

**INTERSTATE 73
ECONOMIC IMPACT ANALYSIS
PART 2**

**A GUIDE TO THE METHODOLOGY
AND RESULTS**

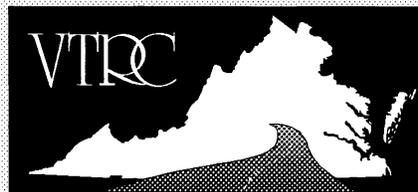
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Virginia Transportation Research Council
(A Cooperative Organization Sponsored Jointly by the
Virginia Department of Transportation and
the University of Virginia)

Charlottesville, Virginia

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TRANSPORTATION RESEARCH COUNCIL

TECHNICAL ASSISTANCE REPORT

**INTERSTATE 73 ECONOMIC IMPACT ANALYSIS
A GUIDE TO THE METHODOLOGY AND RESULTS
Part 2**

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(The opinions, findings, and conclusions expressed in this report are those of the author and not necessarily those of the sponsoring agencies.)

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The Transportation Planning Division of the Virginia Department of Transportation (VDOT) is currently considering seven corridors along which VDOT may build the future Interstate 73. The purpose of this technical assistance project is to estimate the impact that construction of I-73 along any one of these corridors would have on the state's economy.

The project estimates the economic impact by two different methods. The first method is undertaken in cooperation with the Virginia Employment Commission's Economic Information Services Division. A separate fifteen-page report, **An Economic Impact Analysis of the Potential Interstate 73 Corridors** (February 1994), describes the first method and its results.

A sizeable literature describes recent research into the relationship between transportation investment and productivity. The second method, described here, assigns a dollar value to the existing highway net in the localities that would be affected by each of the corridors under consideration; the value is equal to estimated replacement cost. A productivity multiplier or "elasticity" value is selected from the range of such values estimated in recent research efforts. The magnitude of the projected cost for the future I-73 in comparison with the value of the existing road net, together with the chosen elasticity, will determine for each proposed interstate corridor an estimate of the impact on taxable sales and adjusted gross income in each locality through which I-73 would pass, and an estimate of the impact on taxable sales and adjusted gross income in the state as a whole.

A. The economic impact relationship, described in Section C below, depends on the dollar value of the proposed I-73 construction in each county and on the value of the county's existing highway stock. More than one method to assign dollar values exists; this analysis uses two simple methods that require only readily available current-year data.

VDOT's Traffic Engineering Division's **Mileage Tables: State Highway Systems** (1992) lists the number of miles of state roads in each of several categories as of 31 December, 1992. VDOT's Transportation Planning Division supplied valuations per mile that approximate the average replacement cost for each of these types of roads. The existing public roads in each county and city as of 31 December, 1992, are valued as follows:

untreated secondary road...	\$0.5M per mile
hard surfaced secondary road...	0.8M "
2 or 3 lane primary road...	1.5M "
4 or more lane primary road...	4.0M "
interstate highway...	8.0M "
each interchange...	10.0M.

In cities and towns, arterial roads are valued equal to 4 lane primary roads (\$4.0M/mile), and collector streets are valued equal to hard surfaced secondary roads (\$0.8/mile). The value of of all highway miles, but not interchanges, is multiplied by the factor 4/3 to account for the cost of right-of-way.

The analysis measures the increase that I-73 would cause in each county and city's stock of highway assets under two alternative assumptions. Under one assumption, each county's section of each proposed Interstate 73 corridor is valued according to the the schedule used above for the existing roads. This has the advantage of putting the old roads and the proposed new one on comparable terms, but makes it difficult to assign a comparable value to Corridor 3, where lane

additions to an existing interstate, rather than mileage additions, make up much of the total cost. Under the alternative assumption, each county's section of each proposed I-73 route is valued at its estimated cost of construction, using estimates provided by the Transportation Planning Division.

In both cases, the analysis sums the value of a county's existing highway assets and the value of the highway assets of any towns within that county into a single total applicable to the geographic area the county encompasses. The values of the highway assets in independent cities that the county surrounds are also added to the county total except in those cases where a piece of the proposed I-73 is to be built in a city, in which cases that city is treated as a separate geographic area (the estimated impact for city and county treated as one entity would **not** be much different than the sum of estimated impacts for city and county treated separately, however).

B. The analysis predicts the impact of each proposed I-73 corridor on two economic statistics at both the state and the local levels: taxable sales (TS) and adjusted gross income (AGI). The 1992 values of taxable sales in each county and city and in the state as a whole are taken from the Department of Taxation's **Taxable Sales in Virginia Counties and Cities: Annual Report 1992**. The totals of adjusted gross incomes in each county and city and in the whole state in 1991 are from the Department of Taxation's **Annual Report Fiscal Year 1993**. These two economic statistics roughly represent current economic activity. Because business location appears to respond more to improvements in the road net than residence location does (some of the research literature that supports this is mentioned below), and because commercial development clusters along transportation corridors more than residential development does, the predicted impacts on taxable sales may be more meaningful than those on income.

The economic impact relationship described in Section C predicts impact as a percentage of the existing economic activity in a county or city. The Department of Taxation's reports already include taxable sales and income for the towns in the county totals, treating them as a single geographic area. As is done with the highway statistics described in Section A, the economic data for independent cities that a county surrounds are added to the county total except in those cases where the a proposed I-73 corridor passes through a city, in which cases that city is studied separately.

C. The methodology and assumptions used in this analysis are drawn from the recent research into the statistical relationship between public assets such as the highway network and economic performance measures such as employment or income.

The fundamental relationship that this analysis assumes can be described by the following equation:

$$\frac{Y+\Delta Y}{Y} = \left(\frac{K+\Delta K}{K} \right)^E$$

or, with the terms arranged differently,

$$\Delta Y = Y \left[\left(\frac{K+\Delta K}{K} \right)^E - 1 \right]$$

where

- the quantity K is the current stock of public infrastructure, valued in dollar terms, in the geographic area under study; the geographic area in question may be a municipality, a

state, or an entire nation;

- the quantity ΔK is the additional dollars' worth of public infrastructure that will be added as a result of the highway project;
- the quantity Y is some current measure of economic activity in the geographic area under study;
- the quantity ΔY is the additional economic activity that will exist after the new infrastructure has been built;
- the quantity E , called the elasticity, measures the economy's sensitivity to public infrastructure investment. The larger the value of E , the larger the economy's response to a given amount of investment.

D. Using historical data on public infrastructure and economic activity aggregated at the national, state, or local (metropolitan) level, numerous researchers have attempted to estimate the above elasticity. Though their methods and the resulting estimates vary widely and much controversy surrounds them, some patterns emerge.

First, concerning the productivity of public investment in general, three schools of thought seem to exist. One school holds that much of the recent research is methodologically flawed, and that the value of additional investment in public infrastructure has not been proved - that is, the elasticity has not been proved to exceed zero. Another school holds that the elasticity is much higher than would have been believed ten years ago, and that the return on an additional dollar of public investment is in fact considerably larger than the return on an additional dollar of private sector investment. The third school, probably a majority, believes that public capital investment yields small but statistically measurable benefits: in other words, the elasticity is evidently greater than zero. The report **Assessing the Relationship between Transportation Infrastructure and Productivity** (1992), Volume #4 in the Federal Highway Administration's **Searching for Solutions** policy discussion series, surveys the recent research and adopts this third opinion. To quote the report's executive summary, "The majority of state-level studies indicate that public capital has a small, positive effect on private output and productivity."

Second, a large part of the total benefits from a local investment in public infrastructure apparently takes the form of spillover effects into other localities. For example, Table 4 on page 8 of the FHWA report lists selected elasticity estimates published since 1986. The five estimates based on national data range from 0.03 to 0.39 with a median of 0.24. The five estimates based on state data range from 0.04 to 0.25, the median being 0.15. Among the three estimates based on metropolitan area data, the high is 0.31, the low 0.03, and the median value 0.08. If one overlooked the differences in method among the studies cited and accepted the median values as central tendencies, one would infer that the elasticity with which national economic activity responds to a local public infrastructure investment is about three times the elasticity with which the local economy responds, while state elasticity is about twice as big. If the ratio between the level of economic activity and the value of public infrastructure were about the same in all parts of the country, this would imply that for every dollar or job that a small public investment generates in the local economy, it generates one or more elsewhere in the state, and one or more outside the state.

A few studies have examined the effect of highway assets separately from that of other public capital assets. The four such state-level studies mentioned in the FHWA report produce elasticity estimates for highway capital alone of from 0.04 to 0.25. A metro-level study yields an estimate of 0.31. The elasticity of economic activity with respect to highway capital alone equals between one-third and two-thirds of the elasticity for public capital as a whole in these studies. This implies that

a 1% increase in the value of highway assets generates from one to two thirds of the economic impact that that a 1% increase in the value of all public capital would generate.

One can not infer that no local economic statistic will ever shrink in response to a highway investment. Several research papers have identified cases in which the statistical impact of highway construction in certain types of counties appears be small or even negative. For instance, a study by Eagle and Stephanedes in the **Transportation Research Record** No. 1116 (1987) suggests that when a new highway makes existing urban areas more accessible to rural residents, some businesses may relocate from the rural areas to the urban. The research cited earlier indicates only that **in the average case**, a local infrastructure investment causes the local economic statistics to rise.

E. This analysis predicts the impact of each potential Interstate 73 route under three alternative assumptions about the elasticity. An elasticity of 0.02 is adopted to generate a conservative forecast of the economic impact in each locality through which the highway is supposed to pass. 0.05 is adopted to generate a moderate forecast of the local economic impact. Last, 0.125 is chosen to yield an optimistic forecast.

Under all three assumptions the elasticity of state economic activity with respect to the highway capital stock is assumed to be two times the elasticity for local economic activity. If the proposed I-73 investment represented a very small addition (a few percentage points) to each affected locality's total highway capital, this assumption would imply that the total impact in the state would equal a bit more than two times the local impact. Because the dollar value of I-73 is not relatively small (Alternative 2B, for instance, would increase the highway stock in Galax by almost 50%), the state forecast turns out to be much more than twice the local. The economic impact outside the state, which is not calculated, may be supposed to equal roughly half the total impact within the state.

It should be noted that somewhat smaller elasticities, perhaps 0.012, 0.03, and 0.075, would have been chosen to analyze a purely local highway project. The choice of bigger numbers accounts in a crude way for the expectation that the counties through which I-73 is built will also receive some spillover effects from the pieces of I-73 built in other counties, and that the state will receive spillover effects from the pieces of I-73 in other states.

F. The tables provided show the predicted impact on taxable sales and adjusted gross income in each county and city through which each potential I-73 corridor would pass. They are organized as follows:

- the assumed value of the elasticity is in the top right-hand corner;
- the far left column of each table indicates which alternative (ALT 1 through ALT 7) is assumed, and in which way ("equ. cost" - state average replacement cost, equivalent to existing assets, or "est. cost" - estimated construction cost) the proposed new I-73 facility is valued;

The columns of each table represent, in order,

- the name of the county or city (COUNTY),
- the 1992 taxable sales in that locality (TS \$M),
- its total 1991 adjusted gross income (AGI \$M),
- the value of the local highway stock at the end of 1992 (Hwy \$M),
- the value of the addition to the local highway stock that the proposed I-73 corridor represents (I73 \$M),
- the estimated impact on local economic activity (Ben %),
- and the additional annual taxable sales (+TS \$M)

○ and annual income (+AGI \$M)

that this impact implies. All numbers are given in millions of dollars, except for the impact which is given in percentage points. The bottom two rows of each table show a total for the counties and cities through which the highway is proposed to pass (Total Local) and a separate estimate (using the elasticity times two) of the impact on the state as a whole (STATE).

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- Taxable Sales in Virginia Counties & Cities: Annual Report 1992**, Office of Fiscal Research, Department of Taxation, Commonwealth of Virginia, Richmond, VA, 1993

ESTIMATED IMPACT ON TAXABLE SALES & ADJ GROSS INC Elasticity = 0.125

COUNTY	TS \$M	AGI \$M	Hwy \$M	I73 \$M	Ben %	+TS \$M	+AGI \$M
ALT 3 Carroll	67.2	191.7	1260.7	0.0			
(equ. Wythe	173.6	234.7	1039.8	211.3	1.91	3.32	4.49
cost) Wythevill	-	-	249.9	0.0	"	-	-
Bland	8.9	52.2	628.1	0.0			
Total Loc	249.6	478.6		211.3		3.32	4.49
STATE	42904.9	82713.7	103640.2	211.3	0.05	21.86	42.13
ALT 3A Carroll				0.0			
Wythe				200.7	1.82	3.17	4.28
(equ. Wytheville Tn				0.0	"	-	-
cost) Bland				0.0			
Total Local				200.7		3.17	4.28
STATE				200.7	0.05	20.75	40.01
ALT 3 Carroll				254.8	2.33	1.56	4.46
(est. Wythe				247.3	2.22	3.85	5.20
cost) Wytheville Tn				0.0	"	-	-
Bland				218.9	3.81	0.34	1.99
Total Local				721.0		5.75	11.65
STATE				721.0	0.17	74.43	143.48
ALT 3A Carroll				254.8	2.33	1.56	4.46
Wythe				164.9	1.93	3.34	4.52
(est. Wytheville Tn				47.8	"	-	-
cost) Bland				218.9	3.81	0.34	1.99
Total Local				686.4		5.25	10.97
STATE				686.4	0.17	70.86	136.61

• ESTIMATED IMPACT ON TAXABLE SALES & ADJ GROSS INC Elasticity = 0.02

COUNTY	TS \$M	AGI \$M	Hwy \$M	I73 \$M	Ben %	+TS \$M	+AGI \$M
ALT 2 Grayson	22.5	146.5	782.0	144.1	0.34	0.08	0.50
(est. Smyth	151.1	281.9	928.0	252.3	0.44	0.66	1.24
cost) Marion Tn	-	-	75.7	0.0	"	-	-
Saltville	-	-	27.2	0.0	"	-	-
Tazewell	290.4	384.3	891.4	142.8	0.27	0.78	1.03
Tazewell	-	-	35.3	5.3	"	-	-
Bluefield	-	-	68.3	0.0	"	-	-
Richlands	-	-	39.0	0.0	"	-	-
Buchanan	118.8	232.3	645.2	0.0			
Galax Cit	120.4	47.7	117.2	0.0			
Carroll	67.2	191.7	1260.7	0.0			
Total Loc	770.4	1284.4		544.5		1.52	2.76
STATE	42904.9	82713.7	103640.2	544.5	0.02	8.99	17.34
ALT 2A Grayson				144.1	0.34	0.08	0.50
(est. Smyth				252.3	0.44	0.66	1.24
cost) Marion Tn				0.0	"	-	-
Saltville Tn				0.0	"	-	-
Tazewell				253.1	0.44	1.27	1.69
Tazewell Tn				0.0	"	-	-
Bluefield Tn				0.0	"	-	-
Richlands Tn				0.0	"	-	-
Buchanan				211.0	0.57	0.67	1.32
Galax City				0.0			
Carroll				0.0			
Total Local				860.5		2.69	4.74
STATE				860.5	0.03	14.19	27.36
ALT 2B Grayson				397.4	0.83	0.19	1.21
(est. Smyth				252.3	0.44	0.66	1.24
cost) Marion Tn				0.0	"	-	-
Saltville Tn				0.0	"	-	-
Tazewell				142.8	0.27	0.78	1.03
Tazewell Tn				5.3	"	-	-
Bluefield Tn				0.0	"	-	-
Richlands Tn				0.0	"	-	-
Buchanan				0.0			
Galax City				50.5	0.72	0.87	0.34
Carroll				270.7	0.39	0.26	0.75
Total Local				1119.0		2.75	4.57
STATE				1119.0	0.04	18.43	35.54
ALT 2AB Grayson				397.4	0.83	0.19	1.21
(est. Smyth				252.3	0.44	0.66	1.24
cost) Marion Tn				0.0	"	-	-
Saltville Tn				0.0	"	-	-
Tazewell				253.1	0.44	1.27	1.69
Tazewell Tn				0.0	"	-	-
Bluefield Tn				0.0	"	-	-
Richlands Tn				0.0	"	-	-
Buchanan				211.0	0.57	0.67	1.32
Galax City				50.5	0.72	0.87	0.34
Carroll				270.7	0.39	0.26	0.75
Total Local				1435.0		3.92	6.54
STATE				1435.0	0.06	23.61	45.51

. ESTIMATED IMPACT ON TAXABLE SALES & ADJ GROSS INC Elasticity = 0.05

COUNTY	TS \$M	AGI \$M	Hwy \$M	I73 \$M	Ben %	+TS \$M	+AGI \$M
ALT 2 Grayson	22.5	146.5	782.0	144.1	0.85	0.19	1.24
(est. Smyth	151.1	281.9	928.0	252.3	1.10	1.66	3.10
cost) Marion Tn	-	-	75.7	0.0	"	-	-
Saltville	-	-	27.2	0.0	"	-	-
Tazewell	290.4	384.3	891.4	142.8	0.67	1.95	2.58
Tazewell	-	-	35.3	5.3	"	-	-
Bluefield	-	-	68.3	0.0	"	-	-
Richlands	-	-	39.0	0.0	"	-	-
Buchanan	118.8	232.3	645.2	0.0			
Galax Cit	120.4	47.7	117.2	0.0			
Carroll	67.2	191.7	1260.7	0.0			
Total Loc	770.4	1284.4		544.5		3.80	6.93
STATE	42904.9	82713.7	103640.2	544.5	0.05	22.49	43.35
ALT 2A Grayson				144.1	0.85	0.19	1.24
(est. Smyth				252.3	1.10	1.66	3.10
cost) Marion Tn				0.0	"	-	-
Saltville Tn				0.0	"	-	-
Tazewell				253.1	1.10	3.20	4.23
Tazewell Tn				0.0	"	-	-
Bluefield Tn				0.0	"	-	-
Richlands Tn				0.0	"	-	-
Buchanan				211.0	1.42	1.69	3.31
Galax City				0.0			
Carroll				0.0			
Total Local				860.5		6.74	11.89
STATE				860.5	0.08	35.49	68.42
ALT 2B Grayson				397.4	2.08	0.47	3.04
(est. Smyth				252.3	1.10	1.66	3.10
cost) Marion Tn				0.0	"	-	-
Saltville Tn				0.0	"	-	-
Tazewell				142.8	0.67	1.95	2.58
Tazewell Tn				5.3	"	-	-
Bluefield Tn				0.0	"	-	-
Richlands Tn				0.0	"	-	-
Buchanan				0.0			
Galax City				50.5	1.81	2.17	0.86
Carroll				270.7	0.98	0.66	1.87
Total Local				1119.0		6.91	11.46
STATE				1119.0	0.11	46.10	88.87
ALT 2AB Grayson				397.4	2.08	0.47	3.04
(est. Smyth				252.3	1.10	1.66	3.10
cost) Marion Tn				0.0	"	-	-
Saltville Tn				0.0	"	-	-
Tazewell				253.1	1.10	3.20	4.23
Tazewell Tn				0.0	"	-	-
Bluefield Tn				0.0	"	-	-
Richlands Tn				0.0	"	-	-
Buchanan				211.0	1.42	1.69	3.31
Galax City				50.5	1.81	2.17	0.86
Carroll				270.7	0.98	0.66	1.87
Total Local				1435.0		9.85	16.42
STATE				1435.0	0.14	59.04	113.82

• ESTIMATED IMPACT ON TAXABLE SALES & ADJ GROSS INC Elasticity = 0.05

COUNTY	TS \$M	AGI \$M	Hwy \$M	I73 \$M	Ben %	+TS \$M	+AGI \$M
ALT 2 Grayson	22.5	146.5	782.0	179.3	1.04	0.23	1.52
(equ. Smyth	151.1	281.9	928.0	316.0	1.35	2.03	3.79
cost) Marion Tn	-	-	75.7	0.0	"	-	-
Saltville	-	-	27.2	0.0	"	-	-
Tazewell	290.4	384.3	891.4	199.3	0.93	2.70	3.57
Tazewell	-	-	35.3	10.7	"	-	-
Bluefield	-	-	68.3	0.0	"	-	-
Richlands	-	-	39.0	0.0	"	-	-
Buchanan	118.8	232.3	645.2	0.0			
Galax Cit	120.4	47.7	117.2	0.0			
Carroll	67.2	191.7	1260.7	0.0			
Total Loc	770.4	1284.4		705.3		4.96	8.88
STATE	42904.9	82713.7	103640.2	705.3	0.07	29.11	56.12
ALT 2A Grayson				179.3	1.04	0.23	1.52
(equ. Smyth				316.0	1.35	2.03	3.79
cost) Marion Tn				0.0	"	-	-
Saltville Tn				0.0	"	-	-
Tazewell				399.3	1.65	4.78	6.33
Tazewell Tn				0.0	"	-	-
Bluefield Tn				0.0	"	-	-
Richlands Tn				0.0	"	-	-
Buchanan				379.3	2.34	2.78	5.43
Galax City				0.0			
Carroll				0.0			
Total Local				1274.0		9.83	17.07
STATE				1274.0	0.12	52.45	101.12
ALT 2B Grayson				433.3	2.23	0.50	3.27
(equ. Smyth				316.0	1.35	2.03	3.79
cost) Marion Tn				0.0	"	-	-
Saltville Tn				0.0	"	-	-
Tazewell				199.3	0.93	2.70	3.57
Tazewell Tn				10.7	"	-	-
Bluefield Tn				0.0	"	-	-
Richlands Tn				0.0	"	-	-
Buchanan				0.0			
Galax City				52.7	1.87	2.25	0.89
Carroll				264.0	0.96	0.64	1.83
Total Local				1276.0		8.13	13.35
STATE				1276.0	0.12	52.53	101.28
ALT 2AB Grayson				433.3	2.23	0.50	3.27
(equ. Smyth				316.0	1.35	2.03	3.79
cost) Marion Tn				0.0	"	-	-
Saltville Tn				0.0	"	-	-
Tazewell				399.3	1.65	4.78	6.33
Tazewell Tn				0.0	"	-	-
Bluefield Tn				0.0	"	-	-
Richlands Tn				0.0	"	-	-
Buchanan				379.3	2.34	2.78	5.43
Galax City				52.7	1.87	2.25	0.89
Carroll				264.0	0.96	0.64	1.83
Total Local				1844.7		12.99	21.54
STATE				1844.7	0.18	75.76	146.05

* ESTIMATED IMPACT ON TAXABLE SALES & ADJ GROSS INC Elasticity - 0.02

COUNTY	TS \$M	AGI \$M	Hwy \$M	I73 \$M	Ben %	ITS \$M	+AGI \$M
ALT 2 Grayson	22.5	146.5	782.0	179.3	0.41	0.09	0.61
(equ. Smyth	151.1	281.9	928.0	316.0	0.54	0.81	1.51
cost) Marion Tn	-	-	75.7	0.0	"	-	-
Saltville	-	-	27.2	0.0	"	-	-
Tazewell	290.4	384.3	891.4	199.3	0.37	1.08	1.42
Tazewell	-	-	35.3	10.7	"	-	-
Bluefield	-	-	68.3	0.0	"	-	-
Richlands	-	-	39.0	0.0	"	-	-
Buchanan	118.8	232.3	645.2	0.0			
Galax Cit	120.4	47.7	117.2	0.0			
Carroll	67.2	191.7	1260.7	0.0			
Total Loc	770.4	1284.4		705.3		1.98	3.54
STATE	42904.9	82713.7	103640.2	705.3	0.03	11.64	22.44
ALT 2A Grayson				179.3	0.41	0.09	0.61
(equ. Smyth				316.0	0.54	0.81	1.51
cost) Marion Tn				0.0	"	-	-
Saltville Tn				0.0	"	-	-
Tazewell				399.3	0.66	1.90	2.52
Tazewell Tn				0.0	"	-	-
Bluefield Tn				0.0	"	-	-
Richlands Tn				0.0	"	-	-
Buchanan				379.3	0.93	1.10	2.16
Galax City				0.0			
Carroll				0.0			
Total Local				1274.0		3.91	6.79
STATE				1274.0	0.05	20.97	40.43
ALT 2B Grayson				433.3	0.89	0.20	1.30
(equ. Smyth				316.0	0.54	0.81	1.51
cost) Marion Tn				0.0	"	-	-
Saltville Tn				0.0	"	-	-
Tazewell				199.3	0.37	1.08	1.42
Tazewell Tn				10.7	"	-	-
Bluefield Tn				0.0	"	-	-
Richlands Tn				0.0	"	-	-
Buchanan				0.0			
Galax City				52.7	0.74	0.90	0.36
Carroll				264.0	0.38	0.26	0.73
Total Local				1276.0		3.24	5.32
STATE				1276.0	0.05	21.01	40.50
ALT 2AB Grayson				433.3	0.89	0.20	1.30
(equ. Smyth				316.0	0.54	0.81	1.51
cost) Marion Tn				0.0	"	-	-
Saltville Tn				0.0	"	-	-
Tazewell				399.3	0.66	1.90	2.52
Tazewell Tn				0.0	"	-	-
Bluefield Tn				0.0	"	-	-
Richlands Tn				0.0	"	-	-
Buchanan				379.3	0.93	1.10	2.16
Galax City				52.7	0.74	0.90	0.36
Carroll				264.0	0.38	0.26	0.73
Total Local				1844.7		5.17	8.57
STATE				1844.7	0.07	30.29	58.39

• ESTIMATED IMPACT ON TAXABLE SALES & ADJ GROSS INC Elasticity = 0.125

COUNTY	TS \$M	AGI \$M	Hwy \$M	I73 \$M	Ben %	+TS \$M	+AGI \$M
ALT 2 Grayson	22.5	146.5	782.0	179.3	2.61	0.59	3.83
(equ. Smyth	151.1	281.9	928.0	316.0	3.40	5.14	9.58
cost) Marion Tn	-	-	75.7	0.0	"	-	-
Saltville	-	-	27.2	0.0	"	-	-
Tazewell	290.4	384.3	891.4	199.3	2.34	6.79	8.98
Tazewell	-	-	35.3	10.7	"	-	-
Bluefield	-	-	68.3	0.0	"	-	-
Richlands	-	-	39.0	0.0	"	-	-
Buchanan	118.8	232.3	645.2	0.0			
Galax Cit	120.4	47.7	117.2	0.0			
Carroll	67.2	191.7	1260.7	0.0			
Total Loc	770.4	1284.4		705.3		12.51	22.39
STATE	42904.9	82713.7	103640.2	705.3	0.17	72.81	140.37
ALT 2A Grayson				179.3	2.61	0.59	3.83
(equ. Smyth				316.0	3.40	5.14	9.58
cost) Marion Tn				0.0	"	-	-
Saltville Tn				0.0	"	-	-
Tazewell				399.3	4.17	12.10	16.01
Tazewell Tn				0.0	"	-	-
Bluefield Tn				0.0	"	-	-
Richlands Tn				0.0	"	-	-
Buchanan				379.3	5.95	7.07	13.82
Galax City				0.0			
Carroll				0.0			
Total Local				1274.0		24.90	43.25
STATE				1274.0	0.31	131.25	253.03
ALT 2B Grayson				433.3	5.67	1.27	8.30
(equ. Smyth				316.0	3.40	5.14	9.58
cost) Marion Tn				0.0	"	-	-
Saltville Tn				0.0	"	-	-
Tazewell				199.3	2.34	6.79	8.98
Tazewell Tn				10.7	"	-	-
Bluefield Tn				0.0	"	-	-
Richlands Tn				0.0	"	-	-
Buchanan				0.0			
Galax City				52.7	4.75	5.71	2.26
Carroll				264.0	2.41	1.62	4.61
Total Local				1276.0		20.53	33.74
STATE				1276.0	0.31	131.45	253.42
ALT 2AB Grayson				433.3	5.67	1.27	8.30
(equ. Smyth				316.0	3.40	5.14	9.58
cost) Marion Tn				0.0	"	-	-
Saltville Tn				0.0	"	-	-
Tazewell				399.3	4.17	12.10	16.01
Tazewell Tn				0.0	"	-	-
Bluefield Tn				0.0	"	-	-
Richlands Tn				0.0	"	-	-
Buchanan				379.3	5.95	7.07	13.82
Galax City				52.7	4.75	5.71	2.26
Carroll				264.0	2.41	1.62	4.61
Total Local				1844.7		32.91	54.59
STATE				1844.7	0.44	189.65	365.62

• ESTIMATED IMPACT ON TAXABLE SALES & ADJ GROSS INC Elasticity = 0.125

COUNTY	TS \$M	AGI \$M	Hwy \$M	I73 \$M	Ben %	+TS \$M	+AGI \$M
ALT 2 Grayson	22.5	146.5	782.0	144.1	2.14	0.48	3.13
(est. Smyth	151.1	281.9	928.0	252.3	2.77	4.19	7.82
cost) Marion Tn	-	-	75.7	0.0	"	-	-
Saltville	-	-	27.2	0.0	"	-	-
Tazewell	290.4	384.3	891.4	142.8	1.69	4.90	6.48
Tazewell	-	-	35.3	5.3	"	-	-
Bluefield	-	-	68.3	0.0	"	-	-
Richlands	-	-	39.0	0.0	"	-	-
Buchanan	118.8	232.3	645.2	0.0			
Galax Cit	120.4	47.7	117.2	0.0			
Carroll	67.2	191.7	1260.7	0.0			
Total Loc	770.4	1284.4		544.5		9.57	17.43
STATE	42904.9	82713.7	103640.2	544.5	0.13	56.24	108.43
ALT 2A Grayson				144.1	2.14	0.48	3.13
Smyth				252.3	2.77	4.19	7.82
(est. Marion Tn				0.0	"	-	-
cost) Saltville Tn				0.0	"	-	-
Tazewell				253.1	2.77	8.06	10.66
Tazewell Tn				0.0	"	-	-
Bluefield Tn				0.0	"	-	-
Richlands Tn				0.0	"	-	-
Buchanan				211.0	3.60	4.28	8.36
Galax City				0.0			
Carroll				0.0			
Total Local				860.5		17.01	29.98
STATE				860.5	0.21	88.78	171.16
ALT 2B Grayson				397.4	5.27	1.18	7.72
Smyth				252.3	2.77	4.19	7.82
(est. Marion Tn				0.0	"	-	-
cost) Saltville Tn				0.0	"	-	-
Tazewell				142.8	1.69	4.90	6.48
Tazewell Tn				5.3	"	-	-
Bluefield Tn				0.0	"	-	-
Richlands Tn				0.0	"	-	-
Buchanan				0.0			
Galax City				50.5	4.58	5.51	2.18
Carroll				270.7	2.46	1.65	4.72
Total Local				1119.0		17.44	28.93
STATE				1119.0	0.27	115.34	222.37
ALT 2AB Grayson				397.4	5.27	1.18	7.72
Smyth				252.3	2.77	4.19	7.82
(est. Marion Tn				0.0	"	-	-
cost) Saltville Tn				0.0	"	-	-
Tazewell				253.1	2.77	8.06	10.66
Tazewell Tn				0.0	"	-	-
Bluefield Tn				0.0	"	-	-
Richlands Tn				0.0	"	-	-
Buchanan				211.0	3.60	4.28	8.36
Galax City				50.5	4.58	5.51	2.18
Carroll				270.7	2.46	1.65	4.72
Total Local				1435.0		24.88	41.47
STATE				1435.0	0.34	147.75	284.84

ESTIMATED IMPACT ON TAXABLE SALES & ADJ GROSS INC Elasticity= 0.05

COUNTY	TS \$M	AGI \$M	Hwy \$M	I73 \$M	Ben %	+TS \$M	+AGI \$M
ALT 1 Scott	92.6	191.4	906.1	348.0	1.64	1.52	3.14
(equ. Lee	60.4	145.2	741.4	42.7	0.28	0.17	0.41
cost) Wise	184.2	348.6	818.0	378.7	1.74	3.21	6.08
Big Stone	-	-	53.3	0.0	"	-	-
Wise Tn	-	-	45.1	0.0	"	-	-
Norton Ci	89.9	45.4	57.0	31.3	2.21	1.99	1.01
Total Loc	427.1	730.6		800.7		6.89	10.63
STATE	42904.9	82713.7	103640.2	800.7	0.08	33.03	63.68
ALT 1 Scott				285.3	1.38	1.28	2.64
(est. Lee				33.4	0.22	0.13	0.32
cost) Wise				313.6	1.48	2.73	5.17
Big Stone Gap				0.0	"	-	-
Wise Tn				0.0	"	-	-
Norton City				26.7	1.94	1.74	0.88
Total Local				659.0		5.88	9.01
STATE				659.0	0.06	27.20	52.44

ESTIMATED IMPACT ON TAXABLE SALES & ADJ GROSS INC Elasticity= 0.02

COUNTY	TS \$M	AGI \$M	Hwy \$M	I73 \$M	Ben %	+TS \$M	+AGI \$M
ALT 1 Scott	92.6	191.4	906.1	348.0	0.65	0.60	1.25
(equ. Lee	60.4	145.2	741.4	42.7	0.11	0.07	0.16
cost) Wise	184.2	348.6	818.0	378.7	0.69	1.28	2.42
Big Stone	-	-	53.3	0.0	"	-	-
Wise Tn	-	-	45.1	0.0	"	-	-
Norton Ci	89.9	45.4	57.0	31.3	0.88	0.79	0.40
Total Loc	427.1	730.6		800.7		2.74	4.23
STATE	42904.9	82713.7	103640.2	800.7	0.03	13.21	25.47
ALT 1 Scott				285.3	0.55	0.51	1.05
(est. Lee				33.4	0.09	0.05	0.13
cost) Wise				313.6	0.59	1.09	2.06
Big Stone Gap				0.0	"	-	-
Wise Tn				0.0	"	-	-
Norton City				26.7	0.77	0.69	0.35
Total Local				659.0		2.34	3.59
STATE				659.0	0.03	10.88	20.97

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ESTIMATED IMPACT ON TAXABLE SALES & ADJ GROSS INC Elasticity= 0.125

COUNTY	TS \$M	AGI \$M	Hwy \$M	I73 \$M	Ben %	+TS \$M	+AGI \$M
ALT 1 Scott	92.6	191.4	906.1	348.0	4.15	3.84	7.93
(equ. Lee	60.4	145.2	741.4	42.7	0.70	0.42	1.02
cost) Wise	184.2	348.6	818.0	378.7	4.42	8.14	15.40
Big Stone	-	-	53.3	0.0	"	-	-
Wise Tn	-	-	45.1	0.0	"	-	-
Norton Ci	89.9	45.4	57.0	31.3	5.63	5.06	2.56
Total Loc	427.1	730.6		800.7		17.46	26.91
STATE	42904.9	82713.7	103640.2	800.7	0.19	82.63	159.29
ALT 1 Scott				285.3	3.48	3.22	6.66
(est. Lee				33.4	0.55	0.33	0.80
cost) Wise				313.6	3.75	6.90	13.06
Big Stone Gap				0.0	"	-	-
Wise Tn				0.0	"	-	-
Norton City				26.7	4.91	4.42	2.23
Total Local				659.0		14.88	22.76
STATE				659.0	0.16	68.04	131.17

75 1.2