

**The
Innovation
Project**



**A Proposal to Design and Launch a
High-Tech Learning Accelerator
in North Carolina's public schools**

May 28, 2021

Proposal: Why North Carolina Needs a High-Tech Student Accelerator

North Carolina's high-tech employers will continue to hire significant numbers of employees from other states unless we develop innovative pipeline strategies to prepare North Carolina students for these jobs and to nurture connections between NC-based technology companies and future workers.

Technology company leaders recognize the importance of developing technical ability and non-technical skills as a part of formal education, and of students gaining meaningful experience through real-world application of knowledge.

We propose the creation of a **North Carolina High-Tech Learning Accelerator (HTLA)** connected to a **network of place-based learning hubs** to provide rigorous and experiential pathways for jobs in the technology industry.

The HTLA will begin as a design-build initiative of The Innovation Project (TIP), a collaborative working group of forward-thinking K-12 school district superintendents and their teams. This process will bring together leaders in K-12, higher education, and industry to engage in an iterative planning process to operationalize the HTLA and to develop learning hubs in each participating district. As detailed below, this process will address issues of policy and practice and generate viable solutions to both. The HTLA will initially serve high school-aged students who have completed the ninth grade. After a prototyping phase within TIP districts, the HTLA will be open source for all of North Carolina.

The initial goal of the HTLA: within three years, North Carolina will be recognized as the top state in the country for preparing high school students for higher education in computer science and other technology-related subjects, and for entry-level tech jobs. Our longer-term goal: North Carolina will have a robust set of pipelines to technology companies for all North Carolina learners. In aiming to achieve both goals, the HTLA will facilitate and enable transformational strategies for meeting the significant and expanding industry demand for highly-skilled high-tech workers.

Timeline and Projected Student Enrollment in Y1-Y5

This subsection sets forth the timeline for our design-build process, implementation, and growth of the HTLA and place-based learning hubs, each of which are detailed in the pages that follow.

<p>Year 1: Design-Build Process</p>	<p>The Innovation Project and partners will work collaboratively to address all Design Elements discussed below and develop the full HTLA model for launch in interested TIP member districts in Spring or Summer 2022. Simultaneously, participating districts and local partners will develop place-based learning hubs where students will engage in learning at launch.</p>
<p>Years 2-3: Launch and Expansion within TIP Districts</p>	<p>Once the HTLA and learning hubs are operational, each district will engage in iterative processes to improve and expand its K-12 offerings, serve additional K-12 students, and work with local partners to extend HTLA career pathways.</p>
<p>Years 4-5: Statewide Launch and Rapid Growth</p>	<p>In the HTLA’s fourth year, we anticipate making the model open source to interested K-12 public district and charter schools and higher education and industry partners statewide. At this point, we will begin to realize the benefits of the broader ecosystem development through alignment, amplification and acceleration of results as discussed earlier.</p>

Appendix A shows a sample projected student enrollment in Years 1-5 and at the steady state full program build. The sample projection includes all 13 district members of TIP from 2020-21 with an expected 2.5% of eligible students from each enrolled in HTLA programming. As an alternative projection, a subset of TIP’s district members might enroll students in Year 1 with more marked growth and expansion into additional districts within TIP in Year 2. The projections include only students who have completed grade nine and do not incorporate participants in the elementary, middle school, and ninth grade program experiences discussed below.

HTLA Design Elements and the Design-Build Process

TIP has recruited an impressive network of partners to engage in the design-build process. These include K-12 districts and partners with deep subject-matter expertise in computer science and related standards, curriculum, and career clusters including those noted below; project-based learning including internships and group projects solving real-world problems; creating and scaling place-based learning hubs, microschoools, and academies; microcredentials and alternative transcripts; and competency-based education and related policies. TIP will

continue to expand this network of K-12 partners and will recruit partners from North Carolina institutions of higher education (public and private) and the tech industry to be active agents in the design-build process and in the HTLA's efforts to continuously improve its operations and maintain sustained industry relevance on all career pathways.

Together, in Year 1, this group will engage in a design process to create a prototype model of the HTLA that addresses all identifiable implementation issues and needs, including the development of a sustainable funding model. The prototype will address aspects of inter-district collaboration and joint operations including the following key design elements:

THE STUDENT EXPERIENCE. The HTLA's Student Experience will evolve in response to industry needs. The HTLA will develop a **Core Curriculum** related to each of several occupations including software development, artificial intelligence and machine learning, cybersecurity, data mining and data analytics, and computer systems engineering. Development of the Core Curriculum in each area will incorporate extensive input from technology companies, higher education institutions, and K-12 educators. The HTLA will design opportunities for students to access a wide array of **internships, research** opportunities, **experiential and project-based learning experiences**, and rigorous **courses and course modules**. Importantly, "coursework" as used here will not always look like traditional courses that start and end on a uniform set of fixed dates (quarter, semester, or year-long) but will instead be modular and "stackable" into suites of learning experiences that enable students to meet all applicable standards. It will include introductory, intermediate, and advanced level material and skill-building learning experiences, with associated microcredentials in each topic area. Students will have opportunities to complete **Capstone Projects** grounded in real-world application of knowledge accumulated and skills developed during their academic careers.

Enrollment in the HTLA will be open to students who have completed ninth grade. TIP and participating districts will also design "explorations" for high school freshmen and relevant and engaging experiences for middle and elementary school students to develop awareness of and excitement about the HTLA and high-tech career pathways.

COLLABORATION AMONG INNOVATIVE DISTRICT LEADERS. The existing infrastructure of K-12 districts and the ongoing collaboration among TIP's forward-thinking district members will enable a groundbreaking model whereby **districts share talent, resources, and accountability** to maximize benefits for students. The design-build process will include a process for formalizing the relationships among districts to provide educational pathways for students that are grounded in their local community contexts while building on the collective strengths of all participating districts. As just one example, a software development "master teacher" in one district might lead a team of teachers in multiple districts to collaboratively deliver lessons and oversee project-based learning experiences to an interdistrict class. Or, a single teacher might

deliver remote instruction to a group of 20 students across five districts, using post-pandemic best practices for remote teaching and learning.

TECHNOLOGY INDUSTRY CONNECTIONS. Relationships with technology companies will shape the HTLA’s curriculum development, staffing, internships, and experiential and project-based learning opportunities. The early stages of the design-build process will include development of a **graduate profile** and related **competencies** that reflect and respond to industry needs. As the process continues, the HTLA will articulate pathways through which students can demonstrate achievement of the competencies and earn a high school diploma and associated micro-credentials and certifications, all of which will be thoroughly vetted by industry experts to ensure relevance to their current and anticipated future needs. This vetting process will be continuous and iterative, built to evolve with the changing needs of the field and shifts in high-demand positions and related skills and knowledge.

COMPETENCY-BASED PATHWAYS. The HTLA will develop learning opportunities that enable students to proceed on fully competency-based, personalized learning pathways to complete the Core Curriculum. Nevertheless, under the pathways described below, students may choose to take some relevant coursework on traditional calendars and with familiar course structures and summative assessments as benchmarks for learning (e.g., AP Computer Science), when appropriate and as part of an overall, personalized learning plan developed with an HTLA Advisor (see below). The HTLA will partner with community colleges to enable HTLA student to access advanced courses in specific topics (e.g., coding) within the personalized learning plan. In spite of these alternatives, the HTLA will evolve in the direction of increased modularity of learning and will focus on developing learning experiences aligned to the standards, competencies, and subject matter rather than traditional calendars and bell schedules.

POLICY FLEXIBILITY. To make the development of non-traditional, competency-based pathways possible, the HTLA will pursue maximum allowable flexibility or exemption from state and federal laws governing public school accountability, testing, and calendars. The HTLA will seek to be granted at a minimum the operational and financial flexibility afforded to charter and restart schools under state law. The Core Team will work with legislative staff to craft legal frameworks during the first six months of the design-build process and will report to the legislature on their findings and recommendations. The HTLA will aim to maximize flexibility while ensuring strong accountability and transparency.

DATA ANALYTICS. Through industry partnerships, the HTLA will develop, rapidly deploy, and continually refine systems to track, monitor, and report on the effectiveness of quantifiable elements of the HTLA’s operations and of student learning experiences and outcomes. Data analysis will underpin an HTLA accountability system aligned with the HTLA’s purpose in preparing skilled, tech-ready graduates. As part of a prototype and an innovative strategy, the

accountability system will be built for maximum transparency, to celebrate successes and learn from shortcomings and growth opportunities to inform the continuing design-build process.

PERSONALIZED COLLEGE AND CAREER ADVISING. Every HTLA student will work with an **HTLA Advisor** to develop a learning path, identify and complete appropriate courses and learning opportunities, and document evidence of learning as discussed in the following section. The HTLA Advisor will be responsible for maintaining a deep understanding of industry needs and of each student's skills, talents, passions, and interests. Each Advisor will assess the learning opportunities available to students to enable their development and progress toward competency on the Core Curriculum. Advisors will bear primary responsibility for aligning students' personalized pathways with the Graduate Profile, competencies, and requirements and expectations of high school graduates by the state, higher education institutions, and employers. This advisory structure will eventually be aligned with and complement existing college and career counseling offerings in high schools.

EVIDENCE OF STUDENT LEARNING. Students will work with HTLA Advisors to capture their learning through artifacts that demonstrate knowledge acquired, skills developed, and real-world application of both. Each student will develop an HTLA Mastery Transcript, which will be developed during the first year of the design-build process. Student mastery in any given content area will be determined by at least three factors: 1) valid, reliable testing instruments; 2) professional judgment of instructors, internship supervisors, etc.; and 3) student portfolios of work assessed by subject matter experts including industry representatives. All of these will be reflected in the Mastery Transcript. Additionally, students taking traditional coursework will have the opportunity to supplement the Mastery Transcript with a traditional transcript that provides grades and other typical indicators of individual student achievement and growth.

ELEMENTARY AND MIDDLE SCHOOL EXPLORATIONS. Finally, the design-build process will engage districts and partners in developing appropriate elementary and middle school experiences to introduce younger students to technology careers, to give them opportunities to determine which careers are of interest to them, and to provide them with foundational knowledge and skills that will prepare them to access the high school pathways. The HTLA will develop similar experiences or adapt existing alternatives for ninth grade students as well.

Bringing the Design Factors Together: Place-Based Learning Hubs

Through the design-build process, the HTLA will develop groundbreaking approaches to learning, paving the way for students to pursue higher education in related fields and be competitive for and successful in tech careers. To implement these approaches, school districts will identify the physical and virtual spaces where learning will occur and the related state and district policy frameworks enabling students to pursue learning in high-tech subject matter areas and incorporate them into their overall high school programs.

The HTLA presupposes that learning hubs will look different in each district. This is a design *feature*, not a flaw. One of TIP's strengths in leading this work is the collaboration and peer learning the organization facilitates for its members, which in this case will bolster the iterative design process and continual refinement of districts' varying approaches.

Below, we illustrate several of many paths to executing the project's vision through place-based learning hubs. With the requested funding and maximum policy flexibility, we would aim to pursue the advanced options, but with smaller investments and minimal flexibility, we believe we could lay the groundwork for future implementation of the advanced model by developing the more basic options as stepping stones.

BASIC OPTION: SUMMER AND OUT-OF-SCHOOL IMMERSION EXPERIENCES. Under this option, students would be given access to high-tech course pathways within current spaces of non-consumption, without direct overlap with traditional school structures. A student might enroll in a high-tech summer immersion program that includes course modules and project-based learning challenges through which students apply knowledge, skills, and creativity to design solutions to real-world problems. Or she might enroll in asynchronous courses outside school through a provider like edX or Coursera and engage in internships or other field-based experiences as co-curricular or extracurricular activities.

The pathways developed by the HTLA might provide a framework for enabling students to demonstrate competency through these various experiences that together could "stack" into industry-relevant certifications or micro-credentials.

CORE OPTION: MICROSCHOOLS AND HIGH-TECH ACADEMIES. These options would go a step beyond the basic option by enabling students to join peer cohorts making their way through a common set of experiences as a cohesive unit. Cohorts would not be age-based and would not require students to proceed at the same pace. However, they would create distinct physical and intellectual spaces for deep engagement in a specific subject matter area. For example, a Software Development Academy in a traditional school or operating as a microschool might have dedicated classrooms, staff, and established industry partnerships that the school would bring together to provide students with a rigorous and experiential educational pathway. The end goal of participation in this option would be a traditional diploma plus an industry-relevant micro-credential earned through successful completion of a pathway that included student engagement in an in-depth Capstone Project.

ADVANCED OPTION 1: PERSONALIZED AND RELEVANT LEARNING--ANYTIME, ANY PLACE.

Under this option, a student might work with an advisor to define a path to develop all competencies and requirements for a given microcredential through widely varying experiences. The student might end up not taking any traditional courses but instead completing two asynchronous online courses on web development, for example, and working

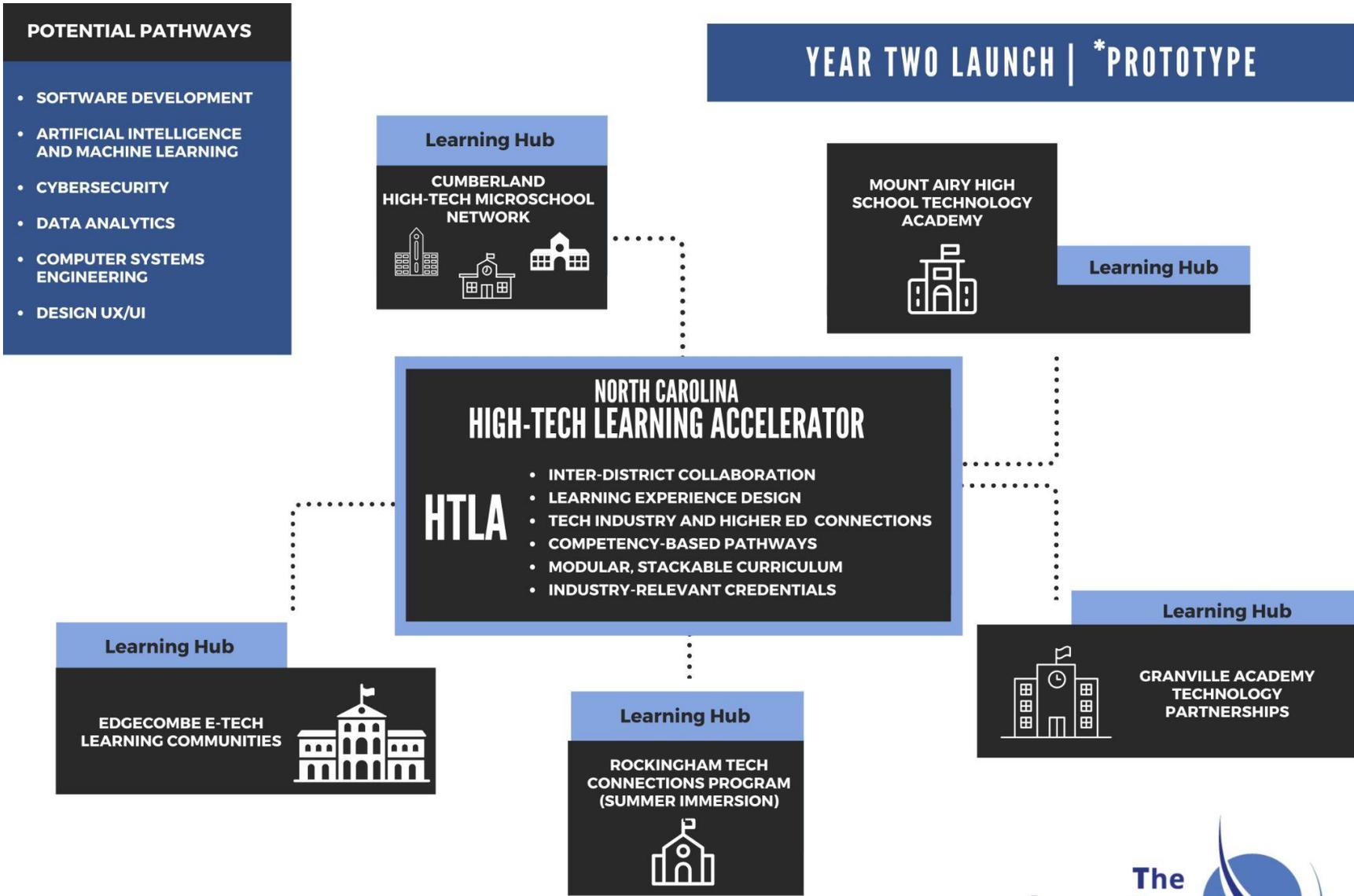
on that in lieu of one of her electives; job shadowing and then interning at a local business in web development; presenting to an HTLA expert panel on an independent study project she completed; and working with District C and a group of students to solve a real problem for a real-world client. Successful completion of all of this might earn the student a Web Development Certificate, the standards for which had been vetted by a group of industry professionals with relevant expertise. And along the way, the student might have catalogued her work in a Mastery Transcript that could then be submitted to colleges or universities or shared with a prospective employer.

ADVANCED OPTION 2: INTER-DISTRICT COLLABORATIVE. The second advanced option would require the most funding, the most expansive policy flexibility, and the most disruptive approach to traditional school and district operations. Under this option, the HTLA would support a consortium of schools with inter-district reach. Two or more districts would coordinate for purposes of enrollment, funding, staffing, and other operational details. For this to make sense, students in all participating districts would need to realize significant value from the inter-district partnership and the economies of scale reached through the joint effort. In appropriate cases, this model could provide expansive opportunities for students to connect with one another and with teachers, internship and research opportunities, higher education partners, and resources not sufficiently available in their communities alone.

Under one approach to this option, the HTLA might even be its own school, with students dually enrolled in the HTLA and their home-base school, and with opportunities for students to take traditional courses and engage in athletics and other extracurricular activities at their base school while separately attending the HTLA for their engagement in the technology-focused HTLA Core Curriculum. Separate systems might be used to enable competency-based learning, a modified Future Ready Course of Study, and use of a Mastery transcript in the HTLA, while some traditional systems might simultaneously continue to be used for students when they attended the home-base school. A collaborative funding model under this option would be an absolute necessity.

The graphic on the following page depicts one prototype for launch in Year Two. In this prototype, each of five TIP districts would collaboratively launch a different place-based learning hub connected through the structures and pathways developed through the HTLA.

As noted in the previous section, the HTLA will also develop model elementary and middle school explorations and on-ramps for ninth graders into the career pathways. These will also be incorporated into the launch and expansion plans of the local place-based learning hubs.



* THE LEARNING HUBS DEPICTED HERE ARE ILLUSTRATIVE EXAMPLES MEANT TO CONVEY THE POWER OF THE HTLA CONCEPT. ACTUAL LEARNING HUBS WILL BE DEVELOPED BY THE HTLA AND TIP DISTRICT TEAMS IN 2021-22.



HTLA Growth and Financial Sustainability Plan

The HTLA aims to serve over 25,000 high-school aged students per year in its full-build steady state, plus significant numbers of higher education students and adult learners accessing pathways derived from the HTLA's K-12 offerings, and tens of thousands of elementary and middle school students who will gain dynamic exposure to technology careers and high school pathways through HTLA-affiliated programs and partnerships.

The Innovation Project will develop and incubate the HTLA for the first three years leading up to statewide launch. During that time, we will establish a separate nonprofit organization that will carry out the statewide launch and manage the long-term growth and viability of the pathways, including through expansion outside high-tech and into other industries. At some point, TIP districts might again serve as the launch sites for growth into other areas, but that will be determined later based on the new nonprofit's capacity and industry needs.

A key facet of the first two years will be the development of the HTLA's financial model to achieve long-range financial sustainability without significant reliance on recurring public funding. We expect to do this through a mix of ongoing per-pupil revenue, industry support for learners at all ages to access HTLA pathways and for the HTLA to maintain its responsiveness to industry needs, and a hybrid earned-philanthropic revenue model for other higher education and adult learners.

Organizational Structure Narrative and Project Budget

The *Executive Director* and *Chief of Staff* will manage all aspects of the HTLA's K-12 program development, planning, and execution. They will be responsible for the strategic program vision, fundraising and partner relations, and overseeing the team planning in Y1 and the launch of the HTLA's programming in partnership with participating LEAs in Y2. They will be assisted by an *Executive Assistant* who will also support Directors and Advisors.

The *Director of District Partnerships* will coordinate the design-build process with district leaders, staff, and external partners in all participating districts, creating place-based Learning Hubs and facilitating the HTLA's connections among them. During the design-build process, the Director's main objective will be to achieve and maintain consensus on a cohesive plan for inter-district implementation, program structure, and the long-term financial model. The Director will oversee the work of five *District Design Leads* who will each be directly responsible for leading the design process in up to two geographically proximate districts. The Director will maintain ongoing dialogue with the directors overseeing the development of learning experiences and industry partnerships. The Director will also oversee a *Student Advising Lead* and a group of *Student Program Advisor* who together will be responsible for outreach to eligible students and direct student advising to align student participation in HTLA pathways with their overall high school programs.

The *Director of Learning Experiences* will be responsible for designing and then continuously improving the student experience. The Director will oversee a *Curriculum Development Lead Designer* and an *Experiential Learning Lead Designer*, as well as a development team of educators and subject matter experts in each substantive pathway area (software development, artificial intelligence and machine learning, cybersecurity, etc.), and two *Program Associates*. Together, this team will develop rigorous, industry-linked, competency-based pathways for students, including traditional courses (or modules), experiential or project-based learning experiences, and real-world capstone projects. The team will also oversee the design, with sustained industry input, of credentials (e.g., microcredentials; certificates) to be earned by students who successfully complete the pathways. The team will coordinate with partners to design and implement elementary and middle school survey courses and experiences designed to expose students to technology careers and high school pathways.

The *Director of Industry Partnerships* will work closely with external contract partners to ensure that industry perspectives remain central to program and curriculum development from the outset and inform the program's iterative continuous improvement processes and organizational culture. The Director will coordinate across teams with the other Directors and Advisors to avoid a siloed approach to industry input.

The project budget in Year One (the Design-Build Process) is **\$3,531,050**. The project budget in Year Two (Launch and Expansion within TIP Districts) is **\$3,304,979** in Year Two. Ongoing design and operational costs will be minimal and will be supported through interdistrict collaboration and the long-term sustainable financial model for the statewide HTLA.

About The Innovation Project

The Innovation Project (TIP) is a nonprofit collaborative working group of innovative North Carolina school district superintendents and their teams. Along with a team of staff and partners, TIP district members work together to “see around corners,” envisioning the future of public education and designing programs and partnerships to meet that future with a dual focus on equity and meeting the needs of every learner.

TIP’s 2020-21 Member Districts:

Asheboro City

Elizabeth City-Pasquotank

Moore County

Rowan-Salisbury

Warren County

Cumberland County

Granville County

Mt. Airy City

Vance County

Edgecombe County

Hoke County

Rockingham County

Wake County

Appendix A: Sample Projected Student Enrollment in HTLA K-12 Pathways, Y1-Y5 and Full Build

District	Total Students, 2020-21 (Grades 10-12)		Y2 (TIP) (~2.5%)	Y3 (TIP) (5.3%)		Y4 (Statewide)	Y5 (Statewide)	Full Build Steady State
Asheboro City	918	Y1: DESIGN BUILD PROCESS	23	49	STATEWIDE PROGRAM LAUNCH	60	62	64
Cumberland	10,530		254	558		684	716	737
Edgecombe	1,149		29	61		75	78	80
Elizabeth City-Pasquotank	1,021		27	54		66	69	71
Granville	1,600		37	85		104	109	112
Hoke	1,611		45	85		105	110	113
Moore	3,093		65	164		201	210	217
Mt. Airy	379		10	20		25	26	27
Rockingham	2,441		59	129		159	166	171
Rowan-Salisbury	4,254		95	225		277	289	298
Vance	907		27	48		59	62	63
Wake	37,362		823	1,980		2,429	2,541	2,615
Warren	396		10	21		26	27	28
Non-TIP Districts	315,229		0	0		3,152	7,881	21,436
TOTAL STUDENTS				1,504		3,480		7,420