The STEPHEN S. FULLER INSTITUTE for Research on the Washington Region's Economic Future

SCHAR School of Policy and Government
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The Economic Impact of the Proposed Regional Science Center on Loudoun County, Northern Virginia, and the Commonwealth of Virginia

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Executive Summary

A large-scale, interactive Regional Science Center is being proposed and planned by the Children's Science Center, a local non-profit that currently reaches 70,000 visitors annually at both the Lab, the region's first hands-on STEM museum facility in Fairfax County, and through outreach programs across the region. The Regional Science Center will be located on donated land at Kincora in Dulles, Virginia, at the intersection of Routes 7 and 28.

The Regional Science Center is envisioned as a multi-dimensional facility providing a comprehensive range of services to enhance STEM educational programs in the public schools and the community at large in Loudoun County, Northern Virginia and elsewhere in the Washington metropolitan area. The development and construction outlays associated with the Center and its operating expenditures and incidental spending by non-local visitors to the Center constitute a large and continuing source of economic benefits for Loudoun County, Northern Virginia and the Commonwealth of Virginia in term of their contribution to these economies' total output, the generation of new personal earnings, and the support of jobs across all sectors of their respective economies. These economic benefits will not be realized in the absence of the Regional Science Center.

The initial phase of the Regional Science Center would include the development of a 56,940 square foot building at the cost of $60.2 million to be located at Kincora in Sterling. As currently proposed, construction would be completed in 2023. Annual operating outlays during the Center's first full year (2024) are projected at $4.2 million, including $2.3 million in payroll and benefits supporting 24 full-time and 30 part-time employees. In addition, there will be 10 seasonal employees employed at the Center.

Annual visitation to the Center is projected to total 344,455. It is projected that 67.7 percent of the Center's visitors will come from outside of Loudoun County making their incidental spending during their visit to Loudoun County an important source of new economic activity. These benefits from visitor spending attracted by the Regional Science Center to Loudoun will also benefit the remainder of Northern Virginia and the Commonwealth of Virginia attracting out-of-state residents who will generate incidental spending to the benefit of these larger economies and support jobs in Loudoun County, elsewhere in Northern Virginia and other portions of the State.

The full magnitude of these economic impacts to the benefit of Loudoun County, Northern Virginia and the Commonwealth of Virginia include their indirect and

induced effects as initial payroll and other outlays for contracted services to local vendors are recycled through these economies generating additional personal earnings to the benefit of workers residing locally and as well as elsewhere in the region, and the Commonwealth of Virginia.

For Loudoun County, the short-term economic impacts from the development and construction of the proposed Regional Science Center are:

- Direct outlays totaling $60.2 million over the development period;
- A total contribution to the Loudoun County economy totaling $83.8 million;
- New personal earnings of $15.9 million accruing to workers residing in Loudoun County (the equivalent of 255 full-time, year-round jobs); and,
- Support 339.3 full-time, year-round equivalent jobs in Loudoun County and elsewhere during the development and construction period.

Summary of Economic Impacts of the
Proposed Regional Science Center on Loudoun County
(in millions of dollars)

Source	Total Outlays	Total Output	Personal Earnings	Jobs Supported
Short-term[1]	$60.164	$83.751	$15.903	339.3
Annual[2]	$9.755	$13.079	$2.527	95.7

Source: Stephen S. Fuller Institute at the Schar School, GMU
[1]economic impact realized during development and construction period expressed in current year dollars; [2]recurring annual economic impacts from Center operations and non-Loudoun County resident incidental spending in the County expressed in 2024 dollars.

For Loudoun County, the long-term economic impacts from the operation of the proposed Regional Science Center in and from spending by non-local visitors to the Center that will recur annually beginning in 2024 are:

- The Center's annual operating outlays of $4.2 million and incidental spending in the County for retail sales, food and beverages, personal services, recreation, transportation and other items by non-Loudoun County resident visitors to the Center totaling $5.6 million annually for total annual direct outlays of $9.8 million;

- An annual contribution to Loudoun County's economy totaling $13.1 million;

- New personal earnings of $2.527 million accruing to workers residing in Loudoun County (the equivalent of 46 full-time, year-round jobs); and,

- A total of 95.7 jobs supported in Loudoun County and elsewhere annually from spending associated with the Center's operation and non-Loudoun County resident visitors.

For Northern Virginia and the Commonwealth of Virginia, short-term economic impacts from the development and construction of the proposed Regional Science Center are:

- The direct spending of $60.2 million will contribute a total of $99.6 million to the Northern Virginia economy, including its contribution to Loudoun County's economy described above, and a total of $118.2 million to the State's economy, inclusive of its contribution to the Northern Virginia economy;

- These outlays will also generate new personal earnings to the benefit of workers residing in Northern Virginia—$25.8 million (equivalent to 462 jobs)—and statewide, totaling $36.9 million (equivalent to 637 jobs); and,

- Will support to total of 589.2 and 855.9 full-time, year-round equivalent jobs respectively in Northern Virginia and the Commonwealth of Virginia and elsewhere during the development and construction period.

Summary of Economic Impacts of the
Proposed Regional Science Center on Northern Virginia
(in millions of dollars)

Source	Total Outlays	Total Output	Personal Earnings	Jobs Supported
Short-term[1]	$60.164	$99.638	$25.802	589.2
Annual[2]	$7.190	$10.750	$2.601	97.5

Source: Stephen S. Fuller Institute at the Schar School, GMU
[1]economic impact realized during development and construction period expressed in current year dollars; [2]recurring annual economic impacts from Center operations and non-Northern Virginia resident incidental spending in Loudoun County on the Northern Virginia economy expressed in 2024 dollars.

For Northern Virginia and the Commonwealth of Virginia, post-construction operating outlays and visitor spending associated with the Regional Science Center, will generate recurring annual benefits that will expand their economies, generate new personal earnings, and support jobs locally, regional, statewide and beyond. These economic benefits will recur annually, they will grow as the Regional Science Center grows physical and programmatically and increases its visitor attendance from greater distances attracting new spending potential into the Virginia, Northern Virginia and Loudoun County economies.

Summary of Economic Impacts of the Proposed
Regional Science Center on the Commonwealth of Virginia
(in millions of dollars)

Source	Total Outlays	Total Output	Personal Earnings	Jobs Supported
Short-term[1]	$60.164	$118.188	$36.880	855.9
Annual[2]	$6.655	$11.350	$3.195	109.3

Source: Stephen S. Fuller Institute at the Schar School, GMU
[1]economic impact realized during development and construction period expressed in current year dollars; [2]recurring annual economic impacts from Center operations and non-Virginia resident incidental spending in Loudoun County on the State's economy expressed in 2024 dollars.

These economic impacts to the benefit of Loudoun County, Northern Virginia and the Commonwealth of Virginia are benefits that would not be realized in the absence of the Regional Science Center. These are economic gains linked directly to the development, construction, and operation of the Regional Science Center as a unique activity not presently available to County residents and residents in the surrounding region. The Regional Science Center will not displace any comparable attraction and therefore its benefits are entirely additive to the Loudoun County economy and these benefit will generate secondary and induced benefits for the economies of Northern Virginia in its entirety as well as for the Commonwealth of Virginia in the form of new jobs for Virginia residents, increased personal earnings, and increased business activity supported by new payroll earnings, new orders from vendors of goods and services and spending by visitors attracted to the Center from outside of the state.

The Economic Impact of the Proposed Regional Science Center on Loudoun County, Northern Virginia and the Commonwealth of Virginia

Introduction

The proposed Regional Science Center is designed to provide interactive, educational programs in science, technology, engineering and math targeting children and visitors of all ages and backgrounds residing in Loudoun County and adjacent jurisdictions including Fairfax, Prince William, Fauquier and other counties and cities in and convenient to Northern Virginia. The Regional Science Center is envisioned as a multi-dimensional facility providing a comprehensive range of services to support and enhance STEM educational programs in the public schools and the community at large as a destination for families and organizations with the mission to advance the understanding and study of the sciences broadly across all segments of the community.

The proposed Regional Science Center would initially occupy a 59,640 square foot building that could be expanded to 70,000 square feet to respond to the growing demand for access to science and math education by the residents of Northern Virginia. Development costs for the initial phase of construction, including soft costs, are estimated to total $60.2 million. These soft and hard costs expenditures exclude the cost of the site as it has been donated by Kincora as a key component of its cultural core and a benefit for Loudoun County residents at a and value of approximately $1.3 million.

As proposed, the Center would be completed in 2023 with 2024 being its first full year of operation. Post-construction operating costs have been estimated to total $4.2 million (in 2024$s) with approximately 56 percent of these annual expenditures supporting payroll and fringe benefits for 24 full-time, 30 part-time staff and 10 seasonal employees.

Annual attendance is estimated at 344,455 with 66.7 percent of these visitors being residents of jurisdictions other than Loudoun County including a significant percentages who would be attracted to the Regional Science Center from nearby non-Virginia jurisdictions in the Washington metropolitan area (26.15%) and from greater distances; that is, outside a 70-mile travel radius (6.24%). These long-distance visitors are likely to be including this stop in Loudoun County as part of a more extensive trip to Northern Virginia or the Washington region. Spending by non-Loudoun County visitors to the Regional Science Center would represent new spending in Loudoun County that would not have occurred in the absence of the Regional Science Center; that is, had these out-of-county visitors not been attracted to Loudoun County. Additionally, visitor spending by non-residents will have beneficial impacts on the broader Northern Virginia and statewide economies.

The economic impacts of the proposed Regional Science Center presented in the following report provide only one lens for assessing the value of the Center to Loudoun County. The core purposes of the Regional Science Center are to support workforce development, foster community/regional identity, and to furnish family experiences that instill a lifelong love of learning science, technology, engineering and mathematics. Its educational programming will be designed to help open the minds of the County's children to science, technology, engineering and math as pathways to future enjoyment, to careers, and to a better life.

As a non-profit 501(c)(3), the Center's primary focus is on delivering its mission, rather than seeking a monetary return on capital investment or operating costs. Still, as will be shown, the proposed Regional Science Center will generate one-time economic benefits for Loudoun County, Northern Virginia and the Commonwealth of Virginia during its construction phase that exceed the direct cost of construction and will continue to generate annual economic benefits for Loudoun County, Northern Virginia and the Commonwealth of Virginia from operating outlays and the incidental expenditures by non-local visitors to the Regional Science Center that together will exceed the annual cost of providing these educational services to all of the region's children and families regardless of their economic status.

Measuring The Regional Science Center's Economic Impacts

The economic impacts of the proposed Regional Science Center are composed of (1) short-term and (2) continuing or long-term effects and are typically measured at their place of origin and to the benefit of the host jurisdiction. The short-term economic impacts are generated by spending for the development and construction of the Center. These are impacts on Loudoun County's economy during the development and construction period, in this case 2019-2023, that would not have been realized in the absence of undertaking of this new construction. These economic impacts are finite and measurable. These short-term benefits will extend beyond Loudoun County to all of Northern Virginia and statewide reflecting the distribution of labor and suppliers involved in design and construction of the Center, as well as the distribution of the indirect and induced effects, spread out within the regional and surrounding economies.

The long-term economic impacts associated with the proposed Regional Science Center occur following the completion of construction and recur annually over the lifetime of the Center. These economic benefits include: the annual expenditures required to operate the Regional Science Center, both payroll and non-payroll, and the new spending that would be attracted into Loudoun County (Northern Virginia and the Commonwealth) due to the existence of the Center. This visitor spending is spending that likely occurs external to the Center that occurs during the visitors' trips to the Regional Science Center. This spending would occur elsewhere at Kincora, Dulles Town Center, Dulles 28 Center and elsewhere in Loudoun County. This incidental visitor spending could also be captured in the Center's STEM Store.

While the visitor impacts being measured herein will largely occur in Loudoun County, their indirect and induced effects will spread out and impact the Northern Virginia and statewide economies reflecting the residential and supplier patterns of employees and businesses benefiting directly from these activities in Loudoun County. Additionally, but not measured in this analysis of visitor spending, will be spending by out-of-town visitors during their trip, which includes a stop at the Regional Science Center, that takes place in other Northern Virginia or Virginia jurisdictions. Clearly, those visitors coming from beyond the 70-mile radius may be on a multi-day visit to the region and will be benefiting other local economies during this visit beyond the spending they do in Loudoun County.

For these economic impacts to be considered new money to the County's, Northern Virginia's or Virginia's economies, spending that would not have likely occurred in the absence of the Regional Science Center, only spending by non-residents will be included in this analysis; that is, for Loudoun County's analysis, all visitors except Loudoun County residents are considered while for the analysis of Northern Virginia's visitor benefits, only visitors who are non-residents of Northern Virginia are included; the same would be true for the State—only visitors to the Regional Science Center who are not Virginia residents are considered as sources of "new" money.

This exclusion of spending of non-residents associated with their visits to the Regional Science Center may exclude spending that would not have been captured by local commercial outlets in the absence of the Center, spending that might have leaked out of the County or Northern Virginia on a visit to an adjacent jurisdiction that now would be retained in Loudoun County (or Northern Virginia or Virginia) as a result of the local residents staying local. Also, this exclusion might result in excluding instances of local residents taking their out-of-town visitors with their children and family members to the Regional Science Center rather than leaving the locality on a day excursion. As a result of these potential undercounts, the calculation of the economic impacts of visitor spending should be considered conservative.

The direct outlays for construction and operation and the incidental spending by visitors to the Regional Science Center generate indirect and induced impacts in the Loudoun County, Northern Virginia and Commonwealth of Virginia economies. These extra benefits result from the circulation of the initial expenditures within the respective economies; that is, the re-spending of payroll and purchases by suppliers and vendors and the subsequent re-spending of this initial spending. Through this process of re-spending and recycling of the initial expenditures by employees of the Center who reside in the County (or Northern Virginia or elsewhere in the State) and local businesses, who are suppliers or contractors during the construction and later during the operation of the Center, the initial economic impacts of these outlays are multiplied. The larger the jurisdiction (its physical extent and economic complexity), the greater the multipliers as larger areas will capture or supply a greater share of the required inputs employed in the construction and operation of the Center—labor, materials, services.

These total economic impacts constitute the total contribution to the County's economy, its gross county product (or Northern Virginia's economy, its gross regional product; or the Commonwealth of Virginia's economy, its gross state product). These new direct outlays also generate new personal earnings for workers residing in Loudoun County, Northern Virginia, or elsewhere in Virginia, employees of the Center's vendors or employees of retail and consumer services establishments that benefit from increased patronage (and spending) by visitors to the Regional Science Center or by employees at the Center. The magnitudes of these impacts beyond the initial expenditures can be calculated by using multipliers provided by the U.S. Department of Commerce's Bureau of Economic Analysis from its RIMS II model. These multipliers are calculated specifically for Loudoun County, Northern Virginia and Virginia and reflect the current magnitude and sectoral structure of their economies.

These economic impacts—short-term and long-term—as described above are presented in this report. However, there is an additional source of economic impact that will flow especially to the benefit of Loudoun County and adjacent jurisdictions from the development and operation of the proposed Regional Science Center that cannot be measured in dollars and cents but rather in measures of competitive advantage and quality-of-life. This bundle of benefits will be identified and analyzed in a separate report.

The focus of this subsequent analysis will be the proposed Regional Science Center's contribution to the ability of Loudoun County (and Northern Virginia) to attract and retain a productive workforce; that is, the benefits of offering a competitive advantage for attracting residential and non-residential investment as a result of having the Regional Science Center as an element of the County's educational infrastructure. In order for Loudoun County and Northern Virginia to compete nationally and regionally for the talent that will be required to support the future economy.

Peer jurisdictions around the country—examples include Raleigh, NC, Austin, TX, Seattle/Bellevue, WA—have already demonstrated the importance of having a science center or facility with a similar mission by their successes in attracting the talent and investment required to support their growing technologically advanced economies. As talent—its attraction and retention—has been identified by the leaders of Washington region's non-federally dependent, high-value added, and fast growing businesses, businesses that look like the future of the region's "new" economy, as the most important condition determining their success, the role that the proposed Regional Science Center can play in enhancing Loudoun County's and Northern Virginia's competitive advantage should be considered as an essential dimension of its contribution to the County's and Northern Virginia's future economic vitality.

The Economic Impact of the Proposed Regional Science Center on Loudoun County

Short-Term Economic Impacts

The short-term economic impacts that would be generated by the development and construction of the proposed Regional Science Center are presented in Table 1 on page 10. These impacts will occur over the construction period (including planning, design, and engineering) that will culminate in 2023 in a completed structure ready to offer STEM education programs for its designated user groups. The economic impacts shown in Table 1 are cumulative. They will occur over this period and will be relatively proportion to the actual outlays in any particular year. These economic impacts will be of greater magnitudes during the years during which the Center is under construction (2019-2023) than during the pre-construction, design phase.

The estimated direct outlays for soft and hard costs over the full construction period total $60.2 million. With an aggregate multiplier of 1.392, these direct expenditures will contribute a total of $83.8 million to the Loudoun County economy. These direct development and construction expenditures will also generate new personal earnings to the benefit of workers residing in Loudoun County totaling $15.9 million. The jobs associated with these new personal earnings will span the breadth of the County's workforce (these are indirect and induced benefits). It is estimated that the $15.9 million in new personal earnings generated by the development and construction of the proposed Regional Science Center would support 255 jobs held by Loudoun County residents during the construction period.

This direct development and construction spending also would support jobs more broadly in Northern Virginia, and elsewhere. The $60.2 million in total development and construction outlays were shown to support 339.3 full-time equivalent, year-round jobs over the full construction period including the 255 jobs estimated to be filled by Loudoun County residents.

Long-Term Economic Impacts

The long-term benefits flowing to the Loudoun County economy from the annual operations of the proposed Regional Science Center have been identified as including: (1) the Center's annual operating outlays including payroll; (2) incidental spending by non-county resident visitors to the Center; and (3) added value to the County's competitive position and quality-of-life in attracting and retaining a talented resident population to support its growing technology-intensive, high-valued added economy. The long-term economic impacts reported here will only analyze the first two of these three groupings of benefits. The third, the competitive and quality-of-life effects, will be analyzed in a separate report.

The economic impacts resulting from the annual operating expenditures of the Regional Science Center also are shown in Table 1. These are calculated in 2024 dollars reflecting the Center's projected first full year of operation. The total operating outlays projected for the Center's first full year of operation are $3.9 million with $2.1 million of these expenditures representing payroll and benefits for its staff.

Table 1

Economic Impact of Construction and Operations of the Proposed Regional Science Center on Loudoun County (in millions of current year dollars)

Phases and Sources	Direct Outlays	Total Output[1]	Personal Earnings[2]	Jobs Supported[3]
Development & Construction				
(1) Design & Pre-Operations				
A&E[4]	$6.7	$11.001	$2.562	42.2
FFE[5]	0.5	0.748	0.152	5.8
Operations	3.2	5.097	1.360	47.5
Totals	$10.4	$16.846	$4.074	95.5
(2) Construction				
Facility	$34.9	$46.888	$8.290	170.8
Exhibits	9.4	12.628	2.232	46.1
Contingency	5.5	7.389	1.306	26.9
Totals	$49.8	$66.905	$11.828	243.8
Total All	$60.2	$83.751	$15.902	339.3
Annual Operations[6]				
Wage and Salary	$2.329	$1.646	$0.316	4.2
Non-Salary	1.835	3.065	0.569	19.5
Total operations	$4.164	$4.7.11	$0.885	23.7

Sources: The Children's Science Center, The Stephen S. Fuller Institute at the Schar School, GMU.

[1]total impact on the Loudoun County economy; [2]new labor income of workers residing in Loudoun County; [3]jobs supported anywhere as a result of new direct spending; [4]architecture & engineering and other professional; [5]furniture, fixtures and equipment purchases; [6]expressed in 2024 dollars, the first full year of operation and recur annually thereafter.

Non-payroll payments to local suppliers of the goods and services required to run the Center constitute the largest share of annual operating expenditures. These would range from repairs and maintenance and janitorial services to office equipment and supplies. Many of these services would be provided by locally based businesses similar to other businesses located in Loudoun County. This local capture rate is reflected in the total output multiplier of 1.676 for non-payroll expenditures by museums and educational facilities in Loudoun County.

Payroll dispersements have a multiplier of 0.7068 due to tax withholding and other retained payments (e.g., insurance, FDIC) but combined operations will still generate a positive total impact of $4.7 million reflecting an aggregate multiplier of 1.13. Annual operating outlays, including payroll, will generate $0.885 million in new personal earnings to the benefit of workers residing in Loudoun County (this translates into an estimated 16.5 full-time, year-round equivalent jobs). Additionally, these operating outlays will support a total of 23.7 jobs over a broader region including those jobs held by workers residing in the County. These economic benefits will recur annually over the lifetime of the Center and would be expected to grow with inflation, the expansion of programs to accommodate increased visitation at the Center, and with the planned increases in the building size of the Regional Science Center.

The principal determinants of the economic impacts of visitors to the Regional Science Center is the number of visitors who would be attracted to visit Loudoun County due to the existence of the Center who would not have visited Loudoun County otherwise and the average spending of each visitor for incidental goods and services beyond their admissions fee to the Center. This incidental spending would include retail, food and beverage purchases, and other recreational expenditures. Spending for hotel accommodations might be included for visitors not on daytrips.

The total visitation projected for the Regional Science Center in its first year of operations was established by Northstar Museums, a division of Northstar Advisors, in its 2014 analysis of the proposed Regional Science Center based on the programs to be offered, population in the service area, competition, and the experience of other science museums and centers nationally. Visitation for the first full year of operation is estimated to total 344,455, including all sources (paid, free, membership, school trip, private parties), and is projected to increase annually at a 1.5 percent rate beyond this first year.

Based on the competitive position of the proposed Regional Science Center in Loudoun County (there are no other similar Center's within the Washington metropolitan area), Northstar estimated that 93.8 percent of all visitors would reside within the Washington metropolitan area, and therefore would be considered local daytrippers, and Loudoun County residents would account for 35.5 percent of these visitors residing within the 70-mile travel radius. The remainder of the visitors (6.24%) would be from beyond this 70-mile travel radius, and are considered travelers likely to be on an overnight trip. The type of visitor—daytripper or long

distance—will determine their corresponding spending patterns and allow for the economic impact of each type of traveler to be calculated reflecting these differences. These aggregate visitor-spending impacts of the projected annual visitation to the Regional Science Center in 2024 are presented in Table 2.

Table 2

Projected Visitation To the Proposed Regional Science Center
by Trip Origin and Total Spending, 2024

Source	Visitors[1]	Total Spending[2]
Loudoun County	114,709	
Northern Virginia[3]	118,160	$2,565,014
All Northern Virginia	232,869	
Metro Washington[4]	90,075	$1,955,346
Remainder of Virginia[5]	10,756	$535,584
Other States[6]	10,755	$535,584
Total Non-Loudoun	229,746	$5,591528
Total Non-NVA	111,586	$3,026,514
Total Non-Virginia	100,830	$2,490,930
Total All Visitors	344,455	

Sources: Children's Science Center, Loudoun County, The Stephen S. Fuller Institute at the Schar School, GMU.
[1]Northstar Advisors; [2]Loudoun County Economic Development spending estimates ($17.42 per local visitors and $39.96 per out-of-town visitor, from beyond 70 miles) inflated to 2024 $s; [3]excluding Loudoun County; [4]Washington metropolitan area excluding Northern Virginia; [5]Elsewhere from within the Commonwealth of Virginia; [6]Residents of other states and countries.

These spending calculations are based on estimated of per visitor spending made by the Loudoun County Department of Economic Development and presented in its Board of Supervisors Action Item report of April 16, 2014 entitled "Financial Agreement with the Regional Science Center." These per-visitor spending estimates, for daytrippers and for visitors living beyond the 70-mile travel radius, were presented in 2014 dollars; these spending estimates were escalated into 2024 dollars values (adjusted only for inflation) to calculate the economic impacts of the Center's projected visitation during its first full year of operation. The full economic impact of visitor spending is presented on Table 3 on page 13.

As with the calculation of development and construction impacts (short-term), the direct spending by visitors attracted to the Regional Science Center will have indirect and induced impacts on Loudoun County's economy that will increase the magnitudes

of their impacts. These indirect and induced economic impacts reflect the re-spending of the initial visitor spending for retail purchases, accommodations, food and beverage services, recreation and other consumer services by the local businesses and their workers for goods and services for personal consumption and business operations. The Bureau of Economic Analysis' RIMS II model provides these multipliers for Loudoun County's economy. In aggregate, for every dollar spent by a visitor to the Regional Science Center, Loudoun County's economy will realize a total of $1.50 ($1.4965). As a result, for the $5.6 million in total annual spending in Loudoun County by non-county resident visitors to the Regional Science Center in 2024, the County's economy will realize $8.4 million in total benefits.

Table 3

Economic Impact of Incidental Spending by Visitors to the Proposed Regional Science Center on Loudoun County (in millions of 2024 dollars)

Sources	Direct Outlays	Total Output[1]	Personal Earnings[2]	Jobs Supported[3]
Northern Virginia Less Loudoun County	$2.565	$3.838	$0.754	33.0
Other[4]	3.026	4.530	0.888	39.0
Total All[5]	$5.591	$8.368	$1.642	72.0

Sources: The Children's Science Center, The Stephen S. Fuller Institute at The Schar School, GMU.
[1]total impact on the Loudoun County economy; [2]new labor income of workers residing in Loudoun County; [3]jobs supported anywhere as a result of new direct spending; [4] including remainder of metro area and areas beyond a 70-mile travel radius. [5]visitor spending impacts of non-Loudoun County residents.

Spending in Loudoun County by non-county resident visitors to the Center will also generate new personal earnings totaling $1.6 that would accrue to workers who reside in Loudoun, supporting an estimated 30 full-time, year-round equivalent jobs held by county residents. Overall, these visitor outlays would support 72 full-time, year-round equivalent jobs in Northern Virginia (including Loudoun County) and elsewhere.

The combination of the economic impacts generated by the Regional Science Center's annual outlays for operations and the annual incidental spending by non-county resident visitors to the Center constitute its long-term impacts, economic impacts that

recur annually over the lifetime of the Center. These annual economic impacts are summarized in Table 4.

Table 4

Summary of Annual Economic Impacts of the
Proposed Regional Science Center on Loudoun County
(in millions of 2024 dollars)

Source	Total Outlays	Total Output[1]	Personal Earnings[2]	Jobs Supported[3]
Operations	$4.164	$4.711	$0.885	23.7
Visitor Spending	5.591	8.368	1.642	72.0
Annual Totals	$9.755	$13.079	$2.527	95.7

Sources: Tables 1 and 3; see Table 1 for footnotes.

The Economic Impact of the Proposed Regional Science Center on Northern Virginia and the Commonwealth of Virginia

Short-Term Economic Impacts

The short-term impacts of the development and construction of the proposed Regional Science Center on the Northern Virginia and Commonwealth of Virginia economies result from the initial expenditures for soft and hard costs, similar to the calculation for the short-term impacts on the Loudoun County economy. However, because the multipliers are larger (respectively 1.656 and 1.964 compared to 1.392 for Loudoun County), reflecting the larger geographic areas with their greater economic complexities, the related economic impacts area larger. These impacts, shown in Tables 5 and 6 on pages 15 and 16, are cumulative in that the economic impacts shown for Northern Virginia include Loudoun County and all of the other Northern Virginia Counties and independent cities and the economic impacts calculated for the Commonwealth of Virginia includes Northern Virginia's impacts along with those captured elsewhere statewide.

The direct expenditure of $60.2 million for the development and construction of the proposed Regional Science Center will contributed $99.6 million to the Northern Virginia economy including Loudoun County; it will generate $25.8 million in new personal earnings that will accrue to workers residing in Northern Virginia that translates into the equivalent of 461.6 full-time, year-round jobs; and support a total of 589.2 full-time, year-round jobs throughout the region, state and beyond.

Table 5

Economic Impact of Construction and Operations of the Proposed Regional Science Center on Northern Virginia (in millions of current year dollars)

Phases and Sources	Direct Outlays	Total Output[1]	Personal Earnings[2]	Jobs Supported[3]
Development & Construction				
(1) Design & Pre-Operations				
A&E[4]	$6.7	$12.216	$3.350	61.9
FFE[5]	0.5	0.864	0.211	7.8
Operations	3.2	5.248	1.701	48.7
Totals	$10.4	$18.028	$5.262	118.4
(2) Construction				
Facility	$34.9	$57.193	$14.395	330.0
Exhibits	9.4	15.404	3.877	88.8
Contingency	5.5	9.013	2.261	52.0
Totals	$49.8	$81.610	$20.540	470.8
Total All	$60.2	$99.638	$25.802	589.2
Annual Operations[6]				
Wage and Salary	$2.329	$2.130	$0.512	15.3
Non-Salary	1.835	3.453	0.871	33.2
Total operations	$4.164	$5.583	$1.383	48.5

Sources: The Children's Science Center, The Stephen S. Fuller Institute at The Schar School, GMU.

[1]total impact on the Northern Virginia economy; [2]new labor income of workers residing in Northern Virginia; [3]jobs supported anywhere as a result of new direct spending; [4]architecture & engineering and other professional; [5]furniture, fixtures and equipment purchases; [6]expressed in 2024 dollars, the first full year of operation and recur annually thereafter.

The direct expenditure of $60.2 for the development and construction of the proposed Regional Science Center will contributed $118.2 million to Commonwealth of Virginia economy including Northern Virginia; it will generate $36.9 million in new personal earnings that will accrue to workers residing in the Commonwealth of Virginia that translates into the equivalent of 636.9 full-time, year-round jobs; and support a total of 855.9 full-time, year-round jobs throughout the state and beyond.

Table 6

Economic Impact of Construction and Operations of the
Proposed Regional Science Center on the Commonwealth of Virginia
(in millions of current year dollars)

Phases and Sources	Direct Outlays	Total Output[1]	Personal Earnings[2]	Jobs Supported[3]
Development & Construction				
(1) Design & Pre-Operations				
A&E[4]	$6.7	$14.050	$4.480	85.6
FFE[5]	0.5	0.958	0.293	10.6
Operations	3.2	6.075	1.758	56.9
Totals	$10.4	$21.083	$6.531	153.1
(2) Construction				
Facility	$34.9	$68.052	$21.268	492.6
Exhibits	9.4	18.329	5.729	132.6
Contingency	5.5	10.724	3.352	77.6
Totals	$49.8	$97.105	$30.349	702.8
Total All	$60.2	$118.188	$36.349	855.9
Annual Operations[6]				
Wage and Salary	$2.329	$2.640	$0.751	22.2
Non-Salary	1.835	3.926	1.146	37.7
Total operations	$4.146	$6.566	$1.897	59.9

Sources: The Children's Science Center, The Stephen S. Fuller Institute at The Schar School, GMU.
[1]total impact on Virginia's economy; [2]new labor income of workers residing in Virginia; [3]jobs supported anywhere as a result of new direct spending; [4]architecture & engineering and other professional; [5]furniture, fixtures and equipment purchases; [6]expressed in 2024 dollars, the first full year of operation and recur annually thereafter.

Long-Term Economic Impacts

Northern Virginia's long-term economic impacts would be generated by the proposed Regional Science Center's annual expenditures for operating the Center, including both payroll and non-payroll outlays, and the incidental expenditures made by visitors to the Center who are not residents of Northern Virginia. In calculating the long-term economic impacts captured by the Commonwealth of Virginia's, only the

incidental spending by out-of-state visitors—new to the state spending—are included along with annual operating outlays.

The annual economic benefits that would accrue to the Northern Virginia and Commonwealth of Virginia economies from the Center's operations are presented in Tables 5 and 6 on pages 15 and 16, respectively. For Northern Virginia, the Center's $4.2 million in total annual operating outlays would contribute $5.6 million to the Northern Virginia economy, generate additional personal earnings totaling $1.4 million accruing to workers residing within Northern Virginia (the equivalent of 25 full-time, year-round jobs), and support a total of 48.5 full-time, year-round jobs in Northern Virginia, the Commonwealth of Virginia and elsewhere.

For the Commonwealth of Virginia, the Center's $4.2 million in total annual operating outlays would contribute $6.6 million to Virginia's economy, generate additional personal earnings totaling $1.9 million accruing to workers residing within the State (the equivalent of 34.5 full-time, year-round jobs), and support a total of 59.9 full-time, year-round jobs in the Commonwealth of Virginia and elsewhere.

The important economic impacts generated by the incidental spending of visitors attracted by the proposed Regional Science Center to the Loudoun County economy, as discussed previously (pages 11-14), also generates economic benefits that will accrue to adjacent jurisdictions in Northern Virginia and throughout the State. The attraction of non-local residents into Northern Virginia from elsewhere in the Washington metropolitan area and Virginia or into the Commonwealth of Virginia from other states represents new spending potential that will support retail and consumer services, restaurants and the hospitality industry more broadly. This visitor spending on incidentals can generate significant magnitudes of new value in the economy overall, supporting job growth and generating new labor income.

These economic impacts are governed by the place of residence of the visitors. Consequently, Loudoun County, because it is the smallest geographic unit of analysis, will have the largest percentage of the Center's total visitors who are non-residents (66.7%) and therefore Loudoun County will realize the largest share of the economic benefits from visitor spending.

Northern Virginia residents, including residents of Loudoun County, will account for 67.6 percent of the Center's visitors with 26.15 percent of the Center's visitors expected to come from the District of Columbia or Suburban Maryland (the other two sub-state portions of the Washington metropolitan area) and 6.24 percent of the Center's visitors residing either elsewhere in Virginia or in other states (and countries) living outside a 70-mile radius of the Center's location. These visitors, residing outside of Northern Virginia or outside of Virginia represent new spending attracted into Northern Virginia or the Commonwealth of Virginia, respectively, and will generate economic benefits beyond those captured in Loudoun County. These economic benefits are shown in Tables 7 and 8 on page 18.

Table 7

Economic Impact of Incidental Spending by Visitors to the Proposed Regional Science Center on Northern Virginia (in millions of 2024 dollars)

Sources	Direct Outlays	Total Output[1]	Personal Earnings[2]	Jobs Supported[3]
Washington Metro[4]	$1.955	$3.338	$0.787	31.7
Other[5]	1.071	1.829	0.431	17.3
Total All[6]	$3.026	$5.167	$1.218	49.0

Sources: The Children's Science Center, The Stephen S. Fuller Institute at The Schar School, GMU.
[1]total impact on the Northern Virginia economy; [2]new labor income of workers residing in Northern Virginia; [3]jobs supported anywhere as a result of new direct spending; [4] Washington metropolitan area excluding Northern Virginia. [5]visitors residing elsewhere in Virginia (excluding Northern Virginia) and in other states and countries; [6]impacts of visitors not residing in Northern Virginia.

Table 8

Economic Impact of Incidental Spending by Visitors to the Proposed Regional Science Center on the Commonwealth of Virginia (in millions of 2024 dollars)

Sources	Direct Outlays	Total Output[1]	Personal Earnings[2]	Jobs Supported[3]
Washington Metro[4]	$1.955	$3.756	$1.019	38.8
Non-Virginia Other[5]	0.536	1.028	0.279	10.6
Total Non-Virginia[6]	$2.491	$4.784	$1.298	49.4

Sources: The Children's Science Center, The Stephen S. Fuller Institute at The Schar School, GMU.
[1]total impact on the Virginia economy; [2]new labor income of workers residing in Virginia; [3]jobs supported anywhere as a result of new direct spending; [4] including only non-Virginia portions of Washington metro area. [5]impacts of visitors from other states and countries excluding Washington metro area; [6]Impacts of visitors of not residing in Virginia.

Economic Impact Summary

The proposed Regional Science Center has been shown to generate both short-term and long-term economic impacts to the benefit of Loudoun County, Northern Virginia and the Commonwealth of Virginia. These short-term economic benefits will be captured over the development and construction period and be fully realized with the planned completion of the Center in 2023.

- This analysis found that the $60.2 million in development and construction outlays for the Regional Science Center would increase economic activity in Loudoun County by a total of $83.8 million. These direct development and construction outlays of $60.2 million would also generate new personal earnings to the benefit of workers residing in Loudoun County totaling $15.9 million (the equivalent of 255 full-time, year-round jobs) and support a total of 339.3 full-time, year-round equivalent jobs in the County and elsewhere during the development period.

- This analysis found that the $60.2 million in development and construction outlays for the Regional Science Center would increase economic activity in Northern Virginia by a total of $99.6 million. These direct development and construction outlays of $60.2 million would also generate new personal earnings to the benefit of workers residing in Northern Virginia totaling $25.8 million (the equivalent of 461.6 full-time, year-round jobs) and support a total of 589.2 full-time, year-round equivalent jobs in Northern Virginia and elsewhere during the development period.

- This analysis found that the $60.2 million in development and construction outlays for the Regional Science Center would increase economic activity in the Commonwealth of Virginia by a total of $118.2 million. These direct development and construction outlays of $60.2 million would also generate new personal earnings to the benefit of workers residing in the Commonwealth totaling $36.9 million (the equivalent of 636.9 full-time, year-round jobs) and support a total of 855.9 full-time, year-round equivalent jobs in the Commonwealth and elsewhere during the development period.

The Regional Science Center will also generate long-term economic impacts to the benefit of Loudoun County, Northern Virginia and the Commonwealth of Virginia. These will be annual benefits and recur each year over the lifetime of the Center. These annual economic benefits, combining both operating outlays and the incidental spending of non-local resident visitors to the Center, will flow to Loudoun County's, Northern Virginia's and the Commonwealth's economies beginning in 2024 following the completion of the Center's construction.

- For Loudoun County, these long-term benefits will contribute a total benefit of $13.1 million to the County's economy each year, generate $2.53 million in new

personal earnings (supporting 45.9 jobs held by county residents) and support a total of 95.7 jobs overall in the region and elsewhere.

- For Northern Virginia, these long-term benefits will contribute a total benefit of $10.8 million to Northern Virginia's economy each year, generate $2.6 million in new personal earnings (supporting 47.3 jobs held by Northern Virginia residents) and support a total of 97.5 jobs overall in the region and elsewhere.

- For the Commonwealth of Virginia, these long-term benefits will contribute a total benefit of $11.4 million to the Commonwealth's economy each year, generate $3.2 million in new personal earnings (supporting 58.1 jobs held by Virginia residents) and support a total of 109.3 jobs overall in the region and elsewhere.

These economic impacts to the benefit of Loudoun County, Northern Virginia, and the Commonwealth of Virginia are benefits that would not be realized in the absence of the Regional Science Center. These are economic gains linked directly to the development, construction, and operation of the Regional Science Center as a unique activity not presently available to residents in Loudoun County and Northern Virginia or elsewhere in the Washington metropolitan area. The Regional Science Center will not displace any comparable attraction and therefore its benefits are entirely additive to the Loudoun County, Northern Virginia and Commonwealth of Virginia economies.

It should be noted that these economic benefits exclude any measurement of the developmental benefits that will accrue to Kincora by the presence of the Regional Science Center as an inducement for accelerated investment in its full development thereby increasing its vitality and its economic value to the benefit of the County and its tax base.

Furthermore, beyond these measureable benefits to the County's and Northern Virginia's economies are the contributions that the Regional Science Center would make to County's and region's competitive positions relative to peer jurisdictions nationally in terms of the quality-of-life offered to their local residents that will attract and retain the talent required in order to grow the high-value added, technology-intensive economy of the future. Being able to compete successfully for this limited and very mobile talent pool will determine the future performance of local and regional economies and the quality-of-life they can support. Offering a comprehensive range of educational experiences, especially ones that advance STEM educational opportunities to children of all ages and backgrounds, is essential for remaining competitively attractive with peer jurisdictions, many of which already have made broad-based access to STEM education a reality for their children. The value of these STEM programs for children and citizens of all ages (as contemplated by the proposed Regional Science Center) will be analyzed further in a separate report.