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Funding Tennessee's Public Colleges and Universities: The Outcomes-Based Funding Formula

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Key Points

The outcomes-based funding formula is a higher education funding tool that allocates state funds to Tennessee's public colleges and universities based on performance. Outcomes rewarded in the formula consist of progression, completion, and efficiency measures, such as student credit hour accumulation, the number of degrees awarded, and degrees awarded per 100 full-time equivalent students. The outcomes-based funding formula governs all operating appropriations for Tennessee's public colleges and universities, with approximately 5.45 percent awarded under the Quality Assurance Funding component of the formula.

The report documents the various components at work in the outcomes-based funding formula that result in the recommendation of appropriation shares to Tennessee's public colleges and universities. The report also shows how each component works through step-by-step examples of the formula's impact on certain institutions' outcomes and appropriation shares.

- For 2017-18, the formula calculated $1.35 billion in operating funds for higher education. The Tennessee Higher Education Commission's (THEC) actual funding request to the General Assembly, however, is typically about 67 percent of the formula's calculation. The General Assembly has fully funded THEC's request for each of the last three years.

- The formula accounts for "focus populations" and provides premiums for focus population success on progression and completion outcomes. Focus populations are those populations that are commonly viewed as at-risk and require additional resources for success. These populations are identified as adult students, low-income, and academically underprepared students (for community colleges). The premiums for universities are 80 percent for a student falling into one focus population and 100 percent for a student falling into two focus populations. Community colleges add a 120 percent premium if a student falls into all three focus population categories.

- Outcomes are weighted based on institutional mission. Mission weights are applied to outcomes based on institutional priorities as identified by college and university presidents and chancellors and in accordance with the Basic Carnegie Classification.

- Quality Assurance Funding (QAF) provides institutions with an opportunity to receive additional funding on top of their individual appropriation. Institutions can earn points in the QAF component by meeting quality standards for student learning, engagement, and student access.

- An institution can increase its appropriation share in two ways: By increasing performance compared to its own three-year average and/or by increasing performance at a greater rate relative to other institutions.

- Any changes in funding are added or deducted from an institution's share of funding from the previous year. While performance determines each institution's share of funding, the amount of funding appropriated by the General Assembly determines how much funding is ultimately received by each institution.

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The Rise of Outcomes-Based Funding in Tennessee

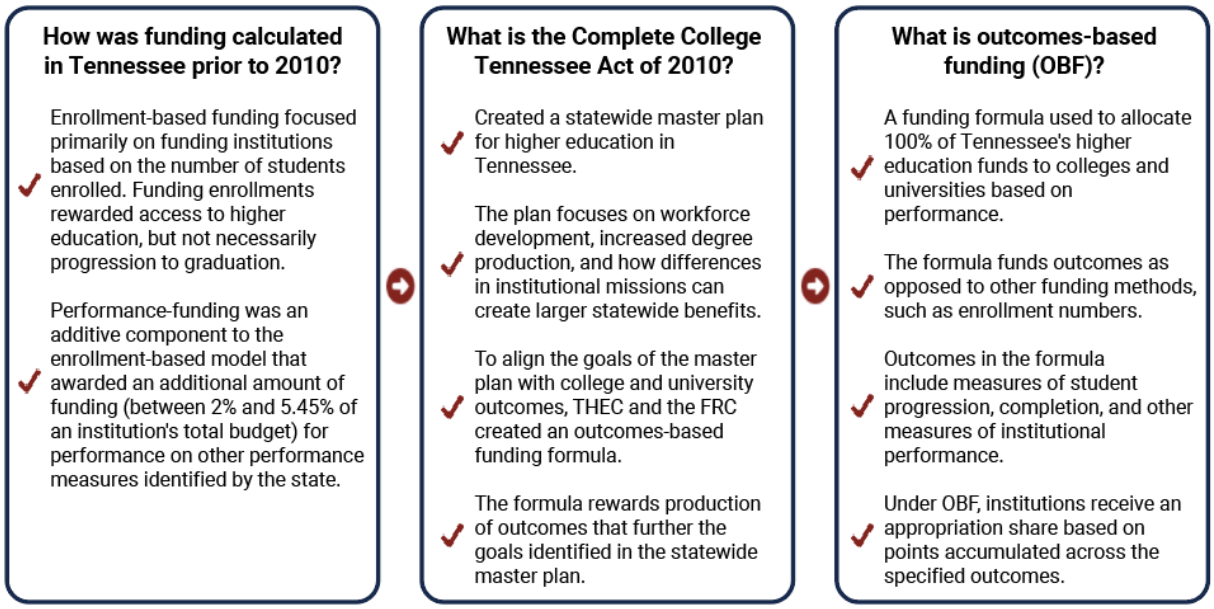
Outcomes-based funding is a higher education funding tool that allocates state funds to public colleges and universities based on how well they perform. The funding tool uses a formula to measure performance on a variety of institutional outcomes. Performance outcomes include measures of progression, efficiency, and completion, such as graduation rates, number of degrees awarded, student credit-hour accumulation benchmarks, and certificates and degrees granted per 100 full-time equivalent students. Currently, the outcomes-based funding formula governs all operating appropriations for Tennessee's public colleges and universities.[1] In 2017-18, the Tennessee Higher Education Commission's (THEC) total appropriation request for Tennessee's public colleges and universities was $913,728,400, which was roughly 67.6 percent of the formula's calculated appropriation of $1,350,936,000.[2]

Tennessee has not always used an outcomes-based funding formula to create funding recommendations for higher education. Historically, Tennessee has funded higher education through a combination of methodologies including an enrollment-based model and performance funding incentives. Enrollment-based funding allocated funds to colleges and universities based on the number of individuals enrolled. This type of formula emerged primarily from the "baby boom" in the United States and the influx of veterans attending some form of higher education because of the federal G.I. Bill.[3] Funding based on enrollments provided a transparent and publicly defensible way to fund higher education, since the major driver in allocations is the operational cost of serving students.[4]

While remaining focused on enrollments, Tennessee also experimented with a performance funding component beginning in 1979. Performance funding was a voluntary option for colleges and universities and allowed participating institutions to earn up to an additional 2 percent of funding, on top of their enrollment-based appropriations, for achieving key benchmarks in five areas.[5] The goal of performance funding was to provide an incentive to colleges and universities that demonstrated a focus on educational quality.[6]

The Tennessee Higher Education Commission (THEC) notes that enrollment-based funding and performance funding models produced moderate results on institutional and student performance.[7] The most notable weakness of the enrollments-based model was its strict focus on enrollment numbers, which rewarded colleges and universities that enrolled more students regardless of whether students were progressing through college toward graduation. Enrollment-based models also produced high administrative costs and showed insensitivity to changing markets, institutional missions, and the state's strategic higher education priorities.[8]

Exhibit 1: Changes to Tennessee's Higher Education Funding Models



Source: Graphic was created by the Office of Research and Education Accountability.

Similarly, the performance funding component received its share of criticism. The component did not mandate an institution to participate; an institution could simply maintain the status quo operating procedures and avoid pursuing the additional incentive. Furthermore, the small percentage of funding attached to performance funding may have been perceived as too inconsequential to influence institutional behavior. Performance funding also showed insensitivity to institutional differences, simply reinforcing those colleges and universities that have always been good performers with additional resources while being unable to change the behavior of poor-performing institutions. Lastly, since performance funding was an additional award for good performance, the stability of the component was oftentimes contingent on healthy state revenues.[9]

State officials began revisiting higher education funding in search of a method that would allow the state to leverage its ability to promote policy outcomes and move away from inputs as the main funding metric. In late 2009, THEC proposed an outcomes-based funding formula it had been developing to then-Governor Phil Bredesen. The outcomes-based funding formula was created through the collaboration of THEC and a Formula Review Committee (FRC) that consisted of college and university officials, stakeholders, and governmental actors. The goal of the FRC was to create an outcomes-based funding formula that rewards institutions to produce outcomes that further the educational attainment and productivity goals of the master plan.

The Complete College Tennessee Act of 2010 and the Shift to an Outcomes-Based Funding Formula

Public Chapter No. 3 of 2010, which amends *Tennessee Code Annotated* 49-7-202, is commonly referred to as the Complete College Tennessee Act (CCTA) of 2010. The CCTA is a higher education reform agenda that directs the Tennessee Higher Education Commission (THEC), in consultation with the Tennessee Board of Regents (TBR), the University of Tennessee, the locally governed institutions, and other higher education stakeholders, to develop a statewide master plan for higher education in Tennessee. The statewide master plan addresses:

- Tennessee's economic development, workforce development, and research needs;
- increased degree production within the state's capacity to support higher education; and
- the differences inherent in institutional missions to realize statewide efficiencies through institutional collaboration and minimize redundancy in degree offerings, instructional locations, and competitive research.[10]

The model was adopted in 2010 and implemented in 2011-12.[11] State appropriations followed the outcomes-based funding formula immediately following adoption, but a "hold-harmless" decree was implemented for the first three years after adoption, which resulted in state funds supplementing the outcomes-based funding to adjust overall institutional funding to be consistent with previous funding levels.[12]

All public universities and community colleges in Tennessee are now funded using an outcomes-based funding formula. Although Tennessee's Colleges of Applied Technology (TCATs) are accounted for in the formula, they are primarily funded through a cost and enrollment-based formula.[13] Changes to the formula can be made by THEC in consultation with the FRC on a yearly basis, but THEC attempts to hold major changes for the five-year review. The five-year cycle for the 2010-15 model came to an end with the distribution of the 2015-16 fiscal year appropriations in November 2014. Beginning in February 2015, the FRC proposed and reviewed changes to the 2010-15 model and gathered feedback from college and university presidents, chancellors, and the Statutory Formula Review Committee before presenting the revised formula to THEC commissioners in July 2015. The 2015-20 formula is now in its 2017-18 iteration.

Key elements of the formula include outcome measures for monitoring performance, premiums for at-risk populations and reverse-transfer associate degrees, scaling outcomes for comparison, recognition of institutional mission differentiation, quality assurance funding and fixed costs, and point calculation for allocating shares of state funds. An in-depth explanation of the outcomes-based funding formula begins on page 5.

College and university outcomes primarily consist of progression, completion, and efficiency measures. The measures are different for community colleges and four-year universities. Outcome measures used in the formula generally consist of:

- student progression using some amount of credit hour completion;
- student completion using the number of certificates or degrees awarded; and
- efficiency using the number of certificates or degrees awarded per 100 full-time students and/or graduation rates.

For more information on the outcomes used for measuring performance and how these specific measures have changed from the 2010-15 to the 2015-20 formula, see page 6.

The formula incorporates student premiums for progression and completion outcomes. The premiums act as an additional weight for certain at-risk student populations that historically struggle to progress and complete college. The premiums essentially provide institutions additional resources if an at-risk student achieves the progression or completion outcomes compared to a traditional student completing progression or completion outcomes. The current premium structure for focus populations awards an 80 percent premium to students in one focus population, 100 percent to students in two focus populations, and 120 percent to students in all three focus populations. The formula applies the 80-100 premiums only to universities. The formula applies the 80-100-120 premiums to community colleges. Furthermore, the 2017-18 formula allows community colleges and universities to receive 50 percent credit for associate degrees that students begin at the community college but finish at the four-year institution. For more information on changes to focus populations, student premiums, and reverse-transfer credits, see page 11.

The outcomes-based funding formula scales outcome measures. Scaling provides comparability of all outcomes across all institutions using each outcome's standard deviation. Scaling may also limit volatility in outcome measures that historically vary more so than other outcomes. Scaling outcomes provide colleges and universities with more stable appropriation recommendations. For more information on the scaling of outcomes, see page 18.

In shifting the focus of the formula from enrollment to outcomes, the formula recognizes mission diversity; mainly, how institutions focus on certain outcomes more heavily compared to other institutions. For example, education officials may emphasize research and public service at the University of Tennessee, Knoxville, more heavily than officials at Tennessee State University. Institutional missions are weighted based on input from college and university presidents, chancellors, and other higher education officials, and in accordance with the Basic Carnegie Classification of Institutions of Higher Education. Institutional missions have changed over time in both college and university sectors. Standardized weights are now applied to

several outcomes for community colleges to reflect the goals of statewide completion initiatives, including the Drive to 55 and the CCTA. For more information on institutional missions and weights in the 2015-20 formula, see page 18.

Quality Assurance Funding (QAF) provides an additional allocation of funding on top of any allocations an institution receives from the outcomes-based formula. QAF was formerly the performance-funding component used in the enrollment-based model. An institution can receive an additional 5.45 in points under the current formula, yielding additional allocations. In 2017-18, a total of $43 million in quality assurance funding was distributed among all institutions.[14] The formula also provides appropriation recommendations based on fixed costs incurred by colleges and universities as a proportion of total fixed costs across all community colleges and universities. For more information on fixed costs, see pages 22-23, and for more information on the QAF component, see page 24.

Lastly, the outcomes-based funding formula uses point totals to calculate each institution's recommendation of appropriation shares. An institution's point total consists of an institution's total weighted outcomes, fixed costs, and quality assurance. Each institution's point total for the current year is compared to their appropriation share from the previous year. The percent change, whether an increase or decrease, is multiplied by an institution's appropriation share of the previous year. An institution may gain or lose shares of state appropriations based on good or poor performance in relation to its previous year's performance and the performance of all other colleges and universities. The amount of new money provided by the state also influences what gaining or losing shares in state appropriations may look like (i.e., an institution may "lose" shares of appropriations from the previous year due to poor performance but still be rewarded with a positive net amount of state dollars due to an increase in new funding). For more information on the point calculation and growth change using point totals, see page 28.

How does the Formula Work?

The funding formula relies on raw data collected by THEC from each college and university in Tennessee for all outcomes identified in the formula. Raw outcome data represents a count for each outcome before it is weighted and scaled for identifying changes to an institution's share of state appropriations.

Outcomes for Community Colleges

The outcomes-based funding formula rewards community colleges on a variety of outcomes. According to THEC's data definitions for the 2016-17 outcomes-based formula, the outcomes for community colleges are defined as follows:[15]

- *12, 24, and 36 credit hour accumulation*. Student credit hour accumulation is measured by the number of full-time and part-time students whose cumulative credits earned at the beginning of a semester are less than the established credit hour threshold benchmarks of 12, 24, or 36 student credit hours and whose cumulative credit hours earned at the end of the semester are equal to or greater than the credit hour threshold benchmarks during the academic year.
- *Dual enrollment*. The unduplicated headcount of high school students taking degree-credit courses in an academic year. Dual enrollment is a postsecondary course, taught either at the postsecondary institution or at the high school by postsecondary faculty or credentialed adjunct faculty. Students enrolled in dual enrollment earn postsecondary credit upon completion of the course.[A] THEC uses end-of-term data for headcounts beginning with fall 2010.
- *Associate degrees produced*. The total associate degrees conferred during an academic year. Students earning multiple degrees in an academic year will have each earned degree count as a separate outcome.
- *Long-term certificates (one to two year certificates)*. The total number of certificates requiring 24 or more credit hours granted during an academic year. Students earning multiple certificates in an academic year will have each certificate count as a separate outcome. General education certificates are excluded from this metric.[B]
- *Short-term certificates (less than one year certificates)*. The total number of certificates requiring fewer than 24 semester credit hours conferred to students during a calendar year. Only certificates identified as technical will be counted.
- *Job placements*. The number of graduates that are capable of being placed in the workforce from the spring, summer, and fall terms within a calendar year who obtain employment in a related field through June 30 of the following year.
- *Transfers out with 12 hours*. The number of undergraduate students who transferred out to any in-state public – and some private – institutions in an academic year who accumulated at least 12 earned student credit hours from the originating institution. The student must have been enrolled at the originating institution at any time one academic

[A] See https://www.tn.gov/education/topic/dual-enrollment.

[B] According to TBR policy (https://policies.tbr.edu/policies/general-education-requirements-and-degree-requirements), general education certificates consist of 41 semester hours in the following subject categories and are required for completion of the Associate of Arts (A.A.), Associate of Science (A.S.), Associate of Science in Teaching (A.S.T.), and all baccalaureate degrees. General education courses consist of 9 semester hours of communication, 9 semester hours of humanities and/or fine arts, 6 semester hours of social/behavioral sciences, 6 semester hours of history, 8 semester hours of natural sciences, and 3 semester hours of mathematics.

year prior to transferring. Students transferring to an institution in the fall after being enrolled at a separate institution the previous spring, but not the previous summer, are included in this outcome.

- *Workforce training*. The total number of contact hours from an academic year. Contact hours are defined as a minimum of 50 minutes of learning activity for courses or activities that provide individuals with soft skills or technical skillsets for the workplace but carry no institutional credit applicable toward a degree, diploma, or certificate.
- *Degrees and certificates per 100 FTE*. Awards per 100 FTE is the combined total of associate degrees and long-term certificates conferred during an academic year for every 100 full-time undergraduate students. Full-time students (or FTE) are defined as fully enrolled students (i.e., taking at least 30 semester credit hours) who complete (i.e., not just enroll in) the full academic term. Non-degree seeking students are not included in undergraduate FTE. Full-time enrollment is 30 semester credit hours.

The outcomes for Tennessee's community colleges for both the 2010-15 and 2015-20 formulas can be seen in Exhibit 2. Terms italicized in the 2015-20 model underwent an operational or definitional change from the 2010-15 model, while terms with a strikethrough in the 2015-20 model were removed as an outcome from the 2010-15 model.

Outcomes for Universities

The outcomes-based funding formula rewards universities on a variety of outcomes. According to THEC's data definitions for the outcomes-based formula model for the 2016-17 academic year, the outcomes for universities are defined as follows:[16]

- *30, 60, and 90 credit hour accumulation*. Student credit hour accumulation is measured by the number of full-time and part-time students whose cumulative credits earned at the beginning of a semester are less than the established credit hour threshold benchmarks of 30, 60, or 90 student credit hours and whose cumulative credit hours earned at the end of the semester are equal to or greater than the credit hour threshold benchmarks during the academic year.
- *Bachelor's and associate degrees*. The combined total of bachelor's and associate degrees conferred to undergraduate students during an academic year. For a student earning multiple degrees, each degree earned in an academic year will count as a separate outcome. Double majors do not count as two outcomes. Austin Peay State University and Tennessee State University are the only universities that grant associate degrees.
- *Master's/Education specialist degrees*. The combined total of master's and education specialist's degrees and certificates conferred to students during an academic year. For a student earning multiple degrees, each degree earned in an academic year will count as a separate outcome. Double majors with the same degree do not count as two outcomes.

- *Doctoral/Law degrees*. The combined total of doctoral and law degrees conferred to students during an academic year. The outcome does not include medical or pharmacy degrees. For a student earning multiple degrees, each degree earned in an academic year will count as a separate outcome. Double majors with the same degree do not count as two outcomes.
- *Research and service*. Expenditures on activities eligible for indirect cost allocation, primarily but not exclusively externally generated funding for research, service, or instruction. The data should exclude financial aid, capital funding, state appropriations, donations from foundations, and practice income.
- *Degrees per 100 FTE*. The combined total of associate and bachelor's degrees conferred during an academic year for every 100 full-time undergraduate students. Full-time students (or FTE) are defined as fully enrolled students (i.e., taking at least 30 semester

Exhibit 2: Changes to Outcome Measures in the Outcomes-Based Funding Formula for Community Colleges, 2010-15 through 2015-20

2010-15 Model Community College Outcomes	2015-20 Model Community College Outcomes
Students accumulating 12 hrs.	Students accumulating 12 hrs.
Students accumulating 24 hrs.	Students accumulating 24 hrs.
Students accumulating 36 hrs.	Students accumulating 36 hrs.
Dual enrollment	Dual enrollment
Associates	Associates
Long-term certificates	Long-term certificates
Short-term certificates	*Short-term certificates*[A]
Job placements	Job placements
Remedial and development success	~~Remedial and development success~~[B]
Transfers out with 12 hrs.	Transfers out with 12 hrs.
Workforce training	Workforce training
Awards per 100 FTE	*Awards per 100 FTE*[C]

Notes: An italicized definition indicates an operational/definitional change from the previous year. A strikethrough the definition indicates the outcome was removed.

[A] In the 2010-15 model only those certificates requiring fewer than 24 semester credit hours that represent the highest award earned at the time of a student's stop-out were counted. In the 2015-20 formula, all technical short-term certificates will be counted, regardless of whether a student stops-out or continues to be enrolled. Certificates defined as academic are not counted as they are intended to transfer.

[B] In an effort to better capture a community college's success in remediating students, the FRC recommended and THEC approved the replacement of the Remedial and Development Success outcome with an Academically Underprepared focus population.

[C] In the 2010-15 model both non-degree seeking and degree-seeking undergraduate students were included in the full-time enrollment metric. Only degree-seeking undergraduate students are included in the FTE metric in the 2015-20 model.

Source: Tennessee Higher Education Commission, 2015-20 Outcomes-Based Funding Formula Overview, Appendix D.

credit hours) who complete (i.e., not just enroll in) the full academic term. Non-degree seeking students are not included in undergraduate FTE. Full-time enrollment is 30 semester credit hours.

- *Six-year graduation rate*. First-time, full-time, fall freshmen and summer first-time freshmen who continued in the fall, attempting 12 credit hours at the census date, who were awarded a bachelor's or associate degree as of the summer semester following their sixth year.

The outcomes for Tennessee's universities for both the 2010-15 and 2015-20 formulas can be seen in Exhibit 3. Terms italicized in the 2015-20 model underwent an operational or definitional change from the 2010-15 model, while terms with a strikethrough in the 2015-20 model were removed as an outcome from the 2010-15 formula. The biggest change for university outcomes was the increase in student credit hour progression measures from 24-48-72 to 30-60-90. According to THEC, the 30, 60, and 90-credit hour progression metrics better represent the number of credit hours students must earn within an academic year to complete a bachelor's degree in four years.[17]

Exhibit 3: Changes to Outcome Measures in the Outcomes-Based Funding Formula for Universities, 2010-15 through 2015-20

2010-15 Formula University Outcomes	2015-20 Formula University Outcomes
Students accumulating 24 hrs.	*Students accumulating 30 hrs.*
Students accumulating 48 hrs.	*Students accumulating 60 hrs.*
Students accumulating 72 hrs.	*Students accumulating 90 hrs.*
Bachelor's and Associate degrees	Bachelor's and Associate degrees
Master's/Education Specialist degrees	Master's/Education Specialist degrees
Doctoral/Law degrees	Doctoral/Law degrees
Research and service	Research and service
Transfers out with 12 hrs.	~~Transfers out with 12 hrs.~~[A]
Degrees per 100 FTE	*Degrees per 100 FTE*[B]
6-year graduation rate	6-year graduation rate

Note: An italicized definition indicates an operational/definitional change from the previous year. A strikethrough the definition indicates the outcome was removed.

[A] THEC identified the Transfers Out outcome from the university sector as an outcome that did not necessarily represent an accurate measurement of success at universities.

[B] The university sector's degrees per 100 FTE outcome has been refined within the FTE metric to recognize only degree-seeking students.

Source: Source: Tennessee Higher Education Commission, 2015-20 Outcomes-Based Funding Formula Overview, Appendix D.

Exhibit 4 shows the general count of students fulfilling a given outcome measure by academic year for two institutions in different sectors of the outcomes-based funding formula: Chattanooga State Community College and Middle Tennessee State University. Data from these two institutions will be used to demonstrate each step of the outcomes-based funding formula.

Exhibit 4: General Count Data on Outcome Measures for Select Institutions, 2013-14 through 2015-16

Chattanooga State Community College

	2013-14	2014-15	2015-16
Students accumulating 12 hrs.	2,339	2,159	2,280
Students accumulating 24 hrs.	1,708	1,611	1,687
Students accumulating 36 hrs.	1,446	1,364	1,387
Dual enrollment	1,373	1,434	1,485
Associate degrees	1,046	935	1,069
Reverse articulated associate degrees	---	---	61
1-2 yr certificates	179	162	123
<1 yr certificates	262	167	172
Job placements	462	425	453
Transfers out with 12 hrs.	499	534	606
Workforce training (contact hours)	116,198	66,340	51,026
Awards per 100 FTE	21.31	20.67	22.59

Middle Tennessee State University

	2013-14	2014-15	2015-16
Students accumulating 30 hrs.	3,001	2,928	2,885
Students accumulating 60 hrs.	3,135	3,228	3,090
Students accumulating 90 hrs.	3,904	3,601	3,765
Bachelor's and Associate degrees	4,012	4,051	4,131
Master's/Ed Specialist degrees	861	847	791
Doctoral / Law degrees	32	30	37
Research and service	$11,740,917	$9,789,671	$9,551,390
Degrees per 100 FTE	21.9	22.7	23.9
Six-year graduation rate	53.2%	51.1%	50.2%

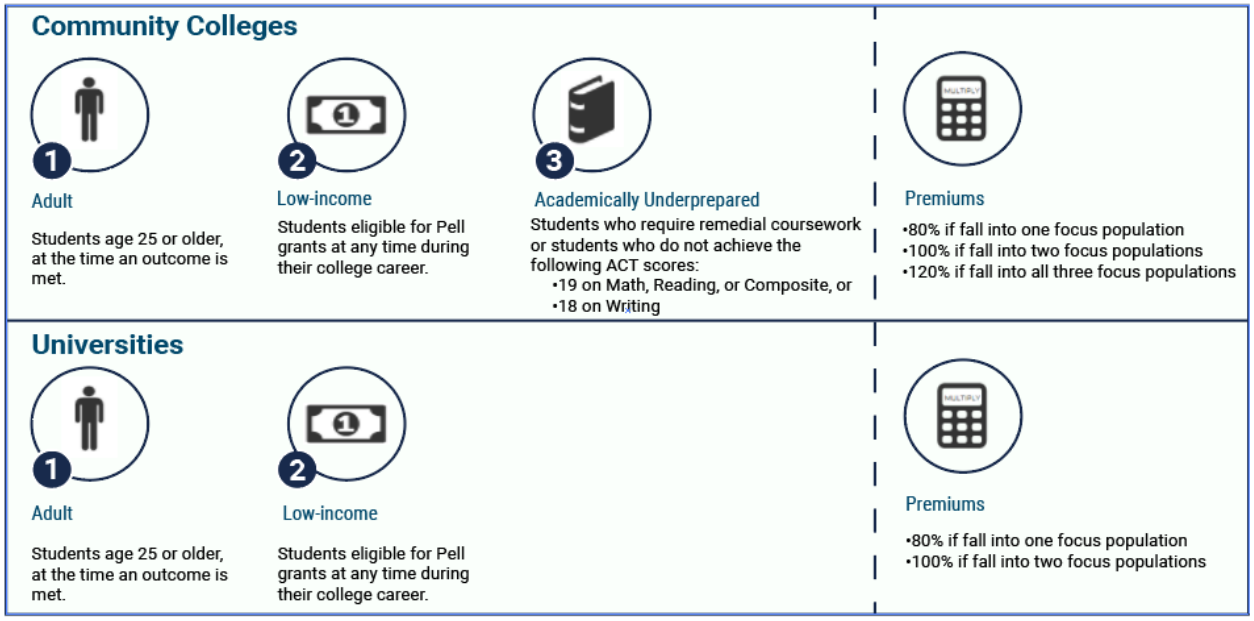
Source: Tennessee Higher Education Commission, 2015-20 Outcomes Based Funding Formula, 2017-18 Outcomes Formula Model, https://www.tn.gov/thec/ (accessed July 12, 2017).

Focus Population Premiums and Reverse Transfer Associate Degree Credits

The formula recognizes that some traditionally underserved and at-risk students require more time and resources to progress through college and graduate. Focus population premiums are used to generate funding for institutions that are successful at serving underserved and at-risk students. Exhibit 5 provides a summary of how focus populations are defined and operationalized for community colleges and universities.

In the 2010-15 formula, there were two subpopulations of students that could generate additional funding for each outcome: adult students and low-income students. Adult students are those students age 25 or older at the time a given outcome is reached. Low-income students are students who are eligible for Pell grants at any point during their time in college. These populations each provided a 40 percent premium for every progression or completion outcome achieved at community colleges and universities. For example, if 100 adult students were awarded a bachelor's degree at a university, the formula accounted for 140 degrees.

Exhibit 5: Focus Populations and Premiums, 2017-18 Outcomes-Based Funding Formula



Source: Graphic was created by the Office of Research and Education Accountability.

The subpopulations underwent a few changes in the 2015-20 formula. First, these student populations are now referred to as focus populations and how they are operationalized differs between community colleges and universities. For universities, adult and low-income students remain the only focus populations. At community colleges, there are three focus populations: adult students, low-income students, and academically underprepared students. Academically underprepared students are those students who do not achieve ACT score thresholds, or any student who is ever identified by the community college as requiring a remedial or development course.[C]

The premiums for all focus populations also changed in the 2015-20 formula. Students who fall into one focus population generate an 80 percent premium for the progression and

Exhibit 6: Students Identified as Focus Populations Completing Progression and Completion Outcomes at Chattanooga State Community College, 2013-14 through 2015-16

		2013-14	2014-15	2015-16
All Students	Students accumulating 12 hrs.	2,339	2,159	2,280
	Students accumulating 24 hrs.	1,708	1,611	1,687
	Students accumulating 36 hrs.	1,446	1,364	1,387
	Associate degrees	1,046	935	1,100
	1-2 Year certificates	179	162	123
	<1yr certificates	262	167	172
One Focus Pop Only	Students accumulating 12 hrs.	778	779	878
	Students accumulating 24 hrs.	532	515	612
	Students accumulating 36 hrs.	436	431	472
	Associate degrees	311	267	332
	1-2 year certificates	64	51	51
	<1 yr certificates	80	47	53
Two Focus Pops Only	Students accumulating 12 hrs.	811	693	690
	Students accumulating 24 hrs.	577	577	532
	Students accumulating 36 hrs.	494	460	431
	Associate degrees	345	302	360
	1-2 Year certificates	58	55	31
	<1yr certificates	77	50	50
All Three Focus Pops	Students accumulating 12 hrs.	341	263	166
	Students accumulating 24 hrs.	340	273	210
	Students accumulating 36 hrs.	315	268	233
	Associate degrees	316	252	287
	1-2 year certificates	39	38	23
	<1 yr certificates	72	42	35

Note: Adding all focus populations will result in an inaccurate number of total students identified as adult, low-income, or academically underprepared at a given institution. The focus population statistics overlap since students may fall into more than one focus population.
Source: Tennessee Higher Education Commission, 2015-20 Outcomes Based Funding Formula, 2017-18 Outcomes Formula Model, https://www.tn.gov/thec/ (accessed July 13, 2017).

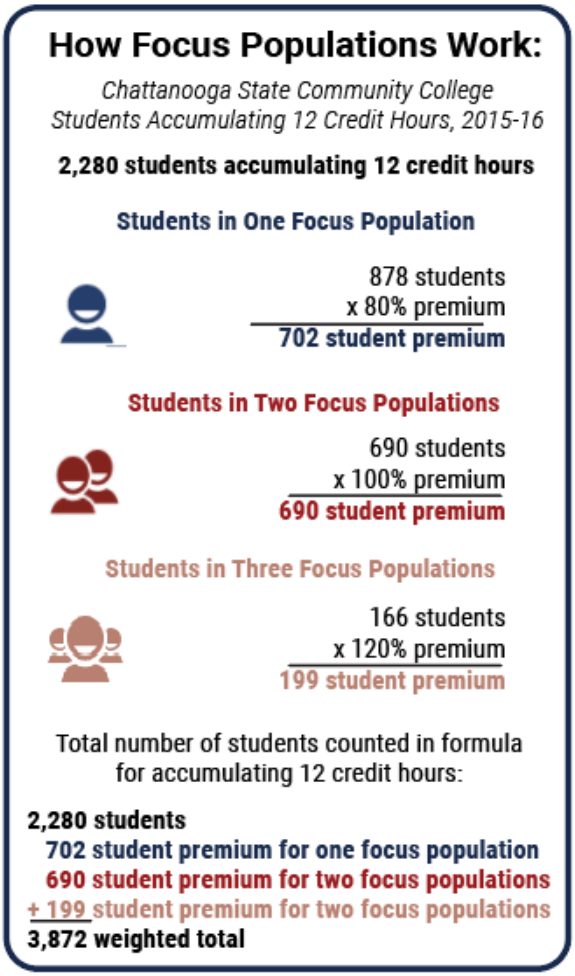
[C] The ACT-related thresholds for designating a student as academically underprepared are a 19 on ACT Math, Reading, or Composite, or below an 18 on ACT Writing. Used only for the progression metrics and the degree and certificate outcomes at community colleges.

undergraduate award outcomes. Students who fall into two focus populations generate a 100 percent premium for the progression and undergraduate award outcomes. Students who fall into all three focus populations generate a 120 percent premium for the progression and undergraduate award outcomes.

Exhibit 6 and Exhibit 8 show the general count of students identified as fulfilling focus population criteria and achieving progression or completion outcomes for Chattanooga State Community College and Middle Tennessee State University. Exhibit 7 and Exhibit 9 show how premiums are applied to students identified as fulfilling focus population criteria.

As seen in both examples for Chattanooga State Community College and Middle Tennessee State University, students fulfilling three focus population criteria for community colleges carry a larger weight (120 percent) than a student fulfilling only one focus population criterion (80 percent). Similarly, students fulfilling two focus population criteria for universities (100 percent) carry a larger weight than a student fulfilling only one focus population criterion (80 percent). The heavier weights provide additional points from the formula for those institutions that progress and graduate students who fall into the focus populations, and who require additional time and resources.

Exhibit 7: How Focus Populations Work, Chattanooga State Community College, 2017-18



Note: Numbers may not add to the weighted total due to rounding.
Source: Tennessee Higher Education Commission, 2015-20 Outcomes Based Funding Formula, 2017-18 Outcomes Formula Model, https://www.tn.gov/thec/ (accessed July 13, 2017).

A higher total value awarded from the focus populations premiums for meeting progression or completion measures typically results in an institution receiving more points when calculating appropriation shares. Thus, the premiums act as an incentive for institutions to meet progression and completion outcomes for students that fall into focus populations.

Exhibit 8: Students Identified as Focus Populations Completing Progression and Completion Outcomes at Middle Tennessee State University, 2013-2014 through 2015-2016

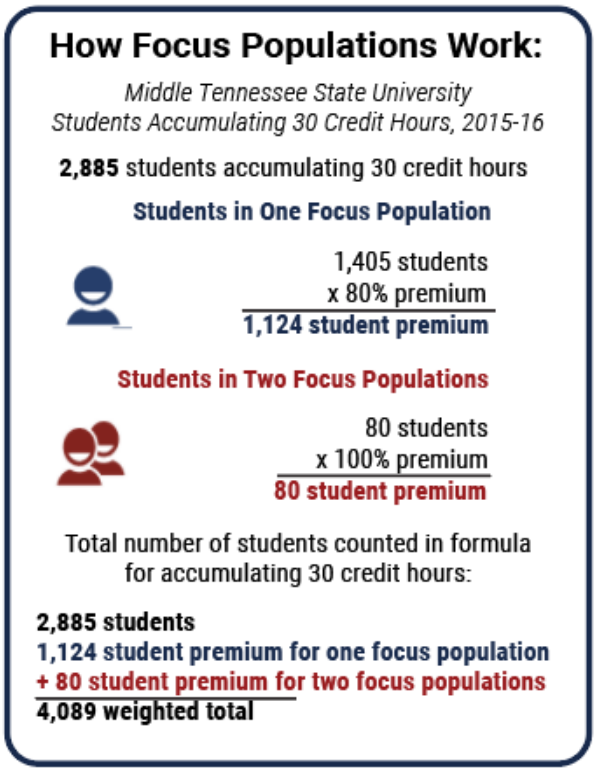
	Focus Populations	2013-14	2014-15	2015-16
All Students	Students accumulating 30 hrs.	3,001	3,928	2,885
	Students accumulating 60 hrs.	3,135	3,228	3,090
	Students accumulating 90 hrs.	3,904	3,601	3,765
	Bachelor's and Associate degrees	4,012	4,051	4,131
One Focus Pop Only	Students accumulating 30 hrs.	1,640	1,508	1,405
	Students accumulating 60 hrs.	1,654	1,675	1,490
	Students accumulating 90 hrs.	1,869	1,768	1,796
	Bachelor's and Associate degrees	1,625	1,683	1,752
Two Focus Pops Only	Students accumulating 30 hrs.	134	111	80
	Students accumulating 60 hrs.	2.81	276	201
	Students accumulating 90 hrs.	676	560	592
	Bachelor's and Associate degrees	1,098	1,138	1,165

Note: Adding all focus populations will result in an inaccurate number of total students identified as adult or low-income at a given institution. The focus population statistics overlap since students may fall into more than one focus population.
Source: Tennessee Higher Education Commission, 2015-20 Outcomes Based Funding Formula, 2017-18 Outcomes Formula Model, https://www.tn.gov/thec/ (accessed July 13, 2017).

Reverse Articulated (Reverse Transfer) Associate Degrees

In the 2017-18 outcomes based funding formula, THEC implemented a shared outcome component for community colleges and universities to receive credit for degrees completed after transfer. Community colleges and universities that partner together to award an associate degree through reverse transfer each receive half credit for the outcome. Reverse transfer allows a student completing more than 25 percent of the required college level credits for an associate degree at a participating Tennessee two-year institution and transferring to a participating Tennessee four-year institution to combine college credits from both institutions and apply them toward an associate degree.[18]

Exhibit 9: How Focus Populations Work, Middle Tennessee State University, 2017-18



Note: Numbers may not add to the weighted total due to rounding.
Source: Tennessee Higher Education Commission, 2015-20 Outcomes Based Funding Formula, 2017-18 Outcomes Formula Model, https://www.tn.gov/thec/ (accessed July 13, 2017).

The shared outcome was included to recognize students who would transfer from a community college to a four-year university before receiving an associate degree at the community college. Once at the university, the student could earn enough credits to be awarded an associate degree, but without a reverse transfer partnership, no award was granted. The reverse transfer shared outcome in the 2017-18 formula allows community colleges and universities to receive 50 percent credit each for an associate degree that a student begins at the community college but finishes at a four-year institution. In 2015-16, THEC identified roughly 900 students that were eligible for reverse transfer.

The formula applies the shared outcome for reverse transfer associate degrees to the outcome for community colleges and universities. The shared outcome includes focus populations if applicable. The associate degrees weighted outcome for community colleges is a function of:

(*the total number of associate degrees awarded*) + (*focus population weights for the total number of associate degrees awarded*) + (*half the number of reverse transfer associate degrees awarded*) + (*focus population weights for the number of shared reverse transfer associate degrees awarded*).

Weighted Average Outcomes

After accounting for focus population premiums for progression and completion outcomes (and reverse transfer associate degree credit) in the same manner as described above, each weighted outcome is averaged. Each outcome at every institution is calculated using a three-year average. For the 2017-18 funding formula recommendation, weighted outcome data for every outcome, including focus population premiums and reverse transfer associate degree credits, is calculated using 2013-14, 2014-15, and 2015-16 data.

Exhibit 10 and Exhibit 11 show how this process works. Looking at Exhibit 10, Chattanooga State Community College shows a weighted outcome total of 4,182 in 2013-14, 3,792 in 2014-15, and 3,872 in 2015-16 for students accumulating 12 credit hours. These numbers are functions of the 80-100-120 premium weighting systems for focus populations for community colleges (i.e., they are weighted to include low-income, adult, and academically underprepared students). The weighted average outcome for 2017-18 (3,948) is calculated by taking the average of the combined weighted outcomes from 2013-14 through 2015-16 for students accumulating 12 credit hours.

The weighted average outcome for students accumulating 30 credit hours at MTSU is calculated in the same fashion. The total students accumulating 30 credit hours over the past three years (2013-14, 2014-15, and 2015-16) is weighted for focus populations using the 80-100 premium weights. These three-year weighted outcomes are then averaged to produce the weighted average outcome for students accumulating 30 credit hours for the 2017-18 formula (4,260).

Exhibit 10: Three-Year Average of Weighted Outcomes for Chattanooga State Community College, 2017-18

	2013-14	2014-15	2015-16	2017-18 Average of Weighted Outcomes
Students accumulating 12 hrs.	4,182	3,791	3,872	3,948
Students accumulating 24 hrs.	3,119	2,928	2,961	3,002
Students accumulating 36 hrs.	2,667	2,490	2,475	2,544
Dual enrollment	1,373	1,434	1,485	1,431
Associate degrees	2,019	1,753	2,069	1,947
1-2 year certificates	335	303	222	287
<1 year certificates	489	305	306	367
Job placements	462	425	453	447
Transfers out with 12 hrs.	499	534	606	546
Workforce training (contact hours)	116,198	66,340	51,026	77,855
Awards per 100 FTE	21.31	20.67	22.59	21.5

Note: The value of each cell is a three-year average of weighted outcomes and does not represent a count for the number of students completing a given outcome.
Source: Tennessee Higher Education Commission, 2015-20 Outcomes Based Funding Formula, 2017-18 Outcomes Formula Model, https://www.tn.gov/thec/ (accessed July 13, 2017).

Exhibit 11: Three-Year Average of Weighted Outcomes for Middle Tennessee State University, 2017-18

	2013-14	2014-15	2015-16	2017-18 Average of Weighted Outcomes
Students Accumulating 30 hrs.	4,447	4,245	4,089	4,260
Students Accumulating 60 hrs.	4,739	4,844	4,483	4,689
Students Accumulating 90 hrs.	6,075	5,575	5,794	5,815
Bachelor's and Associate degrees	6,410	6,535	6,697	6,547
Master's/Ed Specialist degrees	861	847	791	833
Doctoral/Law degrees	32	30	37	33
Research and service	$11,740,917	$9,789,671	$9,551,390	$10,360,659
Degrees per 100 FTE	21.9	22.7	23.9	22.8
6-year graduation rate	53.2%	51.1%	50.2%	51.5%

Note: The value of each cell is a three-year average of weighted outcomes and does not represent a count for the number of students completing a given outcome.
Source: Tennessee Higher Education Commission, 2015-20 Outcomes Based Funding Formula, 2017-18 Outcomes Formula Model, https://www.tn.gov/thec/ (accessed July 13, 2017).

Scaled Outcomes

After the three-year averages of each outcome are calculated, the formula scales each outcome. Scaling each outcome occurs for several reasons: to place outcomes into similar units of measurement and to compare volatility in outcome measures that show variation over time. Exhibit 12 provides an overview of how scales are used in the outcomes-based funding formula.

Scales will have a larger effect on those colleges or universities that show greater variation in their three-year average of weighted outcomes compared to those institutions that show more stability in their three-year average of weighted outcomes.

Initially, scaling outcomes places outcome measures into a standard unit of analysis using the average of each outcome's historic standard deviation. In most cases, scaling relies on a 10-year data set to determine the average standard deviations of all outcomes across each sector. The standard deviation of each outcome allows for comparisons to be made across all college and university outcomes by providing a measure of dispersion for a given outcome from its mean over time. For example, the scaled outcome for the number of students accumulating 12 credit hours at Chattanooga State Community College can be compared to the scaled outcome for job placements at Cleveland State Community College despite being different outcome measures.

Because the outcomes are scaled using the standard deviation, higher values for scales are applied to outcomes that historically see greater levels of variation. Higher scaled values reflect the formula's attempt to moderate the variation and limit the negative impact of the variation on college and university performance. Limiting highly volatile outcomes results in the formula producing more stable appropriation share recommendations. Conversely, scales with lower values are used on outcomes that historically see greater levels of stability.[D]

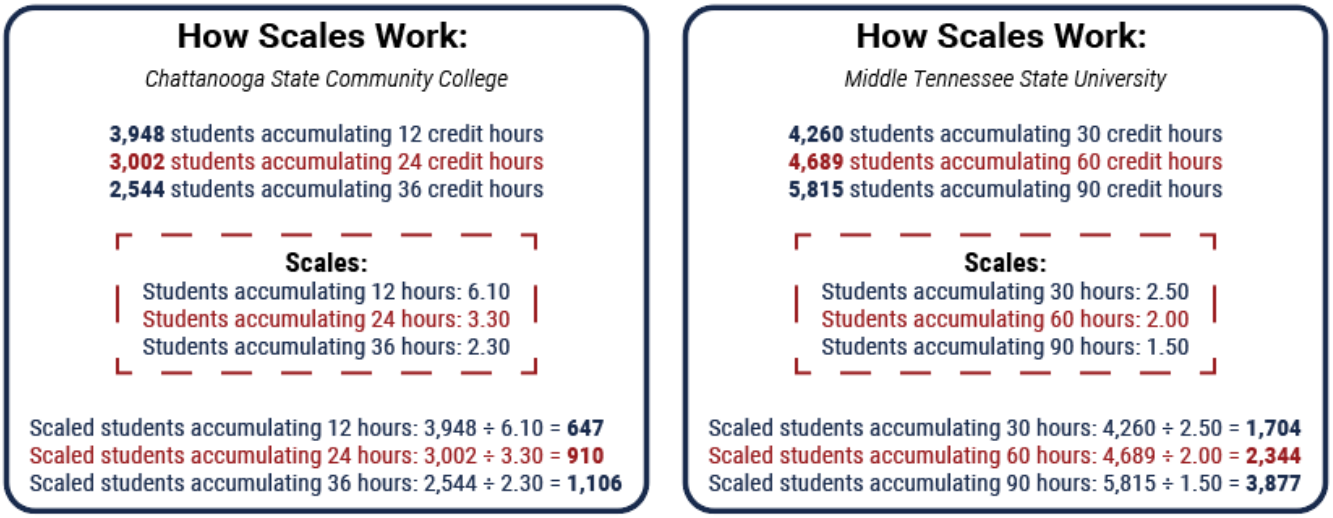
THEC has changed the scales used to calibrate the formula since their initial adoption in the 2010-15 outcomes-based formula. When the scales were first used in the 2010-15 formula, they were a mechanism to standardize the outcomes-based funding formula to the funding levels under the previous enrollment-based funding formula. Since this time, the 2015-20

[D] THEC adjusted several scales if it did not think the standard deviation captured the potential volatility of an outcome. Per its formula recommendation, both the 1-2 Year Certificates and less than 1-Year Certificates in the community college sector and Research and Service in the university sector are historically highly volatile outcomes relative to their respective sizes, to an extent that was not completely captured by the outcomes' standard deviations. These scales were increased to account for this volatility. The Transfers Out with 12 hrs and Awards per 100 FTE in the community college sector and Degrees per 100 FTE in the university sector were increased due to the possibility of increased volatility.

formula uses "mathematically-derived" scales, which heavily influence the 2015-20 proposed scales used in the formula.

Mathematically-derived scales use the total average standard deviation of each outcome for each institution from the historical outcome data. To make the 2010-15 and 2015-20 scales comparable, the 2015-20 scales rely on the two most prominent (i.e., heavily weighted) scales that remained the same from the 2010-15 formula: associate degrees for community colleges, and bachelor and associate degrees for universities. The 2015-20 mathematically-derived scales divides each standardized outcome measure by the average standard deviation of all associate degrees for community college and the average standard deviation of all bachelor's and associate degrees for universities.

Exhibit 12: Scaling Outcomes in the Outcomes-Based Funding Formula, 2017-18



Source: Tennessee Higher Education Commission, 2015-20 Outcomes Based Funding Formula, 2017-18 Outcomes Formula Model, https://www.tn.gov/thec/ (accessed July 13, 2017).

Weighting Outcomes Based on Institutional Mission

The CCTA states the outcomes used in the outcomes-based funding formula must be weighted to reflect mission differences among higher education institutions. The weights for the outcomes are identified through discussions with THEC and college presidents and chancellors about institutional priorities as well as an institution's Basic Carnegie Classification. Scaled outcomes for every institution are weighted based on institutional mission to produce a weighted outcome for a given outcome measure.

The Basic Carnegie Classification

The Basic Carnegie Classification is a framework used to represent and control for institutional differences, and also in the design of research studies to ensure adequate representation of sampled institutions, students, or faculty.[19] By using the Carnegie Classification in the outcomes-based funding formula, institutions with similar missions can apply similar weights for certain outcomes, while institutions with different missions can apply different weights to other outcomes. Exhibit 13 provides an overview of the colleges and universities in Tennessee and how they are classified based on the Basic Carnegie Classification.

The Basic Carnegie Classification defines universities and community colleges differently. For community colleges, the Basic Carnegie Classification sorts institutions into nine categories based on the intersection of two factors: disciplinary focus or program mix (transfer, career and technical degrees, or mixed) and dominant student type (traditional, nontraditional, or mixed).

Exhibit 13: Tennessee's Community Colleges and Universities by Basic Carnegie Classification

Basic Carnegie Classifications	Institutions
Community Colleges	
Associate's Colleges: High Transfer-High Traditional	Cleveland State Columbia State Motlow State Northeast State Roane State Walters State
Associate's Colleges: High Transfer-Mixed Traditional/Nontraditional	Dyersburg State Jackson State Nashville State Pellissippi State
Associate's Colleges: Mixed Transfer/Career & Technical-High Traditional	Chattanooga State
Associate's Colleges: Mixed Transfer/Career & Technical-Mixed Traditional/Nontraditional	Southwest Tennessee Volunteer State
Universities	
Master's Colleges and Universities: Medium Programs	University of Tennessee - Martin
Master's Colleges and Universities: Larger Programs	Austin Peay State University University of Tennessee - Chattanooga
Doctoral Universities: Moderate Research Activity	East Tennessee State University Middle Tennessee State University Tennessee State University Tennessee Technological University
Doctoral Universities: Higher Research Activity	University of Memphis
Doctoral Universities: Highest Research Activity	University of Tennessee, Knoxville

Source: The Carnegie Classification of Institutions of Higher Education, http://carnegieclassifications.iu.edu/index.php (accessed May 8, 2017).

The program mix groups are determined by the percentage of degrees awarded in fields designated as art and sciences, professional, and career and technical.

Doctoral universities include those institutions that awarded at least 20 research or scholarship doctoral degrees during the 2015 academic year, and are denoted across three tiers as R1: highest research activity, R2: higher research activity, and R3: moderate research activity. Master's colleges and universities include those institutions that awarded as least 50 master's degrees and fewer than 20 doctoral degrees during the 2015 academic year and are denoted across three tiers as M1: larger programs, M2: medium programs, and M3: smaller programs.

For example, Chattanooga State Community College is an associate's college maintaining a mixed disciplinary focus, consisting of transfer students and career and technical degrees with a traditional dominant student type according to the Basic Carnegie Classification. Middle Tennessee State University is a doctoral university with moderate research activity (R3).

Exhibit 14 shows the weighting structures for community colleges under the 2015-20 outcomes-based formula. In the far-left column are the outcomes. The top row identifies the

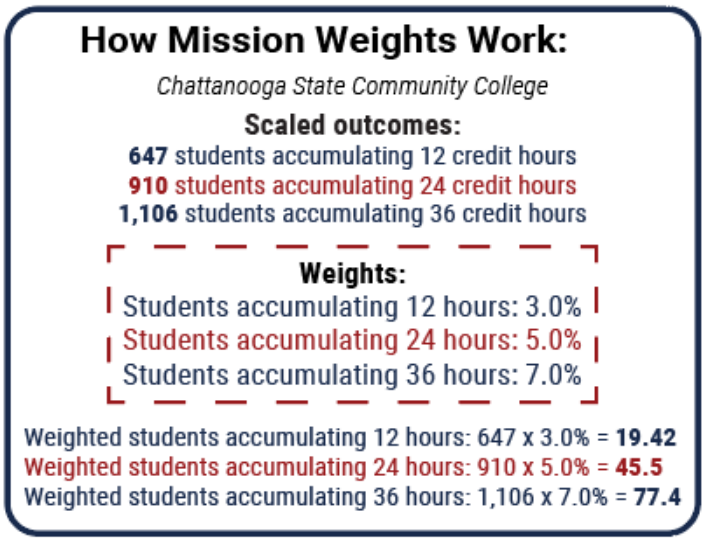
Exhibit 14: 2015-20 Community College Weighting Structure, by Weighted Percentages for Outcomes

	Chattanooga	Cleveland	Columbia	Dyersburg	Jackson	Motlow	Nashville	Northeast	Pellissippi	Roane	Southwest	Volunteer	Walters
Students accumulating 12 hrs.	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Students accumulating 24 hrs.	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Students accumulating 36 hrs.	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Dual enrollment	5.0	7.5	7.5	15.0	7.5	7.5	15.0	10.0	10.0	15.0	12.5	10.0	10.0
Associate degrees	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
1-2 yr certificates	10.0	2.5	17.5	10.0	10.0	0.0	10.0	12.5	0.0	10.0	2.5	5.0	2.5
<1 yr certificates	10.0	17.5	2.5	10.0	10.0	20.0	10.0	7.5	20.0	10.0	17.5	15.0	17.5
Job placements	15.0	15.0	5.0	7.5	15.0	7.5	7.5	15.0	7.5	5.0	5.0	7.5	7.5
Transfers out with 12 hours	10.0	5.0	15.0	10.0	5.0	12.5	10.0	5.0	15.0	10.0	7.5	15.0	15.0
Workforce training (contact hours)	7.5	10.0	10.0	5.0	10.0	10.0	5.0	7.5	5.0	7.5	12.5	5.0	5.0
Awards per 100 FTE	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0

Source: Tennessee Higher Education Commission, 2015-20 Outcomes-Based Funding Formula Overview, Appendix E (accessed May 8, 2017).

name of a given institution. Within each cell are the weights applied to each outcome based on each institution's mission. The community college sector has standardized weights to reflect the goals of statewide completion initiatives, including the Drive to 55 and the CCTA. Associate degrees are weighted at 22.5 percent across all community colleges; progression metrics (students accumulating 12, 24, and 36 credit hours) sum to 15 percent for all community colleges, and long-term and short-term certificates sum to 20 percent, with variation between the two types of certificates depending on institutional priority and historical performance of the community college.

Exhibit 15: Applying Mission Weights to Scaled Outcomes for Chattanooga State Community College, 2017-18



Source: Tennessee Higher Education Commission, 2015-20 Outcomes Based Funding Formula, 2017-18 Outcomes Formula Model, https://www.tn.gov/thec/ (accessed July 13, 2017).

Exhibit 15 shows how mission weights are applied to the scaled outcomes for Chattanooga State Community College. Mission weights multiply a scaled outcome by the percentage associated with a given mission weight. In this

Exhibit 16: 2015-20 University Weighting Structure, by Weighted Percentages for Outcomes

	UTM	APSU	TTU	UTC	MTSU	ETSU	TSU	UM	UTK
Students accumulating 30 hrs.	4.0	3.0	4.0	4.0	3.0	6.0	4.0	3.0	2.0
Students accumulating 60 hrs.	6.0	4.5	6.0	6.0	4.5	7.5	6.0	4.5	4.0
Students accumulating 90 hrs.	10.0	7.5	10.0	10.0	7.5	9.0	10.0	7.5	6.5
Bachelor's and Associate degrees	30.0	27.5	25.0	25.0	22.5	20.0	22.5	22.5	20.0
Master's/Ed Specialist degrees	15.0	20.0	15.0	10.0	20.0	15.0	12.5	10.0	10.0
Doctoral/Law degrees	0.0	0.0	5.0	5.0	7.5	15.0	7.5	15.0	12.5
Research and service	5.0	10.0	10.0	10.0	10.0	10.0	15.0	10.0	12.5
Degrees per 100 FTE	10.0	17.5	10.0	15.0	10.0	7.5	12.5	10.0	17.5
6-year graduation rate	20.0	10.0	15.0	15.0	15.0	10.0	10.0	17.5	15.0

Source: Tennessee Higher Education Commission, 2015-20 Outcomes-Based Funding Formula Overview, Appendix E (accessed July 13, 2017).

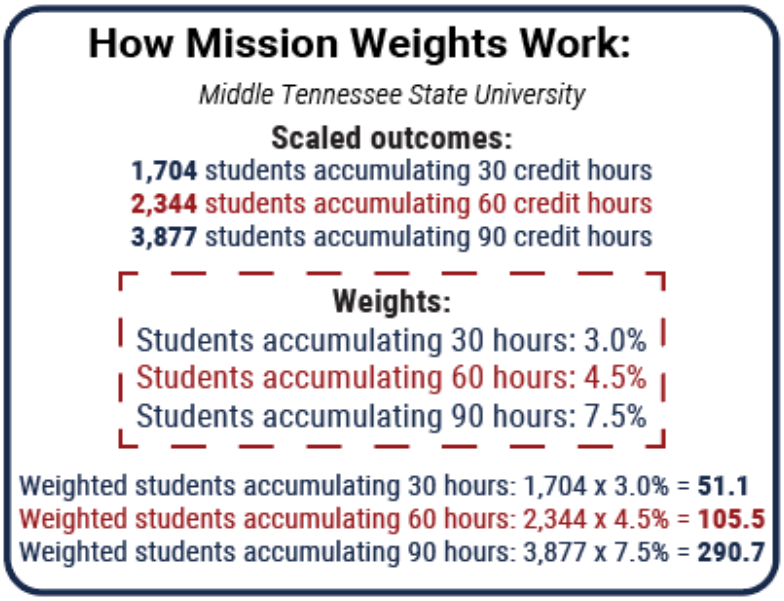
case, and because all community colleges have a standard weight for credit hour completion (3 percent, 5 percent, and 7 percent), Chattanooga State Community College's 12-credit hour outcome measure is multiplied by 3 percent to get a mission-weighted outcome of 19.41. Similar steps are taken for each mission weight across all outcome measures.

Exhibit 16 shows the weighting structures for universities under the 2015-20 outcomes-based funding formula. The far-left column indicates the outcomes used in the formula while the top row contains the abbreviation of each university. The values within each cell under a given institution indicate the weighted percentage that institution applies to a given outcome. There is greater variation among the weights for universities than there is for community colleges.

Exhibit 17 shows how mission weights are applied to the scaled outcomes for Middle Tennessee State University. Again, the scaled outcome is multiplied by each institution's respective mission weights to produce a weighted outcome. The weighted outcome can be thought of as points earned by each institution for each outcome. Thus, all weighted outcomes added together represent an institution's total outcomes-based points, where a greater change in points results in the formula recommending a larger state appropriation share and less points result in the formula recommending a smaller state appropriation share.

Weighted-outcome points are not an institution's final point total in the formula, however. Fixed costs and quality assurance funding are also calculated and turned into points, as discussed below.

Exhibit 17: Applying Mission Weights to Scaled Outcomes for MTSU, 2017-18



Source: Tennessee Higher Education Commission, 2015-20 Outcomes Based Funding Formula, 2017-18 Outcomes Formula Model, https://www.tn.gov/thec/ (accessed July 13, 2017).

Fixed Costs

The formula also considers an institution's fixed costs. Fixed costs include costs incurred by colleges and universities for maintenance and operations, utilities, equipment replacement, and education and general space. Capital outlay for new construction of buildings and capital maintenance is not funded through the fixed costs component of the formula.

Fixed costs are calculated using a five-year average fixed cost to monetize outcomes across all institutions. In the 2017-18 formula, the fixed cost constant was 21.8 percent. The formula adds an additional 21.8 percent of points to cover fixed costs for all institutions. This 21.8 percent is accounted for in the formula by allotting a total of 7,228 total fixed costs points among all institutions in the 2017-18 formula. Exhibit 18 shows how fixed costs are calculated for both Chattanooga State Community College and Middle Tennessee State University.

Fixed Cost Constant: 21.8%

Average Fixed Costs:	$389,360,261
Average Monetized Outcomes:	÷ $1,783,716,163
	21.8%

Fixed Cost Points Available: 7,228

Total Weighted Outcomes:	33,113
Fixed Cost Constant:	x 21.8%
	7,228

To determine how much of the additional 21.8 percent of points each institution gets, the formula looks at the total spent on fixed costs at each institution. An institution's fixed cost share is largely dependent upon its size, with the locally governed institutions accounting for

Exhibit 18: Calculating Fixed Costs, 2017-18 Outcomes-Based Funding Formula

How Fixed Costs Work:
Chattanooga State Community College

Total Fixed Costs at Chattanooga State:	$10,227,008
Total Fixed Costs at All Institutions:	÷ $434,821,288
Chattanooga State Fixed Cost Share:	**2.35%**

Fixed Cost Points: 170

Total Weighted Outcomes:	33,113
Fixed Cost Constant:	21.8%
Fixed Cost Share:	x 2.35%
Chattanooga State Fixed Cost Points:	**170**

How Fixed Costs Work:
Middle Tennessee State University

Total Fixed Costs at MTSU:	$43,733,888
Total Fixed Costs at All Institutions:	÷ $434,821,288
MTSU Fixed Cost Share:	**10.06%**

Fixed Cost Points: 727

Total Weighted Outcomes:	33,113
Fixed Cost Constant:	21.8%
Fixed Cost Share:	x 10.06%
MTSU Fixed Cost Points:	**727**

Source: Source: Tennessee Higher Education Commission, 2015-20 Outcomes Based Funding Formula, 2017-18 Outcomes Formula Model, https://www.tn.gov/thec/ (accessed July 14, 2017).

about 43.5 percent of total fixed costs while the Tennessee Board of Regents community colleges account for about 22 percent. Variation also exists across individual institutions. For example, University of Tennessee, Knoxville, accounts for 25 percent of total fixed costs share and Cleveland State Community College accounts for less than 1 percent of the total fixed costs share.

Fixed cost shares are converted into fixed cost points so that fixed costs can be incorporated into the weighted outcomes of each institution. Fixed costs points are calculated by taking the fixed cost constant of 21.8 percent and multiplying it by the fixed cost share of each institution, which is a function of an institution's total fixed costs divided by the total amount of fixed costs across all institutions. The resulting fixed costs points are then added to the cumulative weighted outcomes points.

Quality Assurance Funding

Each institution can earn additional points for meeting various quality indicators in the Quality Assurance Funding (QAF) component of the outcomes-based funding formula.[E] QAF is the corollary of earlier performance funding and provides an incentive by offering additional funding above the outcomes-based funding recommendation to those institutions that meet certain quality standards. In 2017-18, a total of $43 million in quality assurance was distributed among all institutions.[20]

QAF typically consists of self-auditing academic services, student services, and institutional support functions in order to improve performance.

In 2017-18, a total of $43 million in quality assurance was distributed among all institutions.

Beginning as performance-funding, the QAF component initially rewarded performance based on five general quality benchmarks, including program accreditation, student performance in their field of study, general student education performance, and an evaluation of instructional programs. From 1979-80 through 2009-10, Tennessee added nine performance funding measures and dropped four while also increasing the reward that could be earned from 2 percent to 5.45 percent. Throughout the changes, performance funding remained focused on student achievement and institutional improvement.[21]

[E] QAF first began in Tennessee in 1979 as performance funding. The name changed in the 2015-20 funding cycle to distinguish QAF from the outcomes-based funding formula.

The standards used to determine QAF are currently evaluated every five years to ensure alignment with the state's higher education priorities as laid out in the state Master Plan. In the 2015-20 formula, the maximum amount of points an institution can receive under QAF is 5.45 percent of the institution's funding recommendation. The 2015-20 QAF standards offer institutions a maximum grade of 100 percentage points, 75 of which look at student learning and engagement and 25 of which address student access and success. The standards are slightly different for community colleges and universities, due to the different roles these institutions play in serving students. If an institution earns all 100 percentage points, it will receive the full 5.45 percent in QAF on top of its total outcomes and fixed cost points, while all institutions with scores less than 100 percentage points will receive a proportionate share of the 5.45 percent potential QAF on top of their total outcomes and fixed cost points.

From a topical perspective, some QAF standards for additional funding may seem to overlap with the weighted outcome measures used in the weighted outcomes component of the formula. For example, there is a focus on adult learners as both a focus population rewarded with a premium in the weighted outcomes component of the formula as well as an adult learner success measure in the QAF component. Similarly, the job placement outcome for community colleges may dovetail with the Tennessee job market graduate placement measure in the QAF component for community colleges. While emphasis on certain outcomes appear in both the outcomes-based funding formula and QAF, the use of this data to determine success differs.

Exhibit 19 shows the measures used for QAF and the points tied to each measure. In many cases, QAF goes beyond institutional outcomes, weights, and scales by requiring colleges and universities to detail, both qualitatively and quantitatively, operating procedures and other best practices for achieving a given QAF measure within the institution. This typically consists of self-auditing student services and institutional support offices in search of best practices and other strategic planning operations to better performance. Various rubrics may be used to evaluate institutional responsiveness to QAF measures including assessment forms, program review rubrics, academic audits, institutional satisfaction studies, and comprehensive reports.

Student Learning and Engagement

The student learning and engagement component looks at student assessment scores, program accreditation, and institutional satisfaction surveys. The QAF formula for community colleges also looks at job placement rates.[22]

- *General Education Assessment*. All undergraduate students who have applied to graduate with an associate or bachelor's degree are required to take a general education assessment. The institution's average score is compared to the national average, as well as the institution's three-year average score in the fourth and fifth year of the funding cycle.

- *Major Field Assessment*. All graduating students are required to take an assessment within their major field of study. For those programs with national licensure exams, the program's average score is compared to the national pass rate. For programs using a standardized assessment, the program's average score is compared to scores of other institutions across the country.
- *Academic Programs*. Institutions receive points based on program excellence and accreditation, which is the number of accredited programs divided by the total number of accreditable programs at the institution. For those non-accreditable programs, a score is developed from a Program Review or Academic Audit conducted by an external evaluator.
- *Institutional Satisfaction Study*. Depending on the year of the funding cycle, satisfaction surveys are given to students, faculty, or alumni. The results of these surveys are compared to the institution's Carnegie Classification peer group. Those reports are scored based on a rubric.
- *Adult Learner Success*. This standard intends to increase institutional focus on adult student success, at both community colleges and universities. Depending on the year of the funding cycle, the institution must conduct a self-assessment on adult learners, develop an action plan based on that assessment, or report on progress in serving adult learners.
- *Tennessee Job Market Graduate Placement*. The Tennessee Longitudinal Data System is used to calculate a job placement rate for graduates of each community college. The placement rate is calculated by dividing the number of institution graduates working full-time during any of the four quarters following their graduation year by the total number of graduates in the Tennessee job market.

Exhibit 19: 2015-20 Quality Assurance Funding, Points by Standard

Standard	Community College	University
I. Student Learning and Engagement	**75**	**75**
• *General Education Assessment*	*15*	*15*
• *Major Field Assessment*	*15*	*15*
• *Academic Programs*	*15*	*25*
• *Institutional Satisfaction Study*	*10*	*10*
• *Adult Learner Success*	*10*	*10*
• *Tennessee Job Market Graduate Placement*	*10*	*NA*
II. Student Access and Success	**25**	**25**
TOTAL	**100**	**100**

Source: Tennessee Higher Education Commission, Quality Assurance Funding 2015-20 Cycle Standards (accessed July 21, 2017).

Student Access and Success

For this component of the QAF program, each institution chooses five student focus populations. Institutions are to select focus populations based on their missions. The institution is then assessed based on the quality of its services dedicated to those populations. Institutional commitment should be focused on population success, defined by a greater number of focus populations graduated. The focus populations from which institutions can choose are:[23]

1. Low-income students
2. African American students
3. Hispanic students
4. Male students
5. Veterans
6. High-need geographic area
7. Science, Technology, Engineering, and Mathematics (STEM) programs
8. Health programs
9. Institutional Selection – an institution can develop its own focus population
10. Associate degree graduates enrolled at public universities (for community colleges only)
11. Baccalaureate degree graduates who previously earned associate degree (for universities only)
12. Graduate degrees for African American students, Hispanic students, or in STEM fields (for universities only)

In the 2017-18 outcomes-based funding formula, the total recommendation attributable to QAF was $43 million. The QAF recommendation for each institution varied, ranging from $429,000 at Cleveland State Community College to $10 million at University of Tennessee, Knoxville. Exhibit 20 shows funding allocations for the QAF component in 2017-18.

Exhibit 20: 2017-18 Funding Formula Quality Assurance Points and Dollars Awarded

Institution	Points	Funding Recommendation
Universities		
Austin Peay	89	$1,990,842
East Tennessee	88	$2,655,012
Middle Tennessee	91	$4,414,609
Tennessee State	75	$1,379,133
Tennessee Tech	94	$2,175,756
University of Memphis	92	$5,106,374
University of Tennessee, Chattanooga	87	$2,215,259
University of Tennessee, Knoxville	96	$10,280,568
University of Tennessee, Martin	88	$1,406,668
Subtotal		**$31,624,221**
Community Colleges		
Chattanooga	90	$1,406,910
Cleveland	77	$428,714
Columbia	92	$696,925
Dyersburg	98	$456,972
Jackson	95	$643,590
Motlow	94	$624,387
Nashville	94	$952,192
Northeast	94	$848,200
Pellissippi	93	$1,421,072
Roane	96	$1,013,282
Southwest	78	$1,071,601
Volunteer	85	$886,844
Walters	86	$1,019,305
Subtotal		**$11,469,994**
Grand Total		**$43,094,215**

Source: Tennessee Higher Education Commission, Quality Assurance Funding Points and Dollars Awarded: 1978-79 to 2015-16 (accessed July 13, 2017).

Final Recommendation

The final funding recommendation[F] hinges on the concept of growth. Colleges and universities can grow their share of state appropriations in two ways: by increasing outcome production (as seen in the weighted outcomes component) and by increasing outcome production relative to other institutions (outperforming other institutions at a greater rate in outcome production).

[F] The examples in this section rely on recommended dollar figures as calculated by the outcomes-based funding formula and do not account for what the General Assembly appropriated to higher education for the 2017-18 year. In addition, Tennessee's Colleges of Applied Technology (TCATs), which are primarily funded through a cost and enrollment-based formula, also receive a portion of the total recommended funding through the outcomes-based funding formula. Including the portion of funding allocated to TCATs, the new total funding recommendation calculated for 2017-18 increases from approximately $43 million to approximately $48 million, a difference of $4,247,100. The following examples focus on the final funding recommendations for community colleges and universities and do not include the portion of funding received by TCATs.

THEC calculates the total higher education funding recommendation based on the total points earned by each college and university compared to the point total for all institutions combined. The growth of total points earned by each institution, when compared to the growth in total points of all other institutions, translates to a share, or proportion, of the total state appropriations. Thus, colleges and universities will receive their proportion of total funding regardless of increases or decreases in total state funding to higher education.

The General Assembly determines the amount of the higher education appropriation based on how much state funding is available. THEC's funding request is typically about 67 percent of the formula's calculation. The General Assembly has fully funded THEC's requests each of the last three years.

For 2017-18, the formula calculated approximately $43 million in new funding from the Tennessee General Assembly. THEC noted that it received roughly $25 million in new funding in 2017-18, with $31.1 million earmarked for salaries and insurance that did not go through the formula. All funds will be generated through the formula beginning in 2018-19.

The total points used to identify the proportion of funding allocated to each institution is calculated by adding the point subtotals of each step in the formula discussed above:

(total weighted outcome points) + (total fixed costs points) + (total QAF points) = point total.

The total point calculation indicates the share of appropriations each college or university should be allocated based on performance across all weighted outcomes, all fixed costs, and performance on QAF metrics.

Point Calculation

An institution's point total for the current year is compared to its point total from the previous year to determine the total percent change in points. The percent change in total points, whether an increase or decrease, is then multiplied by the institution's appropriation share for the previous year. Individual institutional performance compared with performance across all universities and community colleges determine the institution's appropriation share for the current year.

Exhibit 21 shows how the formula calculates the percent change in points from the 2016-17 to the 2017-18 academic year. For example, MTSU earned 59 less points in the 2017-18 formula compared to the 2016-17 formula year. The 59-point decrease is a 1.33 percent decrease in overall points accumulated from 2016-17 to 2017-18. The change in points subsequently results in a change in the overall share of state appropriations to each college or university.

As Exhibit 22 shows, each percent change in points is multiplied by the appropriation share of the institution from the previous year. All else being equal, if an institution earned fewer total points than the previous year, it will receive a smaller proportion of total state funding. Conversely, if an institution received more points than the previous year, all else being equal, it will receive a larger proportion of state funding.

Exhibit 21: Calculating Percent Change in Point Totals, 2016-17 to 2017-18

Point Change:

Chattanooga State Community College

Point Total for 2017-18:		964
Point Total for 2016-17:	-	980
Difference:		-16
Percent Change:		**-1.63%**

Middle Tennessee State University

Point Total for 2017-18:		4,417
Point Total for 2016-17:	-	4,476
Difference:		-59
Percent Change:		**-1.33%**

Source: Source: Tennessee Higher Education Commission, 2015-2020 Outcomes Based Funding Formula, 2017-18 Outcomes Formula Model, https://www.tn.gov/thec/ (accessed July 14, 2017).

Identifying Individual Growth Using Point Totals

The individual appropriation share for each college or university is calculated based on an institution's total point change from the previous year, an institution's appropriation share from the previous year, and an institution's total point growth from the previous year. The total change in points from the previous year is multiplied by the previous year's appropriation share to obtain an unadjusted appropriation share. The unadjusted appropriation share represents how an individual institution increased its own outcome production based on its own three-year average.

Exhibit 22: Change in Appropriation Share Growth by Sector, 2016-17 to 2017-18

Appropriation Share Growth:

Chattanooga State Community College

2016-17 Appropriation Share:	3.37%
2017-18 % Change in Points:	x (1+ -1.63%)
2017-18 Appropriation Share:	**3.31%**
Adjusted for Annual Point Total	
2017-18 Appropriation Share:	3.31%
Total Share Growth:	100.66%
2017-18 Appropriation Share:	**= 3.29%**

Middle Tennessee State University

2016-17 Appropriation Share:	10.43%
Percent Change in Points:	x (1+ -1.33%)
2017-18 Appropriation Share:	**10.29%**
Adjusted for Annual Point Total	
2017-18 Appropriation Share:	10.29%
Total Share Growth:	100.66%
2017-18 Appropriation Share:	**= 10.22%**

Source: Source: Tennessee Higher Education Commission, 2015-20 Outcomes Based Funding Formula, 2017-18 Outcomes Formula Model, https://www.tn.gov/thec/ (accessed July 14, 2017).

As described in the next section, this growth is adjusted to also account for the performance of all other colleges and universities by dividing the unadjusted appropriation share by the total share growth for all colleges and universities to obtain an institution's current share of appropriations.

As shown in Exhibit 22, MTSU's total points of 4,417 in 2017-18 resulted in a 1.33 percent decrease from its 2016-17 appropriation share of 10.43 percent. The resulting unadjusted share of

10.29 percent indicates the 2017-18 appropriation share growth based on MTSU's individual institutional performance.

Identifying Adjusted Growth Compared to All Other Institutions

Allocation shares must also account for outcome production relative to other institutions. When accounting for MTSU's performance relative to other institutions, MTSU's performance (10.29 percent of appropriation shares) is divided by total outcome growth across all colleges and universities (indicated by the 100.66 percent). Once adjusting for individual growth relative to all other institutions' growth, MTSU's shares are adjusted to 10.22 percent of the total appropriation shares for the 2017-18 funding formula.

Exhibit 23 shows how shares of recommended appropriations are calculated into actual dollars. The decrease in shares for MTSU in actual dollars (indicated by the reduction from 10.43 percent to 10.22 percent in state shares, or a difference of 1.98 percent) is calculated in the

Exhibit 23: Using Appropriation Shares to Identify Changes in Formula Recommendation Funding, 2016-17 to 2017-18

Funding Changes:

Chattanooga State Community College

2017-18 Appropriation Share:	3.29%
2016-17 State Appropriation:	x $869,975,500
2016-17 Appropriation:	- $29,315,200
Change in Formula Funding:	**-$665,900**
Total New Funding in 2017-18:	$43,752,900
2017-18 Appropriation Share:	x 3.29%
Share of New Funding:	**$1,440,800**
Change in Formula Funding:	-$665,900
Share of New Funding:	+ $1,440,800
Change in Funding for 2017-18:	**$774,900**
2016-17 Appropriation:	$29,315,200
Change in Funding for 2017-18:	+ $774,900
2017-18 Recommendation:	**$30,090,100**

Funding Changes:

Middle Tennessee State University

2017-18 Appropriation Share:	10.22%
2016-17 State Appropriation:	x $869,975,500
2016-17 Appropriation:	- $90,753,200
Change in Formula Funding:	**-$1,799,100**
Total New Funding in 2017-18:	$43,752,900
2017-18 Appropriation Share:	x 10.22%
Share of New Funding:	**$4,473,700**
Change in Formula Funding:	-$1,799,100
Share of New Funding:	+ $4,473,700
Change in Funding for 2017-18:	**$2,674,600**
2016-17 Appropriation:	$90,753,200
Change in Funding for 2017-18:	+ $2,674,600
2017-18 Recommendation:	**$93,427,800**

Source: Source: Tennessee Higher Education Commission, 2015-20 Outcomes Based Funding Formula, 2017-18 Outcomes Formula Model, https://www.tn.gov/thec/ (accessed July 14, 2017).

formula by multiplying 10.22 percent by the total appropriation amount given to all colleges and universities in 2016-17, less MTSU's share in 2016-17. This function looks as follows:

(10.22% * $869,975,500) - $90,753,200 = -$1,799,100

Thus, MTSU's 1.98 percent in "lost" shares from 2016-17 resulted in a loss of $1,799,100 from its 2017-18 total appropriation share.

It is important to note that even though an institution may "lose" shares in state appropriations from the previous academic year, it may still be recommended a positive amount of appropriations based on the outcomes-based funding formula. As shown in Exhibit 23, the total amount of recommended new funding in the 2017-18 academic year for all of Tennessee's public colleges and universities is $43,752,900, meaning the formula calculates recommended shares based on the Tennessee General Assembly increasing overall higher education spending to public colleges and universities by $43,752,900. Since the formula allocates funds proportionally, and MTSU "lost" 1.98 percent shares of appropriations from 2016-17, $1,799,100 is deducted from its new share of recommended state funding, or 10.22 percent of $43,752,900. The formula for deducted lost shares is as follows:

(10.22% * $43,752,900) -$1,799,100 = $2,674,600

After deducting the lost shares from the recommended new money, MTSU will now receive $2,674,600 of new money under the formula.

Poor individual institutional performance or increased relative performance of other institutions does not always result in a net decrease in funding for a given institution. As seen above, funding is proportional to institutions' appropriation shares. Thus, increases or decreases in state funding will heavily influence the dollar-figure attached to each institution's appropriation share. For example, if overall state funding in 2017-18 did not increase, but higher education was funded at the same level compared to 2016-17, MTSU would have experienced a net decrease of 1.98 percent in its recommended appropriation shares, resulting in a loss of $1,799,100 in 2017-18. However, given the formula's $43.7 million request in new funding for 2017-18, MTSU would not see a net decrease in state appropriations from the previous year despite the 1.98 percent deduction in appropriation shares. Instead, based on the amount of the new funding request in the formula, MTSU would receive a smaller amount of new funding. Thus, increases in overall state funding to higher education may result in poorly performing institutions still receiving a net increase in funding. Decreases in overall state funding to higher education may result in well-performing institutions receiving a larger proportion of a smaller funding pie.

Exhibit 24 shows all changes occurring in the formula for every community college and university in Tennessee from the 2016-17 formula to the 2017-18 formula recommendation. The figures in this exhibit rely on recommended funding as calculated by the outcomes-based funding formula and do not account for what the General Assembly appropriated to higher education for the 2017-18 year. THEC's funding request is typically 67 percent of the formula's calculation. For example, the formula calculated approximately $43 million in new funding for fiscal year 2018. The amount of new funding requested and received by THEC for distribution to colleges and universities, however, was roughly $25.1 million.

In addition, the Tennessee Colleges of Applied Technology, which are primarily funded through a cost and enrollment-based formula, also receive a portion of the total funding recommended through the outcomes-based funding formula. Exhibit 24 focuses on the funding recommendations for community colleges and universities and excludes the portion of funding received by TCATs.

MTSU still received a proportion of new money, which the formula adds on top of the previous year's total appropriation. In 2016-17, MTSU was appropriated $90,753,200. Based on the changes in the formula, MTSU received an increase in recommended funding for 2017-18 of $2,674,600. Adding these two values together results in the formula producing an appropriations recommendation for MTSU of $93,427,800.

Exhibit 24: Formula Recommendation Calculation and Estimated Appropriation Changes by Institution, 2016-17 to 2017-18

					Breakdown of 17-18 Changes based on Formula Recommendations			
	2016-17	2016-17	2017-18	2017-18	2017-18	2017-18	2017-18	Percent Change
	Appropriations	Appropriation Share	Individual Appropriation Share Growth (Product of Previous Share and New Point Total)	Appropriation Share Growth Relative to Other Institutions (Individual Growth/Total Growth)	Outcomes Formula Adjustments (in $)	Share of New Funding	Appropriation	From 16-17 to 17-18
Austin Peay	$40,378,500	4.64%	4.74%	4.71%	$595,700	$2,656,400	$43,034,900	6.58%
East Tennessee	$55,012,800	6.32%	6.39%	6.35%	$223,100	$3,001,100	$58,013,900	5.46%
Middle Tennessee	$90,753,200	10.43%	10.29%	10.22%	($1,799,100)	$2,674,600	$93,427,800	2.95%
Tennessee State	$33,717,900	3.88%	3.87%	3.84%	($280,200)	$1,401,500	$35,119,400	4.16%
Tennessee Tech	$42,671,100	4.90%	4.92%	4.89%	($162,800)	$1,975,000	$44,646,100	4.63%
University of Memphis	$102,440,600	11.78%	11.78%	11.70%	($613,000)	$4,508,100	$106,948,700	4.40%
LGI Subtotal	**$364,974,100**	**41.95%**	**41.99%**	**41.71%**	**($2,036,300)**	**$16,216,700**	**$381,190,800**	**4.44%**
Chattanooga	$29,315,200	3.37%	3.31%	3.29%	($665,900)	$774,900	$30,090,100	2.64%
Cleveland	$9,751,700	1.12%	1.17%	1.16%	$383,300	$893,000	$10,644,700	9.16%
Columbia	$13,970,500	1.61%	1.61%	1.60%	($73,000)	$626,000	$14,596,500	4.48%
Dyersburg	$8,622,500	0.99%	0.99%	0.99%	($41,200)	$390,400	$9,012,900	4.53%
Jackson	$12,395,800	1.42%	1.44%	1.43%	$52,300	$678,300	$13,074,100	5.47%
Motlow	$11,739,900	1.35%	1.41%	1.40%	$458,900	$1,072,400	$12,812,300	9.13%
Nashville	$17,756,500	2.04%	2.15%	2.14%	$846,700	$1,782,300	$19,538,800	10.04%
Northeast	$16,059,900	1.85%	1.92%	1.90%	$511,600	$1,345,000	$17,404,900	8.37%
Pellissippi	$27,349,000	3.14%	3.25%	3.22%	$698,800	$2,109,400	$29,458,400	7.71%
Roane	$19,093,300	2.19%	2.25%	2.23%	$311,100	$1,287,000	$20,380,300	6.74%
Southwest	$26,115,800	3.00%	2.90%	2.88%	($1,094,400)	$164,000	$26,279,800	0.63%
Volunteer	$18,698,700	2.15%	2.21%	2.19%	$373,000	$1,332,100	$20,030,800	7.12%
Walters	$21,912,500	2.52%	2.51%	2.49%	($235,900)	$854,300	$22,766,800	3.90%
CC Subtotal	**$232,781,300**	**26.76%**	**27.11%**	**26.93%**	$1,525,400	**$13,309,100**	**$246,090,400**	**5.72%**
UT Chattanooga	$45,835,300	5.27%	5.39%	5.36%	$757,300	$3,100,600	$48,935,900	6.76%
UT Knoxville	$196,911,900	22.63%	22.78%	22.63%	($38,400)	$9,862,700	$206,774,600	5.01%
UT Martin	$29,472,900	3.39%	3.39%	3.36%	($208,000)	$1,263,800	$30,736,700	4.29%
Subtotal	**$272,220,100**	**31.29%**	**31.56%**	**31.35%**	**$510,900**	**$14,227,100**	**$286,447,200**	**5.23%**
Total Colleges and Universities	**$869,975,500**	**100.00%**	**100.66%**	**100.00%**	**$0**	**$43,752,900**	**$913,728,400**	**5.03%**

Source: Tennessee Higher Education Commission, 2015-20 Outcomes Based Funding Formula, 2017-18 Outcomes Formula, https://www.tn.gov/thec/ (accessed July 19, 2017).

Endnotes

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