



UTILIZATION AND OCCUPANCY STUDY

Division Wide Study for Arlington Public Schools

submitted by
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MKTHINK



+ MKTHINK

JULY 2014

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Table of Contents

01 Introduction & Intent	7
02 High Schools	17
03 Middle Schools	115
04 Elementary Schools	167

- Appendix A - Department Interviews
- Appendix B - Utilization and Occupancy Package
- Appendix C - Software Package Recommendations



Washington-Lee High School
Grimm+Parker Website (photo credit)

01

INTRODUCTION

1 Introduction and Intent

“Arlington Public Schools is a diverse and inclusive school community, committed to academic excellence and integrity. We provide instruction in a caring, safe and healthy learning environment, responsive to each student, in collaboration with families and the community.”

APS Vision

Arlington Public Schools (APS) is a diverse and dynamic school division located across the Potomac River from Washington D.C. Out of Virginia’s 132 school divisions in terms of student population, APS operates the 13th largest school division but is physically one of the smallest in the commonwealth.

As a mission driven organization dedicated to helping every student succeed, APS continually strives to provide the highest quality of education to all students.

Over the past decade APS has dealt with a substantial growth in enrollment and its associated challenges. Many steps have been taken to improve the facilities, including the construction of three new state-of-the-art high schools in the last ten years.

While much has been accomplished over the past decade to accommodate the growing student population there are a number of significant obstacles to ongoing work to address large capacity challenges while maintaining, and even improving, the quality educational experience at all schools within APS.

In order to understand and unravel the constraints of future growth, quantitative analysis is needed to assess the capacity and utilization of each school building and the Arlington Public Schools division as a whole. The resultant data will provide APS leadership and school communities with the detailed information needed to make the best possible planning decisions across the portfolio of real estate and every school in the division. This report contains the outcomes of analysis of four schools within the Arlington Public school division at the time of its publication in July of 2014: three high schools – Wakefield, Washington-Lee, and Yorktown, and one middle school – Swanson.

The report additionally summarizes the strategies and recommendations developed corroboratively between Arlington Public Schools and MKThink that address the growing population against an improved understanding of capacity and utilization at each of the four schools noted above.

ARLINGTON PUBLIC SCHOOLS AT A GLANCE

Arlington Public Schools is a public school division of Arlington County, Virginia. Forbes Magazine named Arlington, VA as one of the top places in the nation to educate one's child in 2007. APS enrollment has grown by 3,782 students since 2008 at an average rate of 3.8% per year. It is currently projected to grow by another 3,300 students by 2018.

It is estimated that:

HIGH SCHOOLS

will grow by 1,007 students in 2018, plus another 1,972 students by 2023

151%
increase by 2023

MIDDLE SCHOOLS

will grow by 1,328 students in 2018, plus another 497 students by 2023

37%
increase by 2023

ELEMENTARY SCHOOLS

will grow by 1,772 students in 2018, plus another 497 students by 2023

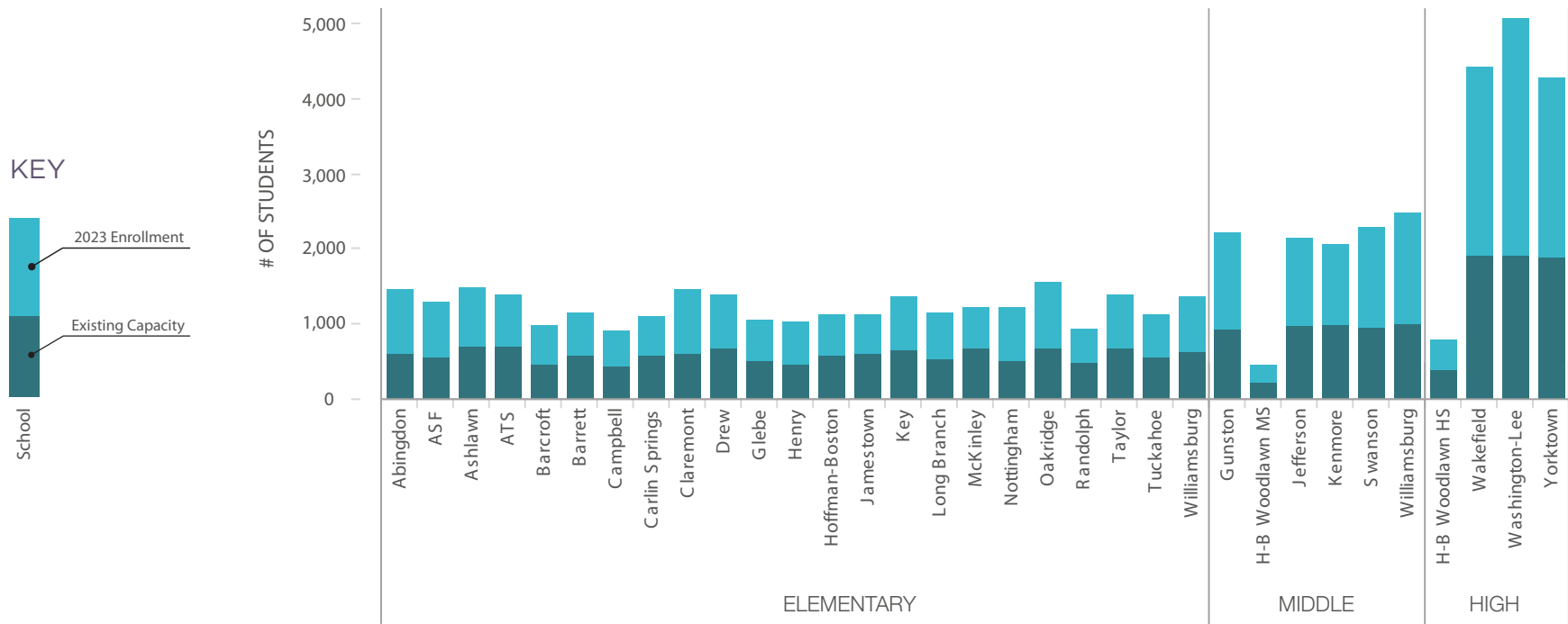
46%
increase by 2023

FOOTNOTE

Current and projected enrollment figures are based on the APS, Facilities Planning Report "Building Capacities and Projected Student Enrollment for School Year 2014-2023."

EXISTING CONDITIONS OF ARLINGTON PUBLIC SCHOOLS

2023 Projected Enrollment vs. Existing Capacity of APS



FOOTNOTE

Current and projected enrollment figures are based on the APS, Facilities Planning Report "Building Capacities and Projected Student Enrollment for School Year 2014-2023."

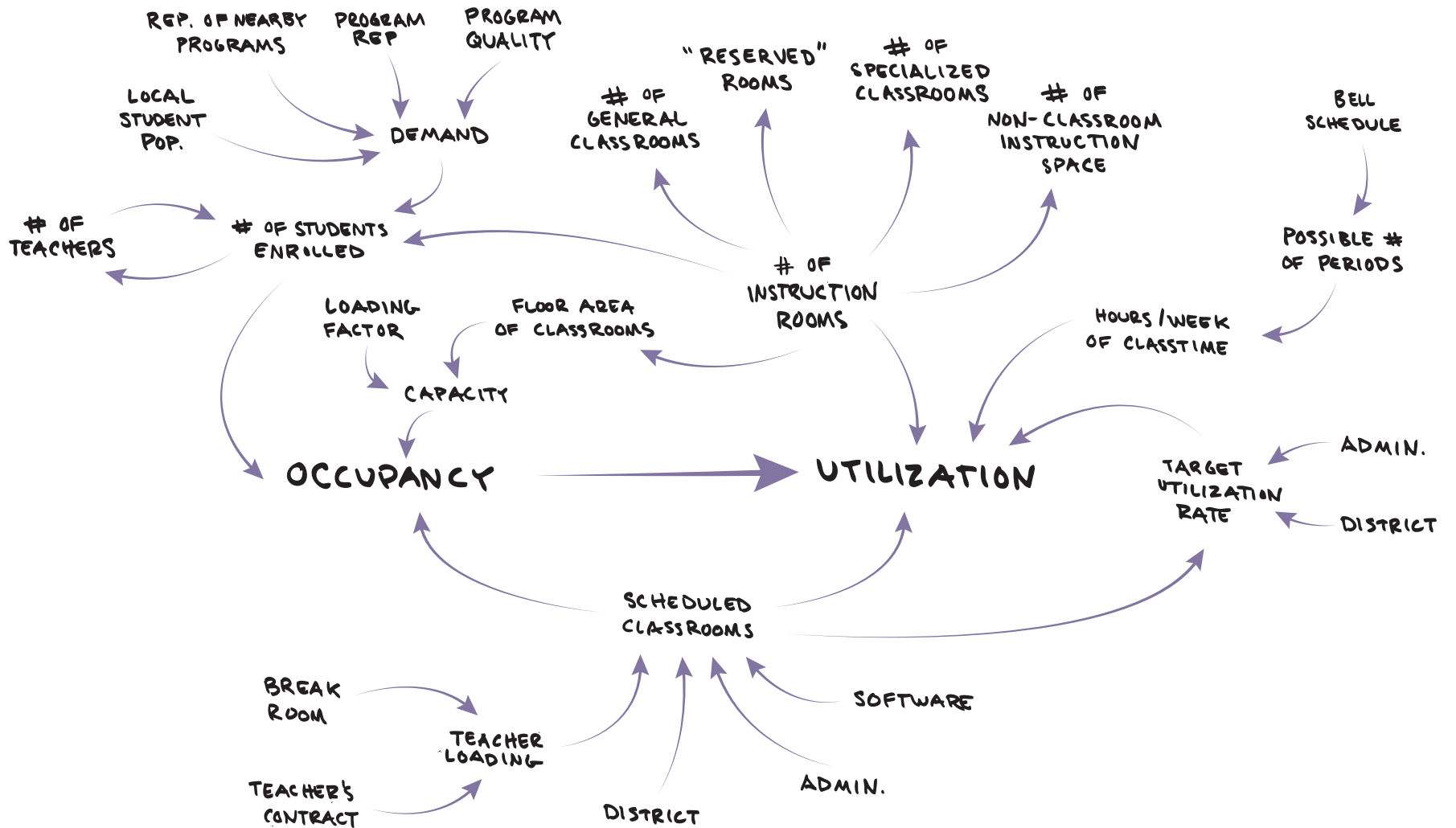
PROJECT OBJECTIVES

MKThink employs rigorous data-driven and evidence-based analytic methods and processes.

Developed at the request of Arlington Public Schools, the facility utilization and occupancy study herein provides a detailed, comprehensive understanding of current capacities and opportunities to capture latent capacity at each of the schools. Existing space use for this report was informed by APS 2013 facilities data, SY 2013-14 master-scheduling information, APS design standards and guidelines, as well as on-site observations.

In addition, programmatic data and qualitative information gathered during interviews with school and division leadership are included in this report. The information captured in this summary will support decision-making with respect to future utilization practices and proposed construction for all existing and new schools across the Arlington Public Schools real estate portfolio.

FACTORS AFFECTING UTILIZATION AND OCCUPANCY



PROJECT APPROACH

The scope of MKThink’s work with Arlington Public Schools includes a facility utilization and occupancy study. A data-driven method employed by MKThink will give APS a comprehensive understanding of the four selected schools’ current capacities and opportunities to capture latent capacity and improved utilization at each of the schools. Thus allowing an growing enrollment within the existing real estate portfolio. Existing space use for this report was informed by last year’s (2013) facilities data, scheduling information, APS design standards and guidelines, as well as on-site investigations.

In addition, quantitative data gathered on-site through interviews with various departments contributed to the final report. This report will provide assistance to APS in making informed decisions regarding the future of all the schools across the division.

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02

HIGH SCHOOLS

An overview of the current High Schools' operations in terms of utilization and occupancy.

2 High Schools

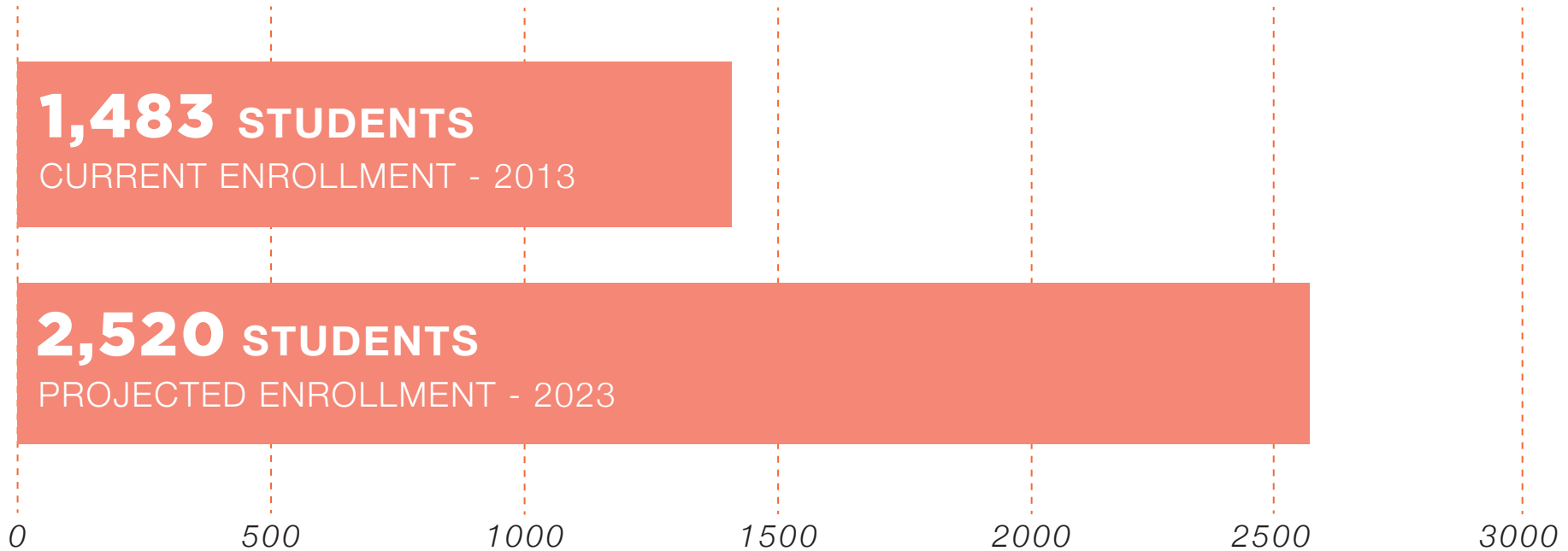
Wakefield	16
Washington-Lee	40
Yorktown	64
Strategies	88

WHS

WAKEFIELD HIGH SCHOOL

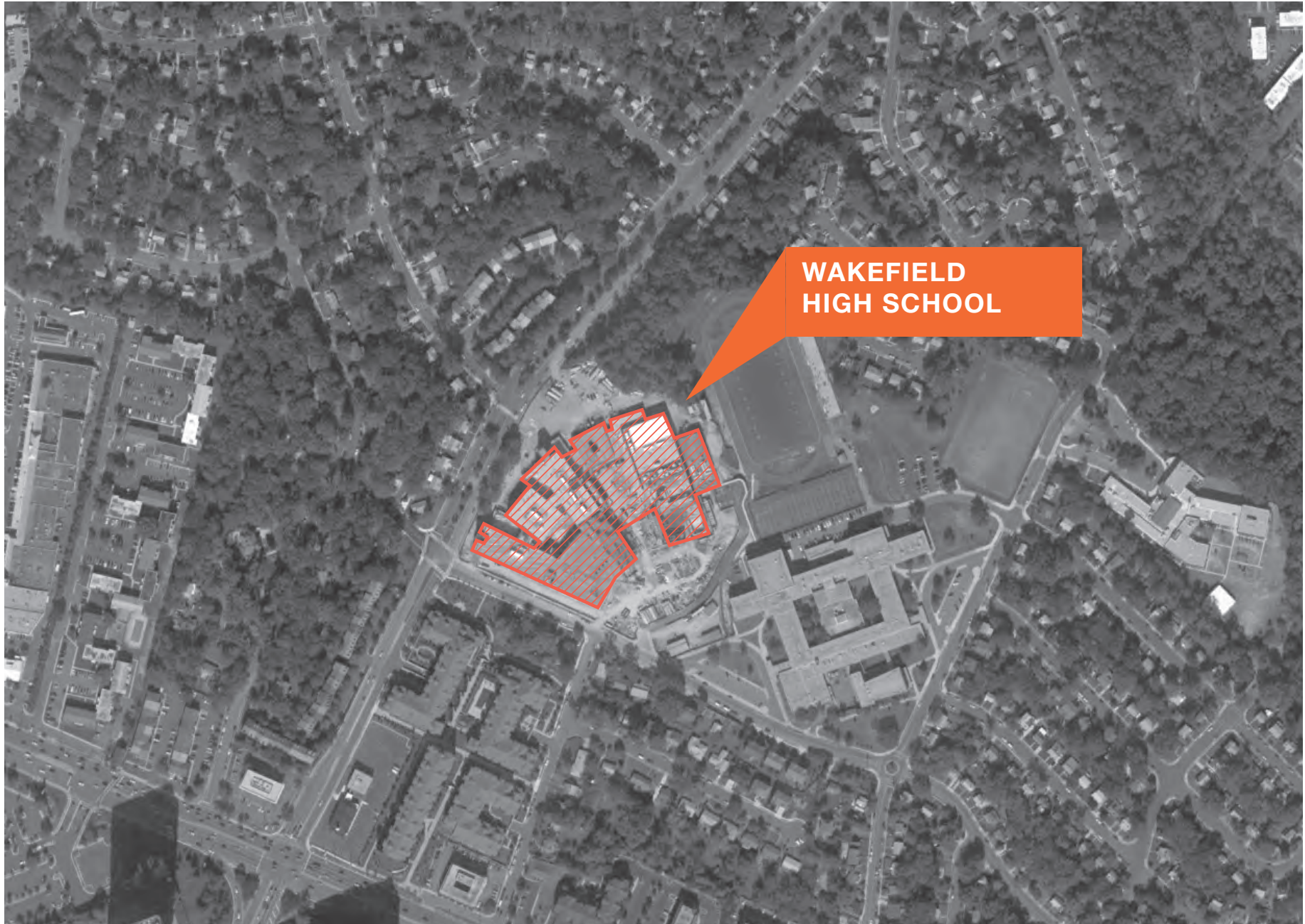
“TO TEACH AND INSPIRE; TO REACH AND TRANSFORM. EVERY STUDENT. EVERY YEAR.”

-WAKEFIELD VISION



FOOTNOTE

Current and projected enrollment figures are based on the APS, Facilities Planning Report “Building Capacities and Projected Student Enrollment for School Year 2014-2023.”



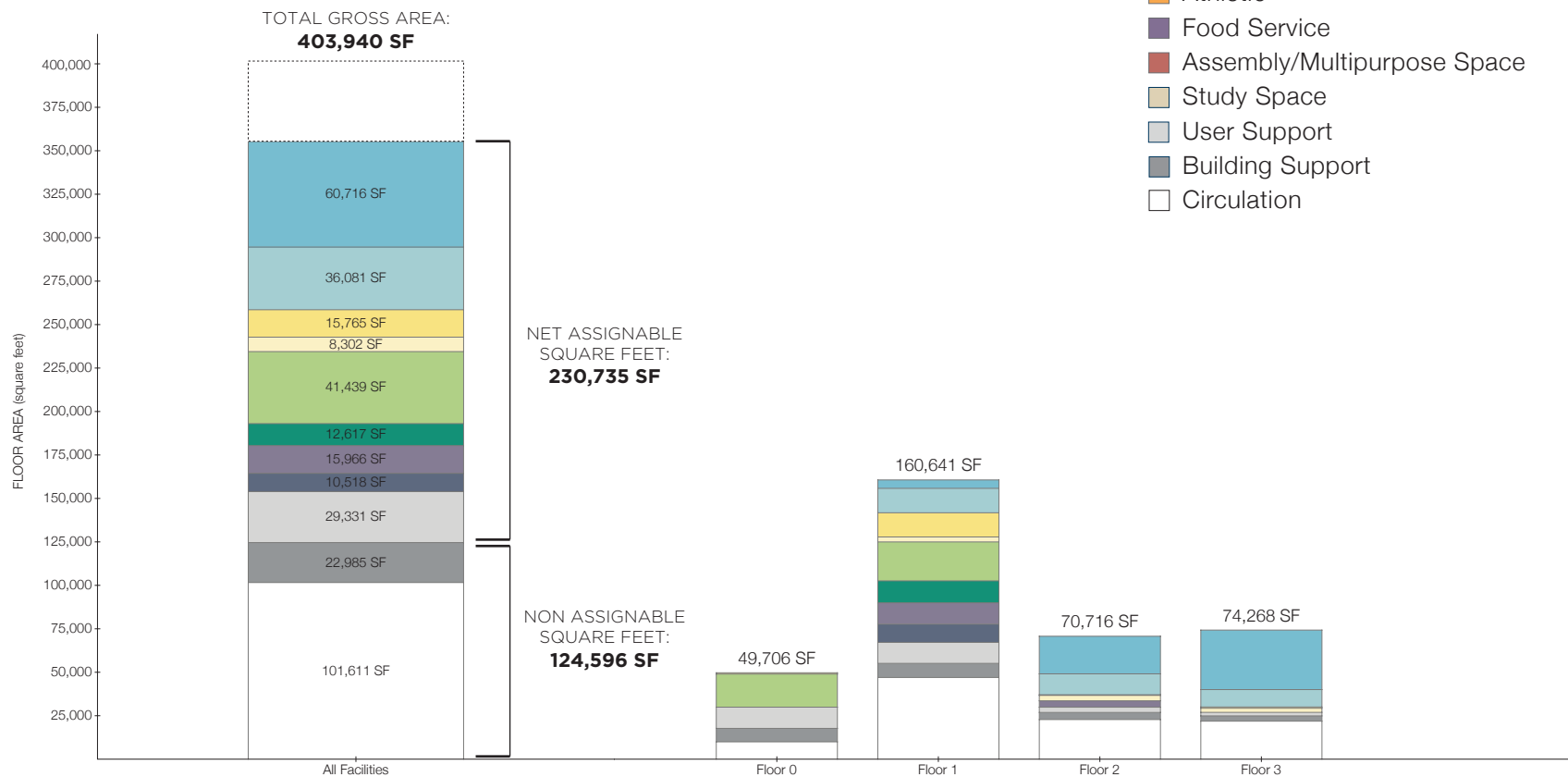
WAKEFIELD
HIGH SCHOOL

EXISTING PROGRAM - WAKEFIELD

Excluding circulation and building support space from the overall total, the Wakefield facilities consist of 230,735 net assignable square feet. Of this, 42% is Instructional space, 18% is Athletic space, and 6.8% is Office space for faculty, staff, and administrators. The top two floors are primarily Instructional space, and the basement is entirely athletic space and associated user support rooms.

KEY

- Structural Area
- General Classroom
- Specialized Classroom
- Office
- Admin/Faculty Support
- Athletic
- Food Service
- Assembly/Multipurpose Space
- Study Space
- User Support
- Building Support
- Circulation



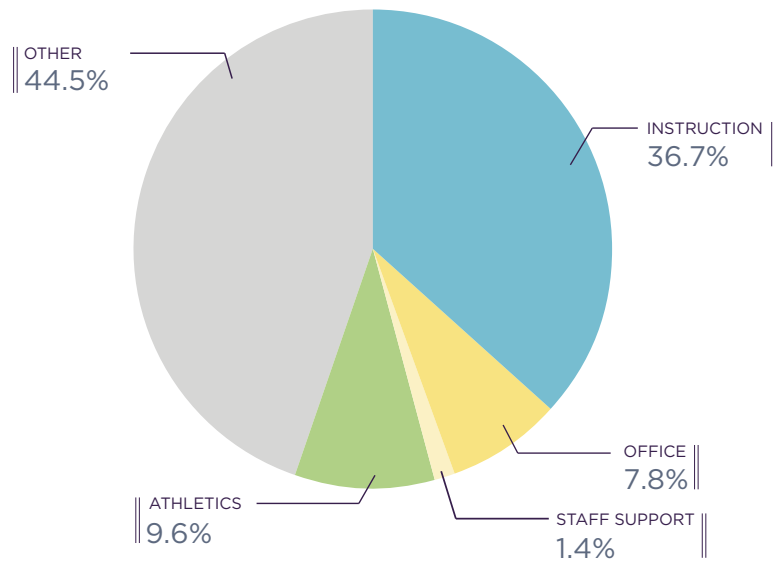
FOOTNOTE

1. Gross square feet figures for Wakefield High School are based on the APS website - Design and Construction Update.

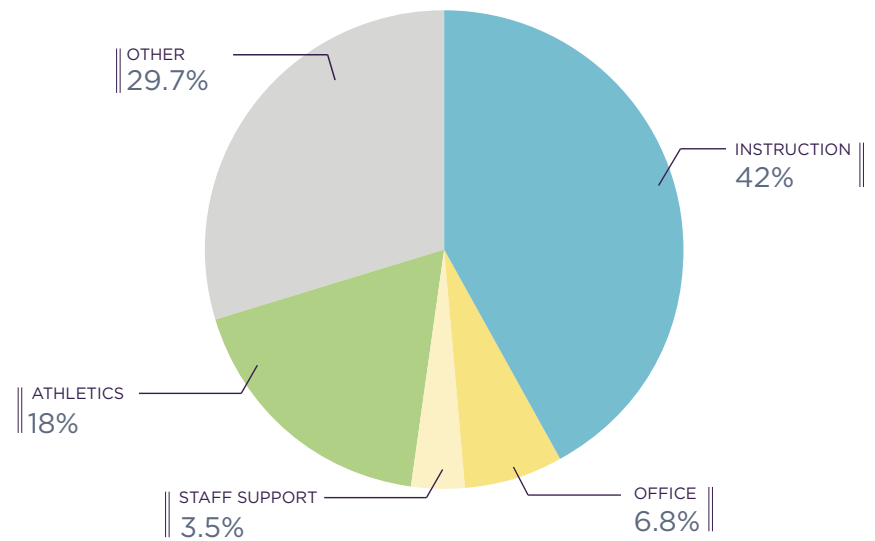
BREAKDOWN BY PROGRAM

Comparison of key program types at a typical school, grades 6-12, and Wakefield High School.

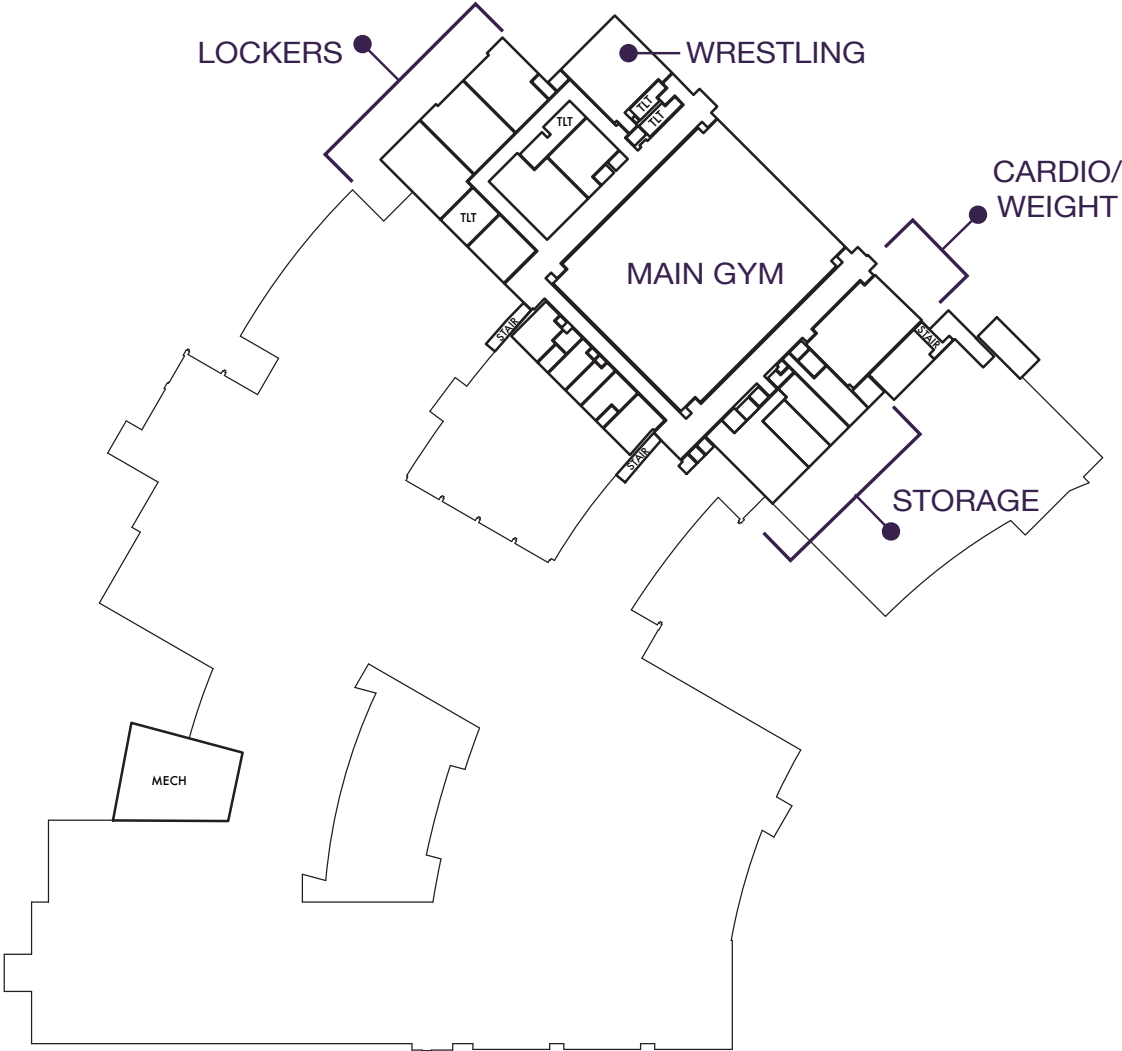
TYPICAL SCHOOL GRADES 6-12



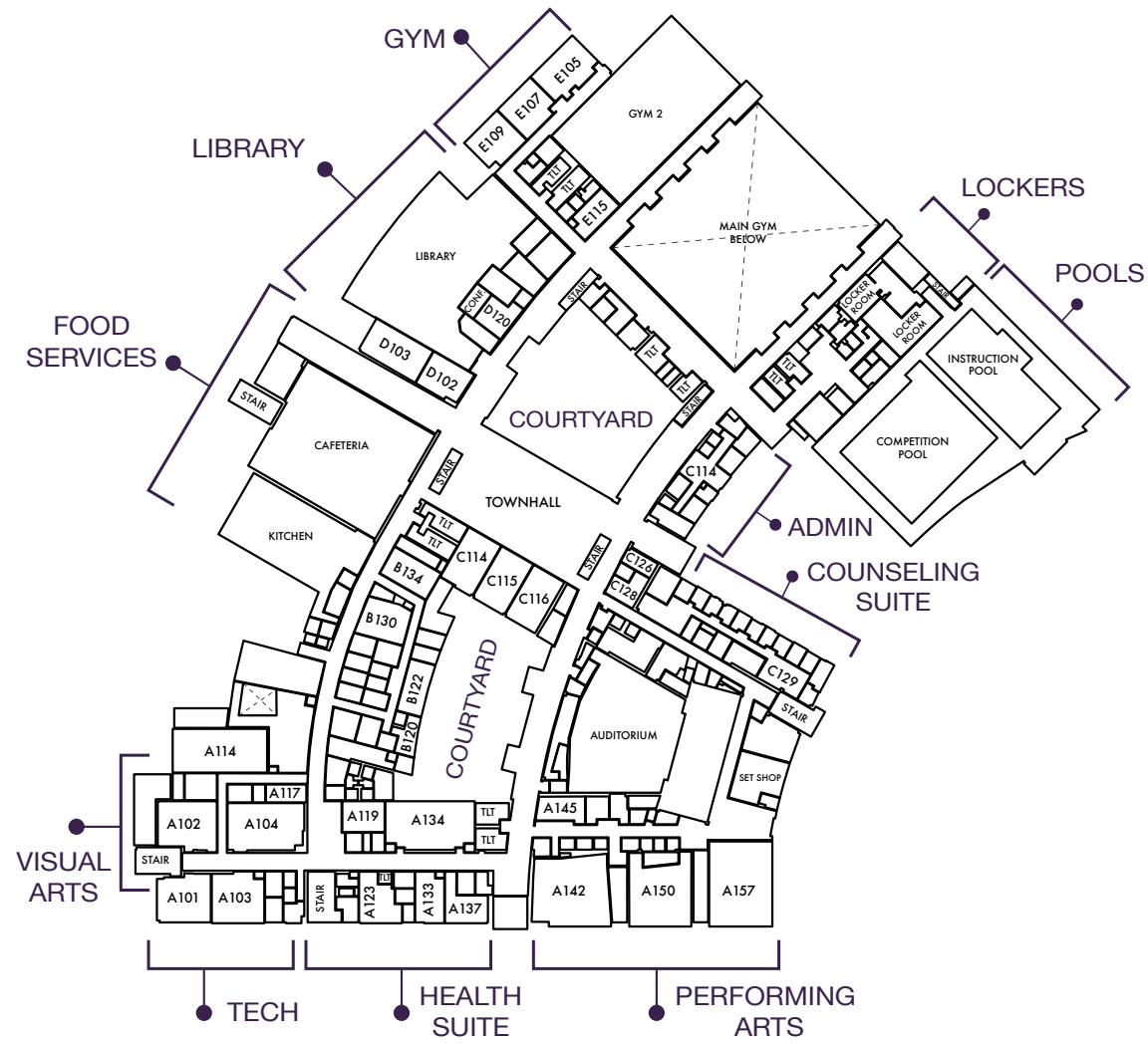
WAKEFIELD HIGH SCHOOL



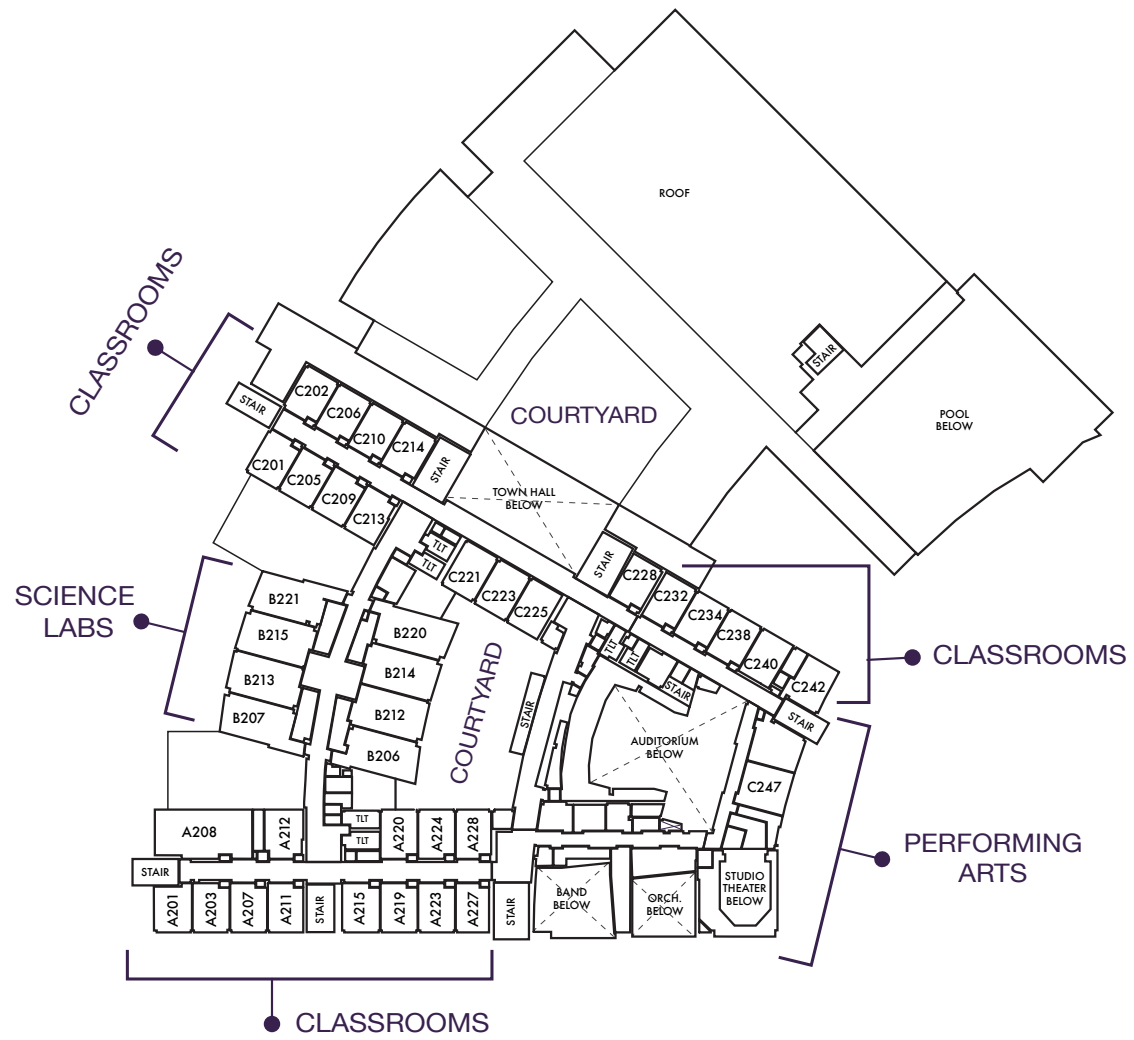
FLOOR PLAN 00



FLOOR PLAN 01



FLOOR PLAN 02



FLOOR PLAN 03





Wakefield High School
bowie | gridley | architect (photo credit)

DEPARTMENT INTERVIEWS

In order to understand the space utilization of Wakefield High School and the occupancy of its classrooms given its schedule, MKThink undertook a series of meetings with school leadership that are key to its operations and success. ¹

HIGHLIGHTS

- WHS is utilized heavily by the community during the week and on weekends, including a church service every Sunday.
- It is a diverse school with a dwindling ESL population due to increasing cost-of-living in Arlington.
- Wakefield has a highly recognized ARTS program.
- Student advisory and academic support is provided during the Warrior Period.
- 300-500 students travel and use the Career Center every day.

FOOTNOTE

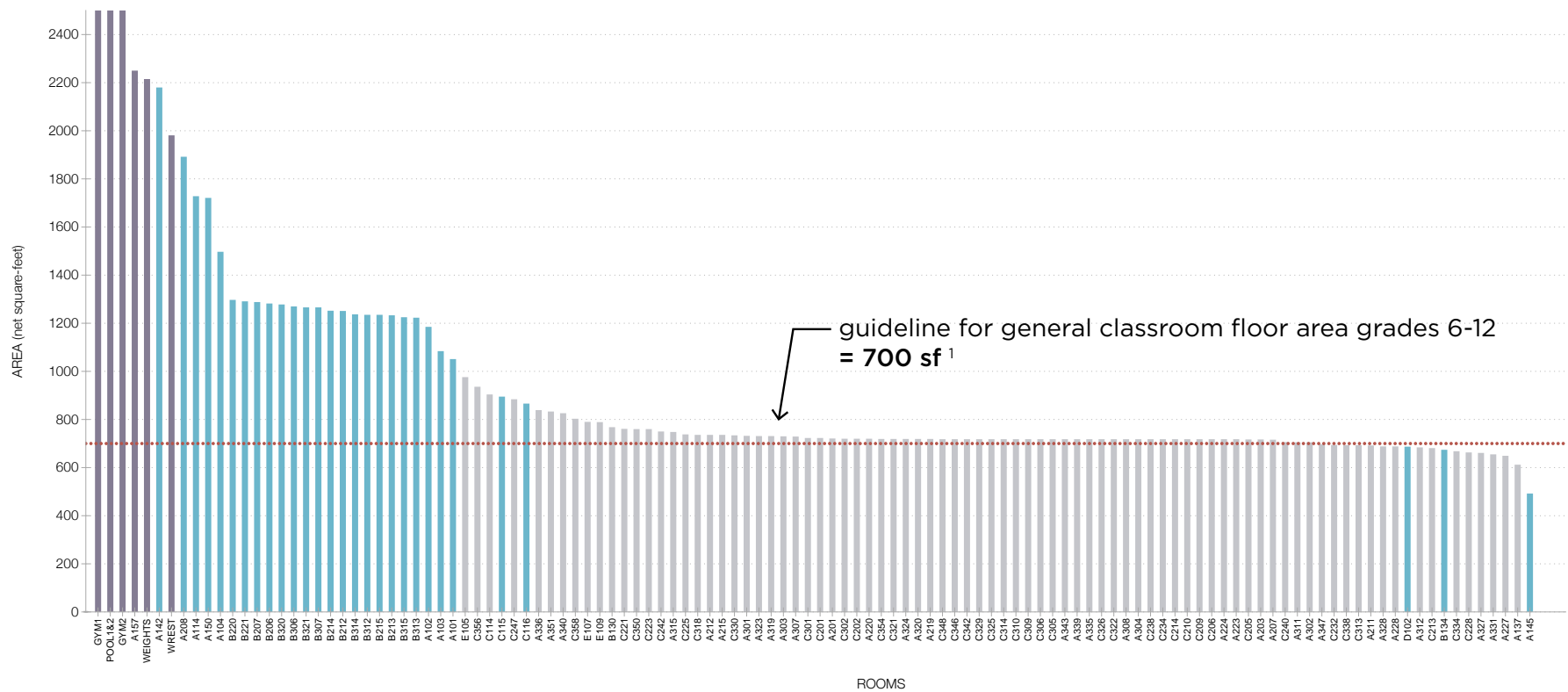
1. Refer to Appendix A for all interviews

INSTRUCTIONAL ROOMS BY FLOOR AREA

Just over 80% (67 out of 83) of General classrooms at Wakefield are within 50 sf of the 700 sf standard outlined by the VA Department of Education (DOE) guidelines for general classrooms grade 6-12¹.

KEY

- General Classroom
[30 ft² per student]
- Specialized Classroom
[40 ft² per student]
[Music - 20 ft² per student]
- Non-Classroom Instruction Space
[125 ft² per student]



FOOTNOTE

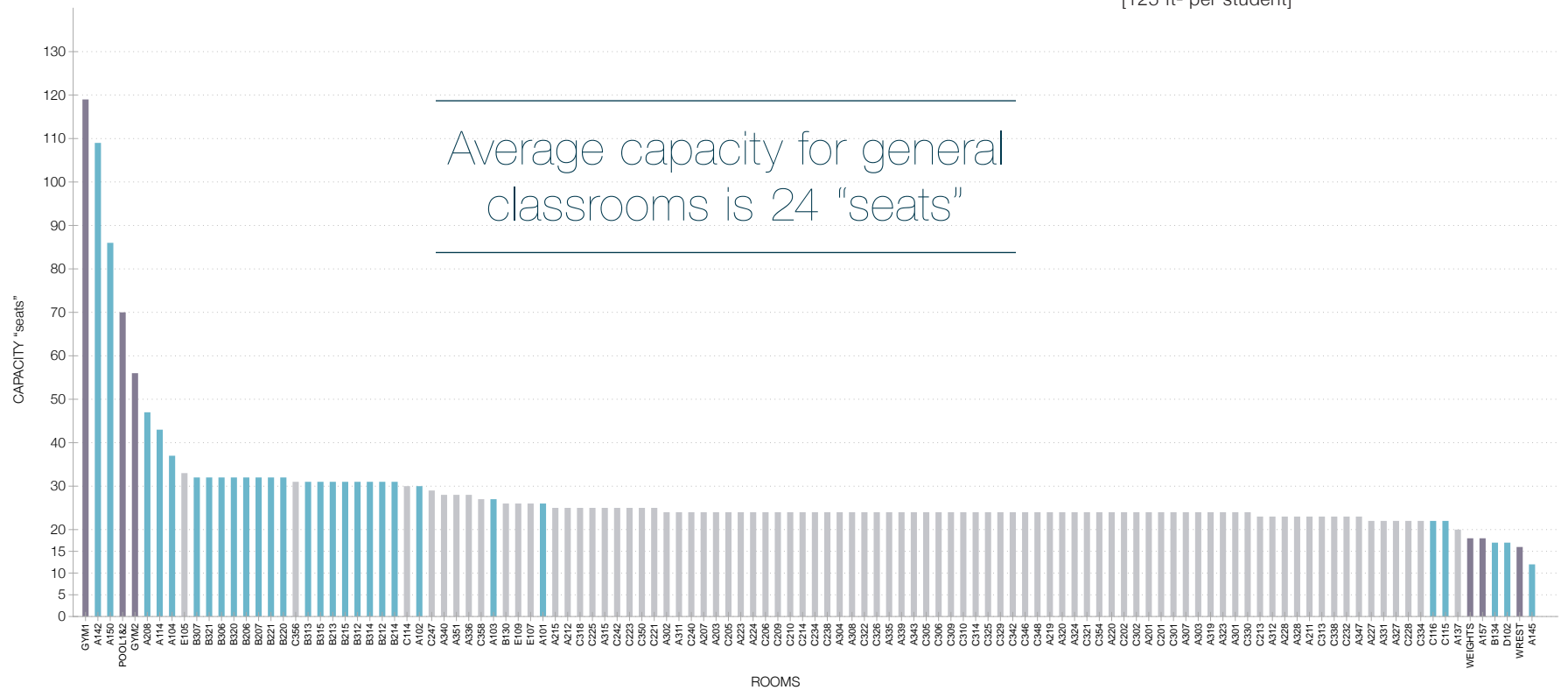
1. General classroom floor area standards for grades 6-12 are based on the Virginia Department of Education "Guidelines for School Facilities" 2013.

INSTRUCTIONAL ROOMS BY CAPACITY

A room's capacity is calculated based on its physical layout and its floor area, using a factor of area (sf) needed per student to engage in the learning activities associated with each room's intended use. See key to the right for the capacity assigned to each room type.

KEY

- General Classroom
[30 ft² per student]
- Specialized Classroom
[40 ft² per student]
[Music - 20 ft² per student]
- Non-Classroom Instruction Space
[125 ft² per student]



FOOTNOTE

General classroom capacity standards are based on common threshold for grades 6-12, Specialized Classrooms and Non-Classroom Instruction Space are based on the Virginia Department of Education "Guidelines for School Facilities" 2013.

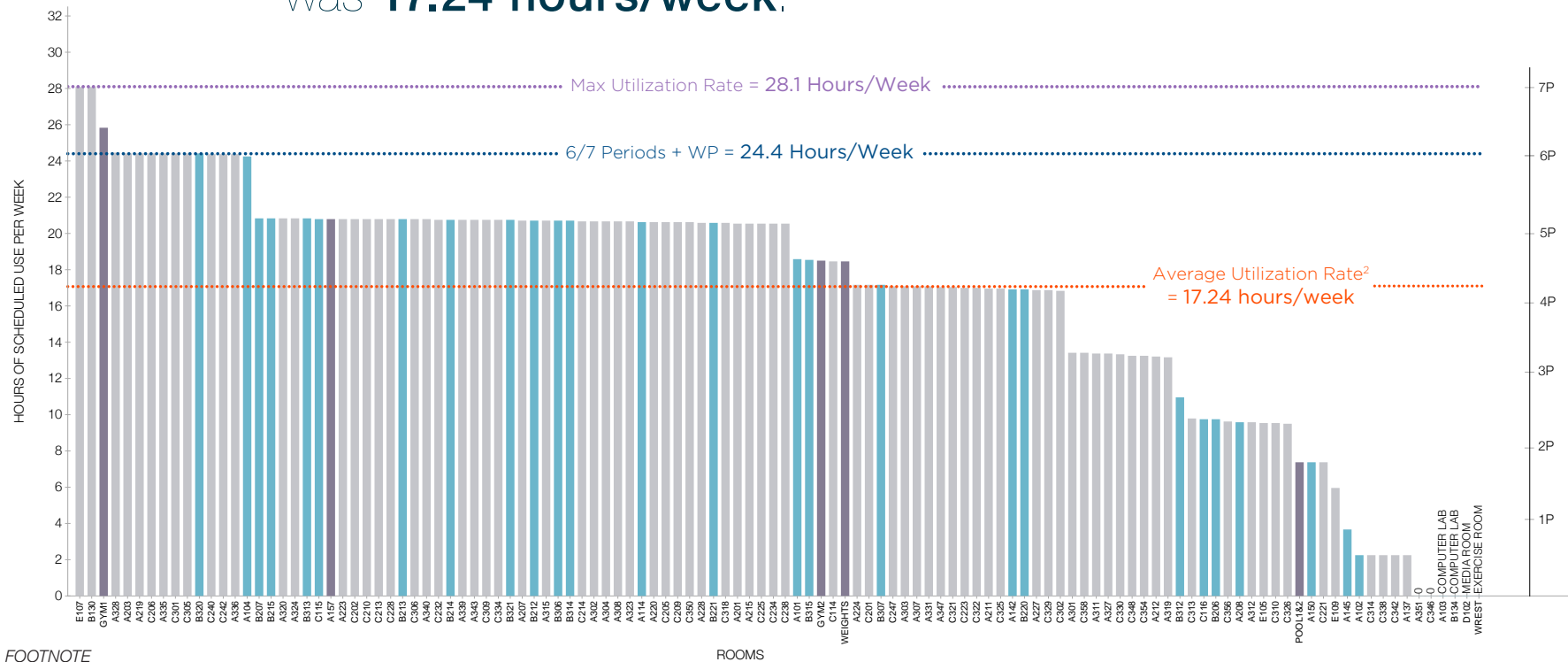
WEEKLY ROOM USE HOURS

During a typical week, the Wakefield bell schedule has 28.1 hours of scheduled room use¹. A total of 17 out of 114 rooms scheduled for instruction use - 14 General Classrooms, 2 Specialized Classrooms, and the Main Gymnasium - were scheduled at or above the target utilization rate of 6 out of 7 instructional periods.

KEY

- General Classroom
- Specialized Classroom
- Non-Classroom Instruction Space

Average utilization rate for fall 2013
was **17.24 hours/week**.



FOOTNOTE

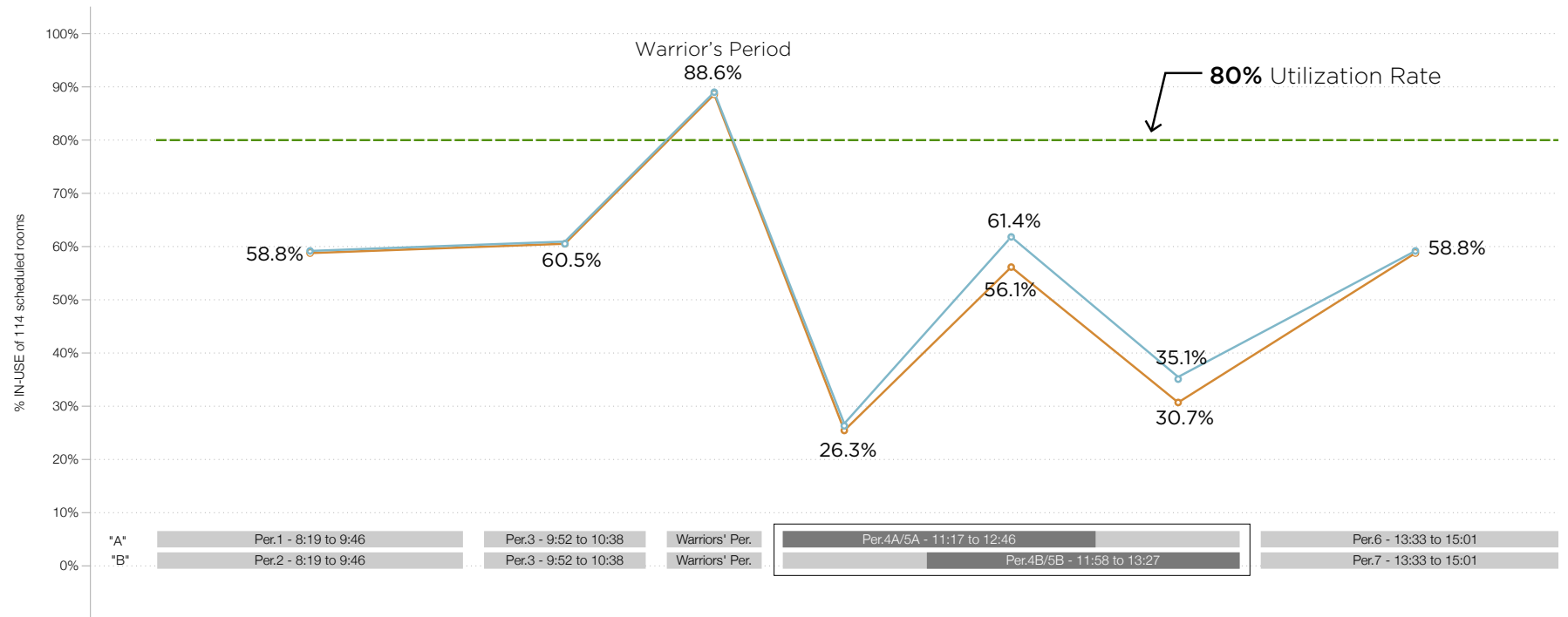
1. "Weekly Room Use Hours" is the amount of time that a room is scheduled for instruction during a 5-day week.
2. Utilization Rates are based on the Fall 2013 schedule.

INSTRUCTIONAL SPACE UTILIZATION BY PERIOD - SEMESTER 1, 2013-14

KEY

Overall utilization patterns from day to day are not significantly impacted by Wakefield’s rotating bell schedules. Throughout the day, however, the percentage of rooms in use at a given time fluctuates between less than 30% (during lunch) to over 80% (during warrior’s period). Outside of lunch times and warrior’s period, the utilization rate is steady between 55% and 60%.

- Room Utilization Rate on “A” Days
- Room Utilization Rate on “B” Days



FOOTNOTE:

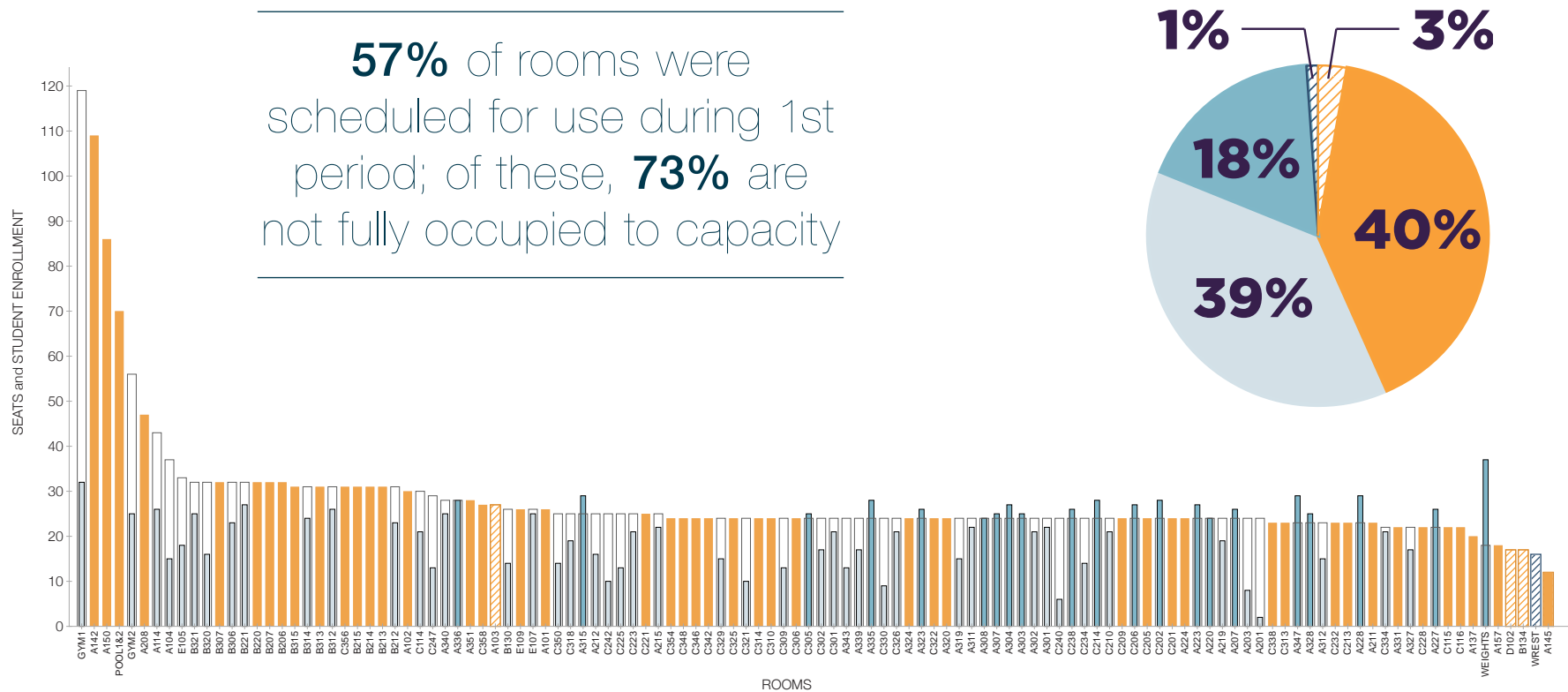
Utilization Rates are based on the set of 144 rooms determined to drive capacity at Wakefield High School. This set includes rooms that both appear in the 2013-14 Master Course Schedule whose primary function is to host classes and rooms that do not appear in the Master Course Schedule, but which have been identified as unscheduled Instructional Space. The 114 room-set does not include the 4 unscheduled “reserved” rooms that are available to all instructors and students on a rotating basis.

1ST PERIOD - OCCUPANCY AND UTILIZATION BY ROOM, FALL 2013-14

KEY

Room utilization and occupancy rates are based on Fall 2013-14 Master Schedule, which includes rooms whose primary function is to host classes, "Reserved" rooms, and Athletic space¹. During 1st period, 57% of rooms were scheduled for use; of these rooms, 21 were at or over capacity, while 10 rooms were less than half full.

- Unscheduled
- Under Occupied
- Occupied to Capacity or Over
- Reserved [Instruction]
- Reserved [Athletics]



FOOTNOTE:

1. Athletic space use patterns are based on the P.E. department's 4th unit schedule, at which time all classes are held indoors due to weather.
2. Charts and floor plans depict a selection of three periods. Refer to Appendix B for a full set of charts that illustrate all eight periods.

1ST PERIOD - FLOOR PLANS

The floor plans below indicate occupancy and utilization by room in terms of the key and corresponding graph to the left.



Floor Plan 00



Floor Plan 01



Floor Plan 02



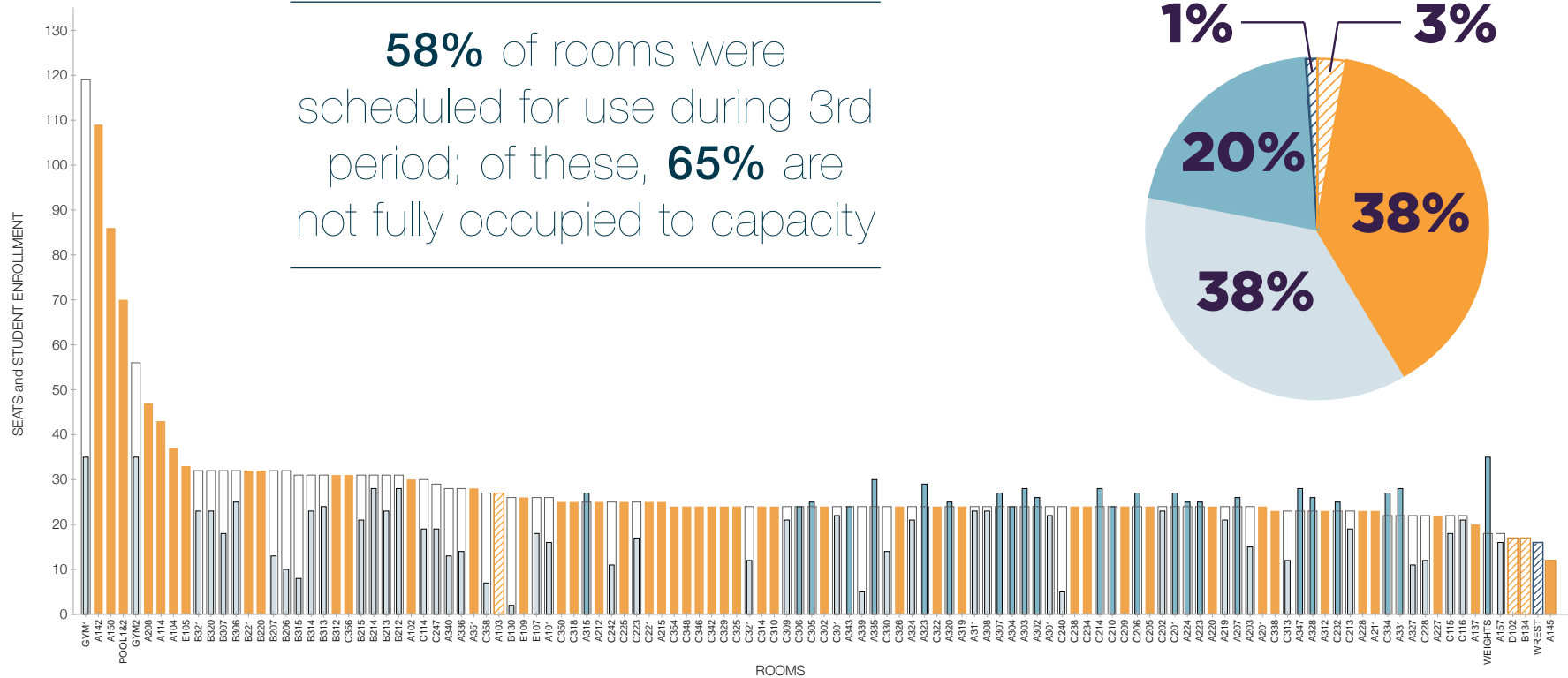
Floor Plan 03

3RD PERIOD - OCCUPANCY AND UTILIZATION BY ROOM, FALL 2013-14

KEY

Room utilization and occupancy rates are based on the Fall 2013-14 Master Schedule, which includes rooms whose primary function is to host classes, "Reserved" rooms, and Athletic space¹. During 3rd period, 58% of rooms were scheduled for use; of these rooms, 24 were at or over capacity, while 10 rooms were less than half full.

- Unscheduled
- Under Occupied
- Occupied to Capacity or Over
- Reserved [Instruction]
- Reserved [Athletics]



FOOTNOTE:

1. Athletic space use patterns are based on the P.E. department's 4th unit schedule, at which time all classes are held indoors due to weather.
2. Charts and floor plans depict a selection of three periods. Refer to Appendix B for a full set of charts that illustrate all eight periods.

3RD PERIOD - FLOOR PLANS

The floor plans below indicate occupancy and utilization by room in terms of the key and corresponding graph to the left.



Floor Plan 00



Floor Plan 01



Floor Plan 02



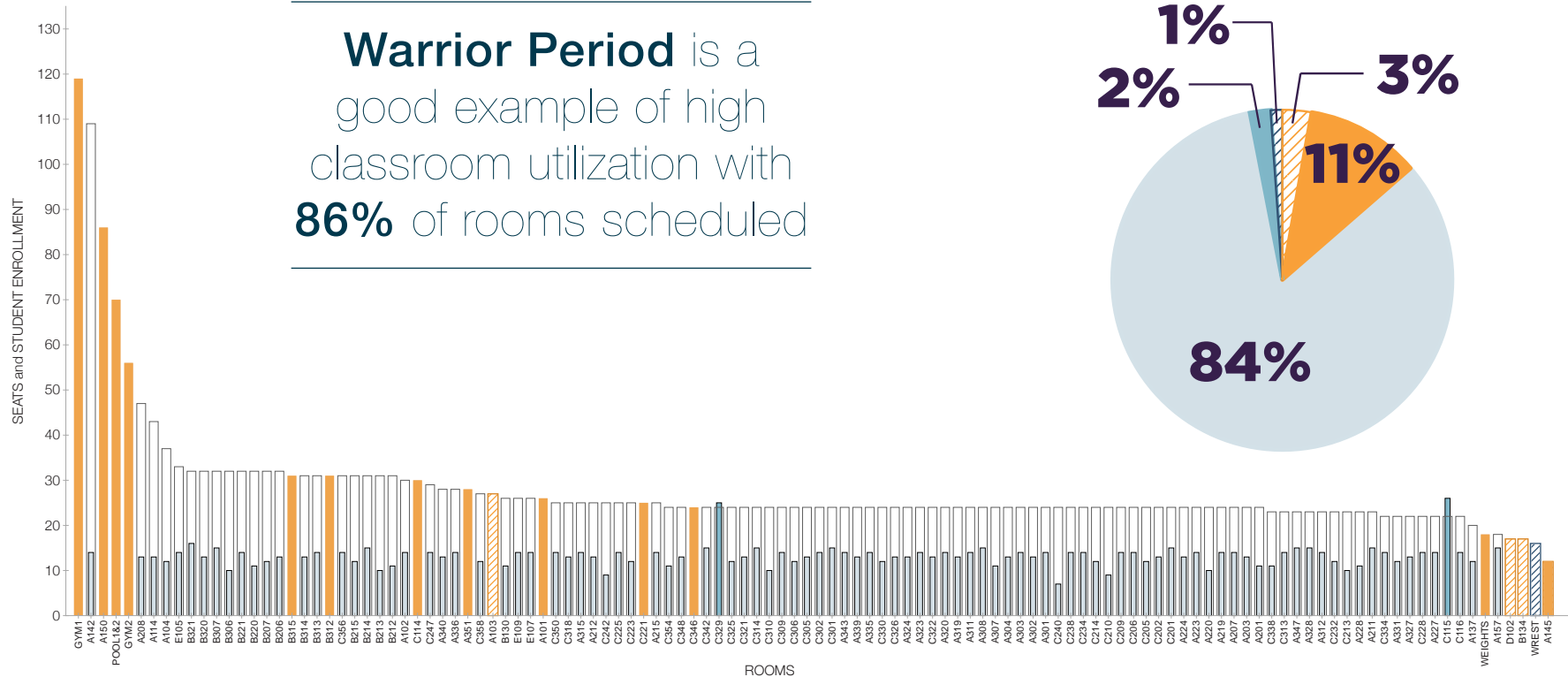
Floor Plan 03

WARRIOR PERIOD - SCHEDULED OCCUPANCY BY ROOM, FALL 2013-14

Room utilization and occupancy rates are based on the Fall 2013-14 Master Schedule, which includes rooms whose primary function is to host classes, "Reserved" rooms, and Athletic space¹. During warrior period, 86% of rooms were scheduled for use; of these rooms, 36 were less than half full.

KEY

- Unscheduled
- Under Occupied
- Occupied to Capacity or Over
- Reserved [Instruction]
- Reserved [Athletics]



FOOTNOTE:

1. Athletic space use patterns are based on the P.E. department's 4th unit schedule, at which time all classes are held indoors due to weather.
2. Charts and floor plans depict a selection of three periods. Refer to Appendix B for a full set of charts that illustrate all eight periods.

WARRIOR PERIOD - FLOOR PLANS

The floor plans below indicate occupancy and utilization by room in terms of the key and corresponding graph to the left.



Floor Plan 00



Floor Plan 01



Floor Plan 02



Floor Plan 03

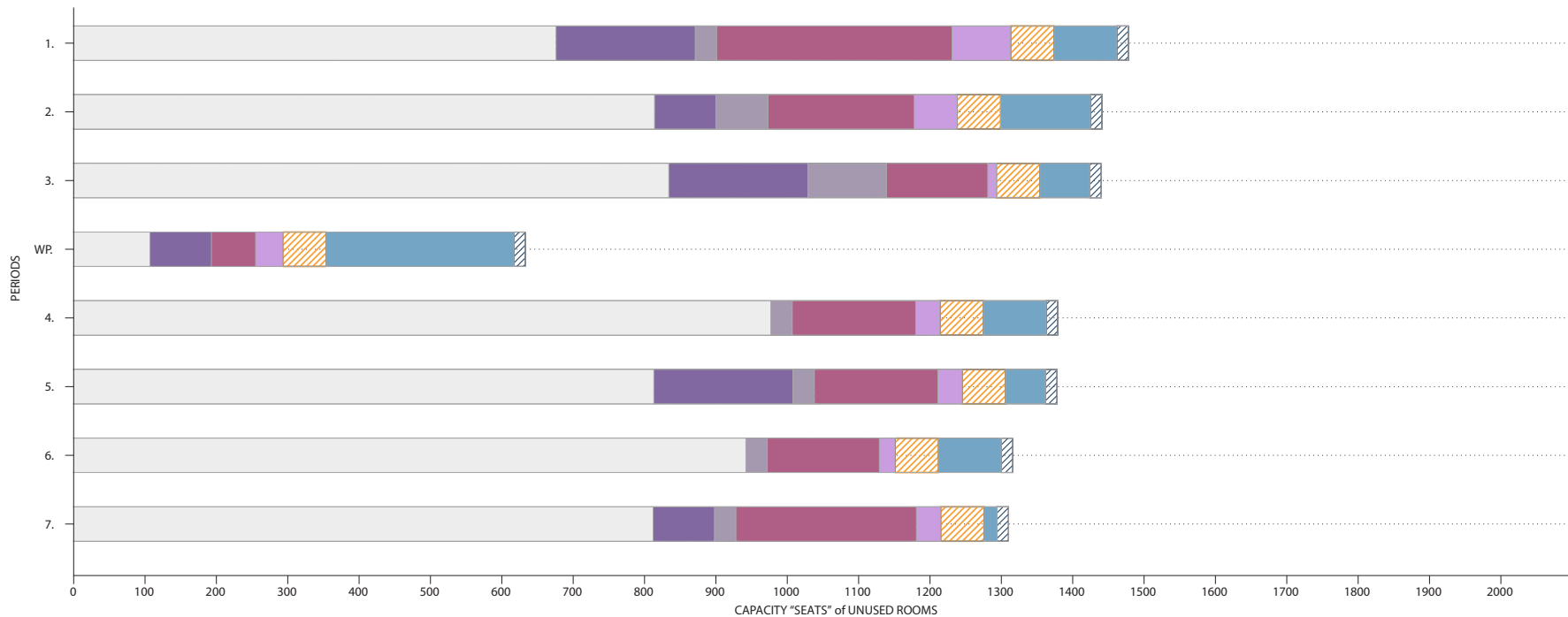
CAPACITY OF UNSCHEDULED ROOMS BY PERIOD AND TYPE

Every instructional period had unused general classroom space, as well as unused Science labs, Computer labs, Visual Art classrooms, and Athletics space. Performing Art classrooms were available all but two instructional periods.

Of the specialized room types, only **Performing Art** classrooms did not have available space all 7 periods.

KEY

- General Classroom
- Performing Art
- Visual Art
- Science Lab
- Computer Lab
- ▨ Reserve [Academic]
- Athletic
- ▨ Reserved [Athletic]

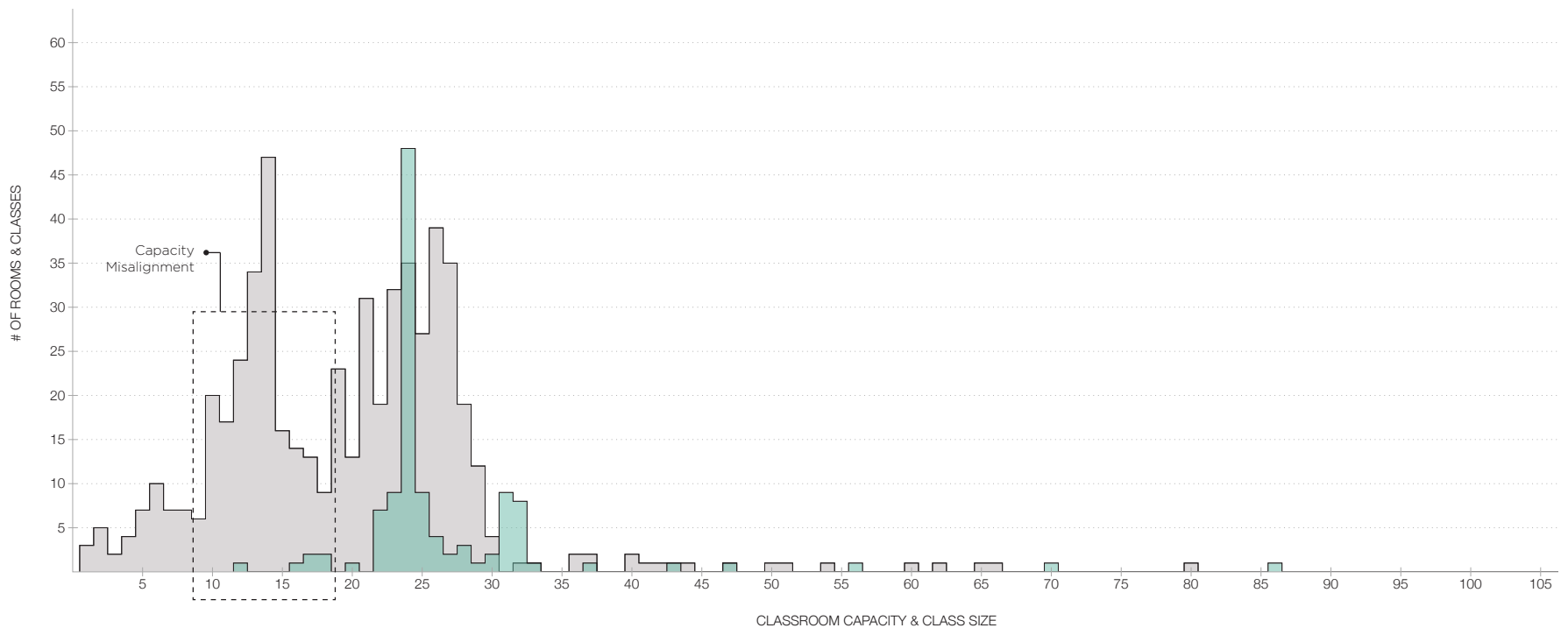


INSTRUCTIONAL SPACES - FREQUENCY BY CAPACITY AND SIZE

KEY

The general classroom inventory at Wakefield has an average capacity of 24 “seats.”¹ The majority of classes are accommodated by this inventory, but classes on the small or large end of the range do not have optimally sized facilities in which to be scheduled. Conversely, the capacity of specialized classrooms is 70% higher than their class enrollment, resulting in a misalignment of capacity of specialized classrooms and their enrollment. It is important to remember that speciality rooms have constraints and properties that make them more difficult to realign.

- # of Classes by Class Enrollment
- # of Rooms by Loading Capacity



FOOTNOTE:

1. Average capacity of 24 “seats” is based on scheduling data collected from the 2013-14 Master Course Schedule

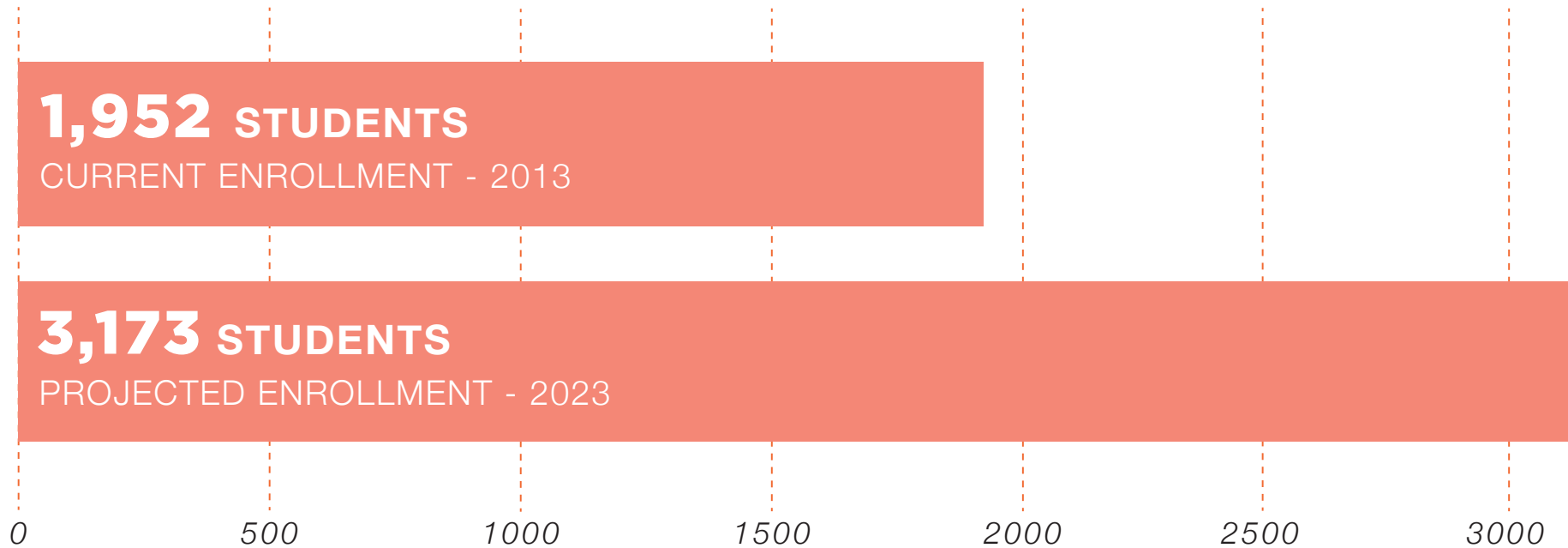
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W-L

WASHINGTON LEE HIGH SCHOOL

“WASHINGTON-LEE HIGH SCHOOL CHALLENGES ALL STUDENTS TO STRIVE FOR THE BEST, TO BECOME LIFE-LONG LEARNERS, AND TO BECOME SUCCESSFUL, ACTIVE MEMBERS OF THE GLOBAL COMMUNITY...”

-WASHINGTON-LEE VISION



FOOTNOTE

Current and projected enrollment figures are based on the APS, Facilities Planning Report “Building Capacities and Projected Student Enrollment for School Year 2014-2023”



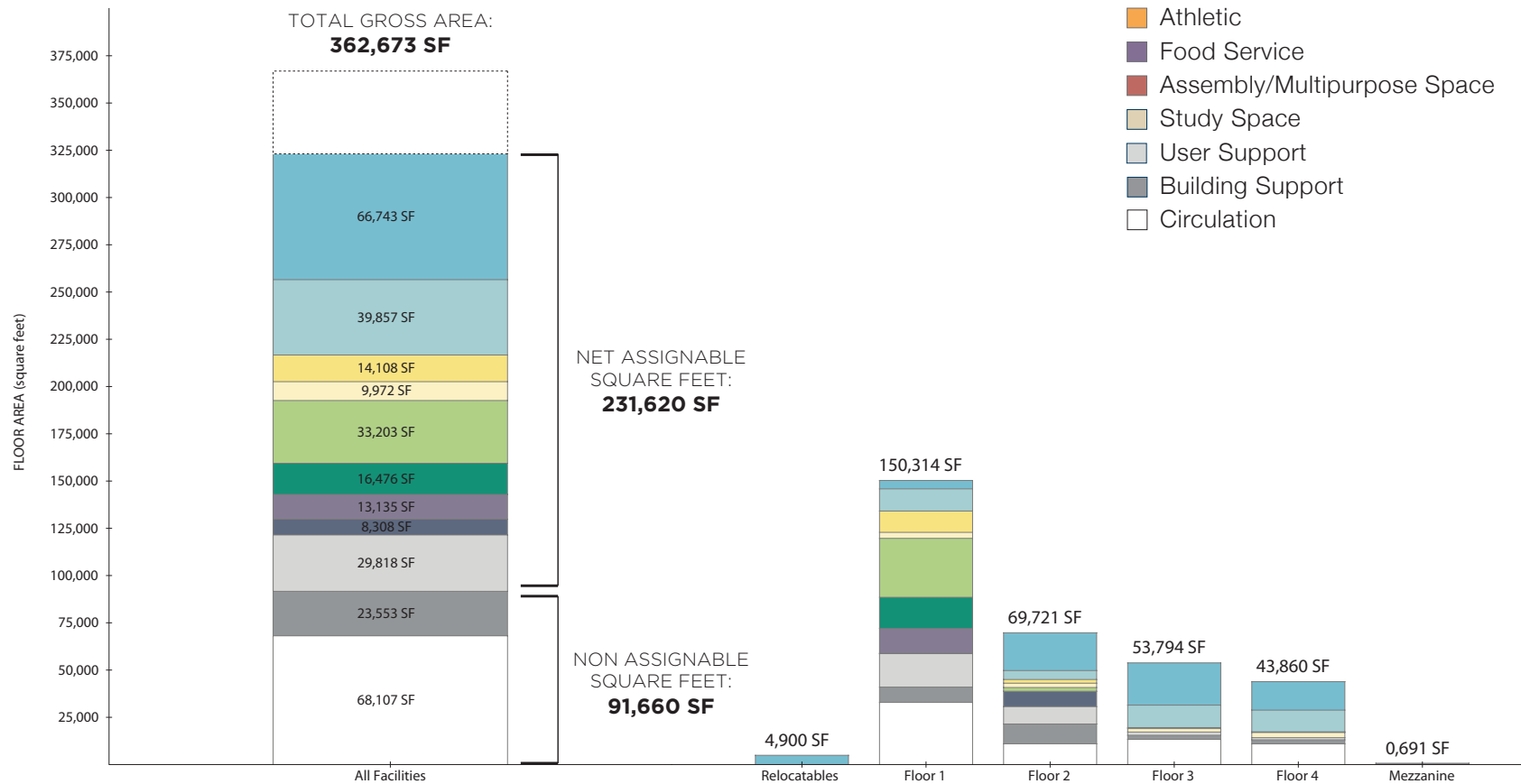
WASHINGTON-LEE
HIGH SCHOOL

EXISTING PROGRAM - WASHINGTON-LEE

KEY

Excluding circulation and building support space from the overall total, Washington-Lee facilities consist of 231,620 net assignable square feet. Of this, 46% is Instructional space, 14.3% is Athletic space, and 6.1% is Office space for faculty, staff, and administrators. The 7 relocatable structures on site at Washington-Lee increase the school Instructional space by 4.8%.

- Structural Area
- General Classroom
- Specialized Classroom
- Office
- Admin/Faculty Support
- Athletic
- Food Service
- Assembly/Multipurpose Space
- Study Space
- User Support
- Building Support
- Circulation



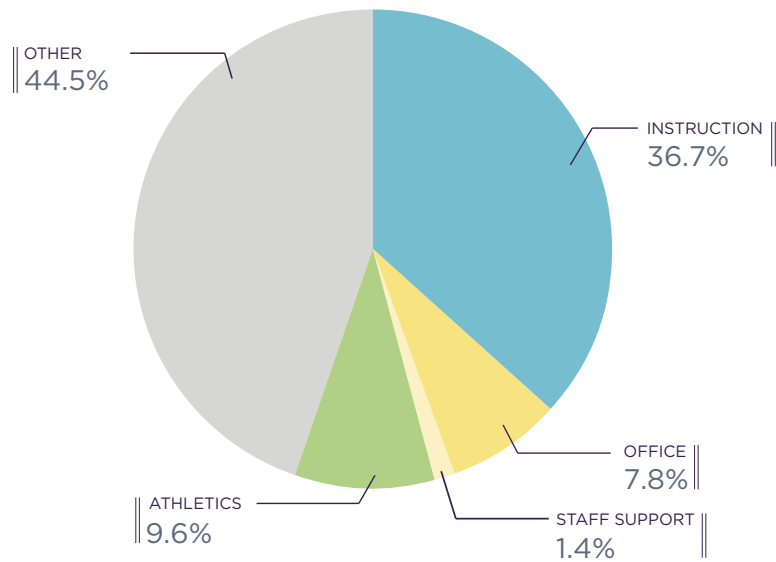
FOOTNOTE

1. Gross square feet figures for Washington-Lee High School are based on APS website - Design and Construction Update.

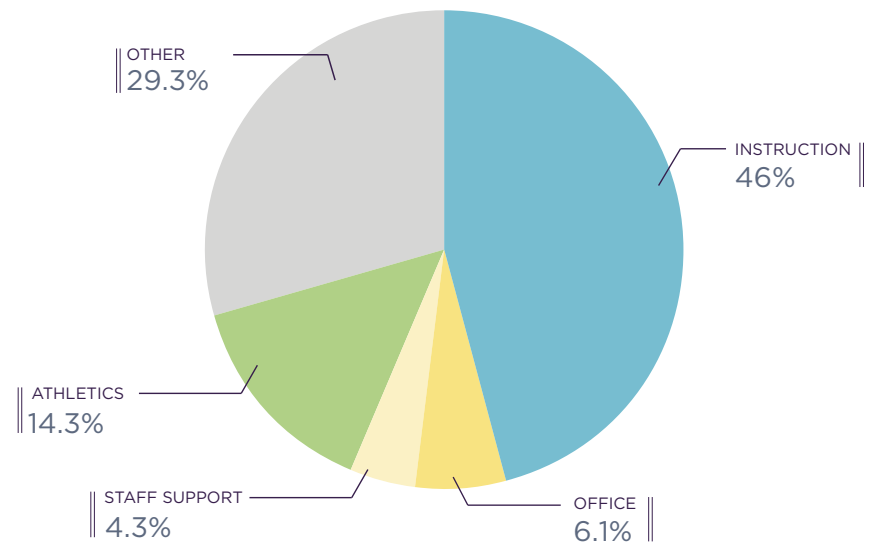
BREAKDOWN BY PROGRAM

Comparison of key program types at a typical school, grades 6-12, and Washington-Lee High School.

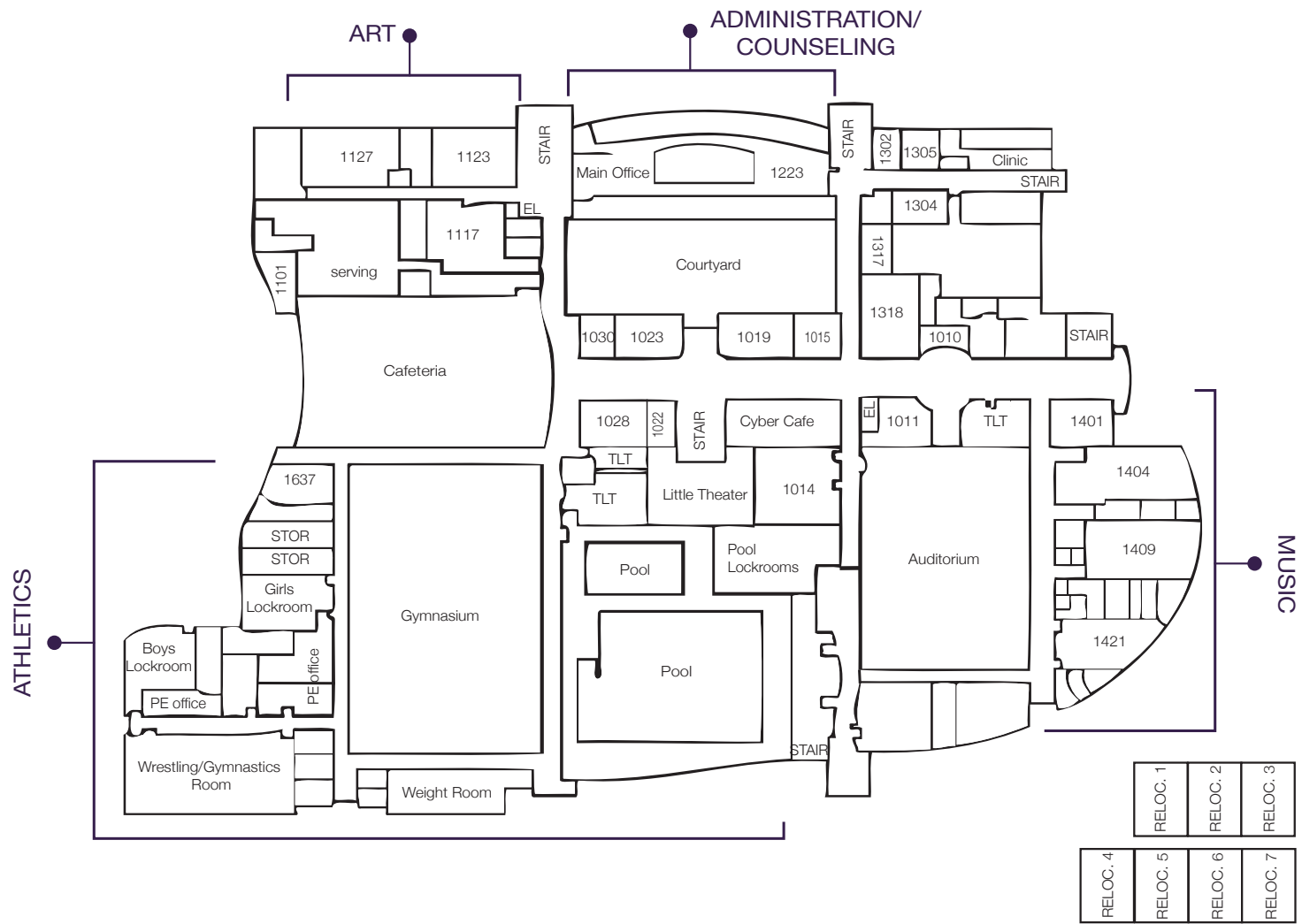
TYPICAL SCHOOL GRADES 6-12



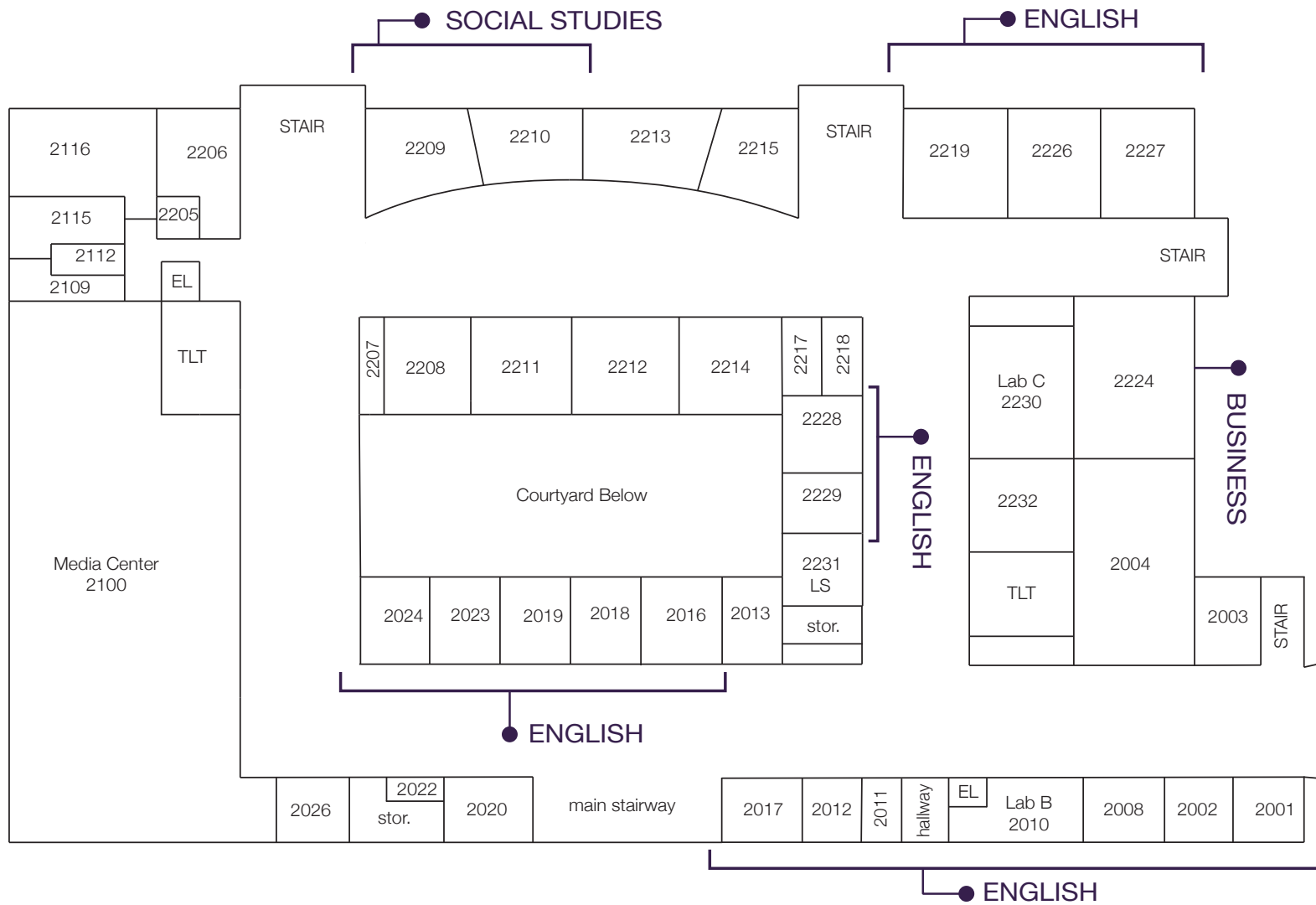
WASHINGTON-LEE HIGH SCHOOL



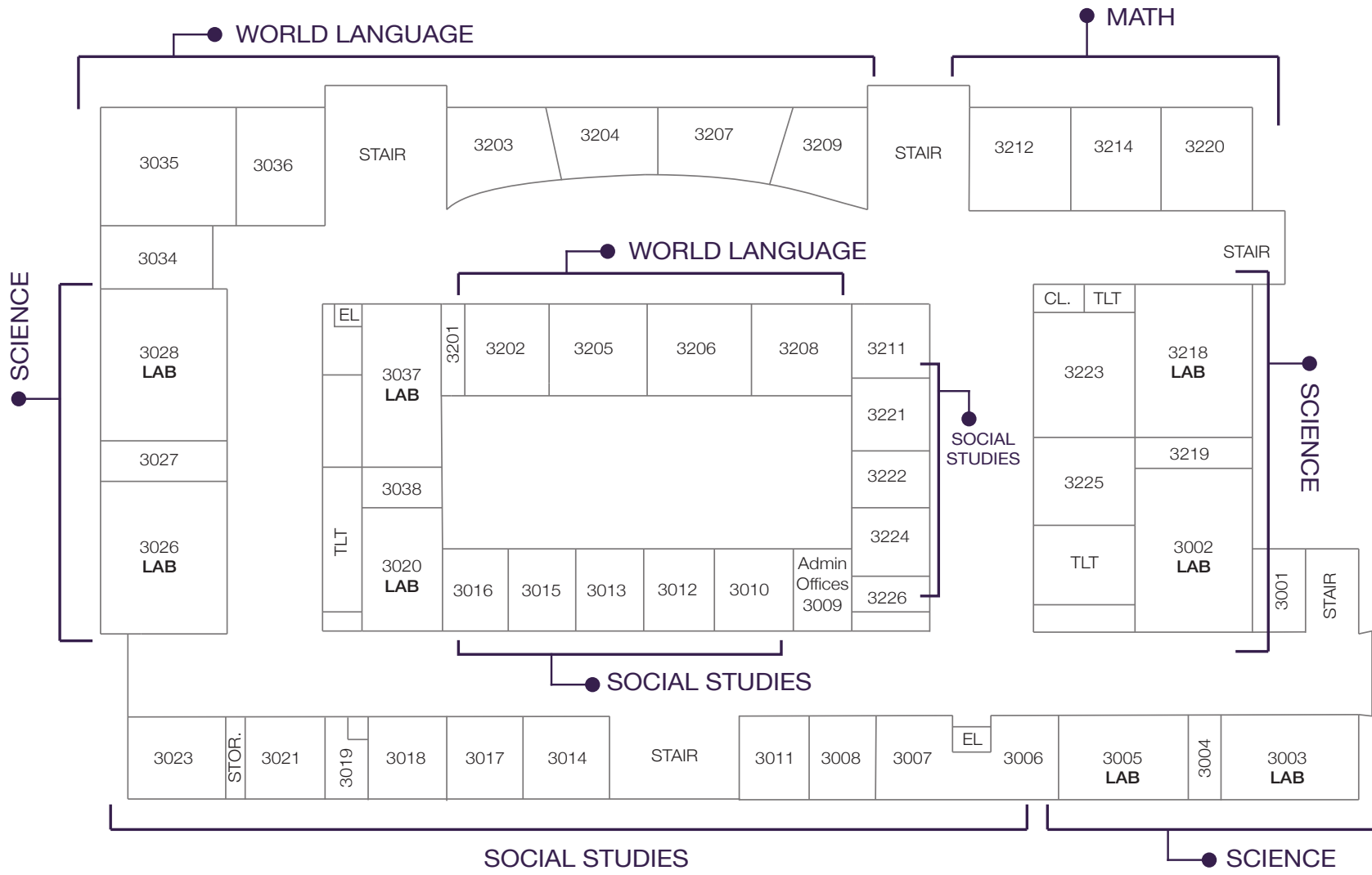
FLOOR PLAN 01



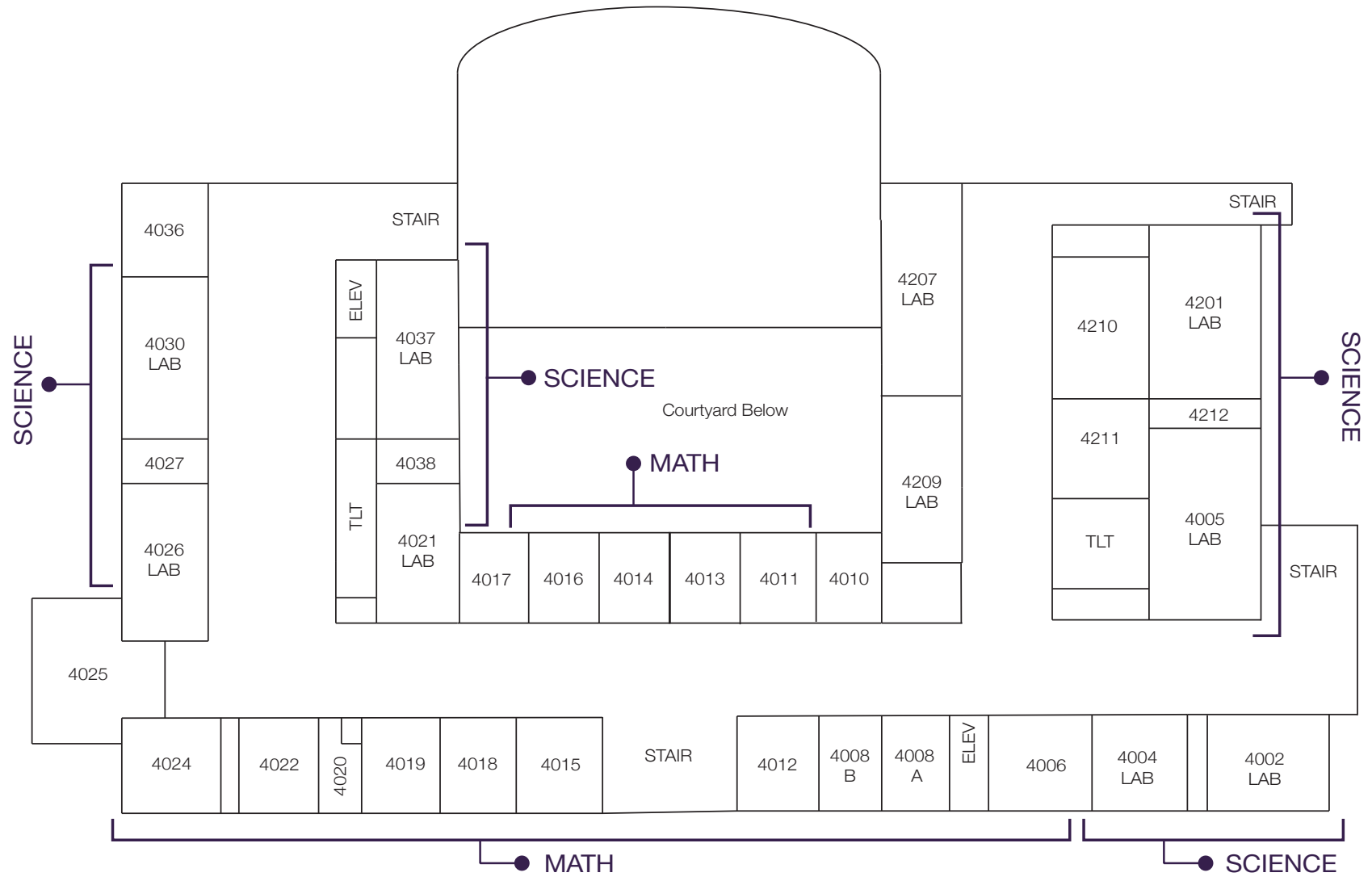
FLOOR PLAN 02



FLOOR PLAN 03



FLOOR PLAN 04





Washington-Lee High School
Grimm+Parker (photo credit)

DEPARTMENT INTERVIEWS

In order to understand the space utilization of Washington-Lee High School and the occupancy of its classrooms given its schedule, MKThink undertook a series of meetings with school leadership that are key to its operations and success. ¹

HIGHLIGHTS

- W-L is heavily utilized by the local community as well as the school division, outside of regular school use.
- It is a diverse school with a large ESL population.
- There currently is no central scheduling function for free classrooms. They are used for teacher prep, common planning time, lunch labs, and various meetings.
- There is no space within the existing facility to assemble the entire school.
- The school struggles to find space during testing periods including Advanced Placement (AP) and International Baccalaureate (IB).

FOOTNOTE

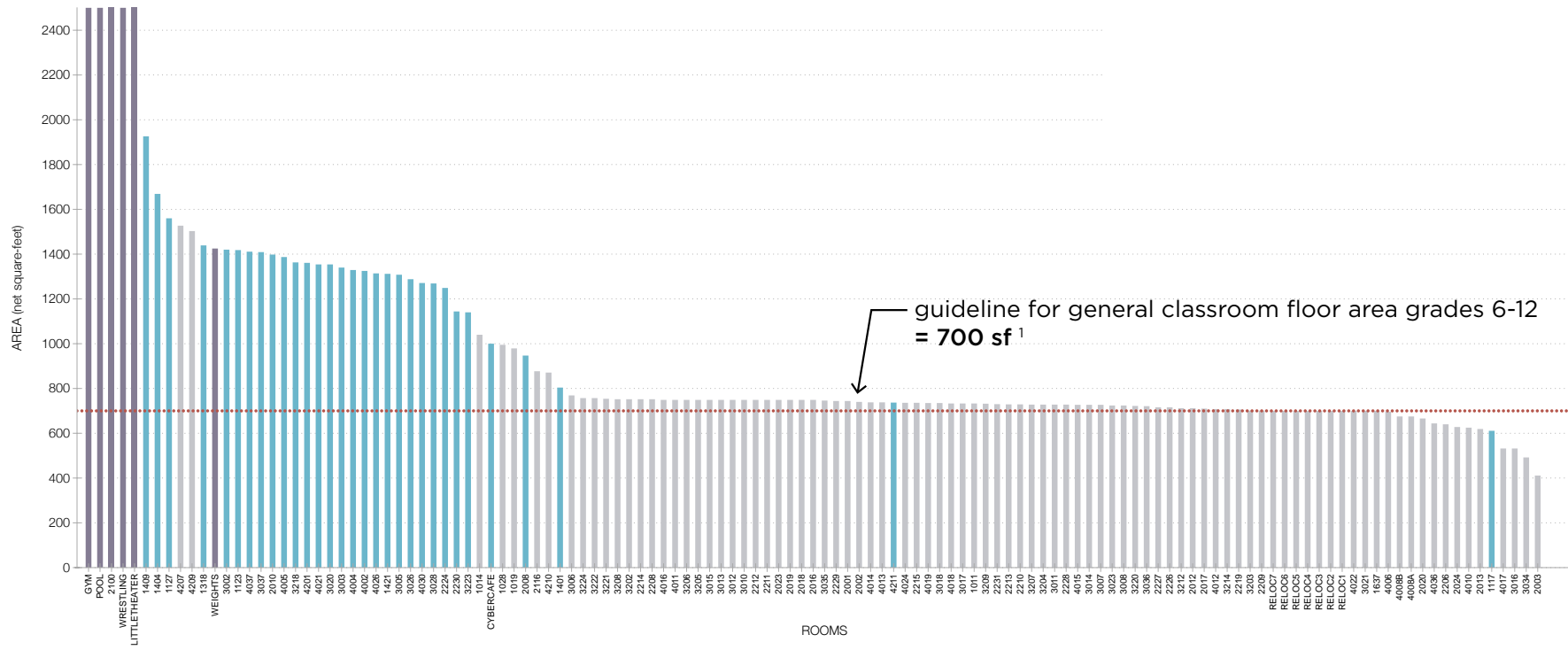
1. Refer to Appendix A for all interviews

INSTRUCTIONAL ROOMS BY FLOOR AREA

KEY

73% (68 out of 90) of general classrooms at Washington-Lee are within 50 sf of the 700 sf standard outlined by the VA Department of Education (DOE) guidelines for general classrooms grade 6-12.¹

- General Classroom
[30 ft² per student]
- Specialized Classroom
[40 ft² per student]
[Music - 20 ft² per student]
- Non-Classroom Instruction Space
[125 ft² per student]



FOOTNOTE

1. General classroom floor area standards for grades 6-12 are based on the Virginia Department of Education "Guidelines for School Facilities" 2013.

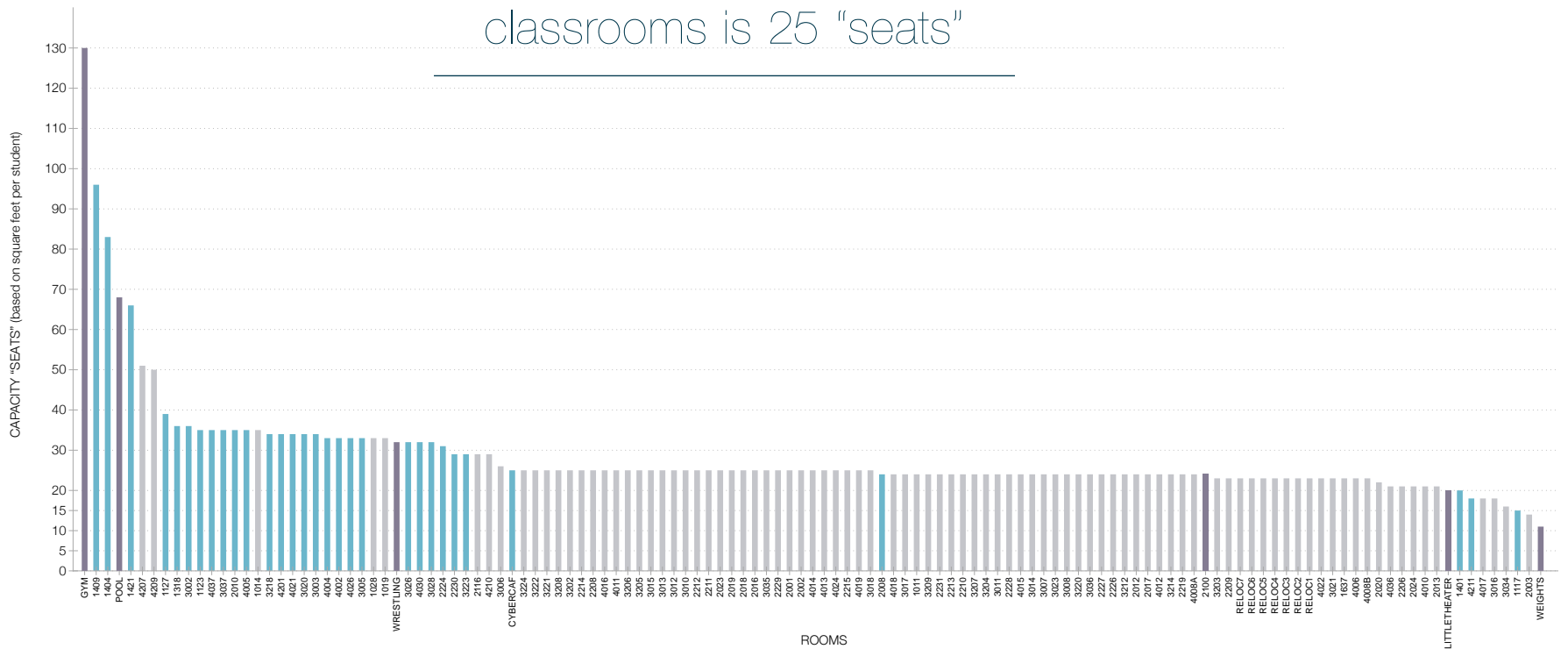
INSTRUCTIONAL ROOMS BY CAPACITY

A room's capacity is calculated based on its physical layout and its floor area, using a factor of area (sf) needed per student to engage in the learning activities associated with each room's intended use. See key to the right for the capacity assigned to each room type.

KEY

- General Classroom
[30 ft² per student]
- Specialized Classroom
[40 ft² per student]
[Music - 20 ft² per student]
- Non-Classroom Instruction Space
[125 ft² per student]

Average capacity for general
classrooms is 25 "seats"



FOOTNOTE

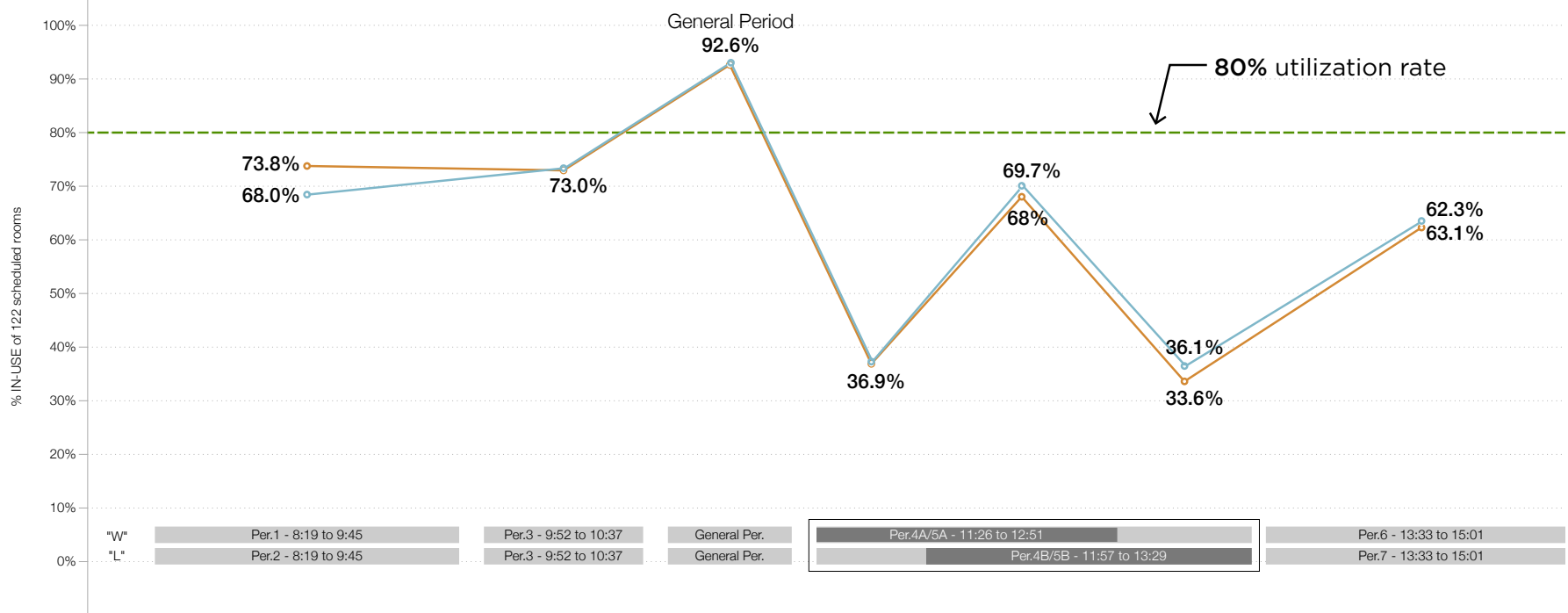
General classroom capacity standards are based on common threshold for grades 6-12, Specialized Classrooms and Non-Classroom Instruction Space are based on the Virginia Department of Education "Guidelines for School Facilities" 2013.

INSTRUCTIONAL SPACE UTILIZATION BY PERIOD - SEMESTER 1, 2013-14

KEY

Overall utilization patterns from day to day are not significantly impacted by Washington-Lee's rotating bell schedules. Throughout the day, the percentage of rooms in use at a given time fluctuates between 36% (during lunch) to over 90% (during general period). Outside of lunch times and general period, the utilization rate fluctuates less dramatically between 62% and 74% utilization.

- Room Utilization Rate on "W" Days
- Room Utilization Rate on "L" Days







FOOTNOTE:

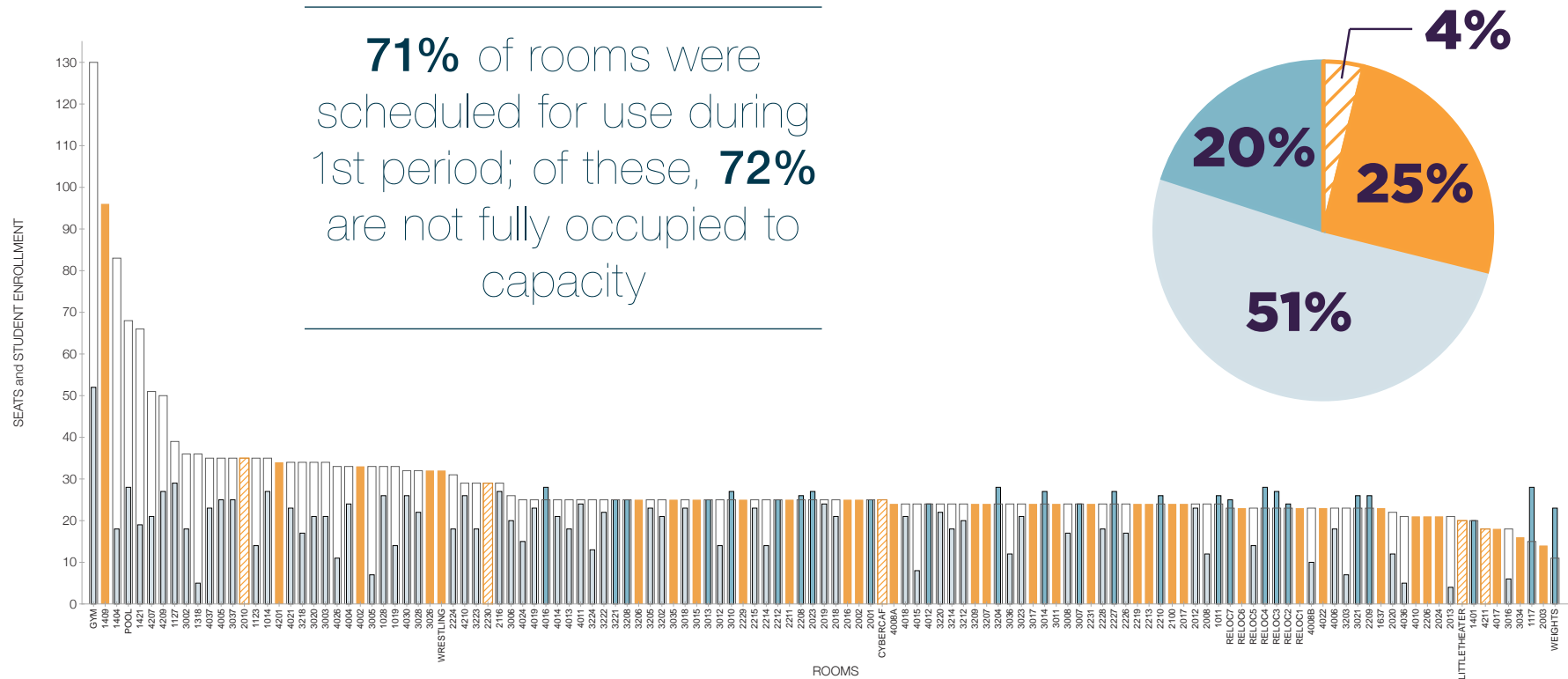
Utilization Rates are based on the set of 122 rooms determined to drive capacity at Washington-Lee High School. This set includes rooms that both appear in the 2013-14 Master Course Schedule, whose primary function is to host classes and rooms that do not appear in the Master Course Schedule but which have been identified as unscheduled Instructional Space. The 122 room-set does not include the 5 unscheduled "reserved" rooms that are available to all instructors and students on a rotating basis.

1ST PERIOD - OCCUPANCY AND UTILIZATION BY ROOM, FALL 2013-14

KEY

Room utilization and occupancy rates are based on the Fall 2013-14 Master Schedule, which includes rooms whose primary function is to host classes, “reserved” rooms, and Athletic space¹. During 1st period, 71% of rooms were scheduled for use; of these rooms, 25 were at or over capacity, while 16 rooms were less than half full.

-  Speciality Reserved
-  Unscheduled
-  Under Occupied
-  Occupied to Capacity or Over







FOOTNOTE:

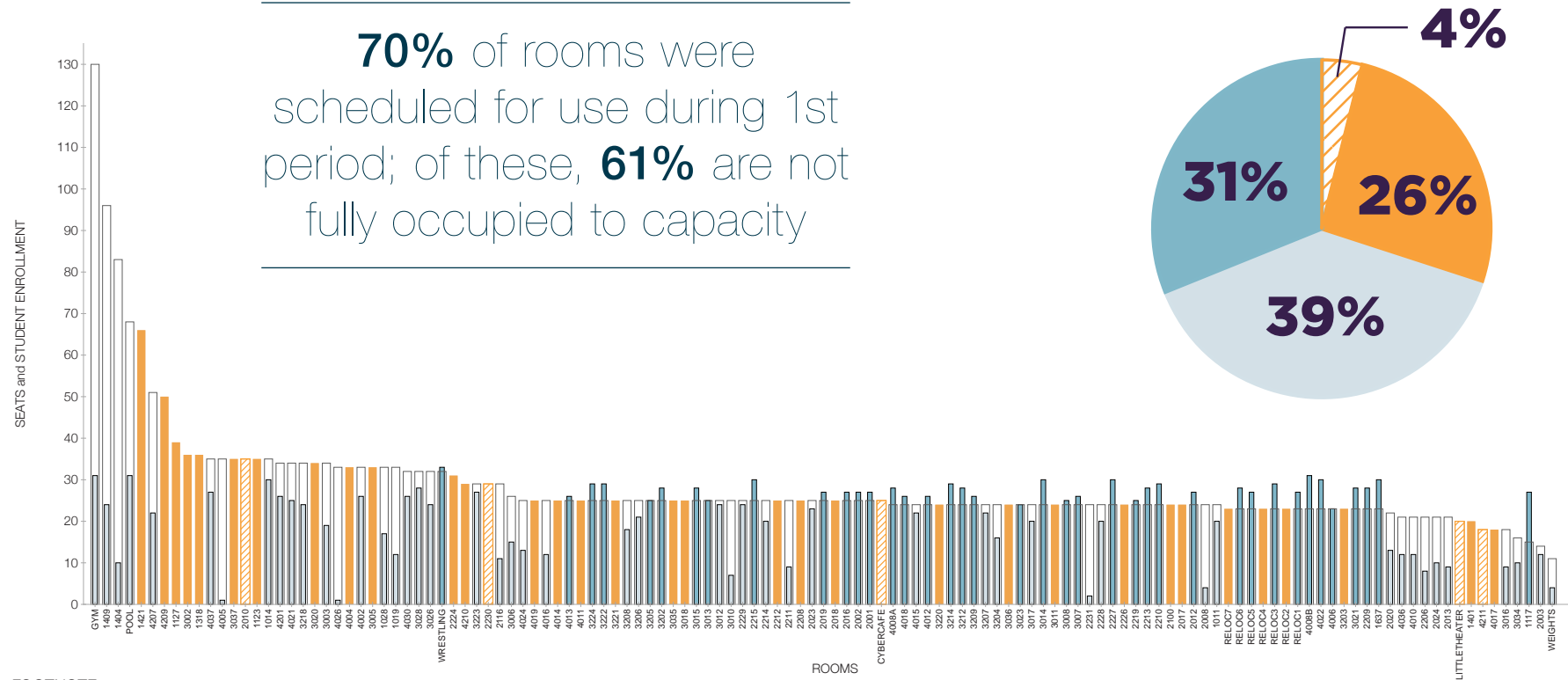
1. Athletic space use patterns are based on the P.E. department's 4th unit schedule, at which time all classes are held indoors due to weather.
2. Charts and floor plans depict a selection of three periods. Refer to Appendix B for a full set of charts that illustrate all eight periods.

3RD PERIOD - OCCUPANCY AND UTILIZATION BY ROOM, FALL 2013-14

KEY

Room utilization and occupancy rates are based on the Fall 2013-14 Master Schedule, which includes rooms whose primary function is to host classes, “reserved” rooms, and Athletic space¹. During 3rd period, 70% of rooms were scheduled for use; of these rooms, 39 were at or over capacity, while 16 rooms were less than half full.

-  Speciality Reserved
-  Unscheduled
-  Under Occupied
-  Occupied to Capacity or Over

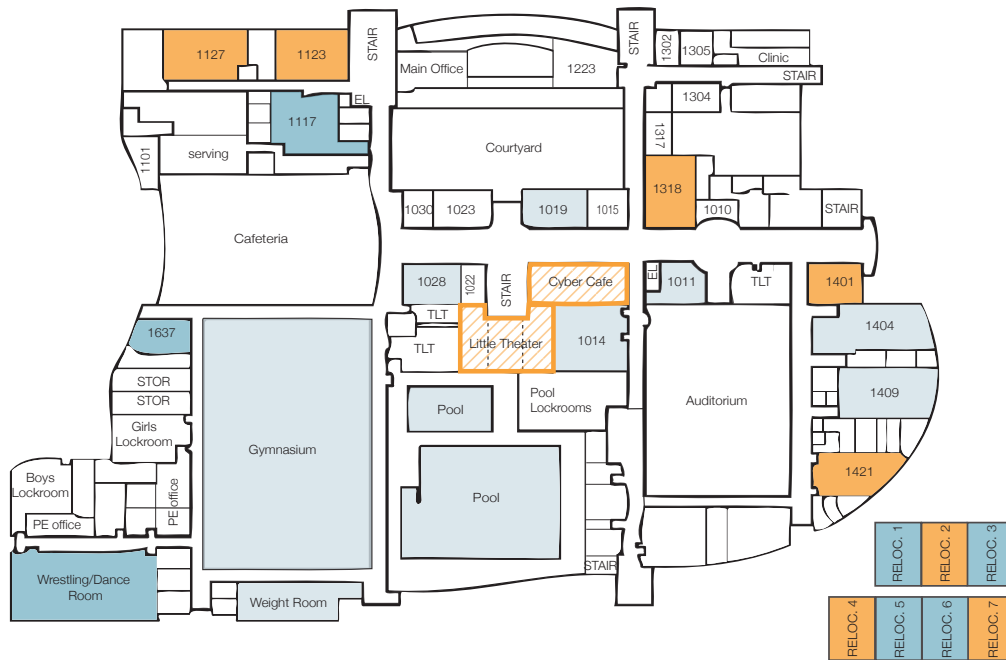


FOOTNOTE:

1. Athletic space use patterns are based on the P.E. department's 4th unit schedule, at which time all classes are held indoors due to weather.
2. Charts and floor plans depict a selection of three periods. Refer to Appendix B for a full set of charts that illustrate all eight periods.

3RD PERIOD - FLOOR PLANS

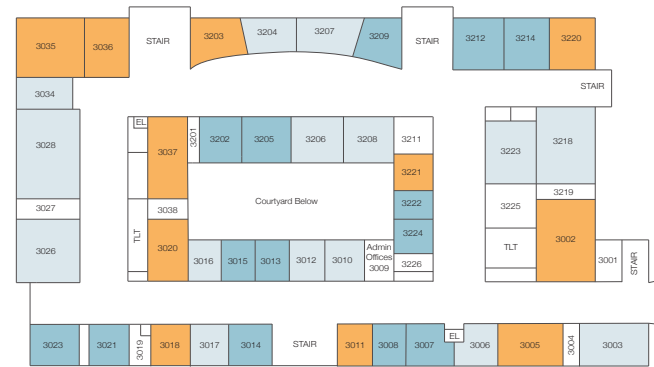
The floor plans below indicate occupancy and utilization by room in terms of the key and corresponding graph to the left.



Floor Plan 01



Floor Plan 02



Floor Plan 03







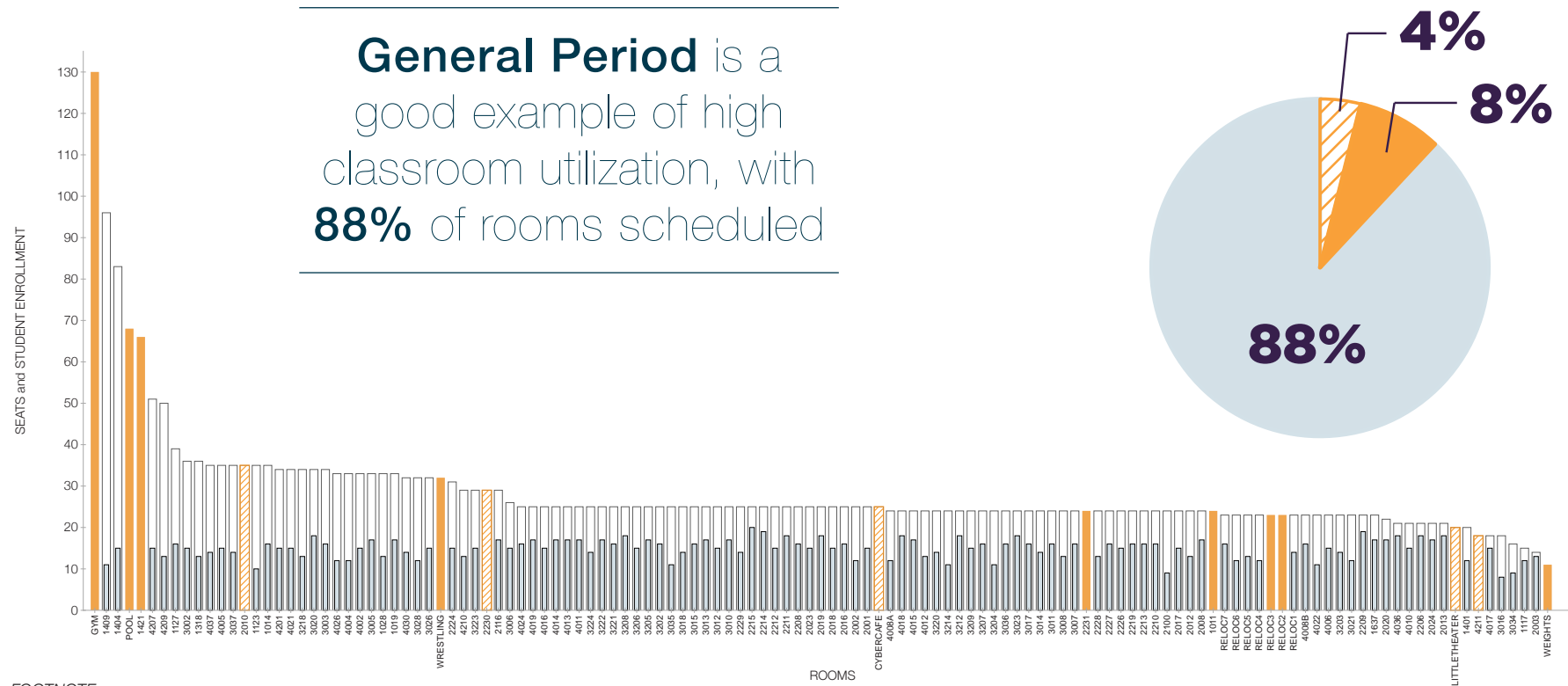
Floor Plan 04

GENERAL PERIOD - SCHEDULED OCCUPANCY BY ROOM, FALL 2013-14

KEY

Room utilization and occupancy rates are based on the Fall 2013-14 Master Schedule, which includes rooms whose primary function is to host classes, “reserved” rooms, and Athletic space¹. During general period, 88% of rooms were scheduled for use; of these rooms, 32 rooms were less than half full.

-  Speciality Reserved
-  Unscheduled
-  Under Occupied
-  Occupied to Capacity or Over



FOOTNOTE:

1. Athletic space use patterns are based on the P.E. department's 4th unit schedule, at which time all classes are held indoors due to weather.
2. Charts and floor plans depict a selection of three periods. Refer to Appendix B for a full set of charts that illustrate all eight periods.

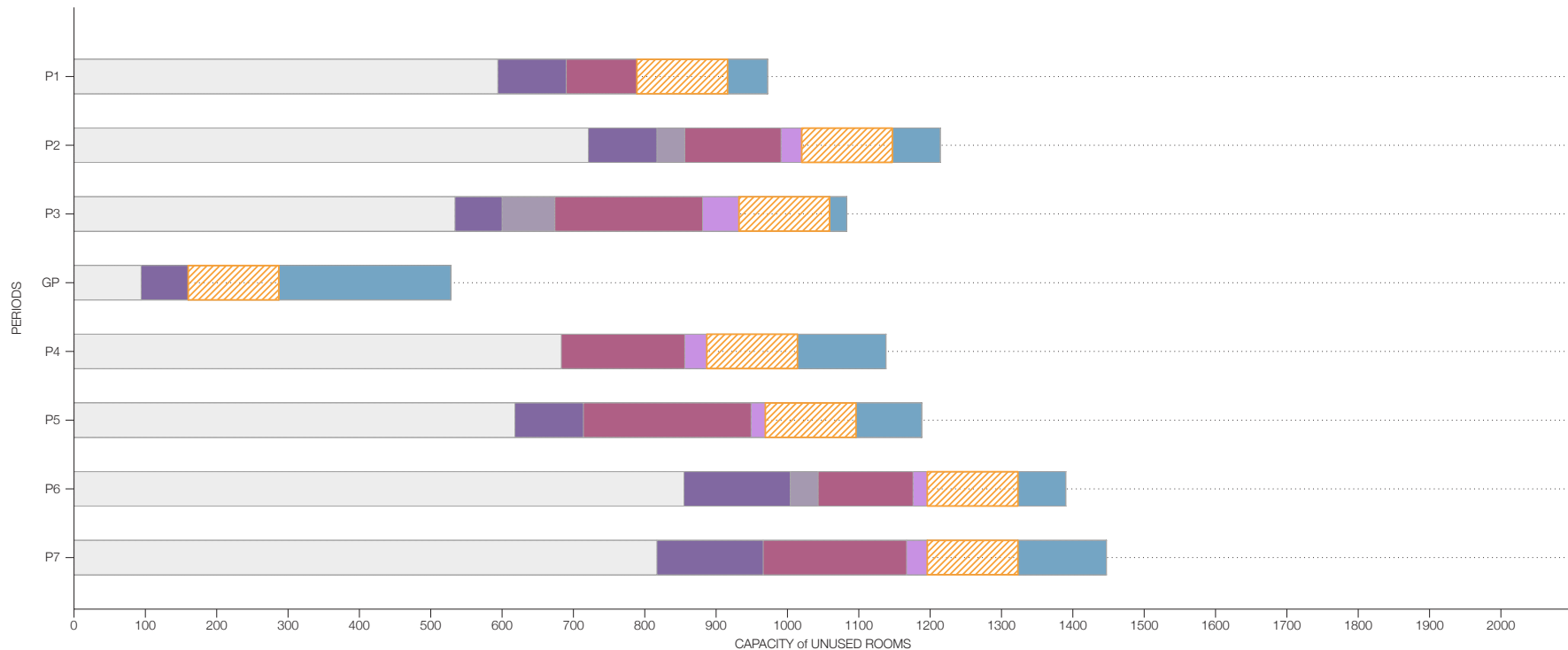
CAPACITY OF UNSCHEDULED ROOMS BY PERIOD AND TYPE

Every instructional period had unused General classroom space, as well as unused Science labs and Athletics space. Performing Art classrooms and Computer lab space were available all but one instructional period; however Visual Art classrooms were fully utilized during four of the seven instructional periods.

Visual Art classrooms have **limited capacity available** and are fully utilized during periods 1, 4, 5, 7 and GP

KEY

- General Classroom
- Performing Art
- Visual Art
- Science Lab
- Computer Lab
- Speciality Reserve
- Athletic

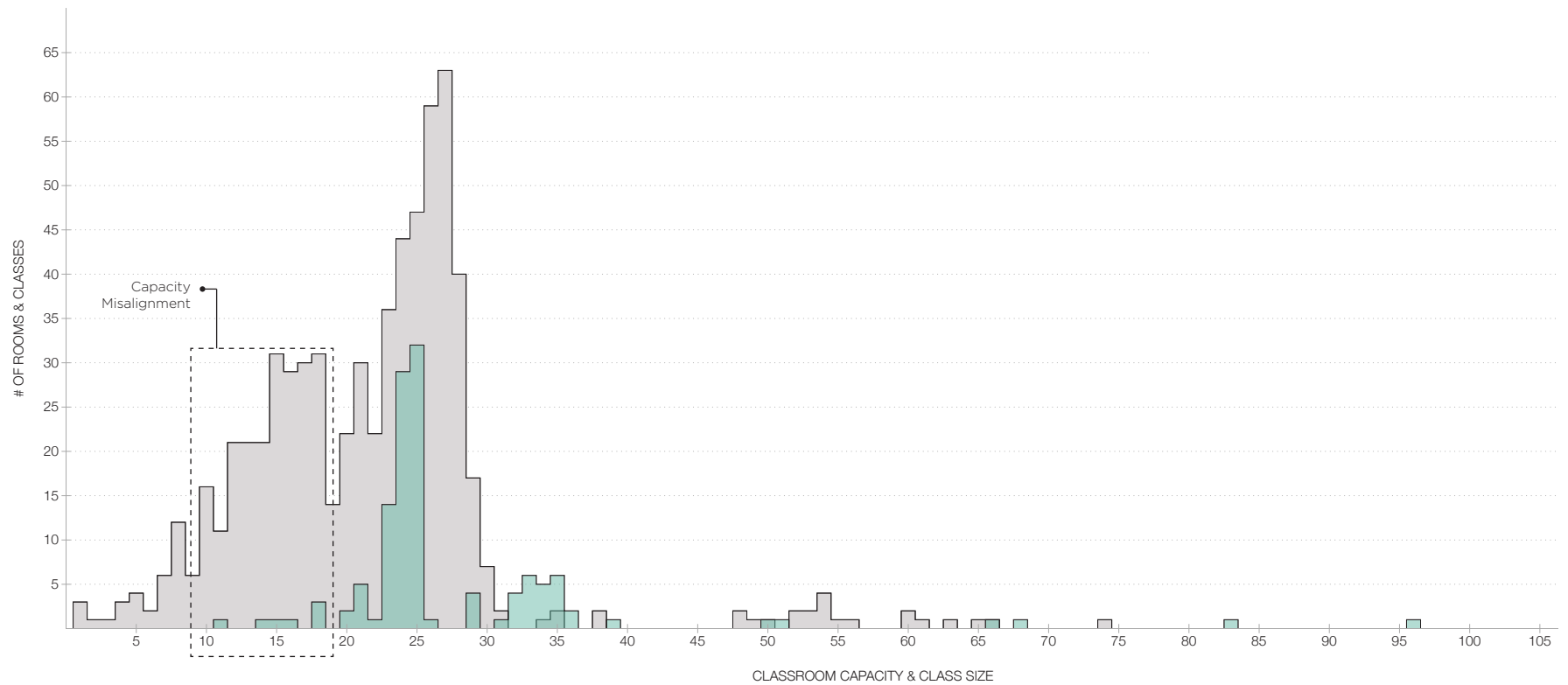


INSTRUCTIONAL SPACES - FREQUENCY BY CAPACITY AND SIZE

KEY

The general classroom inventory at Washington-Lee has an average capacity of 25 “seats.”¹ The majority of classes are accommodated by this inventory, but classes on the small or large end of the range do not have optimally sized facilities in which to be scheduled. Conversely, the capacity of specialized classrooms is 70% higher than their class enrollment, resulting in a misalignment of capacity of specialized classrooms and their enrollment. It is important to remember that speciality rooms have constraints and properties that make them more difficult to realign.

- # of Classes by Class Enrollment
- # of Rooms by Loading Capacity



FOOTNOTE:

1. Average capacity of 24 “seats” is based on scheduling data collected from the 2013-14 Master Course Schedule

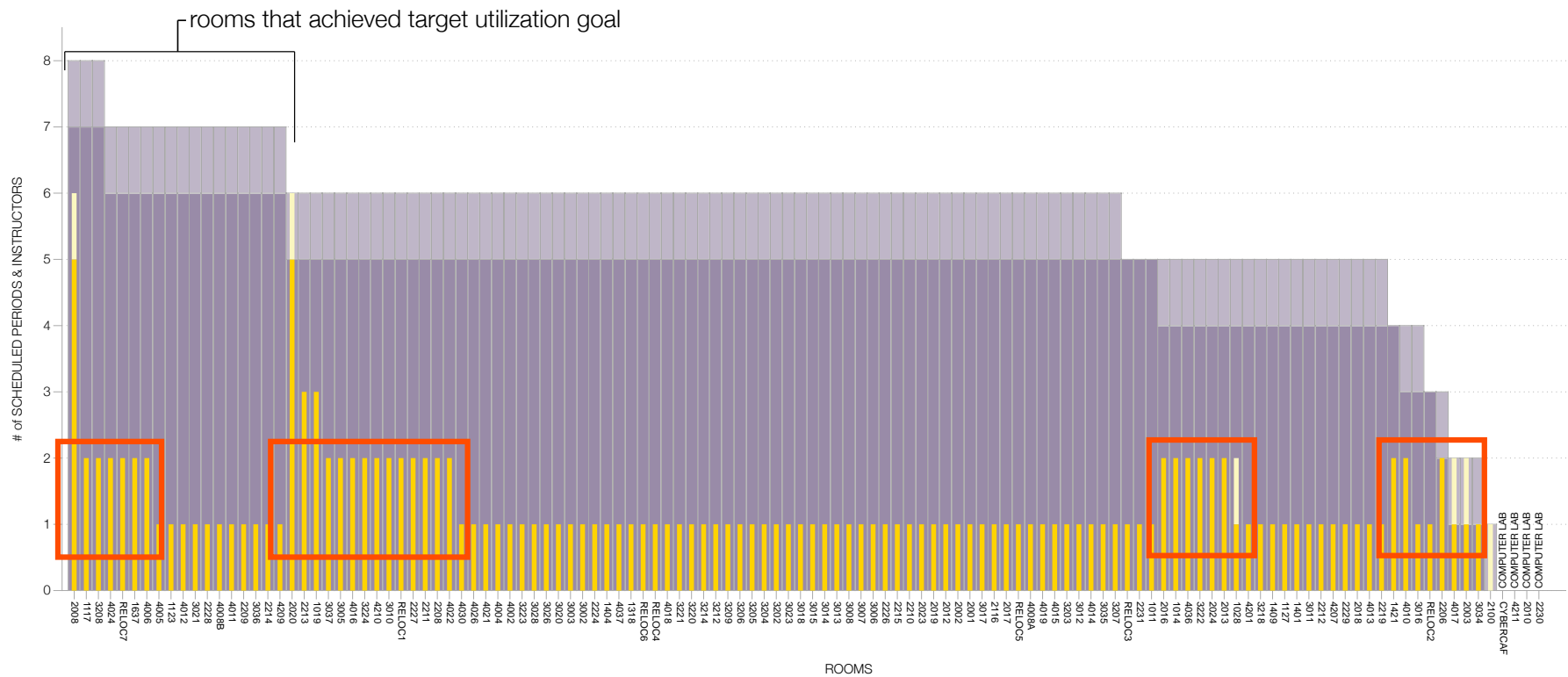
ROOMS BY PERIODS IN USE AND OCCUPIED BY INSTRUCTORS

28% (33 out of 117) of Instructional rooms scheduled in the Fall 2013-14 semester had more than 1 instructor assigned to share the space. 18 out of 117 instruction rooms achieved the target utilization goal of 6 out of 7 instructional periods.

28% of rooms are scheduled for more than 1 instructor
only 15% of rooms met the target utilization rate

KEY

- # of Scheduled Instructional Periods
- General Period
- # of Scheduled Instructors
- Additional/Different Instructor (GP)
- Rooms with Multiple Instructors



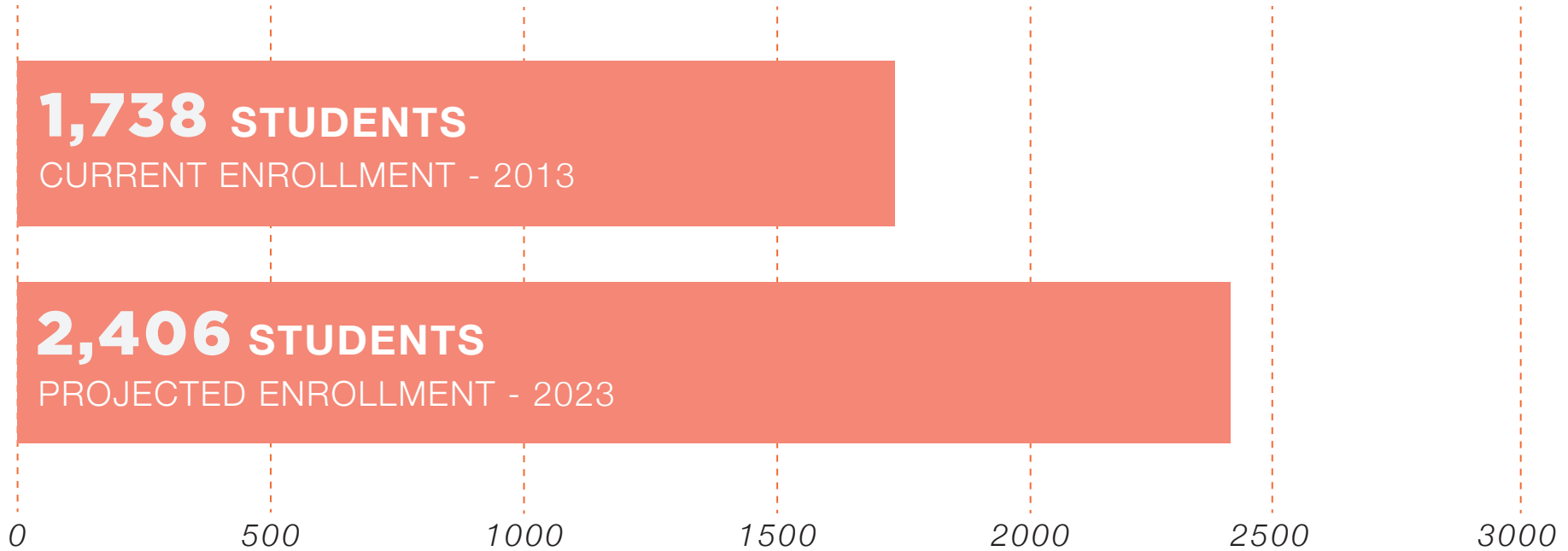
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YHS

YORKTOWN HIGH SCHOOL

"WE BELIEVE THAT WE ARE A COMMUNITY OF LEARNERS ENGAGED IN THE PROCESS OF SYSTEMATICALLY BUILDING CONNECTIONS TO KNOWLEDGE, TO EACH OTHER AND TO THE WORLD.

-YORKTOWN MISSION



FOOTNOTE

Current and projected enrollment figures are based on the APS, Facilities Planning Report "Building Capacities and Projected Student Enrollment for School Year 2014-2023"



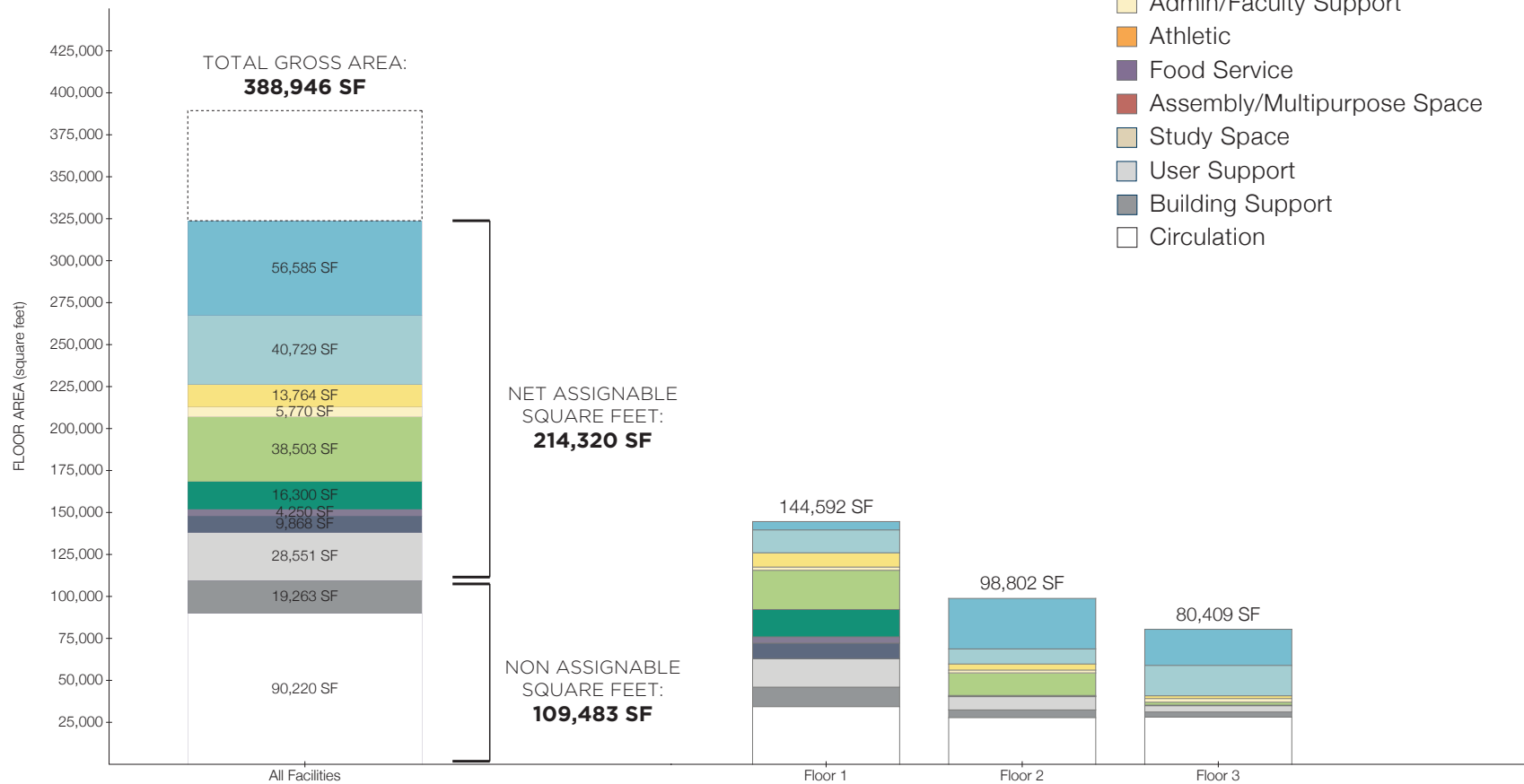
YORKTOWN
HIGH SCHOOL

EXISTING PROGRAM

Excluding circulation and building support space from the overall total, Yorktown's facilities consist of 214,320 net assignable square feet. Of this, 45.4% is Instructional space, 18% is Athletic space, and 6.4% is Office space for faculty, staff, and administrators.

KEY

- Structural Area
- General Classroom
- Specialized Classrooms
- Office
- Admin/Faculty Support
- Athletic
- Food Service
- Assembly/Multipurpose Space
- Study Space
- User Support
- Building Support
- Circulation



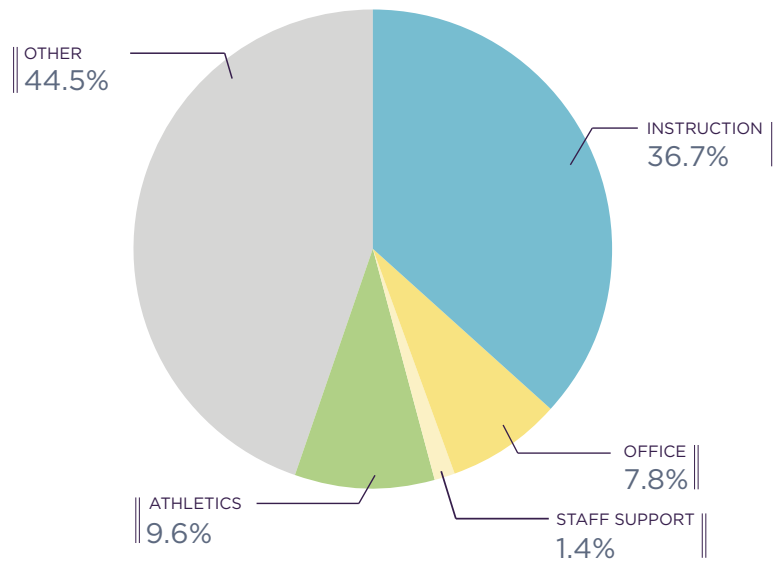
FOOTNOTE

1. Gross square feet figures for Yorktown High School are based on APS website - Design and Construction Update

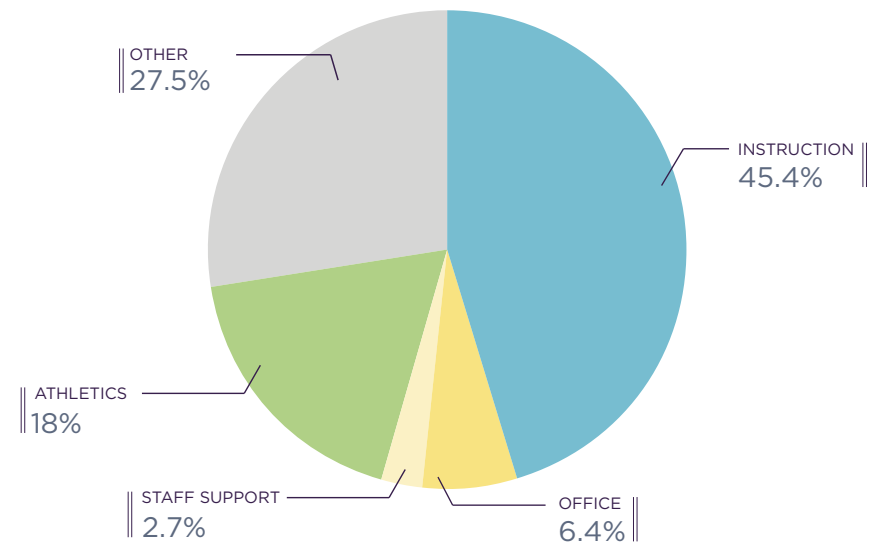
BREAKDOWN BY PROGRAM

Comparison of key program types at a typical school grades 6-12 and Yorktown High School.

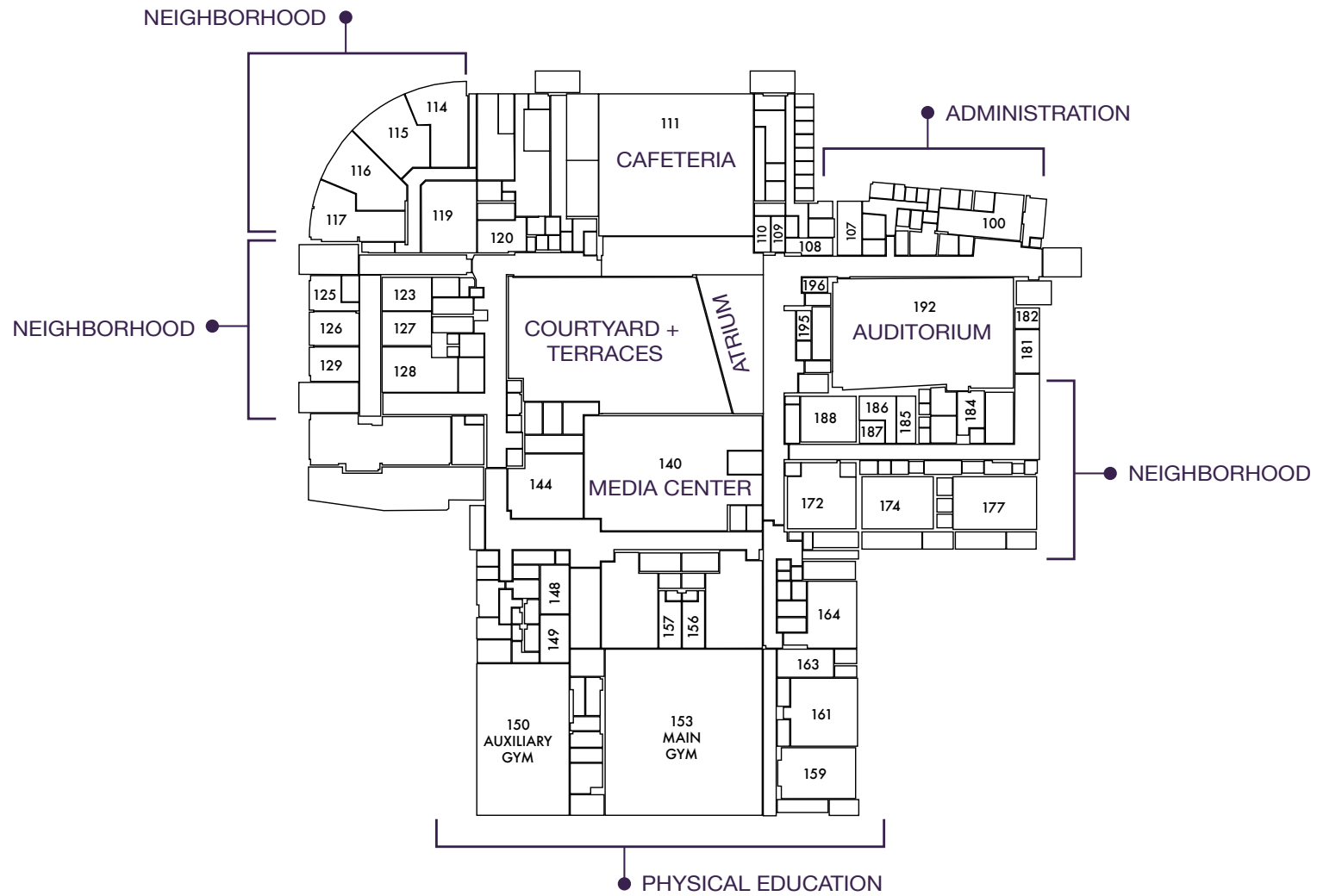
TYPICAL SCHOOL GRADES 6-12



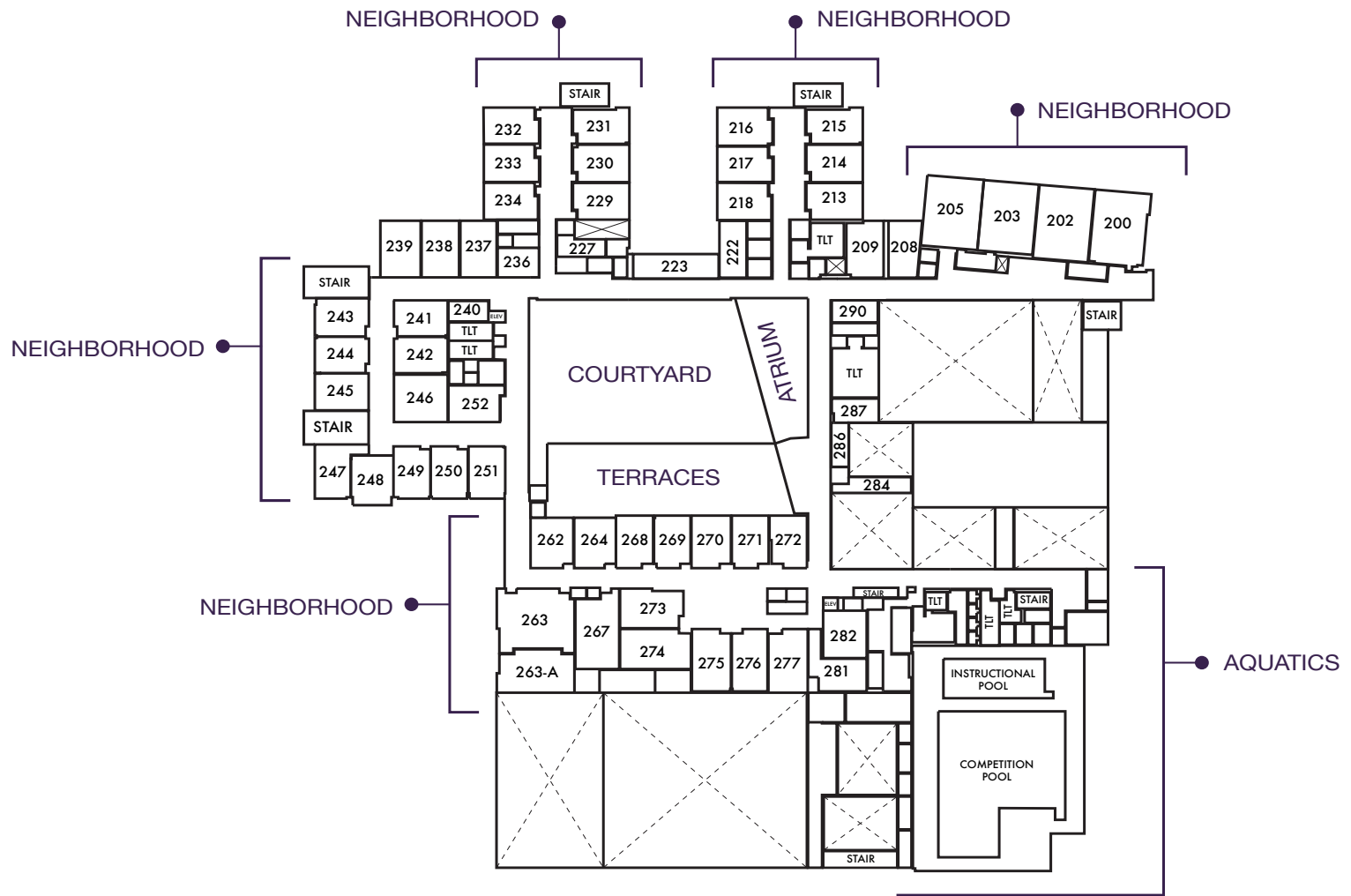
YORKTOWN HIGH SCHOOL



FLOOR PLAN 01



FLOOR PLAN 02



FLOOR PLAN 03



DEPARTMENT INTERVIEWS

In order to understand the space utilization of Yorktown High School and the occupancy of its classrooms given its schedule, MKThink undertook a series of meetings with school leadership that are key to its operations and success. ¹

HIGHLIGHTS

- Foundational principles: social-emotional learning (not a program, embedded with all staff and incorporated into every classroom), high expectations for every student, civic engagement and high involvement (Center for Leadership and Public Service, Yorktown Lions, Senior Experience (internships)).
- Extensive AP program (29 classes offered).
- Modified block schedule that accommodates the range of needs by departments.
- One pinch point, central stair.
- Not organized by departments; organized into neighborhoods supporting interdisciplinary collaborations

FOOTNOTE

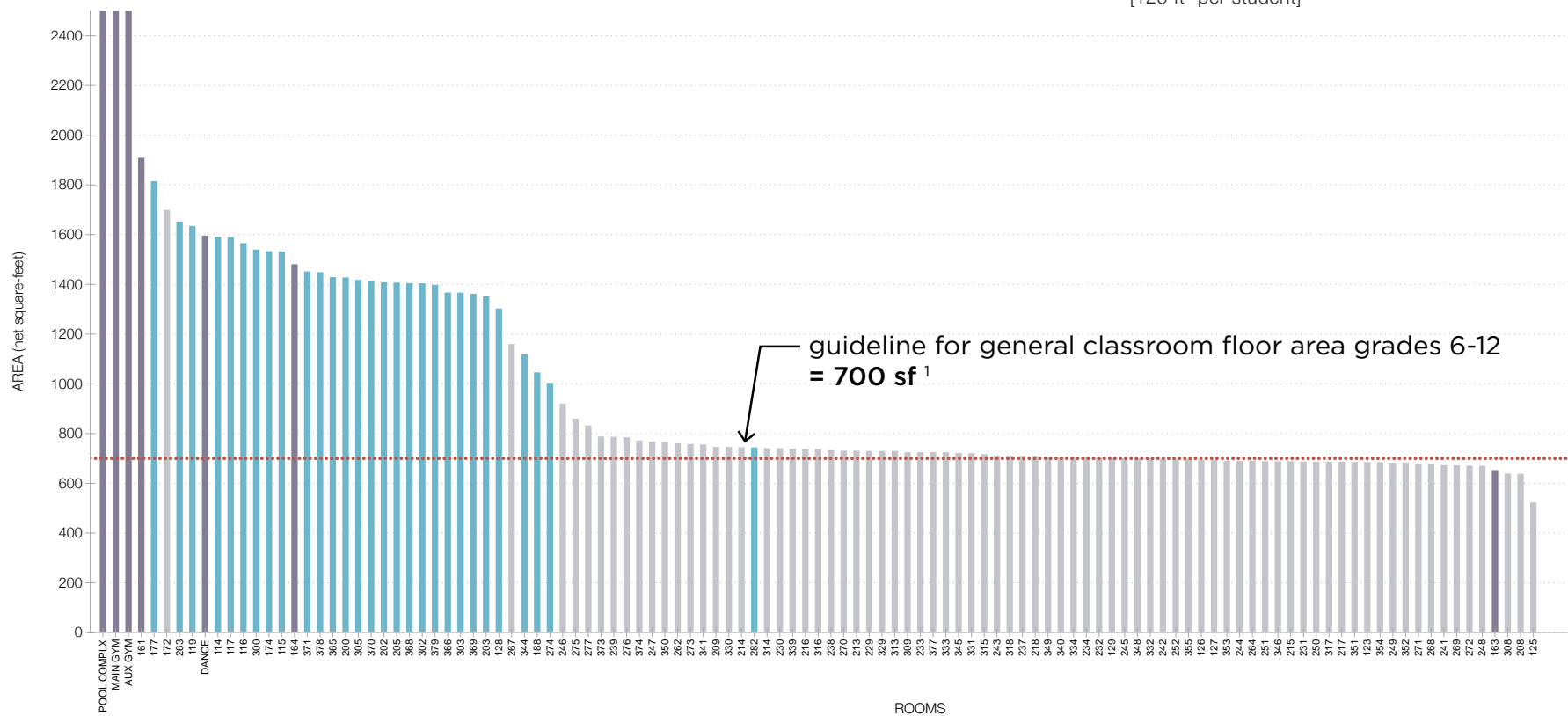
1. Refer to Appendix A for all interviews

INSTRUCTIONAL ROOMS BY FLOOR AREA

78% (60 out of 77) of general classrooms at Yorktown are within 50 sf of the 700 sf standard outlined by the VA Department of Education (DOE) guidelines for general classrooms grade 6-12.¹

KEY

- General Classroom
[30 ft² per student]
- Specialized Classroom
[40 ft² per student]
[Music - 20 ft² per student]
- Non-Classroom Instruction Space
[125 ft² per student]



FOOTNOTE

1. General classroom floor area standards for grades 6-12 are based on the Virginia Department of Education "Guidelines for School Facilities" 2013.

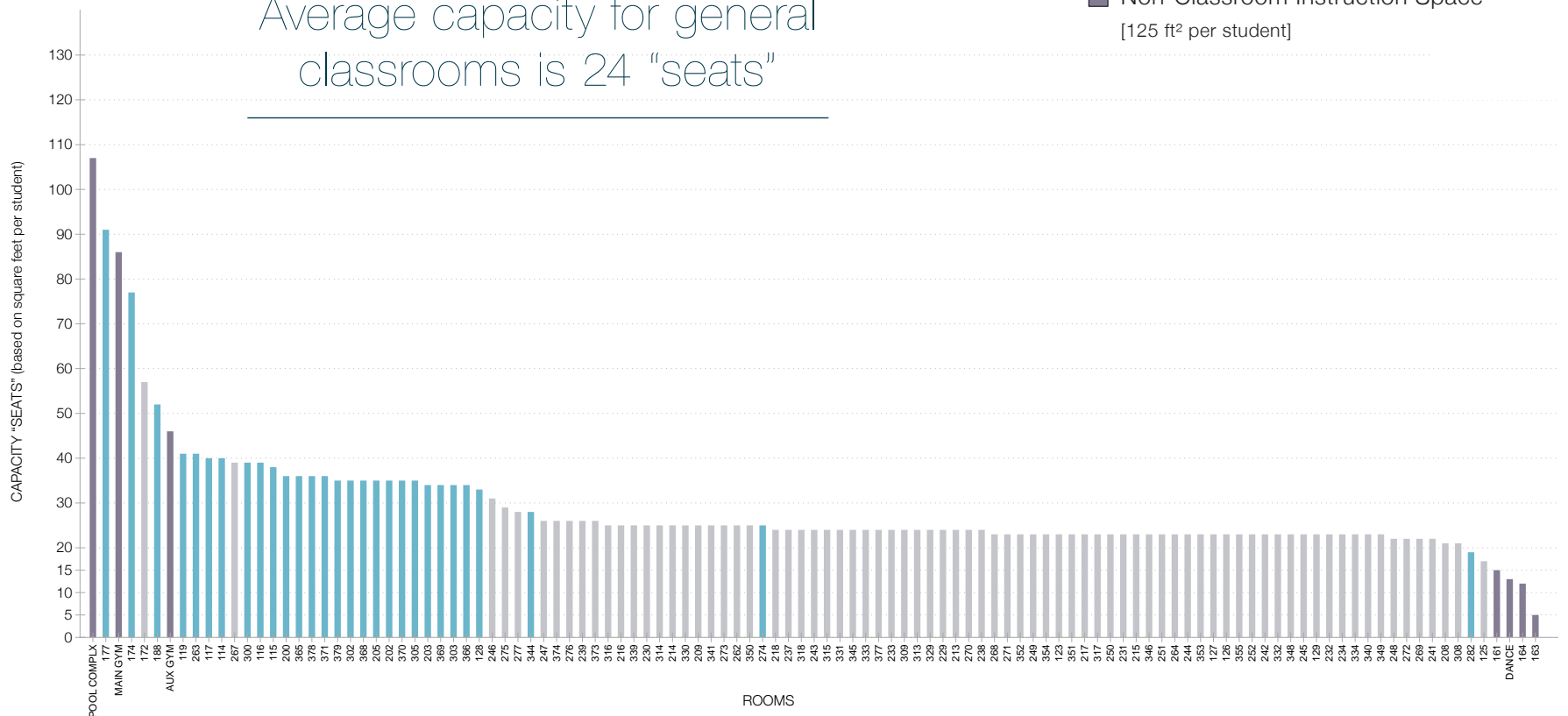
INSTRUCTIONAL ROOMS BY CAPACITY

A room's capacity is calculated based on its physical layout and its floor area, using a factor of area (sf) needed per student to engage in the learning activities associated with each room's intended use. See key to the right for the capacity assigned to each room type.

KEY

- General Classroom [30 ft² per student]
- Specialized Classroom [40 ft² per student]
- [Music - 20 ft² per student]
- Non-Classroom Instruction Space [125 ft² per student]

Average capacity for general classrooms is 24 "seats"



FOOTNOTE

General classroom capacity standards are based on common threshold for grades 6-12, Specialized Classrooms and Non-Classroom Instruction Space are based on the Virginia Department of Education "Guidelines for School Facilities" 2013.

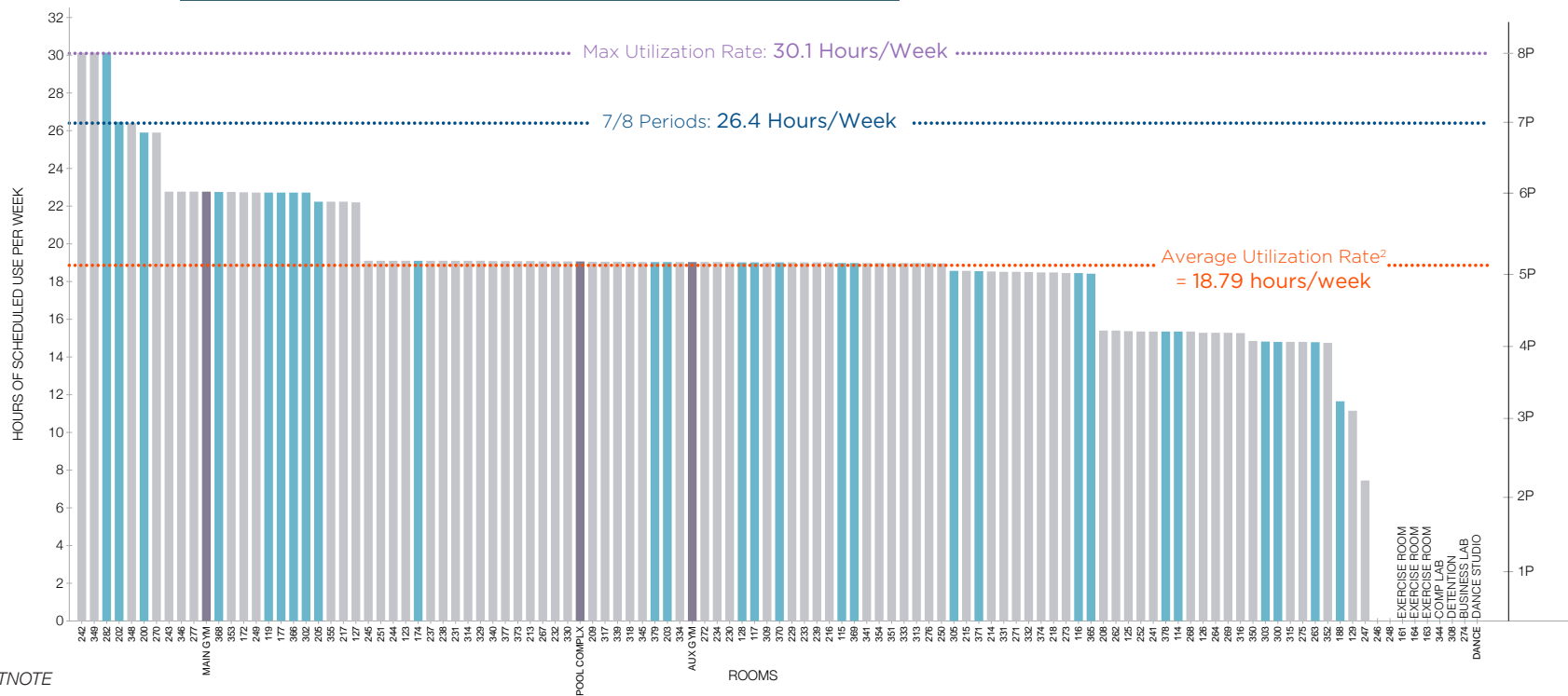
WEEKLY ROOM USE HOURS

During a typical week, the Yorktown bell schedule has 30.1 hours of scheduled room use¹. A total of 7 rooms - 4 General Classrooms and 3 Specialized Classrooms - were scheduled at or above the target utilization rate of 7 out of 8 instructional periods.

KEY

- General Classroom
- Specialized Classroom
- Non-Classroom Instruction Space

Average utilization rate for fall 2013
was **18.79 hours/week**.



FOOTNOTE

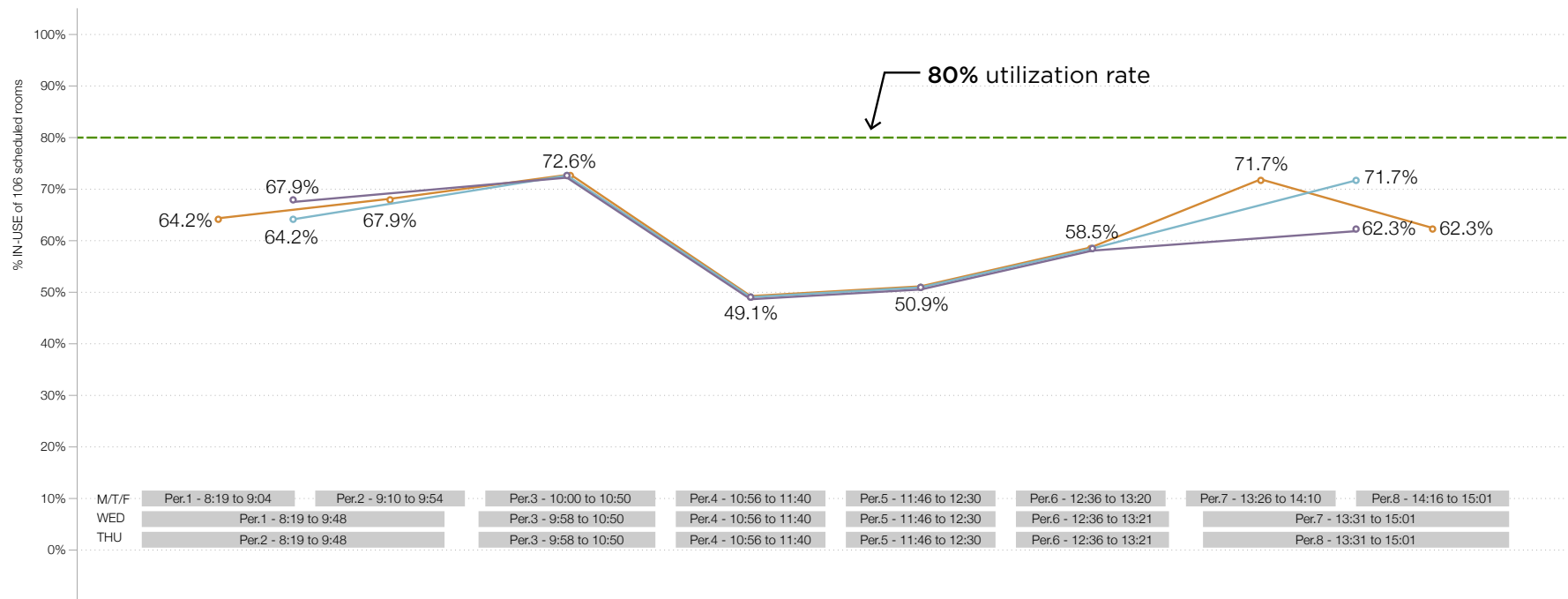
1. "Weekly Room Use Hours" is the amount of time that a room is scheduled for instruction during a 5-day week.
2. Utilization Rates are based on the Fall 2013 schedule.

INSTRUCTIONAL SPACE UTILIZATION BY PERIOD - SEMESTER 1, 2013-14

KEY

Yorktown does not incorporate a general/home room period into its schedule, but the school does allow period 3, thirty extra minutes of class time more than the other periods each week (220 to 225 minutes for periods 1,2,4,5,6,7,8, and 254 minutes for period 3). In addition, Yorktown staggers its lunch break in 3 waves rather than 2 (like Washington-Lee and Wakefield) leading to a less volatile utilization rate throughout each day.

- Room Utilization Rate on MON/TUE/FRI
- Room Utilization Rate on WED
- Room Utilization Rate on THU



FOOTNOTE:

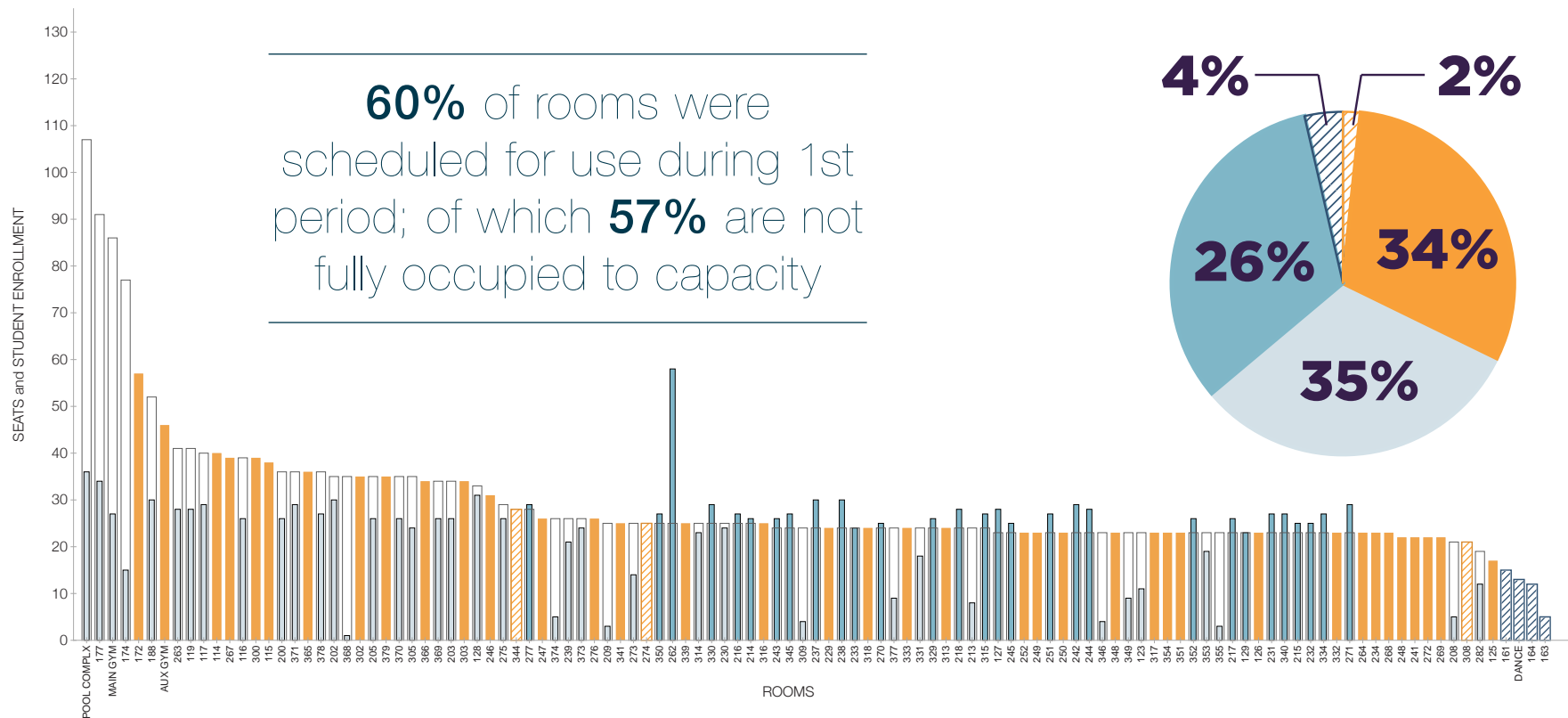
Utilization Rates are based on the set of 106 rooms determined to drive capacity at Yorktown High School. This set includes rooms that both appear in the 2013-14 Master Course Schedule, whose primary function is to host classes and rooms that do not appear in the Master Course Schedule but which have been identified as unscheduled Instructional Space. The set of 106 rooms does not include the 7 unused "reserved" rooms that are available to all instructors and students on a rotating basis.

1ST PERIOD - OCCUPANCY AND UTILIZATION BY ROOM, FALL 2013-14

KEY

Room utilization and occupancy rates are based on the Fall 2013-14 Master Schedule, which includes rooms whose primary function is to host classes, "Reserved" rooms, and Athletic space¹. During 1st period, 61% of rooms were scheduled for use; of these rooms, 29 were at or over capacity, while 15 rooms were less than half full.

- Unscheduled
- Under Occupied
- Occupied to Capacity or Over
- Reserved [Instruction]
- Reserved [Athletics]



FOOTNOTE:

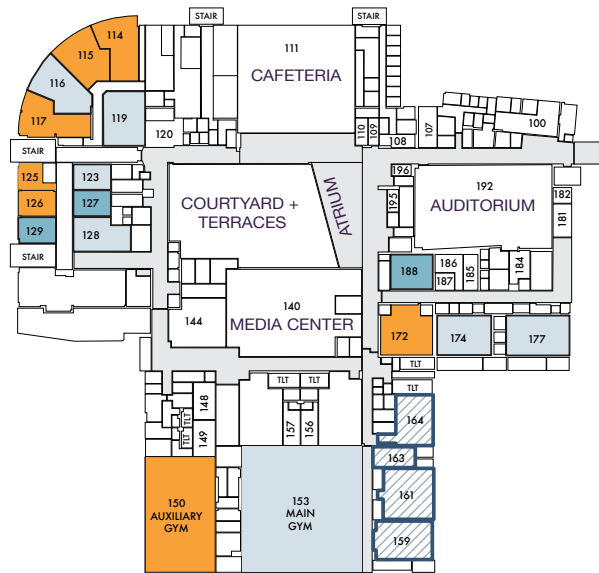
1. Athletic space use patterns are based on the P.E. department's 4th unit schedule, at which time all classes are held indoors due to weather.
2. Charts and floor plans depict a selection of three periods. Refer to Appendix B for a full set of charts that illustrate all eight periods.

1ST PERIOD - FLOOR PLANS

The floor plans below indicate occupancy and utilization by room in terms of the key and corresponding graph to the left.



Floor Plan 02



Floor Plan 01



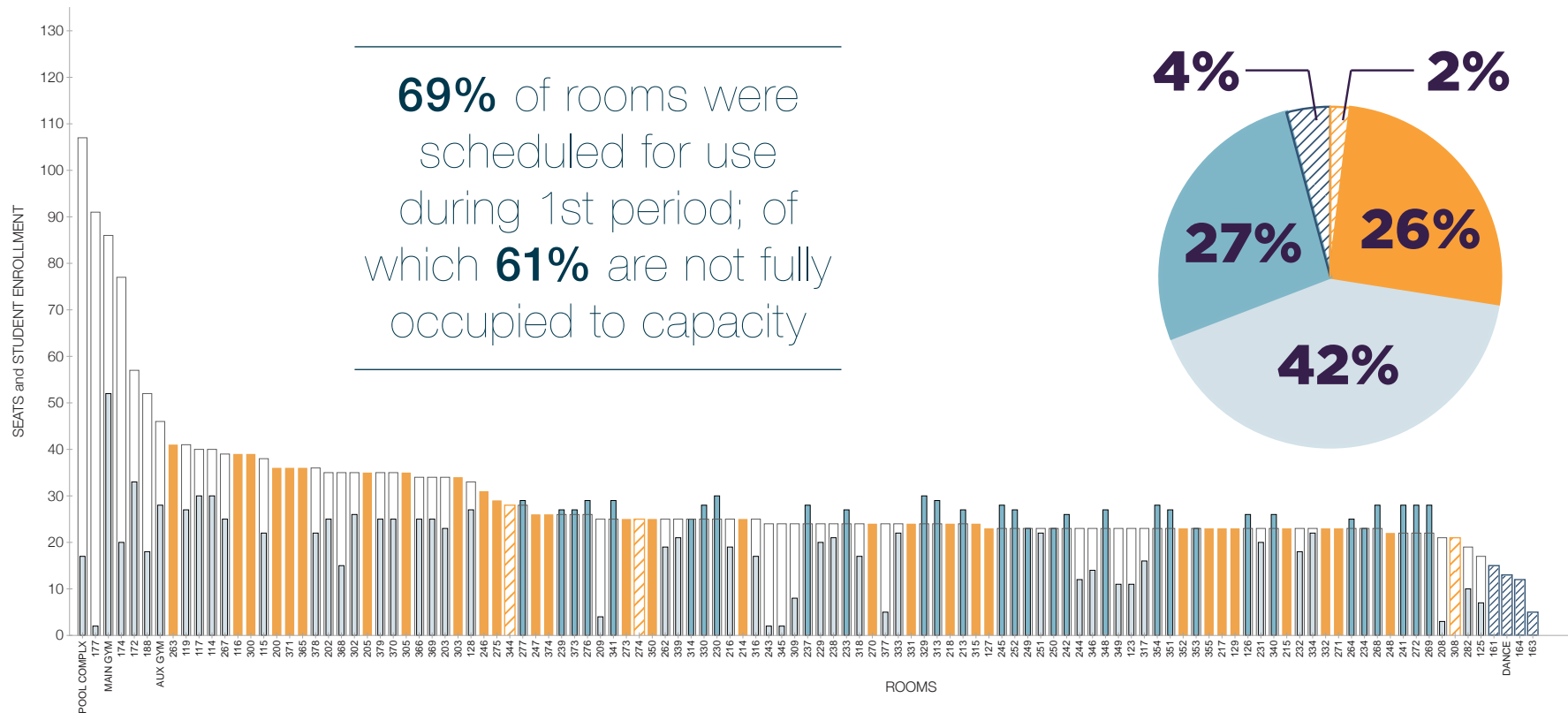
Floor Plan 03

3RD PERIOD - OCCUPANCY AND UTILIZATION BY ROOM, FALL 2013-14

KEY

Room utilization and occupancy rates are based on the Fall 2013-14 Master Schedule, which includes rooms whose primary function is to host classes, "Reserved" rooms, and Athletic space¹. During 3rd period, 69% of rooms were scheduled for use; of these rooms, 30 were at or over capacity, while 14 rooms were less than half full.

- Unscheduled
- Under Occupied
- Occupied to Capacity or Over
- Reserved [Instruction]
- Reserved [Athletics]



FOOTNOTE:

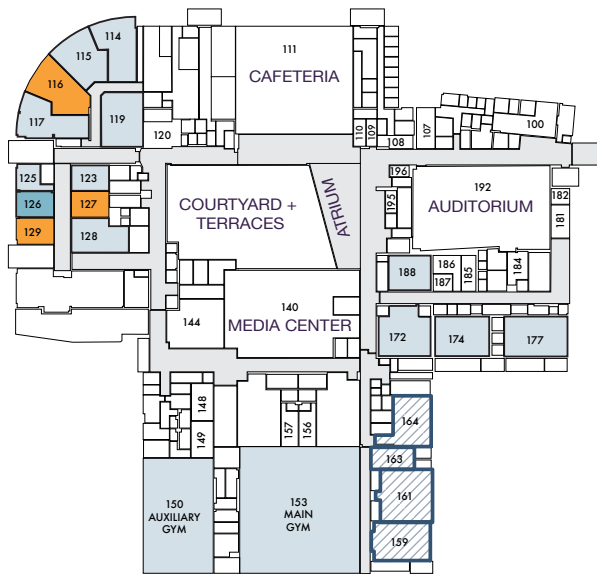
1. Athletic space use patterns are based on the P.E. department's 4th unit schedule, at which time all classes are held indoors due to weather.
2. Charts and floor plans depict a selection of three periods. Refer to Appendix B for a full set of charts that illustrate all eight periods.

3RD PERIOD - FLOOR PLANS

The floor plans below indicate occupancy and utilization by room in terms of the key and corresponding graph to the left.



Floor Plan 02



Floor Plan 01



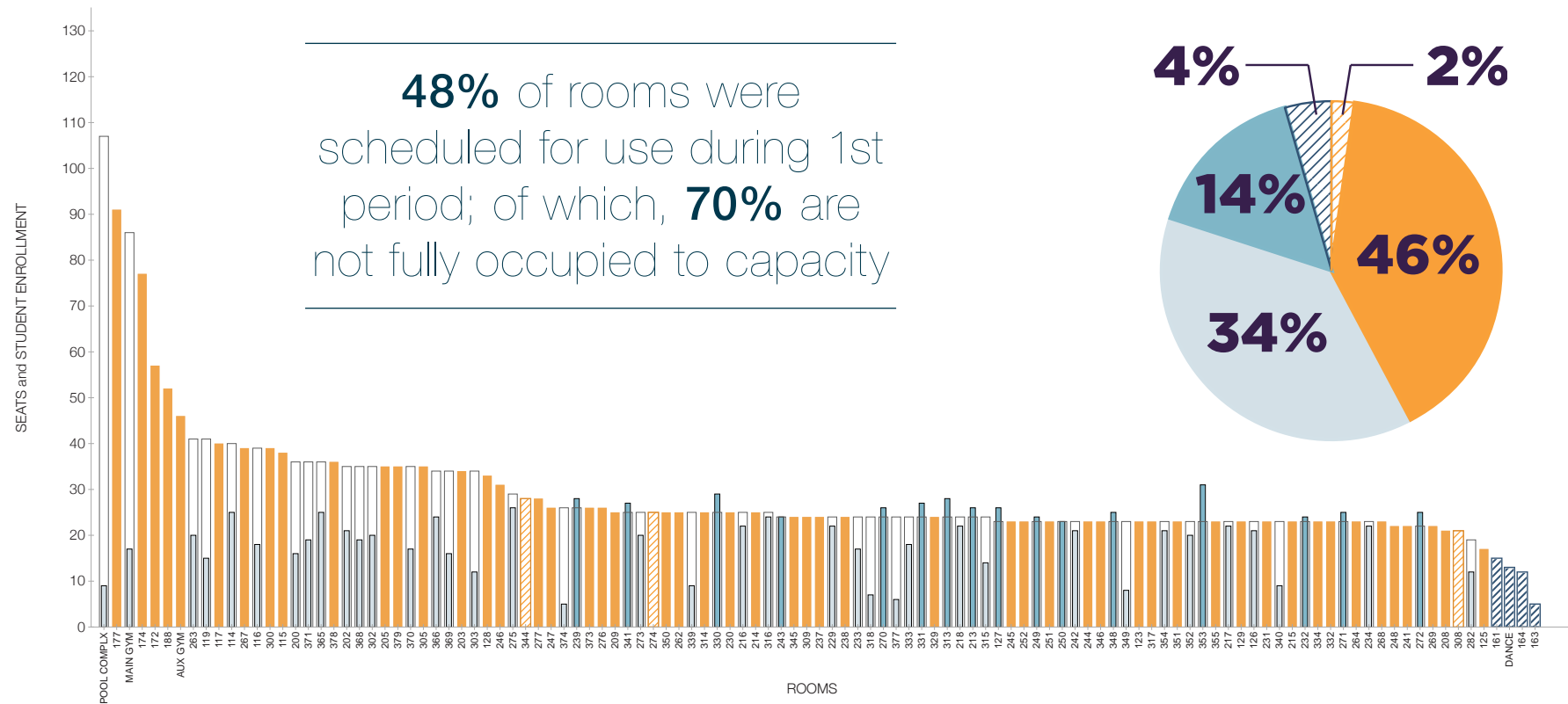
Floor Plan 03

5TH PERIOD - SCHEDULED OCCUPANCY BY ROOM, FALL 2013-14

Room utilization and occupancy rates are based on the Fall 2013-14 Master Schedule, which includes rooms whose primary function is to host classes, “Reserved” rooms, and Athletic space¹. During 5th Period, 48% of rooms were scheduled for use; of these rooms, 16 were at or over capacity, while 15 rooms were less than half full.

KEY

- Unscheduled
- Under Occupied
- Occupied to Capacity or Over
- Reserved [Instruction]
- Reserved [Athletics]



FOOTNOTE:

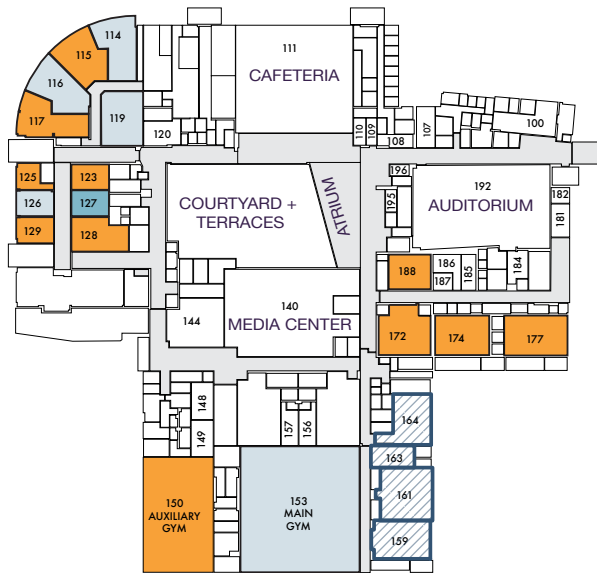
1. Athletic space use patterns are based on the P.E. department's 4th unit schedule, at which time all classes are held indoors due to weather.
2. Charts and floor plans depict a selection of three periods. Refer to Appendix B for a full set of charts that illustrate all eight periods.

5TH PERIOD - FLOOR PLANS

The floor plans below indicate occupancy and utilization by room in terms of the key and corresponding graph to the left.



Floor Plan 02



Floor Plan 01



Floor Plan 03

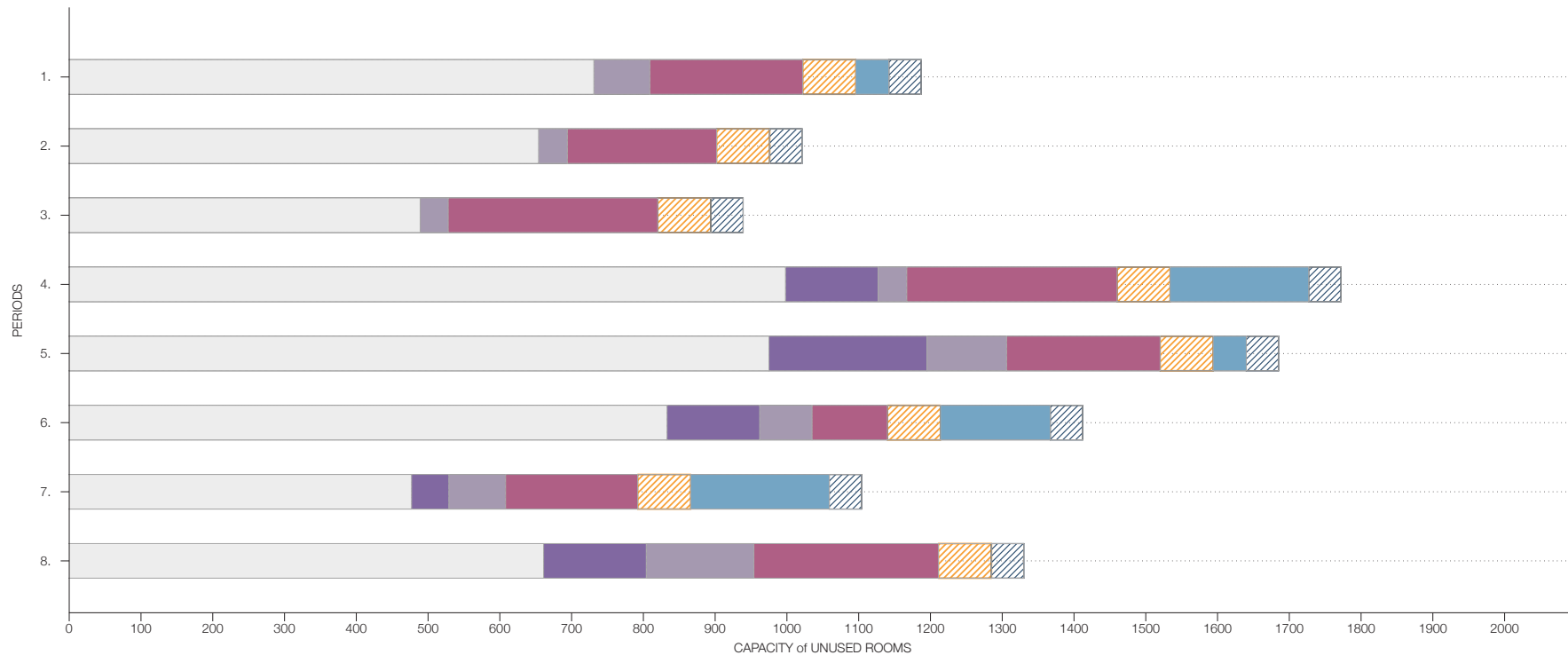
CAPACITY OF UNSCHEDULED ROOMS BY PERIOD AND TYPE

Every instructional period had unused General classroom space available, as well as Science Labs and Visual Art classrooms. During three periods of the day, large portions of the Athletic facilities were unscheduled, however during the other five periods there was little or no available space. In addition, the “Reserved” (academic) section includes two Computer labs, which are open for sign-up use.

KEY

- General Classroom
- Performing Art
- Visual Art
- Science Lab
- Athletic
- Reserved (Academic)
- Reserved (Athletic)

During three periods of the day, large portions of the Athletic facilities are unscheduled.

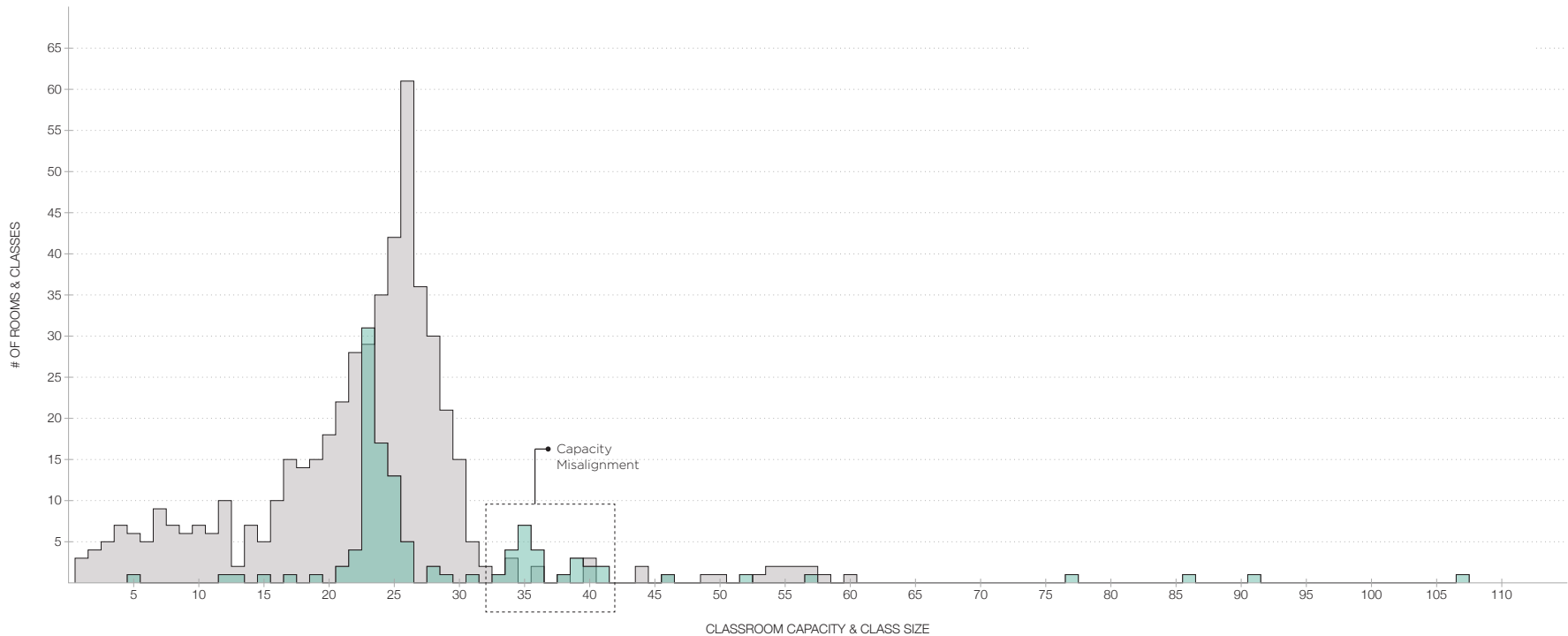


INSTRUCTIONAL SPACES - FREQUENCY BY CAPACITY AND SIZE

KEY

The general classroom inventory at Yorktown has an average capacity of 24 “seats.”¹ The majority of classes are accommodated by this inventory, but classes on the small or large end of the range do not have optimally sized facilities in which to be scheduled. Conversely, the capacity of specialized classrooms is 69% higher than their class enrollment, resulting in a misalignment of capacity of specialized classrooms and their enrollment. It is important to remember that speciality rooms have constraints and properties that make them more difficult to realign.

- # of Classes by Class Enrollment
- # of Rooms by Loading Capacity



FOOTNOTE:

1. Average capacity of 24 “seats” is based on scheduling data collected from the 2013-14 Master Course Schedule

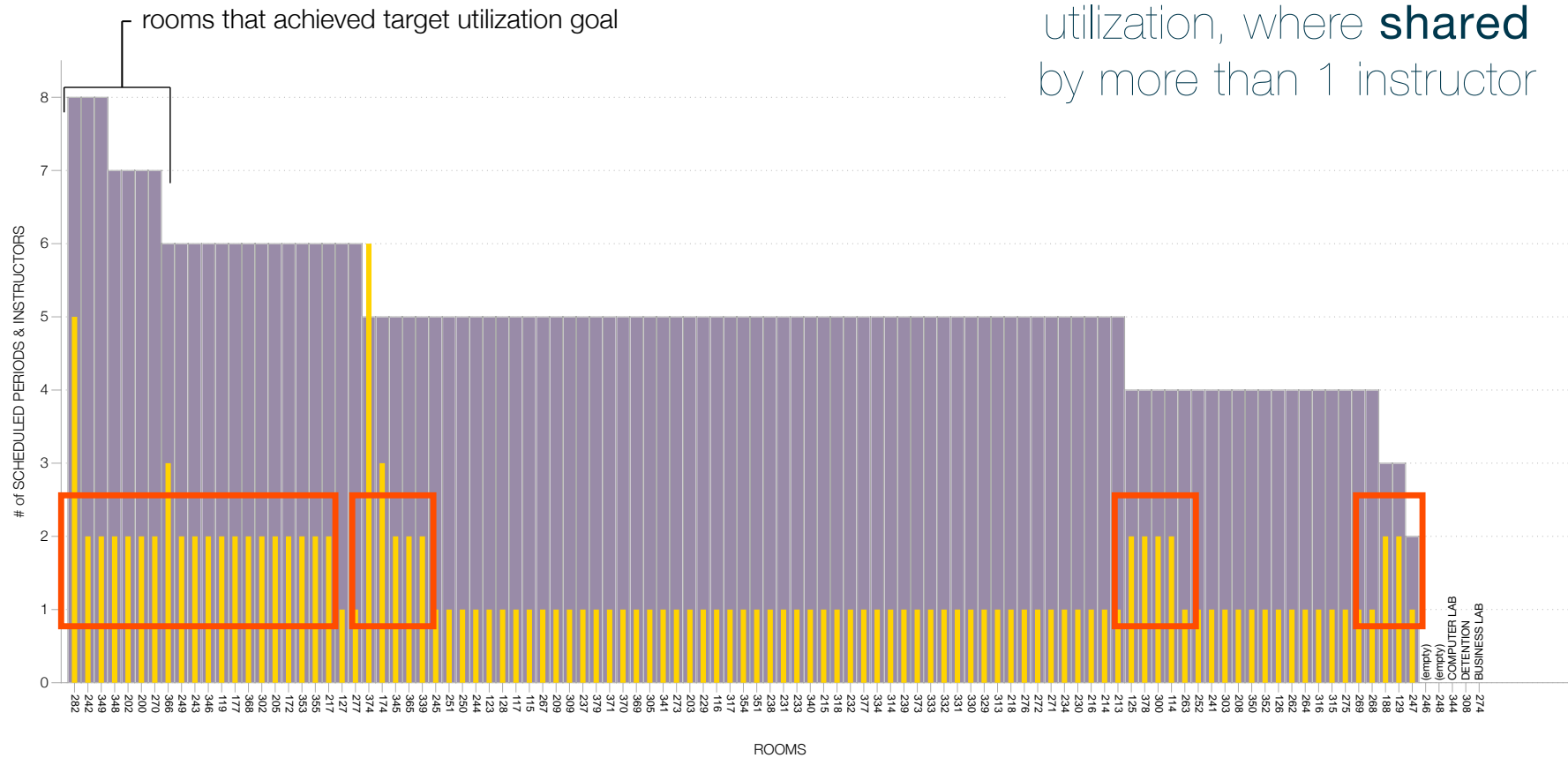
ROOMS BY PERIODS IN USE AND OCCUPIED BY INSTRUCTORS

KEY

28% (33 out of 117) of Instructional rooms scheduled in the Fall 2013-14 semester had more than 1 instructor assigned to share the space. Only 7% (7 out of 103) instruction rooms achieved the target utilization goal of 7 out of 8 instructional periods.

- # of Scheduled Instructional Periods
- # of Scheduled Instructors
- Rooms with Multiple Instructors

All rooms that meet target utilization, where **shared** by more than 1 instructor



STRATEGIES

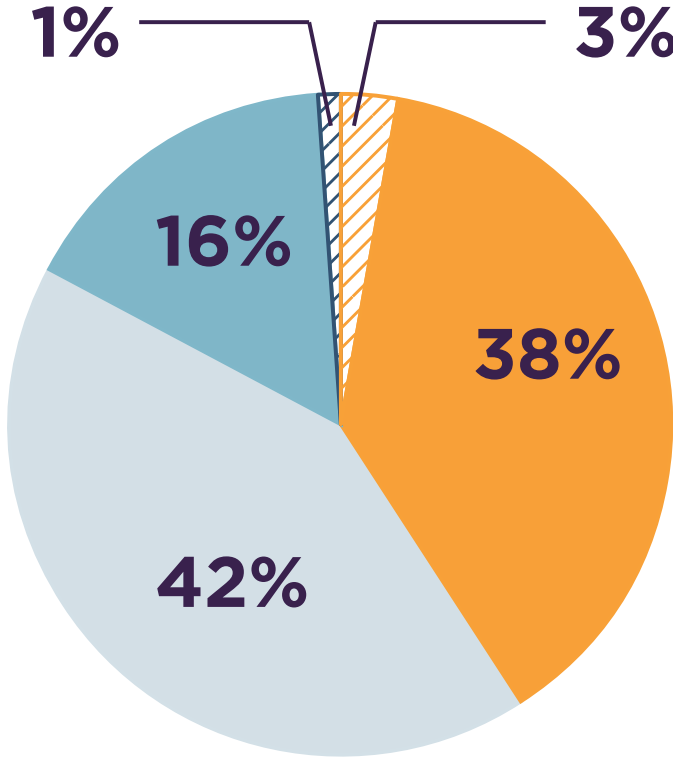
Strategies

Utilization and Occupancy Comparision	90
Latent Classroom Capacity	92
Capacity Oppportunity Assessment	98
Strategies	101

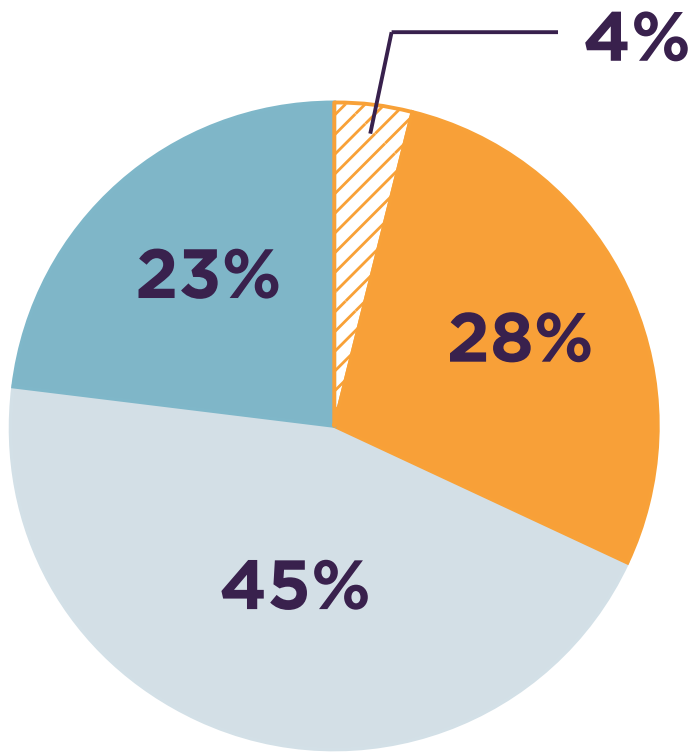
UTILIZATION AND OCCUPANCY COMPARISON

The following is an utilization and occupancy analysis comparing existing space use informed by APS 2013 facilities data and Semester 1, SY 2013-14 master scheduling data for all three high schools.

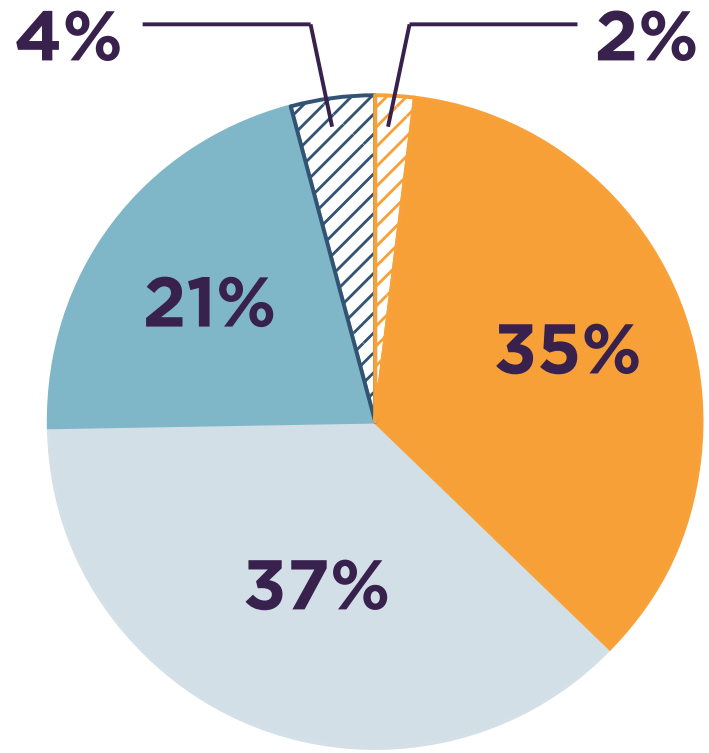
- Unscheduled
- Under Occupied
- Occupied to Capacity or Over
- Reserved [Instruction]
- Reserved [Athletics]



WAKEFIELD



WASHINGTON-LEE



YORKTOWN

LATENT CLASSROOM CAPACITY

The diagram to the right illustrates the amount of latent classroom capacity that exists in Wakefield High School based on current scheduling practices.

Occupancy¹

The vertical axis represents occupancy. Improving scheduling practices to fill instructional rooms at 80% of current published capacity could yield accommodations up to an additional 217 students³.

Utilization²

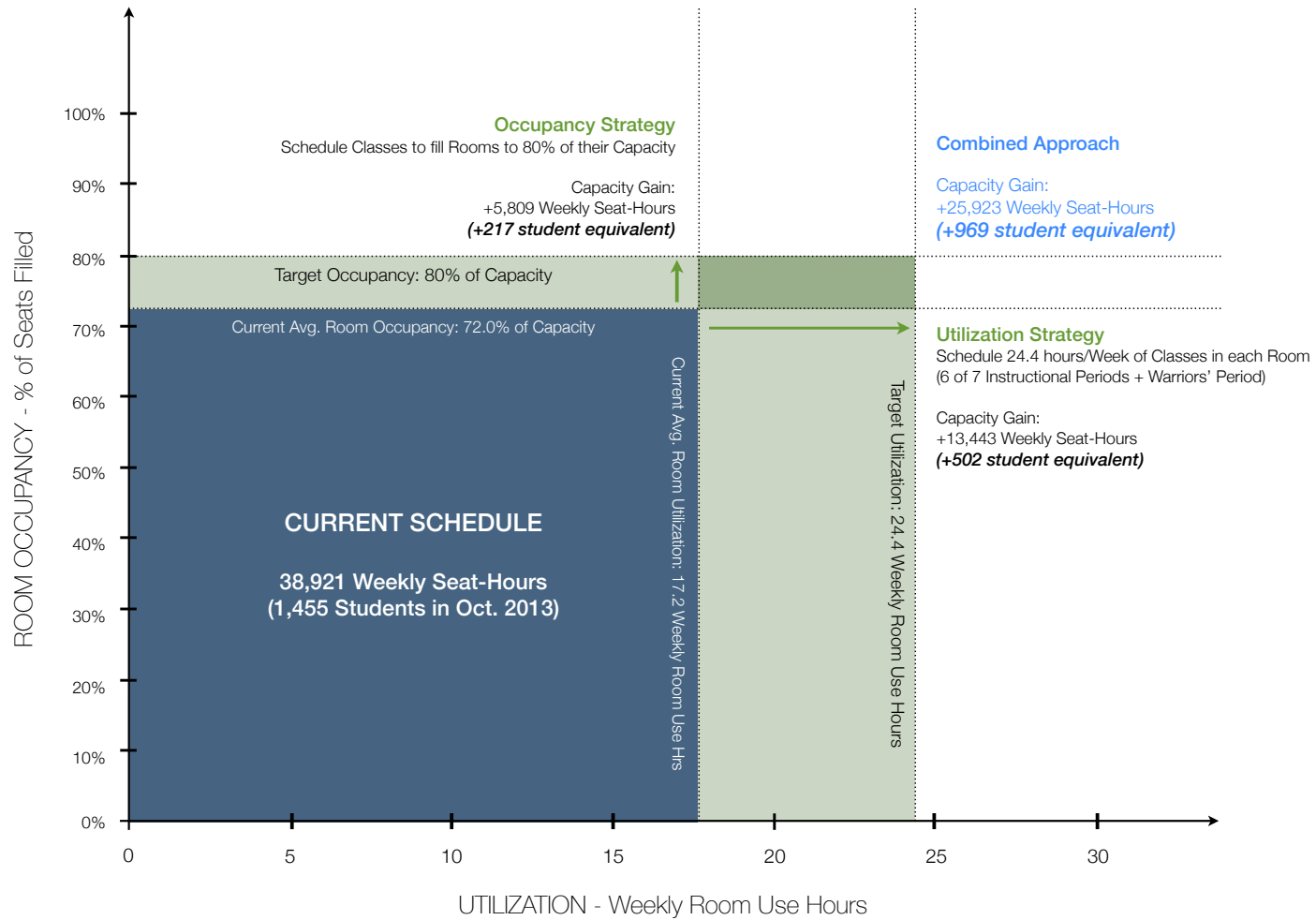
The horizontal axis represents utilization. Improving scheduling practice to utilize instructional rooms at the APS goal of 6/7 periods per day could yield accommodations for approximately 502 additional students.

A combined strategy of both occupancy and utilization improvements could yield an additional capacity of approximately 719 students above current enrollment.

FOOTNOTE:

1. "Occupancy" is the ratio of people-to-capacity for a given room during a specific time
2. "Utilization" is the number of hours a particular space is being used. It is typically compared to the maximum amount of time a space can be accessed.
3. A utilization rate of 80% is often used as a benchmark for the operation of school facilities

WAKEFIELD HIGH SCHOOL



LATENT CLASSROOM CAPACITY

The diagram to the right illustrates the amount of latent classroom capacity that exists in the Washington-Lee High School based on current scheduling practices.

Occupancy¹

The vertical axis represents occupancy. Improving scheduling practices to fill instructional rooms at 80% of current published capacity could yield accommodations for up to an additional 159 students³.

Utilization²

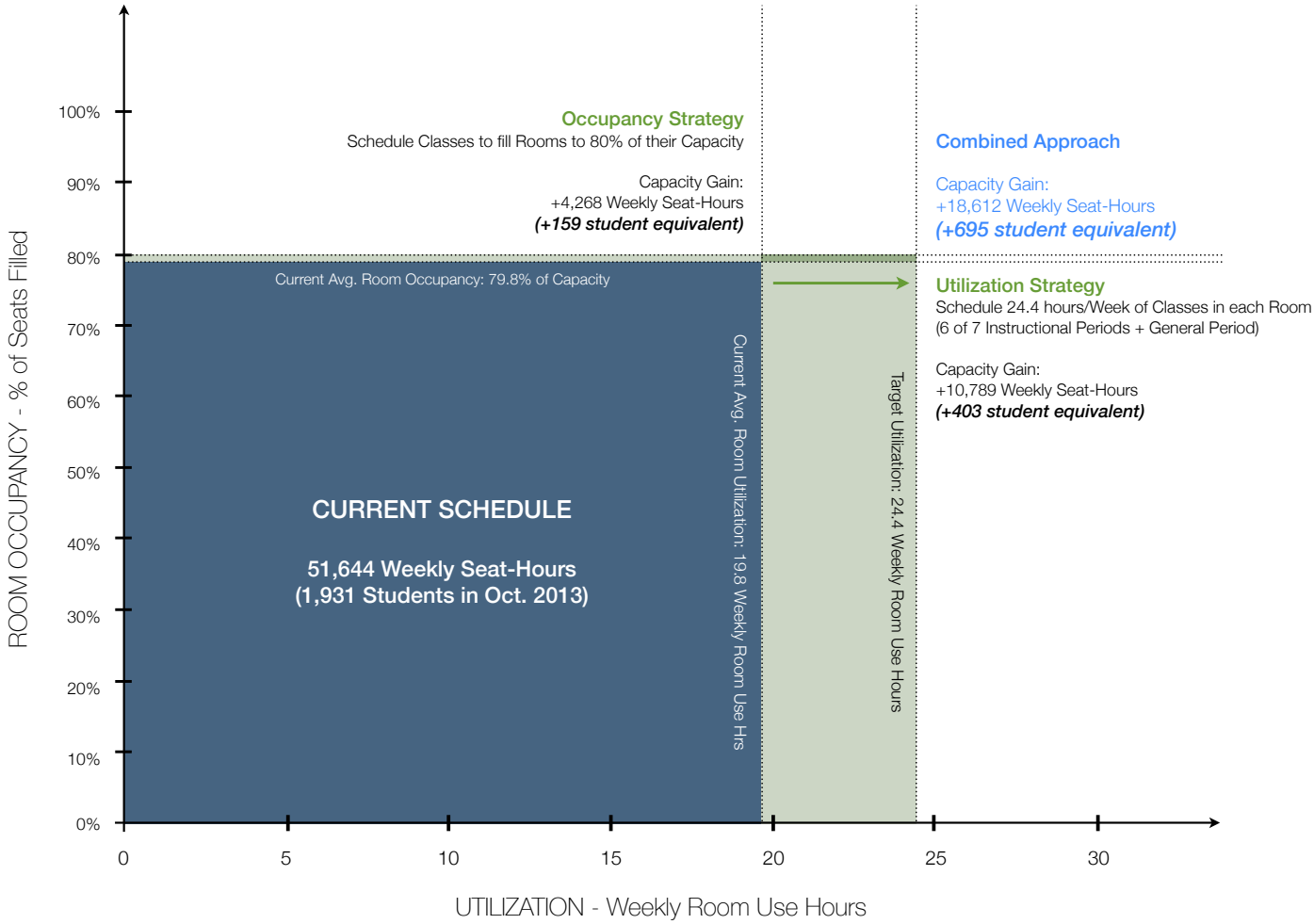
The horizontal axis represents utilization. Improving scheduling practice to utilize instructional rooms at the APS goal of 6/7 periods per day could yield accommodations for approximately 408 additional students.

A combined strategy of both occupancy and utilization improvements could yield an additional capacity of approximately 567 students above current enrollment.

FOOTNOTE:

- 1. "Occupancy" is the ratio of people-to-capacity for a given room during a specific time
- 2. "Utilization" is the number of hours a particular space is being used. It is typically compared to the maximum amount of time a space can be accessed.
- 3. A utilization rate of 80% is often used as a benchmark for the operation of school facilities

WASHINGTON-LEE HIGH SCHOOL



LATENT CLASSROOM CAPACITY

The diagram to the right illustrates the amount of latent classroom capacity that exists in the Yorktown High School based on current scheduling practices.

Occupancy¹

The vertical axis represents occupancy. Improving scheduling practices to fill instructional rooms at 80% of current published capacity could yield accommodations for up to an additional 203 students³.

Utilization²

The horizontal axis represents utilization. Improving scheduling practice to utilize instructional rooms at the APS goal of 7/8 periods per day could yield accommodations for approximately 653 additional students.

A combined strategy of both occupancy and utilization improvements could yield an additional capacity of approximately 856 students above current enrollment.

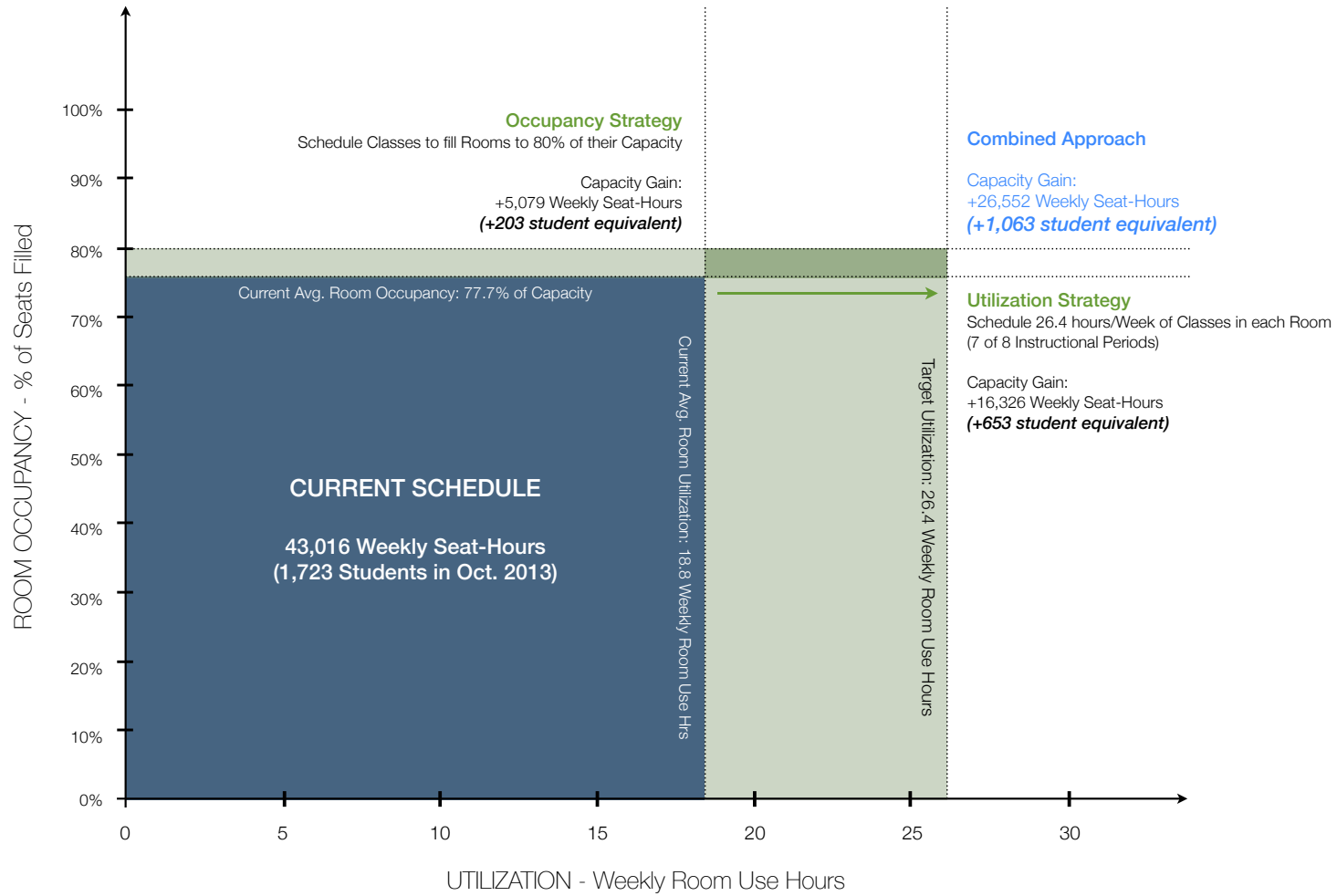
FOOTNOTE:

1. "Occupancy" is the ratio of people-to-capacity for a given room during a specific time

2. "Utilization" is the number of hours a particular space is being used. It is typically compared to the maximum amount of time a space can be accessed.

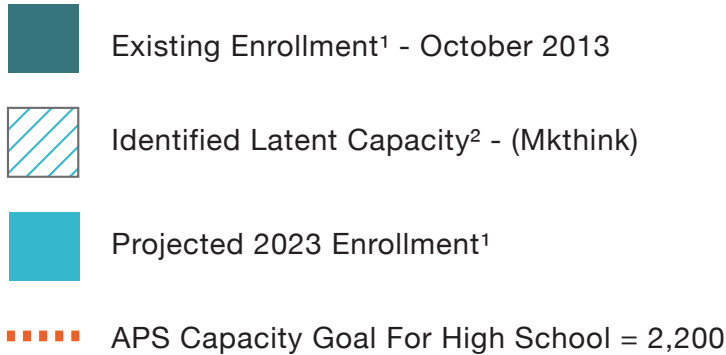
3. A utilization rate of 80% is often used as a benchmark for the operation of school facilities

YORKTOWN HIGH SCHOOL



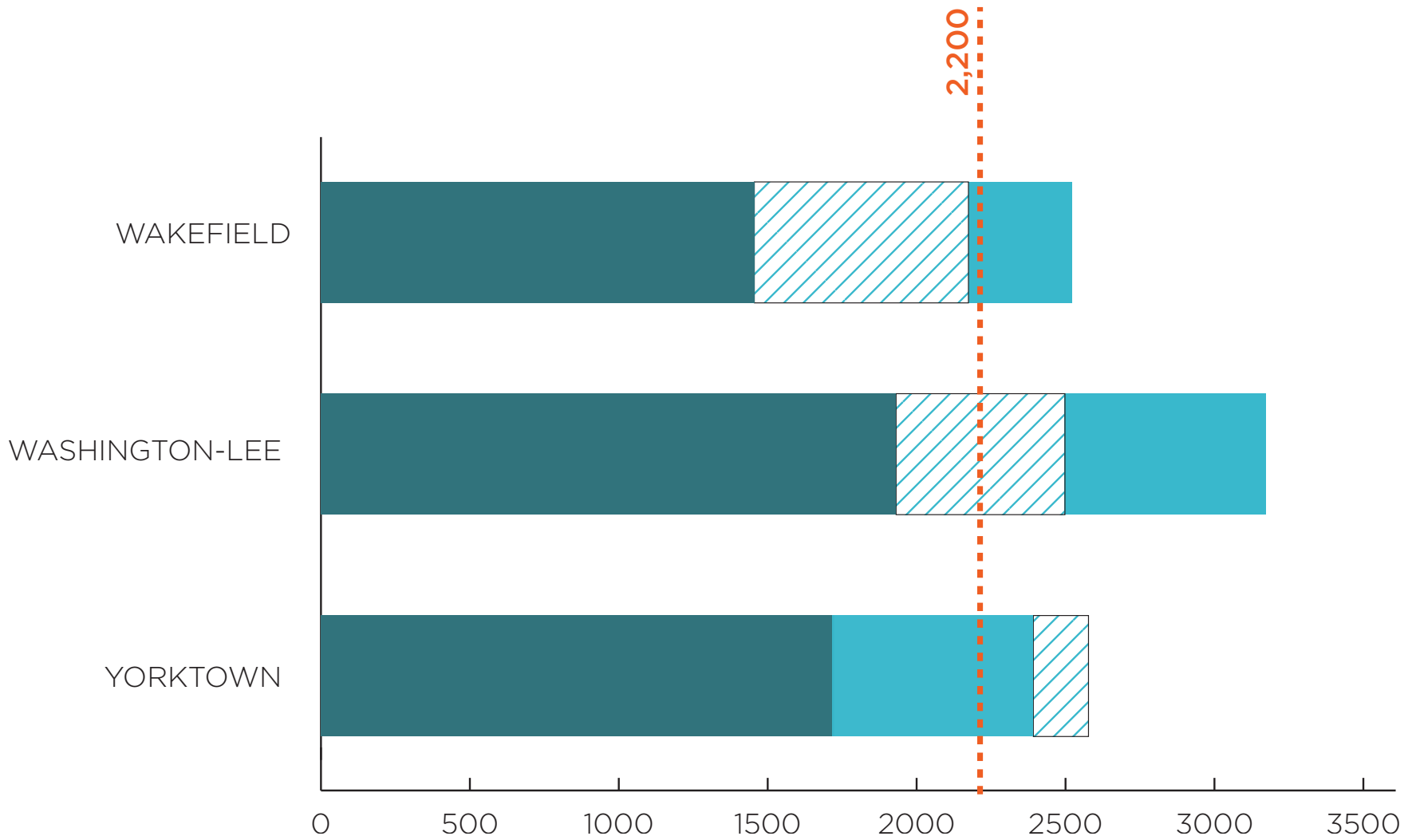
CAPACITY OPPORTUNITY ASSESSMENT

In reviewing the data for all three high schools analyzed within this report, MKThink in collaboration with APS has identified several strategies for accommodating a capacity goal of up to 2,200 students for each high school.



FOOTNOTE

1. Current and projected enrollment figures are based on the APS, Facilities Planning Report "Building Capacities and Projected Student Enrollment for School Year 2014-2023."
2. The identified latent classroom capacity is based on current scheduling practices, please see page 92-96





Addressing the growing population of Arlington Public Schools is a complex task, but we have identified our strategic starting points. Though an analysis of three selected High Schools, here are three specific recommendations to address the growing population and lack of capacity at the high school level.

1. SCHEDULING SOFTWARE

An analysis of the existing scheduling software and its capacity to balance schedule against utilization and occupancy while serving the needs of administrative staff across the division.

2. CAPTURE LATENT CAPACITY

Capture latent capacity found at each of the sites by utilizing a combination of furniture and building solutions, maximizing the utilization and occupancy of the current facilities in support of division strategic goals.

3. UTILIZE ADDITIONAL SPACES

Make better use of communal spaces in support of academic functions.

1. SCHEDULING SOFTWARE

SOFTWARE IDENTIFICATION PROCESS

In order to identify a software package that best meets APS needs, it is recommended that the following process is undertaken:

DISCOVERY

- Survey and interview administrative staff at all, or a select representative of schools, in order to understand the requirements needed from a software package in order to serve the needs of the individual schools
- Survey and interview administrative staff at APS in order to understand the requirements needed from a software package in order to serve the needs of APS at the system level
- Work with division IT staff to understand the current software package and any of its accompanying module offerings

ASSESSMENT

- Run demos on recommended software products to see how well each supports the need of the division and individual school administrators

STRATEGY

- Make recommendations to the division based on software performance, fit, and cost
- Work with software providers to develop dashboards that are specific to the division's needs, meet the needs of individual school administrators, and provides an easy to understand user interface
- Create an implementation strategy to ensure proper usage of the software throughout the division

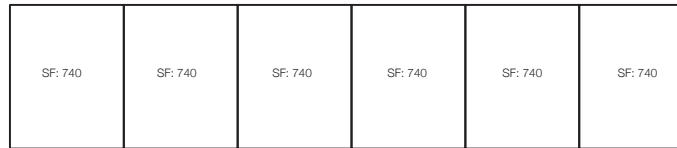
FOOTNOTE:

See "Appendix C: Software Package Recommendation" for a more detailed report.

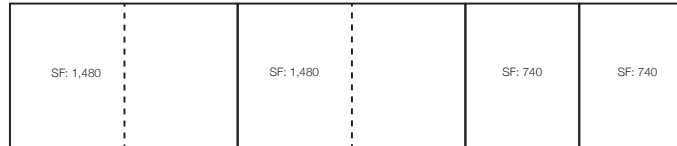
2.

CAPTURE LATENT CAPACITY

2A. Classroom Rightsizing: modify room size to better match class size

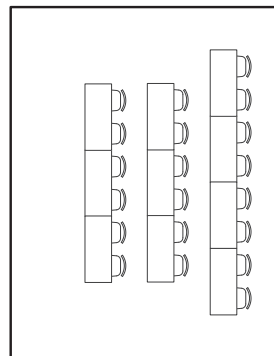


Existing

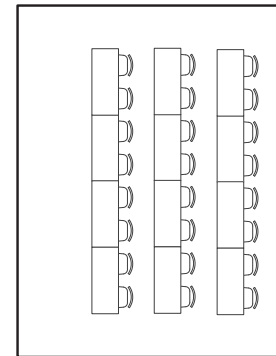


Proposed

2B. Capacity Redefinition: adjust sf/student allocations to increase room capacities. This can be accomplished with the right furniture/technology that supports the learning environment.



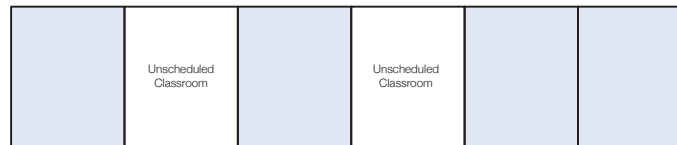
20 Seats



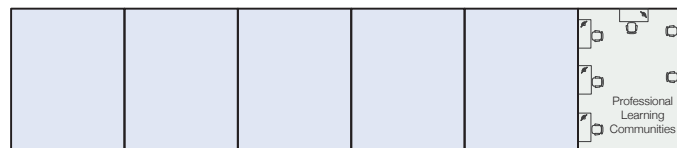
24 Seats

2C. Professional Learning

Communities: provide collaborative teacher work areas for each professional learning communities, classrooms not associated with individual teachers enables higher utilization



Existing - 6 Classrooms



Proposed - 5 Classrooms + 1 Teachers Prep Rooms

3a.

UTILIZE ADDITIONAL SPACES: WAKEFIELD

OVERVIEW

As the newest high school in the APS portfolio, Wakefield has the greatest capacity to accommodate enrollment growth. This does not preclude the fact that there are opportunities to capture additional latent capacity within Wakefield as the division continues to grow.

Library - Instruction Classroom: The library is large enough to accommodate an additional instruction classroom as needed.

Town Hall Heart - Breakout Space: The town hall heart could better be utilized during classroom hours and after hours as additional breakout space and non-traditional instructional space.

Town Hall Courtyard - Breakout Space: The town hall courtyard could be better utilized during classroom hours and after hours as additional breakout space and classroom space during the warmer seasons.

3b.

UTILIZE ADDITIONAL SPACES: WASHINGTON-LEE

OVERVIEW

Of the three high schools surveyed and analyzed for this report, Washington-Lee has the highest existing utilization and occupancy ratio. Accommodating projected enrollment growth at Washington-Lee will require thoughtful strategies and diligent application.

Little Theater - Instruction Classroom(s): The little theater has the capacity to function as two additional instructional classrooms as needed, some modifications will be required in order to successfully implement.

Library - Instruction Classroom: The library is large enough to accommodate an additional instruction classroom as needed.

Hallway Pockets - Breakout and Lunch Space: Providing furniture in recessed areas throughout in the hallways, especially on the ground floor will assist in alleviating the overflow of the cafeteria during the colder seasons and provide needed space for student teams to work in groups on projects. Throughout Washington-Lee there is already a culture of students gathering in and claiming these zones at lunch and during free time. Reclaiming these spaces though correct furniture will allow for an improved utilization that directly support APS's strategic instructional goals.

Enclosed Patio - Lunch Space and Classroom: Sheltering the external patio adjacent to the playing field can alleviate the overflow of the cafeteria during the warm seasons while providing additional outdoor break out and classroom space.

3c.

UTILIZE ADDITIONAL SPACES: YORKTOWN

OVERVIEW

The Design of Yorktown's Neighborhoods provides great opportunities for increased breakout and gathering space at all levels of the school.

Library - Instruction Classroom: The library is large enough to accommodate an additional instruction classroom as needed.

Neighborhood Breakout Space: The width of the halls within each "neighborhood" at Yorktown could be better utilized as breakout and meeting space if adequately furnished.

End of Hall Green Breakout Space: Similar to the "neighborhood" spaces, each floor has a designated "green room" at the end of the hall which have been adorned with plants and could be better utilized as breakout and meeting space if adequately furnished. In addition this allow for much needed space for student teams to work in groups on projects.

Courtyard & Terraces - Breakouts: The courtyard and terraces could be better utilized during classroom hours and after hours as additional breakout space and classroom space during the warmer seasons.

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03 MIDDLE SCHOOLS

An overview of the current Middle Schools' operations in terms of utilization and occupancy.

3 Middle Schools

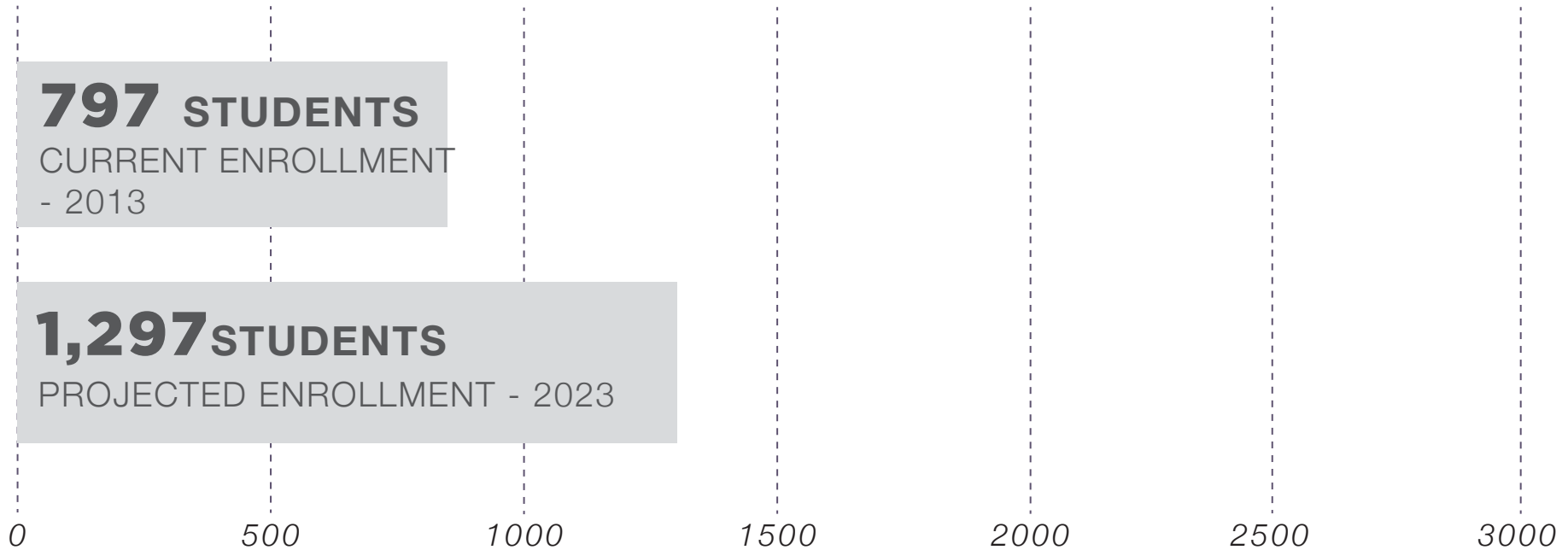
Gunston	116
Jefferson	118
Kenmore	120
Swanson	122
Williamsburg	146
H-B Woodlawn	148
Strategies	153

GMS

GUNSTON MIDDLE SCHOOL

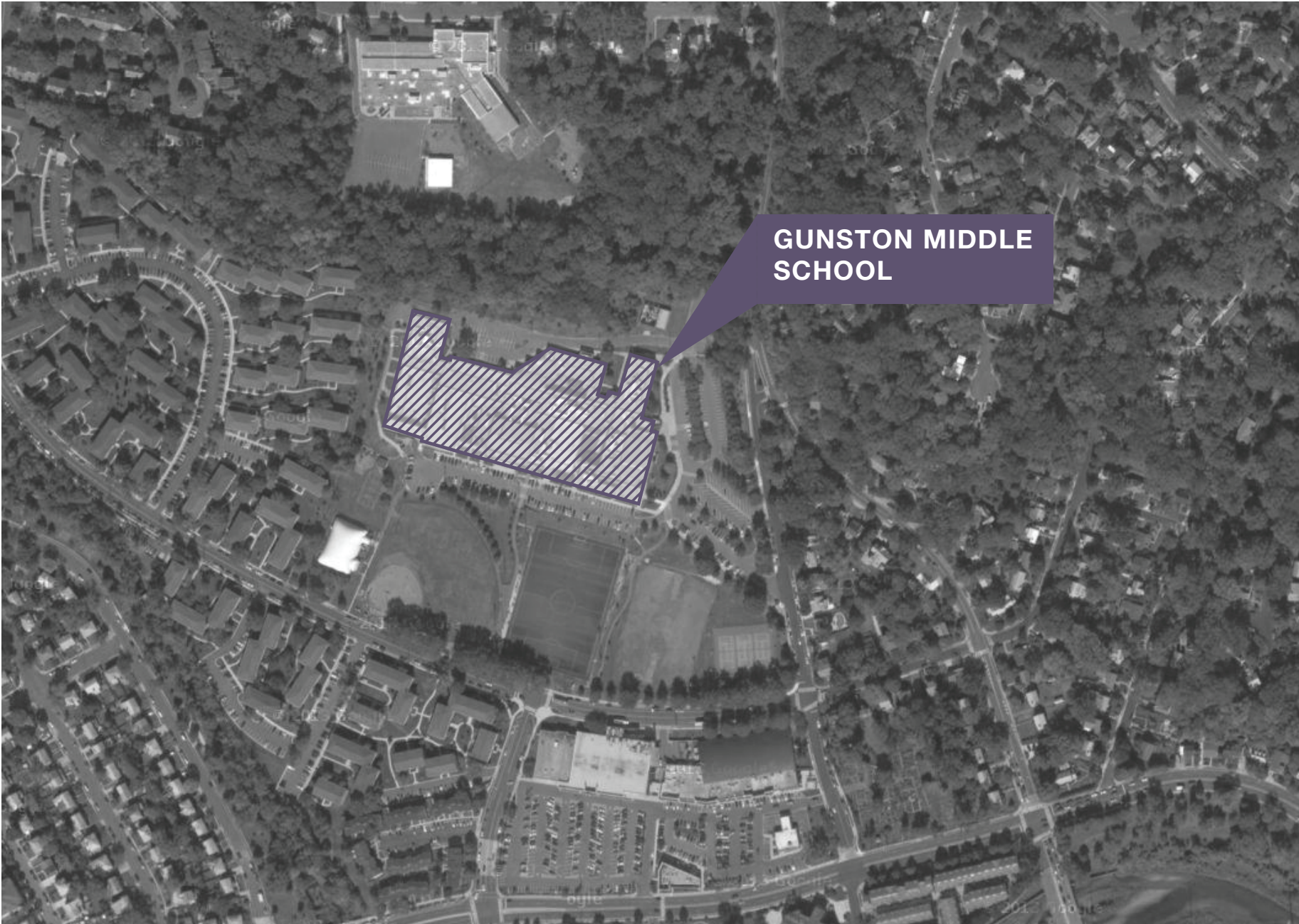
“AT GUNSTON MIDDLE SCHOOL WE PROVIDE A SUPPORTIVE LEARNING ENVIRONMENT, WE HAVE HIGH EXPECTATIONS, AND WE PROMOTE WISE DECISION MAKING AND LIFE-LONG LEARNING.”

- GUNSTON MISSION



FOOTNOTE

Current and projected enrollment figures are based on the APS, Facilities Planning Report “Building Capacities and Projected Student Enrollment for School Year 2014-2023”



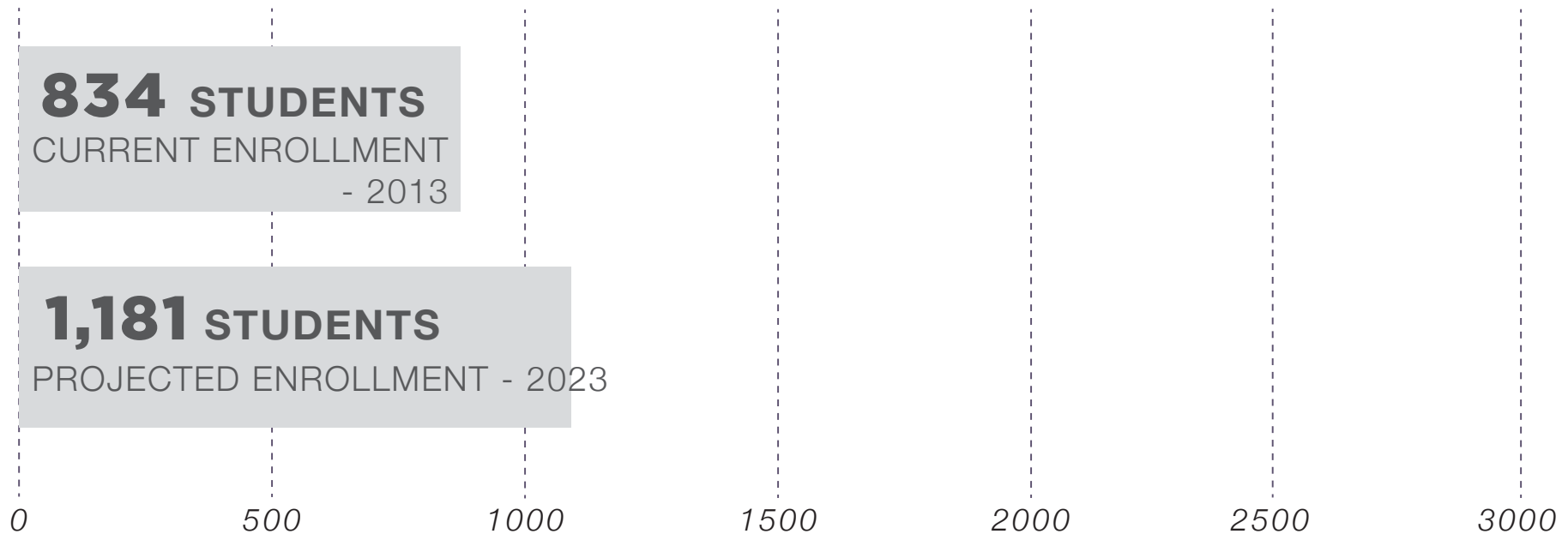
**GUNSTON MIDDLE
SCHOOL**

JMS

JEFFERSON MIDDLE SCHOOL

“THOMAS JEFFERSON MIDDLE SCHOOL PREPARES ALL STUDENTS TO BE ACTIVE MEMBERS OF THE GLOBAL COMMUNITY AND SKILLED REFLECTIVE COMMUNICATORS WHO CAN APPLY THEIR LEARNING TO BENEFIT THE WORLD AROUND THEM.”

-JEFFERSON PHILOSOPHY



FOOTNOTE

Current and projected enrollment figures are based on the APS, Facilities Planning Report “Building Capacities and Projected Student Enrollment for School Year 2014-2023”



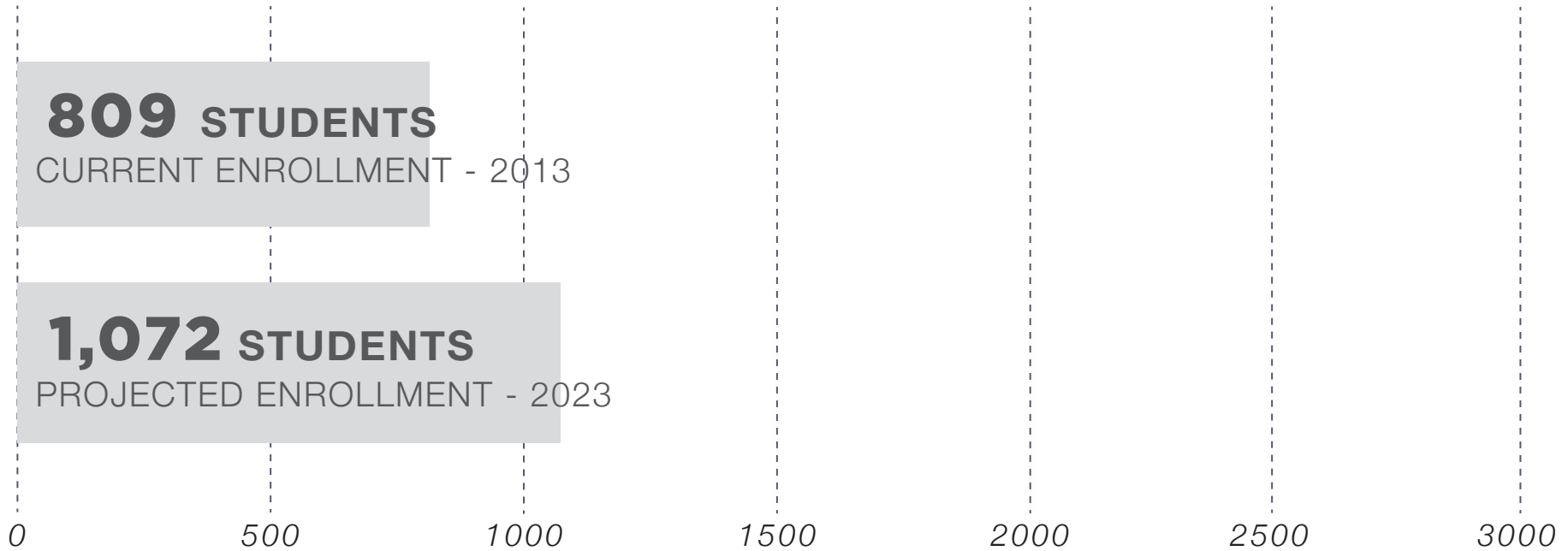
JEFFERSON
MIDDLE SCHOOL

KMS

KENMORE MIDDLE SCHOOL

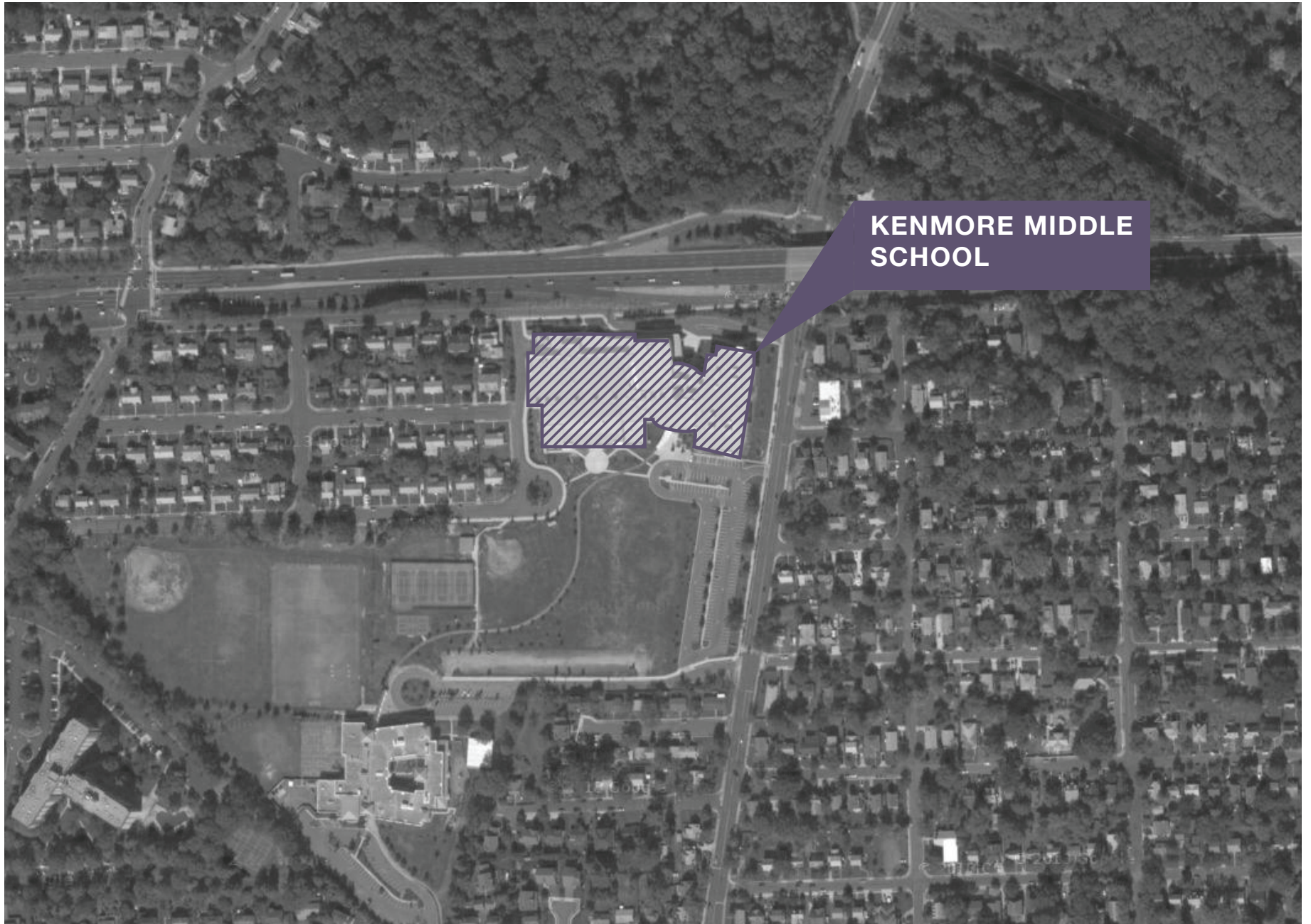
“THE MISSION OF KENMORE MIDDLE SCHOOL IS TO PROVIDE A BALANCED LEARNING ENVIRONMENT OF INTELLECTUAL, SOCIAL, CULTURAL, AND PHYSICAL EXPERIENCES DESIGNED TO MEET THE NEEDS OF EARLY ADOLESCENTS.”

-KENMORE PHILOSOPHY



FOOTNOTE

Current and projected enrollment figures are based on the APS, Facilities Planning Report “Building Capacities and Projected Student Enrollment for School Year 2014-2023”



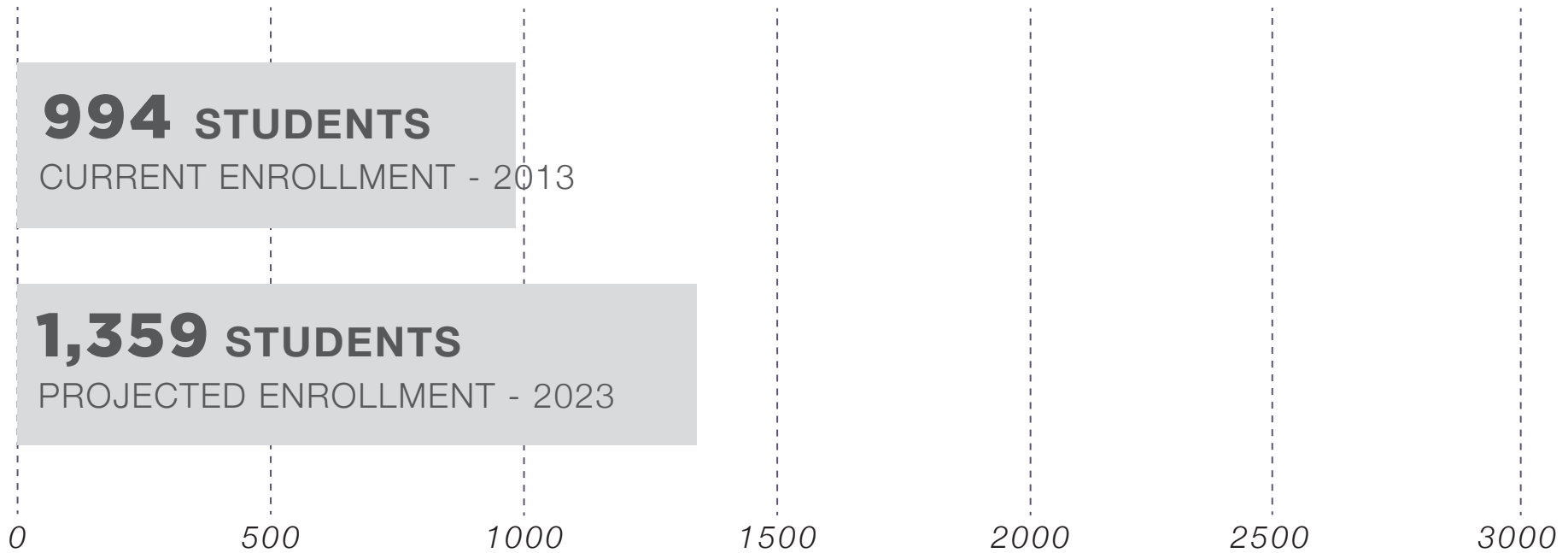
**KENMORE MIDDLE
SCHOOL**

SMS

SWANSON MIDDLE SCHOOL

“ENGAGE AND EDUCATE TODAY'S STUDENTS, EMPOWERING THEM TO CONTRIBUTE TO TOMORROW'S WORLD.”

-SWANSON VISION



FOOTNOTE

Current and projected enrollment figures are based on the APS, Facilities Planning Report “Building Capacities and Projected Student Enrollment for School Year 2014-2023”



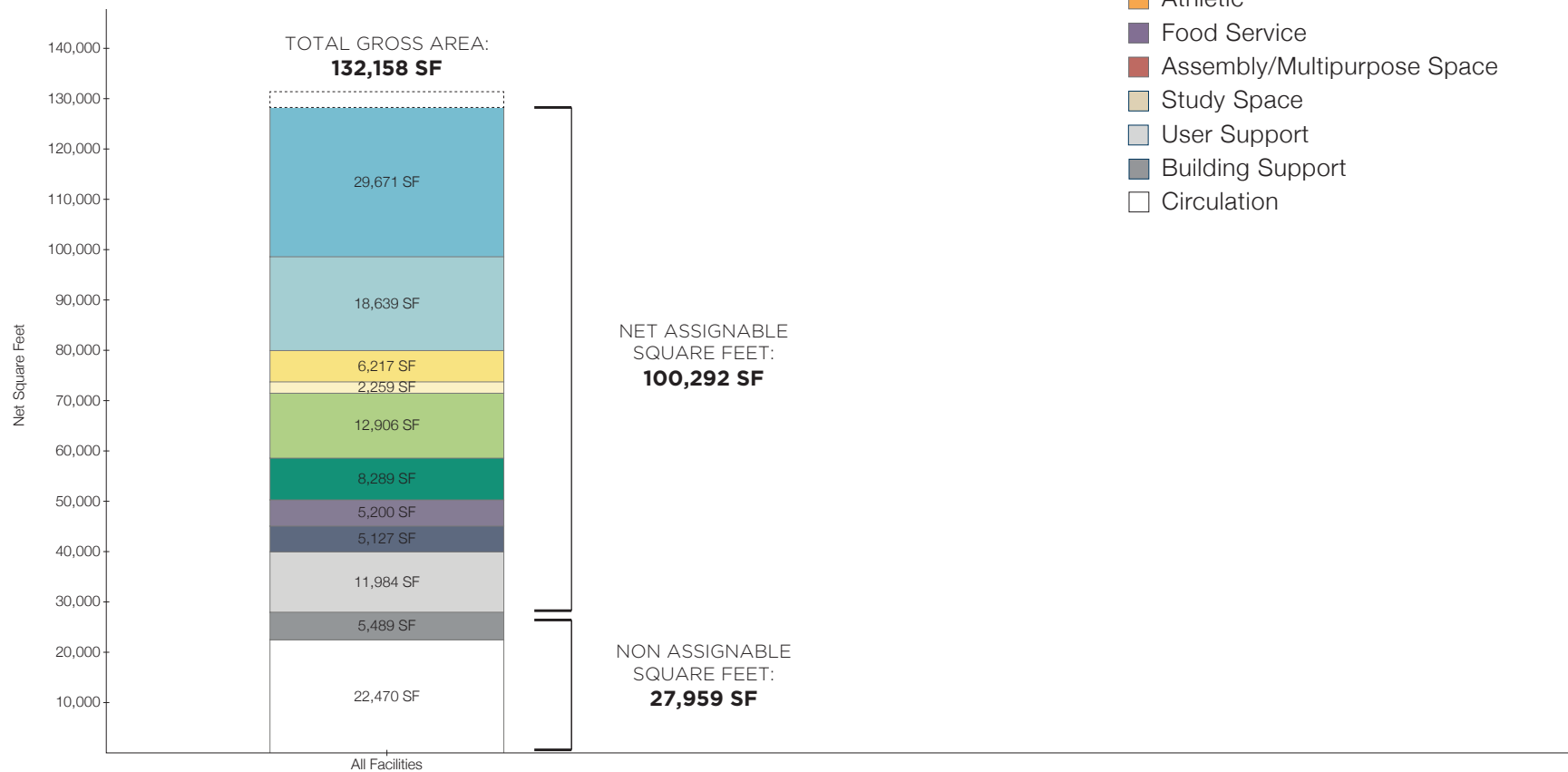
SWANSON MIDDLE
SCHOOL

EXISTING PROGRAM

Excluding circulation and building support space from the overall total, the Swanson facilities consist of 100,292 net assignable square feet. Of this, 48.2% is Instructional space, 12.9% is Athletics space, and 6.2% is Office space for faculty, staff, and administrators.

KEY

- Structural Area
- General Classroom
- Specialized Classroom
- Office
- Admin/Faculty Support
- Athletic
- Food Service
- Assembly/Multipurpose Space
- Study Space
- User Support
- Building Support
- Circulation



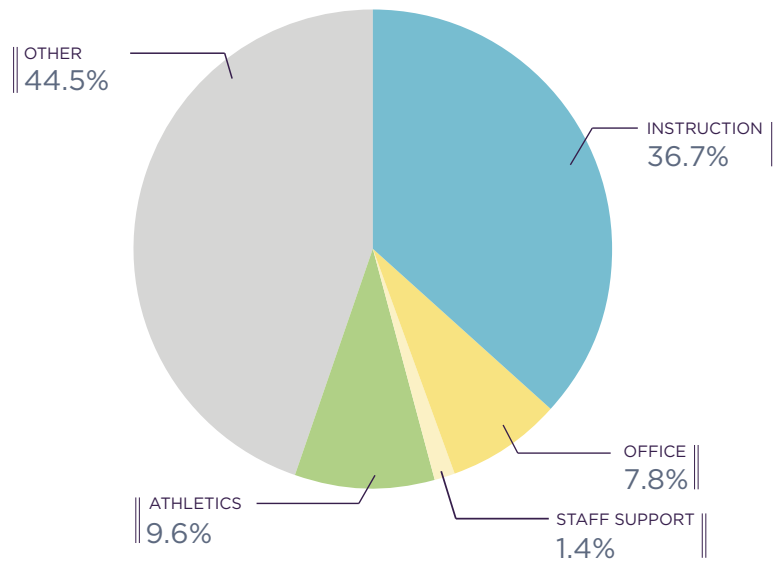
FOOTNOTE

Gross square feet figures for Swanson Middle School are based from APS website - Energy Report Card

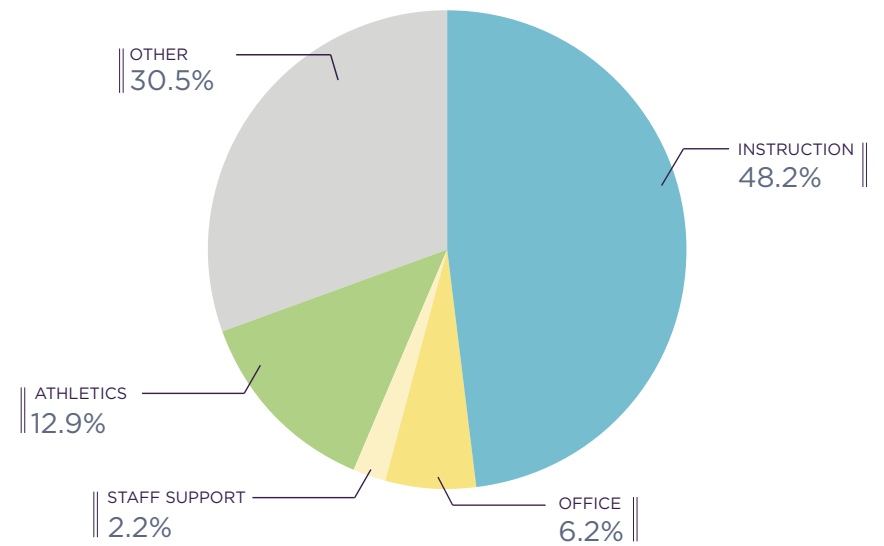
BREAKDOWN BY PROGRAM

Comparison of key program types at a typical school, grades 6-12, and Swanson Middle School.

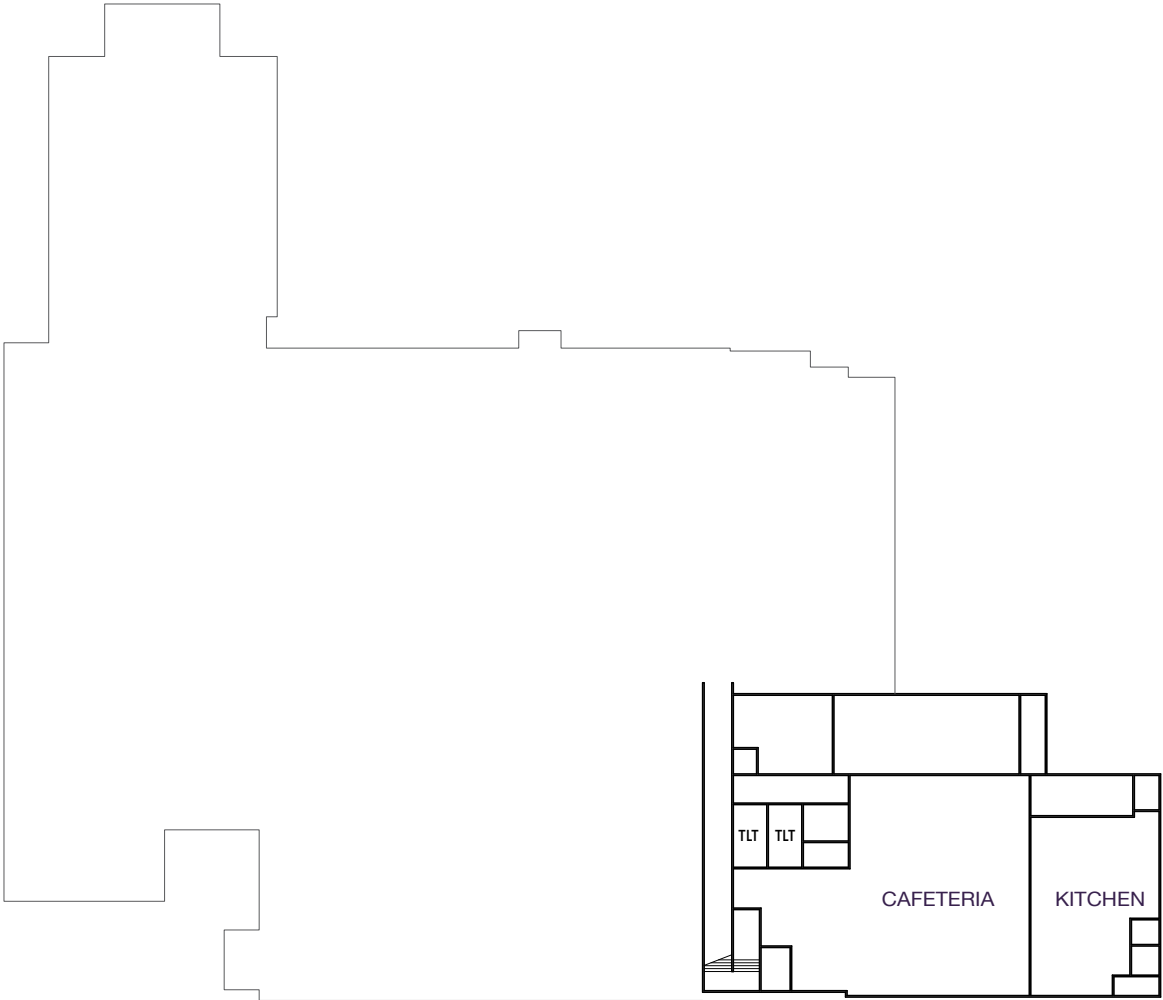
TYPICAL SCHOOL GRADES 6-12



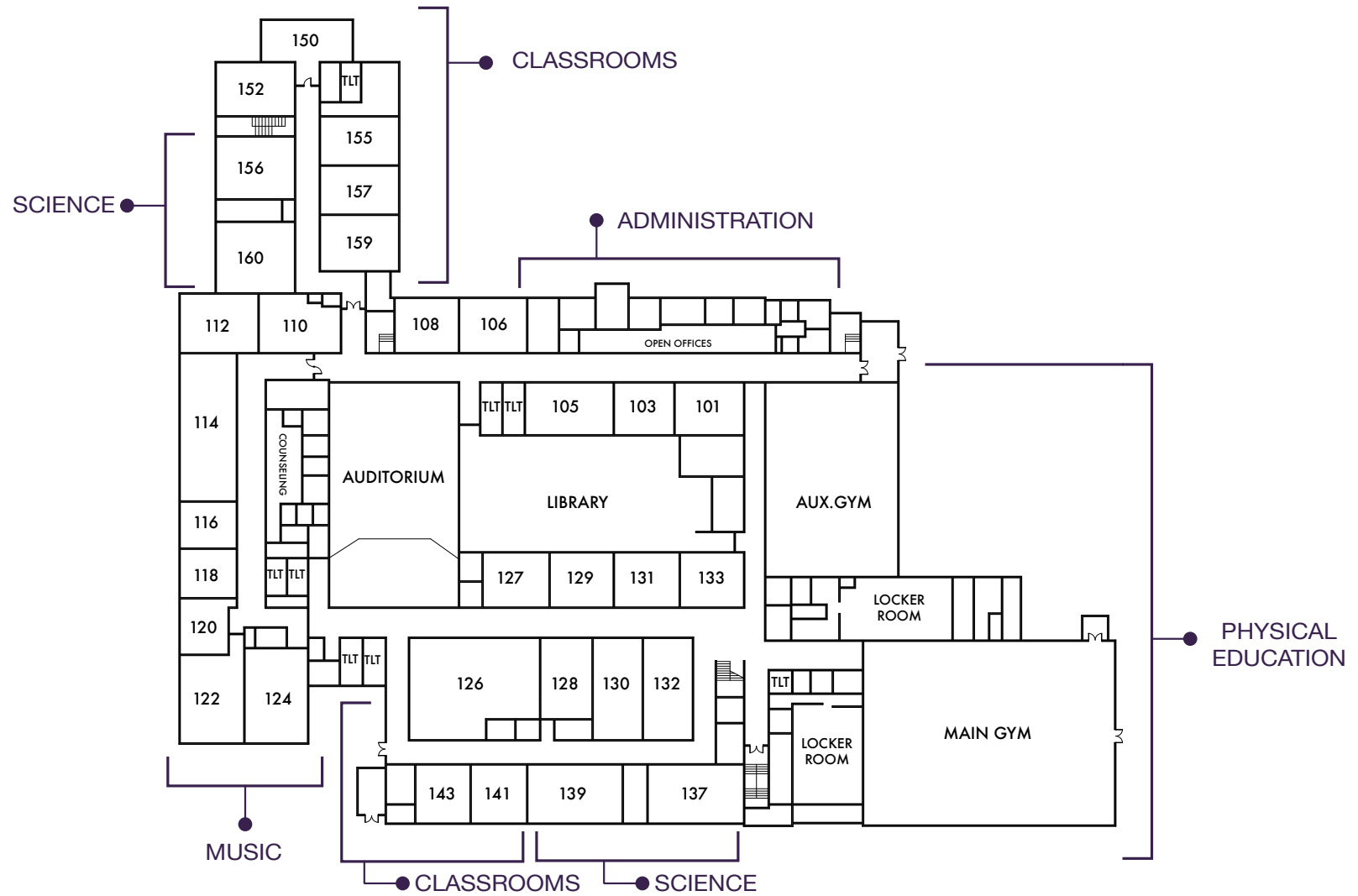
SWANSON MIDDLE SCHOOL



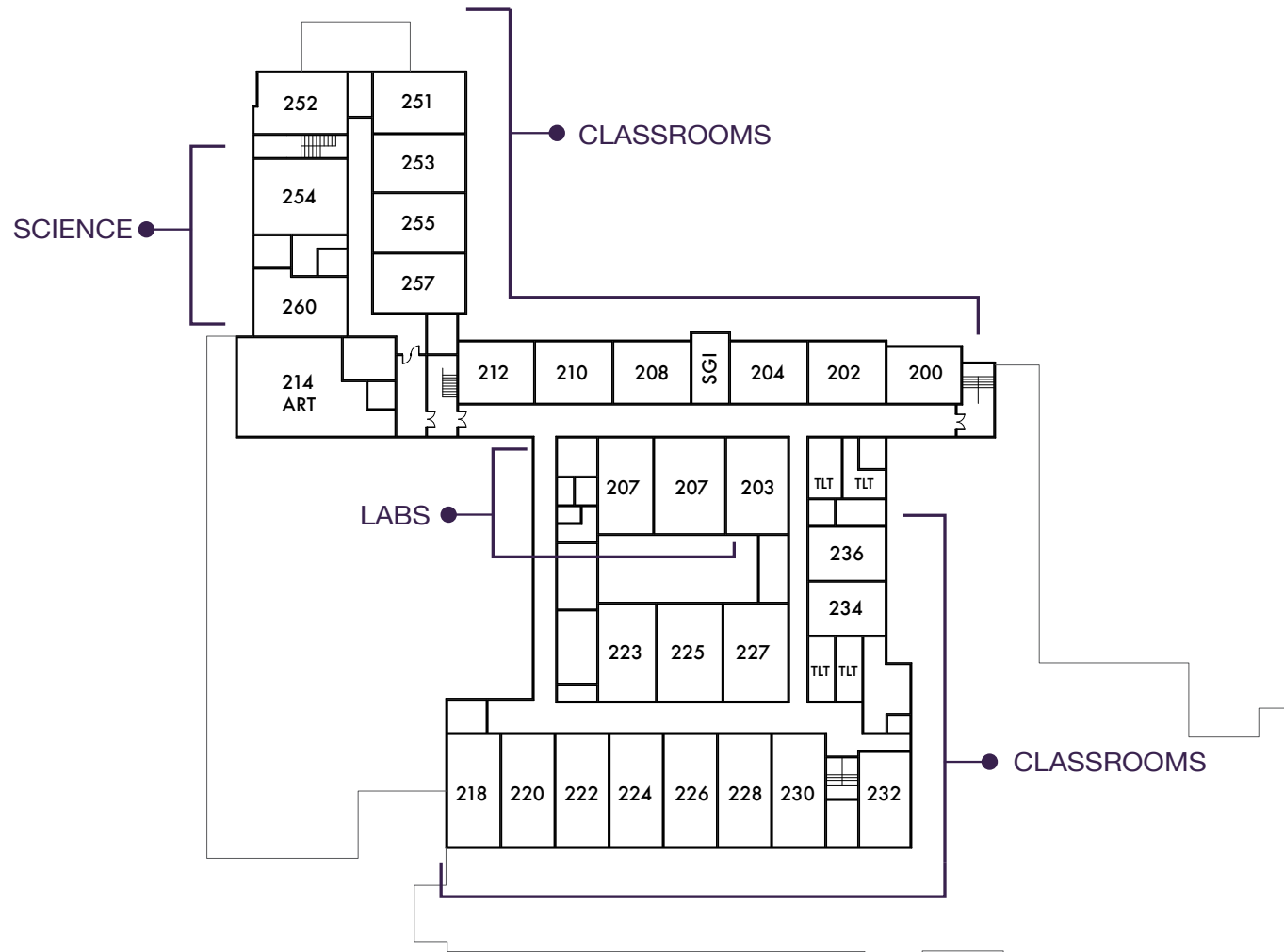
FLOOR PLAN 00



FLOOR PLAN 01



FLOOR PLAN 02







DEPARTMENT INTERVIEWS

In order to understand the space utilization of Swanson Middle School and the occupancy of its classrooms given its schedule, MKThink undertook a series of meetings with school leadership that are key to its operations and success. ¹

HIGHLIGHTS

- The theme at Swanson Middle School is: service, scholarship, and spirit.
- The school is organized in diverse teams of students, with an intentional distribution of capabilities, backgrounds, gender, and ethnicity.
- Teams are roughly made-up of about 100 students by grade.
- The classroom space for each team is as contiguous as possible within current architectural constraints
- The Student Teacher Advisory and Reading (STAR) period runs 20 minutes.

FOOTNOTE

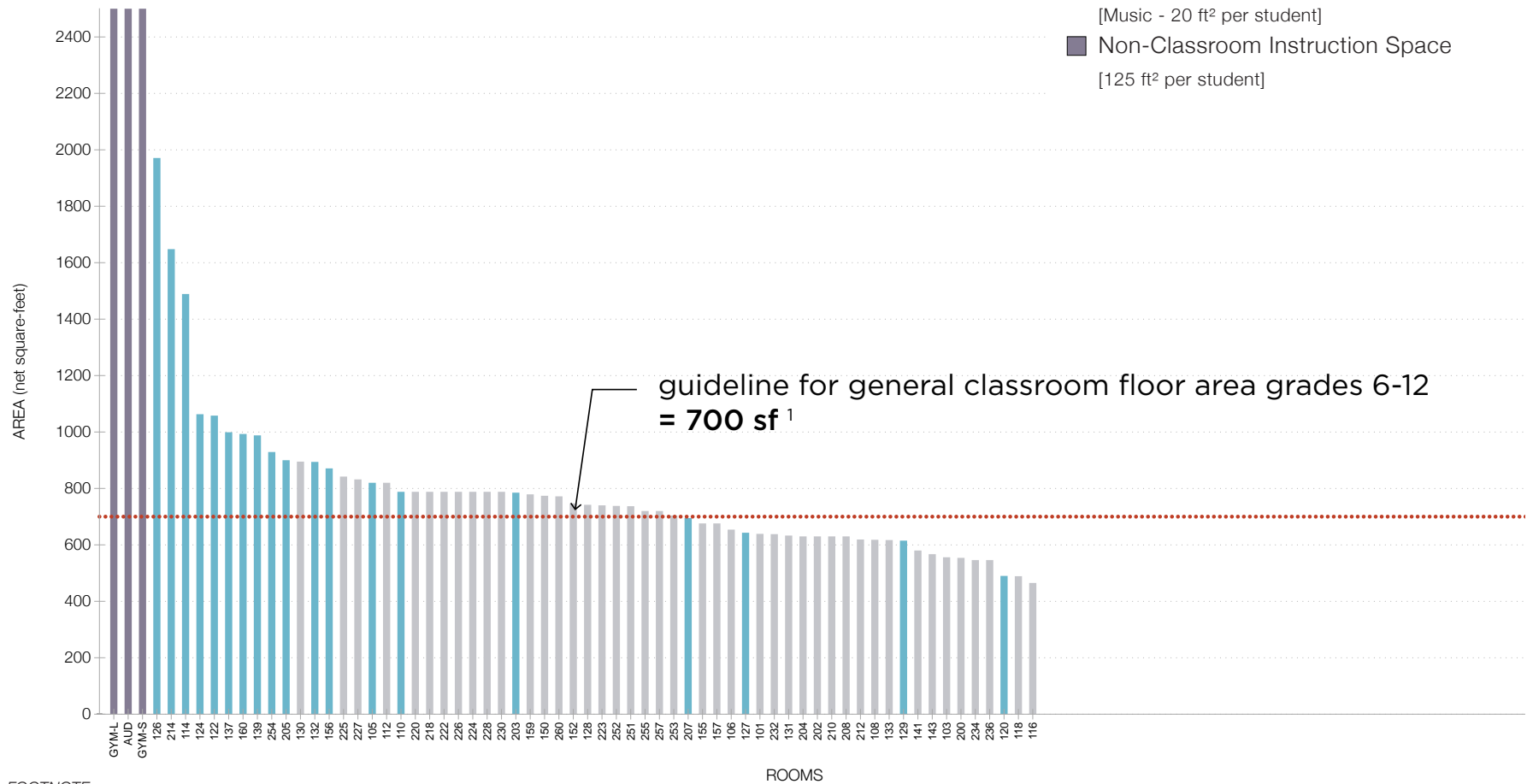
1. Refer to Appedix A for all interviews

INSTRUCTIONAL ROOMS BY FLOOR AREA

KEY

26% (11 out of 43) of general classrooms at Swanson are within 50 sf of the 700 sf standard outlined by the VA Department of Education (DOE) guidelines for general classrooms grade 6-12.¹

- General Classroom
[30 ft² per student]
- Specialized Classroom
[40 ft² per student]
[Music - 20 ft² per student]
- Non-Classroom Instruction Space
[125 ft² per student]



FOOTNOTE

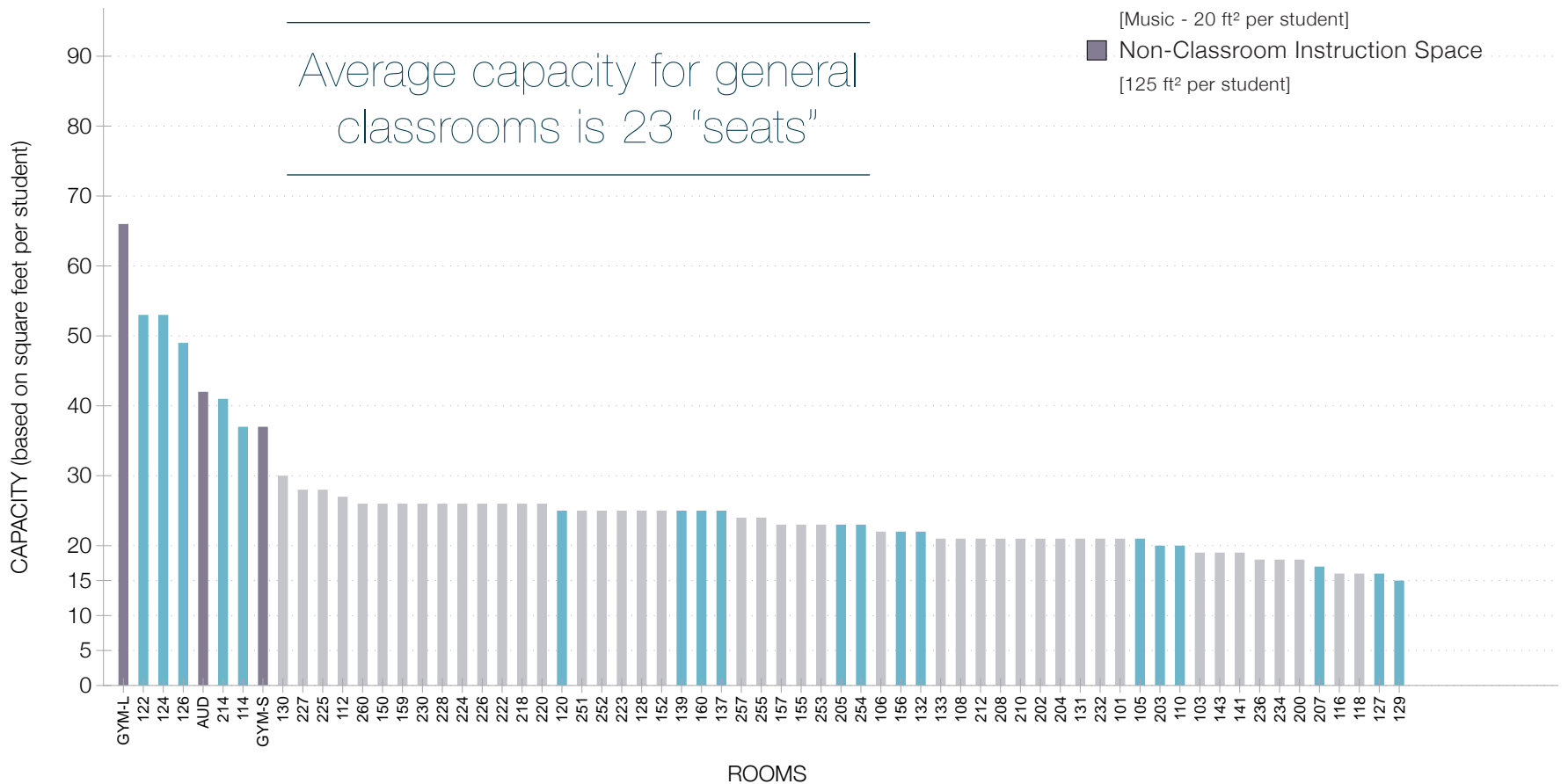
1. General classroom floor area standards for grades 6-12 are based on the Virginia Department of Education "Guidelines for School Facilities" 2013.

INSTRUCTIONAL ROOMS BY CAPACITY

A room's capacity is calculated based on its physical layout and its floor area, using a factor of area (sf) needed per student to engage in the learning activities associated with each room's intended use. See key to the right for capacity assigned to each room type.

KEY

- General Classroom
[30 ft² per student]
- Specialized Classroom
[40 ft² per student]
[Music - 20 ft² per student]
- Non-Classroom Instruction Space
[125 ft² per student]



FOOTNOTE

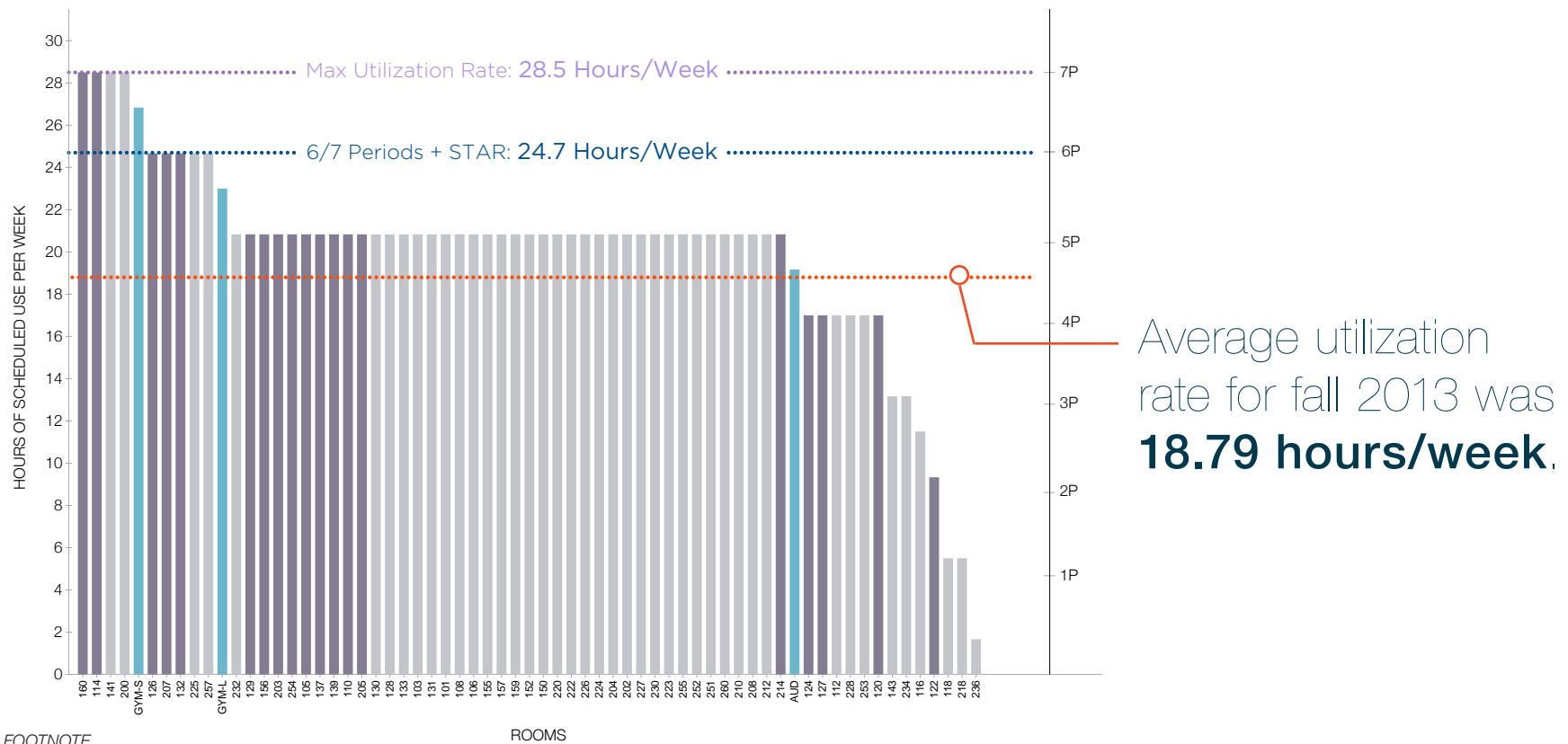
General classroom capacity standards are based on common threshold for grades 6-12, Specialized Classrooms and Non-Classroom Instruction Space are based on the Virginia Department of Education "Guidelines for School Facilities" 2013.

WEEKLY ROOM USE HOURS

During a typical week, the Swanson bell schedule has 28.5 hours of scheduled room use¹. A total of 7 rooms - 4 General classrooms and 3 Specialized classrooms - were scheduled at or above the target utilization rate of 6 out of 7 instructional periods.

KEY

- General Classroom
- Specialized Classroom
- Non-Classroom Instruction Space



FOOTNOTE

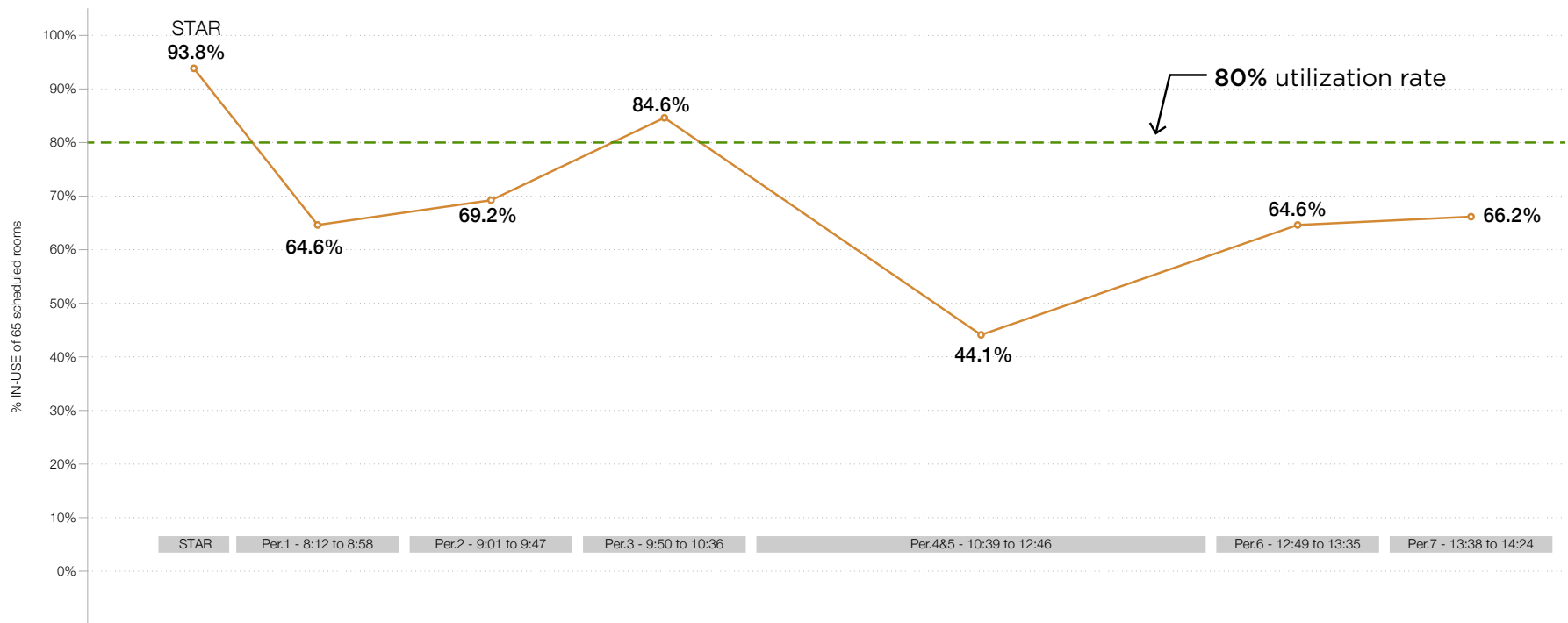
1. "Weekly Room Use Hours" is the amount of time that a room is scheduled for instruction during a 5-day week.
2. Utilization Rates are based on the Fall 2013 schedule.

INSTRUCTIONAL SPACE UTILIZATION BY PERIOD - SEMESTER 1, 2013-14

KEY

Throughout the day, the percentage of rooms in use at a given time fluctuates between 44% during lunch, and over 90% during STAR period. Outside of lunch times and STAR period, the utilization rate fluctuates less dramatically between 65% and 85% utilization. Swanson's average room utilization operates at the highest rate among the selected schools in the report.

—○— Room Utilization Rate



FOOTNOTE:

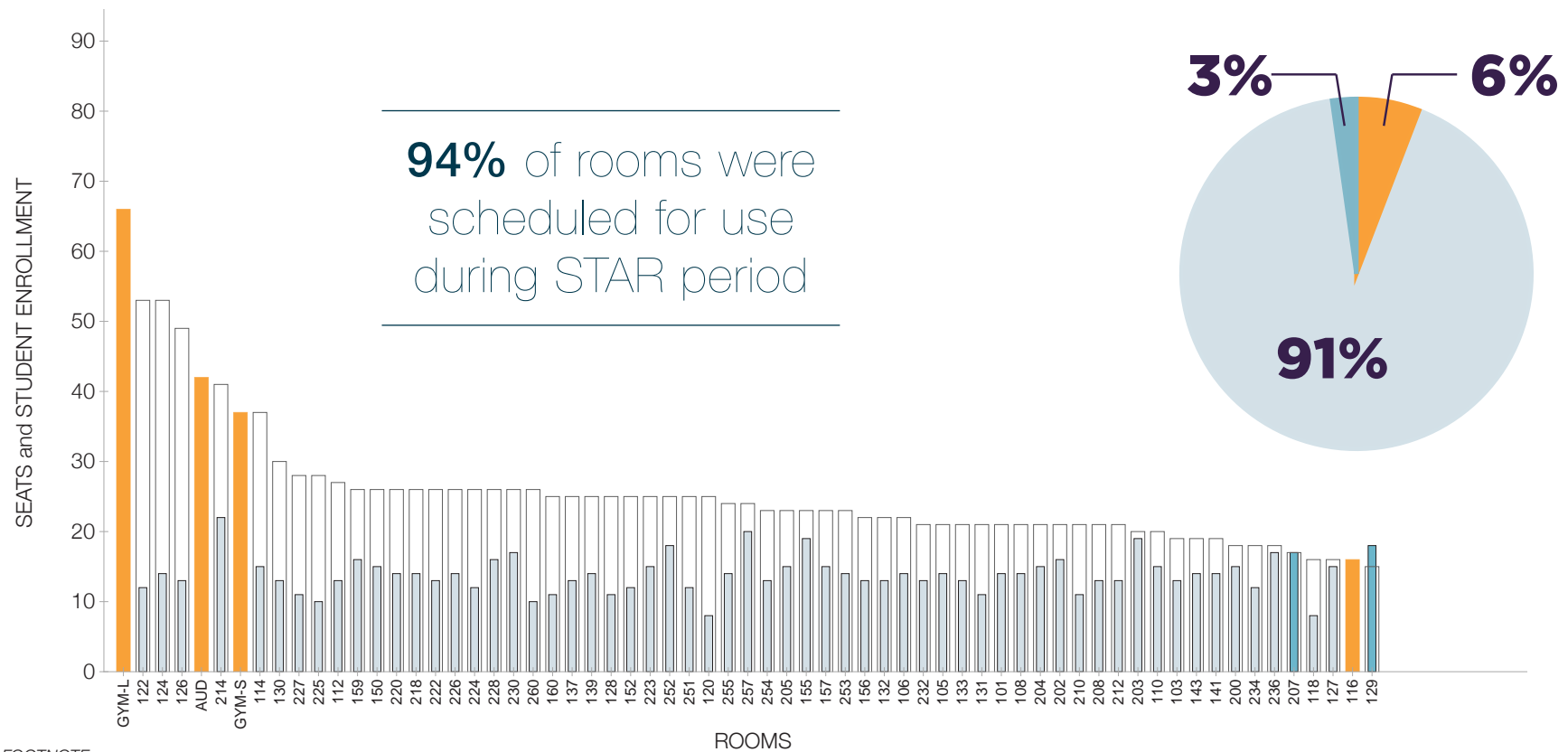
Utilization Rates are based on the set of 65 rooms determined to drive capacity at Swanson Middle School. This set includes rooms that both appear in the 2013-14 Master Course Schedule and whose primary function is to host classes.

STAR PERIOD - OCCUPANCY AND UTILIZATION BY ROOM, FALL 2013-14

KEY

Room utilization and occupancy rates are based on the Fall 2013-14 Master Schedule, which includes both rooms whose primary function is to host classes and Athletic space¹. During STAR period, 94% of rooms were scheduled for use; of these rooms, 2 were at or over capacity, while 15 rooms were less than half full.

- Unscheduled
- Under Occupied
- Occupied to Capacity or Over



FOOTNOTE:

1. Athletic space use patterns are based on the P.E. department's 4th unit schedule, at which time all classes are held indoors due to weather.
2. Charts and floor plans depict a selection of three periods. Refer to Appendix B for a full set of charts that illustrate all eight periods.

STAR PERIOD - FLOOR PLANS

The floor plans below indicate occupancy and utilization by room in terms of the key and corresponding graph to the left.



Floor Plan 01



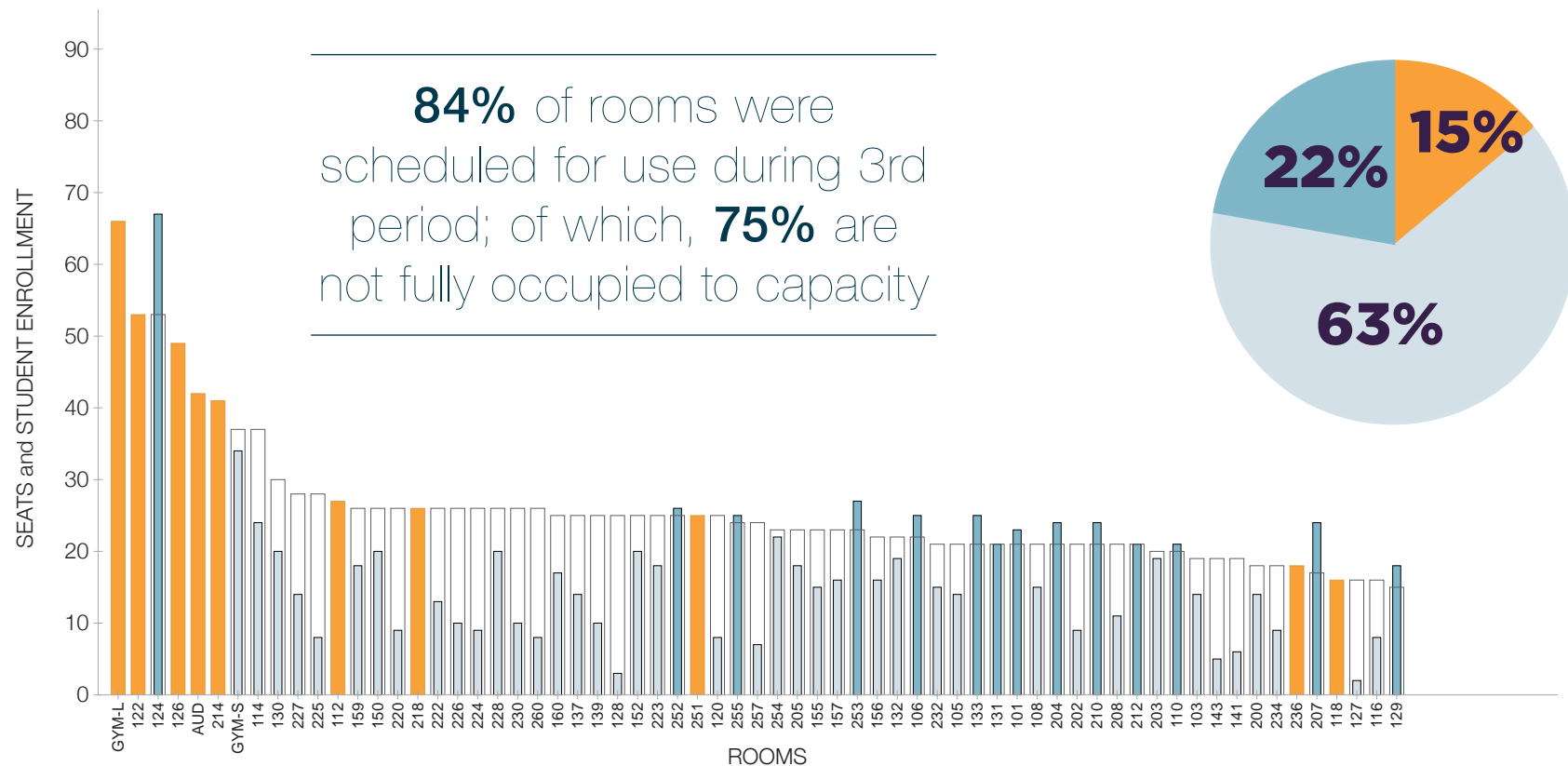
Floor Plan 02

3RD PERIOD - OCCUPANCY AND UTILIZATION BY ROOM, FALL 2013-14

KEY

Room utilization and occupancy rates are based on the Fall 2013-14 Master Schedule, which includes both rooms whose primary function is to host classes and Athletic space¹. During 3rd period, 84% of rooms were scheduled for use; of these rooms, 14 were at or over capacity, while 14 rooms were less than half full.

- Unscheduled
- Under Occupied
- Occupied to Capacity or Over



FOOTNOTE:

1. Athletic space use patterns are based on the P.E. department's 4th unit schedule, at which time all classes are held indoors due to weather.
2. Charts and floor plans depict a selection of three periods. Refer to Appendix B for a full set of charts that illustrate all eight periods.

3RD PERIOD - FLOOR PLANS

The floor plans below indicate occupancy and utilization by room in terms of the key and corresponding graph to the left.



Floor Plan 01



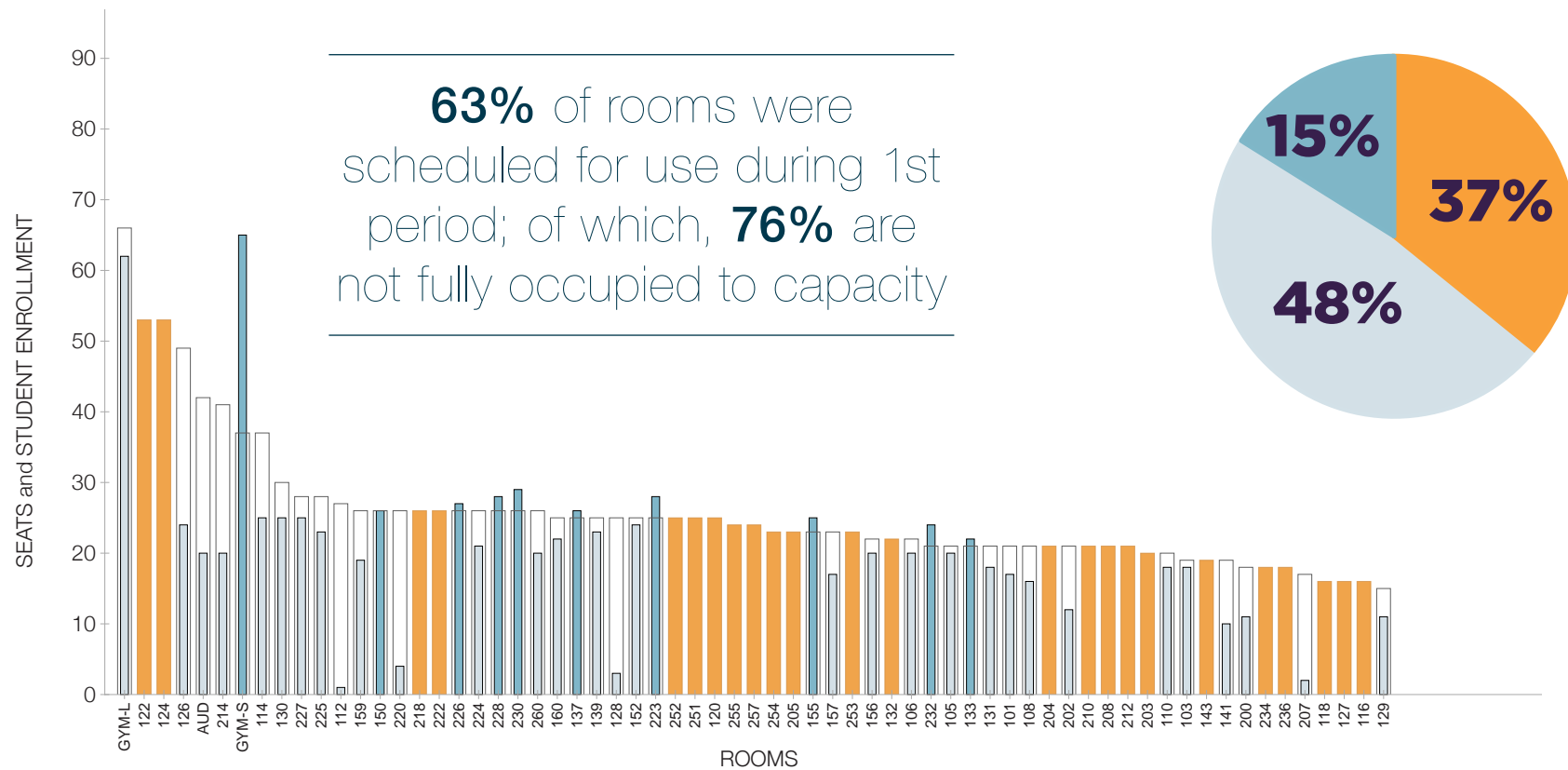
Floor Plan 02

5TH PERIOD - SCHEDULED OCCUPANCY BY ROOM, FALL 2013-14

KEY

Room utilization and occupancy rates are based on the Fall 2013-14 Master Schedule, which includes both rooms whose primary function is to host classes and Athletic space¹. During period 5, 63% of rooms were scheduled for use; of these rooms, 10 were at or over capacity, while 7 rooms were less than half full.

- Unscheduled
- Under Occupied
- Occupied to Capacity or Over



FOOTNOTE:

1. Athletic space use patterns are based on the P.E. department's 4th unit schedule, at which time all classes are held indoors due to weather.
2. Charts and floor plans depict a selection of three periods. Refer to Appendix B for a full set of charts that illustrate all eight periods.

FLOOR PLANS

The floor plans below indicate occupancy and utilization by room in terms of the key and corresponding graph to the left.



Floor Plan 01



Floor Plan 02

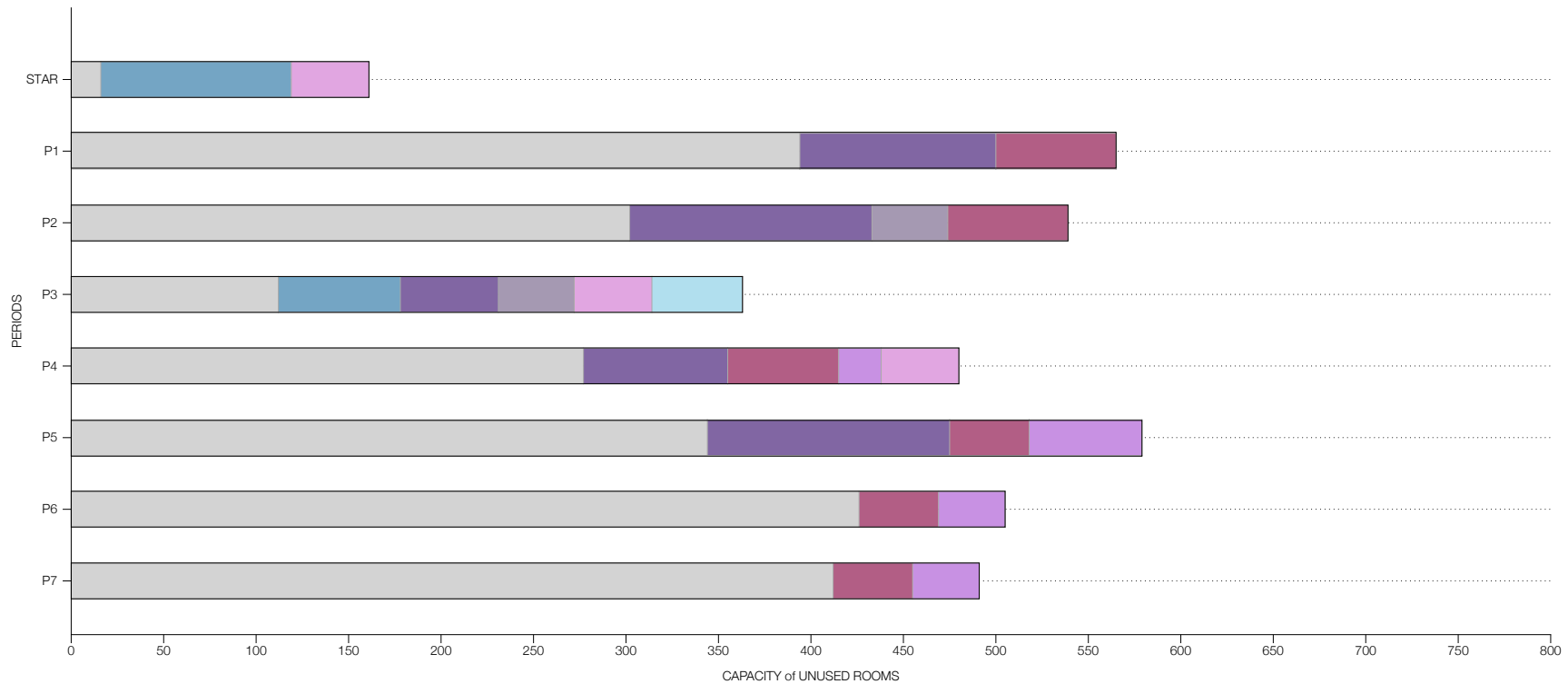
CAPACITY OF UNSCHEDULED ROOMS BY PERIOD AND TYPE

KEY

Every instructional period had unused General classroom space available, however all other types of Instructional rooms identified below were fully utilized during at least one period.

Of the unused space at Swanson, there is limited amount of capacity for specialized room types.

- General Classroom
- Athletic
- Performing Art
- Visual Art
- Science Lab
- Computer Lab
- Auditorium
- Shop

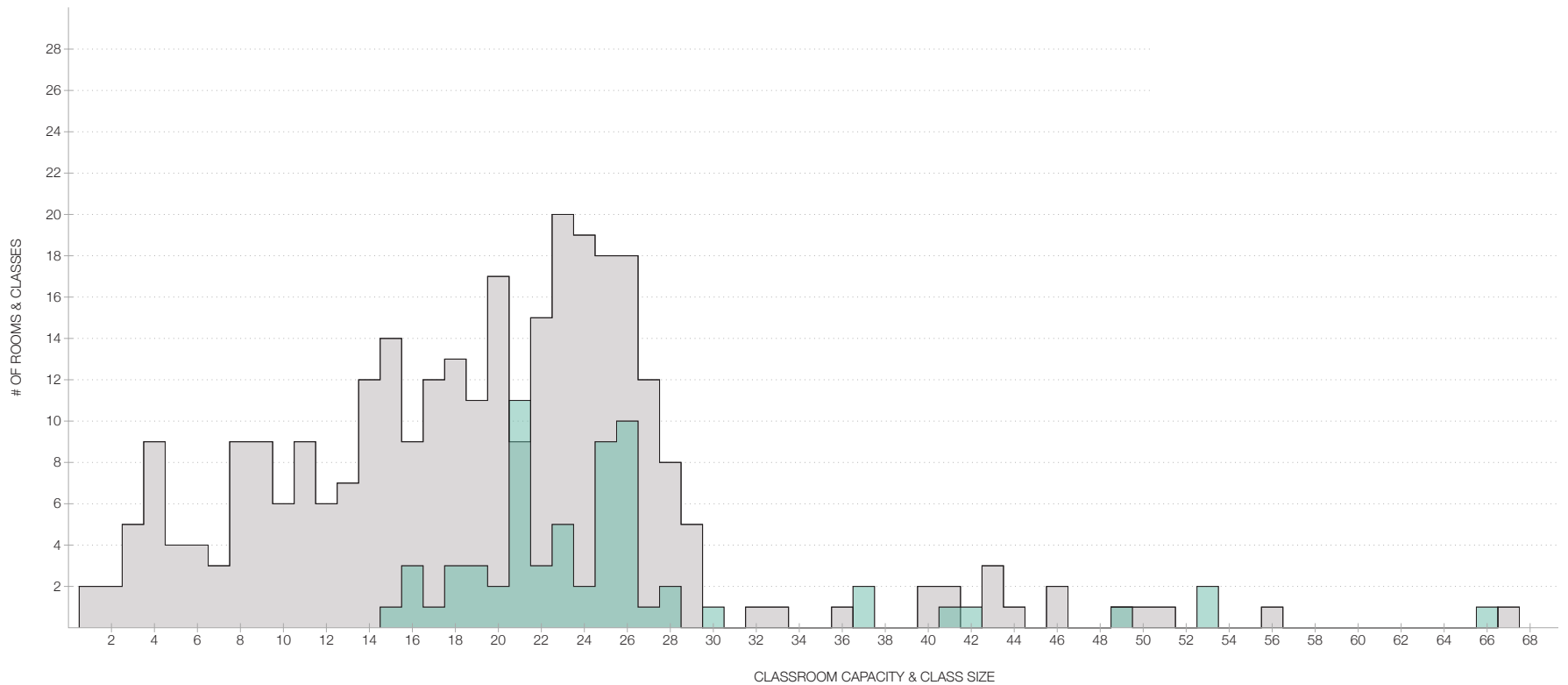


INSTRUCTIONAL SPACES - FREQUENCY BY CAPACITY AND SIZE

KEY

Both the General and Specialized classroom inventory at Swanson accommodates the average class size, there is a wider distribution range for class size than for classroom capacity, which means that those classes on the small or large end of the range do not have optimally sized facilities in which to be scheduled. It is important to remember that speciality rooms have constraints and properties that make them more difficult to realign.

- # of Classes by Class Enrollment
- # of Rooms by Loading Capacity



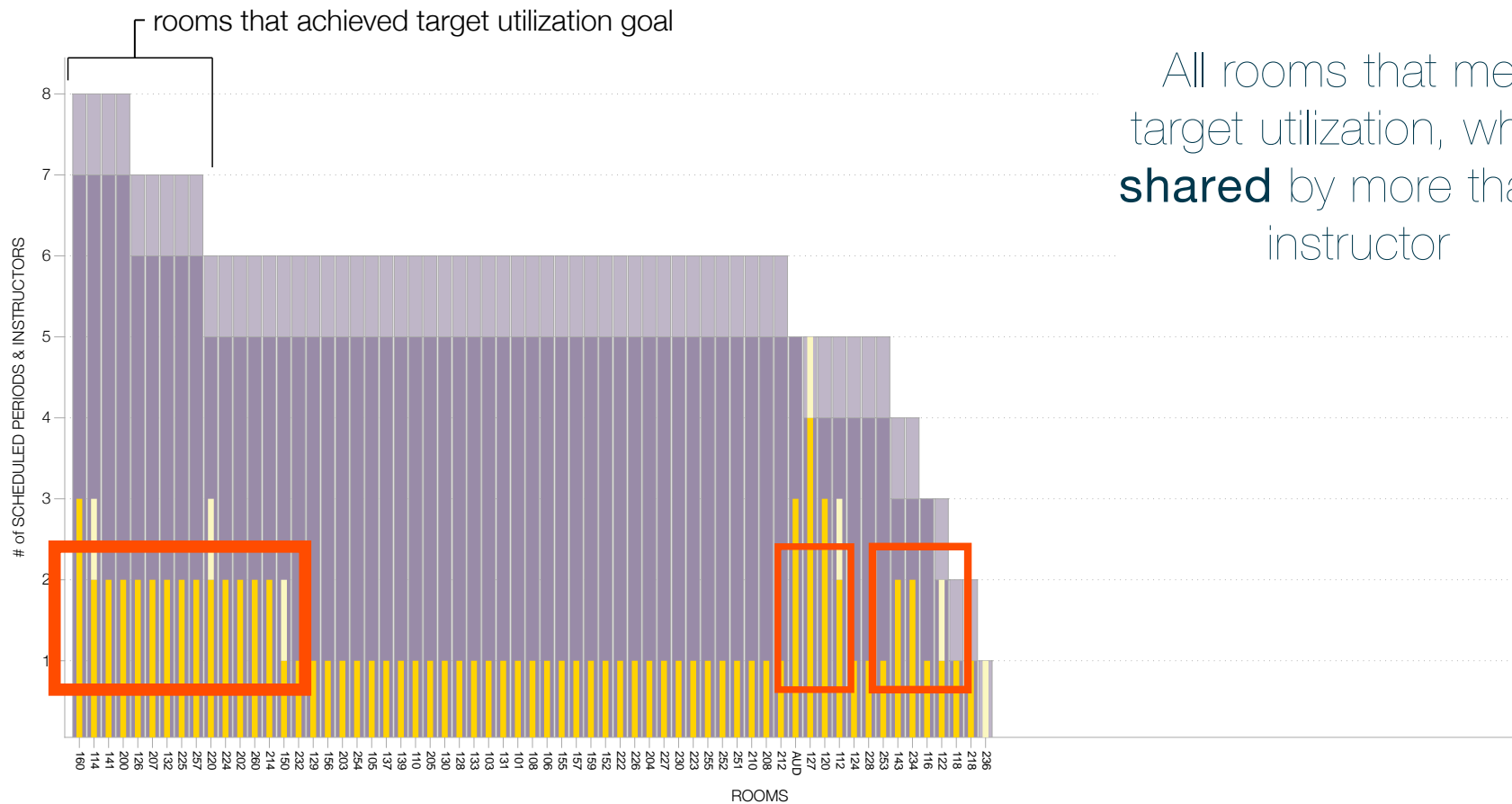
ROOMS BY PERIODS IN USE AND OCCUPIED BY INSTRUCTORS

KEY

34% (21 out of 62) of Instructional rooms scheduled in the Fall 2013-14 semester had more than 1 instructor assigned to share the space. Six out of 62 Instruction rooms achieved the target utilization goal of 6/7 instructional periods.

- # of Scheduled Instructional Periods
- STAR Period
- # of Scheduled Instructors
- Additional/Different Instructor (STAR)
- Rooms with Multiple Instructors

All rooms that meet target utilization, where **shared** by more than 1 instructor



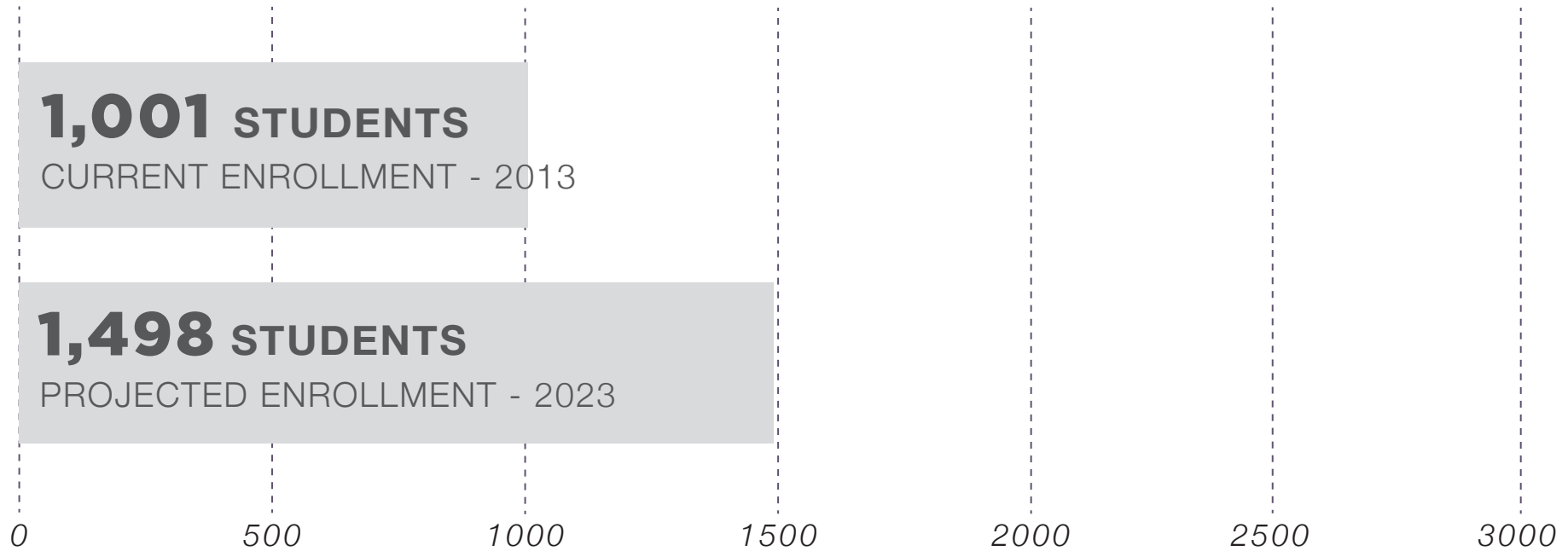
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WMS

WILLIAMSBURG MIDDLE SCHOOL

“THE WILLIAMSBURG MIDDLE SCHOOL COMMUNITY IS DEDICATED TO THE DEVELOPMENT OF LIFELONG LEARNERS WHO ARE CIVIC-MINDED AND CULTURALLY COMPETENT. WE STRIVE TO PROVIDE A SAFE AND SUPPORTIVE ENVIRONMENT IN WHICH ALL OUR STUDENTS CAN ACHIEVE THEIR FULLEST POTENTIAL”

-WILLIAMSBURG MISSION



FOOTNOTE

Current and projected enrollment figures are based on the APS, Facilities Planning Report “Building Capacities and Projected Student Enrollment for School Year 2014-2023”



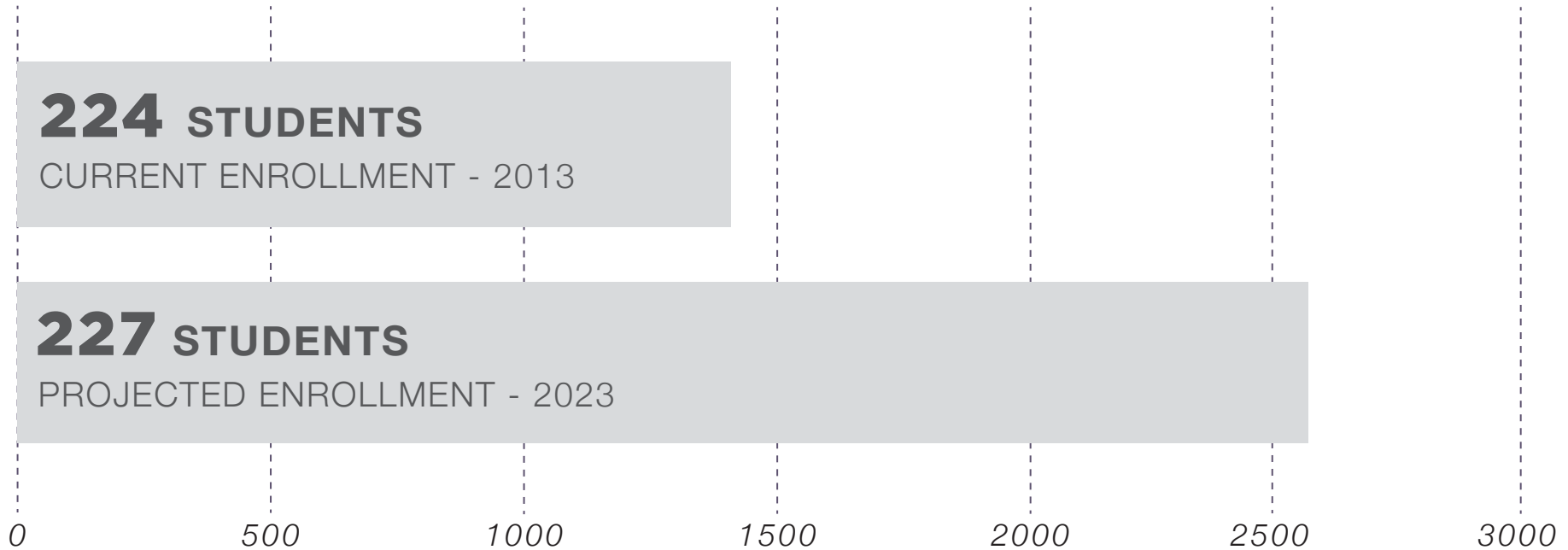
WILLIAMSBURG
MIDDLE SCHOOL

WMS

H-B WOODLAWN MIDDLE SCHOOL

“THE CENTRAL FOCUS OF OUR SYSTEM IS STUDENT CHOICE. STUDENTS MAKE CHOICES IN THREE GENERAL AREAS, USE OF TIME AND PERSONAL BEHAVIOR, EDUCATIONAL GOALS AND SCHOOL GOVERNANCE.”

-H-B WOODLAWN PHILOSOPHY



FOOTNOTE

Current and projected enrollment figures are based on the APS, Facilities Planning Report “Building Capacities and Projected Student Enrollment for School Year 2014-2023”



H-B WOODLAWN
MIDDLE SCHOOL

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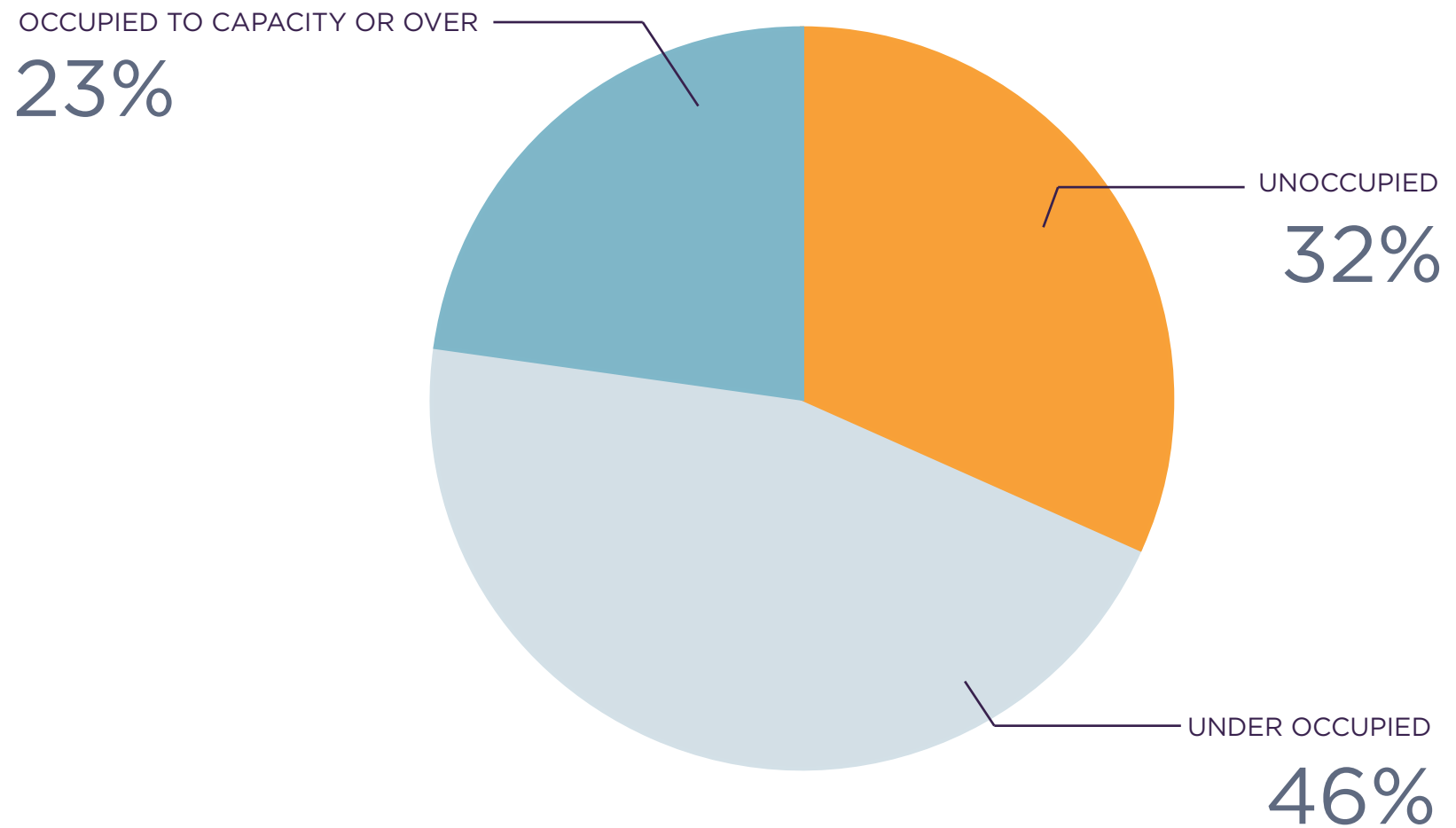
STRATEGIES

Strategies

Utilization and Occupancy Comparison	154
Latent Classroom Capacity	156
Capacity Opportunity Assessment	158
Strategies	161
Areas of Concerns	163

Looking at Swanson Middle School as a representative model for all Middle Schools within APS, MKThink in collaboration with APS has identified several strategies that can be implemented at multiple levels to help accommodate an anticipated enrollment up to 1,050 for each Middle School.

UTILIZATION AND OCCUPANCY COMPARISON



SWANSON - LATENT CLASSROOM CAPACITY

The diagram to the right illustrates the amount of latent classroom capacity that exists in the facility based on current scheduling practices.

Occupancy¹

The vertical axis represents occupancy. Improving scheduling practices to fill instructional rooms at 80% of current published capacity could yield accommodations for up to an additional 54 students³.

Utilization²

The horizontal axis represents utilization. Improving scheduling practice to utilize instructional rooms at the school's goal of 6/7 periods per day could yield accommodations for up to approximately 199 additional students.

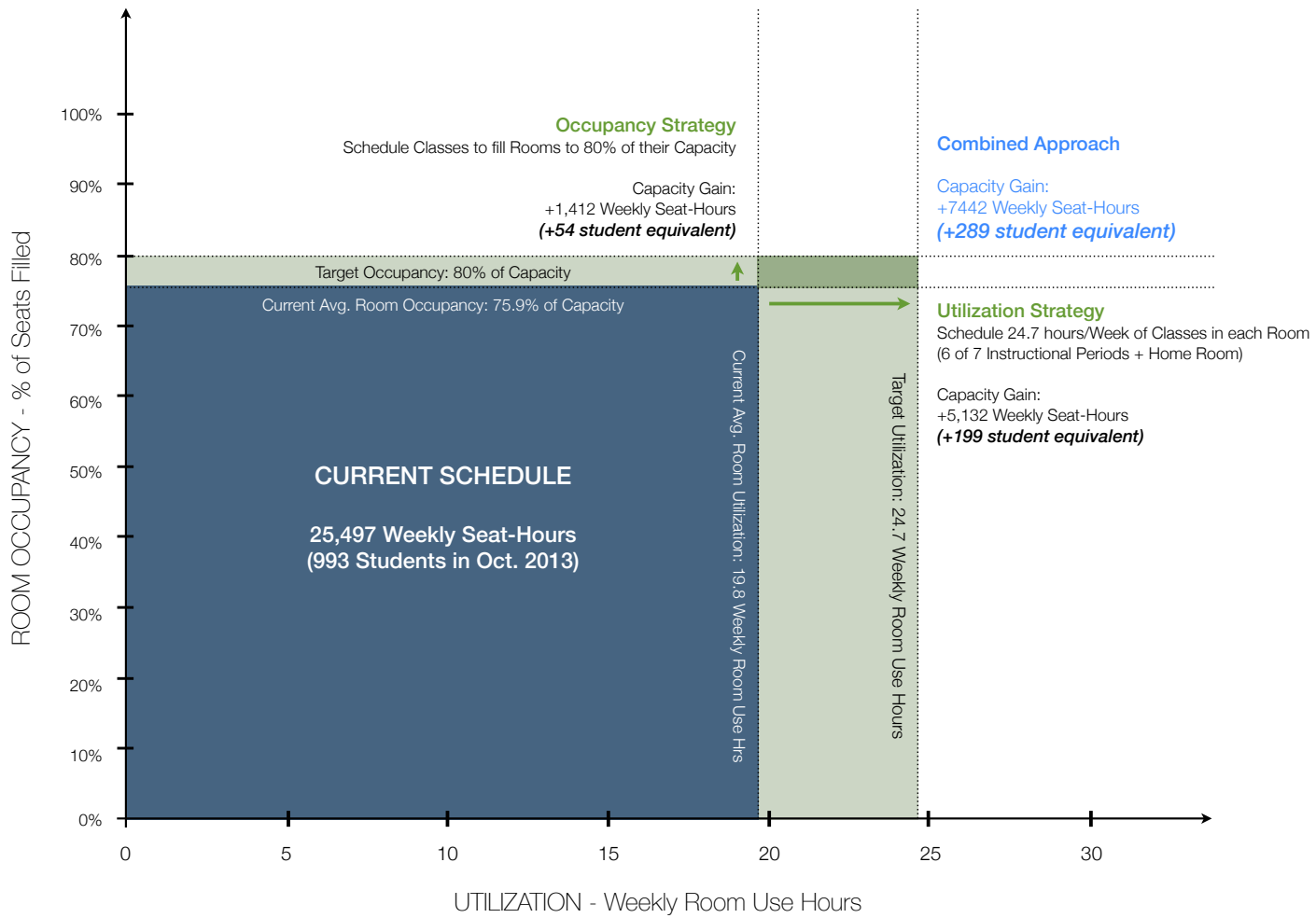
A combined strategy of both occupancy and utilization improvements could yield an additional capacity of approximately 254 students above current enrollment.

FOOTNOTE:





1. "Occupancy" is the ratio of people-to-capacity for a given room during a specific time

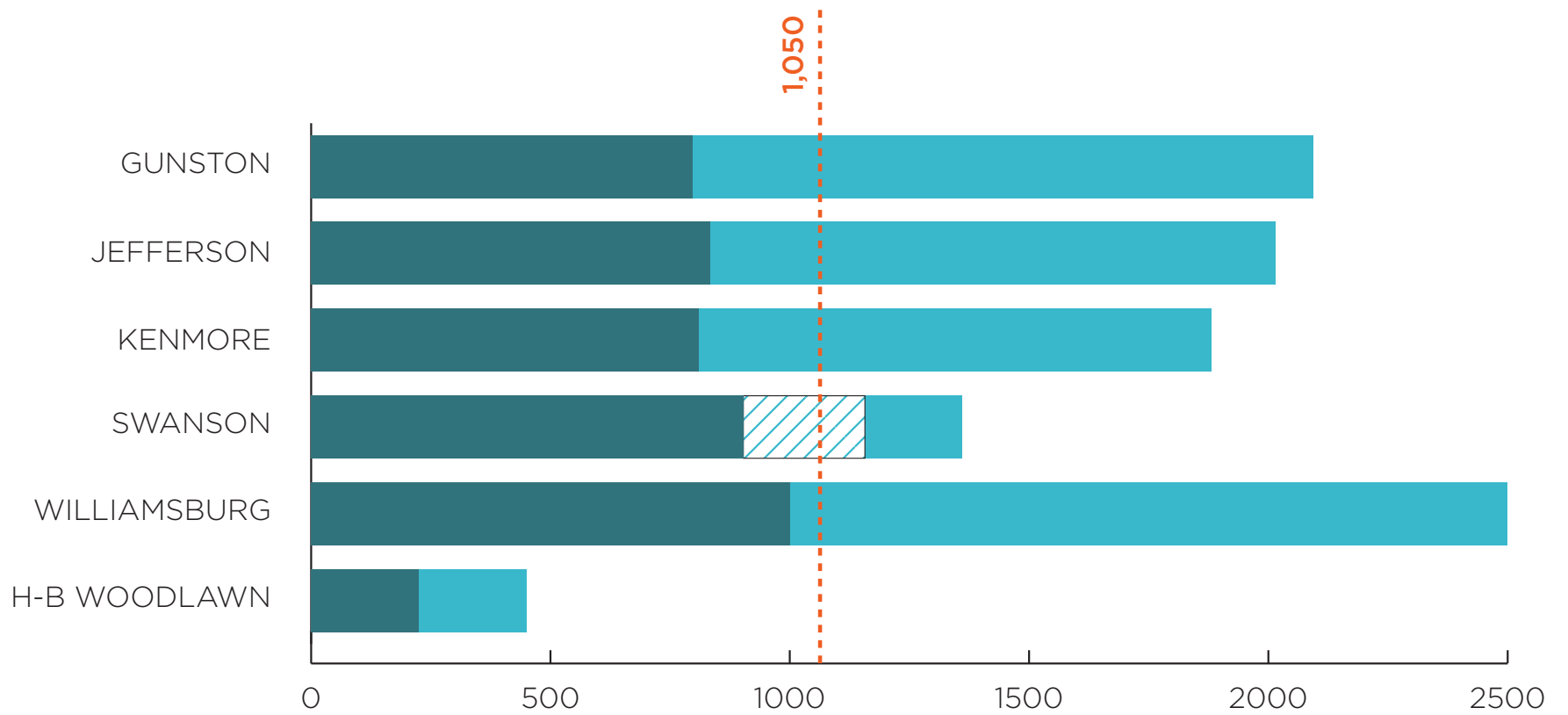
2. "Utilization" is the number of hours a particular space is being used. It is typically compared to the maximum amount of time a space can be accessed.

3. A utilization rate of 80% is often used as a benchmark for the operation of school facilities



Looking at Swanson Middle School as a representative model for all Middle Schools within APS, MKThink in collaboration with APS have identified several strategies that can be implemented at multiple levels to help accommodate an anticipated enrollment of 1,050 for each Middle School.

-  Existing Enrollment¹ - October 2013
-  Identified Latent Capacity² - (Mkthink)
-  Projected 2023 Enrollment¹
-  APS Capacity Goal For Middle School = 1,050





Rhythm



How to Use
Bran-Magble

FREE GRAY
PAPER

STENCILS

MARKERS

Measurements



STRATEGIES

To address the growing population and lack of capacity at the Middle School level, we propose three design recommendations to capture latent capacity and improve utilization.

1. SCHEDULING SOFTWARE

An analysis of the existing scheduling software and its capacity to balance schedule against utilization and occupancy while serving the needs of administrative staff across APS.

** refer to page 96*

2. CAPTURE LATENT CAPACITY

Capture latent capacity found at each of the sites by utilizing a combination of furniture and building solutions, maximizing the utilization and occupancy of the current facilities.

** refer to page 98*

3. SPECIALTY SPACES

A more comprehensive study of Swanson's specialty spaces should be conducted to better understand their current constraints and provide additional solutions.

** refer to page 138*

AREAS OF CONCERN

Though an analysis of Swanson Middle School here are three areas of concern regarding the growing enrollment and capacity challenges at the middle school level. This is not an exhaustive list, and further detailed study is needed to identify all challenges for increasing capacity for each school.

A SPECIALTY SPACES

There is a limited amount of capacity for these type of specialized spaces at Swanson Middle School in regard to Science, Art, Music, Technology, and other speciality instruction. An increase in enrollment may increase scheduling challenges in specialty instruction rooms.

B CAFETERIA

Further detailed study is needed to fully understand how it could accommodate the growing student enrollment to meet APS's capacity goal of 1,050 students.

C GYMNASIUM

Swanson contains two gymnasiums, which are both over capacity during a majority of periods throughout the semester. Alternatives to traditional gymnasium space needs to be explored further in order to accommodate more students.

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04 ELEMENTARY SCHOOLS

An overview of the current Elementary Schools' operations in terms of utilization and occupancy.

4 Elementary Schools

Abingdon	##
Arlington Science Focus	##
Arlington Tradition	##
Ashlawn	##
Barcroft	##
Barrett	##
Campbell	##
Carlin Spring	##
Claremont	##
Drew	##
Glebe	##

Henry	##
Hoffman-Boston	##
Jamestown	##
Key	##
Long Branch	##
McKinley	##
Nottingham	##
Oakridge	##
Randolph	##
Taylor	##
Tuckahoe	##

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