



**EMBARGOED UNTIL 12:00 PM MARCH 5, 2013 – DO NOT DISTRIBUTE**  
**PARCC Assessment Administration Capacity Planning Tool**  
**Users' Guide**  
**March 2013**

The *PARCC Assessment Administration Capacity Planning Tool*, released in March 2013, provides schools and districts with a spreadsheet-based tool that allows school and district administrators to enter information about their school technology capacity, and model a range of possible configurations for testing devices, bandwidth utilization, and number of administration days (<http://www.parcconline.org/technology>). This will assist planners in thinking through where gaps in assessment administration capacity exist, and exploring possible scenarios for addressing those gaps. For example, if the calculator highlights that the number of testing days needed based on a school's student population and current device capacity exceeds the testing window, schools can calculate the impact of adding another cart of laptops or of increasing bandwidth capacity.

While this planning tool focuses on minimum needs for test administration in school year 2014-2015, PARCC encourages schools and districts to consider their computer device needs for assessment as only one factor in an overall strategy for educational technology that supports **high-quality student instruction, teacher professional development, and school community communications, as well as next generation assessment**.

### **What the Capacity Planning Tool Is:**

The use of the *Assessment Administration Capacity Planning Tool* is voluntary and provides estimates only. Estimates are designed to be conservative approximations around which schools and districts can plan. Additional precision for schools and districts will be achievable as specifications such as session-specific testing time and the bandwidth demand of full test forms are better defined through PARCC's item research and field testing. To that end, PARCC will continue to update the Capacity Planning Tool as more detailed information is available. The most current version will be maintained at the PARCC website (<http://www.parcconline.org>), and PARCC states will work with districts and schools to provide updated versions when they become available.

Data schools will enter into the Tool include the following:

- Projected **student enrollments by tested grade** for the 2014-2015 school year
- Number of **computer devices that are available for assessment** and that meet or exceed the PARCC Technology Guidelines (<http://www.parcconline.org/technology>)
- Number of **test administration days**, if different from the PARCC maximum of 20 days
- **Bandwidth availability** and simultaneous usage estimates for instructional and school office uses of bandwidth that will be taking place during assessment sessions

The Tool will provide users with calculated estimates that provide more detailed information about readiness for computer-based administration of PARCC in 2014-15, including:



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**Device Capacity Model:** Shows the maximum number of administration days the school will need to administer the assessments based on the school's current student to device ratio. This model also shows the maximum number of days of administration that would be required, if the school could build capacity to meet the following alternative student to device scenarios:

- If the school had two students per device at the largest grade level;
- If the school had one student per device at the largest grade level; and
- If the school had one student per device for each tested student in the school.

**Assessment Administration Model:** Shows the number of devices and bandwidth a school would need to administer the assessments in 5, 10, 15 or 20 administration days.

### What the Capacity Planning Tool Is Not:

The *Assessment Administration Capacity Planning Tool* **should not be used as a single source of readiness information** and its **resulting calculations should always be examined in the real contexts of individual schools**. Estimated capacity needs calculated in the tool are approximations to inform a larger school and district planning process, and **are not** PARCC requirements to which schools must conform.

The *Assessment Administration Capacity Planning Tool* is not a full scheduling tool, and does not accommodate entry of specific class, student, or teacher information nor detailed day-by-day assessment administration assignments. PARCC will provide additional information to guide such processes by Fall 2014, once all PARCC assessment administration requirements are finalized.

### **The Technology Readiness Tool**

While similar in some aspects, the *Assessment Administration Capacity Planning Tool* is not a duplication, or a version, of the PARCC and Smarter Balanced Technology Readiness Tool (TRT) that PARCC states and districts are using to inventory the computers and network infrastructure they have available for assessment and evaluate them against the PARCC Technology Guidelines (<http://www.techreadiness.org>). However, the TRT serves as a source schools can use for generating the number of assessment-ready devices for entry into the *Assessment Administration Capacity Planning Tool*.

The PARCC and Smarter Balanced Technology Readiness Tool is focused on consortium, state, and district level aggregated views of technology infrastructure and serves as an **inventory of hardware and network readiness**. The TRT allows for detailed data upload, but not modeling, and updates only once a day. Submitted data from districts and states are reported to PARCC and Smarter Balanced to inform the consortia's technology platform development and to support states' preparation for computer-based assessments in 2014-15. The *Assessment Administration Capacity Planning Tool* is focused on school building-level capacity to administer the assessments within the testing window. It is a scenario-planning tool that allows schools to experiment with different values for devices, assessment administration scenarios, and bandwidth. It requires minimal data entry, and allows for modeling of "what if" scenarios that schools can see instantly as they change their input numbers. The



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*Assessment Administration Capacity Planning Tool* does not submit data to PARCC or automatically roll up to a state level report: **it is for schools' internal use only.**

## Assumptions Used In The Capacity Planning Tool:

The estimated output values calculated by the *Assessment Administration Capacity Planning Tool* are based on the following assumptions:

- Number of Sessions:** PARCC assessments will be administered in a total of nine sessions. At each grade level the **Performance Based Assessment component will require five sessions** – three sessions for ELA/literacy and two sessions for mathematics. The **End of Year Assessment component at each grade level will require four sessions** – two sessions for ELA/literacy and two sessions for mathematics.
- Maximum Testing Window:** Schools will have a **maximum of 20 school days to administer the Performance Based Assessment (PBA) components for ELA/literacy and mathematics and a maximum of 20 school days to administer the End of Year Assessment components (EOY) for ELA/literacy and mathematics.** It is important to note; however, that while the testing windows will span 20 days for each component, schools will be able to complete administration of the tests in fewer days, if they have sufficient capacity to administer computer-based assessments to large numbers of students simultaneously.
- Testing Window Minimum:** While PARCC's test administration policies are not yet finalized, the *Assessment Administration Capacity Planning Tool* uses the assumption that each individual student will not take more than one session per day. Therefore, the default **minimum testing window in the Planning Tool is 5 school days for the Performance Based Assessment (PBA) components and 5 school days for the End of Year Assessment components (EOY).**
- Bandwidth Demand of Test Sessions:** The final bandwidth requirements for PARCC assessments have not yet be determined, and are dependent on PARCC's development of next generation assessment items and the technology platform to deliver them. PARCC anticipates the release final bandwidth requirements by October 2013. For the purposes of the *Assessment Administration Capacity Planning Tool*, the calculations use levels that are at the high end of industry averages for technology and media rich online assessments: a maximum bandwidth demand of **100 kbps for online administration** where students maintain an active connection to the Internet throughout the test, and **30 kbps for administration of tests using caching approaches** (browser or proctor caching) that have much lower per student bandwidth demands. PARCC's final bandwidth requirements may be lower than the estimated values used in the Capacity Planning Tool, but are not likely to be greater than 100 kbps (online) / 30 kbps (caching); therefore schools can consider the estimates generated by the Capacity Planning Tool to be conservative approximations for general planning purposes.



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**A Note About Bandwidth Capacity Estimates Generated by the Capacity Planning Tool:**

Actual performance of school networks is highly variable, even from day to day or throughout a day, depending on local network design, performance fluctuations with the Internet Service Provider, use of wireless versus wired network connections, competing bandwidth uses in the school or district, and many other factors. As a result, no estimator tool that PARCC could provide can accurately represent the actual average network speed at a school or the actual available bandwidth for assessment administration. Because bandwidth utilization is a dynamic and complex value dependent on many local settings and environmental factors, the calculations in the Capacity Planning Tool are only approximations to assist local planning. Actual capacity will vary.

PARCC encourages schools to use a speed test tool they trust to gauge average connection speeds measured multiple times over several days, during the similar days of the week and times of day that assessments will be delivered. The results of such speed tests can then be entered into the Capacity Planning Tool as more precise estimates of network capacity. In February 2013, the State Educational Technology Directors Association (SETDA) issued an analysis of online speed testing tools, including detailed information on tools provided by [SpeedTest.net](http://www.speedtest.net), Education SuperHighway’s School [Speed Test](#), and the Smarter Balanced Assessment Consortia’s bandwidth check [diagnostic tools](#). It presents a detailed description of each tool, including its strengths and weaknesses, followed by observations based on measured data. It concludes by offering recommendations on how best to use each of the tools to inform decision-making by education leaders and policymakers.

To access a copy of the SETDA/Netcraft analysis and for more information about the SETDA report, *The Broadband Imperative: Recommendations to Address K-12 Educational Infrastructure Needs*, please visit: <http://www.setda.org/web/guest/schoolspeedtests>.

**Using the Capacity Planning Tool:**

**STEP 1: Enter your school data.**

FIELD	DEFINITION	SOURCE DATA
<b>FIELD 1:</b> <b>Student population by tested grade</b>	PARCC summative assessments will be delivered via computer-based testing to students in grades 3-11. Enter the number of students at each grade level that will be taking PARCC summative assessments at your school.	Resulting planning estimates will be most accurate when school enrollment data are projected for the 2014-2015 school year.

FIELD	DEFINITION	SOURCE DATA
<p><b>FIELD 2:</b>  <b>Number of assessment-ready computer devices – by location.</b></p>	<p>Only computer devices that are both usable for assessment delivery and that meet PARCC minimum technology guidelines should be considered. For example, do not include office computers in the total count, or devices that are too old, too slow, too small to meet the PARCC specifications.</p> <p>Indicate how many of the test-ready devices are in classrooms or on mobile carts, and how many are in centralized location such as a computer lab, through which students will rotate during testing. While the calculations in the tool do not account for this distinction, it is an important factor for schools to consider in planning for the number of simultaneous test-taking students that can be accommodated.</p>	<p>The Technology Readiness Tool can be used to calculate the devices in a school’s inventory that meet minimum technology specifications.  <a href="http://www.techreadiness.org">http://www.techreadiness.org</a>.</p> <p>PARCC’s technology guidelines:  <a href="http://www.parcconline.org/technology">http://www.parcconline.org/technology</a></p>
<p><b>FIELD 3:</b>  <b>Number of Administration Days</b></p>	<p>This field has two options:            1) Run calculations using the PARCC estimate of a 20-day maximum            OR            2) Use a different number of administration days between 5 and 20 (for example, states or districts may establish different requirements)</p>	<p>Check with your district or state for local test administration guidelines that may differ from the PARCC maximum.</p>

FIELD	DEFINITION	SOURCE DATA
<p><b>FIELD 4:</b> <b>Bandwidth availability</b></p>	<p>Enter information about the school’s connection speeds for:</p> <p>1) Average External Connection Speed to the Internet AND 2) Average Internal Network speed within the school.</p>	<p>PARCC recommends using a trusted speed test tool to measure actual connection speeds averaged over several days (see above for details).</p> <p>Alternately, external connectivity information may be available from your commercial Internet Service Provider, or from your district technology office, depending on your network configuration.</p>

<p><b>FIELD 4:</b> <b>Simultaneous Bandwidth Usage</b></p>	<p>Estimate the level of simultaneous uses of the network bandwidth that will be taking place in the school at the same time assessments are being administered. These are estimates only and will yield an estimated level of usage. Actual bandwidth utilization is a dynamic and complex value dependent on many local settings and environmental factors.</p>	<p>If the results of speed test tool measurements (taken under similar conditions of simultaneous activity to those of assessment days) are used to provide bandwidth availability in FIELD 3, then FIELD 4 of the Capacity Planning Tool can be left blank.</p>
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**Note:** The information about average bandwidth demands of common school technology activities that PARCC has listed in the Capacity Planning Tool are derived from those used by the State Educational Technology Directors Association in their 2012 report *The Broadband Imperative*, as well as SETDA’s original source – the School 2.0 Bandwidth Calculator ([http://etoolkit.org/etoolkit/bandwidth\\_calculator](http://etoolkit.org/etoolkit/bandwidth_calculator)).

**STEP 2: Review your current capacity based on the data you entered.**

Devices: The first set of calculated values in the Capacity Planning Tool use the information you provided in STEP 1 to show the **current student-to-device ratio for the tested grades in the school.**



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**Bandwidth:** Based on the number of administration days you indicated, and the number of assessment-ready devices reported, the Capacity Planning Tool checks the available bandwidth against the calculated need for the current device capacity. If the calculations indicate a gap in bandwidth availability compared to the need, **the gap will be indicated in red. Otherwise the “No Gap” indicator will be displayed.**

**Assessment Administration Days:** Based on the number of reported students and devices, the Capacity Planning Tool indicates how many days of testing would be needed to administer the assessments to groups of students over two sessions per day. If this number is greater than the desired testing window, **the gap will be indicated in red. Otherwise the “No Gap” indicator will be displayed.**

**STEP 3: Review the Planning Models to evaluate Device Capacity and Administration Days needed under different capacity scenarios.**

**DEVICE CAPACITY MODEL**

For each scenario within the Device Capacity model the Capacity Planning Tool provides the following information for both Performance Based Assessment (PBA) and End of Year (EOY) components of the PARCC assessments:

**Devices:** The calculated values use the information you provided in STEP 1 to show the **estimated student-to-device ratio for all tested grades in the school** and the **number of devices that would be needed** for the scenario based on reported student enrollment. If the calculations indicate a gap in devices available compared to the need, **the gap will be indicated in red. Otherwise the “No Gap” indicator will be displayed.**

<b>Students per device based on enrollment for all tested grades</b>	Calculated using the ratio of students per device for the scenario, and the student enrollment data provided by the school.  <i>Example: To meet the target ratio of two students per device at the largest tested grade level, a school with a total of 484 tested students and 124 students in the largest grade would need 62 devices. This translates to an 8 students-per-device ratio for the total population across all tested grades.</i>
<b>Estimated Devices Needed for This Model</b>	Calculated using the ratio of students per device for the scenario, and the student enrollment data provided by the school.  <i>Example: A school with 124 students in the largest tested grade would need 62 devices to meet the target ratio of two students per device at the largest tested grade level. .</i>
<b>Reported Available</b>	Number of devices the school reported as available in the data entered in Step 1 above.



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<b>Additional Devices Needed to Meet Target Ratio</b>	<p>Reports the difference between the number of computers calculated as necessary to meet the target ratio and the current number reported as available by the school.</p> <p><i>Example: A gap of 11 devices would be displayed for a school that needs 62 devices to meet the largest grade ratio but reports 51 available devices.</i></p>
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**Bandwidth:** Based on the number of administration days you indicated, and the number of assessment-ready devices reported, the Capacity Planning Tool checks the available bandwidth against the calculated bandwidth need given the current device capacity. If the calculations indicate a gap in bandwidth availability compared to the need, **the gap will be indicated in red. Otherwise the “No Gap” indicator will be displayed.**

<b>Maximum Estimated Need (if Administered Online):</b> Bandwidth per Test Block at Target Device Capacity (in kbps)	<p>Calculated from PARCC’s estimated maximum bandwidth demand for the assessments and the number of devices needed for the target ratio scenario, with an assumption of two testing time blocks scheduled per day.</p> <p><i>Example: A school that needs 62 devices for the largest tested grade target ratio will need 6200 kbps per time block to administer fully online.</i></p>
<b>Minimum Estimated Need (if Administered with Caching):</b> Bandwidth per Test Block at Target Device Capacity (in kbps)	<p>Calculated from PARCC’s estimated minimum bandwidth demand for the assessments and the number of devices needed by the target ratio scenario, with an assumption of two testing time blocks scheduled per day.</p> <p><i>Example: A school that needs 62 devices for the largest tested grade target ratio will need 1860 kbps per time block for an administration that involves browser or proctor caching.</i></p>
<b>Current Availability:</b> Bandwidth per Test Block (in kbps)	<p>Calculated from the reported available network connection speed, factoring in the reported simultaneous uses for instructional and administrative demands.</p>
<b>Additional Bandwidth Needed to Meet Target Device Capacity</b>	<p>Reports the difference between the bandwidth calculated as necessary to meet the target ratio and the bandwidth reported as available by the school.</p> <p><i>Example: A gap of 1200 kbps would be displayed for a school that needs 6200 kbps per test block that reported 5000 kbps available.</i></p>

**Assessment Administration Days:** Based on the number of reported students and devices, the Capacity Planning Tool indicates how many days of test scheduled test sessions would be needed to administer the assessment to all tested students with two available sessions per day. If this number is greater than the desired testing window, **the gap will be indicated in red. Otherwise the “No Gap” indicator will be displayed.**



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<b>Days Required by this model</b>	Calculated from the reported student enrollment and the number of test sessions for the PARCC assessments, using the number of devices required by the model and assuming two testing blocks scheduled per day.
<b>Reported Available</b>	The number of target administration days as entered by the school into the spreadsheet. (Note: some states or districts may set targets for schools. Check with your state or district.)
<b>Capacity Gap in Days</b>	<p>Reports the difference between the administration days calculated as necessary to meet the target ratio and the target number of administration days as reported the school.</p> <p><i>Example: A gap of 5 administration days would be displayed for a school with a target device ratio requiring 15 administration days for the tested student enrollment, but only reporting 10 administration days available.</i></p>

**ADMINISTRATION DAYS MODEL**

For each scenario within the Administration Days model, the Capacity Planning Tool provides the following information for both the Performance Based Assessment (PBA) and End of Year (EOY) components of the PARCC assessments:

Devices: The calculated values in this model use the information you provided in STEP 1 to show the **estimated number of devices that would be needed** for the testing window scenario, based on reported student enrollment. If the calculations indicate a gap in devices available compared to the need, **the gap will be indicated in red. Otherwise the “No Gap” indicator will be displayed.**

<b>Minimum number of devices needed to support the target number of administration days</b>	<p>Calculated using the student enrollment data provided by the school and the target number of administration days, assuming two testing blocks scheduled per day.</p> <p><i>Example: A school with 484 students in all tested grades that reports 51 available devices would need 121 devices to complete PARCC assessments for all tested students within 20 administration days.</i></p>
<b>Reported Available</b>	Number of devices the school reported as available in the data entered above.
<b>Additional devices needed to meet the target number of administration days</b>	<p>Reports the difference between the number of computers calculated as necessary to meet the target number of administration days and the current number reported as available by the school.</p> <p><i>Example: A gap of 70 devices would be displayed for a school that needs 121 devices to meet the 20-administration day scenario, but that reports 51 devices available.</i></p>



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**Bandwidth:** Based on the number of administration days you indicated, and the number of assessment-ready devices reported, the Capacity Planning Tool checks the available bandwidth against the calculated need for the current device capacity. If the calculations indicate a gap in bandwidth availability compared to the need, **the gap will be indicated in red. Otherwise the “No Gap” indicator will be displayed.**

<b>Maximum Estimated Need (if Administered Online):</b> Bandwidth per Test Block at Target Device Capacity (in kbps)	Calculated from PARCC’s estimated maximum bandwidth demand for the assessments and the number of devices needed by the target ratio scenario, with an assumption of two testing time blocks scheduled per day.  <i>Example: A school that needs 61 devices for its administration days target will need 6100 kbps per time block to administer fully online.</i>
<b>Minimum Estimated Need (if Administered with Caching):</b> Bandwidth per Test Block at Target Device Capacity (in kbps)	Calculated from PARCC’s estimated minimum bandwidth demand for the assessments and the number of devices needed by the target ratio scenario, with an assumption of two testing time blocks scheduled per day.  <i>Example: A school that needs 61 devices for its administration days target will need 1830 kbps per time block for an administration that involves browser or proctor caching.</i>
<b>Current Availability:</b> Bandwidth per Test Block (in kbps)	Calculated from the reported available network connection speed, factoring in the reported simultaneous uses for instructional and administrative demands.
<b>Additional Bandwidth Needed to Meet Target Device Capacity</b>	Reports the difference between the bandwidth calculated as necessary to meet the target ratio and the bandwidth reported as available by the school.  <i>Example: A gap of 1200 kbps would be displayed for a school that needs 6200 kbps per test block but that reports 5000 kbps available.</i>

**STEP 4: Model different scenarios as desired by entering alternate starting values for available devices or bandwidth or changing the number of administration days (between 5 and 20 days) to experiment with different possible capacity configurations.**

The primary value of the *Assessment Administration Capacity Planning Tool* is to help schools understand the relationship between the anticipated requirements for PARCC assessment administration and the ratios of computer devices and network capacity that could impact the overall assessment experience during the available testing window.

By adjusting the values in the Capacity Planning Tool’s Planning Models, schools can experiment with different possible configurations of assessment-ready devices, network capacity, and administration days.



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## **ADDITIONAL RESOURCES**

PARCC Technology Guidelines:

<http://www.parcconline.org/technology>

Information about the PARCC Assessment Design:

<http://www.parcconline.org/parcc-assessment-design>

PARCC Item and Task Prototypes:

<http://www.parcconline.org/samples/item-task-prototypes>

PARCC Model Content Frameworks:

<http://www.parcconline.org/parcc-model-content-frameworks>

PARCC Assessment Policies:

<http://www.parcconline.org/parcc-assessment-policies>