Appalachian Agricultural Exposition Center Economic Impact Study

Terance J. Rephann, Ph.D.
Center for Economic and Policy Studies

June 2014

Weldon Cooper
Center for Public Service
University of Virginia

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EXECUTIVE SUMMARY

This study examines the economic impact of a proposed Appalachian Agricultural Exposition Center to be located in northeastern Wythe County, Virginia. Agriculture has historically played an important role in the county economy and continues to make a major contribution. Moreover, local residents and leaders place a high value on diversifying and strengthening the agriculture sector. A new center is seen as an important tool for increasing the viability of area agriculture, promoting business recruitment, improving agricultural education, and encouraging agritourism.

The Appalachian Agricultural Exposition Center has been in the planning stages for nearly a decade. The impetus for the center came in February 2006 when the Southwest Horsemen's Association sold a 13-acre site that it owned and dedicated the proceeds towards establishing an indoor arena elsewhere in the county to hold horse shows and competitions. Shortly thereafter, a more broadly based group was formed to create a multipurpose facility that could host a variety of agricultural, entertainment and community events, including rodeos, livestock shows, sporting events, musical concerts, and trade shows. The group registered as a non-profit 501 c(3) organization called the Appalachian Agricultural Exposition Center (AAEC) and set out to develop the documentation needed to demonstrate the demand for and viability of a new facility. The organization sponsored several foundational studies, including a market and financial feasibility study, business plan, and schematic design and construction cost estimates for establishing a facility in the vicinity of Fort Chiswell.

Since the market and feasibility study was completed in 2008, only modest changes have occurred in the regional market area that would introduce new competitive challenges to a new center in Wythe County. The study mentioned three venues in the planning stages that had the potential to affect the center, including the Daniel Boone Exposition Center, Horse Park of the South, and West Virginia Equestrian Center. None of the plans for these centers has been realized. However, a similar type of facility was constructed in 2010, the Olde Dominion Agricultural Complex in Chatham, which is an over 2-hour drive from the Fort Chiswell site. Also, a 170'X250' outdoor arena called the Mark E. Hufeisen Horse Complex opened in 2008 in the New River Trail State Park.

The Appalachian Agricultural Exposition Center is envisioned to have three buildings, outdoors riding ring, paved and unpaved parking areas and driveway at an estimated $5.126 million cost including the cost of land acquisition. The focal point of the facility will be a large 60,000 square foot indoor arena with dirt floor and seating that will accommodate 3,000 people. The site will also contain a 140'X300' outdoor uncovered riding ring and four livestock barns that will accommodate a total of 204 livestock or equine. A general office building will serve as administrative headquarters and maintenance shed will store maintenance supplies. The AAEC board also sees a potential second project phase at a later date, which could add another 68-stall barn, an outdoor ring, and additional parking. When completed, the facility is projected to need two permanent staff to administer and maintain, including a manager and maintenance worker. Additional maintenance and service tasks will be contracted out.

The center is projected to attract 32 events in its opening year and grow to 71 events by the fifth year of operation. Attendance is expected to start at 22,250 and grow to 46,700 by the fifth year and grow to 56,764 under an alternative growth scenario that sees average attendance expanding in the direction of average event attendance observed at four regional benchmark agricultural arenas. Four categories of events are anticipated, including equestrian events, livestock events, sports competitions, and entertainment and consumer shows. A sizable majority of attendees can be expected to be drawn from outside the county. However, the geographical range of attraction will vary by the category of event, with participant-oriented events such as equestrian and livestock events drawing from a wider radius

than spectator events such as sports competitions and entertainment and consumer shows.

This study examines the economic impact of the Appalachian Agricultural Exposition Center using input-output analysis, a research tool that allows one to quantify the impact of an economic activity or expenditure in a region and IMPLAN, an industry standard input-output model. For this study, area center-related expenditures on local goods and services are counted as "final demand" or direct injections into the local economy. Linkages with other industries in the area mean that this initial injection further stimulates the economy as a result of the purchases of goods and services and payments to employees. The stimulus causes a "multiplier effect" that results when money is re-spent in the local economy.

Impact results are presented in a several different ways. First, economic impacts are described by the source of the impact including: (a) construction period impacts, (b) impacts attributable to facility operations, and (c) impacts attributable to visitor spending on county goods and services such as meals, lodging, gifts, etc. Second, economic impact results are also presented for two scenarios: a "baseline" visitor projections scenario based on numbers provided in the prior market and feasibility study and a higher "alternative" growth pattern that assumes a modest amount of visitor growth above the baseline as described earlier. Third, economic impacts are identified as direct (the expenditures attributable to facility-related spending), indirect (impacts attributable to purchases of local production inputs), and induced (impacts attributable to additional worker household spending). Fourth, results are presented for Wythe County and for the Commonwealth of Virginia. The former counts only visitor expenditures in Wythe County derived from non-residents towards the visitor economic impacts while the latter counts only visitor expenditures from out-of-state resident anywhere in the state towards the visitor economic impacts. Fifth, results are presented for four different economic measures (a) total sales or total industrial output, (b) value-added, (c) labor income, and (d) employment. Two fiscal impact measures are also provided: state and local (i.e., Wythe County) revenues.

Among the findings are the following:

County Economic and Tax Revenue Impacts

- Center construction is estimated to stimulate 47 jobs in the county. These include 39 mainly construction jobs attributable directly to building the facility as well as an additional 8 spin-off jobs in the community that can be expected based on the purchases of supplies and payment of wages and salaries to local workers. Center construction impacts include $4.327 million in total county sales or total industry output, $2.050 million county value-added, and $1.639 million county labor income.

- In the fifth year of operation, the center is estimated to create from 48 to 71 county jobs, $3.831 million to $4.882 million in total county sales or total industry output, $2.435 to $2.896 million in county value-added, and $1.829 to $2.124 million in county labor income.

- Center construction is estimated to generate approximately $57,000 in Wythe County tax revenue. Under the baseline scenario, Wythe County tax collections start at $48,000 in the first year of operations and grow to $117,000 in the fifth year. Under the alternative scenario, county tax collections start at $48,000 and grow to $155,000. The cumulative local tax impact is $467,000 in the baseline scenario and $541,000 in the alternative scenario. The local options sales and use tax is estimated to bring in between $50,000 and $61,000, the meals tax between $85,000 and $102,000, and the lodgings tax between $77,000 and $99,000.

State Economic and Tax Revenue Impacts

- Center construction has a state total industry output impact of $6.397 million, value-added impact of $3.619 million, labor income impact of $2.861 million and a state employment impact of 59 jobs. The state economic impacts are uniformly higher than the county economic impacts because there are fewer direct expenditure leakages from the Virginia economy and higher multiplier effects due to more input purchasing opportunities.

- In the fifth year of operations, the center is estimated to create from 17 to 19 state jobs, $2.845 million to $3.031 million in state total industrial output, $2.100 million to $2.202 million in state value-added, and $1.625 million to $1.687 million in state labor income. These state economic impacts are uniformly lower than the county economic impacts because we count only the estimated Virginia expenditures of out-of-state residents. We also assumed that 17 of the 71 events are currently already hosted at other locations within the state and thus represent spending redirected from other areas in the state rather than new spending.

- Center construction is estimated to generate approximately $154,000 dollars in state tax revenue. State tax collections are estimated to be approximately $36,000 in the first year of operations, moving up to $103,000 in the fifth year under the baseline scenario, and growing to $110,000 in the alternative scenario. Cumulative state tax revenue is estimated to be approximately $490,000 for the entire study period in the baseline scenario and $504,000 in the alternative scenario. The bulk of the tax impact comes from the individual income tax.

A new agricultural exposition center may offer other benefits to the community beyond economic activity and additional tax revenue. For example, the new facility could potentially contribute to the health and wellness of the community. Statistical analysis conducted using Virginia Outdoors Survey data indicates that increases in local horse shows and competitions can potentially boost Wythe County resident participation in horse riding by approximately 3.1 percent. This equates to an estimated 383 Wythe County households taking up horse riding, which can produce various physical, psychological, and other therapeutic benefits. The center would also serve as a venue for youth recreational activities such as scouts, soccer, and regional athletic competitions. In addition, a center would serve as a focal point for promoting area agriculture and industry and celebrate the area's agricultural heritage. Facility events could be used as a forum to exchange ideas, discuss industry problems and challenges, transfer technology, and demonstrate industry best practices. Also, local educational institutions and the Virginia Cooperative Extension Service could use the center for training and education such as 4-H activities. The center would also provide an additional venue, meeting space and convocation center for a variety of community events such as high school and college graduations and family reunions and could host community events that raise funds for worthwhile local charitable causes.

In addition, the community could possibly increase the economic impact of the agricultural exposition center in various ways. Center leadership could emphasize a "buy local" strategy and develop local network of vendors and caterers to provide on-site services and procure products and services from local producers. Development incentives could be offered to foster additional tourism infrastructure such as lodging, eating, and amusement and recreation facilities in the vicinity of the center. In addition, center activities could be linked and marketed with other tourist attractions in the region to encourage visitors to visit those venues as well.

INTRODUCTION

This study examines the economic impact of a proposed agricultural exposition center to be located in northeastern Wythe County, Virginia. Agriculture has historically played an important role in the county economy and continues to make a major contribution. Moreover, local residents and leaders place a high value on diversifying and strengthening the agriculture sector so that it remains viable in the future. The proposed facility would provide a venue for meetings, shows, auctions, festivals, and other events and assist the growth of area tourism, particularly agritourism and equine-related tourism. It would also promote area agriculture by providing a venue for marketing and selling local products and offering agricultural workforce development activities. This study estimates the economic impacts of facility construction, operations, and visitor spending on the Wythe County and Virginia economies. The study estimates the facility's effects on output, employment, income and local and state tax revenues during construction and for a five-year period after opening based on projected operational expenditures and visitor figures derived partly from a prior market and financial feasibility study conducted by Virginia Tech's Office of Economic Development with supplemental information from a 2014 business plan.

The study is divided into six additional sections. The first section describes the Wythe County economy with close attention to the agriculture and tourism sectors that play a supportive role in the success of the planned endeavor. The second section describes the proposed Appalachian Agricultural Exposition Center, including planned facility size and features, operational characteristics, and the projected types and size of events to be hosted there. The third section describes the input-output methodology and IMPLAN software used in the economic impact analysis. The fourth section describes the assumptions and data used to generate expenditures associated with the construction and operation of the center. The fifth section presents the results in terms of employment, sales, income, and tax revenue impacts for three components: (a) facility construction, (b) facility operation, and (c) visitor spending on goods and services such as meals, lodging, gifts, etc. Economic impacts are presented for both "baseline" visitor projections provided in the prior market and feasibility study and an "alternative" growth trend that assumes a modest rate of growth above the baseline. Results are also provided for Wythe County and the Commonwealth of Virginia. The sixth section discusses and attempts to quantify when possible how the proposed center might affect the community in other ways. Potential benefits are organized into the areas of health and wellness, workforce development, agricultural and industrial promotion, community engagement, and business development opportunities.

SECTION ONE
WYTHE COUNTY ECONOMY AND AGRICULTURE

Wythe County is a predominantly rural county located in southwestern Virginia approximately one hour driving distance along I-81 from Roanoke City to the north and Bristol City to the south (see **Figure 1.1**). The county's population was estimated to be 29,251 in 2012, which is up 9.6 percent from 27,621 in 2000 (see **Figure 1.2**). The county seat of Wytheville is the largest incorporated town in the county, with an estimated 8,196 residents in 2012, up from 7,912 in 2000 for a growth rate of 3.6 percent. Rural Retreat is the only other incorporated area in the county and had 1,485 residents in 2012 compared to 1,381 in 2000 for a growth rate of 7.5 percent. The area has generally experienced population growth since the early 1970s with intermittent years of population loss. The growth pattern is somewhat slower than the state and nation but representative of the Southwestern region, which has experienced slower growth in recent years in connection with the erosion of employment in mining and manufacturing industries and aging population.

Compared to the state, the Wythe County economy is relatively specialized in farming, manufacturing, mining, accommodation and food services, and government and government enterprises. Much of the employment gains since 1990 have occurred in accommodation and food services, health care, administrative and support services (which includes temporary employment firms) and manufacturing, with manufacturing and health care offering the highest average annual wages (see **Figure 1.3**). Manufacturing can be found in both nondurable goods such as beverage manufacturing and durable goods such as automobile parts and supplies, machinery and equipment, plastics, and rubber manufacturing. The county has a sizeable number of lodging establishments and restaurants for a community of its size owing to its location at the intersection of two interstates (I-81 north south and I-77 east west) and close proximity to the Mount Rogers National Recreation Area, Jefferson National Forest and the New River Trail Park. The county hosts several other area attractions, including two wineries, a dinner theatre and various types of private outdoor recreational venues.

Wythe County's agriculture resembles much of the rest of the Southwest region. It has a large beef cattle herd and thirty dairy farms. Forage crops and corn are also important. After falling rapidly during the 1980s, farm employment has stabilized in the

Figure 1.1. Wythe County Location

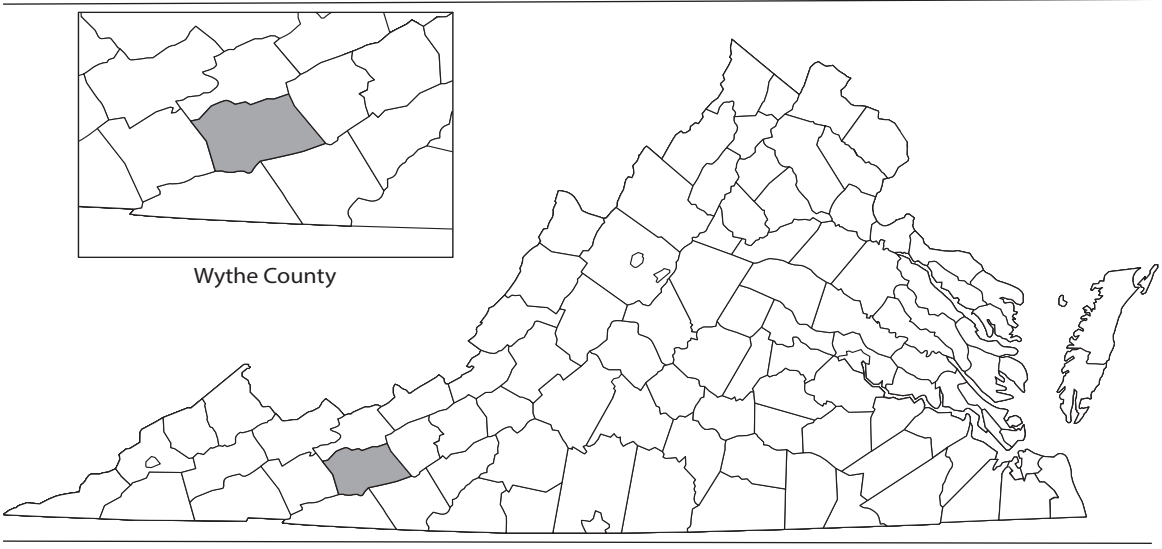
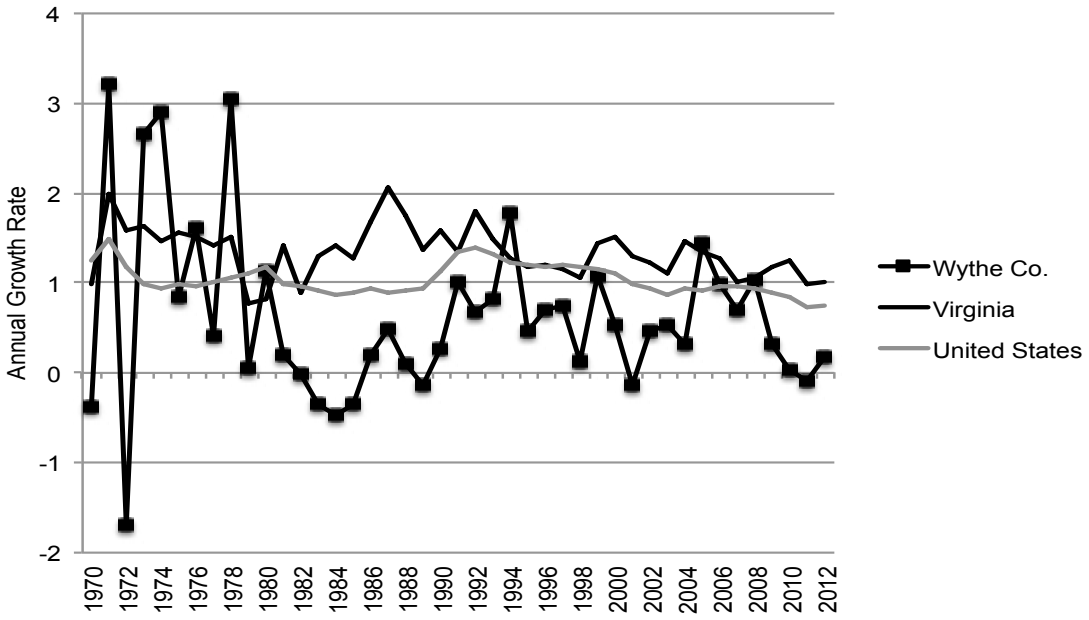
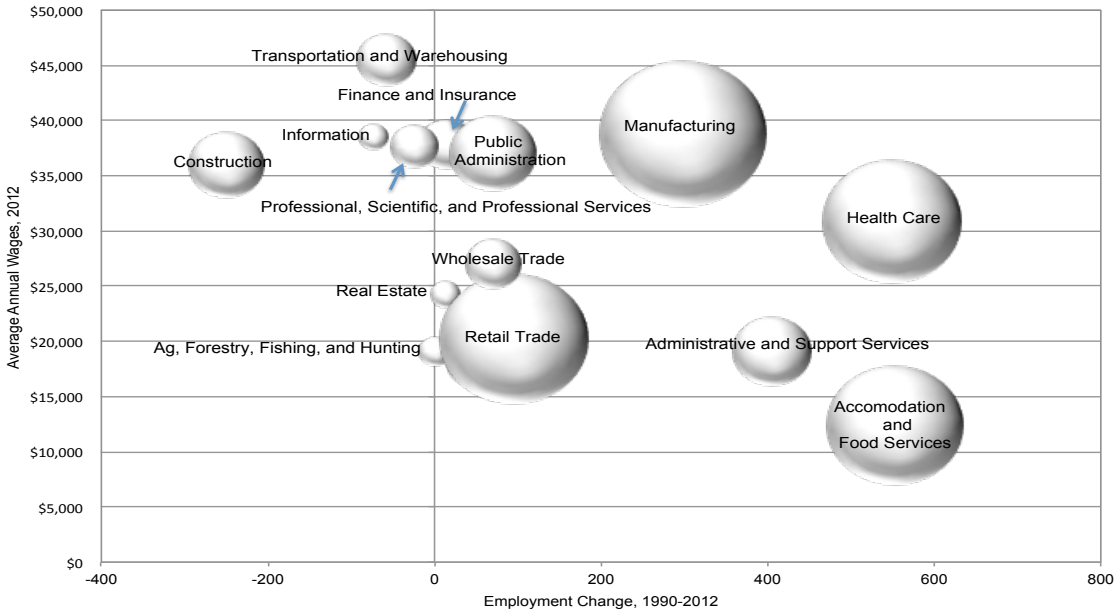


Figure 1.2. Annual Population Growth Rate, United States, Virginia, and Wythe County, 1970-2012



Source: Bureau of Economic Analysis, Local Area Personal Income

Figure 1.3. Size of Sector, Change in Employment 1990-2012, and Average Annual Wages 2012, Wythe County

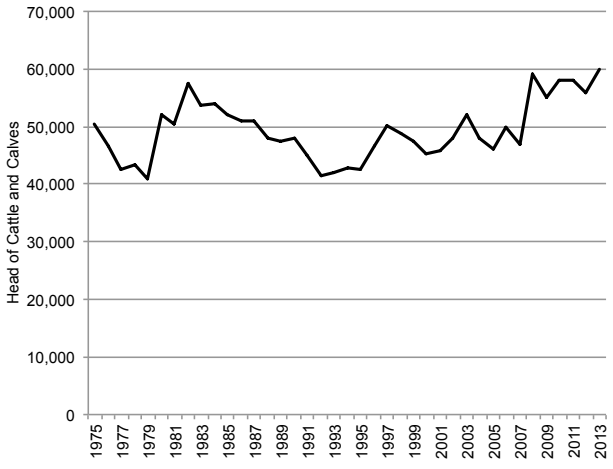


Source: Virginia Employment Commission, Quarterly Census of Employment and Wages
Note: Size of sphere is proportional to 2012 employment

last decade at a level of approximately 950 and constitutes about 6 percent of total county employment (see **Figure 1.4**). In the past six years, farm cash receipts from marketings have increased in tandem with the growth in livestock sales and cattle prices. The cattle and calf inventory has increased in recent years (see **Figure 1.5**) from an estimated 45,200 in 2000 to 60,000 head in 2013, ranking Wythe County 4th among Virginia counties (behind Rockingham, Augusta, and Washington counties). The area also hosts a small but growing equine population estimated at 2,600 in 2006, ranking it 26th among Virginia counties (USDA, NASS 2008).

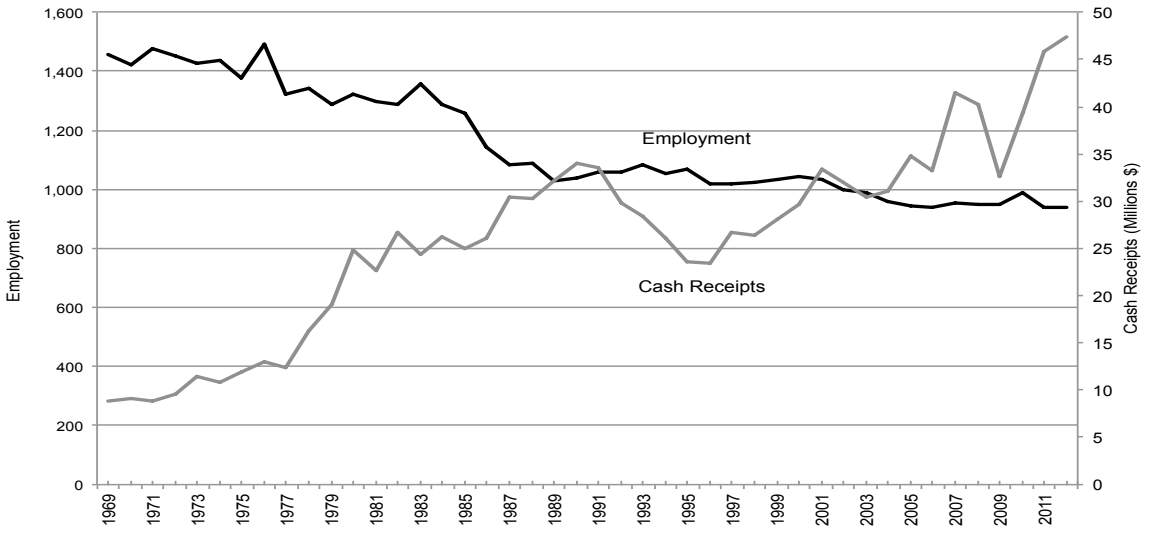
Agriculture is an important aspect of area heritage and provides economic, scenic, and environmental benefits. Recognizing the importance of these contributions, the county government has established the goal of preserving and promoting agriculture in order to assist economic development, promote tourism, protect the natural environment and open space, and maintain quality of life. The establishment of a multipurpose facility to be used for agriculturally related events is a key element in this plan (see **Table 1.1**). A new agricultural exposition facility could assist the county in advancing both agricultural and tourism industry goals in its Comprehensive Plan. A new center is seen as an important tool for increasing the viability of area agriculture, promoting business recruitment, improving agricultural education, and encouraging agritourism.

Figure 1.5 Wythe County Cattle and Calf Inventory, 1975-2013



Source: U.S. Department of Agriculture, National Agricultural Statistics Service, Quickstats

Figure 1.4 Wythe County Farm Employment and Cash Receipts from Marketings, 1969-2012



Source: Bureau of Economic Analysis, Local Area Personal Income

Table 1.1 Agricultural and Tourism Objectives in Comprehensive Plan Pertinent to Multi-Purpose Facility

Objectives	Strategies
Maintain the viability and improve the diversity of the agricultural industry in Wythe County.	Recognize agriculture as a viable industry in the county and an integral part of the county's economic base.
	Facilitate the location of viable and appropriate new agriculture and forestry-related industries to the county and the expansion of existing ones.
	Support efforts of local farmers to grow a variety of farm products and encourage cooperative marketing efforts.
	Encourage educating citizens about the role of agriculture and agriculture-related businesses in the local economy.
	Encourage agritourism efforts.
	Promote more agriculture-related or agriculture-friendly recreational activities such as horse-back riding, hunting, fishing, and canoeing.
Promote the development and expansion of tourism industry in Wythe County.	Encourage agritourism and historical, ethnic, and cultural tourism venues and events, for example, year-round produce and crafts markets (such as indoor Farmer's Markets), farm tours, corn mazes, pick-your-own produce opportunities, ethnic heritage tours, and artisan and performing arts centers.
	Encourage the establishment, by public or private entities or a combination of both, of a multipurpose facility to serve as a venue for a variety of community activities and attractions consistent with the county's cultural heritage and conducive to tourism and recreation such as car shows, horse shows, sports events, agricultural expositions, and performing arts events.

SECTION TWO
APPALACHIAN AGRICULTURAL EXPOSITION CENTER FEATURES

The Appalachian Agricultural Exposition Center has been in the planning stages for nearly a decade. The impetus for the center came in February 2006 when the Southwest Horsemen's Association sold a 13-acre site that it owned and dedicated the proceeds ($340,000) towards establishing an indoor arena elsewhere in the county to hold horse shows and competitions. Shortly thereafter, a more broadly based group was formed with the assistance of the Wythe County Farm Bureau to create a multipurpose facility that could host a variety of agricultural, entertainment and community events, including rodeos, livestock shows, sporting events, musical concerts, and trade shows. The group registered as a non-profit 501 (c)(3) organization called the Appalachian Agricultural Exposition Center (AAEC) and set out to develop the documentation needed to demonstrate the demand for and viability of a new facility. The organization sponsored several foundational studies, including a market and financial feasibility study (Potter et al. 2008), business plan (Appalachian Agricultural Exposition Center, Capital Campaign Committee n.d.), and schematic design and construction cost estimates for establishing a facility in the vicinity of Fort Chiswell (Hill Studio and David Denny 2007). The market and financial feasibility study conducted as part of the planning effort by Virginia Tech concluded:

> "Wythe County is well suited as a host site for the proposed center due to its crossroads location, a feature most nearby facilities lack, and ease of access to Interstates 77 and 81. Further, the loss of agricultural venues in the surrounding area has increased demand for this type of facility. The proposed center can expect to attract a mix of equestrian events, livestock events, and outdoor oriented sporting events, as well as a small number of concerts, trade shows, and fairs. . . There is excellent demand for the center in certain segments of the industry, primarily rodeo-related events that have strong attendance numbers. Based on the strong agricultural ties in the region and state and the lack of similarly positioned facilities within the immediate area there is demand for an exposition center in Wythe County." (Potter et al. 2008, p. 5)

Since that time, the organization has conducted fundraising activities and applied for various types of grant funding, including most recently an unsuccessful grant to the Virginia Tobacco Indemnification and Community Revitalization Commission. One of the obstacles to securing funding, however, has been the need to secure the land for building the facility. Although the initial plan focused on a 48 acre parcel near I-81 exit 80, the list of potential sites has since expanded to a new site located in the vicinity of exit 80 that has lower site development and infrastructure costs and greater visibility from the interstate highway. A new business plan has also been developed reflecting cost savings and business opportunities available at this alternative site.

Since the market and feasibility study was conducted in 2008, only modest changes have occurred in the regional market area that would introduce new competitive challenges to a new center in Wythe County. The study recognized four other exposition centers and four civic centers within a 200-mile region of the proposed center, including the Eastern Kentucky Expo Center in Pikeville, KY, the Virginia Horse Center in Lexington, VA, the Great Smoky Mountains Expo Center in Morristown, TN, and the Western North Carolina Agricultural Center in Fletcher, NC. The four civic centers included Freedom Hall Civic Center in Johnson City, TN, Salem (VA) Civic Center, Roanoke (VA) Civic Center, and Augusta Agricultural and Industrial Center in Fishersville, VA. The study mentioned three venues in the planning stages that had the potential to affect the center. They were the Daniel Boone Exposition Center, Horse Park of the South, and West Virginia Equestrian Center. None of the plans for these centers has been realized. However, a similar type of facility was constructed in 2010,

the Olde Dominion Agricultural Complex in Chatham, which is an over 2 hour drive from the Fort Chiswell site. An outdoor arena called the Mark E. Hufeisen Horse Complex opened in 2008. It is located on 16.5 acres in the New River Trail State Park and contains a 170' by 250' arena, accommodations for calf roping, seating for up to 600 spectators, a concession stand, announcer's booth and rodeo equipment, and parking.[1] AAEC Board members do not view it as direct competition for the center indoor arena. Wythe County has some other area venues that are capable of hosting smaller entertainment and livestock activities such as the Wytheville Community Center and the Wythe County Livestock Exchange but they primarily serve other functions. Wythe County also has two equine-related facilities that cater to trail riding equine tourists: Hungry Horse East, LLC with 14 campsites and access to approximately 70 trail miles and Hussy Mountain Horse camp with 30 campsites and access to approximately 200 trail miles.

The center is envisioned to have three buildings, outdoors riding ring, paved and unpaved parking areas and driveway. Hill Studio and David Denny (2007) developed a cost estimate for the center based on a proposed site at exit 80 (see **Table 2.1**). The current $5.126 million cost estimate assumes acquisition of a site with relatively low excavation and infrastructure costs. The focal point of the facility will be a large 60,000 square foot indoor arena with dirt floor and seating that will accommodate 3,000 people. The site will also contain a 140'X300' outdoor uncovered riding ring and four livestock barns that will accommodate a total of 204 livestock or equine. A general office building will serve as administrative headquarters and maintenance shed will store maintenance supplies. The AAEC Board also sees a potential second project phase at a later date, which could add another 68-stall barn, an outdoor ring, and additional parking. Detailed cost estimates for this second phase are not available.

When completed, the facility is projected to need two permanent staff to administer and maintain, including a manager and maintenance worker.

1 http://www.dcr.virginia.gov/state-parks/horse-camping-trails.shtml

Table 2.1 Appalachian Agricultural Exposition Center Construction Costs

Item	Cost Estimate
Infrastructure	
Land and Infrastructure Purchase	$1,250,000
Demolition and Site Preparation	$250,000
Subtotal Land and Infrastructure	$1,500,000
Facilities	
Indoor Arena (3,100 seats 60,0000SF)	$1,590,000
Barns Stalls (204 Stalls)	$900,000
Outdoor Ring	$170,000
Administrative Building and Maintenance Building	$150,000
Subtotal Facilities	$2,810,000
Landscape Amenities	$50,000
Related Costs	
Surveying, Geotech, Permits, Legal and Administration, Inspection, etc.	$60,000
A/E Design Services	$270,000
Construction Contingency	$436,000
Subtotal Related Costs	$766,000
Estimated cost	$5,126,000

Source: Appalachian Agricultural Exposition Center, Capital Campaign Committtee. 2014. Business Plan.

Additional maintenance and service tasks will be contracted out. **Table 2.2** provides cost projections by spending categories. Expenditures on supplies and materials will initially be higher because of the need to equip the facility and purchase supply inventory. These costs decrease in later years and total costs decline as a result. In the first year, operational costs are projected to exceed facility revenues derived entirely from leasing the facility and equipment, leasing sites to private businesses, and selling supplies to outside organizations and individuals. As the number of hosted events increases and leasing agreements are reached, these revenues will increase. The facility is projected to realize net income in the second year.

According to the *Plan to Develop an Appalachian Agricultural Exposition Center in Southwest*

Table 2.2 Appalachian Agricultural Exposition Center Operational Costs

Item	Year 1	Year 2	Year 3	Year 4	Year 5
Staff Salaries and Benefits	$67,200	$69,960	$72,720	$75,660	$78,600
Contracted Maintenance	$60,000	$60,000	$60,000	$60,000	$60,000
Contracted Labor for Events	$20,000	$22,500	$25,000	$27,500	$30,000
Office Supplies	$14,400	$9,950	$5,500	$4,250	$3,000
Utilities & Telecommunications	$60,000	$65,000	$70,000	$75,000	$80,000
Office Equipment Rentals/Purchases	$10,000	$7,500	$5,000	$3,750	$2,500
Marketing	$6,000	$6,000	$6,000	$6,000	$6,000
Accounting and Legal Services	$8,004	$6,502	$5,000	$5,000	$5,000
Insurance & Regulatory Expenses	$40,000	$37,500	$35,000	$32,500	$30,000
Miscellaneous	$110,000	$75,000	$40,000	$42,500	$45,000
Total	$395,604	$359,912	$324,220	$332,160	$340,100

Source: Appalachian Agricultural Exposition Center Capital Campaign Committtee. 2014. Business Plan.

Note: Years 2 and 4 were interpolated.

Virginia (Appalachian Agricultural Exposition Center, Capital Campaign Committee), the center is projected to attract 32 events in its opening year and grow to 71 events by the fifth year of operation (see **Table 2.3**). Four categories of events are anticipated, including equestrian events, livestock events, sports competitions, and entertainment, and consumer shows. Equestrian events consist of judged horse shows and competitions that award participants for the conformation, disposition, or performance of the horse or for the skill exhibited by the rider. Shows are often categorized by region, discipline, or breed and divided into classes that feature similar types of horse and rider skill levels. Popular types of horse shows include hunters, jumpers, dressage, reining, cutting, and driving. Equestrian events usually center around the participants and attract relatively lower numbers of spectators than other events to be hosted at the facility. Livestock events primarily involve the showing of cattle and other livestock such as sheep and lambs, and goats. They often include vendor exhibitions, education and training activities, youth competitions, and cattle sales and auctioning. Sport competitions are primarily spectator oriented events. Many of the planned activities are western competitions featuring both equine and cattle such as rodeos, bull riding, and team penning while others are dirt competitions involving mechanical vehicles such as motor vehicles and motorcycles. Entertainment and consumer shows consist of musical performances, carnivals and fairs, and gun, coin, and consumer shows.

Table 2.3 shows the average expected attendance for each type of event and the projected number of events by year. Attendance is expected to start at 22,250 and grow to 46,700 by the fifth year. As will be discussed in section four, a sizable majority of attendees can be expected to be drawn from outside the county. However, the geographical range of attraction will vary by the category of event, with participant-oriented events such as equestrian and livestock events drawing from a wider radius than spectator events such as sports competitions and entertainment and consumer shows.

Table 2.3. Appalachian Agricultural Exposition Center Event and Attendance Estimates

Event/Sponsor	Estimated Attendance	Year 1	Year 2	Year 3	Year 4	Year 5
Equestrian Events						
Virginia Horse Shows Association	500	1	1	1	1	1
Virginia Thoroughbred Association	250			1	1	2
Virginia Draft Horse & Mule	100			1	2	3
Virginia Pony Breeders	100				1	1
Virginia Reining horse	250	2	2	2	2	2
Commonwealth Dressage	250		1	1	1	1
Commonwealth Dressage Association	100				1	1
Pinto of the Virginias	100					1
Botetourt County Horsemen	100					1
Subtotal Events		3	4	6	9	13
Subtotal Estimated Attendance		1,000	1,250	1,600	1,900	2,450
Livestock Events						
Virginia Angus	250	1	1	1	1	1
Virginia Beef Expo	500		1	1	1	1
Virginia Farm Show	1,000	1	1	1	1	1
Virginia Beef Improv Association	250	1	1	2	2	3
SW Virginia Angus Association	250	1	1	2	2	2
Virginia Gelbvieh Association	250	1	1	2	2	2
SW Virginia Charolais Association	250	1	1	2	2	2
NRV Hereford Association	250		1	1	1	
Genex Coop Purebred Sale	250	1	1	1	1	1
Subtotal		7	9	13	13	13
Subtotal Estimated Attendance		2,500	3,250	4,250	4,250	4,250
Sport Competitions						
International Barrel Racing	1,000	4	5	6	6	6
Southern Extreme Bull Riding	1,500	4	4	4	5	5
Professional Bull Riding	1,500	3	4	6	6	6
Virginia High School Rodeo	250	4	4	4	5	5
Anchor Bull Competition	1,000			1	1	2
US Team Penning Association	500	1	1	1	1	1
Arena Cross	1,500				1	2
Demolition Derby	1,500				1	2
Subtotal		16	18	22	26	29
Subtotal Estimated Attendance		16,000	18,500	23,500	28,250	32,250
Entertainment and Consumer Shows						
Boone Enterprises	500	1	1	1	2	2
Primetime Productions	250	1	1	1	1	1
Performances	500	1	1	2	2	2
Consumer Show	500				1	2
Gun Show	500	2	2	3	3	4
Collectibles Show	500	1	1	1	1	1
Coin Show	500				1	1
Wytheville Fire Department	500		1	1	1	1
Wytheville Arts Council	500		1	1	1	2
Subtotal		6	8	10	13	16
Subtotal Estimated Attendance		2,750	3,750	4,750	6,250	7,750
Total Events		32	39	51	61	71
Total Estimated Attendance		22,250	26,750	34,100	40,650	46,700

Source: Appalachian Agricultural Exposition Center, Capital Campaign Committee (n.d.). Note: Years 2 and 4 were interpolated.

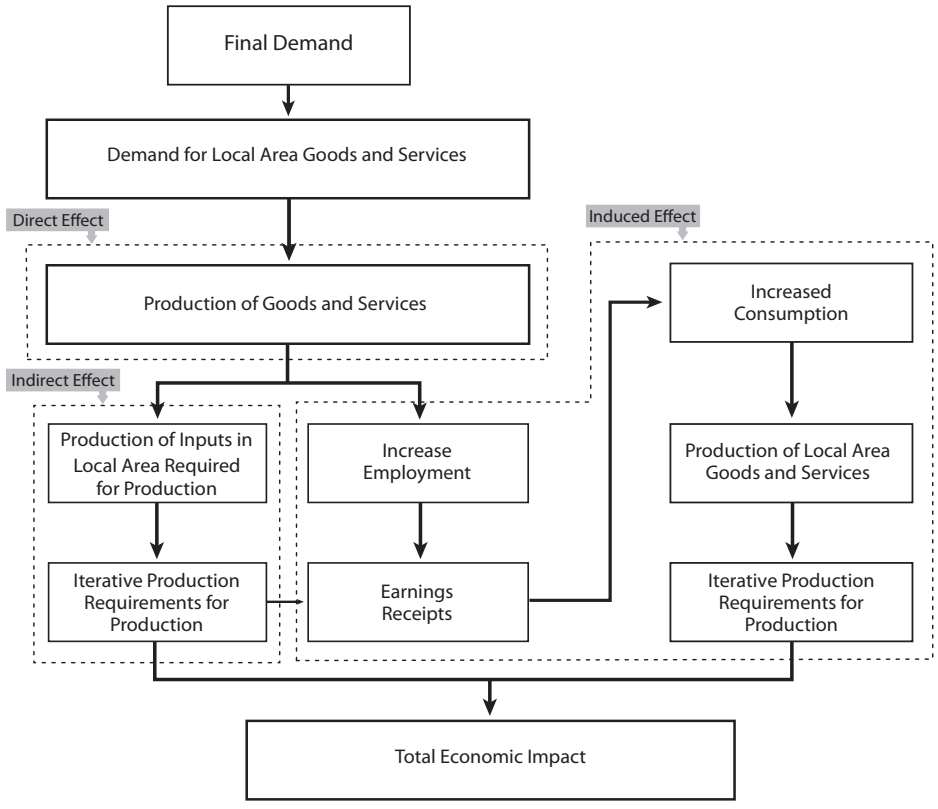
SECTION 3
ECONOMIC IMPACT METHODOLOGY

This study examines the economic impact of the Appalachian Agricultural Exposition Center using input-output analysis, a research tool that allows one to quantify the impact of an economic activity or expenditure in a region. For this study, area center-related expenditures on local goods and services are counted as "final demand" or direct injections into the local economy. Linkages with other industries in the area mean that this initial injection further stimulates the economy as a result of the purchases of goods and services and payments to employees. The stimulus causes a "multiplier effect" that results when money is re-spent in the local economy.

This study uses IMPLAN (IMpact analysis for PLANning), an industry standard input-output model that has been utilized in many economic impact studies including similar studies of agriculture exposition centers in other Virginia localities such as the Olde Dominion Agricultural Complex in Chatham (Jack Faucett Associates, Inc. 2011) and the Virginia Horse Center in Lexington (Knapp 2005; Knapp and Barchers 2001). Input output models are based on input-output tables, which show flows of purchases and sales among sectors of the economy (Miller and Blair 2009). Economic multipliers are derived from these tables. These multipliers allow one to measure the total impact of new expenditures on the local economy.

The total impact of a new activity consists of three parts, a "direct effect," "an indirect effect," and an "induced effect" (see **Figure 3.1**). The "direct effect" consists of the injection of economic activity or expenditure into the region. For example, visitor spending on Wythe County business goods and

Figure 3.1 Economic Impact Diagram



services would count as the direct effect. This initial expenditure then causes a "ripple effect" on the local economy when money is re-spent. For instance, local businesses provide supplies and services to restaurants such as accounting services, utilities and insurance. These businesses spend a portion of their sales revenues on their supplies and services from other local firms who, in turn, purchase a portion of their supplies and services from other local firms. This cascading sequence of spending continues until the subsequent rounds of spending dissipate due to leakages in the form of spending outside the area. The cumulative effect of these cascading rounds of inter-industry purchases is referred to as the "indirect effect." The final component of total impact (the "induced effect" or "induced impact") is attributable to the spending of households. For instance, businesses pay households for their labor services. These households then purchase goods and services from area firms who in turn receive a portion of their labor, material and public service inputs from within the region. Again leakages occur at each round due to purchases of goods and services outside the area. The "induced effect" is the sum of the impacts associated with these household purchases.

The first stage of estimating the economic impacts of the center is to convert the costs of building and operating the facility and the expenses incurred by visitors into expenditures by industry. These conversions are discussed in the next section and mapped onto IMPLAN sectors. The next stage involves converting these expenditures into area final demand by accounting for initial spending leakages outside the area. The third stage involves running the IMPLAN model and generating the economic impact results.

Results are presented for four different economic measures (a) total sales or total industrial output, (b) value-added, (c) labor income, and (d) employment. Two fiscal impact measures are also provided: state and local (i.e., Wythe County) revenues. Total sales or industry output is the total value of industry production or during a period. It measures sales of intermediate inputs for use in production as well as sales of products to final consumers. Value-added is a subset of total industrial output. It reflects only sales to final consumers and therefore avoids the double counting that occurs when intermediate inputs are included. It is also equivalent (minus capital depreciation expenses) to the sum of employee compensation, propriety income, other property type income (e.g., rents, interest, dividends and undistributed profits), and indirect business taxes (i.e., sales and excise taxes). It is the most commonly used measure of economic activity. Value-added is the concept behind gross domestic product (GDP) and can be compared to the GDP numbers provided by the Bureau of Economic Analysis for states and metropolitan areas. Labor income represents the component of value-added that flows to workers and business owners in the form of employee compensation and proprietary income. Employment includes full-time and part-time employment. Revenues include taxes, fees and fines, and charges for service. Although tax revenue estimates are available from IMPLAN, we estimated them separately using current tax information from Virginia and Wythe County. The methodology used is explained in **Appendix A**.

We develop economic impact estimates for both Wythe County and the Commonwealth of Virginia. Consequently two input-output models are required for economic impact analysis. The model used for Wythe County is developed using IMPLAN utilizing Wythe County specific data. The model used for the Commonwealth of Virginia is developed using IMPLAN from Virginia-specific data. It is important to note that differences in the two models produce different economic multipliers. Since Virginia is a much larger and more diversified economy with far fewer consumer and industrial spending leakages, any given amount of expenditure will have larger multiplier effects. For instance, the agricultural exposition center and local suppliers will purchase electrical power, which cannot be furnished by a Wythe County power plant because none exists. However, electrical power generation is available in Virginia and will be at least partially provided by Virginia power plants. Furthermore, businesses that benefit from the initial round of spending are also more likely to source their inputs from the state (which includes Wythe County) than Wythe County.

SECTION FOUR
EXPENDITURES BY SOURCE

The Appalachian Agricultural Exposition Center has primarily three expenditure streams associated with it. First, facility construction will result in a large but temporary expenditure on architectural and engineering services, site grading, utility and infrastructure installation, building construction, and landscaping. Second, facility operations will require spending on administration and maintenance personnel and equipment, supplies, utilities and services. Third, visitors to the center will spend money in the community on goods and services such as meals, lodging, gifts, and fuel. There are also several intangible or less easy to quantify possible benefits associated with the center, but they are treated in the final section of this study. Each of these more concrete expenditure categories is described in further detail below.

Construction and Operational Expenditures

In order to estimate expenditures on construction and operation, the information presented in Section 2 was used to generate information for input into the IMPLAN model using its sectoral categorization scheme. In doing so, construction contingency was assigned to IMPLAN sectors in proportion to the item shares of the total cost estimate without construction contingency. This process involved creating a crosswalk from the items in Table 2.1 and Table 2.2. The results of these conversions for construction costs to IMPLAN construction expenditures are shown in **Table 4.1**. **Table 4.2** shows a similar conversion for operational costs to operational expenditures using IMPLAN sectors. Purchases of utilities, supplies, materials, equipment and services are assigned to the appropriate IMPLAN sector. Staff payroll is represented as labor income within IMPLAN while contracted maintenance services are assigned to IMPLAN sector 388 "services to buildings and dwellings."[2]

2 These operational expenditures were modeled in IMPLAN by a method called "Analysis-by-parts" (ABP). This method separates the modeling into two tasks: modeling the purchase of goods and services from local firms as an expenditure for IMPLAN industries and the payment of wages and salaries as an increase in labor income.

Table 4.1 Construction Expenditures by IMPLAN Sector (Expressed in 2014 Dollars)

IMPLAN Code	Description	Expenditure
34	Construction of new non-residential commercial and health care structures	$3,016,157
36	Construction of other new nonresidential structures	$479,843
369	Architectural, engineering, and related services	$330,000
388	Services to buildings and dwellings	$50,000
	Total	$3,876,000

Although both tables show the construction and operations expenditures associated with the center, they do not show the expenditures actually made in Wythe County or the Commonwealth of Virginia (also known as the "final demand"). In order to estimate the proportion of these expenditures by IMPLAN industry actually made in these areas, we rely on IMPLAN Regional Purchase Coefficients (RPCs). RPCs represent the share of industry demand that is provided by area producers and are estimated within IMPLAN using a trade flow method described in Thorvaldson, Olson, and Alward (2011). For instance, architectural and engineering services for the center will likely be provided largely by firms located outside of Wythe County but a firm located within Virginia. IMPLAN estimates that 89.6 percent of architectural, engineering, and related services will be provided by Virginia-based firms but only 9.0 percent by Wythe County-based firms. It is also important to note that for retail trade, wholesale trade, and transportation sectors, only spending on the portion of the purchase actually earned by area businesses (i.e., the "margin") is counted as a final demand. Therefore, direct sales (i.e., final demand) reported in Section 5 results will be slightly smaller than the total expenditures reported in Tables 4.1 and 4.2.

Table 4.2 Operations Expenditures by IMPLAN Sector and Revenues (Expressed in 2014 Dollars)

IMPLAN Code	Description	Year1	Year2	Year3	Year4	Year5
31	Electric power generation, transmission, and distribution	$7,826	$8,478	$9,130	$9,783	$10,435
32	Natural gas distribution	$3,913	$4,239	$4,565	$4,891	$5,217
33	Water, sewage and other systems	$32,609	$35,326	$38,043	$40,761	$43,478
39	Maintenance and repair construction of nonresidential maintenance and repair	$6,667	$7,813	$8,000	$9,597	$11,250
321	Retail Trade--Furniture and home furnishings	$10,000	$7,500	$0	$0	$0
323	Retail Trade--Building material and garden suply	$80,000	$45,313	$0	$0	$0
330	Retail--Miscellaneous	$14,400	$9,950	$5,500	$4,250	$3,000
351	Telecommunications	$15,652	$16,957	$18,261	$19,565	$20,870
358	Insurance agencies, brokerages, and related activiities	$40,000	$37,500	$35,000	$32,500	$30,000
365	Commercial and industrial machinery and equipment rental and leasing	$0	$0	$18,667	$19,194	$19,688
367	Legal services	$3,956	$3,213	$2,471	$2,471	$2,471
368	Accounting, tax preparation, bookkeeping, and payroll services	$4,048	$3,289	$2,529	$2,529	$2,529
377	Advertising and related services	$6,000	$6,000	$6,000	$6,000	$6,000
388	Services to Buildings and Dwelling	$60,000	$60,000	$60,000	$60,000	$60,000
390	Waste management and remediation services	$23,333	$21,875	$18,667	$19,194	$19,688
	Labor income	$87,200	$92,460	$97,720	$103,160	$108,600
	Total	$395,604	$359,912	$324,553	$333,894	$343,225
	Revenues	$260,870	$548,988	$837,105	$1,110,314	$1,383,523

Visitor Expenditures

Estimating visitor expenditures requires several pieces of information. First, we need estimates of the expected number of visitors. Second, we need to estimate the residential location patterns of the visitors, which has a bearing on both the average amount of spending expected and whether we treat the spending as an injection of new spending (in the case of non-residents) or repurposing of existing spending (in the case of local residents). Third, we need to estimate the average visitor expenditure. Spending is generally higher for residents outside of normal commuting distance because of the higher likelihood of overnight stays. They can also be larger for agricultural events involving competitive showing of equine and livestock than spectator events because of the costs associated with transporting, sheltering, feeding, and caring for the animals.

We rely on visitation estimates by type (i.e., equestrian events, livestock events, sports competitions, and entertainment and consumer shows) developed as part of the *Plan to Develop an Appalachian Agricultural Exposition Center in Southwest Virginia* presented earlier in Table 2.3 to provide a baseline estimate of expected

Table 4.3 Center Estimated Average Attendance Versus Benchmark Facility Attendance

Type of Event	AAEC Average 5th Year Attendance	Benchmark Mean	Benchmark Minimum	Benchmark Maximum
Equestrian Events	188	875	200	2,000
Livestock Events	307	640	83	2,000
Sports Competitions	1,103	1,530	100	3,000
Entertainment and Consumer Shows	435	1,244	375	3,700

visitor spending. However, we also developed a set of alternative higher visitation estimates. After examining 2013 event calendar attendance estimates for three benchmark facilities examined in the Virginia Tech study (i.e., Great Smoky Mountains Expo Center, Western North Carolina Agricultural Center, Rockingham County Fairgrounds) plus the new Olde Dominion Agricultural Complex in Chatham, we found average attendance for these facilities was 26 percent higher than the average expected center 5th year attendance for sports competitions but more than double the average center 5th year attendance for entertainment and consumer shows, equestrian events, and livestock events (see **Table 4.3**). These benchmark facilities differ in numerous ways including proximity to population; highway accessibility and traffic volumes; size, age, and quality of the facility; marketing and management characteristics; rental fee levels; and local availability of tourism infrastructure and other tourism amenities. Therefore, in the alternative visitation estimates using for comparison to the baseline numbers, we incorporated a modest 5 percent annual growth factor for average event visitors for sports competitions and a 15 percent annual growth factor for equestrian events, livestock events and entertainment and consumer shows.

Table 4.4 summarizes the residential origin assumptions used in the analysis. For equestrian events, we used attendance patterns drawn from a survey of show managers conducted as part of a statewide economic impact of the horse industry (Rephann 2011). The original sample of 42 events was restricted to 11 events of statewide significance for this study because the types of equestrian events to be hosted by the center are expected to have a similar drawing power. The data tabulation indicates that 16 percent of attendees were local residents, 74 percent were residents of other Virginia localities, and 10 percent were from other states. Estimates of livestock event visitor patterns and expenditures were obtained from a survey of the Virginia Cattle Industry Convention held at the Rockingham County Fairgrounds near Harrisonburg, VA conducted on Friday, March 29th, 2014 (survey details, results, and instrument are presented in **Appendices B and C**). The survey showed that 12.5 percent of attendees were residents of Rockingham County or Harrisonburg while 12.5 percent were from out-of-state. The balance (75 percent) was drawn from elsewhere in the state, with a high percentage originating from western counties with sizeable cattle populations. In order to estimate the likely residential origin for sporting and entertainment events, we used attendance patterns reported for the Virginia Horse Center for similar types of events (Knapp 2005). For that study, sporting events (Southeast Bullriding, Royal Lippizzaners, Lone Star Rodeo, High School Rodeo) drew 16 percent of visitors from the Lexington City/ Rockbridge County area, 64 percent from elsewhere in the state, and 20 percent from out-of-state. Entertainment events (Civil War Memorabilia, Jeff Bates Concert, Midnight Rockbridge, and Bluegrass Bonanza) drew 36 percent of visitors from the Lexington City/Rockbridge County area, 50 percent from elsewhere in the state, and 14 percent

Table 4.4 Visitor Residency by Event Type

	% In-county	% Other In-state	% Out-of-state
Equestrian Events	16	74	10
Livestock Events	12.5	75	12.5
Sports Competitions	16	64	20
Entertainment and Consumer Shows	36	50	14

from out-of-state. Of the four types of events, the entertainment and consumer shows are expected to draw the highest percentage from the local area.

Visitor expenditures were estimated separately for equestrian events, livestock events, and sporting competitions/entertainment and consumer shows. For equestrian events, attendees were divided into two categories: participants and spectators. Once again, the survey of show managers conducted as part of a statewide economic impact of the horse industry showed that approximately 40 percent of the attendance headcount consisted of equestrian event competitors and 60 percent spectators. Estimates of average participant and attendee spending at equestrian events were obtained from a horse event attendance survey conducted as a part of the same horse industry economic impact study. It consisted of surveys of 365 horse show and competition attendees conducted by on-site interviews at eight randomly sampled horse shows and competitions around the state.

Table 4.5 shows the average spending per travel party for participants and spectators and by location of spending (i.e., at the event, in the local area but outside the event, and outside the local area but inside of Virginia). Equestrian event participants spend much higher amounts than spectators because of registration fees and the additional costs associated with transporting, housing, feeding, and caring for the horses. Expenditures also vary by residence with in-state, out-of-county and out-of-state resident expenditures higher than in-county resident expenditures.

Cattle show expenditures were estimated using data from the Virginia Cattle Industry Convention Survey. **Table 4.6** shows the average cattle show expenditures by residency and location of spending. In aggregating the results, no distinction is made between those showing or selling cattle and other attendees as was done for equestrian events. The primary determinant of spending was distance travelled and whether the party lodged in the

Table 4.5 Equestrian Event Expenditures ($) by Residency and Location of Spending

	Participants			Spectators		
	In-county	In-state, out-of-county	Out-of-state	In-county	In-state, out-of-county	Out-of-state
At the event						
Spectator admission fees, parking, and program	0.00	0.00	0.00	4.67	13.81	15.00
Food and drink	34.87	112.78	150.96	7.15	31.62	134.11
Lodging (hotels, motels, campsites)	0.00	171.36	244.56	0.00	41.11	226.43
Entertainment	23.33	9.24	28.88	0.00	5.24	11.79
Gifts, souvenirs, clothing, etc.	22.17	38.55	61.34	4.00	28.65	71.79
Travel (gas, tolls, fares)	0.00	0.00	0.00	0.00	0.00	0.00
Car rental	0.00	0.00	0.00	0.00	0.00	0.00
Other	7.03	20.83	4.41	0.00	10.08	12.50
Entry, registration, showing fees	282.37	515.45	878.30	0.00	0.00	0.00
Stall or boarding fees	31.50	191.68	230.54	0.00	0.00	0.00
Feed and bedding	17.67	74.41	111.83	0.00	0.00	0.00
Horse care services (e.g., farrier, veterinary, grooming)	10.00	116.33	148.33	0.00	0.00	0.00
Tack and horse supplies	14.00	63.14	116.29	0.00	0.00	0.00
Other horse related expenses	6.83	98.88	78.44	0.00	0.00	0.00
Horse transport	0.00	0.00	0.00	0.00	0.00	0.00

Table 4.5 (continued)

	Participants			Spectators		
	In-county	In-state, out-of-county	Out-of-state	In-county	In-state, out-of-county	Out-of-state
In the local area outside the event						
Spectator admission fees, parking, and program	0.00	0.00	0.00	0.00	0.00	0.00
Food and drink	16.00	83.60	193.03	4.03	43.65	92.14
Lodging (hotels, motels, campsites)	0.00	112.93	260.97	0.00	32.84	117.29
Entertainment	0.00	5.12	8.28	0.00	3.17	4.64
Gifts, souvenirs, clothing, etc.	0.83	13.80	77.22	0.00	5.63	5.18
Travel (gas, tolls, fares)	22.50	52.17	103.19	3.47	20.33	81.07
Car rental	0.33	0.36	13.98	0.00	0.40	3.57
Other	0.00	4.34	1.96	0.00	2.14	2.14
Entry, registration, showing fees	0.00	0.00	0.00	0.00	0.00	0.00
Stall or boarding fees	42.67	0.33	23.66	0.00	0.00	0.00
Feed and bedding	5.50	1.32	5.11	0.00	0.00	0.00
Horse care services (e.g., farrier, veterinary, grooming)	16.67	1.65	4.57	0.00	0.00	0.00
Tack and horse supplies	2.33	5.66	35.48	0.00	0.00	0.00
Other horse related expenses	6.67	3.14	0.00	0.00	0.00	0.00
Horse transport	11.50	10.83	11.51	0.00	0.00	0.00
Outside the local area but in-state						
Spectator admission fees, parking, and program	0.00	0.00	0.00	0.00	0.00	0.00
Food and drink	2.83	12.23	12.69	0.00	2.06	7.32
Lodging (hotels, motels, campsites)	4.17	3.88	21.61	0.00	0.00	8.93
Entertainment	0.00	2.48	0.11	0.00	0.00	1.79
Gifts, souvenirs, clothing, etc.	0.83	7.02	3.33	0.00	0.00	0.00
Travel (gas, tolls, fares)	3.33	29.09	83.19	5.33	10.63	25.18
Car rental	0.00	0.00	8.19	0.00	0.87	16.07
Other	0.00	0.25	0.00	0.00	0.00	53.57
Entry, registration, showing fees	0.00	0.00	0.00	0.00	0.00	0.00
Stall or boarding fees	10.67	8.43	7.53	0.00	0.00	0.00
Feed and bedding	2.17	0.41	2.90	0.00	0.00	0.00
Horse care services (e.g., farrier, veterinary, grooming)	13.33	2.89	0.00	0.00	0.00	0.00
Tack and horse supplies	0.67	5.17	4.30	0.00	0.00	0.00
Other horse related expenses	8.33	0.00	0.00	0.00	0.00	0.00
Horse transport	13.17	53.51	21.45	0.00	0.00	0.00

Table 4.5 (continued)

	Participants			Spectators		
	In-county	In-state, out-of-county	Out-of-state	In-county	In-state, out-of-county	Out-of-state
Total						
Spectator admission fees, parking, and program	0.00	0.00	0.00	4.67	13.81	15.00
Food and drink	53.70	208.61	356.68	11.18	77.33	233.57
Lodging (hotels, motels, campsites)	4.17	288.17	527.14	0.00	73.95	352.65
Entertainment	23.33	16.84	37.27	0.00	8.41	18.22
Gifts, souvenirs, clothing, etc.	23.83	59.37	141.89	4.00	34.28	76.97
Travel (gas, tolls, fares)	25.83	81.26	186.38	8.80	30.96	106.25
Car rental	0.33	0.36	22.17	0.00	1.27	19.64
Other	7.03	25.42	6.37	0.00	12.22	68.21
Entry, registration, showing fees	282.37	515.45	878.30	0.00	0.00	0.00
Stall or boarding fees	84.84	200.44	261.73	0.00	0.00	0.00
Feed and bedding	25.34	76.14	119.84	0.00	0.00	0.00
Horse care services (e.g., farrier, veterinary, grooming)	40.00	120.87	152.90	0.00	0.00	0.00
Tack and horse supplies	17.00	73.97	156.07	0.00	0.00	0.00
Other horse related expenses	21.83	102.02	78.44	0.00	0.00	0.00
Horse transport	24.67	64.34	32.96	0.00	0.00	0.00
Total Expenditures	634.27	1,833.26	2,958.14	28.65	252.23	890.51
Average number in travel party	3.75	3.81	3.91	2.41	3.02	3.32

Source: Rephann (2011)

area. When asked about costs associated with livestock care, participants usually indicated that they brought supplies and materials needed with them and provided needed care by themselves.

For sporting and entertainment events, we used 2013 leisure traveller expenditure estimates provided by market research firm TNS to the Virginia Tourism Corporation (Virginia Tourism Corporation 2013). These estimates are based on survey data for households that travelled at least 50 miles to arrive at a destination in Virginia. The TNS traveller spending estimates are often used in tourism economic impact studies, including studies of the Olde Dominion Agricultural Complex and Virginia Horse Center (Jack Faucett Associates, Inc. 2011; Knapp 2005). Since the estimates do not disaggregate spending by residence or identify the location of spending, this information was estimated for the purposes of this analysis. The average daily spending for a travel party averaging 2.6 individuals was $82.68. These visitors were assumed to have some travel features similar to horse show and competition spectators. Based on horse show and competition spectator trip durations, it was assumed that out-of-state residents had a trip duration of 3.2 days, in-state, out-of-county residents had a trip duration of 1.3 days, and in-county residents spent an amount equivalent to an average one visitor day with costs of lodging and car rental/public transport excluded. Expenditures were allocated by location (event, local area, and in-state but not local area) on the basis of the expenditure shares by location found for spectators at horse shows and competitions. **Table 4.7** shows the resulting imputed average expenditures disaggregated by residency and location of spending.

Special Considerations in Measuring Visitor Expenditures

Crompton (2006) offers several caveats to observe when estimating the economic impact of new sports venues, festivals, and other tourism attractions. First, he cautions against including the spending of local

Table 4.6 Livestock Event Expenditures ($) by Residency and Location of Spending

	Attendees		
	In-county (N=5)	In-state, out-of-county (N=30)	Out-of-state (N=5)
At the event			
Admission fees, parking, and program	62.50	25.70	250.00
Food and drink	12.50	20.64	24.00
Lodging (hotels, motels, campsites)	0.00	0.00	0.00
Entertainment	0.00	0.00	0.00
Gifts, souvenirs, clothing, etc.	0.00	3.75	10.00
Travel (gas, tolls, fares)	0.00	0.00	0.00
Car rental	0.00	0.00	0.00
Other	0.00	0.71	0.00
Entry, registration, showing fees	4.00	27.33	0.00
Stall or boarding fees	0.00	0.00	0.00
Feed and bedding	0.00	0.00	0.00
Livestock care services (e.g., veterinary, grooming)	0.00	0.00	0.00
Other cattle related expenses	0.00	1.67	0.00
In the local area outside the event			
Spectator admission fees, parking, and program	0.00	0.00	0.00
Food and drink	12.50	34.46	90.00
Lodging (hotels, motels, campsites)	0.00	60.46	240.87
Entertainment	0.00	1.07	0.00
Gifts, souvenirs, clothing, etc.	0.00	4.46	0.00
Travel (gas, tolls, fares)	12.75	25.14	45.61
Car rental	0.00	3.71	0.00
Other	0.00	0.00	0.00
Entry, registration, showing fees	0.00	0.00	0.00
Stall or boarding fees	0.00	0.00	0.00
Feed and bedding	0.00	1.33	0.00
Livestock care services (e.g., veterinary, grooming)	0.00	0.00	0.00
Other cattle related expenses	0.00	0.00	0.00
Outside the local area but in-state			
Spectator admission fees, parking, and program	0.00	0.00	0.00
Food and drink	0.00	1.78	10.00
Lodging (hotels, motels, campsites)	0.00	0.00	0.00
Entertainment	0.00	0.00	0.00
Gifts, souvenirs, clothing, etc.	0.00	1.07	0.00
Travel (gas, tolls, fares)	0.00	13.57	67.08
Car rental	0.00	0.00	89.44
Other	0.00	0.00	0.00
Entry, registration, showing fees	0.00	0.00	0.00
Stall or boarding fees	0.00	0.00	0.00
Feed and bedding	0.00	0.00	0.00
Livestock care services (e.g., veterinary, grooming)	0.00	2.50	0.00
Other cattle related expenses	0.00	0.00	0.00

Table 4.6 (continued)

	Attendees		
	In-county (N=5)	In-state, out-of-county (N=30)	Out-of-state (N=5)
Total			
Spectator admission fees, parking, and program	62.50	25.70	250.00
Food and drink	25.00	56.88	124.00
Lodging (hotels, motels, campsites)	0.00	60.46	240.87
Entertainment	0.00	1.07	0.00
Gifts, souvenirs, clothing, etc.	0.00	9.28	10.00
Travel (gas, tolls, fares)	12.75	38.71	112.69
Car rental	0.00	3.71	89.44
Other	0.00	0.71	0.00
Entry, registration, showing fees	4.00	27.33	0.00
Stall or boarding fees	0.00	0.00	0.00
Feed and bedding	0.00	1.33	0.00
Livestock care services (e.g., veterinary, grooming)	0.00	2.50	0.00
Other cattle related expenses	0.00	1.67	0.00
Total expenditures	104.25	229.35	827.00
Average Party Size	1.6	3.6	2

residents when computing final demand. Second, he recommends against including visitors who might have merely changed the timing of their visitation rather than the actuality (i.e., "time switchers") if the venue or event had not been available and visitors who had another primary purpose for visiting the area (i.e., "casual" visitors) when computing the non-resident visitor headcount. Third, he suggests that researchers should consider the potential displacement of prospective visitors who cancel their visitation plans to avoid tourist congestion that stems from large events. Ignoring these issues could impart a positive bias to economic impact estimates.

In computing impacts, we count only the local expenditures of non-residents as an injection of new spending or final demand. The reason for excluding resident spending related to the new facility is that it likely would have been spent in the local area anyway. For instance, instead of attending a local movie theater, local residents may elect to attend a rodeo at the center. The spending is simply shifted from one local good or service to another, which largely cancels out depending on the respective magnitude of the industry economic multipliers. Some researchers have also considered the possibility that a new entertainment venue or event can encourage "import substitution." That means that local consumers who previously purchased a good or service outside the area are induced to spend locally when the good or service becomes available locally. When a previous spending "leakage" from the local economy is reduced, it has the same effect as an injection of new spending. Researchers sometimes acknowledge the role of import substitution and in rare instances attempt to estimate its importance. One approach is to survey local residents who attend an event and ask them if they would have travelled outside the area for comparable services if the event were not available, and, if so, what amount they would have spent outside the local area at the alternative event (Felsenstein and Fleischer 2003; Cobb and Olberding 2007). For example, the availability of new entertainment options at the center may mean that fewer Wythe County residents travel to Salem and Roanoke civic centers for rodeos and musical performances. In the case of Wythe County, we have no reliable information that would allow us to estimate the import substitution that would

Table 4.7 Sports Competitions and Entertainment and Consumer Show Expenditures ($) by Residency and Location of Spending

	Attendees		
	In-county	In-state, out-of-county	Out-of-state
At the event			
Admission fees, parking, and program	0.00	0.00	0.00
Food and drink	14.15	11.81	22.58
Lodging (hotels, motels, campsites)	0.00	0.00	0.00
Entertainment	4.11	3.43	6.56
Gifts, souvenirs, clothing, etc.	4.57	3.81	7.28
Travel (gas, tolls, fares)	0.00	0.00	0.00
Car rental	0.00	0.00	0.00
Other	0.46	0.38	0.73
In the local area outside the event			
Spectator admission fees, parking, and program	0.00	0.00	0.00
Food and drink	6.71	19.72	49.04
Lodging (hotels, motels, campsites)	0.00	10.17	23.10
Entertainment	1.95	5.72	14.24
Gifts, souvenirs, clothing, etc.	2.16	6.36	15.82
Travel (gas, tolls, fares)	22.21	33.56	76.24
Car rental	0.00	6.10	13.86
Other	0.22	0.64	1.58
Outside the local area but in-state			
Spectator admission fees, parking, and program	0.00	0.00	0.00
Food and drink	4.77	1.79	10.39
Lodging (hotels, motels, campsites)	0.00	0.58	3.35
Entertainment	1.38	0.52	3.02
Gifts, souvenirs, clothing, etc.	1.54	0.58	3.35
Travel (gas, tolls, fares)	5.08	1.91	11.07
Car rental	0.00	0.35	2.01
Other	0.15	0.06	0.34
Total			
Spectator admission fees, parking, and program	0.00	0.00	0.00
Food and drink	25.63	33.32	82.02
Lodging (hotels, motels, campsites)	0.00	10.75	26.46
Entertainment	7.44	9.67	23.81
Gifts, souvenirs, clothing, etc.	8.27	10.75	26.46
Travel (gas, tolls, fares)	27.28	35.47	87.31
Car rental	0.00	6.45	15.87
Other	0.83	1.07	2.65
Total expenditures	69.45	107.48	264.58
Average Party Size	2.6	2.6	2.6

result from a new agricultural exposition center. However, we estimate large Wythe County import leakages for most entertainment-related service sectors (see **Table 4.8**). These leakages arise from the relatively small number of local entertainment options in these areas compared to nearby cities.

We also attribute all of the spending of non-residents associated with the new center as an injection of new spending. This assumption departs from the Crompton recommendation. Information collected from the Virginia horse industry attendee survey indicates that 81 percent of horse show and competition attendees visited the county where the event was held for the expressed purpose of attending the event (Rephann 2011). For the Virginia Cattle Convention, we found that figure to be 97.5 percent. We have no comparable information for other sporting and entertainment events. Although visitation estimates likely include "casual" visitors, we make no attempt to adjust for this factor. Instead, we view the exclusion of local import substitution expenditures and inclusion of some casual visitor expenditures as being largely self-cancelling.

While it is certainly possible that center event congestion might displace other tourists, we view this probability to be low. Wythe County has a relatively large and diversified lodging industry and seems likely to easily accommodate the temporary surges in hotel/motel/camping activity that would result from some of the larger events. We do not view this as a problem and consequently do not account for the possibility in our analysis.

In computing visitation economic impacts, the location of spending matters. Only a portion of spending at the event will be counted as final demand for two reasons. First, some of the spending (e.g., admission and registration fees) goes toward the costs of renting/leasing of the facility and payments to the hosting facility for goods and services. These expenses will be already counted as revenues for the center and consequently already be realized as operational expenditures. Second, a sizeable portion of local vendors will likely be drawn from outside the area. Therefore, the purchases of visitors from these non-resident vendors will constitute a spending leakage from the local economy. Based on Virginia equine event surveys (see **Table 4.9**), it is estimated that 32.4 percent of spending is retained by local vendors and 80 percent of show receipts by local show managers. Therefore, we will conservatively assume that only 32.4 percent of on-site expenditures will flow into the local economy. The remainder will go towards facility operation revenue and/or flow to non-resident vendors.

County Visitor Expenditures versus State Visitor Expenditures

We make economic impact estimates for both Wythe County and the Commonwealth of Virginia. Thus, some discussion of methodological differences in computing visitor expenditures is warranted. In computing tourism expenditures for Wythe County economic impact analysis, we count the estimated Wythe County expenditures of out-of-state residents and Virginia residents who reside outside of Wythe County. For the statewide visitor expenditures,

Table 4.8 Estimated Wythe County Imports in Arts, Entertainment, and Recreation Sectors

IMPLAN Sector	Description	Estimated Imports
402	Performing arts companies	$15,407
403	Spectator sports companies	$2,141,557
404	Promoters of performing arts and sports and agents for public figures	$2,567,328
405	Independent artists, writers, and performers	$1,957,242
406	Museums, historical sites, zoos, and parks	$1,838,768
407	Fitness and recreational sports centers	$2,178,828
408	Bowling centers	$88,268
409	Amusement parks, arcades, and gambling industries	$2,432,894
410	Other amusement and recreation industries	$2,726,093
	Total	$15,946,386

Source: IMPLAN

Table 4.9. Residency of Event Managers, Vendors, and Employees

	Percentage by Place of Residence		
Residence	Managers	Employees	Vendors
In-county	79.6%	35.4%	32.4%
Other In-state	20.4%	40.8%	35.3%
Out-of-state	0%	23.8%	32.3%

Source: Rephann (2011)

we count the estimated Virginia expenditures of out-of-state residents only. We also assumed that 17 of the 71 events are currently hosted at other locations within the state (e.g., the Virginia Beef Expo which is currently held at the Rockingham County Fairgrounds) and did not include them in the visitor expenditure calculations. The rationale for not including the in-state resident expenditures and transferred event expenditures in statewide economic impact estimation is the same as given previously for not including the expenditures of Wythe County residents in the county-level economic impact estimates—we view the spending as largely redirected from other spending that would have occurred elsewhere in the state. Combining the assumptions described above with baseline visitor estimates by event type and year in Table 2.3, residential origin patterns by event type in Table 4.4, average expenditure by event type, participant/spectator status and residential origin for non-residents in Tables 4.5-4.7, and assigning the expenditures to the appropriate IMPLAN industry in a manner similar to that described in Rephann (2011) produces Wythe County visitor expenditures reported in **Table 4.10**. Doing the same for out-of-state resident visitor counts and Virginia expenditures produces state visitor expenditures reported in **Table 4.11**. Both tables also show the Wythe County visitor expenditures by IMPLAN industry for Wythe County and the state of Virginia assuming alternative scenario visitor estimates that incorporate a 5 percent annual growth factor for average event visitors for sports competitions and a 15 percent annual growth factor for equestrian events, livestock events and entertainment and consumer shows.

Table 4.10 Wythe County Visitor Expenditures by IMPLAN Sector and Year (Expressed in 2014 Dollars)

IMPLAN Code	Description	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Base						
10	All other crop farming	$4,397	$5,512	$7,067	$8,294	$10,545
19	Support activities for agriculture and forestry	$39,284	$49,119	$62,883	$74,581	$96,027
323	Retail Stores--Building materials and garden supply	$5,863	$7,350	$9,422	$11,059	$14,060
326	Retail Stores--Gasoline stations	$297,912	$355,529	$452,748	$542,365	$626,950
327	Retail Stores--Clothing and clothing accessories	$20,280	$24,316	$30,973	$37,166	$43,709
328	Retail Stores--Sporting goods, hobby, book and music	$24,936	$30,531	$38,985	$46,534	$57,397
329	Retail Stores--General merchandise	$9,151	$11,031	$14,053	$16,910	$20,302
330	Retail Stores--Miscellaneous	$44,914	$53,852	$68,594	$82,310	$96,799
335	Transport by truck	$3,540	$4,425	$5,664	$6,726	$8,673
362	Automotive equipment rental and leasing	$49,644	$58,901	$74,907	$90,372	$104,230
379	Veterinary services	$8,514	$10,643	$13,623	$16,177	$20,860
402	Performing arts companies	$23,029	$27,300	$34,695	$42,072	$48,923
403	Spectator sports companies	$1,185	$1,405	$1,786	$2,166	$2,518
404	Promoters of performing arts and sports and agents for public figures	$86,678	$109,407	$140,824	$160,261	$195,728
406	Museums, historical sites, zoos, and parks	$1,354	$1,605	$2,039	$2,473	$2,876
407	Fitness and recreational sports centers	$113	$134	$170	$206	$240
409	Amusement parks, arcades, and gambling industries	$29,542	$35,021	$44,508	$53,970	$62,759
410	Other amusement and recreation industries	$1,497	$1,775	$2,255	$2,735	$3,180
411	Hotels and motels, including casino hotels	$213,118	$264,528	$340,145	$385,517	$445,174
412	Other accommodations	$5,717	$7,096	$9,125	$10,342	$11,942
413	Food services and drinking places	$272,037	$329,074	$420,356	$495,366	$575,707
	TOTAL	$1,138,310	$1,388,555	$1,774,823	$2,087,602	$2,448,600
Alternative						
10	All other crop farming	$4,397	$6,339	$9,345	$12,614	$18,443
19	Support activities for agriculture and forestry	$39,284	$56,487	$83,163	$113,429	$167,953
323	Retail Stores--Building materials and garden supply	$5,863	$8,452	$12,461	$16,819	$24,591
326	Retail Stores--Gasoline stations	$297,912	$369,658	$491,698	$617,001	$755,305
327	Retail Stores--Clothing and clothing accessories	$20,280	$25,597	$34,497	$43,974	$55,842
328	Retail Stores--Sporting goods, hobby, book and music	$24,936	$33,647	$47,560	$63,010	$87,646
329	Retail Stores--General merchandise	$9,151	$11,778	$16,107	$20,906	$27,611
330	Retail Stores--Miscellaneous	$44,914	$56,688	$76,398	$97,386	$123,671
335	Transport by truck	$3,540	$5,089	$7,491	$10,230	$15,170
362	Automotive equipment rental and leasing	$49,644	$60,609	$79,599	$99,650	$120,256
379	Veterinary services	$8,514	$12,239	$18,016	$24,604	$36,485
402	Performing arts companies	$23,029	$28,113	$36,921	$46,583	$56,998
403	Spectator sports companies	$1,185	$1,447	$1,900	$2,398	$2,934
404	Promoters of performing arts and sports and agents for public figures	$86,678	$125,736	$186,016	$243,301	$341,615
406	Museums, historical sites, zoos, and parks	$1,354	$1,653	$2,170	$2,738	$3,350
407	Fitness and recreational sports centers	$113	$138	$181	$228	$279
409	Amusement parks, arcades, and gambling industries	$29,542	$36,064	$47,363	$59,757	$73,118
410	Other amusement and recreation industries	$1,497	$1,828	$2,400	$3,028	$3,705
411	Hotels and motels, including casino hotels	$213,118	$292,638	$418,246	$524,978	$677,909
412	Other accommodations	$5,717	$7,850	$11,220	$14,083	$18,186
413	Food services and drinking places	$272,037	$350,308	$479,105	$604,248	$762,084
	TOTAL	$1,138,310	$1,492,357	$2,061,859	$2,620,964	$3,373,150

Table 4.11 Virginia Visitor Expenditures by IMPLAN Sector and Year (Expressed in 2014 Dollars)

IMPLAN Code	Description	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Base						
10	All other crop farming	$0	$0	$0	$0	$161
19	Support activities for agriculture and forestry	$0	$0	$0	$0	$1,282
323	Retail Stores--Building materials and garden supply	$0	$0	$0	$0	$214
326	Retail Stores--Gasoline stations	$149,221	$175,878	$226,252	$271,674	$312,729
327	Retail Stores--Clothing and clothing accessories	$19,253	$22,620	$28,770	$34,872	$40,632
328	Retail Stores--Sporting goods, hobby, book and music	$7,611	$8,942	$11,373	$13,785	$16,718
329	Retail Stores--General merchandise	$3,630	$4,264	$5,415	$6,572	$7,623
330	Retail Stores--Miscellaneous	$9,643	$11,330	$14,410	$17,466	$20,351
335	Transport by truck	$0	$0	$0	$0	$278
362	Automotive equipment rental and leasing	$31,440	$37,365	$49,756	$58,014	$65,363
379	Veterinary services	$0	$0	$0	$0	$275
402	Performing arts companies	$1,505	$1,768	$2,245	$2,725	$3,148
403	Spectator sports companies	$2,708	$3,180	$4,038	$4,901	$5,662
404	Promoters of performing arts and sports and agents for public figures	$7,212	$8,853	$13,338	$14,018	$17,045
405	Independent artists, writers, and performers	$897	$1,053	$1,337	$1,623	$1,875
406	Museums, historical sites, zoos, and parks	$2,172	$2,551	$3,239	$3,932	$4,542
407	Fitness and recreational sports centers	$4,272	$5,018	$6,372	$7,734	$8,935
408	Bowling centers	$473	$556	$706	$857	$990
409	Amusement parks, arcades, and gambling industries	$10,998	$12,917	$16,404	$19,909	$23,001
410	Other amusement and recreation industries	$7,515	$8,826	$11,208	$13,603	$15,715
411	Hotels and motels, including casino hotels	$51,930	$62,030	$84,320	$96,614	$110,248
412	Other accommodations	$6,209	$7,417	$10,082	$11,552	$13,182
413	Food services and drinking places	$119,280	$140,600	$181,328	$217,197	$250,616
	TOTAL	$435,969	$515,166	$670,591	$797,047	$920,584
Alternative						
10	All other crop farming	$0	$0	$0	$0	$281
19	Support activities for agriculture and forestry	$0	$0	$0	$0	$2,243
323	Retail Stores--Building materials and garden supply	$0	$0	$0	$0	$374
326	Retail Stores--Gasoline stations	$149,221	$179,843	$237,996	$294,317	$351,836
327	Retail Stores--Clothing and clothing accessories	$19,253	$22,984	$29,776	$36,975	$44,701
328	Retail Stores--Sporting goods, hobby, book and music	$7,611	$9,086	$11,771	$14,617	$18,817
329	Retail Stores--General merchandise	$3,630	$4,329	$5,592	$6,949	$8,333
330	Retail Stores--Miscellaneous	$9,643	$11,512	$14,914	$18,519	$22,389
335	Transport by truck	$0	$0	$0	$0	$487
362	Automotive equipment rental and leasing	$31,440	$38,894	$54,671	$66,620	$78,843
379	Veterinary services	$0	$0	$0	$0	$480
402	Performing arts companies	$1,505	$1,795	$2,319	$2,881	$3,433
403	Spectator sports companies	$2,708	$3,229	$4,171	$5,183	$6,175
404	Promoters of performing arts and sports and agents for public figures	$7,212	$9,844	$16,718	$19,530	$26,874
405	Independent artists, writers, and performers	$897	$1,069	$1,381	$1,717	$2,045
406	Museums, historical sites, zoos, and parks	$2,172	$2,590	$3,346	$4,157	$4,953
407	Fitness and recreational sports centers	$4,272	$5,095	$6,581	$8,178	$9,744
408	Bowling centers	$473	$564	$729	$906	$1,079
409	Amusement parks, arcades, and gambling industries	$10,998	$13,115	$16,942	$21,053	$25,083
410	Other amusement and recreation industries	$7,515	$8,961	$11,576	$14,385	$17,138
411	Hotels and motels, including casino hotels	$51,930	$65,267	$94,942	$114,765	$140,009
412	Other accommodations	$6,209	$7,804	$11,352	$13,722	$16,740
413	Food services and drinking places	$119,280	$143,885	$191,182	$235,921	$283,349
	TOTAL	$435,969	$529,865	$715,957	$880,394	$1,065,405

SECTION 5
ECONOMIC IMPACT RESULTS

This section presents economic impact results for the proposed Appalachian Agricultural Exposition Center. Results are described by the source of the impact including: (a) facility construction, (b) facility operations, and (c) visitor spending on area goods and services such as meals, lodging, gifts, etc. Economic impact results are also presented for two scenarios: a "baseline" visitor projections scenario which depends on numbers provided in the prior market and feasibility study and a higher "alternative" growth pattern that assumes a modest amount of visitor growth above the baseline predicated on the assumption that baseline numbers would gradually converge towards event attendance counts achieved at four benchmark agricultural exposition centers in the region. Economic impacts are also identified as direct (the expenditures attributable to facility-related spending), indirect (impacts attributable to purchases of local production inputs), and induced (impacts attributable to additional worker household spending). Finally, results are presented for Wythe County and for the Commonwealth of Virginia. The former counts only non-resident visitor expenditures in Wythe County as area final demand while the latter counts only expenditures from out-of-state resident anywhere in the state for events that are new to Virginia towards the visitor final demand.

Table 5.1 shows the expenditures attributable to the Appalachian Agricultural Exposition Center. Facility construction causes a one-time expenditure of approximately $3.876 million. When the center is opened, it is estimated to cause new spending starting at $1.534 million in the first year of operation and growing to $2.789 million in the fifth year of operation. Under the alternative visitor growth scenario, spending starts at $1.534 million and grows to $3.173 million. For the state, new spending is $832 thousand in the first year and grows to $1.261 million in the base scenario and to more than $1.406 million in the alternative scenario.

Table 5.1 Expenditures by Source, Wythe County and Virginia (Expressed in 2014 Dollars)

Source	Wythe County	Virginia
Base Scenario		
Construction	$3,876,000	$3,876,000
Operations Year 1	$395,604	$395,604
Operations Year 2	$359,912	$359,912
Operations Year 3	$324,220	$324,220
Operations Year 4	$332,160	$332,160
Operations Year 5	$340,100	$340,100
Visitors Year 1	$1,138,310	$435,969
Visitors Year 2	$1,388,555	$515,166
Visitors Year 3	$1,774,823	$670,591
Visitors Year 4	$2,087,602	$797,047
Visitors Year 5	$2,448,600	$920,584
Year 1 Total	$1,533,914	$831,573
Year 2 Total	$1,748,467	$875,078
Year 3 Total	$2,099,043	$994,811
Year 4 Total	$2,419,762	$1,129,207
Year 5 Total	$2,788,700	$1,260,684
Total	$14,465,886	$8,967,353
Alternative Scenario		
Visitors Year 1	$1,138,310	$435,969
Visitors Year 2	$1,492,357	$529,865
Visitors Year 3	$2,061,859	$715,957
Visitors Year 4	$2,620,964	$880,394
Visitors Year 5	$3,373,150	$1,065,405
Year 1 Total	$1,533,914	$831,573
Year 2 Total	$1,852,269	$889,777
Year 3 Total	$2,386,079	$1,040,177
Year 4 Total	$2,953,124	$1,212,554
Year 5 Total	$3,713,250	$1,405,505
Total	$16,314,637	$9,255,585

Wythe County Economic Impacts

Table 5.2 shows how these expenditures result in Wythe County sales/output impacts. Construction activity causes a direct sales or total industry output impact of $3.442 million with the remaining $434 thousand of initial expenditures resulting in sales outside the county. Indirect and induced impacts add almost $1 million more for a total industry output impact of $4.328 million in Wythe County. "Operations" impacts refer to the economic impacts that result from the day-to-day operations of the facility. During the first five years of operation, the center operations output is equivalent to its projected revenues. These values are the same as

Table 5.2 Wythe County Total Industry Output Impacts by Source and Scenario (Expressed in 2014 Dollars)

Source	Direct	Indirect	Induced	Total
Base Scenario				
Construction	$3,442,368	$239,232	$646,127	$4,327,728
Operations Year 1	$260,870	$192,765	$69,187	$522,822
Operations Year 2	$548,986	$176,121	$68,492	$793,599
Operations Year 3	$837,105	$154,053	$66,763	$1,057,922
Operations Year 4	$1,110,314	$153,583	$68,939	$1,332,836
Operations Year 5	$1,383,523	$153,133	$71,122	$1,607,778
Visitors Year 1	$826,825	$117,068	$119,819	$1,063,712
Visitors Year 2	$1,010,604	$143,718	$146,118	$1,300,440
Visitors Year 3	$1,293,400	$184,134	$186,876	$1,664,410
Visitors Year 4	$1,510,976	$213,768	$219,277	$1,944,021
Visitors Year 5	$1,726,100	$246,121	$250,732	$2,222,952
Year 1 Total	$1,087,695	$309,833	$189,006	$1,586,535
Year 2 Total	$1,559,590	$319,839	$214,610	$2,094,039
Year 3 Total	$2,130,505	$338,187	$253,639	$2,722,332
Year 4 Total	$2,621,290	$367,351	$288,216	$3,276,858
Year 5 Total	$3,109,623	$399,253	$321,854	$3,830,730
Total (All Years)	$13,951,072	$1,973,696	$1,913,453	$17,838,221
Alternative Scenario				
Visitors Year 1	$826,825	$117,068	$119,819	$1,063,712
Visitors Year 2	$1,096,931	$157,046	$158,138	$1,412,115
Visitors Year 3	$1,532,279	$221,041	$220,113	$1,973,433
Visitors Year 4	$1,951,938	$281,475	$281,012	$2,514,425
Visitors Year 5	$2,540,188	$368,000	$366,067	$3,274,255
Year 1 Total	$1,087,695	$309,833	$189,006	$1,586,535
Year 2 Total	$1,645,917	$333,167	$226,630	$2,205,714
Year 3 Total	$2,369,384	$375,095	$286,876	$3,031,355
Year 4 Total	$3,062,252	$435,058	$349,952	$3,847,261
Year 5 Total	$3,923,711	$521,132	$437,189	$4,882,032
Total (All Years)	$15,531,328	$2,213,517	$2,135,781	$19,880,625

the revenue values reported earlier in Table 4.2. The expenditures from center operations result in local input purchases and payments to local labor that creates indirect and induced impacts reported in the table. Total impacts of operation during the first five year of operations increase from $523 thousand in the first year to $1.608 million in the fifth year. Visitor expenditures impacts are larger. In the baseline scenario, the total industry output impacts increase each year in tandem with the growth in the number of events at the center and growth in number of visitors from approximately $1.064 million in the first year to $2.223 million in the fifth year. In the alternative scenario with higher visitor growth, visitor impacts grow from $1.064 million to $3.274 million. Therefore, cumulative total impacts combining construction, operations, and visitor impacts total $18-$20 million.

Total industry output impacts are lower than total expenditures reported in the previous section for several reasons. First, for construction and operations, only the portion of spending estimated to actually occur in the area is counted based on IMPLAN estimates. Second, for the retail trade sectors i.e., building materials and garden supply, gasoline stations, clothing and clothing accessory stores, sporting goods stores, general merchandise stores, miscellaneous retail stores, only the margins (the markup on product prices

charged by retailers for merchandizing) are considered as the sales contribution of the retail trade sectors. Third, for the facility operation, the direct sales or output is the revenue accruing to the center from fees paid by its customers.

Table 5.3 and **Table 5.4** present value-added and labor income impacts. As reported earlier, value-added and labor income are subsets of total industrial output. Value-added represents payments made to factors of production such as labor income, proprietor income, and dividends, interest and rent plus indirect business taxes such as sales and excise taxes. Labor income is a portion of value-added and represents the additional earning by local workers and business owners. Total value-added is $2.050 million during construction and varies from a low of $770 thousand in the first year to $2.435 million in the fifth year in the baseline scenario and $2.896 million in the alternative scenario. The total labor income impact is $1.639 million during construction. After the center opens, the impacts range from $481 thousand in the first year to $1.829 million in the fifth year under the baseline scenario and up to $2.124 million in the fifth year under the alternative growth scenario. **Table 5.5** presents employment impacts. Center construction is estimated to create 47 local jobs, including 39 mainly construction jobs attributable directly to building the facility. An additional 8 spin-

Table 5.3 Wythe County Value-added Impacts by Source and Scenario (Expressed in 2014 Dollars)

Source	Direct	Indirect	Induced	Total
Base Scenario				
Construction	$1,532,299	$135,897	$381,641	$2,049,837
Operations Year 1	$114,530	$109,551	$40,859	$264,940
Operations Year 2	$316,550	$98,910	$40,449	$455,908
Operations Year 3	$672,971	$84,975	$39,428	$797,374
Operations Year 4	$968,401	$84,311	$40,713	$1,093,425
Operations Year 5	$1,263,842	$83,658	$42,002	$1,389,502
Visitors Year 1	$368,353	$65,556	$70,767	$504,677
Visitors Year 2	$448,252	$80,473	$86,299	$615,025
Visitors Year 3	$573,271	$103,099	$110,371	$786,742
Visitors Year 4	$671,683	$119,733	$129,508	$920,925
Visitors Year 5	$759,483	$137,998	$148,085	$1,045,565
Year 1 Total	$482,883	$175,107	$111,627	$769,617
Year 2 Total	$764,802	$179,383	$126,748	$1,070,933
Year 3 Total	$1,246,242	$188,074	$149,799	$1,584,116
Year 4 Total	$1,640,084	$204,045	$170,221	$2,014,350
Year 5 Total	$2,023,325	$221,656	$190,086	$2,435,068
Total (All Years)	$7,689,636	$1,104,163	$1,130,123	$9,923,922
Alternative Scenario				
Visitors Year 1	$368,353	$65,556	$70,767	$504,677
Visitors Year 2	$482,387	$87,935	$93,398	$663,720
Visitors Year 3	$667,743	$123,760	$129,999	$921,503
Visitors Year 4	$846,014	$157,658	$165,966	$1,169,638
Visitors Year 5	$1,084,471	$206,240	$216,195	$1,506,905
Year 1 Total	$482,883	$175,107	$111,627	$769,617
Year 2 Total	$798,937	$186,845	$133,847	$1,119,628
Year 3 Total	$1,340,714	$208,736	$169,427	$1,718,877
Year 4 Total	$1,814,415	$241,970	$206,679	$2,263,063
Year 5 Total	$2,348,313	$289,898	$258,197	$2,896,408
Total (All Years)	$8,317,561	$1,238,453	$1,261,418	$10,817,431

Table 5.4 Wythe County Labor Income Impacts by Source and Scenario (Expressed in 2014 Dollars)

Source	Direct	Indirect	Induced	Total
Base Scenario				
Construction	$1,394,158	$71,447	$173,584	$1,639,188
Operations Year 1	$87,200	$70,958	$18,604	$176,762
Operations Year 2	$259,036	$64,130	$18,417	$341,583
Operations Year 3	$585,272	$54,949	$17,953	$658,174
Operations Year 4	$852,080	$54,492	$18,538	$925,110
Operations Year 5	$1,118,898	$54,051	$19,125	$1,192,074
Visitors Year 1	$232,013	$40,215	$32,202	$304,430
Visitors Year 2	$282,642	$49,390	$39,271	$371,304
Visitors Year 3	$361,367	$63,288	$50,225	$474,881
Visitors Year 4	$424,872	$73,411	$58,933	$557,216
Visitors Year 5	$485,355	$84,585	$67,390	$637,331
Year 1 Total	$319,213	$111,173	$50,806	$481,192
Year 2 Total	$541,678	$113,521	$57,688	$712,887
Year 3 Total	$946,639	$118,238	$68,178	$1,133,055
Year 4 Total	$1,276,952	$127,903	$77,472	$1,482,326
Year 5 Total	$1,604,253	$138,636	$86,515	$1,829,404
Total (All Years)	$6,082,893	$680,917	$514,243	$7,278,052
Alternative Scenario				
Visitors Year 1	$232,013	$40,215	$32,202	$304,430
Visitors Year 2	$305,486	$53,998	$42,504	$401,988
Visitors Year 3	$424,508	$76,049	$59,164	$559,721
Visitors Year 4	$542,500	$96,795	$75,536	$714,831
Visitors Year 5	$707,011	$126,509	$98,408	$931,928
Year 1 Total	$464,026	$80,430	$64,405	$481,192
Year 2 Total	$588,129	$103,388	$81,775	$743,571
Year 3 Total	$785,875	$139,337	$109,389	$1,217,895
Year 4 Total	$967,372	$170,206	$134,470	$1,639,941
Year 5 Total	$1,192,366	$211,094	$165,798	$2,124,002
Total (All Years)	$5,391,925	$775,902	$729,420	$7,845,789

off jobs in the community can be expected based on the purchases of supplies and payment of wages and salaries to local workers. These jobs last only as long as the construction continues. The center operations will create two permanent jobs during the five-year period. The iterative effect of center and worker spending in the local economy would create an additional two jobs. The spending of visitors provides a significant additional boost in economic activity. The total visitor impact of the center grows from 20 jobs in the first year of operation to 44 jobs by the fifth year according to the baseline scenario and 67 total jobs under the alternative scenario. To sum up, the center is estimated to stimulate 47 jobs, $4.328 million in total sales or total industry output, $2.050 million value-added, and $1.639 million labor income during the construction phase. In the fifth year of operation, the center is estimated to create from 48 to 71 jobs, $3.831 million to $4.822 million in total sales or total industry output, $2.435 to $2.896 million in value-added, and $1.829 million to $2.124 million in labor income.

Virginia Economic Impacts

Tables 5.6 to **5.9** show the total industry output, labor income, value-added and employment impacts

Table 5.5 Wythe County Employment Impacts by Source and Scenario

Source	Direct	Indirect	Induced	Total
Base Scenario				
Construction	39	2	6	47
Operations Year 1	2	2	1	5
Operations Year 2	2	2	1	5
Operations Year 3	2	1	1	4
Operations Year 4	2	1	1	4
Operations Year 5	2	1	1	4
Visitors Year 1	18	1	1	20
Visitors Year 2	22	2	1	25
Visitors Year 3	28	2	2	32
Visitors Year 4	33	2	2	37
Visitors Year 5	39	3	2	44
Year 1 Total	20	3	2	25
Year 2 Total	24	4	2	30
Year 3 Total	30	3	3	36
Year 4 Total	35	3	3	41
Year 5 Total	41	4	3	48
Alternative Scenario				
Visitors Year 1	18	1	1	20
Visitors Year 2	24	2	1	27
Visitors Year 3	34	2	2	38
Visitors Year 4	44	3	3	50
Visitors Year 5	60	4	3	67
Year 1 Total	20	3	2	25
Year 2 Total	26	4	2	32
Year 3 Total	36	3	3	42
Year 4 Total	46	4	4	54
Year 5 Total	62	5	4	71

of the center on the Commonwealth of Virginia. The tables show that during the construction phase, the center has a total industry output impact of $6.397 million, value-added impact of $3.619 million, labor income impact of $2.861 million and 59 jobs. These economic impacts are uniformly higher because there are fewer direct expenditure leakages from the Virginia economy and higher multiplier effects due to more input purchasing opportunities.

Expenditures during the operational phase are lower for the state than Wythe County because the expenditures of Virginia resident visitors and expenditures associated with events transferred within Virginia is not counted. Only the in-state expenditures of out-of-state residents on "new events" and facility operation are included as expenditures. However, the multipliers for those smaller expenditures are higher. When the center opens, total state output impacts expand from $1.2 million thousand during the first year to $2.9 million in the fifth year in the baseline scenario. In the fifth year, the center is estimated to create from 17 to 19 jobs, $2.845 million to $3.031 million in total industrial output, $2.100 million to $2.202 million in value-added, and $1.625 million to $1.687 million in labor income.

State and Local Tax Revenue Impacts

Table 5.10 presents tax revenue impacts for Wythe County and the Commonwealth of Virginia. Center construction is estimated to generate approximately $154 thousand dollars in state tax revenue and $57 thousand in Wythe County tax revenue Under the baseline scenario, state tax collections are estimated to be approximately $36 thousand in the first year

Table 5.6 Virginia Total Industry Output Impacts by Source and Scenario (Expressed in 2014 Dollars)

Source	Direct	Indirect	Induced	Total
Base Scenario				
Construction	$3,714,923	$1,072,269	$1,610,027	$6,397,219
Operations Year 1	$260,870	$289,098	$136,953	$686,920
Operations Year 2	$548,986	$274,177	$135,436	$958,600
Operations Year 3	$837,105	$264,871	$135,019	$1,236,995
Operations Year 4	$1,110,314	$270,970	$139,939	$1,521,223
Operations Year 5	$1,383,523	$277,072	$144,867	$1,805,462
Visitors Year 1	$285,381	$110,766	$94,719	$490,866
Visitors Year 2	$337,766	$131,257	$112,074	$581,097
Visitors Year 3	$442,779	$172,925	$146,748	$762,453
Visitors Year 4	$523,103	$203,435	$173,540	$900,077
Visitors Year 5	$604,145	$234,692	$200,869	$1,039,706
Year 1 Total	$546,251	$399,863	$231,672	$1,177,786
Year 2 Total	$886,752	$405,435	$247,510	$1,539,697
Year 3 Total	$1,279,884	$437,796	$281,767	$1,999,448
Year 4 Total	$1,633,417	$474,405	$313,478	$2,421,300
Year 5 Total	$1,987,668	$511,763	$345,737	$2,845,167
Total (All Years)	$10,048,895	$3,301,531	$3,030,191	$16,380,617
Alternative Scenario				
Visitors Year 1	$285,381	$110,766	$94,719	$490,866
Visitors Year 2	$348,641	$135,836	$115,612	$600,090
Visitors Year 3	$476,911	$187,428	$157,827	$822,166
Visitors Year 4	$584,591	$229,277	$193,554	$1,007,422
Visitors Year 5	$710,308	$278,950	$235,790	$1,225,048
Year 1 Total	$546,251	$399,863	$231,672	$1,177,786
Year 2 Total	$897,627	$410,013	$251,049	$1,558,690
Year 3 Total	$1,314,016	$452,299	$292,846	$2,059,161
Year 4 Total	$1,694,905	$500,247	$333,492	$2,528,645
Year 5 Total	$2,093,831	$556,022	$380,658	$3,030,510
Total (All Years)	$10,261,554	$3,390,713	$3,099,743	$16,752,011

Table 5.7 Virginia Value-added Impacts by Source and Scenario (Expressed in 2014 Dollars)

Source	Direct	Indirect	Induced	Total
Base Scenario				
Construction	$2,018,898	$614,297	$985,476	$3,618,671
Operations Year 1	$114,530	$172,272	$83,831	$370,633
Operations Year 2	$316,550	$161,776	$82,903	$561,230
Operations Year 3	$672,971	$153,932	$82,647	$909,550
Operations Year 4	$968,401	$157,140	$85,659	$1,211,200
Operations Year 5	$1,263,842	$160,353	$88,676	$1,512,871
Visitors Year 1	$152,925	$66,399	$57,977	$277,302
Visitors Year 2	$180,869	$78,681	$68,600	$328,150
Visitors Year 3	$236,405	$103,642	$89,824	$429,872
Visitors Year 4	$279,991	$121,944	$106,223	$508,158
Visitors Year 5	$323,393	$140,642	$122,952	$586,987
Year 1 Total	$267,455	$238,671	$141,809	$647,935
Year 2 Total	$497,419	$240,457	$151,503	$889,379
Year 3 Total	$909,376	$257,574	$172,472	$1,339,422
Year 4 Total	$1,248,392	$279,084	$191,882	$1,719,358
Year 5 Total	$1,587,235	$300,995	$211,628	$2,099,858
Total (All Years)	$6,528,776	$1,931,077	$1,854,770	$10,314,623
Alternative Scenario				
Visitors Year 1	$152,925	$66,399	$57,977	$277,302
Visitors Year 2	$186,409	$81,419	$70,766	$338,594
Visitors Year 3	$253,682	$112,313	$96,606	$462,601
Visitors Year 4	$311,348	$137,400	$118,474	$567,221
Visitors Year 5	$377,684	$167,087	$144,327	$689,097
Year 1 Total	$267,455	$238,671	$141,809	$647,935
Year 2 Total	$502,959	$243,196	$153,669	$899,823
Year 3 Total	$926,653	$266,245	$179,253	$1,372,151
Year 4 Total	$1,279,749	$294,540	$204,133	$1,778,422
Year 5 Total	$1,641,526	$327,440	$233,003	$2,201,968
Total (All Years)	$6,637,240	$1,984,388	$1,897,343	$10,518,970

Table 5.8 Virginia Labor Income Impacts by Source and Scenario (Expressed in 2014 Dollars)

Source	Direct	Indirect	Induced	Total
Base Scenario				
Construction	$1,898,524	$431,116	$531,185	$2,860,825
Operations Year 1	$87,200	$111,354	$45,180	$243,734
Operations Year 2	$259,036	$77,094	$44,680	$380,810
Operations Year 3	$585,272	$98,002	$44,542	$727,816
Operations Year 4	$852,080	$99,695	$46,165	$997,940
Operations Year 5	$1,118,898	$101,401	$47,791	$1,268,090
Visitors Year 1	$97,018	$40,003	$31,249	$168,270
Visitors Year 2	$114,703	$47,421	$36,975	$199,099
Visitors Year 3	$149,706	$62,568	$48,414	$260,689
Visitors Year 4	$177,523	$73,514	$57,253	$308,291
Visitors Year 5	$205,809	$84,765	$66,270	$356,843
Year 1 Total	$184,218	$151,357	$76,429	$412,005
Year 2 Total	$373,739	$124,515	$81,655	$579,909
Year 3 Total	$734,978	$160,570	$92,956	$988,505
Year 4 Total	$1,029,603	$173,210	$103,418	$1,306,231
Year 5 Total	$1,324,707	$186,166	$114,061	$1,624,933
Total (All Years)	$5,545,770	$1,226,934	$999,705	$7,772,408
Alternative Scenario				
Visitors Year 1	$97,018	$40,003	$31,249	$168,270
Visitors Year 2	$118,125	$49,114	$38,142	$205,381
Visitors Year 3	$160,344	$67,942	$52,070	$280,356
Visitors Year 4	$196,904	$83,063	$63,856	$343,823
Visitors Year 5	$239,984	$101,070	$77,791	$418,845
Year 1 Total	$184,218	$151,357	$76,429	$412,005
Year 2 Total	$377,161	$126,208	$82,822	$586,191
Year 3 Total	$745,616	$165,944	$96,612	$1,008,172
Year 4 Total	$1,048,984	$182,758	$110,021	$1,341,764
Year 5 Total	$1,358,882	$202,471	$125,582	$1,686,935
Total (All Years)	$5,613,387	$1,259,854	$1,022,651	$7,895,892

Table 5.9 Virginia Employment Impacts by Source and Scenario

Source	Direct	Indirect	Induced	Total
Base Scenario				
Construction	40	7	12	59
Operations Year 1	2	3	1	6
Operations Year 2	2	2	1	5
Operations Year 3	2	2	1	5
Operations Year 4	2	2	1	5
Operations Year 5	2	2	1	5
Visitors Year 1	4	1	1	6
Visitors Year 2	5	1	1	7
Visitors Year 3	6	1	1	8
Visitors Year 4	7	2	1	10
Visitors Year 5	8	2	2	12
Year 1 Total	6	3	2	12
Year 2 Total	7	3	2	12
Year 3 Total	8	3	2	14
Year 4 Total	9	4	2	15
Year 5 Total	10	4	3	17
Alternative Scenario				
Visitors Year 1	4	1	1	6
Visitors Year 2	5	1	1	7
Visitors Year 3	7	1	1	9
Visitors Year 4	8	2	1	11
Visitors Year 5	10	2	2	14
Year 1 Total	6	4	2	12
Year 2 Total	7	3	2	12
Year 3 Total	9	3	2	14
Year 4 Total	10	4	4	21
Year 5 Total	12	4	3	19

of operations moving up to $103 thousand in the fifth year while Wythe County tax collections start at $48 thousand and grow to $117 thousand.

Cumulative state tax revenue is estimated to be approximately $490 thousand for the entire study period in the baseline scenario and $504 thousand in the alternative scenario. The bulk of the tax impact comes from the individual income tax. The local tax impact is much more sensitive to the visitor growth assumptions than the state. The cumulative local tax impact is $467 thousand in the baseline scenario and $541 thousand in the alternative scenario. The local options sales and use tax is estimated to bring in between $50 thousand and $61 thousand, the meals tax between $85 thousand and $102 thousand, and the lodgings tax between $77 and $99 thousand.

Table 5.10 Tax Revenue Impacts by Year, Wythe County and Virginia

Tax Source	Construction	Year 1	Year 2	Year 3	Year 4	Year 5	Total
State taxes							
Sales and use tax	$11,226	$14,280	$14,535	$16,013	$18,715	$21,440	$96,209
Individual income tax	$107,567	$15,491	$21,805	$37,168	$49,114	$61,097	$292,243
Other state taxes (corporate income, motor fuels, etc.)	$35,463	$6,350	$8,716	$13,126	$16,850	$20,579	$101,083
Total	$154,256	$36,121	$45,056	$66,307	$84,679	$103,116	$489,535
Wythe County taxes							
Local options sales and use tax	$1,642	$7,014	$8,018	$9,646	$11,201	$12,521	$50,043
Meals tax	$2,611	$11,062	$13,332	$16,951	$19,916	$21,214	$85,085
Lodgings tax	$75	$9,964	$12,364	$15,895	$18,016	$20,802	$77,117
Other local taxes (property, business license, etc.)	$52,701	$19,787	$27,534	$40,728	$51,789	$62,606	$255,144
Total	$57,029	$47,827	$61,248	$83,220	$100,923	$117,142	$467,389
Total state and local taxes	$211,284	$83,949	$106,304	$149,527	$185,602	$220,258	$956,924
Alternative Scenario							
State taxes							
Sales and use tax	$11,226	$14,280	$14,879	$17,082	$22,131	$24,803	$104,401
Individual income tax	$107,567	$15,491	$22,041	$37,907	$50,450	$63,429	$296,886
Other state taxes (corporate income, motor fuels, etc.)	$35,463	$6,350	$8,818	$13,447	$17,429	$21,579	$103,086
Total	$154,256	$36,121	$45,738	$68,436	$90,010	$109,811	$504,372
Wythe County taxes							
Local options sales and use tax	$1,642	$7,014	$8,620	$11,315	$14,258	$18,250	$61,099
Meals tax	$2,611	$11,062	$14,199	$19,351	$24,359	$30,733	$102,315
Lodgings tax	$75	$9,964	$13,676	$19,540	$24,526	$31,669	$99,450
Other local taxes (property, business license, etc.)	$52,701	$19,787	$28,786	$44,192	$58,183	$74,467	$278,116
Total	$57,029	$47,827	$65,281	$94,398	$121,327	$155,117	$540,979
Total state and local taxes	$211,284	$83,949	$111,019	$162,834	$211,336	$264,929	$1,045,351

SECTION 6
OTHER EFFECTS

A new agricultural exposition center may offer other benefits to the community beyond economic activity and additional tax revenue. These benefits are briefly discussed here, organized into the areas of health and wellness, workforce development, agricultural and industrial promotion, and community engagement. In addition, the center could impose a few additional costs on the community. Community leadership could work proactively to minimize the costs and maximize the economic impacts and benefits of the new facility.

Health and Wellness

While many of the events to be hosted by the facility will be spectator-oriented, the arena also creates a new indoor venue for active sports such as equestrian and adventure sports (e.g., BMX, Motocross). The center would also provide a location for youth recreation such as Boy Scouts, soccer and regional athletic competitions and therapeutic activities for disabled and disadvantaged children (e.g., special olympics, therapeutic riding). The Appalachian Agricultural Exposition Center is projected to boost the number of horse shows and competitions held in the area from one in 2010 (an event held at the Mark E. Hufeisen Horse Complex) to 25 events five years after opening. This increase will move Wythe County from a current statewide rank of 63rd in terms of such equestrian shows and competitions to a rank of 17th (see **Table 6.1**).

Table 6.1 Rank of Virginia Localities by Estimated Number of Horse Shows and Competitions

Rank	Locality	#
1	Loudoun County	124
2	Lexington City	85
3	Fauquier County	79
4	Prince William County	76
5	Clarke County	61
6	Spotsylvania County	60
7	Fairfax County	57
8	Hanover County	53
9	Culpeper County	51
10	Virginia Beach City	42
11	Suffolk City	36
12	Fluvanna County	31
13	Orange County	31
14	Chesterfield County	28
15	Goochland County	27
16	Isle of Wight County	27
17	***Wythe County***	***25***
18	Salem City	19
19	James City County	16
20	Powhatan County	16
20	Chesapeake City	16

Source: Based on data from Rephann (2011)

Statistical analysis conducted using Virginia Outdoors Survey data described in **Appendix D** shows that the number of local equestrian shows and other horse competition events available is positively associated with the rate of local household participation in horse riding. The increase in local horse shows and competitions can potentially boost Wythe County resident participation levels by approximately 3.1 percent (from an estimated 8.0 current participation rate to 11.1 percent afterwards). This result suggests that the increasing visibility of equestrian sports and availability of new riding venue in the area could result in an estimated 383 Wythe County households taking up horse riding. Enhanced involvement in horse riding and other adventure sports by local residents in turn could produce various physical, psychological, and other therapeutic benefits.

Workforce Development

The region currently lacks a facility for hosting large education and training events. Training opportunities, demonstrations, and coursework offered by the center would provide a huge agricultural classroom for the region. Wythe Community College, local high schools, and the Virginia Cooperative Extension Service could possibility utilize it for some training and program development. It can also

be used to promote 4-H programs. 4-H programs can have a positive effect on youth including improved school performance, leadership skill development and enhanced self-esteem (Kress n.d.).

Agricultural and Industrial Promotion

A new agricultural exposition center would serve as a focal point for promoting area agriculture and industry and celebrate the area's agricultural heritage. Facility events could be used as a forum to exchange ideas, discuss industry problems and challenges, transfer technology, and demonstrate industry best practices. Equipment shows and consumer shows would be among the events that are hosted. The center could also be used to highlight and market area products and services such as local foods. Many similar agricultural centers hold weekly farmers markets at their locations. Visitor and news media exposure would increase the area's visibility and possibly increase its attractiveness as a tourist destination and business location. Moreover, the addition of this major tourism venue could also help towards building the critical mass of activities needed to attract and retain visitors as part of a comprehensive tourism promotion effort and extend the tourism season (Felsenstein and Fleischer 2003).

A new agricultural exposition center could be an important factor in expanding the area horse industry. This growth could provide additional economic stimulus. The county had an estimated horse population of 2,600 in 2006 (USDA, NASS. 2008). The Wythe County horse industry in 2010 was estimated to be associated with 117 jobs, $3.1 million in gross domestic product, and nearly $100 thousand in local tax revenue (Rephann 2011).

Community Engagement

The center would provide an additional venue, meeting space and convocation center for a variety of community events such as high school and college graduations and family reunions. The center board has discussed the possibility of creating a museum on the site and hosting a regional fair. It could also host community events that raise funds for worthwhile local charitable causes. Many of the festivals and events hosted by the facility could help build "community pride, sense of place, or identify, volunteerism and the general benefit of pulling people together" (Marcouiller 1995). Center activities would provide a new cultural and entertainment amenity for the region. These amenities are known to be important influences on migrant locational choices and could play a small role in making the county more attractive for skilled workers in areas where area workforce gaps exist and recruitment has been difficult.

New Business Opportunities

The center Business Plan anticipates that rental income from occupancy of rental units at the proposed site will generate approximately $700,000 by the fifth year of operation. It was not within the scope of this study to determine the mix of businesses that might be hosted at the site or determine which businesses would be relocations from other sites within the county or entirely new businesses. However, the opportunity exists to attract businesses to the vicinity of the center that would benefit from closer proximity. **Table 6.2** shows baseline and alternative impact estimates by industry of impact that result from visitor expenditures.

Although the economic impact model does not predict the location of new business activity, economic impact estimates suggest that the center could be supportive of additional local businesses that provide services to travelers including food services, lodging, and retail trade. While agricultural support activities and sports promotion employment would occur chiefly at the center for hosted events, others might possibly be anchored at leased sites or elsewhere near the center. For example, the magnitude of employment and sales impacts for food services and drinking places is comparable to a family restaurant while the hotel and motel impacts are similar to a budget motel.

Other Considerations

It is important to note also that there may be some additional costs that arise from center activity such as increased traffic and periodic congestion during large events, the need for additional on-site and off-site fire, ambulance and police

services during peak activity and increased solid waste pollution (Crompton 2006). No effort was made to quantify these additional costs.

Also, the community could possibly increase the economic impact of the agricultural exposition center in various ways (Felsenstein and Fleischer 2003). Center leadership could emphasize a "buy local" strategy and develop local network of vendors and caterers to provide on-site services and procure products and services from local producers. Development incentives could be offered to foster additional tourism infrastructure such as lodging, eating, and amusement and recreation facilities in the vicinity of the center. In addition, center activities could be linked and marketed with other tourist attractions in the region to encourage visitors to visit those venues as well.

Table 6.2 Top Ten Industries by Employment for 5th Year Visitor Impact

IMPLAN Sector	Description	Employment	Labor Income	Value Added	Total Industrial Output
Base Scenario					
19	Support activities for agriculture and forestry	13	$51,120	$4,478	$96,175
413	Food services and drinking places	10	$181,421	$283,719	$572,338
411	Hotels and motels, including casino hotels	4	$84,491	$190,800	$446,776
404	Promoters of performing arts and sports and agents for public figures	4	$26,924	$47,544	$196,820
402	Performing arts companies	2	$12,059	$15,441	$51,585
326	Retail Stores - Gasoline stations	1	$32,453	$63,152	$95,207
330	Retail Stores - Miscellaneous	1	$20,246	$36,603	$47,034
409	Amusement parks, arcades, and gambling industries	1	$17,284	$27,596	$65,569
328	Retail Stores - Sporting goods, hobby, book and music	1	$8,725	$12,384	$23,963
382	Employment services	1	$11,146	$13,215	$17,790
Alternative Scenario					
19	Support activities for agriculture and forestry	22	$89,409	$7,831	$168,210
413	Food services and drinking places	15	$263,868	$412,656	$832,438
404	Promoters of performing arts and sports and agents for public figures	8	$46,982	$82,962	$343,444
411	Hotels and motels, including casino hotels	7	$128,644	$290,507	$680,248
402	Performing arts companies	3	$14,235	$18,226	$60,891
326	Retail Stores - Gasoline stations	1	$39,441	$76,750	$115,708
330	Retail Stores - Miscellaneous	1	$26,114	$47,211	$60,665
409	Amusement parks, arcades, and gambling industries	1	$20,356	$32,500	$77,221
328	Retail Stores - Sporting goods, hobby, book and music	1	$13,300	$18,878	$36,530
382	Employment services	1	$16,409	$19,453	$26,188

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APPENDIX A
FISCAL IMPACT METHODOLOGY

The methodology and the description for computing state and local tax estimates is the same as that used in a study of the economic impact of the Virginia horse industry (Rephann 2011). The state and local tax calculations use economic impact estimates derived from IMPLAN to represent tax base impacts (i.e., labor income, value-added, and industry sales). Estimated average effective tax rates are computed using information on baseline tax bases and tax revenues. Since tax bases are expressed in calendar years and revenues are expressed in fiscal years, tax revenues were computed as averages of the beginning fiscal year and end fiscal year values for each category of tax revenues. That is to say, calendar year 2011 revenues are computed based on average revenues for FY 2011 and FY 2012.[3] The assumption is made that effective tax rates will be the same in future years. The computations involved for various types of state and local revenue are shown in **Table A.1**.

Local Taxes

Wythe County local tax rates were used to estimate the local tax revenue that would accrue as a result of the Appalachian Agricultural Exposition Center. These taxes included the local option sales tax, local meals tax, local lodging tax, and other local government tax revenues (e.g., property taxes, machinery and tools taxes).

Local option sales tax revenue impact was estimated by applying the local sales tax of one percent to total sales impacts for the IMPLAN retail sectors (321-325 and 327-331), hotels and motels and accommodations (410-411), food services and drinking places (413), and automotive repair (414).[4] Local meals tax impact estimates were obtained by multiplying restaurant sales impacts by the Wythe County meals tax rate (4 percent). The hotels and motels and other lodging sales impacts were multiplied by the Wythe County lodgings tax rate (5 percent) to obtain lodging tax revenue impacts. These tax rates were drawn from Virginia local tax rates, 2013 (Knapp and Kulp 2013)

Other local government tax revenues (e.g., property taxes, machinery and tools taxes) were also estimated. Other local government revenues were aggregated for Wythe County and Wytheville Town (e.g., total tax collections minus local options sales tax collections, restaurant sales taxes, and lodging taxes) and represented as a percentage of Wythe County value-added in 2011. The other government tax revenue impact was computed by applying the local percentage (2.57 percent) to locality total value-added impacts.

State Taxes

The state government sales and use tax estimates were based on IMPLAN total sales impacts for the same retail trade and selected services described for local taxes above. The total sales impact figure includes both the state and local sales taxes. Therefore, the sales tax was removed by multiplying total sales by .950[=1.00/1.053]. The 1.053 includes the state 4.3 percent rate and the local 1 percent rate. State sales tax revenue was calculated by multiplying the adjusted sales figure by the state sales tax rate of 4.3 percent.

State individual income tax collections were based on IMPLAN total labor income impacts. Income tax revenue in 2011 as a percentage of 2011 estimated labor income was calculated as 3.76 percent. Labor income impacts were multiplied by this rate.

Detailed information on tax bases for other tax categories such as corporate income and motor

3 Information on actual FY 2011 and FY 2012 state revenues by type were obtained from the revenue forecasts in the 2012 and 2013 Executive Budget Documents located at the Virginia Department of Planning and Budget website (http://dpb.virginia.gov/budget/budget.cfm). Information on the FY 2011 and FY 2012 local budgets was obtained from the Auditor of Public Accounts, Comparative Report of Local Government Revenues and Expenditures, Year Ended June 30, _____. Reports for 2011 and 2012. Exhibits B and B-2.

4 The tax rate was applied to direct sales based on gross retail sales rather than gross retail margin.

vehicle fuel consumption was not available from the study or model. Therefore, they were estimated using residual revenues (i.e., total tax collections minus state sales tax collections and individual income tax collections) as a percentage of state GDP (gross domestic product) for 2011. Residual tax revenue impacts were calculated by applying this percentage (0.98 percent) to the total value-added impact, which is a measure equivalent to gross domestic product.

Table. A.1 State and Wythe County Revenue by Tax and Source

Item	Construction	Operations Year 1	Operations Year 2	Operations Year 3	Operations Year 4	Operations Year 5
State Taxes						
Sales and Use Tax						
Taxable Sales--direct, indirect, and induced	$274,904	$113,213	$76,332	$27,002	$25,528	$25,357
Adjusted taxable expenditures @.94966762	$261,067	$107,515	$72,490	$25,643	$24,243	$24,081
Tax @ 4.3%	$11,226	$4,623	$3,117	$1,103	$1,042	$1,035
Individual income tax						
Labor income-direct, indirect, and induced	$2,860,825	$243,734	$380,810	$727,816	$997,940	$1,268,090
Tax at 3.76%	$107,567	$9,164	$14,318	$27,366	$37,523	$47,680
Other State Taxes (corporation income, etc.)						
Value-added--direct, indirect, and induced	$3,618,671	$370,633	$561,230	$909,550	$1,211,200	$1,512,871
Other state taxes per dollar of value-added (0.98%)	$35,463	$3,632	$5,500	$8,914	$11,870	$14,826
Total state taxes	$154,256	$17,420	$22,936	$37,382	$50,435	$63,542
Wythe County taxes						
Local options sales and use tax						
Taxable Sales--direct, indirect, and induced	$172,879	$101,661	$66,467	$20,045	$19,554	$19,066
Adjusted taxable expenditures @ .94966762	$164,178	$96,545	$63,121	$19,036	$18,570	$18,107
Tax at 1%	$1,642	$965	$631	$190	$186	$181
Meals tax						
Sales of meals--direct, indirect, and induced	$71,337	$7,344	$7,189	$6,925	$7,126	$7,328
Adjusted total sales on meals @.91491308	$65,267	$6,719	$6,578	$6,335	$6,520	$6,705
Tax at 4%	$2,611	$269	$263	$253	$261	$268
Lodgings tax						
Sales of meals--direct, indirect, and induced	$1,648	$201	$187	$166	$168	$171
Adjusted total sales on lodging @.90661831	$1,494	$183	$169	$150	$153	$155
Tax @ 5%	$75	$9	$8	$8	$8	$8
Other local taxes (property, BPOL, etc.)						
Value-added	$2,049,837	$264,940	$455,908	$797,374	$1,093,425	$1,389,502
Other local taxes per dollar of value-added (2.57%)	$52,701	$6,812	$11,721	$20,500	$28,112	$35,724
Total local taxes	$57,029	$8,055	$12,624	$20,952	$28,566	$36,181

Table A.1 (Continued)

Item	Visitors Year 1	Visitors Year 2	Visitors Year 3	Visitors Year 4	Visitors Year 5
State Taxes					
Sales and Use Tax					
Taxable Sales--direct, indirect, and induced	$236,482	$279,613	$365,128	$432,774	$499,671
Adjusted taxable expenditures @.94966762	$224,579	$265,539	$346,751	$410,992	$474,521
Tax @ 4.3%	$9,657	$11,418	$14,910	$17,673	$20,404
Individual income tax					
Labor income-direct, indirect, and induced	$168,270	$199,099	$260,689	$308,291	$356,843
Tax at 3.76%	$6,327	$7,486	$9,802	$11,592	$13,417
Other State Taxes (corporation income, etc.)					
Value-added--direct, indirect, and induced	$277,302	$328,150	$429,872	$508,158	$586,987
Other state taxes per dollar of value-added (0.98%)	$2,718	$3,216	$4,213	$4,980	$5,752
Total state taxes	$18,701	$22,120	$28,925	$34,244	$39,574
Wythe County taxes					
Local options sales and use tax					
Taxable Sales--direct, indirect, and induced	$636,963	$777,825	$995,713	$1,159,962	$1,299,370
Adjusted taxable expenditures @ .94966762	$604,903	$738,675	$945,596	$1,101,578	$1,233,970
Tax at 1%	$6,049	$7,387	$9,456	$11,016	$12,340
Meals tax					
Sales of meals--direct, indirect, and induced	$294,918	$357,104	$456,257	$537,090	$572,338
Adjusted total sales on meals @.91491308	$269,824	$326,719	$417,436	$491,391	$523,639
Tax at 4%	$10,793	$13,069	$16,697	$19,656	$20,946
Lodgings tax					
Sales of meals--direct, indirect, and induced	$219,610	$272,568	$350,478	$397,275	$458,723
Adjusted total sales on lodging @.90661831	$199,102	$247,116	$317,750	$360,177	$415,886
Tax @ 5%	$9,955	$12,356	$15,887	$18,009	$20,794
Other local taxes (property, BPOL, etc.)					
Value-added	$504,677	$615,025	$786,742	$920,925	$1,045,565
Other local taxes per dollar of value-added (2.57%)	$12,975	$15,812	$20,227	$23,677	$26,881
Total local taxes	$39,772	$48,624	$62,268	$72,357	$80,961

Table A.1 (Continued)

Item	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Year 5 Total	Total (All Years)
State Taxes						
Sales and Use Tax						
Taxable Sales--direct, indirect, and induced	$349,695	$355,945	$392,130	$458,302	$525,028	$2,356,004
Adjusted taxable expenditures @.94966762	$332,094	$338,029	$372,393	$435,235	$498,602	$2,237,420
Tax @ 4.3%	$14,280	$14,535	$16,013	$18,715	$21,440	$96,209
Individual income tax						
Labor income-direct, indirect, and induced	$412,005	$579,909	$988,505	$1,306,231	$1,624,933	$7,772,408
Tax at 3.76%	$15,491	$21,805	$37,168	$49,114	$61,097	$292,243
Other State Taxes (corporation income, etc.)						
Value-added--direct, indirect, and induced	$647,935	$889,379	$1,339,422	$1,719,358	$2,099,858	$10,314,623
Other state taxes per dollar of value-added (0.98%)	$6,350	$8,716	$13,126	$16,850	$20,579	$101,083
Total state taxes	$36,121	$45,056	$66,307	$84,679	$103,116	$489,535
Wythe County taxes						
Local options sales and use tax						
Taxable Sales--direct, indirect, and induced	$738,625	$844,292	$1,015,758	$1,179,516	$1,318,436	$5,269,506
Adjusted taxable expenditures @ .94966762	$701,448	$801,796	$964,632	$1,120,148	$1,252,076	$5,004,279
Tax at 1%	$7,014	$8,018	$9,646	$11,201	$12,521	$50,043
Meals tax						
Sales of meals--direct, indirect, and induced	$302,262	$364,293	$463,182	$544,216	$579,666	$2,324,956
Adjusted total sales on meals @.91491308	$276,543	$333,297	$423,771	$497,911	$530,344	$2,127,133
Tax at 4%	$11,062	$13,332	$16,951	$19,916	$21,214	$85,085
Lodgings tax						
Sales of meals--direct, indirect, and induced	$219,811	$272,755	$350,644	$397,443	$458,894	$1,701,195
Adjusted total sales on lodging @.90661831	$199,285	$247,285	$317,900	$360,329	$416,041	$1,542,335
Tax @ 5%	$9,964	$12,364	$15,895	$18,016	$20,802	$77,117
Other local taxes (property, BPOL, etc.)						
Value-added	$769,617	$1,070,933	$1,584,116	$2,014,350	$2,435,068	$9,923,922
Other local taxes per dollar of value-added (2.57%)	$19,787	$27,534	$40,728	$51,789	$62,606	$255,144
Total local taxes	$47,827	$61,248	$83,220	$100,923	$117,142	$467,389

APPENDIX B
VIRGINIA CATTLE INDUSTRY CONVENTION ATTENDANCE SURVEY

UVA Institutional Review Board # 2014-0096-00

WELDON COOPER
CENTER FOR PUBLIC SERVICE
University of Virginia

VIRGINIA CATTLE INDUSTRY CONVENTION ATTENDANCE SURVEY

This survey is being conducted as part of a study to measure the impact of the cattle industry events in Virginia. It is sponsored by the Wythe County government for the Appalachian Agricultural Exposition Center.Participation is voluntary, but your cooperation in this effort will be extremely helpful. The survey should take approximately 10 minutes to complete. **All information that you provide will be kept strictly confidential**. Thank you for your participation.

1. I participated as:
   - ❑ Visitor/Attendee
   - ❑ Competiton, Show, or Sale Participant Number of Cattle/Calves _____)
   - ❑ Paid Staff/Management
   - ❑ Volunteer Staff
   - ❑ Vendor/Exhibitor
   - ❑ Other (please specify _____).

2. What type of events did you/will you participate in during the convention (check all that apply):
   - ❑ Education/Training/Workshop
   - ❑ Trade Show
   - ❑ Livestock Show
   - ❑ Livestock Sale
   - ❑ Membership or Awards Meeting
   - ❑ Other (please describe _____).

3. What is your home zip code? _____

4. Did you travel to this area specifically for the convention?

   1. Yes
   2. No

5. How many people, including yourself, are in your immediate travel party? _____

6. If you are not a local resident, how many days will you stay:
   a. In the local area (defined as the area within 15 miles of the event)? _____

   If you are not a Virginia resident, how many days will you stay:
   b. In Virginia but outside the local area? _____

Please see reverse side for more questions

7. Thinking about what you've spent so far and what you think you'll spend for the rest of your visit, what are **your travel party's total expected expenses** for this trip for the following categories (please count all your spending by cash, checks, credit or debit card. If you don't know for sure, give your best estimate rather than leaving it blank)?

Category I	(1) At this event	(2) In the local area but outside the event	(3) In Virginia but outside the local area on the way to and from this event
a. Admission fees, parking, and program	$		
b. Food and drink	$	$	$
c. Lodging (hotels, motels, campsites)	$	$	$
d. Entertainment	$	$	$
e. Gifts, souvenirs, clothing, etc.	$	$	$
f. Travel (gas, tolls, fares)		$	$
g. Car rental		$	$
h. Other (Please describe _____)	$	$	$

Show or sale participant only:

Category II	(1) At this event	(2) In the local area but outside the event	(3) In Virginia but outside the local area on the way to and from this event
a. Entry, registration, showing fees	$		
b. Stall or barn fees	$	$	$
c. Feed and bedding	$	$	$
d. Livestock care services (e.g., veterinary, grooming)	$	$	$
e. Other, cattle related expenses (Please describe _____)	$	$	$

8. Age group:
    1. Under 25 years old
    2. 25-44 years old
    3. 45-64 years old
    4. 65 years old or older

9. Education level:
    1. Some high school or less
    2. High school graduate
    3. Some college or trade school
    4. Bachelor's degree
    5. Some graduate or graduate degree

10. Gender:
    1. Male
    2. Female

Thank you for taking the time to complete this survey. If you have any questions about the survey, please contact Terry Rephann at the Weldon Cooper Center for Public Service, P.O. Box 400206 Charlottesville, VA 22904-4206. Phone (434)-982-4501. Fax (434) 982-5536. e-mail: trephann@virginia.edu.

APPENDIX C
VIRGINIA CATTLE INDUSTRY CONVENTION ATTENDANCE SURVEY METHODOLOGY AND RESULTS

A survey of the Virginia Cattle Convention held at the Rockingham County Fairgrounds near Harrisonburg, VA during the period March 27-March 30 was conducted on Friday, March 29th, 2014. The survey instrument is provided in Appendix B. The survey was based on a horse attendee survey used in a Virginia Horse Industry study (Rephann 2011) that was slightly modified to be more pertinent to livestock events. Two interviewers conducted the surveys in the Exhibit Hall Center and Barn and Show Ring areas of the Fairgrounds. Fifty attendees were approached. Seven refused and three agreed to accept survey packets for later mail return. Forty survey completions were made on site. A summary of expenditures by residency is reported in section 4 of this study. Other survey results are listed in **Table C.1**.

Table C.1 Virginia Cattlemen Convention Survey Results

Item	Number	%
Residency		
In-county	5	12.5
In-state, out-of-county	30	75
Out-of-state	5	12.5
Total	40	
Participation status		
Visitor/Attendee	25	62.5
Competition, Show, or Sale Participant	5	12.5
Staff (Volunteer, Paid)	2	5
Vendor/Exhibitor	4	10
Other	5	12.5
Events attended/participated		
Education/Training/Workshop	12	30
Trade Show	10	25
Livestock Show	13	32.5
Livestock Sale	8	20
Membership or Awards Meeting	4	10
Other	7	17.5
Attended Area Specifically for Convention?		
Yes	39	97.5
No	1	2.5
Age		
Under 25 years old	2	5
25-44 years old	9	22.5
45-64 years old	21	52.5
65 years old or older	7	17.5
NA	1	2.5
Education		
Some high school or less	1	2.5
High school graduate	5	12.5
Some college or trade school	8	20
Bachelor's degree	13	32.5
Some graduate or graduate degree	6	15
NA	7	17.5
Gender		
Male	27	67.5
Female	12	30
NA	1	2.5

APPENDIX D
EFFECTS OF LOCAL HORSE SHOWS AND COMPETITIONS ON HOUSEHOLD HORSE RIDING PARTICIPATION

We examined how household recreational horse riding choices are associated with various household and geographical variables. Data for the analysis are drawn from household-level survey data used for the 2011 Virginia Outdoors Survey. (Guterbock et al. 2011). As part of the questionnaire, respondents were asked in 2011 if they participated in 48 different activities within the last year, including horse riding.

An exploratory regression method called stepwise logit regression was used to examine this question. Stepwise regression is a statistical model selection procedure that uses fixed rules to identify variables from a large list of possible explanatory variables. It is often used when substantial uncertainty exists about the underlying model structure.[5] Logit regression is used when the dependent variable represents a binary choice.[6]

In the Virginia Outdoors Survey, the horseback riding decision is cast as "yes" (value of 1) or "no" (value of 0) and was the dependent variable. The independent variables were various household attributes such as age, gender, race/ethnicity, household size, and income drawn from survey responses and geographical variables constructed based on the household location. County-level characteristics were percentage of county urbanized, recreation-planning region, number of horse shows and competitions sponsored during the year by county venues in 2010 per 100,000 resident population and county equine inventory per 1,000 residents. These characteristics were computed based on information from the U.S. Census Bureau, data from the Virginia Department of Conservation and Recreation, a tabulation of 1,934 horse events compiled as part of a Virginia horse industry impact study (Rephann 2011) and a survey of the equine population conducted by the Virginia Office of the National Agricultural Statistics Service (USDA, NASS 2008). The motivation for including each of these variables is described in more detail in Rephann (2012).

Table D.1 shows the results of the stepwise logit regression. It indicates that seven variables (out of 14 variables included in the stepwise regression) are statistically significant with household horse riding participation. They are household head age (AGE), size of household (HHSIZE), race (WHITE), household income of $100,000 or more (INC100KPLUS), county urbanization percentage (PURBAN), Chesapeake Region, (CHESAPEAKE), and number of county horse shows and competitions (EVENTS) per 100,000 residents. Results indicate that horse riding participation likelihood decreases with age of head of household, residency in the Chesapeake Bay region, and higher county urbanization percentages. It increases with household size, income, and number of county horse shows and competitions available.

The regression result is suggestive but not confirmative that offering more horse shows and competitions in an area can boost horse recreation riding. The availability of a new horse-riding venue could motivate resident horse owners to take up competitive horse riding and showing.

5 The stepwise model selection rule employed here relies on backward selection. With backward selection, an initial model is estimated that contains all of the independent variables. Thereafter, variables are removed that fail to meet a certain threshold of statistical significance (in this case a statistical significance level of 20 percent for a two-tailed test) and the equation is re-estimated. Statistically insignificant variables continue to be culled until a final statistical model containing all statistically significant variables is chosen.

6 In a linear probability model, prob(y=1 | x)=α+xβ where x is a vector of independent variables and β are the associated coefficients and α the intercept term to be estimated. One problem with using this model with binary choice data is that predicted values can occur outside the [0,1] probability interval. Another problem is that coefficient estimates have an undesirable statistical property called inefficiency that results in systematically inaccurate coefficient test results. In contrast, the logit model relies on the logistic function which characterizes the probability using the logistic function prob(y=1|x)=e^xβ/(1+e^xβ). The model corrects for both of these problems.

Table D.1 Logit Regression of Household Horse Riding Participation

Variable	Coef	Std. Err.	z	Pr>|z|	eBk	dy/dx
AGE	-0.197229	0.0061731	-3.19	0.001	0.9805	-0.00099
HHSIZE	0.1008181	0.0437062	2.31	0.021	1.1061	0.0050606
WHITE	0.5432049	0.3021593	1.8	0.072	1.7215	0.23268
INC100KPLUS	0.6446102	0.1912684	3.37	0.001	1.9052	0.37662
PURBAN	-0.0103765	0.0029192	-3.55	0.000	0.9897	-0.0005209
CHESAPEAKE	-1.605283	0.7303983	-2.2	0.028	0.2008	-0.0453917
EVENTS	0.0044883	0.0012637	3.55	0.000	1.0045	0.0002253
Constant	-2.167536	0.4928988	-4.44	0.000		
Number of observations	2,151					
Pseudo R2	0.0652					
Log likelihood	-486.54617					

The availability of horse shows and competitions could also raise the profile of equestrian sports in the county and increase general public involvement in horse riding. However, these results could also still be affected by econometric identification problems that make it difficult to more confidently infer causal impacts.

In order to explore the possible effect of the Appalachian Agricultural Exposition Center on Wythe County household horse riding participation, we used the estimated logit equation in **Table D.1** to estimate the effect of increasing the number of equestrian activities in a county for a representative household. Since the logit equation is non-linear, the estimated effects of increasing the number of events is conditional on other variables in the model. We assumed that the typical household head is 45 years of age, has a household size of four individuals, is white, and has an income less than $100,000. Wythe County is approximately 25 percent urban and had 28,868 residents in 2010. Only one horse competition was offered in Wythe County in 2010. Since the Appalachian Agricultural Exposition Center is projected to offer 24 horse shows and competitions, it is projected that Wythe County will offer 25 in total. Therefore, the number of events per 100,000 residents will increase from 3.464 before to 90.065 after completion. Plugging these before and after values into the equation with the other variable baseline values results in a computation of 8.0 percent participation before the introduction of the agricultural expo center and 11.1 percent afterwards for an approximately 3.1 percent increase. Based on recent census data that Wythe County has 12,472 households, this 3.1 percent increase translates into an estimated 383 additional Wythe County households that would participate in horse riding activities.