

Economic and Sales Tax Revenue Effects of Volkswagen's Location of its Automobile Assembly Plant in Chattanooga, Tennessee

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August 2008

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This brief paper presents estimates of the economic and tax revenue effects of Volkswagen’s automobile assembly plant location in Chattanooga, Tennessee. The value of tax concessions and other incentives provided by Tennessee state and local governments to Volkswagen is also reported.

Summary of Quantifiable Benefits

Total economic benefits of Volkswagen’s location include a \$511.1 million annual increase in personal income, \$55.7 million yearly in state and local tax revenue, and the support of 11,477 full-time equivalent (FTE) jobs (see Table 1). The location increases income by \$11,859.8 million (net present value) over a 30-year time horizon with a corresponding increase of \$1,399.4 million in state and local tax revenue (see Table 2). The large economic effects result from the 2,000 full-time jobs that Volkswagen expects to have at the automobile assembly plant, with a total annual payroll of \$136.1 million, combined with significant supplier purchases. These wages, salaries, and other purchases will work through the state’s economy to produce even more substantial impacts via indirect and multiplier effects. The income, employment, and tax benefits are discussed in the following sections.

Table 1: Summary of Annual Benefits

Income	\$511.1
Employment	11,477
Jobs at VW plant	2,000
State tax revenue	\$28.0
Local tax revenue	\$27.7
Total tax revenue	\$55.7

Note: Dollar values in millions.

Table 2: Summary of Lifetime Benefits*

Income	\$11,859.8
Employment	11,477
Jobs at VW plant	2,000
State tax revenue	\$756.7
Local tax revenue	\$642.7
Total tax revenue	\$1,399.4

** All dollar valued items in net present value.
Note: Dollar values in millions.*

In addition to these ongoing benefits, the construction phase for the facility will also generate substantial gains for the state. The estimates in Table 3 point to additional income of \$333.3 million and nearly 10,000 full-time jobs. The state should receive \$20.8 million in sales tax revenue, while local governments will receive \$5.3 million in sales tax revenue from construction-related activity.

Table 3: Construction

Income	\$333.3
Employment	9,931
State sales tax	\$20.8
Local sales tax	\$5.3
Total sales tax	\$26.1

Note: Dollar values in millions.

Income Benefits

The Volkswagen location will increase personal income by \$511.1 million annually. These income benefits are received every year so that they represent \$11,859.8 million (net present value) over the next 30 years¹. The total income benefit arises from Volkswagen's direct payment of wages and salaries, purchases from suppliers, and broad multiplier benefits. Direct income effects are the payment of \$136.1 million annually in wages and salaries.

¹ Assumes three percent annual wage inflation.

Indirect/multiplier effects arise from Volkswagen’s purchase of supplies, inputs, and services across Tennessee and from spending by Volkswagen employees and others who benefit from Volkswagen’s purchases. Non-payroll expenditures and multiplier-effects account for \$375.0 million in benefits. Table 4 provides a summary of the income benefits to the state of Tennessee.

Table 4: Income Effects

Annual Effects	
Direct effect	\$136.1
Indirect/multiplier effects	\$375.0
Total income benefits	\$511.1
Lifetime Effects*	
Total income benefits	\$11,859.8

** Net present value.
Note: Dollar values in millions.*

Employment Benefits

The location of Volkswagen in Tennessee will create 11,477 FTE jobs (see Table 5). Volkswagen expects to employ 2,000 people at the automobile assembly plant. New jobs are also created through Volkswagen’s purchases from suppliers in Tennessee and from the multiplier effects. Income generated from non-payroll expenditures and multiplier effects will support 9,477 jobs.

Table 5: Employment Effects

Direct effect	2,000
Indirect/multiplier effects	9,477
Total employment	11,477

State Tax Revenue Benefits

This report also estimates the state and local tax revenues arising from the location. The income generated by the Volkswagen location will result in \$55.7 million in annual tax revenues for Tennessee state and local governments. Of that total, approximately 50.4 percent or \$28.0

million accrues to the state’s tax coffers, and the remaining 49.6 percent or \$27.7 million would go to local governments. Tax revenue will increase by \$1,399.4 million over the 30-year lifetime. Sales tax revenue is the largest source of additional taxes. The tax revenue comes from several sources including Volkswagen employees, taxes paid on multiplier income as this is spent on sales taxable items in Tennessee, and business purchases on taxable transactions. Table 6 provides a breakdown of the tax benefits.

Table 6: Tax Effects

Annual Revenue	
Total state taxes	\$28.0
Total local taxes	\$27.7
Total taxes	\$55.7
Lifetime Revenue*	
Total state taxes	\$756.7
Total local taxes	\$642.7
Total taxes	\$1,399.4

** All dollar valued items in net present value.
Note: Dollar values in millions.*

Adjustment for Non-Tennessee Suppliers

The analysis provided above was based on the expected income and jobs created from the location of an automobile assembly plant, with impacts captured by business interrelationships and multipliers developed by the U.S. Department of Commerce. It is possible that some of the supplier benefits will accrue to Georgia and Alabama because of the close geographic proximity of the plant to these states. We expect a significant majority of the suppliers to locate in Tennessee because of Volkswagen’s specified intent to have suppliers at the site, the specific tax benefits that accrue to suppliers in Tennessee, good transportation linkages within Tennessee, and the state’s lack of an income tax. Table 7 illustrates that the effects for Tennessee remain dramatic even if some suppliers locate in the other states. Personal income in Tennessee would

be increased by over \$10 billion even after adjusting downward for more suppliers outside Tennessee.

Table 7: Adjusted for Non-Tennessee Suppliers

Annual Effects	
Income	\$436.1
Employment	9,582
Lifetime Effects	
Income*	\$10,119.4
Employment	9,582

* Net present value.

Note: Dollar values in millions.

Intangible Benefits

The location of a major automobile assembly plant in Tennessee provides a series of additional benefits that are not easily quantifiable but can be of considerable importance. First, the location can result in the creation of even more jobs for the state. The demonstration effect of having a large and prominent firm like Volkswagen consider many options across the country and choose Tennessee can cause other firms to examine Tennessee locations more carefully. This will increase the chance that more automobile assembly plants and other manufacturing facilities, as well as firms in other sectors, come to Tennessee. Also, Volkswagen could expand the size of the manufacturing facility and add to Tennessee's employment base once the initial jobs are here. The rapid expansion of other Tennessee automobile manufacturing facilities over the past several decades provides an example of how employment in future years can easily exceed the employment expectations at the time the location is announced. In addition, training and education programs available to employees at firms such as Volkswagen are a valuable means of enhancing the quality and skill levels of the Tennessee labor force.

Second, the location offers many benefits beyond those accruing in jobs and income. For example, Volkswagen's managers will be important leaders in communities throughout the Chattanooga area, thereby benefiting educational, cultural, and philanthropic organizations. Their leadership can enhance the quality of life around the state as it improves educational, cultural, and other opportunities. Further, Volkswagen may make sizeable contributions to charitable and not-for-profit organizations. Volkswagen's employees will also make important contributions to not-for-profit and charitable organizations. The company and employee contributions will go far towards improving our quality of life.

Value of Incentives and Investments to Support Volkswagen

The net present value of Tennessee state and local government concessions plus contributions by the federal government provided to Volkswagen total \$577.4 million (see Table 8). These include \$6.8 million in the job tax credit, \$71.9 million in super job tax credits, and \$27.6 million in enhanced industrial machinery credit. A total of \$168.8 million in infrastructure investments will support Volkswagen's investment. This includes \$80.0 million in a pad-ready site, \$70.0 million in additional infrastructure, and \$18.8 million in roads for the interstate connector and major road access (funded by the federal government). State workforce investments total \$81.2 million and include \$3.4 million in recruitment, screening and on the job training (federally funded); \$40.0 million in the training center; \$13.8 million in training center operating funds; and \$24.0 million in fast track job training. A total of \$2.0 million is used to support marketing and promotion. Local incentives sum to \$219.2 million and include \$40.2 million in land, \$40.0 million in additional infrastructure, and \$6.0 million for the "green"

welcome center. The City of Chattanooga and Hamilton County will also provide a PILOT (payment in lieu of property tax) incentive that is valued at \$133.0 million².

Table 8: Summary of State and Local Incentives

	Present Value
Nonrefundable State Tax Credits	
Job tax credit	\$ 6,754,943
Super job tax credits	71,902,208
Enhanced industrial machinery credit	27,560,168
Subtotal	\$ 106,217,319
State Infrastructure Investments	
Pad-ready site	80,000,000
Additional infrastructure	70,000,000
Roads (TDOT) *	18,800,000
Subtotal	168,800,000
State Workforce Investments	
Recruitment, screening, and OJT training *	3,402,000
Training center	40,000,000
Training center operating funds	13,750,976
Fast track job training	24,000,000
Subtotal	81,152,976
Other State Support	
Marketing/PR	2,000,000
Subtotal	2,000,000
Local Incentives	
Land	40,200,000
Additional infrastructure	40,000,000
PILOT	133,047,399
Welcome center	6,000,000
Subtotal	219,247,399
Total Present Value of Incentives	\$ 577,417,694

* Represents federally funded items.

Notes:

Valued in terms of 2011 dollars.

² This assumes \$450.0 million for new building and construction, \$40.2 million for land, and \$480.0 for equipment and other personal property.

As show in Table 9, Tennessee state government support for Volkswagen totals \$336.0 million. Local government's contribution amounts to \$219.2 million.

Table 9: Incentives by Level of Government

Federal	\$	22,202,000
State		335,968,295
Local		219,247,399
Total	\$	577,417,694

Cash Flow Analysis

The estimates of expected tax revenues (Table 6) and incentives (Table 8) can be drawn together into a cash flow analysis that demonstrates that Tennessee state and local governments can expect to collect positive net cash flow over the assumed 30-year life of the project. The cash flow summary is contained in Table 10. The tax credits, federal funds, and local PILOT are not cash expenditures for purposes of this analysis. The results illustrate that Tennessee state government can expect to collect \$756.7 in new tax revenues after investing \$229.8 million in the Volkswagen project. The local governments can expect to collect \$642.7 million after investing \$86.2 million in the project.³

³ Note that the local governments own the land, so this does not represent an actual out-of-pocket expenditure. The land cost represents an estimate of the sales value that is lost by providing the land to Volkswagen.

Table 10: Cash Flow Analysis

State			
Cash flow from operating activities			
Tax revenues	\$	756,700,000	
Subtotal			\$ 756,700,000
Cash flow from investing activities			
Pad-ready site		(80,000,000)	
Additional infrastructure		(70,000,000)	
Training center		(40,000,000)	
Training center operating funds		(13,750,976)	
Fast track job training		(24,000,000)	
Marketing		(2,000,000)	
Subtotal			(229,750,976)
Net change in cash			\$ 526,949,024
Local			
Cash flow from operating activities			
Tax revenue	\$	642,700,000	
Subtotal			\$ 642,700,000
Cash flow from investing activities			
Land		(40,200,000)	
Additional infrastructure		(40,000,000)	
Welcome center		(6,000,000)	
Subtotal			(86,200,000)
Net change in cash			\$ 556,500,000

Summary

The Volkswagen location is expected to generate nearly \$500 million dollars in income each year, create more than 11,000 jobs, and produce \$55.7 million in state and local tax revenue each year. In addition, Tennessee will receive a series of intangible benefits, such as enhanced visibility and leadership. The investment by Tennessee state and local governments appears to yield a very high rate of return. Based on this analysis, the state will receive approximately one dollar in annual benefits for each initial dollar of incentives and investments to support Volkswagen's location in Tennessee. In total, Tennessee will see income rise by nearly \$12 billion and tax revenues by more than \$1 billion over a 30-year lifetime.