decade later, the academic technology market is more robust. A number of software solutions have now been developed that provide strong predictive analytic engines and readily deployable ways to collect student performance information in the earliest week of a semester. These new analytical tools enable personalized student engagement, with focused intervention by the university when the model *predicts* development of a new risk based on daily performance data. This is essential for further progress as it becomes necessary to engage the segment of students who have not yet been accommodated by prior initiatives, and to be pre-emptive in engaging all students in a timely fashion *before* failure occurs. Such early risk analysis and identification is a key strategy for making progress on improving retention.

Although these advancements are highly promising, ASU's diligent research suggests that no one product integrates all services needed to address and correct obstacles to student success. As a result, ASU is working with a team of vendors to build an integrated academic, financial, and career planning technology platform, and aspires to develop this next-generation platform in a way that can be licensed to other universities. It will provide more data to students and their advisors about curriculum planning and pathways that assure improved time to degree, generate earlier alerts to faculty and advisors about academic, financial, and social issues that could lead to attrition, and be a source of information and advice that links current decisions to the potential impact on long-term financial plans and career goals. A next-generation approach also ensures a better experience on mobile devices that can be adaptable quickly as new technologies become available. The initial deployment of the suite of services is taking place in the Spring 2017 semester.

Other technologies have also been deployed to support student success and support more effective student services.
- A new in-house support center for ASU Online students that uses phone outreach, chat, and other social media applications to deliver academic, financial,

and social support. This replaces a service provided by an outside vendor, whose results were judged to be deteriorating.

- A Salesforce CRM system is being implemented in advising, financial aid and other points of contact to better coordinate and speed response to student issues, as well as uniformly record the means, content and results of interactions with each student. This interaction data will feed back to bolster the predictive models and to improve ASU's ability to tailor outreach work to particular students' needs.

- The learning management system (LMS) is a key communications tool for students and faculty, but the existing LMS is aging. ASU is in the process of securing an updated LMS that will address stability issues, provide better integration with the student success suite for data analytics, and take advantage of advances in the understanding of what constitutes a pedagogically sound interface for students and faculty.

- An interactive and personalized mindset application has been launched to help students build community and that encourages a positive mindset when one does not exist, which is especially important for first generation students who often feel alone and overwhelmed in their first year.

Student Success Staff and Facilities

Technology alone is not sufficient to boost student success. It requires well-trained advisors, tutors, and student mentors to support the work of the faculty and to be sure that the technology tools and the predictive analytics do the job for which they were designed. Improved advising centers have been built in a number of ASU's colleges, including Engineering and Business, and others are underway (CLAS). Residence halls have been redesigned with floors and full facilities dedicated to programs and advising for specific colleges. An externally funded pilot is underway to test different types of interventions and intensity of advising contacts to see if further investments in advisors justify the additional cost.

Other Initiatives

Knowing that improvements in retention and graduation will increasingly come from targeting specific, sometimes small, populations means that many pilot programs have to be tested and then deployed rapidly when successful. One example is the LEAD program that integrates three courses for students entering with lower levels of

preparation. The courses are designed to both teach the standard concepts of the courses and advance critical thinking and communication skills. The pilots have been very successful in boosting the retention of the students involved and a full implementation has started. Another example is the SEED employment program that incentivizes units to hire more students. The goal is to target needy students who currently work in off-campus jobs and relieve some of the schedule and travel pressures that often accompany that kind of employment and get in the way of studying. Finally, working with partner organizations which are able to build student-friendly work schedules, ASU is seeking to develop 1,000 new off-campus jobs.

Success Beyond Graduation

Recalling the ASU Charter once again, we intend to measure our institutional performance relative to how our students succeed. Evidence of our students' success helps illustrate the impact of these new and continuing programs aimed at supporting their academic engagement.

In highly competitive national honors, ASU students are among the best in the country. To name a few national student awards, ASU is:
- #2 producer of Goldwater Scholars for STEM, second to Stanford since 2006;
- #5 producer of Fulbright student awards;
- #22 producer of Truman scholars since 2006, tied with MIT and Princeton.

ASU students also are prepared to contribute to the economy and society. ASU has been recognized as:
- #4 this year for contributing the greatest number of graduates to Teach For America, and is a top contributor for eight years running
- #5 for producing the best-qualified graduates by employers surveyed by the Wall Street Journal
- #9 by Times Higher Education for preparing graduates for jobs; ahead of MIT, Columbia, Johns Hopkins, Duke, UCLA and the University of California
- #22 among large universities on the Peace Corps' list of' Top 25 Universities, for the 4th consecutive year
- One of the universities earning the 2015 Carnegie Foundation's Community Engagement Classification, which recognizes "teaching and learning, producing

research that makes a difference in communities, and revitalizing their civic and academic missions"

<u>Sharing Innovations</u>

ASU knows that it does not have a lock on innovations that can drive student success improvements. In order to more actively and formally seek out and share ideas, ASU took a lead role in forming the University Innovation Alliance, a group of eleven large public universities with similar commitments to expanding student opportunity and success. With funding from the Gates Foundation and five other foundations, ASU, Ohio State, Purdue, Michigan State, Iowa State, Kansas, Texas-Austin, UC Riverside, Oregon State, Georgia State, and Central Florida meet three times annually and talk regularly offline to share ideas that have been tried, lessons learned. The group is also pursuing joint pilots that will increase the number of under-represented students who attend college and graduate. We have already learned about and implemented a number of new ideas such as specific financial aid interventions, process mapping to improve the impact of student communications, and advising strategies.

UNIVERSITY
INNOVATI●N
ALLIANCE
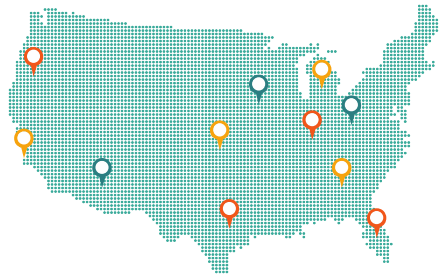
Arizona State University
Georgia State University
Iowa State University
Michigan State University
The Ohio State University
Oregon State University
Purdue University
University of California at Riverside
University of Central Florida
University of Kansas
University of Texas at Austin

6. Tactics and Strategies: Assuring Academic Quality

Probably most important to ASU's long-term viability is the ability to continue to strengthen its academic quality. The best recruitment ambassadors will be students who encounter a distinguished and engaged faculty in up-to-date classrooms and laboratories, and who participate in a curriculum that prepares them with cutting-edge disciplinary knowledge and critical thinking skills, and that exposes them to significant research activities.

ASU has already taken major steps to advance these objectives by strengthening the faculty and their research programs. As noted in the introduction, hiring 800 to 1,000 new faculty members and adding up to 2 million square feet of academic and research space is needed. The financial plan addresses the resources required.

Faculty

How the faculty is deployed to meet the overlapping requirements of effective teaching, growing research activity, and financial viability is as important as the raw number of faculty. Over the last five years, ASU has adjusted its strategies for faculty resources. The tenured/tenure track faculty remain the key element. They are responsible for almost all course design and for much of the research work. Their activity is supplemented by non-tenure track teaching faculty. Excess reliance on part-time faculty within this category has been systematically addressed by creating full-time positions filled by individuals with a commitment to teaching and to ASU. Currently, of approximately 3,400 faculty members, only 10% are part-time and not on tenure track. Sixty-two percent of the full-time faculty are tenured or tenure track and 56% of the overall faculty is tenured or tenure track.

Over the last five years, the teaching load has shifted somewhat in response to the cost pressures brought on by limited state investment and modest tuition rate increases. The proportion of the on-campus load taught by full-time faculty grew from 77% to 78.5%, but there was a 6-point shift in responsibility from tenured/tenure-track to other full-time instructors. When online teaching (a consistent 16% to 17% of the overall student credit hours) is factored in, the pattern remains the same. While we have confidence that ASU's instructors and lecturers are excellent teachers and, because of their full-time status, are fully devoted to serving their students, we also need to ensure that these

faculty members continue to receive the fullest support possible; they provide great value to our students and to the institution. To that end, the provost has recently implemented new salary guidelines. Our non-track faculty have a range of career options: there are two levels of promotion above entry-level and, in some cases, the possibility of multi-year contracts. Many of our fixed-term faculty spend much of their careers at ASU. However, over the next period of development ASU will emphasize the hiring of tenured and tenure track faculty. This will assure that curriculum development and research activities can be well-supported and that students continue to have real opportunities to interact with research-active faculty.

Another priority for faculty hiring is to continue to build the diversity of the faculty. Colleges and departments are developing recruitment plans to ensure ASU attracts a diverse pool of job candidates There will also be cross-disciplinary opportunities for hiring in areas with a greater representation of diverse candidates. In addition to using institutional resources, ASU will actively seek support from external funding sources which have programs targeting faculty diversity.

Programs of Study

Academic quality also requires the introduction of new programs of study that are aligned with evolving intellectual developments and career needs. In the near term, some of the new programs planned include neuroscience, environmental engineering, nuclear engineering, international development, biomechanics, medical nutrition, recreation therapy, applied quantitative science, and the history of science, ideas, and innovation. The development of new degrees follow the design aspirations which guide ASU's ongoing evolution as a New American University. New degree programs are designed to leverage the university's location, transform society, fuse intellectual disciplines, and engage with people and issues locally, nationally and internationally. Many of these will be based at the Polytechnic and West campuses in order to help build enrollment levels and avoid facility pressures in Tempe and Downtown Phoenix.

Measuring Learning Outcomes and Quality

The overarching goals for an ASU education are:

- Graduates who have achieved the skills and abilities to think critically, communicate effectively, solve quantitative problems, demonstrate information and digital literacy, and understand how to make ethical decisions
- Graduates who possess the credentials, knowledge and abilities necessary to advance in their chosen careers or fields of study

A baccalaureate education should prepare students for a particular profession or advanced study and for constructive and satisfying personal, social and civic lives, as well. In addition to depth of knowledge in a particular academic or professional discipline, students should also be broadly educated and develop the general intellectual skills they need to continue learning throughout their lives. Thus, the general studies requirement complements the undergraduate major by helping students gain mastery of critical learning skills, investigate the traditional branches of knowledge and develop the broad perspective that frees one to appreciate diversity and change across time, culture and national boundaries.

These outcomes can be measured by using a number of tools:
- Graduating student self-assessments and alumni surveys. All graduating students respond to a survey which includes a self-assessment of their experiences at ASU. Each year, approximately 6,000 alumni respond to the survey of recent graduates.
- Writing skills evaluations, dissertations, and theses
- Student, faculty and employer feedback and surveys
- Post-baccalaureate employment, job placement and certification rates
- Academic program reviews
- National program rankings
- Measuring participation in capstone/ experiential learning, research, clinical/field experience
- Surveys of employment over time including departmental surveys and DES reports
- Rates of graduate degree admissions and number attaining further degrees

To support this work, ASU is creating data structures to support the analysis of outcomes and the reporting of educational quality assessments. Models are also being

developed to deconstruct national and international rankings to search for weaknesses that can inform strategic development of academic programs. As these tools are completed we will revise and build out the public and internal data sites to present important university data to the respective constituencies.

University-wide adoption and assessment of student digital ePortfolios will be one important tool in advancing the measurement of learning outcomes. These digital ePortfolios are created by students to include materials demonstrating their abilities in meeting critical thinking, communication, and other learning goals. As the faculty develop rubrics for evaluation of university-wide student outcomes goals (e.g. critical thinking) and rubrics for evaluation of program-specific student learning outcomes, the portfolios will allow better evaluation of a student's larger development and growth. Further, as ASU institutes cross-sectional sampling of student portfolios, it will be able to measure university-wide outcomes and use longitudinal sampling of student portfolios for measuring program-specific outcomes.

Expanding the Research Enterprise and Supporting Economic Development

Providing students with an environment steeped in research activity is a hallmark of the educational experience at the most highly regarded universities in the country, and ASU must achieve this if it is to serve its students well and prepare them for future success. To reach the academic and metric goals, there must be a central strategy backed by significant resources. ASU's knowledge enterprise is constructed around the principles of conducting transdisciplinary, use-inspired and socially embedded research. Relying solely on unguided faculty efforts can only take a research enterprise so far because of the natural limits on the time available to individual faculty members and the size of the average single investigator grant. ASU not only continues to be one of the fastest growing research enterprises among U.S. universities, but also remains nimble and responsive to emerging research and economic development opportunities.

This approach has resulted in substantial success. In FY16, total research expenditures grew by 9.1% to $501 million and proposal submissions reached $1.83 billion . With $393.5 million in extramural funding ASU continues to be ranked among the top U.S. universities for total research expenditures. ASU also performs at a very high level in many sub-categories of the overall research enterprise.

ASU Arizona State University

2015 National Science Foundation (NSF)
Higher Education Research and Development (HERD) Rankings

Total Research Expenditures: 48 of 876 ahead of

THE UNIVERSITY OF CHICAGO   BROWN   PRINCETON UNIVERSITY

Total Research Expenditures among Institutions without a Medical School :

10 of 724 ahead of   Caltech   PRINCETON UNIVERSITY   Carnegie Mellon University

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Non-Medical School Expenditures: 27 of 876 ahead of

Stanford University   THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL   COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK

Social Sciences: 5th ahead of

Berkeley UNIVERSITY OF CALIFORNIA   Cornell University   UCLA   Penn UNIVERSITY of PENNSYLVANIA

Political Science: 5th ahead of   Yale   COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK   Duke UNIVERSITY

Sociology: 5th ahead of   Stanford University   TEXAS The University of Texas at Austin   UNIVERSITY OF MARYLAND

Humanities: 12th ahead of

HARVARD UNIVERSITY   Berkeley UNIVERSITY OF CALIFORNIA   PRINCETON UNIVERSITY   Cornell University

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Business and Management: 17th ahead of

UCLA   THE UNIVERSITY OF CHICAGO   Duke UNIVERSITY   COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK

Non-Science and Engineering: 12th ahead of

Stanford University   TEXAS The University of Texas at Austin   COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK   Penn UNIVERSITY of PENNSYLVANIA

Earth Sciences: 3rd ahead of

Electrical Engineering: 8th ahead of

Bioengineering: 13th ahead of

Engineering Expenditures: 20th ahead of

HHS (including NIH) Funded Expenditures among Institutions without a Medical School:
10th ahead of

NASA Funded Expenditures: 11th ahead of

NSF Funded Expenditures: 25th ahead of

DOE Funded Expenditures: 24th ahead of


DOD Funded Expenditures: 32nd ahead of

ASU has been able to grow to this level of activity from its very modest level of $125 million in FY03 by taking a planful approach to encouraging and supporting faculty research activity. One element of this approach has been to continually evaluate the most pressing problems of interest to funding agencies, identify those which match up

with strengths and interests that ASU faculty have or can develop, and then drive proposal activity in that direction. In addition to continuing to pursue research in current areas of focus, including NASA-related work, bio-design, and security studies, we have identified several other key strategic research areas that will leverage our research and entrepreneurship capabilities and create economic growth and opportunity in the short- and long-term:

- **Manufacturing:** Emerging manufacturing technologies have great potential to create high-quality manufacturing jobs in Arizona. We will invest in diverse technologies, such as information technology, biotechnology, nanotechnology, additive manufacturing, and advanced electronics and sensors to support their development.

- **Materials:** Materials innovations will underpin many of the most important modern technologies and high-value products. Advanced materials innovations will spur enabling technologies, novel production technologies and important technology-based application domains.

- **Food/Water/Energy Nexus:** A rapidly growing global population and increasing prosperity are putting unsustainable pressures on food, water, and energy resources. Research in this area will focus on solutions that take the interconnections of food, water and energy into consideration, maximizing their application and sustainability.

- **Resilience and Adaptation:** ASU views climate adaptation through a transdisciplinary lens, allowing us to address multiple adaptation challenges and draw on funding from diverse sources, like the Department of Defense, NASA and Department of Homeland Security..

In another important initiative, ASU has built a comprehensive support structure for proposal preparation and submission that allows faculty members to concentrate on the scientific and creative aspects of their plans. A robust level of strong proposal submissions is the best measure of future award success. The Office of Knowledge Enterprise and Development (OKED) now has a combination of a strong professional pre- and post-award administrative staff and a team of proposal writers, faculty trainers,

award negotiators, and project managers for successful proposals. This structure is responsible for rapidly increasing individual proposal volume and has also encouraged many more faculty members to conceptualize larger scale multi-investigator and multi-institutional proposals.
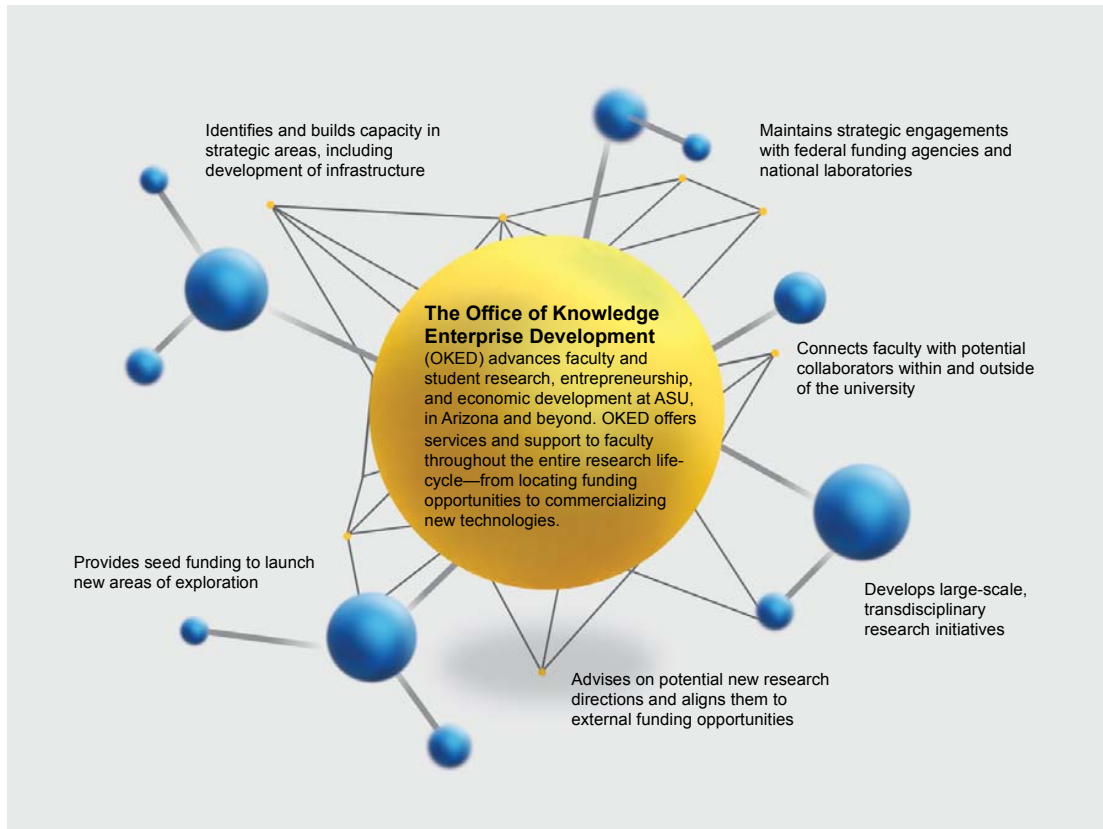
Maintaining and growing the investment in this support structure will be a key requirement if ASU is to reach its $815 million goal. That goal can be reached only if we are able to supplement the growing number of individual faculty awards with large complex projects sufficient to generate 25% to 30% of the target volume. The recent announcement of the $450 million multi-year and multi-institution NASA award for the 16 Psyche project to explore a metallic asteroid is an example.

Another OKED initiative is to build a support structure to expand corporate engagement with ASU. Current efforts tend to be relatively small-scale activities that have grown from the work of individual faculty members. There are substantial opportunities to pursue larger-scale strategic partnerships with corporations if activities are coordinated and

planned across units and are supported by an OKED-based staff of professionals. A pilot program is being launched this year with a goal of recruiting four companies with strategic partner potential and ten companies with whom a transactional relationship is possible. Research funding is just one goal of the corporate engagement effort. We will also work to build comprehensive partnerships that include internships, capstone projects, scholarships, and employment pathways for graduates.

Encouraging the commercialization of ASU's research output is one of OKED's goals because innovation at ASU is a key part of economic growth in the Phoenix metro area and in the state. In FY16, ASU faculty working with AzTE submitted 269 invention disclosures, initiated 13 start-up companies, and were issued 60 U.S. patents. AzTE also facilitated $16.7 million in industry sponsored research. To date, more than 95 startups have been launched based on ASU innovations. These companies and their sub-licensees have attracted more than $600 million in funding from venture capital firms and other investors. In FY16 alone, ASU start-up companies, including Fluidic Energy, HealthTell, Heliae and Zero Mass Water, received more than $96 million in venture capital funding. ASU-linked startups are having an economic impact and currently employ more than 500 people, many in Arizona. A staff of fifteen professionals support this research commercialization activity.

Beyond Arizona, AzTE maintains a continued physical presence at the ASU California Center in Santa Monica that fosters connections between the Arizona and California innovation ecosystems. In 2016, ASU and Draper University broadened their collaborative engagement, building on work initiated in California by AzTE. Draper University and ASU are combining students and curriculum to launch what is intended to be the #1 entrepreneurial program in the country: the Draper/ASU Entrepreneurial Master's Program. It will culminate in a business plan competition, where Draper will be investing at least $1 million. Finally, the National Academy of Inventors and Intellectual Property Owners Association has again ranked ASU as one of the top 100 universities in the world for U.S. utility patents. ASU was #38, ahead of Duke, Princeton and Yale.

In order to expand technology transfer, ASU will continue to provide strong support and will launch new initiatives to further encourage bringing ideas from ASU and the local community to the marketplace. An example of a recent effort is ASU's Startup Mill. This

new initiative's focus is accelerating both internal and external startups with the highest potential. ASU's Startup Mill matches faculty, student and community startups with accomplished entrepreneurs-in-residence who have launched, grown and exited their own businesses. This program is open to startups in any industry. Startup selections are made based on the potential contribution to the economic vitality of the region and ASU. Many of the cities in the Phoenix region are interested in encouraging entrepreneurs and innovators. ASU's Entrepreneurship + Innovation office has a number of programs to provide training and support. Future strategies in this area are likely to be developed in response to market conditions and perceived opportunities rather than from a pre-defined playbook.

Providing Adequate Infrastructure for Teaching and Research

None of the recent expansion of enrollment or research activity has been possible without the proper facilities and technology infrastructure, and that relationship will be true in the future. The Enterprise Plan presented here for FY17 to FY25 includes plans for funding growth in the amount of teaching and academic support space by 825,000 net assignable square feet (NASF), and research space by 475,000 NASF, as well as investments of $60 million in technology upgrades and enhancements..

Overall space use at ASU is more efficient than its peers. A recent study of space in FY16 showed that ASU's four campuses ranged from 378 users per 100,000 GSF at ASU Polytechnic to 795 at Downtown Phoenix, with an average of about 450. The median of the ASU peers was about 290. The building plan outlined here would add just under 2,000,000 GSF. With a planned level of FTE growth of about 27,000 and this building plan, the density level would decline from the current level. This is an acceptable outcome since about half of the growth in the enterprise plan is in online programs.

Looking at the research space growth plan alone, one sees that the proposed growth of 475,000 NASF (about 750,000 GSF) would increase the existing research space by 50%. This new space will be supplemented by planned investments of over $125 million in renovations and upgrades to the existing laboratories on the four campuses. These two elements will provide the facilities to support the 70% rate of growth in planned research expenditures. It is useful to note that ASU's use of research space in FY15 was $466 per

NASF. The median for its peer group in FY14 was $375 per NASF, with universities like UCLA, Penn State, and Ohio State below the median. With the new space and the enhanced productivity of existing space, the ASU goal is to reach $525 to $550 per NASF; a level that is currently seen at universities like Rutgers and Maryland.

The planned investments in these new academic and research projects total $875 million. In addition, ASU will need to invest in ongoing renovation of existing spaces and repair of infrastructure totaling $575 million and $60 million for technology upgrades. Parking expansion and athletic facilities will require an additional $275 million in investments. Most of this funding will come from issuing new debt. Debt service on the academic and research projects is estimated to total about $108 million by FY 2025, and will come from a mix of tuition and indirect cost revenue growth. Debt service on the other projects will come from project revenues (parking and athletics) and gift funds. Residence hall expansion will also be needed on all of the metropolitan campuses. The enterprise plan assumes that ASU will continue its recent practice of working with private-sector development partners to finance these projects, and their costs are not a part of the financial plan.

The risks to be considered in this plan are two-fold. Interest rates on debt are assumed to be 5% to 6%. This is higher than what was paid in recent issuances, but if the interest rate environment for institutional borrowing rise even more substantially either the costs will be higher or less borrowing will be possible. Another risk is that the credit rating agencies will not continue to value ASU's growth and management strengths in the same way as they have over the last ten years, and will rely more heavily on financial metric-driven criteria in making credit rating decisions, likely increasing the cost of capital. Finally, if enrollment growth lags the forecasts, there will be insufficient revenue for the building program. However, lower enrollment levels would require a smaller increment of additional space, so with careful planning of project timing this risk can be mitigated.

The FY16 calculation of accumulated deferred maintenance on academic and support facilities is $240 million. Accumulated deferred maintenance on auxiliary facilities is estimated at an additional $40 million, and is addressed primarily through sources generated by the functions using the space. Without intervention, the total accumulated

deferred maintenance will rise as existing buildings age, and will fall as investments are made or buildings are taken off-line.

The plan anticipates investments totaling $200 to $225 million toward the deferred maintenance backlog will be made over the next nine years. Operating budget assumptions include upwards of $10 million annually towards this need, to be supplemented by gifts, bond proceeds and other funding sources. This substantial level of investment is expected to be sufficient to address the most critical problems, and ASU will continue to press the State to make separate investments to address their responsibilities. Proper monitoring of issues and targeted investments in the most immediate needs has been a non-optimal but adequate strategy over the last ten years. The investment plan provides more funding than was available in that period. To try to build funding levels to eliminate the entire deferred maintenance backlog would require that either many key academic quality needs not be addressed or that net tuition increases of over 5% per year be proposed.

7. Tactics and Strategies: Acquiring the Resources Needed

The Enterprise Plan includes the financial and management means to support the initiatives outlined above. In many cases, new funding is less important than managing the redeployment of faculty and staff to work on the new activities without damaging current efforts. In other cases new investment is the only means of advancing. ASU has been successful in regularly reallocating existing resources to moderate the need for incremental resources.

Expanding the Enrollment Base

As described in each of the seven strategic enterprise reports that ASU has made, the importance of a robust non-resident and international enrollment base has been stressed. In the absence of reliable levels of State investment, these groups are the largest source of funds needed to build an institution of national quality and to keep an affordable mix of tuition rates and financial aid.

Between FY2008 and FY2016, state's annual investment decreased by almost $200 million. This has been exacerbated by the 5,500 student growth in resident enrollment since then that has not received any State support. The current annual impact has totaled well over $300 million when inflation is taken into account, and the cumulative impact has been well over $2 billion. While there had to be major resident tuition increases in the 2009-2011 period, the very slow resident tuition rate growth since that time has been possible only because non-resident and international tuition funds replaced about $180 million of that annual amount. ASU Online, which educates a large number of non-resident students, provided another $40 million in annual net offset.

The enrollment numbers show this, with 14,300 domestic non-resident and 3,450 international undergraduate and graduate students in FY2009 growing to 16,500 and 10,050 students in FY2017. Online programs add another 20,200 non-resident students. (On-campus non-residents and international students will generate over $565 million in gross revenue in FY2017, and online enrollment of non-residents (excluding Starbucks) will yield over $130 million.) But the aspirations that ASU has for student success, research growth, and economic impact require large new investments and it will be possible only if the non-resident and international populations continue to find ASU an attractive institution in increasing numbers.

The Enterprise Plan is built on increasing these enrollment levels (excluding Thunderbird) to 21,000 domestic non-residents and 13,000 international on-campus students and to over 50,000 ASU Online non-residents. This necessitates being able to operate successfully in national and global markets where the competition are increasingly the best institutions in the world.

Accomplishing this requires:
- Advancing the knowledge of ASU's transformation and quality throughout the United States and the world
- Refining the recruitment efforts for domestic non-resident students in a market that is not growing and which has much more competition
- Refining the recruiting efforts for international students and improving their experience at ASU
- Providing ever increasing levels of academic value to students prepared to pay the market price for quality higher education. This means, among other things, growing the faculty (in all of its guises) to assure that ASU students are being educated in a sophisticated research university environment in which both exposure to new knowledge and high quality, caring teaching are blended.
- Continuing to proliferate the available modalities for education (Pro-Mod, Online, GFA, etc.) so that learning style, geographic, or life situation are not limiters
- Regularly refining academic program offerings to reflect interdisciplinary opportunities and are expanded as knowledge or career needs expand

Expanding Professional Master's Degree, Certification, Continuing Education, and Executive Education Programs

While there has been a 50% increase in enrollment in master's degree programs (growing from 8,500 to 12,900), it has been driven by a doubling of on-campus international master's students and an over four-fold increase in non-resident students in online programs. Masters' degree enrollment of resident students, however, has been stable for the last six years (ranging between 4,400 to 4,700), and in that time there has been a substantial shift from on-campus to online enrollment, which is now one-third of the resident total. A city the size of Phoenix should have substantially more master's students to support a diverse economy.

Increasing master's enrollment is important to both increase revenue (the Enterprise Plan includes an increase of over $80 million by FY25 with over 75% from non-residents and international students) and to help to produce a more educated work force that can support Arizona's increasingly knowledge-based economy. In order to push towards these complementary goals, an active effort is underway at the central and unit level to identify graduate and certification programs that will be of particular interest to the employers of the future, which address known work force needs (particularly in engineering and health fields), and/or which have shown success in other metropolitan areas. Offerings in both on-campus and online formats will be developed. It is likely that we will seek some outside help in evaluating market needs as a part of this effort.

Careers can also be advanced through professional certification and professional continuing/non-degree programs. At the same time that the opportunities for new master's programs are being evaluated, we will be studying the possibilities in these areas and then following through to capitalize on the market's needs.

Executive education can be another substantial new revenue source. One of the reasons that ASU was interested in rescuing the Thunderbird School of Management was its strong reputation in executive education. We could see the potential synergies of joining Thunderbird's marketing and delivery expertise in executive education with ASU's strength in a wider range of fields that are of interest to companies. The portfolio will include, among others, global business development, general business management, supply chain, engineering, and public management. A mix of programs specifically designed for executive teams at individual companies and short courses open to more than one company is being developed to be offered at Thunderbird, at company sites, and overseas. The current gross revenue from executive education is about $26 million annually. The target is to build the multi-school portfolio by a factor of two to three times that amount. The margins on this work can be used to support all of larger school goals in faculty hiring and retention and improved student service.

Building the Brand: Visibility and Outreach

Having a strong, respected and desirable ASU brand has many enterprise benefits. Most importantly, the business elements of the enterprise plans rely heavily on the ability to

attract increasing numbers of non-residents and international students and to be able to move up the market price charged to these groups due to perceived value. Research has shown that nothing is more important to recruiting in these markets than perceived academic quality, and value and sense of "fit within" the university. The current perceptions and awareness of ASU among non-residents and international students is not consistent with the high performing research university that ASU has become. Changing perceptions, generating awareness, and impacting enrollment will require targeted strategic actions and investment.

In order to achieve the desired outcomes, a targeted effort will be executed differentially for on-campus domestic non-residents, on campus international students, on-campus graduate students and ASU Online students. These marketing plans will be integrated to maximize constituent overlap, marketing effectiveness and efficiency.

Building respect for the ASU brand is a key priority. Although there have been improvements in perceptions, ASU's accomplishments and transformation over the last fifteen years remain under-recognized locally, domestically, and internationally and the old stereotype of a party school is still too prevalent. President Crow's heavy schedule of advancing the news of the changes in ASU and its model is one tactic used to positively impact the perceptions. However, brand building awareness through targeted marketing will be required for success.

Three years ago ASU initiated the marketing hub and strengthened the Media Relations and Communications group to create a team with expertise to proactively impact constituent's perceptions of the ASU brand and garner positive media attention and outreach. The marketing efforts have proven to be successful in a targeted geography of Phoenix and Tucson and the capacity to expand inside and outside of Arizona is now available. This necessitated new investments of about $8 million to build a core. New resources for expanded outreach efforts are needed in the Enterprise Plan.

Beyond the importance to recruiting, ASU is looking to use its accomplishments to generate awareness and interest in new models to address the fact that higher education is in crisis. Nothing is more important to the economy of the future than education, and a much broader component of the population will have to be educated for the country to be successful. The emergence of the now-failed for-profit segment is evidence that non-traditional populations recognized this and found that the historical structures of higher education were not in a position to be responsive (either due to limits on scale or outdated notions of selectivity). There are not enough universities stepping up to address this crisis and a lack of models is one element in that failure.

ASU is pursing a range of strategies to address the issue and has shown success in a number of areas. But as big as ASU is willing to be, it cannot be big enough, and so providing a model and guidance to other institutions is a goal. Integrated marketing and communication efforts are need to improve the awareness and visibility of ASU's impact in this area.

Our plans to drive awareness of ASU within Arizona, across the United States, and in targeted international markets as part of the effort to increase enrollment, research, donations, respect, and interest in the brand will include the a number of tactics.

- Create an integrated marketing plan with enrollment marketing, focused on generating brand strength relative to ASU's academic quality in target markets such as Arizona, California, China, and UAE
- Leverage ASU Online's domestic and international marketing efforts to build ASU's brand strength and awareness
- Activate alumni as advocates and agents for the brand
- Generate university pride and affinity among students and faculty
- Generate awareness of ASU's accomplishments among sector "influencers" (the academy)
- Leverage academic and non-academic partnerships to generate awareness of ASU's achievements and innovations

- Continue building a robust testing, monitoring and constituent knowledge and insights function within ASU
- Build a "best in class" international Marketing and Communications functional area within ASU

New Educational and Pathway Modalities

Another cross-cutting effort to help assure growth in the key non-resident markets is the development by EdPlus of the Global Freshman Academy. This collection of freshman-level digital courses, offered at scale with no up-front required payment will serve a number of functions. They will generate direct income from students taking the courses and then choosing to pay for credit after passing. Some of these students will then choose to enroll at ASU – either on-campus or online. The GFA curriculum can also be used to broaden the pool of students who can be admitted to ASU. Students with GPAs from high school or community college too low for admission will have a very low cost means of repairing their transcript deficiencies or otherwise proving their ability to do college work. This use of GFA has been initiated with Starbucks for the relatively high proportion of interested students who are not admissible. In the pilot program, 25% of the 613 Starbucks partners offered this pathway have taken advantage of GFA. This platform will be used by ASU in many other new ways. Examples include programs for international students to prepare and get credits in their home countries before coming to ASU, pathway programs for students in community colleges outside of Arizona who are seeking to delay a transfer-driven move, and programs for new corporate and municipal partners seeking educational benefits for their employees.

GFA currently has nine courses built and in use. We have already experienced over 241,000 class enrollments and 5,800 successful completions. In order to fully take advantage of the opportunities, EdPlus will build a suite of twenty-five to thirty courses that can be packaged as four to five course sequences designed as preparation for specific fields of study (e.g. engineering, business, social science/ humanities, and health professions).

Because of their scale and the fact that they must work effectively with relatively low levels of faculty time, these are expensive courses to build—roughly three to four times

the cost of a standard ASU Online course. The base budget in EdPlus will handle some of this work, but new investments of both university and philanthropic funds are already being used to accelerate the progress toward full build-out. Over the next year or two, we anticipate an investment of $3 million in this effort.

Targeted Recruiting and Yield Efforts

The non-resident and online markets are constantly changing due to demographic, political, and cultural shifts. Strategic planning for success in these markets is therefore more a matter of regular analysis, reactive change, and flexibility, than it is a matter of a defined plan. For example, the international student market has recently been impacted by changes in oil revenues in some countries, uncertainties about the American political scene in others, and internal politics in yet others. Reacting to this required consideration of modest discounting strategies for government agencies that control larger numbers of student slots in one market, having more active on-ground efforts and different in-country partners in another market, building a new preparatory pathway program to bolster a changing English language training market, and shifting the emphases in the marketing message in another.

In the domestic non-resident market, experiments with coordinated and geographically targeted brand marketing and in-school recruitment are being conducted. Having more recruitment staff based out of state is another tactic being tested. Out of state community colleges are an important potential source of recruits to both on-campus and online programs. ASU has one senior staff member who is devoted exclusively to developing the relationships and the formal partnerships that can help build a pipeline.

The use of financial aid, particularly in the domestic non-resident market, is an important tool and strategies for awards have to be reviewed annually for their effectiveness in both recruiting and retention. New analysis is also underway to examine aid policies in the online market to see if our award structure is well-designed.

In all of our markets, we have worked to aggressively take advantage of the new early FAFSA application using prior year tax data to get financial aid offers out much earlier, which allows more yield-focused interactions with students who have a full picture of their costs.

All of this suggests that outlining a ten-year plan for recruitment strategy is not useful, but having the analytical tools and willingness to innovate and shift strategies is crucial. ASU's success in building on-campus and online enrollment over the last five years suggests that it is ready for the challenges ahead.

Investment needs in this area are unpredictable for the reasons outlined above. The key driver of success is to evaluate each expenditure proposal against the predicted outcome in growing or sustaining enrollment and determining whether the overall net revenue impact has an opportunity to be positive, and making changes in response to the results. We believe that there are adequate resources included in the financial aid projections and in the marketing cost components of the enterprise plan to be appropriately reactive.

Partnerships

Partnerships with companies, municipalities, other non-profits, and universities have been a crucial element in ASU's ability to grow its enrollment, program breadth, and academic quality in an era of constrained resources. Major examples of the partnerships are:

- The City of Phoenix's initial investment of over $200 million to create the Downtown Phoenix Campus and its ongoing support with funding and land for expansion of programs such as Law and biomedical/health programs
- The City of Mesa's investment in the infrastructure needed to allow construction of new classroom buildings at the Polytechnic campus
- The Mayo Clinic partnership that includes shared departmental and lab space at Mayo, joint faculty appointments, shared seed funding for research, and the new Mayo Medical School
- Work with the State Land Department, ABOR, and the other universities to acquire 24 acres adjacent to the Mayo Clinic Hospital that can be used for future support of the partnership and to encourage commercial development nearby.
- Support from the Lake Havasu School District and community to open a campus in Lake Havasu City
- Development of the PLuS Alliance with King's College London and the University of New South Wales, two highly-regarded international universities, will provide

openings into international markets for joint online degree programs and the
ability to enhance our competitiveness for joint research funding from non-US
sources.

- Public/private partnerships with a number of companies which build student
residence projects has been responsible for most of the new residence capacity
at ASU in the last ten years. This has allowed ASU to preserve borrowing
capacity for academic projects.

- Other public/private projects have allowed ASU to build solar power generation
capabilities that are now sufficient to provide over 25 megawatts without capital
expenditures. This is a major element in both utility cost control and achieving the
goal of carbon neutrality.

Finding new opportunities for mutually beneficial partnerships is a continuing activity.
One example was the work (unsuccessful due to the election outcome) with the City of
Mesa to finance a major building project that would have helped spur Mesa's downtown
development efforts and permit ASU to build state-of-the-art facilities for digital creative
programs. Another project that is in the exploratory phase is work with the City of
Phoenix to fund portions of the infrastructure costs needed for ASU to build on its land
adjacent to Mayo and for commercial development to be spurred.

ASU Enterprise Partners
The ASU Foundation's success in philanthropic fund raising is discussed in Section 3 of
the Enterprise Report. Beyond that traditional role, ASUF has undergone a
transformation to provide a wider range of activities to support ASU and seek new
sources of support beyond philanthropy.

ASU Enterprise Partners, inaugurated a 501(c)(3) not-for-profit corporation on July 1,
2016, as an innovative resource raising model aimed at advancing ASU. ASU Enterprise
Partners is a holding entity providing support services—finance, marketing, IT and
legal—to its operating affiliate entities. There are five affiliates:

1. The ASU Foundation for A New American University, focusing on philanthropy
2. Arizona Technology Enterprises, facilitating the technology transfer activates for
university-generated intellectual property discussed earlier in this report
3. University Realty, managing real estate investment for the benefit of ASU

4. the Research Collaboratory at ASU, assisting ASU in international projects
5. the ASU Research Enterprise (ASURE), providing specialized, applied technology solutions for government customers.

ASU Enterprise Partners is intended to assist ASU in creating and evaluating models for the advancement of ASU as an enterprise in an increasingly competitive education industry, and to bring efficiencies and economies of scale by relieving the affiliates from seeking out their own back office expertise and services and allowing new ventures to cost-effectively grow under the umbrella of the new structure. All affiliates are governed by an individual board with expertise specific to the respective entity's resource focus, assuring oversight and rigorous governance. The ASU Enterprise Partners board itself receives regular updates from the subsidiaries' managing directors and boards about subsidiary activities and focuses on risk management for the overall organization.

8. Tactics and Strategies: Advancing the Enterprise Model to Control Costs and Build Financial Strength

The enterprise model is a means of increasing ASU's resource base to make the needed investments in faculty, space, technology, and staff. It is also a model which serves to instill the kind of financial discipline that ASU has exhibited in the last ten years. There are a number of reasons why maintaining and building on that is necessary.

Cost Effectiveness

Because the scale of new resources that one can reasonably project as possible will be barely adequate to the tasks at hand in growing academic quality and student success continued cost effectiveness is crucial. During its period of growing success, ASU has been able to operate with a level of educational and general (E&G) resources per student and per degree that is at the lower end of the spectrum of research intensive public universities. In the last year for which data is available for all schools (FY14), the combined tuition and state investment level per degree at ASU ranked 56th among all 73 universities of this type. When looking at just the 34 institutions without medical schools, ASU's resources per degree were almost 20% less than the median. While the data for the comparators is not yet available, we do know that the actual ASU result for FY16 remains low and would be about 14% below the FY14 median.
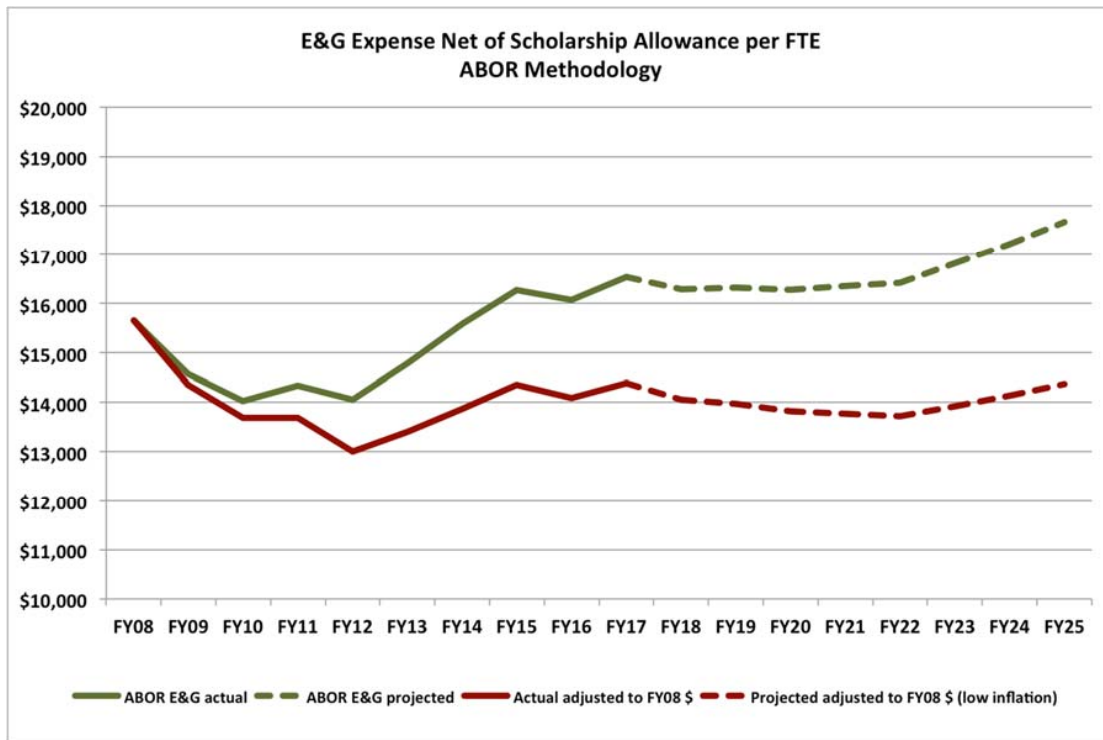

Tuition, Fees, and State Appropriations per Degree Awarded
Very High Research Public Universities without Medical Schools
IPEDS FY2014

ASU OFR Business Plan February 2017
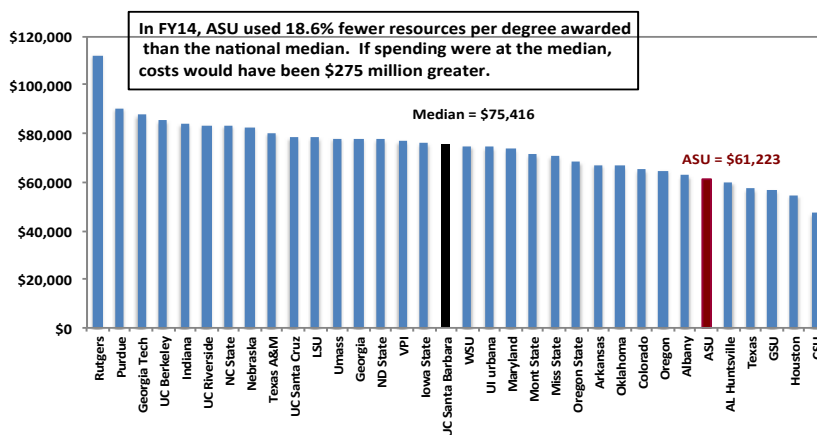
One of the key elements behind ASU's performance in this measure is its ability to use a combination of economies of scale and enterprise organizational approaches to achieve a high level of personnel efficiency. In the last year of national data (FY 2015), ASU was operating with 62% of the number of overall non-medical faculty per FTE student than the median of its peer schools, and half the number of overall employees per FTE.

The future requires a careful balancing act between cost effectiveness and investment in building an institution that can provide the educational and economic development services required for Arizona's success. Both ASU and Arizona are competing with strong rivals. Higher spending is not the goal, but we will need to monitor our outcomes carefully against the competition to be sure that we are spending enough to move to the levels of success of institutions that the University of Washington and the University of Minnesota have in advancing their states' development.
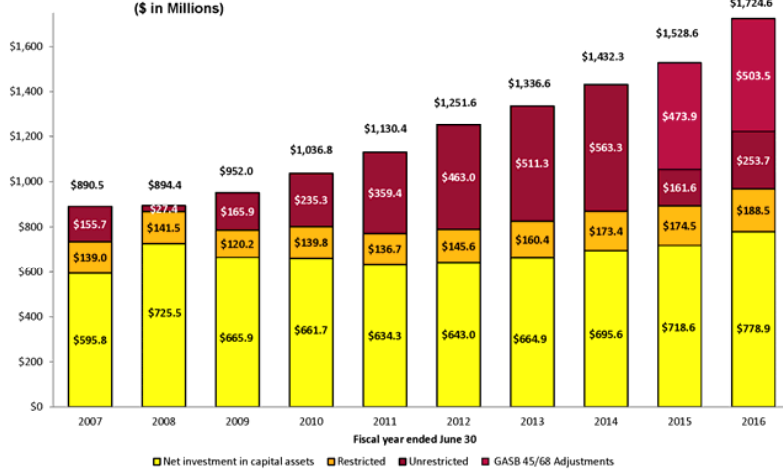
Given the unlikeliness of the State making large increases in its per-student investment level, costs have to continue to be controlled if large tuition increases are to be avoided, but we do seek to slowly increase per student spending in order to build the institution. Using the E&G spending per FTE format defined by ABOR for the OFR exhibits, ASU has shown minimal cost growth over the last three years, and remains at a level that is below that of FY2008 when adjusted for inflation. The projected expenditure levels would yield nominal growth through the period until FY2025, but when adjusted for inflation (using a modest assumption of the ¾ percent annual growth in CPI that we have seen in the last two years) FY25 would be about the same as FY17. If, as might be expected, inflation exceeds this level, the real inflation-adjusted costs in FY25 will be well below FY17 levels. The projected spending level is above those seen in the period of adjustment to the State investment cuts (FY10 to FY14), but these levels were not adequate to support the needs of a quality university over the long term. The projected levels should be reasonably adequate.

E&G Expense Net of Scholarship Allowance per FTE
ABOR Methodology

Legend: ABOR E&G actual — ABOR E&G projected — Actual adjusted to FY08 $ — Projected adjusted to FY08 $ (low inflation)
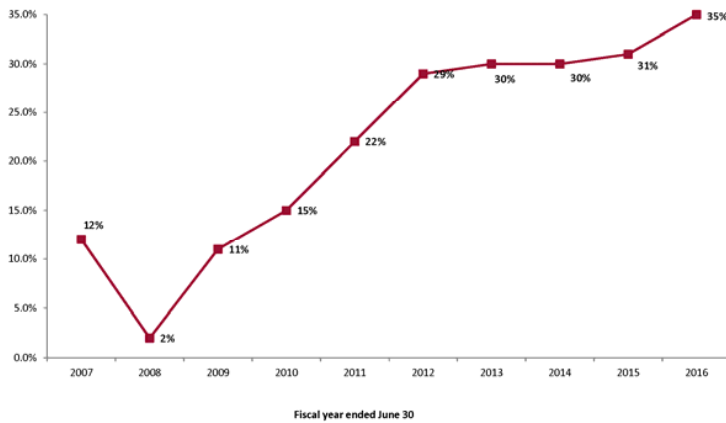
Financial Strength

ASU's ability to build the facilities it will need to support academic quality and research expansion depends upon its access to capital markets at reasonable interest rates. Financial results that yield adequate levels of new asset growth are a key to this. At June 30, 2016 the University had total assets of $3.6 billion and net position of $1.2 billion. In FY16 alone, ASU strengthened its financial foundation with a $109 million increase in net position, compared to a $92 million increase in FY 2015. This represents the 11th straight year in which ASU reported an increase in net position. In the five years from 2011 to 2016 ASU has been able to build its net position by more than 50% ($600 million).

Net Position
($ in Millions)

Fiscal year ended June 30

Legend: Net investment in capital assets | Restricted | Unrestricted | GASB 45/68 Adjustments

January 2017

Unrestricted Net Position to Operations

Fiscal year ended June 30

January 2017

The Enterprise Plan presented here projects an additional cumulative increase in net position of about $900 million over nine years. This is currently judged to be sufficient to allow us to work with the rating agencies to maintain a strong credit rating.

Cost Control

Controlling cost increases as the enrollment grows cannot be at the expense of academic quality. While expenditures will grow due to adding new faculty lines, building the needed support staff, adding physical space, and maintaining a strong commitment to financial aid, not all spending can rise at the same rate. A number of tactics for controlling cost growth are anticipated.

ASU's cost structure and its performance have both benefited by the application of innovations in the use of technology to deliver services such as student advising, billing and financial aid communications, and efficient student problem resolution. Automation and technology applications such as work flow and cloud services have been key to increased efficiency and enhanced customer service in administrative services as well. Continued use of new functionality and innovations in this area will have to be found.

Organizational structure innovations have also been one of the important tools in reducing cost pressures. In the past, departmental consolidations were a key means of reducing support staff requirements while promoting interdisciplinary goals. New opportunities for shared services in administrative support, business and HR functions, and technical support are under study and should provide new opportunities for slowing cost growth without impacting service levels.

The means of educational delivery, using different mixes of tenure/tenure track faculty, non-tenure track faculty, and graduate assistants for different elements of the educational process (course design, teaching, educational delivery support), has been a constant balancing act between cost control and teaching quality. Despite the cost implications, the mix should not be allowed to move away from tenure/tenure track faculty and the faculty hiring plans will permit a slightly higher ratio of tenure/tenure track hires than has been the case recently. However, the balance of traditional lecture/seminar teaching versus active/hybrid teaching versus online-only teaching also continues to evolve and has cost consequences, due not so much to the mix of faculty types than to the differences in optimal class sizes for different modalities. The increasing ratio of online and active/hybrid courses will provide some cost advantages.

One cost element that ASU will seek to modify is that of financial aid awards to resident students that are solely merit-based. Given ASU's increasing quality and value proposition, the attractiveness of the Barrett Honors College, and the affordable resident tuition rate, it should be possible to reduce the proportion of students with low or no need who receive financial aid awards that cover 75% to 100% of tuition without reducing their yield rate. In FY16, students from families with incomes over $125,000 received average aid packages covering 73% of tuition. Internal competition among the three universities in Arizona contributes to the difficulty of fully implementing this kind of change, but the potential exists to save over $25 million annually at ASU alone through reforms to the packaging approach.

Challenges

There are risks in the spending assumptions in the Enterprise Plan. Salary pool increases, assumed to be fully financed by University resources, are built into the planning at an average of 3% per year. In the parts of the operation where there is intense hiring competition, such as faculty, technology support, technology developers, instructional designers, project managers, and engineering and finance professionals, this leaves little room for being able to match outside offers or grant tactical raises without driving the pool for others below inflation. If the hiring market heats up nationally there will be pressure on this pool. Similarly, the allowance for non-personnel inflation of 1.5% annually may be below the expected inflation rate over time. ASU's budgeting over the last five years has been such that inflation was not funded in many years, and while it is possible for managers to handle this by re-prioritizing spending, it is not a planning assumption that works well over a long period of time without the potential for compromising quality.

As has been the case for most of the last five years at ASU, a portion of the new investments planned in faculty, technology, and other needs are assumed to come from the reinvestment of budget reductions within the units. This has generally been possible when limited to ½ to 1½ percent of the budget annually. This is the assumption in this plan. The key to accomplishing this is strong management in the academic and support units, because this kind of re-periodization must be based on local knowledge of each unit's capacities.

Conclusion

The ASU Enterprise Plan which was adopted in 2010 has provided the strategy and tactics to advance the institution's capacity to grow and diversify enrollment, improve student success rates, expand degree production, and become a research powerhouse. In accomplishing all of this, we have made major strides to honor the ASU Charter and build one model for public universities seeking to address, at scale, the need for a larger proportion of the population to bring a research-grade education to their lives and careers. The path to 2025 and succeeding in meeting ASU's ABOR-assigned responsibilities will be certain to present as many challenges as the last ten years, but the strategy and tactics presented in this report, combined with the demonstrated ability to react, adapt, and innovate make us confident about the future.