

Economic Impact of the US Army Heritage and Education Center

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Introduction (Ryan Karr)

The US Army Heritage and Education Center (USAHEC) is a unique institution nationally and an important contributor to the local and state economy. This paper has been prepared, in part, for an USHEC application for a state grant for a second phase of proposed construction.

USAHEC is a multipurpose facility. It functions as a research institution open to the public, serves as an artifact storage facility, and includes an extensive heritage trail that accommodates various rotating exhibits, a visitor and education center, and a conservation facility. These factors combine to make it one of the premiere research and education institutions pertaining to the history of the U.S. Army and its Soldiers as a major regional and national tourist destination. To quote a representative from USAHEC,

“USAHEC is dedicated to honoring the service and sacrifice of Soldiers and their Families by sharing their personal stories; preserving and making publically available their artifacts and archival materials for study; and educating and inspiring visitors, especially school children in grades 5-12 by promoting a greater understanding of the contributions made to our Nation by its Soldiers.”¹

This paper presents an impact analysis of the current state of USAHEC and an impact estimate for the proposed expansion 1 year and 5 years after completion.

Proposed Expansion (Ryan Karr)

This analysis looks at the potential effect of Phase Two of the Visitor and Education Center. Again quoting the application submitted by AHEC,

“Phase Two of the Visitor and Education Center (VEC) will create the architectural defining feature for the U.S. Army Heritage and Education Center and will provide an additional 37,000 square feet. Enhancements include an additional exhibit and interpretive gallery that will highlight Soldier artwork; two multipurpose rooms to host more complex educational programs; and improved conferencing capabilities to accommodate larger Veterans’ reunions and special events. Estimated cost of construction is \$10.75 million.

When completed, the Visitor and Education Center will serve as the heart of the complex from which public programs will emanate. A fully developed VEC will enhance USAHEC’s public outreach, educational, and tourism capabilities; improve its ability of telling the Army story; and sustain its growing visitation. With greater emphasis on the Department of Defense using the facility for conferences, the finished VEC will also increase Washington DC’s use of the campus for off sites and local hotels to house support staff.”²

¹ USAHEC Application, 2.

² USAHEC Application, 2.

This economic impact analysis was calculated based on data obtained from officials at USAHEC, information from various local sources, and additional outside research.

Economic Impact Methodology (Ryan Karr)

First, one must define economic impact. Economic impact is generated by any institution or development project that brings into an area and adds directly to that region's income. Some of this added income leads to further area spending as the initial beneficiaries make local purchases. This regional spending adds further to the local income and employment through the multiplier effect. For the USAHEC additions to the number of visitors and their average spending represents the biggest potential benefit to Pennsylvania and to Cumberland County. Construction costs and increased operating expenditures will also lead to higher income and employment.³

The economic impact of any institution is comprised of three general components: (1) the direct spending of the institution on labor and on other inputs, (2) the secondary income produced by the spending of the institution's employees, known as induced income, and (3) the secondary income produced by the spending of the suppliers from whom the institution buys materials, energy, and other non-labor inputs. This income is often referred to as indirect income. Direct spending measures the net inflow of income into the region because of the existence of the institution.⁴ USAHEC is an exporter from the region of education, research and tourist service. Nearly all of the benefits of USAHEC would be lost if it were closed.

Indirect spending and induced spending are estimated through a multiplier model. In general, income is related to spending and the marginal propensity to consume via the following formula:

$$Income = Spending \times \frac{1}{1 - Marginal Propensity to Consume}$$

The general process of spending multipliers is as follows. USAHEC related spending generates area income. This income is then spent at USAHEC, generates savings, taxes, and non-local spending. This generates an additional round of added income from area spending and so on. This cyclical relation can be summed up in an aggregate multiplier for an accurate estimate of potential effects.

For this analysis we choose to use the RISM-II multipliers, a regional economic model which provide multipliers for both county and state input-output relations. RIMS multipliers come in Type I and Type II varieties. These multipliers differ in how they account for indirect and induced spending. Type I RIMS II multipliers include only direct spending while Type II multipliers include both indirect and induced spending. We choose to use multipliers based on the language on the application provided by USAHEC, which for the most part were Type II.

Two types of impact can be studied: gross and net. Gross impact is the total economic impact generated by an institution. Net impact is only the increase in impact within the region. Although gross spending figures are often used (either deliberately or by mistake) we choose to

³ USAHEC Power point.

⁴ US Army Impact Analysis, 4.

use net figures as they more accurately represent increased local economic impact. We defined net impact as spending increases by those residing outside of the area. This was broken down into two regions – net to the county, and net to the state.

The following will look at our process of determining the various data we needed to calculate economic impact, describe the process to obtain it, then show the results of calculations.

AHEC Total Visitor Residence Estimates and Employment Impact (Sun Lee)

	Cumberland County (C.C.)	State - C.C.	Regional (incl. C.C.)	PA: Non- regional	Out-of- PA	Total
AHEC 2010	268		360	59	198	617
AHEC 2011	170		245	40	33	318
2009 (Washingtonburg)	499		632	133	78	843
2010 (Washingtonburg)	351		470	72	64	606
Total	1288	723	1707	304	373	2,384
% of total	54.03%	30.33%	71.60%	12.75%	15.65%	
Annual estimate for total visitors by area (152982)	82,656	46,399	109,535	19,505	23,942	152,982
Annual estimate for total visitors by area (250000)	135,075	75,825	179,000	31,875	39,125	250,000
Annual estimate for total visitors by area (500000)	270,150	151,650	358,000	63,750	78,250	500,000

To estimate geographic distribution of AHEC visitors, we retrieved data from both 2010 & 2011 Army Heritage Days visitor surveys and surveys from the 2009 and 2010 “Market at Washingtonburg” events. We established four geographic categories which were Cumberland County, the South Central PA region, PA residents from outside the region, and non-state residents. The percentage of state residents from outside of Cumberland County was found percentages for each geographical category excluding Cumberland County: 71.6% for the South Central PA region, 12.75% for non-regional PA residents, and 15.65% out-of-state residents. In addition, we calculated the total number of visitors from PA but not from Cumberland County. This total was [2384 (total) – 373 (out of PA) – 1288 (Cumberland County) = 723]. The percentage of non-Cumberland County PA visitors was 30.33%.

The total estimate for annual visitors was 152,982, which was retrieved from adding weekly total visitor volumes provided by the AHEC administration (31 weeks in total), and multiplying by 52/31 weeks. The annual estimates for geographical distribution were calculated using this annual figure and the percentages of each geographical category based on the sample surveys. For example, we estimated the total annual visitors from the South-Central PA region. We calculated this as $71.6\% * 152,982$, or 109,539. Moreover, according to a market study,⁵ the education center expects approximately 250,000 visitors in one year and more than 500,000 visitors in five years after the expansion project is complete. We used these figures and the percentages of each geographical category based on the sample surveys to calculate the annual estimate for total visitors by area. For instance, we estimated the center will obtain a total of 78,250 ($15.65\% * 500,000$) annual out-of-PA visitors five years after the project completion.

Visitor Spending: Intro, Food and Hotels (Annie Weichert)

Visitor spending surveys were handed out to spectators at the US Army Heritage and Education Center event, “Training for the North African Campaign” on Saturday, September 29th, 2012. A variety of people and groups were asked to fill out the survey, which consisted of eight questions regarding their average direct spending. Respondents were first asked to choose from three categories regarding where they resided. Those categories were: Cumberland County (PA), Other PA (all counties in the state of Pennsylvania except for Cumberland County), and Out of State (any resident of a state other than Pennsylvania). The main areas of focus on spending for us were on food, hotels and other. The Other section included direct spending on Entertainment, Auto, Souvenirs and other. The purpose of this survey was to eventually find the overall economic impact of the USAHEC and its proposed expansion on Carlisle, PA. To find the overall economic impact, we started by finding the “project’s ability to draw spending into the area that would otherwise not occur [there]. That spending [then] becomes a local party’s income, which starts the multiplier process” (W. Bellinger, personal communication, December 2, 2012). This process is encompassed in the net impact figures which are superior to the gross figures and they show the potential inflow of money that could result from the expansion of the center; rather than the gross estimate that would show us all the money that would be brought in from this project. Thus the net figure is more appropriate for this project, from which we were able to calculate the net total economic impacts for Pennsylvania and Cumberland County.

	Current	In 1 Year	In 5 Years
Gross	\$1,966,694.98	\$3,2113,932.00	\$6,427,864.00
Net (for county)	\$1,390,185.78	\$2,272,107.37	\$4,544,214.74
Net (for state)	\$762,410.19	\$1,246,210.67	\$2,492,421.34

	Current	In 1 Year	In 5 Years
Gross	\$6,380,745.19	\$10,427,280.98	\$20,854,561.00
Net (for county)	\$4,510,318.74	\$7,370,963.71	\$14,741,927.42
⁵ See the USAHEC application form and please cite the market study.			
Net (for state)	\$2,473,563.62	\$4,042,541.98	\$8,085,083.96

The first calculation made was in regards to visitor's spending on food. The respondents answered two questions: How many meals were eaten? and How expensive was the meal? Since we didn't directly ask the survey takers the exact meal price for each of their meals, we assumed that if they responded saying they ate at a fast food restaurant, they spent \$7.50. We also assumed if the respondent ate at a medium priced food establishment, they spent \$13, and finally if the respondent ate at an expensive restaurant, their meal was roughly \$40. From these numbers we were able to calculate the average meal spending per person and apply it to the direct spending by all visitors. We found the gross current total direct spending to be \$1,966,694.

We then used the expected number of visitors in 1 year and 5 years using the figures provided by the USAHEC, 250,000 and 500,000 people respectively. We multiplied by the correct proportions to arrive at the gross projected net spending, the net for the county and the net for the state (Table 1). The net spending total is the "net increase in spending that results from the added expenditures of Out of State" [for state] or Other PA, "residents to Carlisle from the expansion of the Center that otherwise would not be spent in the local economy" (Bellinger, W. et al., 2012, 18). We found indirect spending by using the Type II multiplier (2.2444) for Food in Pennsylvania, which we combined with direct spending to find the total income impact (Table 2). The total direct spending is significantly higher for both the county and state if the proposed expansion were to transpire.

A direct result of the increase in food spending by the proposed expansion of the US Army Heritage and Education Center is an increase in both the state and county employment figures for the food service industry. In order to calculate the employment increase, we needed to use the food service RIMSII multipliers for Cumberland County and Pennsylvania. The multiplier for the county is 17.91 and 28.3189 for the state of Pennsylvania. These figures can be deciphered as "the number of employees added to the food service industry per million of dollars added to the county or state income" (H. Rosen, personal communication, December 11, 2012). For example, to calculate the current net employment for the state, we multiplied 28.3189 by 2.473563 (the multiplier is per million) to result in 70 jobs (Table 3).

<i>Net- County</i>	Current	In 1 Year	In 5 Years
County	80	132	264
State	127	208	417
<i>Net- State</i>			
County	44	72	144
State	70	114	228

	Current	In 1 Year	In 5 Years
Gross	\$195,888.88	\$320,117.53	\$640,235.06
Net (county)	\$138,466.79	\$226,288.59	\$452,577.17
Net (state)	\$75,938.40	\$124,106.04	\$248,212.08

To find the benefit of the expanded US Army Heritage and Education Center on the government, we calculated the state tax impact from the additional food production. Included in the overall state impact tax is state income tax, state sales tax, and state payroll tax. The state

income tax is a flat tax rate of 3.07% (.0307). This is important because for every dollar that visitors to the AHEC spend on food, it then becomes someone else's income resulting in the multiplier effect. The sales tax is a flat rate of 6%, while the payroll tax is a little more difficult to calculate. Payroll tax is the "total employment impact x \$8,000 (only the first \$8,000 is taxed) x 7.3632%" (W. Bellinger, personal communication, November 30, 2012). Tables 4, 5 and 6 show the tax impact for each individual category.

	Current	In 1 Year	In 5 Years
Gross	\$382,844.71	\$625,636.86	\$1,251,273.72
Net (county)	\$270,619.13	\$442,257.82	\$884,515.64
Net (state)	\$148,413.82	\$242,552.52	\$485,105.02

	Current	In 1 Year	In 5 Years
Gross	\$106,030.08	\$173,771.52	\$347,543.04
Net (county)	\$74,810.11	\$122,523.65	\$245,636.35
Net (state)	\$41,233.92	\$67,152.38	\$134,304.77

	Current	In 1 Year	In 5 Years
Gross	\$684,763.67	\$1,119,525.91	\$2,239,051.82
Net (county)	\$483,896.03	\$791,070.06	\$1,582,729.16
Net (state)	\$265,586.14	\$433,810.94	\$867,621.87

The most important figures to focus on are the total taxes from additional meal spending in Carlisle by visitors to the expanded US Army Heritage and Education Center. In five years, the Pennsylvania government will be making approximately \$600,000 more in total tax impact from meal spending than they currently do (Table 7).

To calculate the overall economic impact, we also needed to find figures for the visitor spending on hotels during their duration in Carlisle. Our first step in this process was to process the respondent's answers to the following survey questions: How many people did you travel with here today? Will your visit include an overnight stay? (their response incorporated how many nights they stayed) and if you are staying overnight in the Carlisle area, where? We then had to estimate the per-lodging costs by looking at the current rates for each area on Hotels.com. The average cost for residents of Cumberland County and Out of State were in hotel areas that averaged \$90 per night, while those from elsewhere in Pennsylvania averaged a slightly higher rate, \$95, per night. The third step in this process was to assume the number of visitors per room, of which our estimate assumed that any party of 3 or less rented only one room and for every two additional members another room was rented. After combining all of these estimates and our survey results, we came to the conclusion that the average hotel spending per visitor was \$2.95 per Cumberland County resident, \$43.85 per Other PA resident, and \$112.50 per Out of State resident.

Table 8: Total Direct Spending on Lodging			
<i>Gross Estimate</i>			
	Current	In 1 Year	In 5 Years
Cumberland County	\$245,888.00	\$201,173.00	\$802,346.00
Other PA	\$2,034,596.00	\$3,324,926.00	\$6,649,853.00
Out of State	\$2,693,559.00	\$4,401,563.00	\$8,803,125.00
Total	\$4,973,559.00	\$8,127,662.00	\$16,255,324.00
<i>Net Estimate</i>			
Net (for county)	\$4,728,071.00	\$7,726,489.00	\$15,452,978.00
Net (for state)	\$2,693,475.00	\$4,401,563.00	\$8,803,125.00

The total hotel spending figures were found by “multiplying the average spending per visitor by the annual visitor estimates for each area” (Bellinger, W. et al., 2012, 31). We estimated the total overall hotel spending for all visitors to AHEC to more than triple over the course of the next five years. There is currently a gross number of \$4,973,559 being spent on hotels by these visitors and we estimate that at 500,000 visitors, there will be \$16,255,324 spent (Table 8).

The total net increase for the state would be a little under \$9 million, while the county would benefit by roughly \$15.5 million when there are 500,000 visitors to the US Army Heritage and Education Center. If the proposed expansion were to occur, the net increases in Tables 7 and 8 show a large inflow of total spending that would otherwise not be spent in the local economy. The lodging multipliers were constructed by using the final demand divided by a variety of factors such as output, earnings and employment (Table 9). Lodging has a relatively large employment effect due to the fact that there is more of a demand for “lower wage jobs and labor-intensive services” (Bellinger, W., et al., 2012, 33). The most important figure to concentrate on in Table 10 is the overall net economic impact from lodging 5 years after the proposed expansion.

Table 9: Lodging Multipliers		
	County	State
Final demand/output	990,925	536,639
Final demand/earnings	507,023	274,580
Final demand/employment	94,838	51,248

Table 10: Net Economic Impact from Lodging		
	State	County
Income (current)	\$5,473,141.00	\$7,125,676.00
Earnings (current)	\$1,586,726.00	\$1,576,339.00
Employment (current)	54	60
Income (250,000)	\$8,943,976.00	\$11,644,591.00
Earnings (250,000)	\$2,592,961.00	\$2,576,011.00
Employment (250,000)	87	97
Income (500,000)	\$17,887,952.00	\$23,289,182.00
Earnings (500,000)	\$5,185,922	\$5,152,022.00
Employment (500,000)	174	194

There will be 174 jobs added in the state of Pennsylvania as well as over \$17.5 million in taxable income for the government. The state flat income rate is 3.07%, which was used to gather the net tax income revenue as \$549,160, which is quite a large difference from the \$168,025 the government is currently making in taxable income (Table 11).

Sales tax for hotel spending was calculated by using Pennsylvania's 6% tax rate and amounted to roughly \$1 million by 2017 (Table 11). The payroll tax for hotels was estimated using the same methods as in visitor spending on food. Payroll tax revenue in the future could amount to \$102,496 when there are 500,000 visitors to the US Army Heritage and Education Center (Table 11). The overall hotel spending economic impact of the total net tax revenue from the proposed expansion in five years would be an extra \$1,724,934 for the government of Pennsylvania (Table 11).

Table 11: Tax Impact from Lodging	
Tax	Net Estimate
Sales Tax (current)	\$328,388.00
Income Tax (current)	\$168,025.00
Payroll Tax (current)	\$31,809.00
Total Tax Revenue (current)	\$528,222.00
Sales Tax (250,000)	\$536,639.00
Income Tax (250,000)	\$274,580.00
Payroll Tax (250,000)	\$51,248.00
Total Tax Revenue (250,000)	\$862,467.00
Sales Tax (500,000)	\$1,073,278.00
Income Tax (500,000)	\$549,160.00
Payroll Tax (500,000)	\$102,496.00
Total Tax Revenue (500,000)	\$1,724,934.00

Other Visitor Spending (Ryan Karr)

The data for other visitor spending comes from the aforementioned USAHEC heritage days survey. Other spending includes four categories that were surveyed: Auto, Entertainment, Souvenirs, and Other. Visitors were asked to categorize their spending in one of five categories: \$0, \$1-20, \$21-50, \$50+. In calculations we assumed conservative estimates within these categories to calculate spending figures. These estimates were: \$0, \$10, \$35, and \$60. From these estimates and survey respondents, we calculated average per visitor spending. This was divided into three regions: Cumberland County, Other Pennsylvania Areas, and Out of State. The figures were as follows:

Table 1: Visitor Spending Estimates	Cumberland County	Other Pennsylvania	Out of State
Souvenirs	11.43	15.28	12.5
Auto	10.68	17.9	29.16
Entertainment	8.704	7.16	8.755
Other	5.39	11.2	15.77

From these figures we calculated direct other visitor spending by multiplying these averages by the previously mentioned visitor estimates. This resulted in the following data.

Table 2: Visitor Direct Spending	CC Area	OPA	Out of State	Total
Souvenir Spending	\$944,762.07	\$708,751.19	\$299,271.67	\$1,952,784.93
Auto Spending	\$882,769.81	\$830,277.90	\$698,140.95	\$2,411,188.65
Entertainment Spend.	\$719,440.86	\$332,111.16	\$209,609.88	\$1,261,161.90
Other Spending	\$445,517.72	\$519,503.49	\$377,561.14	\$1,342,582.35
Total	\$2,992,490.46	\$2,390,643.74	\$1,584,583.63	\$6,967,717.83

Continuing to use the previously found visitor spending estimates found for 1 and 5 years after completing of the project, we calculated visitor direct spending for 1 and 5 years after the completion of the Phase II expansion.

Table 3: Visitor Direct Spending Estimates	CC Area	Other PA	Non-PA	Total
Total (~150,000)	\$2,992,490	\$2,390,644	\$1,584,584	\$6,967,718
Total (250,000)	\$4,890,255	\$3,906,732	\$2,589,488	\$11,386,475
Total (500,000)	\$9,780,511	\$7,813,464	\$5,178,976	\$22,772,951

Moving forward with this data, we looked to differentiate Gross Spending and Net Spending. Again, Net Spending was classified as spending that USAHEC brought into the County and State. The figures are as follows.

Current	CC-NET	PA-NET
Souvenir Spending	\$1,008,022.86	\$299,271.67
Auto Spending	\$1,528,418.85	\$698,140.95
Entertainment Spending	\$541,721.04	\$209,609.88
Other Spending	\$897,064.63	\$377,561.14
1 Year	CC-NET	PA-NET
Souvenir Spending	\$1,647,286.5	\$489,062.50
Auto Spending	\$2,497,705	\$1,140,885
Entertainment Spending	\$885,267.38	\$342,539.38
Other Spending	\$1,465,961.25	\$617,001.25
5 Years	CC-NET	PA-NET
Souvenir Spending	\$3,294,573	\$978,125
Auto Spending	\$4,995,410	\$2,281,770
Entertainment Spending	\$1,770,534.75	\$685,078.75
Other Spending	\$2,931,922.50	\$1,234,002.5

	Current	1 Year	5 Years
Gross Spending	\$6,967,717.83	\$11,386,475.43	\$22,772,950.85
State Net Spending	\$1,584,583.63	\$2,589,488.13	\$5,178,976.25
Cumberland County Net Spending	\$3,975,227.37	\$6,496,220.13	\$12,992,440.25

Next, induced spending was calculated using RIMS-II Type 2 multipliers. We multiplied our direct spending estimates by the following multipliers to arrive at our induced spending figures. Type 2 multipliers were used, per the language on the application. We chose to use the categories of Automotive, Retail Trade and entrainment from the RIMS II database.

Table 7: RIMS II Type 2 Multipliers		Final- demand Output (dollars)	Final- demand Earnings (dollars)	Final-demand Employment (number of jobs per \$million)	Direct- effect Earnings (dollars)	Direct-effect Employment (number of jobs per \$million)
PA	Auto	2.1202	0.6272	16.4765	1.9747	2.0613
	Retail Trade	2.0265	0.6205	21.8311	1.8437	1.559
	Entertainment	2.09	0.6368	26.1976	1.8991	1.4655
Cumberland County	Auto	1.5074	0.2876	7.8522	1.4959	1.6228
	Retail Trade	1.4692	0.3024	11.7553	1.4021	1.3099
	Entertainment	1.4941	0.2951	13.8109	1.4481	1.2712

Looking at these multipliers, it is interesting to note the different impacts each category of spending has. In general, spending categories that generate lower paying jobs have higher multipliers. Additionally, certain types of spending are much more localized, which causes the difference between PA and Cumberland County multipliers to be smaller.

From here, we multiplied the relevant figures to multipliers and arrived at these Net Project Impact totals.

Table 8: Net Project Impact 1 Year After Completion				
		Final Output	Final Earnings	Final Employment
CC-NET	Souvenir Spending	\$2,420,193.33	\$498,139.44	19
	Auto Spending	\$3,765,040.52	\$718,339.96	20
	Entertainment Spending	\$1,322,677.99	\$261,242.40	12
	Other Spending	\$2,153,790.27	\$443,306.68	17
	Total	\$9,661,702.10	\$1,921,028.48	68
PA-NET	Souvenir Spending	\$991,085.16	\$303,463.28	11
	Auto Spending	\$2,418,904.38	\$715,563.07	19
	Entertainment Spending	\$715,907.29	\$218,129.07	9
	Other Spending	\$1,250,353.03	\$382,849.28	13
	Total	\$5,376,249.86	\$1,620,004.70	5

		Final Output	Final Earnings	Final Employment
CC-NET	Souvenir Spending	\$4,840,386.65	\$996,278.88	39
	Auto Spending	\$7,530,081.04	\$1,436,679.92	39
	Entertainment Spending	\$2,645,355.97	\$522,484.80	24
	Other Spending	\$4,307,580.54	\$886,613.36	34
	Total	\$19,323,404.20	\$3,842,056.96	137
PA-NET	Souvenir Spending	\$1,982,170.31	\$606,926.56	21
	Auto Spending	\$4,837,808.76	\$1,431,126.14	38
	Entertainment Spending	\$1,431,814.59	\$436,258.15	18
	Other Spending	\$2,500,706.07	\$765,698.55	27
	Total	\$10,752,499.72	\$3,240,009.41	104

Now having direct and indirect spending figures, we turned our attention to calculation tax impact of the base. Income tax was calculated as the total income impact numbers times a flat tax rate of 3.07%. Payroll Tax was calculated by multiplying the number of employees (for gross, net county and state) by \$8000, which is an assumed earned salary. This figure was then multiplied by a flat tax rate of 7.3632% to obtain payroll tax impact. Sales tax was calculated as 6% of total spending.

	Current	In 1 Year	In 5 Years
Gross	\$865,565.52	\$1,414,486.23	\$2,828,972.46
Net (for county)	\$354,736.71	\$579,702.13	\$1,159,404.25
Net (for state)	\$197,393.09	\$322,574.99	\$645,149.98

	Current	In 1 Year	In 5 Years
Gross	\$533,765	\$872,266.51	\$1,744,533.02
Net (for county)	\$218,754.30	\$357,482.98	\$714,965.95
Net (for state)	\$121,725.74	\$198,921.24	\$397,842.49

	Current	In 1 Year	In 5 Years
Gross	\$1,009,826.46	\$144,092.16	\$288,184.32
Net (for county)	\$21,203.42	\$40,050.91	\$80,690.80
Net (for state)	\$13,546.63	\$2,944.92	\$61,254.33

Construction (William Bellinger)

I. Direct Effects

The cost of the project has been set at \$10.75 million. This is the direct spending figure for the construction phase of the USAHEC expansion. A management employee with R.S. Mowery & Sons suggested a total employment figure of 175 to 200 jobs for this sized project, some of which would be relatively brief. He said that a past \$24 million dollar project by the firm had produced about 400 total jobs. On that basis, \$10.75 million would produce about 180 jobs, based on the same dollar to jobs relationship. This is within the suggested range, and therefore will be used as our estimate of employment directly associated with the project.

The same employee also suggested that a common rule of thumb is that about 35% of the total budget would go to earnings. Applying this percentage to the \$10.75 million figure produces a direct earnings total of \$3,762,500.

II. Construction Impact on Income, Employment, and Earnings

Because of the language of the application document, Type I multipliers are used for these estimates. Type I multipliers include the indirect effects of spending by the general contractor but do not include the income created by employee spending. They are therefore smaller and less complete, but are consistent with the language of the funding application. Table 1 lists the Type I multipliers for the Construction Industry for Pennsylvania and for Cumberland County.

Table I: Type I Construction Multipliers

	Final-demand Output (dollars)	Final-demand Earnings (dollars)	Final-demand Employment (number of jobs)	Direct-effect Earnings (dollars)	Direct-effect Employment (number of jobs)
Pennsylvania	1.6844	0.5564	11.974	1.5101	2.3456
Cumberland County	1.3474	0.2949	6.4764	1.2952	1.37

Calculating the impact of the construction phase of the project involves multiplying the direct spending and employment numbers by their

Table II: Direct and Total Impact Estimates

	Direct Effects	Total Effects	Indirect Effects
Pennsylvania Income	\$10.75M	18.11M	7.36M
Pennsylvania Employment	180	422	242
Pennsylvania Earnings 1*	\$3,762,500	\$5,681,751	\$1,919,251
Pennsylvania Earnings 2*	\$3,960,864	\$5,981,300	\$2,020,436
Cumberland County Income	\$10.75M	\$14.85M	\$4.10M
Cumberland County Employment	180	247	67
Cumberland County Earnings 1	\$3,762,500	\$4,873,190	\$1,110,690
Cumberland County Earnings 2	\$3,960,864	\$5,130,111	\$1,169,247

An alternative measure of the total earnings figure is available. Multiplying the total cost of the project (\$10.75 Million) by the Final Demand/Earnings multiplier below gives a total earnings impact number. For the State, this approach produced a total earnings estimate of \$5,981,300, which is slightly higher than the result based on the 35 % earnings to total budget figure. Dividing this value by the direct effect earnings multiplier produces an estimated direct earnings figure of \$3,960,864.

While conservative figures are generally preferred, the more formal and detailed nature of the second estimate leads us to recommend its use in this case.

Employment Estimates (Faith Andrews)

The employment figures are based on the number of current permanent staff (direct employment), which was provided in the USAHEC Application Form. There are currently 76 civilian staff members and 2 military staff members. It is difficult to predict future payroll increases based on the USAHEC expansion and given uncertain Congressional action, so we assumed no payroll increases would be made in the years following the expansion; therefore, the

figures of 76 civilian and 2 military staff members will be used for all future employment figures.

Employee Earnings

According to the USAHEC Application Form, the 2012 pay and benefits for federal staff is estimated at \$71,579 per employee for a total of \$5.58 million. Based on uncertain economic policies of the federal government, we assumed a one-year pay freeze for federal staff. In order to estimate the pay five years after completion of the project, we used a 2010 Congressional Research Service Study that shows year-to-year increases in federal pay. We used the five most recent years in the study to find an average yearly percentage increase in employee pay for the years following the one-year pay freeze (2.94%).

Federal Civil Service Pay	
Year	% Change
2006	3.1
2007	2.2
2008	3.5
2009	3.9
2010	2.0

Five years after the expansion, the estimated employee pay is \$80,375, with total employee earnings estimated at \$6.27 million. Below is a table of the current and future estimates for total employee earnings.

Total Employee Earnings Estimates	
Currently (2012)	\$5,583,162
In 1 Year	\$5,585,162
In 5 Years	\$6,269,250

Direct Employee Spending

To find the first round effects of employee spending, we multiplied the total employee earnings (outlined above) by a determined ratio of consumption to income (70%). For example, the total employee spending in five years is \$4,388,475, as calculated by multiplying the estimated total employee earnings in five years by the consumption to income ratio [$\$6,269,250 * 70\%$]. The table below shows total direct employee spending.

Total Employee Spending (Direct)	
Currently (2012)	\$3,908,213
In 1 Year	\$3,908,213
In 5 Years	\$4,388,475

Because the staff and pay remain constant for the current year and the year after, the employee spending totals are equal.

Direct Sales Tax Revenue

The direct sales tax revenue is based on the above employee spending estimates. We used a sales tax rate of 6% and multiplied it by the employee spending estimates to find the direct sales tax revenue. For example, with current employee spending at \$5,583,162, the estimated current total sales tax revenue is \$234,493. The following table provides all future estimates for sales tax revenue:

Direct Sales Tax Revenue (from Employee Spending)	
Currently (2012)	\$234,493
In 1 Year	\$234,493
In 5 Years	\$263,309

Total Payroll Impact

The above employee spending and sales tax revenue only calculate the direct effects based on current and future employee earnings. In order to determine the full effect of the USAHEC expansion project, we calculated the indirect spending effects in the state (PA) and county (Cumberland) based on payroll. To calculate the current and future indirect impact, we used RIMS II multipliers in our calculations for the category consisting of museums, historical sites, zoos, and parks. The following tables show the totals calculated for the employment impact, income tax, sales tax and the overall impact.

County Impact from Payroll

Cumberland County	Current	In 1 Year	In 5 Years
Income Impact	\$6,228,519	\$6,228,519	6,993,913
Employment Impact	56	56	56

The income impact was calculated by multiplying the Cumberland County (CC) RIMS II multiplier of 1.5937 by the total employee spending. For example, the calculation to find the current income impact is as follows: $\$3,908,213 * 1.5937 = \$6,228,519$.

The employment impact was calculated by multiplying the CC RIMS II employment multiplier of 14.2934 by the total employee spending (\$3.9 in millions) to find the total increase in employee per million spent. The calculation for the current employment impact is as follows: $\$3.9$ (in millions) $\times 14.2934 = 56$. We assumed no increases in employment would be made in the years following the expansion, which is why the estimated employment impact is constant at 56 for all time markers.

State Impact from Payroll

State	Current	In 1 Year	In 5 Years
Total Income Impact	8,784,490	8,784,490	9,863,975
Employment Impact	101	101	101
Direct Income Tax	171,403	171,403	192,466
Indirect Income Tax	146,951	146,951	165,009
Total Income Tax	318,354	318,354	357,475
Sales Tax	527,069	527,069	591,839
Payroll	59,720	59,720	59,720
Total Tax Impact	905,143	905,143	1,009,033

The total income impact for the state was calculated using the PA RIMS II final demand/output multiplier of 2.2477 and multiplying by employee spending. For example, the current total income impact was calculated as follows: $2.2477 \times \$3,908,213 = \$8,784,490$.

Just as we assumed no employment increases would take place within CC in the near future, we assumed the employment would remain constant at a 101 employee increase per million spent from employee earnings. We used a multiplier of 25.9955.

The direct income tax was calculated by multiplying the state income tax (3.07%) by total employee earnings. For example, the current direct income tax was calculated as: $\$5,583,162 \times 0.0307 = \$171,403$. The indirect income tax was calculated to find what the secondary effects of employment earnings would be that would not be accounted for in initial spending (ie. savings). We used the final demand/output multiplier of 1.22477 (the state multiplier of 2.22477 minus 1) and multiplied it by total employee earnings and the state income tax. The current indirect income tax was calculated as such: $\$3,908,213 \times 1.22477 \times 0.0307 = \$146,951$. Adding the direct and indirect income tax figures generated the totals for income taxes together.

The total sales tax impact was calculated using the state multiplier of 2.2477 and multiplying that figure by employee spending and the state sales tax (6%). For example, the current sales tax was calculated as follows: $2.2477 \times \$3,908,213 \times 0.06 = \$527,069$.

The payroll figures were calculated using the following formula: employment impact * 8,000 * 0.073632. These figures are estimated to be the same, since the employment impact figures are equal (101). Total state payroll effect is estimated to be 59,720.

The total tax impact was calculated by simply adding the total sales, payroll and income taxes together. For example, the current total impact is as follows: 527,069 + 59,720 + 318,354 = 905,143.

Operating Expenses (Faith Andrews)

The operating expenses we covered do not represent the full operating budget, but rather encompass utilities primarily. The figures we obtained for maintenance, electricity, gas and water came directly from USAHEC Director Kris Ruth, and therefore no manual calculation was done on our part. The figures in the below table represent the direct operating expenditures as of fiscal year 2012.

We also calculated the other indirect effects on taxes from utilities based on employee spending. The current number of employees working in utilities is 7, and for the purposes of future utilities-based estimates, the 7 workers will remain constant.

Utility	Direct Spending	County GDP Impact	State GDP Impact
Maintenance & Repair	\$95,625	\$152,866	\$179,240
Electricity Cost	\$320,000	\$401,344	\$599,808
Natural Gas Cost	\$335,000	\$396,506	\$627,924
Water and Sewer	70,000	\$102,445	\$131,208
Total	\$820,625	\$1,053,161	\$1,538,180

The total impact on taxes consists of the following:

Taxes (Total Impact)	
Sales	\$92,291
Income	\$47,222
Payroll	\$4,274
Total	\$143,787

Net figures for PA and Cumberland County (Sun Lee)

Table 1: Net Impact on State and Cumberland Country (C.C.) Income (in \$)

Category	Current Visitors (152K)		250K visitors		500K visitors	
	State	C.C.	State	C.C.	State	C.C.
Hotels	5,473,141	7,125,676	8,943,976	11,644,591	17,887,952	23,289,182
Food	2,473,564	4,510,319	4,042,542	7,370,964	8,085,084	14,741,927
Other Visitor	3,524,904	5,797,021	5,760,313	9,661,702	11,520,626	19,323,404
Total Visitor	11,471,609	17,433,016	18,746,831	28,677,257	37,493,662	57,354,514
Construction	18,110,000	14,850,000	0	0	0	0
Payroll	8,784,490	6,228,519	8,784,490	6,228,519	9,853,974	6,993,912
Utilities	1,538,180	1,053,161	1,538,180	1,053,161	1,538,180	1,053,161
TOTAL	39,904,279	39,564,696	29,069,501	35,958,937	48,885,816	65,401,587

Table 1 exhibits a comparison of the net impact on the state of Pennsylvania and the county of Cumberland County income. The state and county are expected to receive a similar amount of income of \$40 million at the current level of visitors with the construction project. Once the construction is completed, both the state's and the county's income decrease, yet the degree of decline is minimal due to the increased number of visitors. With the 250,000 visitors, Cumberland County is expected to generate a \$7 million more income than state. Five years after the expansion project (with 500,000 visitors), the state and the county benefit an income of approximately \$50 million and \$65 million, respectively.

Table 2: Net Impact on State and Cumberland Country (C.C.) Employment

Category	Current Visitors (152K)		250K visitors		500K visitors	
	State	C.C.	State	C.C.	State	C.C.
Hotels	54	60	87	97	174	194
Food	70	80	114	132	228	264
Other Visitor	31	41	51	68	103	136
Total Visitor	155	181	252	297	505	594
Construction	422	247	0	0	0	0
Payroll	101	56	101	56	101	56
Utilities	7	7	7	7	7	7
TOTAL	685	491	360	360	613	657

Table 2 showcases a comparison of the net impact on the employment figures of Pennsylvania and Cumberland County. The state of PA and Cumberland Country generate 685 and 491 jobs, respectively, at the current level of visitors with the construction project. One year

after the project completion and with 250,000 visitors, both the state and the county generate the same number of jobs estimated at 360. Five years after the proposed AHEC expansion project (500,000 visitors), the state of PA and the Cumberland County provide their citizens with an increased employment opportunity of 613 and 657 jobs, respectively.

Table3: Net Impact on State Tax Revenue (in \$)

Table 3 exhibits a net impact on state tax revenue. With the current level of visitors and the proposed construction project, the state is expected to generate approximately \$4.2 million in tax revenue. The government of Pennsylvania will generate approximately \$3 million tax revenue within the next year. With 500,000 visitors, the state will generate about \$4.6 million tax revenue, which is higher than the current level of visitors.

Category	Current Visitors	250K visitors	500K visitors
Hotels	528,222	862,467	1,724,934
Food	265,586	433,811	867,622
Other Visitor	479,430	604,945	984,593
Total Visitor	1,273,238	1,901,223	3,577,149
Construction	1,947,310	0	0
Payroll	905,143	905,143	905,143
Utilities	143,787	143,787	143,787
TOTAL	4,269,478	2,950,153	4,626,079

General Conclusions (Sun Lee)

Our study exhibits that the U.S. Army Heritage and Education Center (USAHEC)'s expansion plan will have a positive economic impact to the state of Pennsylvania, particularly within Cumberland County. The expansion of the USAHEC will be an excellent investment in the State's cultural and tourism resources. However, the magnitude of the economic impact should be interpreted carefully since various impact numbers are based on the optimistic case estimates. A conservative or pessimistic assumption in one year and/or five years after the expansion may be desirable and reasonable. Even if significantly modified, these results still support the conclusion that the USAHEC is a valuable educational and tourist destination.

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