

*June 14, 2011*

## **1% Regional Sales Tax for Transportation Revenue Forecast**

### **Overview**

HB 277 specifies that the State Fiscal Economist is to provide revenue forecasts of the 1% regional sales tax for transportation. This document summarizes the data, methodology and results of the forecasts.

### **Data**

The Department of Revenue provided sales tax revenue by county for various local option sales taxes from 1997 – 2010. The Department stated that data prior to 1997 was not reliable due to changes in accounting technology. The maximum revenue by local option sales tax was used as the measure of the revenue yield from a 1% sales tax for transportation. Note that this revenue is tied to the full sales tax base for each county. The regional transportation sales tax exempts several items from the tax; thus, this revenue must be adjusted to deduct revenue from these exempt items. Second, several counties did not have a local sales tax in effect during certain periods; this requires some adjustment in the forecasting process. The county level data was summed by regional planning group to yield the base revenue data for forecasting. Annual revenue by county and regional planning group is listed in the data appendix.

A variety of economic data was examined for potential use in the forecast process. These include personal income, population and employment. These data were sourced from a variety of sources: the Department of Community Affairs, the Bureau of Labor Statistics and the Bureau of Economic Analysis. Note that personal income and employment data were available only through 2009. Historical tax revenue data and personal income data by county and planning region are contained in the Appendix.

### **Forecast Method**

A variety of methods could be used to forecast revenues. It is important that the method chosen reflect the underlying data. There are several key features of the revenue data. First, it is limited in time span; there are fourteen years of data observations available (1997 – 2010). This limits the applicability of most statistical techniques when the task is to forecast forward another twelve years. Second, the historical data spans two recessionary time periods. The first recession period, 2000 – 2001, was relatively mild, although it had a more severe impact on the Atlanta metro region. The second recession, 2007 – 2009, was extremely severe and has been characterized as “The Great Recession” since it was by most measures the worst recession since the Great Depression.

There are several economic factors that make it difficult to use this historical data period for forecasting purposes. First, consumer spending tended to grow quite quickly for much of the decade of the 1990 and through 2007 relative to income growth. Consumers had ready access to credit and were able to convert home equity into cash to support spending growth. Second, the Great Recession dramatically changed consumer behavior. Beyond its severe decline in output, employment and income, this recession was driven, in part, by a severe financial crisis. This crisis could be seen in the sharp correction

**June 14, 2011**

in stock and other asset prices and in the on-going decline in residential real estate prices. The consumer response to this downturn was severe and resulted in a sharp decline in sales tax revenues. Moreover, it likely changed consumer use of credit and the downturn in housing prices has largely eliminated the ability to turn home equity into cash. While it is very unlikely that similar economic circumstances would recur during the duration of the regional sales tax for transportation, it is likely that consumer spending growth relative to income growth will be lower than experienced prior to the Great Recession. Thus, sales tax growth would also be somewhat limited.

Given the limited historical data available, the forecast methodology used can be summarized as:

1. Data analysis - Measure the historical relationship between sales tax revenue growth and personal income growth. Note how this relationship varies depending on the time span of the data and, in particular, whether years from the Great Recession are included or excluded. Adjust as necessary to account for expected changes in consumer behavior.
2. Personal Income Forecasts - Develop forecast of Georgia personal income. Forecasts are taken from Moody's Analytics. Allocate forecasted Georgia personal income to planning regions based on relative historical performance and REMI model forecasts provided by the Atlanta Regional Commission. The REMI forecasts were for the Atlanta Region, surrounding counties and the rest of the state.
3. Develop Forecasts for Exemptions - Adjust forecasts for exemptions specified in HB 277
4. Develop Forecasts of Revenue - Apply historical relationship(s) between sales tax revenue growth and income growth to forecast(s) of personal income growth.
5. Final Forecasts - Publish revenue forecasts by year and region in nominal and in inflation adjusted dollars.

### ***Data Analysis***

Table 1 summarizes the annualized growth rates of revenue from a 1% sales tax and personal income for the 12 planning regions and in total. Base revenue has been adjusted in the Atlanta Region and the River Valley Region to account for years in which a jurisdiction did not have a local sales tax for all or part of a year. Growth in sales tax revenues are detailed for two time periods – 1997 through 2010 and 1997 through 2009. This is done to provide information on the overall growth in the historical data series and then to provide a direct comparison to growth in personal income, the data for which ends in 2009.

**Table 1**

June 14, 2011

Region #	Region	Annualized Growth		
		Sales Tax Revenue		Personal Income
		1997-2010	1997-2009	1997-2009
1	Northwest Georgia	4.1%	4.5%	5.4%
2	Georgia Mountains	4.8%	5.2%	6.4%
3	Atlanta Regional Commission	2.9%	3.2%	4.9%
4	Three Rivers	4.4%	4.8%	5.1%
5	Northeast Georgia	4.9%	5.3%	6.2%
6	Middle Georgia	3.3%	3.7%	4.4%
7	Central Savannah River Area	3.7%	3.6%	4.4%
8	River Valley	2.9%	3.2%	4.7%
9	Heart of Georgia	3.3%	3.7%	4.1%
10	Southwest Georgia	2.7%	2.6%	3.8%
11	Southern Georgia	3.5%	3.6%	4.3%
12	Coastal	4.6%	5.0%	5.4%
	<b>Total</b>	<b>3.5%</b>	<b>3.7%</b>	<b>5.0%</b>

As shown, tax revenues grew slower than personal income when using the entire historical data set, which includes data during the Great Recession.

Table 2 reports the same data measured over two different time spans; 1997 through 2007 and 1997 through 2008.

June 14, 2011

Table 2

Region #	Region	Annualized Growth			
		Sales Tax	Personal	Sales Tax	Personal
		Revenue	Income	Revenue	Income
		1997 - 2007		1997 - 2008	
1	Northwest Georgia	6.5%	6.3%	5.5%	6.0%
2	Georgia Mountains	8.0%	7.5%	6.5%	7.3%
3	Atlanta Regional Commission	5.1%	6.1%	4.1%	5.7%
4	Three Rivers	6.7%	5.7%	6.2%	5.7%
5	Northeast Georgia	7.7%	6.9%	6.5%	6.8%
6	Middle Georgia	4.8%	4.8%	4.5%	4.8%
7	Central Savannah River Area	4.7%	4.7%	4.4%	4.8%
8	River Valley	4.4%	5.0%	3.8%	5.1%
9	Heart of Georgia	4.9%	4.4%	4.5%	4.5%
10	Southwest Georgia	4.3%	4.1%	3.8%	4.2%
11	Southern Georgia	5.3%	4.5%	5.0%	4.7%
12	Coastal	7.2%	6.0%	6.4%	6.0%
	<b>Total</b>	<b>5.6%</b>	<b>5.9%</b>	<b>4.7%</b>	<b>5.7%</b>

This table shows that growth in sales tax revenue and personal income were almost equal for the 1997 – 2007 time period. This time span includes years of strong economic growth and it also includes a recession. However, as the time span is extended to include 2008, the first full year of the Great Recession, the gap between sales tax growth and personal income growth begins to widen. Also, as shown in Table 1, the gap widens further as the time span is broadened to include 2009.

It is likely that the relationship measured over the 1997 – 2007 time period overstates future performance. During this historical period, consumer spending was boosted by aggressive use of credit and by converting housing equity into cash available for spending. The period after 2007 is the opposite; consumers reacted to lost wealth and the downturn in the economy by reducing credit use and sharply reducing spending.

The base forecast assumes the starting point for sales tax growth in each planning region is to grow proportionally to income growth in line with a mid-point between the performance measured over 1997 – 2007 and the performance measured over 1997 - 2008. It is then assumed that sales tax growth will decline slightly relative to income growth due to the continuing shift in consumer purchases toward services from goods. This method was chosen to dampen the high growth of the early period but not as far as indicated by the sharp downturn starting in 2008.

### **Personal Income Forecasts**

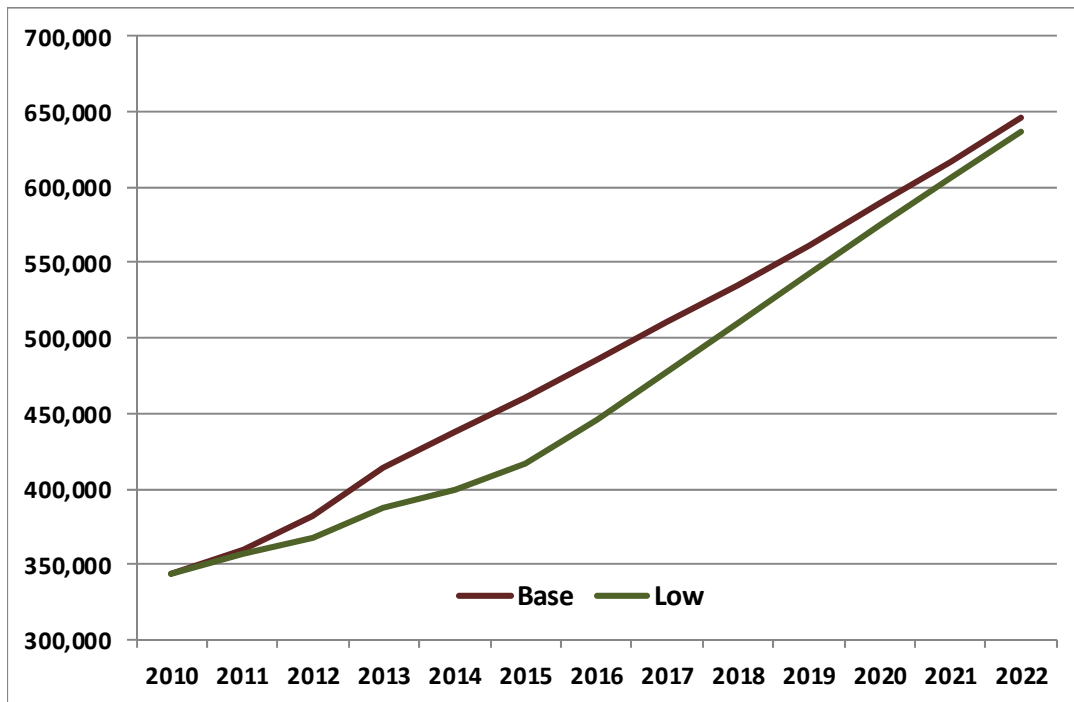
Forecasts of Georgia personal income were taken from forecasts prepared by Moody’s Analytics. Figure 1 below depicts the base case Georgia personal income forecast from Moody’s and an alternative (and lower growth) forecast from Moody’s. Figure 2 shows the same data in year over year percent change

June 14, 2011

format. The lower forecast envisions a prolonged economic slump with faster growth starting in 2015. The base forecast anticipates faster near term growth.

Figure 1

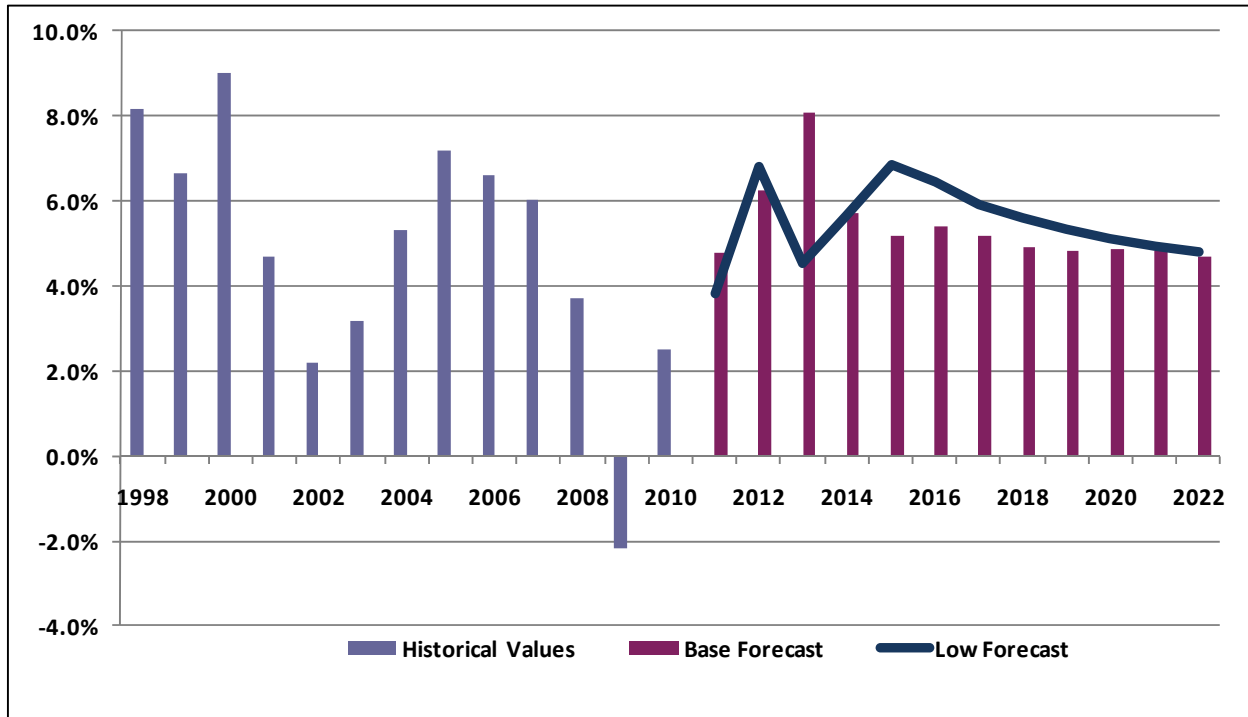
Georgia Personal Income – Historical and Forecasts (\$000)



June 14, 2011

Figure 2

Georgia Personal Income Growth (% Change from Prior Year)



The base case forecast reflects a scenario in which the national and state economy continues to grow with personal income growth accelerating through 2013 and then moderating toward a long-run growth rate. This forecast represents Moody's assessment of the most likely course of the economy and Georgia personal income growth. However, there are significant risks to the current recovery and outlook. A condensed list of factors that could derail the recovery includes housing, high oil prices and financial market stress associated with sovereign debt in Europe.

The low forecast assumes a second dip in economic activity in 2013 with recovery accelerating in 2014 and 2015, before growth settles down towards its long-run average. The Appendix includes annual forecasts of personal income by planning region for the two scenarios.

**Exemptions**

HB 277 specifies that six items will be exempt (or partially exempt) from the 1% sales tax for transportation. These are

1. Energy used in manufacturing,
2. Fuel used in off-road equipment,
3. Fuel used in public transit,
4. Jet fuel at qualified airports,
5. Motor fuel, and

**June 14, 2011**

6. Sales of autos (exempted on value above \$5,000)

Fiscal notes have been prepared on these issues and the revenue estimates from these notes were used as a starting point for measuring the revenue impact of these exemptions. These state wide total impacts were allocated to planning regions based on various economic factors. Jet fuel was allocated to the Atlanta Region since Hartsfield is the only qualifying airport in the state. Energy used in manufacturing was allocated based on the proportion of Georgia's manufacturing establishments in the region. The exemption on auto sales greater than \$5,000 was based on the fiscal note analysis which used car titling activity by region. Generally, other exemptions were allocated based on the proportion of Georgia population in the region.

There is a gap from the base year of the fiscal note analysis to the initial year of the regional tax. The annual revenue reduction from the exemptions was forecasted to 2013. Expected sales tax revenues were reduced by the amount of the revenue cost of the exemptions to measure the net sales tax revenue for 2013 and forecasts for subsequent years were calculated off of this revised baseline. The table below summarizes the total revenue reduction associated with the exemptions in 2013.

**Table 3 – 2010 Revenue Reduction from Exemptions**

	<b>2013</b>
<b>Northwest Georgia</b>	<b>22,075,284</b>
<b>Georgia Mountains</b>	<b>17,993,779</b>
<b>Atlanta Regional Commission</b>	<b>151,586,863</b>
<b>Three Rivers</b>	<b>12,249,457</b>
<b>Northeast Georgia</b>	<b>14,190,645</b>
<b>Middle Georgia</b>	<b>13,401,953</b>
<b>Central Savannah River Area</b>	<b>11,026,587</b>
<b>River Valley</b>	<b>8,902,273</b>
<b>Heart of Georgia</b>	<b>7,234,123</b>
<b>Southwest Georgia</b>	<b>9,289,831</b>
<b>Southern Georgia</b>	<b>10,324,681</b>
<b>Coastal</b>	<b>16,907,497</b>
<b>Total</b>	<b>295,182,974</b>

***Develop Forecasts of Revenue***

Forecasts of revenue from the 1% regional tax for transportation are developed by combining the posited future relationship between sales tax growth and personal income growth with the forecast of income growth and the estimated revenue loss from the exemptions through 2013. Beyond 2013, the forecast is driven on the net forecast for 2013 using the relationship between sales tax growth and personal income and the personal income forecast. Table 4 lists the total sales tax revenue in nominal and inflation adjusted dollars and the associated annualized growth rates over the time span of the

June 14, 2011

regional tax, 2013 – 2022. Tables 5 lists the annualized growth rates for sales tax revenues and personal income over the entire forecasting time span (2010 – 2022).

**Table 4**

<u>Region</u>	<b>Base Growth Forecast</b>			
	<b>Total Revenue</b>	<b>Total Revenue</b>	<b>Annualized Growth - Nominal</b>	
	<b>Nominal \$</b>	<b>Inflation Adjusted</b>	<b>Sales Tax</b>	<b>Personal</b>
	<b><u>2013 - 2022</u></b>	<b><u>2013 - 2022</u></b>	<b><u>Revenue</u></b>	<b><u>Income</u></b>
Northwest Georgia	1,487,935,178	1,267,996,446	4.9%	5.1%
Georgia Mountains	1,259,664,582	1,070,760,271	6.3%	6.6%
Atlanta Regional Commission	8,468,028,100	7,223,732,208	4.3%	5.5%
Three Rivers	947,047,315	806,067,514	5.5%	5.0%
Northeast Georgia	987,987,352	840,563,937	5.8%	5.7%
Middle Georgia	876,421,322	748,740,139	3.5%	3.7%
Central Savannah River Area	841,044,916	718,621,178	3.4%	3.7%
River Valley	594,061,269	507,771,349	3.2%	4.1%
Heart of Georgia	398,870,417	340,698,756	3.6%	3.5%
Southwest Georgia	530,378,773	453,389,868	3.1%	3.2%
Southern Georgia	670,985,361	572,827,906	3.9%	3.6%
Coastal	1,608,343,970	1,369,385,131	5.4%	4.8%
<b>Total</b>	<b>18,670,768,554</b>	<b>15,920,554,704</b>	<b>4.5%</b>	<b>5.1%</b>

June 14, 2011

Table 5

Region	Base Growth Case Annualized Growth 2010-2022	
	Sales Tax Revenue	Personal Income
Northwest Georgia	5.1%	5.4%
Georgia Mountains	6.6%	7.0%
Atlanta Regional Commission	4.3%	5.9%
Three Rivers	5.8%	5.3%
Northeast Georgia	6.1%	6.1%
Middle Georgia	3.5%	3.9%
Central Savannah River Area	3.5%	3.9%
River Valley	3.2%	4.3%
Heart of Georgia	3.6%	3.7%
Southwest Georgia	3.1%	3.4%
Southern Georgia	4.0%	3.8%
Coastal	5.6%	5.1%
<b>Total</b>	<b>4.6%</b>	<b>5.5%</b>

Tables 6 and 7 provide the same data for the low growth scenario.

Table 6

Region	Total Revenue 2013 - 2022	Total Revenue (\$2010) 2013 - 2022	Annualized Growth 2013-2022	
			Sales Tax Revenue	Personal Income
Northwest Georgia	1,402,510,408	1,193,168,725	5.4%	5.7%
Georgia Mountains	1,168,157,515	990,834,965	7.0%	7.3%
Atlanta Regional Commission	8,014,962,462	6,826,932,113	4.8%	6.2%
Three Rivers	887,484,423	753,917,237	6.2%	5.6%
Northeast Georgia	922,038,935	782,887,052	6.5%	6.4%
Middle Georgia	839,278,628	716,123,526	3.9%	4.1%
Central Savannah River Area	807,057,348	688,748,402	3.8%	4.1%
River Valley	570,717,075	487,262,300	3.6%	4.5%
Heart of Georgia	380,950,705	324,979,560	4.0%	3.9%
Southwest Georgia	509,982,615	435,464,969	3.5%	3.6%
Southern Georgia	639,677,834	545,353,733	4.3%	4.0%
Coastal	1,513,639,510	1,286,350,179	6.0%	5.4%
<b>Total</b>	<b>17,656,457,461</b>	<b>15,032,022,760</b>	<b>5.0%</b>	<b>5.7%</b>

June 14, 2011

Table 7

Region	Low Growth Annualized Growth 2010-2022	
	Sales Tax Revenue	Personal Income
Northwest Georgia	4.9%	5.3%
Georgia Mountains	6.3%	6.8%
Atlanta Regional Commission	4.1%	5.7%
Three Rivers	5.6%	5.2%
Northeast Georgia	5.8%	5.9%
Middle Georgia	3.3%	3.8%
Central Savannah River Area	3.3%	3.8%
River Valley	3.1%	4.2%
Heart of Georgia	3.5%	3.6%
Southwest Georgia	3.0%	3.4%
Southern Georgia	3.8%	3.7%
Coastal	5.4%	5.0%
<b>Total</b>	<b>4.4%</b>	<b>5.3%</b>

Tables listing year by year forecasts by region in nominal and inflation adjusted dollars are in the Appendix.

#### Forecast Risks

These are several factors that could cause actual revenues from a 1% regional sales tax to differ from the forecasts.

- 1) Personal income growth (in total and/or by region) could differ from the forecasts used in the forecasting process.
- 2) Estimates for the potential revenue (in total and/or by region) associated with the various exemptions could differ from the estimates used in the forecasting process.
- 3) The relationship between sales tax revenue growth and personal income growth (in total and/or by region) could differ from that assumed in the forecasting process. This relationship is highly variable based on the time period considered. In addition, the historical relationships were impacted by two recessions and by an era of heavy use of credit by consumers.
- 4) The State could change the tax base by either adopting additional exemptions to the sales tax or by expanding the sales tax to additional services

***June 14, 2011***

- 5) The State is working to become a full member of the Streamlined Sales Tax Agreement. It is possible that the State would have to eliminate some of the exemptions specified in HB 277 in order to become a full member.