UPDATE ON VIRGINIA'S TECH TALENT INVESTMENT PROGRAM

VEDP Virginia Economic Development Partnership
VEDP.org

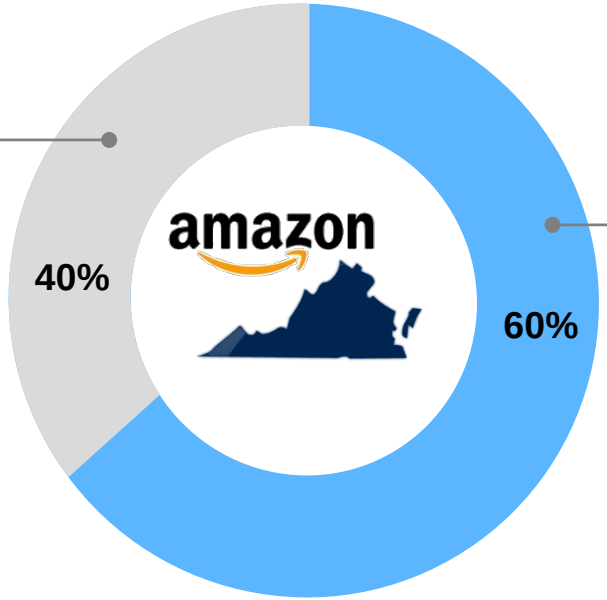
AMAZON HQ2 IN ARLINGTON, VIRGINIA

- Northern Virginia selected over 237 proposals in a 15-month competition (September 2017 to November 2018)
- Amazon has committed to create a minimum of 25,000 jobs in Arlington, with average annual wages in excess of $150,000, escalating by at least 1.5% annually
- Capital investment of $2.5 billion, mostly in new buildings
- Our incentive package reflects a minimum of 25,000 jobs (Phase I), with a potential ramp to 37,850 jobs (Phase II)
- Minimum of $1.2B in net new SGF $s after accounting for all state obligations (over 20 years at 25k jobs)

WE PURSUED A DISTINCTIVE STRATEGY FOR HQ2 THAT WOULD POSITION OUR ENTIRE TECH SECTOR FOR SUCCESS

From the outset, we committed to **match the scale and structure of the financial commitment for HQ2 with the ambition of the project** through a combination of company commitments and investments in our state and regional competitiveness for all technology firms and corporate headquarters

TRADITIONAL INCENTIVES



INVESTMENTS IN VIRGINIA'S COMPETITIVENESS:

We will launch a series of initiatives to grow Virginia's tech talent and infrastructure, while supporting Amazon's success in Virginia

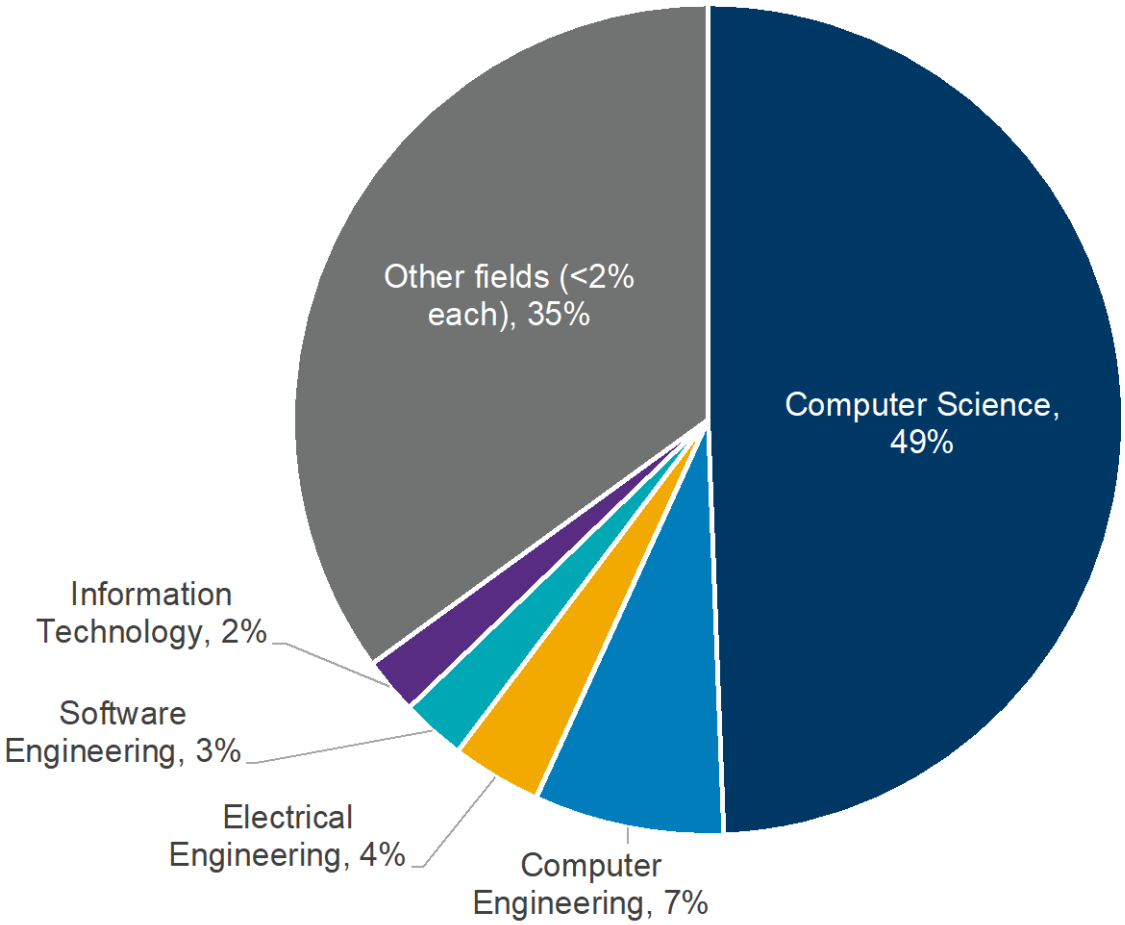
Note that the final package split was about 30% direct incentives and 70% investments in Virginia's competitiveness

THE HEART OF VA'S SUCCESSFUL HQ2 BID WAS A TECH TALENT INVESTMENT PROGRAM TARGETING 25-35K NEW CS DEGREES

- Even before HQ2, the tech sector had been identified by VEDP and others as Virginia's largest traded-sector employment growth opportunity by far – with future high-wage job growth constrained only by the size of our tech-talent pipeline
- Amazon created additional urgency to build a more robust tech talent pipeline as the company highlighted that pipeline as its top location criterion for HQ2
- Through our Tech Talent Investment Program proposal to Amazon for HQ2, we envisioned launching a performance-based initiative to add approximately 25-35,000 new degrees in key fields (above baseline levels) over the next two decades
- Based on analyses of tech job staffing at Amazon HQ1, interviews with tech firms, and an analysis of Census microdata to identify fields most commonly associated with software development, we selected computer science, computer engineering, and software engineering as the eligible degree fields for this first funding round
- These new tech grads will benefit hundreds of tech employers across Virginia
- Because college grads are highly mobile, we can increase degree production not just in Northern Virginia but also in other places across the Commonwealth
- Based on Amazon's roughly 50/50 split between bachelor's and master's grads at HQ1, we envisioned a similar mix of new degrees – master's degrees reduce the total cost, can be produced much more quickly, and lend themselves to customization

COMPUTER SCIENCE IS THE DOMINANT DEGREE FIELD LINKED TO TECH-INTENSIVE JOBS, SUCH AS SOFTWARE ENGINEERING

Distribution of degrees by field for tech employees at Amazon Seattle HQ



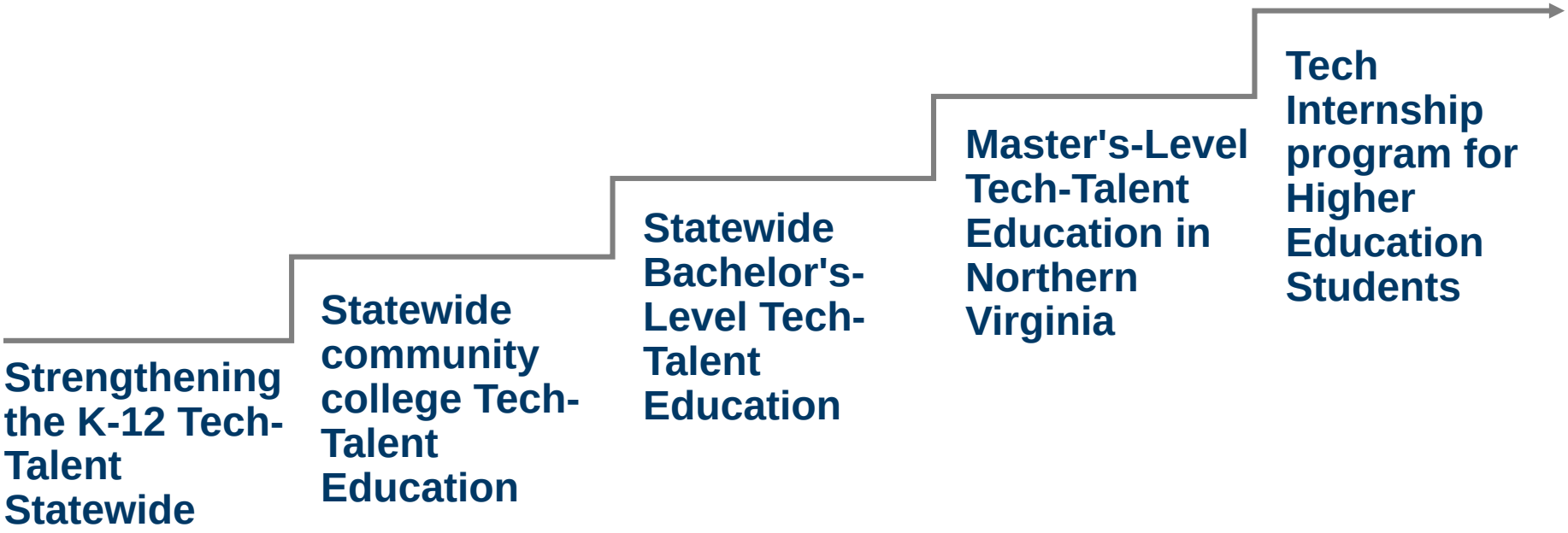
Additional perspectives on tech-talent pipelines:

VEDP analysis of U.S. Census ACS microdata indicates that computer science is, by far, the most common major for college grads working in software development or computer programming positions in the U.S. overall as well as in the DC/MD/VA region

Interviews and focus groups with many tech employers confirmed computer science as the principal college degree field of concern re: strengthening the tech-talent pipeline in Virginia (in addition to alternative pathways, e.g., coding boot camps)

Source: social media data; U.S. Census American Community Survey; VEDP analysis

VIRGINIA IS INVESTING UP TO $1.1B IN A PERFORMANCE-BASED TECH-TALENT INITIATIVE TO DOUBLE ANNUAL CS GRADS (BS+MS)



To add >31k BS/MS grads in CS and related fields over 20 years, Virginia is investing:

- ~$675M in undergrad education, including 250-300 new faculty lines, startup packages, capital projects (new buildings and labs), and operational support
- ~$375M in graduate education, including 75-100 new faculty lines, startup packages, capital projects (a new tech campus plus new buildings), and operational support
- $25M in tech internships/apprenticeships in higher education
- $25M in K12 computer science education (e.g., professional development, online curricula)

THE DESIGNATED REVIEWERS FOLLOWED SEVERAL PRINCIPLES TO DEVELOP THE TTIP STRUCTURE AND ALLOCATIONS

General principle	How this principle was incorporated
Fidelity to MEI briefings prior to HQ2 announcement	Target 25-35K new BS/MS degrees in CS and related fields over 20 yrs., with new MS degrees focused in NOVA (VT/GMU); performance-based funding model based on VT structure includes SGF for new degrees plus one-time equipment, with total state support up to $1.1B max over 20 yrs., subject to appropriation; see more details below
Conformity with the Code of Virginia requirements	All code requirements included in the proposal structure that interested institutions were required to complete, and these requirements will be incorporated into the final MOU that will be executed with each participating institution (detail on next page)
Focus on most strategically important degree fields	Eligible degree fields limited for now to computer science, computer engineering, and computer software engineering, as these fields are the top feeders to the tech jobs firms are having the most difficulty filling (e.g., software development engineering, machine learning / AI)
Performance-based funding	Echoing a key principle of MEI leadership, funding model and MOU structure will ensure that institutions can only achieve their forecasted annual state support if they produce all of their committed new eligible degrees (on top of baseline numbers)
Consistent approach for calculating SGF per new degree	SCHEV-developed base adequacy values for each school, with institution-specific fund split, utilized to develop values for SGF per new in-state eligible degree from organic growth, plus instrument/equipment startup costs; SGF per new degree values account for impact of transfers
Reallocation by design and via funding model	Reallocation and/or institutional skin in the game driven by: (a) no state inflation adjustment over 20-year funding cycle; (b) most institutions proposing some reallocation-driven growth; and, (c) all institutions only funded for actual, not forecasted, organic growth (reallocation degrees funded at 15% of organic rate)

WE UTILIZED A CONSISTENT MOU STRUCTURE WITH EACH SCHOOL TO MEET THE REQUIREMENTS IN THE CODE OF VIRGINIA

Code requirement	MOUs address this requirement by including…
1. Submission of an enrollment plan by the qualified institution detailing the number of eligible degrees produced between July 1, 2013, and June 30, 2018	▪ Acknowledgment that the institution provided this information (included in attached institution proposal)
2. A detailed plan of (i) how the qualified institution proposes to materially increase the enrollment, retention, and graduation of students pursuing eligible degrees, (ii) the resources necessary to accomplish such increase in enrollment, retention, and graduation, and (iii) how the qualified institution plans to track new enrollment	▪ A reference to the proposed TTIP plan, including this information in narrative form as well as a proposed pro-forma economic model and the final economic model developed by the Designated Reviewers
3. An accounting of the anticipated number of in-state and out-of-state students enrolling in eligible degree programs	▪ Expected enrollment split between in-state and out-of-state students
4. The existing capacity of current eligible degree programs, and an estimate of the amount of funding necessary to grow the qualified institution's enrollment capacity pursuant to the plan submitted pursuant to subdivision 2	▪ A reference to proposed TTIP plan, including this information in narrative form as well as a proposed pro-forma economic model and the final economic model developed by the Designated Reviewers
5. Where applicable, proposed plans to partner with other qualified institutions to provide courses or programs that will lead to the completion of an eligible degree	▪ A reference to institution’s proposed TTIP plan, including responses to this question
6. Where applicable, existing or proposed articulation agreements with [VCCS] to provide guaranteed admission for qualified students with an associate degree for transfer into an eligible degree program	▪ A reference to institution’s proposed TTIP plan, including existing and/or proposed articulation agreements
7. A proposed reallocation of existing funds held by or appropriated to the qualified institution to meet increased enrollment, retention, and graduation goals in eligible degree programs	▪ Institution’s proposed TTIP plan, including narrative and quantitative responses to this question, as well as consistent formula to calculate reallocation impact
8. [Requirement for annual report to Secretary of Finance]	▪ Detailed annual reporting requirements

TTIP ALLOCATION APPROACH YIELDING 15.6K NEW BS AND 15.7K NEW MS DEGREES FOR UP TO $1.1B (MAX) OVER 20 YEARS

TTIP Allocation Approach

- Fund Virginia Tech's BS (Blacksburg) and MS (Alexandria) proposals in line with how they have been envisioned for nearly two years, subject to 100% philanthropic match of all state support for new MS degrees, with exception that one-time faculty salary startup is not funded
- Fund GMU's proposed MS expansion in Arlington ($125 million), subject to a 100% philanthropic match of all state support for new MS degrees
- Fund BS expansion proposals of UVA and W&M up to 75% growth over baseline (same as VT BS) based on their program quality and high confidence in their ability to execute
- Fund all remaining BS proposals up to 37.1% 20-year program growth over baseline (or each institution's proposed growth percentage, if lower). Do not fund remaining MS proposals.
- Hold back remaining $98.5 million for miscellaneous TTIP-related support to be determined (e.g., community colleges, future application rounds, additional eligible degrees)

Methods for Determining State Funding per Degree

- Leverage SCHEV-calculated estimates for SGF per BS degree by school to determine SGF schools receive per new, organic, in-state BS degree (note: includes impact of transfers), plus one-time equipment for new faculty startup packages (capped at VT level per new degree)
- Utilize Virginia Tech and GMU proposals for SGF per new MS degree (GMU total cost per new MS degree comparable to that of Virginia Tech)
- Divide all SGF commitments equally over 20 years, with exception that FY20 will be proportionally reduced to account for smaller funding total; MOUs will include language adjusting annual payments for underperformance

PERFORMANCE-BASED TTIP AWARD ALLOCATIONS FOR 11 PARTICIPATING INSTITUTIONS ACROSS THE COMMONWEALTH

Institution	ADDITIONAL ELIGIBLE DEGREES ABOVE BASELINE ANTICIPATED			Overall 20-Year Program Growth Over Baseline	STATE SUPPORT ANTICIPATED ($M)				State Operating Support (SGF) Per In-State Organic Degree*
	In-State	*Out-of-State*	TOTAL		*Operating (SGF)**	*Equipment (HEETF)*	*Capex*	TOTAL	
VT BS	4,197	1,714	**5,911**	75.0%	$ 189.7	$ 36.3	$ 69.0	**$ 295.0**	$ 45,200
UVA BS	2,733	683	**3,416**	71.5%	$ 16.1	$ 9.0	$ 8.0	**$ 33.1**	$ 39,200
CWM BS	605	326	**930**	75.0%	$ 27.1	$ 0.3	$ 1.6	**$ 28.9**	$ 44,800
CNU BS	380	12	**392**	28.0%	$ 14.7	$ 0.1	$ 0.2	**$ 15.0**	$ 46,600
GMU BS	1,867	410	**2,277**	37.1%	$ 79.7	$ 7.6	$ 23.0	**$ 110.4**	$ 42,700
JMU BS	397	70	**467**	22.9%	$ 13.4	$ 0.0	$ 0.9	**$ 14.3**	$ 40,700
NSU BS	100	27	**126**	37.1%	$ 4.7	$ 0.1	$ 0.5	**$ 5.3**	$ 51,800
ODU BS	688	76	**765**	37.1%	$ 29.0	$ 0.2	$ 0.1	**$ 29.2**	$ 46,000
RU BS	394	-	**394**	37.1%	$ 17.4	$ 0.0	$ -	**$ 17.4**	$ 44,100
VCU BS	664	58	**722**	37.1%	$ 26.3	$ 4.2	$ -	**$ 30.5**	$ 43,300
VSU BS	137	48	**186**	37.1%	$ 6.0	$ 0.1	$ 1.3	**$ 7.3**	$ 47,600
BS TOTAL	**12,162**	**3,424**	**15,585**	**53.0%**	**$ 424.0**	**$ 57.9**	**$ 104.6**	**$ 586.5**	
VT MS	5,162	5,162	**10,324**	563.3%	$ 63.8	$ 18.5	$ 167.7	**$ 250.0**	$ 12,359
GMU MS	3,090	2,238	**5,328**	241.1%	$ 33.7	$ 7.3	$ 84.0	**$ 125.0**	$ 14,311
MS TOTAL	**8,252**	**7,400**	**15,652**	**226.5%**	**$ 97.5**	**$ 25.8**	**$ 251.7**	**$ 375.0**	
OVERALL TOTAL	**20,414**	**10,823**	**31,237**	**86.1%**	**$ 521.6**	**$ 83.6**	**$ 356.3**	**$ 961.5**	

* For MS expansions only, operating (SGF) dollars include startup faculty salaries (no such funds provided for BS expansions)
Methodology Note: Operating support (SGF) calculated by multiplying per-in-state degree support by # of organic growth in-state degrees + 15% of per-in-state degree support by the # of reallocated in-state degrees

THE FOLLOWING HAS BEEN PROPOSED FOR THE BIENNIUM BUDGET (SUBJECT TO APPROPRIATION)

	FY20 State SGF Support ($M)	FY21 State SGF Support ($M)	FY22 State SGF Support ($M)
VT BS	$ 5,476,345	$ 9,695,499	$ 9,695,499
UVA BS	$ 463,889	$ 821,285	$ 821,285
CWM BS	$ 781,842	$ 1,384,198	$ 1,384,198
CNU BS	$ 424,587	$ 751,702	$ 751,702
GMU BS	$ 2,301,844	$ 4,075,259	$ 4,075,259
JMU BS	$ 387,126	$ 685,381	$ 685,381
NSU BS	$ 136,464	$ 241,601	$ 241,601
ODU BS	$ 836,472	$ 1,480,916	$ 1,480,916
RU BS	$ 501,080	$ 887,128	$ 887,128
VCU BS	$ 759,772	$ 1,345,125	$ 1,345,125
VSU BS	$ 172,740	$ 305,824	$ 305,824
BS TOTAL	$ 12,242,161	$ 21,673,918	$ 21,673,918
VT MS	$ 1,842,378	$ 3,261,805	$ 3,261,805
GMU MS	$ 972,914	$ 1,722,478	$ 1,722,478
MS TOTAL	$ 2,815,291	$ 4,984,283	$ 4,984,283
TBD	$ 1,542,547	$ 5,103,024	$ 5,103,024
OVERALL TOTAL	$ 16,600,000	$ 31,761,225	$ 31,761,225

Biennium Budget Subject to Appropriation: *+$15.2M in FY21, +15.2M in FY22*

Note: *Values exclude one-time equipment purchases and capital projects*

NEXT STEPS (NOT COMPREHENSIVE)

- Finalize community college pilot program, including associated MOU, by December
- Finalize participation of any additional four-year institutions (e.g., UVa-Wise and Longwood University) by December
- Provide detailed guidance to all participating institutions regarding how underperformance adjustments will be handled

DISCUSSION, Q&A

VIRGINIA'S NOVEL HQ2 APPROACH FOCUSED ON HIGHER EDUCATION HAS GARNERED NATIONAL PRAISE (EXAMPLE)

The Washington Post

To win Amazon, higher ed was Virginia's secret sauce

By Editorial Board

Nov. 18, 2018

…

[The Commonwealth's] blueprint to establish a Northern Virginia outpost of Virginia Tech, and to expand STEM — science, technology, engineering and math — programs at the existing Arlington campus of George Mason University and elsewhere, represents a more ambitious vision than what may end up being regarded as a relatively modest package of financial incentives offered to Amazon directly.

... It's not only that Amazon's headquarters will rebrand Virginia; by pouring money into higher ed, Virginia is rebranding itself. …

Yes, there are likely to be speed bumps, but by most early indicators, Virginia seems to have bargained wisely.

VIRGINIA'S NOVEL HQ2 APPROACH FOCUSED ON HIGHER EDUCATION HAS GARNERED NATIONAL PRAISE (EXAMPLE)

The New York Times

A Better Way to Attract Amazon's Jobs

Virginia can teach New York a few things about how to make a deal that actually works.

By Amy Liu

Ms. Liu is vice president and director of the Metropolitan Policy Program at the Brookings Institution.

Feb. 16, 2019

…

VIRGINIA'S NOVEL HQ2 APPROACH FOCUSED ON HIGHER EDUCATION HAS GARNERED NATIONAL PRAISE (EXAMPLE)

> In Virginia's case, a lot of the [HQ2] 'incentives' were public-service enhancements: a new campus of Virginia Tech in Northern Virginia, improvements in public transit, enhancements in job skills. This kind of package makes more sense than just throwing a lot of cash at the company. So, will states in the future imitate some of the huge offers to Amazon, or will they imitate what Virginia did? That's the political choice faced by governors and state legislators.

W.E. UPJOHN INSTITUTE FOR EMPLOYMENT RESEARCH

Timothy J. Bartik
Senior Economist, W.E. Upjohn Institute for Employment Research
2019

MOST OF VIRGINIA'S PROPOSED COMMITMENTS ARE INVESTMENTS IN THE TECH-TALENT PIPELINE AND TRANSPORTATION INFRASTRUCTURE

Focus area	Component	Description	Size ($MM)
Company incentive	Provide post-performance incentive grants	Provide post-performance job-creation grants to offset Amazon's talent acquisition and development costs associated with standing up HQ2	550[1]
Tech-talent pipeline initiative	Expand tech-talent pipeline across Virginia	Expand Virginia's statewide tech-talent pipeline, adding bachelor's degrees in computer science and closely related fields in excess of current levels over the next 20 years, as well as invest $25 million in expanded internship opportunities to connect tech students to tech jobs	Up to 710[2]
	Launch tech campus(es) in Northern Virginia	Build a tech campus (or two distinct campuses) alongside a leading anchor university that will attract and retain top talent globally, creating an additional 12,500 – 17,500 master's degrees in computer science and closely related fields in excess of current levels over the next 20 years	Up to 375[2]
	Broaden K-12 tech-talent pipeline	Boost the tech-talent pipeline of the future by further developing and deploying K-12 tech-talent education programming	25
Regional infra-structure expansion	Enhance multimodal transportation infrastructure	Provide State support for priority transportation infrastructure projects that will improve mobility in the region	195[3]
Total of company incentives			550[1]
Total of state competitiveness investments (tech-talent pipeline initiative and infrastructure expansion)			Up to 1,305[4]

1 Maximum value of $550 million assumes company creates 25,000 jobs with average annual wages of $150,000, plus benefits, escalated at annually up to $200 million in additional company incentives (for a cumulative total of $7SO million) is available if the company creates a total of 37,850 qualifying jobs within 20 gears

2 Value represents the maximum new state investment in capital and operational support that be required to achieve the referenced degree production outcomes. Participating institutions will enter into MOUS that detail their plans for growth, state funding commitments, annual reporting requirements, and future funding parameters associated with performance. The total new state investment to grow bachelor's-level tech-talent education will be determined in part by how much of the growth in computer science and related fields is associated with an overall increase in college graduates at each institution and how much relates to a shift in the degree-field mix that mix occur at some institutions

3 Maximum value of $195 million assumes company creates 25,000 jobs with average annual wages of $150,000, plus benefits, escalated at 15% annually. Up to $100 million in additional state infrastructure commitments (for a cumulative total of $295 million) is available if the company creates a total of 37,850 qualifying jobs within 20 years

4 Maximum value assumes company creates 25,000 qualifying jobs and assumes maximum potential state investment for the tech-talent pipeline initiative