



STATE OF INDIANA

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December 2014 Revenue Forecast Methodology

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Discussion of the Forecast

Fiscal year 2015 Indiana state tax revenue has shown lower than expected growth since the December 2013 forecast. Revenue failed to meet expectations as the underlying economic growth in FY 2014 and FY 2015 was slower than anticipated at the time of the most recent forecast.

Indiana personal income, as tracked by the U.S. Bureau of Economic Analysis (“BEA”), is a key component of the Indiana revenue forecast. Indiana personal income and its subcomponents are included in the majority of models used to forecast state revenue.

Indiana personal income had strong growth in FY 2013 and increased by 4.3% during that period. At the time of the December 2013 forecast, IHS Global Insight projected Indiana personal income growth of 3.5% in FY 2014, 4.7% in FY 2015 and 4.6% in FY 2016. However, shortly after the December 2013 forecast, Indiana personal income data released by BEA showed slow FY 2014 growth. The most recent BEA estimates show growth in FY 2014 of 0.8%. Expectations for growth are strong through the upcoming biennium. IHS Global Insight currently forecast growth in Indiana personal income of 3.6% in FY 2015, 4.2% in FY 2016, and 4.8% in FY 2017.

Corporate income tax models utilized by the committee are driven by U.S. corporate profits. These profits, which increased by 1.2% in FY 2014, are forecasted by IHS Global Insight to increase by 8.9% in FY 2015 and 6.2% in FY 2016, and 0.1% in FY 2017.

The committee continues to monitor both the size and shifts in the labor market. Over the past year, the number of Hoosiers employed has increased and the unemployment rate has improved. At the time of the December 2013 forecast, the Indiana unemployment rate was forecast as 7.6% for FY 2014. The actual FY 2014 unemployment rate was 6.6% and the rate is forecasted to average 5.6% throughout FY 2015 and FY 2016.

The labor participation rate and the changing demographics of the labor force are key aspects to Indiana's economic outlook. At the time of the December 2013 forecast, IHS Global Insight forecasted an Indiana labor participation rate of 60.1%. Actual data outperformed the forecast and reached 60.6% and is forecasted to reach 61% in FY 2015. The number of Indiana residents employed as a percent of population has also recovered in the last year. While the rate remained above 60% from FY 1988 to FY 2008, it fell to 55% in FY 2010. The rate began to rebound in FY 2014 and is forecasted to remain around 57% throughout FY 2015 to FY 2017.

Discussion of the Equations Used in the Forecast

Sales Tax

Employment and investment income drive sales tax revenues differently than income received from government transfer payments. Specifically, transfer payments are largely spent on items not subject to sales taxes, such as food and housing. Furthermore, government transfer payments contain a large counter-cyclical component in the form of income support payments. For example, unemployment insurance expenditures increase when the economy is performing poorly. To account for these differences, the committee began incorporating personal income net of transfer payments into the sales tax equation in the last few forecasts.

Additionally, consumer spending does not solely change in a linear fashion with income but depends on both the nature of that income and consumers' savings decisions. Spending decisions are influenced by consumers' current economic conditions and their economic outlook on the future. A main contributor to the stability of future income is employment status. To account for this, as well as the changing labor market, the committee incorporated a measure of Indiana employment into the model. The Indiana employment to population ratio serves as a proxy for the impact of employment and demographic trends on the Indiana sales tax base.

The model used by the Committee is replicated as Equation (1) below.

Equation (1): Adj. Sales Tax Base = $-9,083.374 + (0.471 * \text{FY Adjusted IPI}) + (21,813.6 * \text{FY Number of Indiana Employed Divided the Total Indiana Population, 15 years and over}) - \text{Adjustments}$

Individual Income Tax

The Committee determined that the income tax forecast should be derived using three separate equations to account differences between income tax collected through estimated payments, tax withheld from employee payment or other income disbursements, and final income tax reconciliations. The selected equations use quarterly data rather than fiscal year data to account for fluctuations throughout each fiscal year.

Estimated payments are mainly collected on investment income, sole proprietors, and business income. BEA's Indiana Proprietors' income comprises the majority of these income components. The estimated payment equation used by the committee includes Indiana Proprietors' Income, the amount of estimated payments lagged four quarters, and a set of binary variables to account for seasonal factors and structural changes in estimated payment activity.

Withholding on income tax is driven mainly by Indiana salary and wage disbursements. Additionally, income tax can also be withheld on pension benefits, retirement benefits, and government transfer payments. The Committee incorporated the Indiana Gross State Product into the withholding tax equation as a proxy for those non-wage related forms of income.

The final settlement amounts include refunds for overpayment and all forms of final remits. The committee used historical averages to estimate a fiscal year total.

Equation 2: Individual Income Tax = Quarterly Estimated Payments + Quarterly Withholding Income Tax + Remainder

Equation 2 (a): Quarterly Adjusted Estimated Payments Tax Base = $-68.038 + (0.071 * \text{Indiana Proprietors' Income}) + (2,005.459 * \text{Dummy for CY Q1}) + (2,822.306 * \text{Dummy for CY Q2}) + (1,703.050 * \text{Dummy CY Q3}) + (0.340 * \text{Year Lag Estimated Payments}) + (2,658.684 * \text{Dummy for CY2008 Q2}) + (-1,022.966 * \text{Dummy for FY 2009 Onwards})$

Equation 2 (b): Withholding Tax Base = $1.000313161 * (\text{EXP}(-2.895 + (0.311 * \text{the Natural Log of Indiana Wages and Salaries}) + (0.756 * \text{the Natural Log GSP}) + (0.130 * \text{Dummy FY Qtr 3}) + (-0.015 * \text{Dummy FY Qtr 4}) + (0.04 * \text{The Number of Months in the Quarter that Follow a Month with Five Fridays})) - \text{Adjustments}$

Equation 2 (c): Remainder = The arithmetic mean of all quarters between FY 2011 and FY 2014 - Adjustments

Corporate Income Tax

The forecast equation employed by the Committee in December 2013 was retained for this forecast and is driven by Calendar Year National Income and Product Accounts (NIPA) Corporate Profits and a binary variable to account for the impact from the recession. The binary variable was introduced to capture the impact from net operating loss carry backs caused by the 7.1% and 16.0% decline in corporate profits in CY 2007 and CY 2008, respectively. The binary variable has been set to 0 throughout this forecast period to reflect the diminished pool of net operating losses and the elimination of the carry-back option for the purposes of Indiana taxation. The equation employed by the Committee is replicated as Equation (3). Revenues from the Utility Receipts Tax, the Utility Services Use Tax, and the Financial Institutions Tax were forecast separately and the results of the Equation (3) were adjusted accordingly.

Equation 3: Corporate Income Tax Base = $0.9984 * (\text{EXP}(-5.323 + (1.005 * \text{Natural Log of CY Corporate Profits}) + (-0.235 * \text{Dummy for FY 2010 and FY 2011})) - \text{Adjustments}$

Cigarette & Tobacco Products Tax

The Committee adopted two equations to estimate the Cigarette Tax and Tobacco Products Tax. Cigarette Sales, measured in packs of 20, depend upon fiscal year real Indiana personal income, an estimate of the sum of the four surrounding states' real prices, the real Indiana price, the real Indiana cigarette excise tax rate, and a trend variable equal to the fiscal year forecast minus 1965. Tobacco Product sales are estimated based on fiscal year real Indiana personal income, a product of real price index and federal tobacco products excise tax, real Indiana excise tax on tobacco products, a real federal tobacco product tax rate, and a trend variable. The sales, income, cigarette tax rate and price variables are expressed in natural logarithms. The tobacco tax rate and the trend variable are not in logarithmic form.

Equation (4): Cigarette Sales = $\text{EXP}(-9.69 + (1.38 * \text{Real Indiana Personal Income}) + (-0.619 * \text{Natural Log of Real Indiana Price}) + (-0.726 * \text{Natural Log of Surrounding State's Real Prices}) + (-0.153 * \text{Natural Log of Indiana Cigarette Excise Tax Rate}) + (-0.051 * \text{Trend Variable}))$

Equation 4(a): Gross Cigarette Tax = $0.995 * (\text{Cigarette Sales})$

Equation (5): Tobacco Product Sales = EXP (-14.0 + (1.593 * Natural Log of Real Indiana Personal Income) + (- 0.281 * Natural Log of Real Indiana Excise Tax on Tobacco) + (-0.018 * (Indiana Excise Tax on Tobacco) + (0.011 * Federal Tobacco Product Tax Rate) + (0.022 * Trend Variable))

Equation (5a): Tobacco Products Tax = 0.24 * (Tobacco Products Sales)

Alcoholic Beverage Taxes

The alcoholic beverage tax model includes three equations: one for beer, one for liquor, and one for wine. All three equations include fiscal year real Indiana personal income, the real beverage price. The beer equation includes dummy variables for 1979 and after, 1993 and after and 2012 and after. Two other dummy variables are included where the dummy for fiscal years after 1978 and the dummy for fiscal years after 2011 are multiplied by the log of real Indiana personal income. The liquor equation includes a dummy variable for 1999 and after. It also includes a variable where the dummy for fiscal years after 1998 is multiplied by the log of real Indiana Personal Income. The wine equation includes dummy variables for 1987 and after. For all equations, the income and price variables were adjusted by the Gross Domestic Product price deflator. The sales and income variables are expressed in terms of natural logarithms. The price variables are not in natural logarithms.

Equation (6): Beer Sales = EXP (3.32 + (.7422 * Natural Log of Real Indiana Personal Income) + (-0.754 * Natural Log Real Indiana Personal Income when FY > 1978) + (0.262 * Natural Log of Real Indiana Personal Income when FY > 1992) + (-0.0426 * Real Beer Price) + (8.9 * Dummy for FY>1978) + (-3.17 * Dummy for FY > 1992) + (-0.0773 * Dummy for FY>2011))

Equation (6a): Beer Tax = 0.115 * (Beer Sales)

Equation (7): Liquor Sales = EXP (16.70 + (- 0.59 * Natural Log of Real Indiana Personal Income) + (- 0.0717 Real Liquor Price) + (2.48 * Natural Log of Real Indiana Personal Income for FY>1998) + (-30.17 * Dummy for FY>1998))

Equation (7a): Liquor Tax = 2.68 * (Liquor Sales)

Equation (8): Wine Sales = EXP (1.32 + (0.842 * Natural Log of Real Indiana Personal Income) + (- 0.533 (Real Wine Price) +(- 0.269 * Dummy for FY > 1986)

Equation (8a): Wine Tax = 0.47 * (Wine Sales)

Gaming Taxes

The Committee adopted an equation to estimate the total adjusted gross wagering receipts of the state's 11 riverboat casinos and 2 racinos. Adjusted gross wagering receipts serves as the tax base for the riverboat wagering tax and the racino slot machine wagering tax. These estimates are then used to compute estimated fiscal year riverboat wagering tax collections and racino slot machine wagering tax collections.

The equation estimates quarterly total adjusted gross wagering receipts generated at the state's 11 riverboat casinos and 2 racinos based on its relationship to quarterly nominal Indiana personal income in millions of dollars, a set of dummy variables, and an interaction variable that accounts for other economic and market circumstances. The equation contains a dummy variable to account for the addition of the French Lick Casino and its impact on total adjusted gross wagering receipts levels since 2006. The equation includes a dummy variable to account for the competitive impact of the Four Winds Casino on total adjusted gross wagering receipts levels since 2007. The Four Winds Casino is a tribal casino located in New Buffalo, Michigan, about 20 miles from the Blue Chip Casino in Michigan City, Indiana. The equation also includes a dummy variable to account for the addition of the racinos at Hoosier Park and Indiana Downs and their impact on total adjusted gross wagering receipts levels since 2008. The equation includes a variable comprising the interaction of quarterly nominal Indiana personal income and dummy for quarters in which French Lick is operating to account for the secular leveling and decline in total adjusted gross wagering receipts levels due to market and capacity factors. The equation also includes quarterly dummy variables to account for seasonal variation in adjusted gross wagering receipts levels. The baseline AGR forecast is then adjusted to account for: (1) potential competitive impacts from new casino operations in neighboring states, (2) changes in Indiana laws, and (3) court decisions impacting taxation of gaming revenues. The equation chosen is replicated as Equation (9) below.

Equation (9): Total adjusted gross wagering receipts = -6,218,095 + (3,149 * Quarterly Nominal Indiana Personal Income) + (1,027,545,137 * Dummy for Quarters in which "French Lick" is Operating) + (-29,973,782 * Dummy for Quarters in which "Four Winds" is Operating) + (-67,168,460 * Dummy for Quarters in Which the Racinos are Operating) + (4,712 * (Interaction of Nominal IPI and Quarters in which "French Lick" is operating) + (-11,761,129 * Dummy for CY Quarter 2) + (-38,592,621 * Dummy for CY Quarter 4)

Technical Calculation Methodology Appendix

Sales Tax

1. Regress both the Fiscal Year Indiana Personal Income Net of Transfer Payments (x_1) and the Number of People Employed in Indiana divided by the Indiana Population 15 and Older (x_2) on the Adjusted Sales Tax Base (y). Use the standard linear regression form where β represents the coefficients estimated by the Ordinary Least Square regression:

$$y = \beta_1 + (\beta_2 * x_1) + (\beta_3 * x_2)$$

2. This equation will generate the following coefficients:

$$\beta_1 = -9,038.374$$

$$\beta_2 = 0.471$$

$$\beta_3 = 21,813.6$$

3. Multiply β_2 (0.471) by the Fiscal Year Indiana Personal Income Net of Transfer Payments.
4. Multiply β_3 (21,813.6) by the FY Number of People Employed in Indiana divided by the Indiana Population 15 and Older.
5. Steps 3 and 4 will produce the following results for the forecast fiscal years:

Fiscal Year	$B_2 * \text{FY Indiana Personal Income Net of Transfer Payments}$	$B_3 * \text{The FY Number of People Employed in Indiana divided by the Indiana Population 15 and Older}$
2015	100,449.97	12,555.55
2016	104,678.45	12,568.10
2017	109,768.84	12,563.72

6. Sum the appropriate row for the year to be forecast and add the intercept coefficient, β_1 (9,083.37361796195).
7. Multiply the result of Step 6 by the sales tax rate (7%).
8. Subtract the relevant adjustment to the year being forecast to account for the impact of tax measures enacted by the General Assembly. The adjustments are as follows:

Fiscal Year	Adjustment
2015	-66.7
2016	-68.0
2017	-69.3

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9. Multiply the results of Step 8 by 0.98848 to account for the percentage of sales taxes deposited in the General Fund under HEA 1001- 2013.

Individual Income Tax - Estimated Payments

1. Regress quarterly Indiana Proprietors' Income (x_1), Dummy Variables for Calendar Year Quarter 1 (x_2), Quarter 2 (x_3) and Quarter 3 (x_4), Year Lag of Estimated Payments (x_5), Dummy Variable for Calendar Year 2008 Quarter 2 (x_6), and a Dummy Variable for Fiscal Year 2009 Onwards (x_7) on the Estimated Payments Tax Base (y). Use the standard linear regression form as shown below where β are the estimated coefficients from the Ordinary Least Squares regression:

$$y = \beta_1 + (\beta_2 * x_1) + (\beta_3 * x_2) + (\beta_4 * x_3) + (\beta_5 * x_4) + (\beta_6 * x_5) + (\beta_7 * x_6) + (\beta_8 * x_7)$$

2. This equation will generate the following coefficients:

$$\beta_1 = -68.038$$

$$\beta_2 = 0.071$$

$$\beta_3 = 2,005.459$$

$$\beta_4 = 2,822.306$$

$$\beta_5 = 1,703.050$$

$$\beta_6 = 0.340$$

$$\beta_7 = 2,658.684$$

$$\beta_8 = -1,022.966$$

3. Multiply β_2 (0.071) times the Indiana Proprietors' Income.
4. Multiply β_3 (2,005.459) times the Dummy for Calendar Year Quarter 1.
5. Multiply β_4 (2,822.306) times the Dummy for Calendar Year Quarter 2.
6. Multiply β_5 (1,703.050) times the Dummy for Calendar Year Quarter 3.
7. Multiply β_6 (0.340) times the Year Lag of Estimated Payments.
8. Multiply β_7 (2,658.684) times the Dummy Variable for Calendar Year 2008 Quarter 2.
9. Multiply β_8 (-1,022.966) times the Dummy Variable for Fiscal Year 2009 Onwards.
10. Add the intercept coefficient to Steps 3 – 9. (where $\beta_1 = -68.038$)

11. Repeat Step 3 through Step 10 for each quarter in the fiscal year. Summing the quarters for Step 3 through Step 10 will produce the following results for the fiscal year:

Fiscal Year	β_1	β_2 * IN Proprietors Income	β_3 * Dummy CY Q1	β_4 * Dummy CY Q2	β_5 * Dummy CY Q3	β_6 * Year Lag of Estimated Payments	β_7 * Dummy For CY2008 Q2	β_8 * Dummy For FY2009 Onwards
2015	-272.15	6,245.22	2,005.46	2,822.31	1,703.05	4,223.60	-	-4,091.86
2016	-272.15	6,648.60	2,005.46	2,822.31	1,703.05	4,292.20	-	-4,091.86
2017	-272.15	6,909.85	2,005.46	2,822.31	1,703.05	4,452.53	-	-4,091.86

12. Multiply the result of Step 11 by the income tax rate for the given fiscal year.

Fiscal Year	Tax Rate
2015	3.35833%
2016	3.3%
2017	3.270833%

Individual Income Tax – Withholdings

1. Regress the Natural Log of Wages and Salary (x_1), Natural Log of Gross State Product (x_2), Dummy for Fiscal Year Quarter 3 (x_3), Dummy for Fiscal Year Quarter 4 (x_4), number of months following months with Five Fridays (x_5), on the Natural Log of the adjusted Withholdings (y). Use the standard log-log regression form as shown below where β are the estimated coefficients from the Ordinary Least Squares regression:

$$\ln(y) = \beta_1 + (\beta_2 * \ln(x_1)) + (\beta_3 * \ln(x_2)) + (\beta_4 * x_3) + (\beta_5 * x_4) + (\beta_6 * x_5)$$

2. This equation will generate the following coefficients:

$$\beta_1 = -2.895$$

$$\beta_2 = 0.311$$

$$\beta_3 = 0.756$$

$$\beta_4 = 0.130$$

$$\beta_5 = -0.015$$

$$\beta_6 = 0.040$$

3. Multiply β_2 (0.311) by the quarterly Natural Log of Indiana Wages and Salary.
4. Multiply β_3 (0.756) by the quarterly Natural Log of Gross State Product.
5. Multiply β_4 (0.130) by the Dummy for FY Quarter 3.

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6. Multiply β_5 (-0.015) by the Dummy for FY Quarter 4.
 7. Multiply β_6 (0.040) by the Five Fridays variable.
 8. Add the results from Steps 3 – 7.
 9. Add β_1 (-2.895) to Step 8.
 10. Repeat Step 3 through Step 9 for each quarter in the fiscal year.
 11. Exponentiate Step 10. The results of this step are in the table below.

Fiscal Year	Adjusted Withholding Base
2015	138,863.12M
2016	143,085.32M
2017	148,814.82M

12. Regress the values of the Adjusted Withholding base predicted by the model described in Step 11 (values found in Step 11) on the observed value of the Actual Withholding base. Use the linear regression form but suppress the intercept so the regression line passes through the origin:

$$y = (\alpha_1 * x_1)$$

13. The model estimated in Step 12 will produce the coefficient 1.000313161(α_1)
14. Multiply Fiscal Year Adjusted Withholding base amounts found in Step 11 with the coefficient found in Step 13. This result is the Fiscal Year forecast amount as shown below.

Fiscal Year	Adjusted Withholding Base
2015	138,906.60M
2016	143,130.12M
2017	148,861.42M

15. Subtract the relevant adjustment to the year being forecast to account for the impact of the tax measures enacted by the General Assembly. The adjustments are as follows:

Fiscal Year	Adjustment Base
2015	4,088.9M
2016	4,498.6M
2017	4,910.3M

16. Multiply the results found in Step 15 by the income tax rates in the following table:

Fiscal Year	Tax Rate
2015	3.35833%
2016	3.3%
2017	3.270833%

Individual Income Tax - Remainder

1. Sum the four quarters of the Remainder base to get Fiscal Year totals for 2011 to 2014.
2. Average the Fiscal Year totals from 2011 to 2014. This average gives you \$5,380.76M.
3. Subtract the relevant adjustment from the Fiscal Year average found in Step 2 to account for the impact of tax measures enacted by the General Assembly. The adjustments are as follows:

Fiscal Year	Adjustment Base
2015	340.8M
2016	356.5M
2017	369.7M

4. Multiply the results found in Step 3 by the income tax rates in the following table:

Fiscal Year	Tax Rate
2015	3.35833%
2016	3.3%
2017	3.270833%

Individual Income Tax – Total

1. Add the results from Step 12 of the Estimated Payments equation, Step 16 of the Withholding equation, and Step 4 of the Remainder equation for the relevant Fiscal Years.

Corporate Income Tax

1. Regress both the Natural Log of the Calendar Year Corporate Profits (x_1) and a Dummy Variable for Fiscal Years 2010 and 2011 (x_2) on the Natural Log Adjusted Corporate Tax Base (y). Use the standard log-log regression form as shown below where β are the estimated coefficients from the Ordinary Least Squares regression:

$$\ln(y) = \beta_1 + (\beta_2 * \ln(x_1)) + (\beta_3 * x_2)$$

2. The equation will generate the following coefficients:

$$\beta_1 = -5.323$$

$$\beta_2 = 1.005$$

$$\beta_3 = -0.235$$

3. Multiply β_2 (1.005) by the Log of Calendar Year Corporate Profits.
4. Multiply β_3 (-0.235) by the Dummy Variable for Fiscal Years 2010 and 2011.
5. Steps 3 and 4 will produce the following results for the forecast fiscal years:

Fiscal Year	$B_2 * \text{CY Corporate Profits}$	$B_3 * \text{Dummy Variable for FY10 and FY11}$
2015	14.63855999	0.00
2016	14.74728295	0.00
2017	14.77780275	0.00

6. Sum the appropriate row for the year to be forecast and add the intercept coefficient, β_1 (-5.323).
7. Regress the values of the Adjusted Corporate Tax Base predicted by the model described in Step 1, on the observed value of the Adjusted Corporate Tax Base. Use the linear regression form but suppress the intercept so the regression line passes through the origin:

$$y = (\alpha_1 * x_1)$$

8. The model estimated in Step 7 will produce the coefficient 0.9983963 (α_1).
9. Exponentiate the result of Step 6 and multiply by the coefficient found in Step 8.
10. Multiply the product of Step 9 by 91.85% to adjust for Single Sales Factor.

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11. The product of Step 10 is the forecasted unadjusted Corporate Tax Base. Multiply the forecast base by the forecast blended tax rate. The forecast tax rates are as follows:

Fiscal Year	Tax Rate
2015	6.7978%
2016	6.3836%
2017	6.1163%

12. Subtract the following adjustment from Step 11 to account for tax measures enacted by the General Assembly:

Fiscal Year	Adjustment
2015	3.124
2016	3.124
2017	8.924

13. Add the following amounts to the result of Step 12 to account for the revenues from the Utility Receipts Tax:

Fiscal Year	URT
2015	221.1
2016	222.8
2017	224.5

14. Add the following amounts to the result of Step 12 to account for the revenues from the Utility Services Use Tax:

Fiscal Year	USUT
2015	10.8
2016	10.8
2017	10.8

15. Add the following amounts to the result of Step 12 to account for the revenues from the Financial Institutions Tax:

Fiscal Year	FIT
2015	56.2
2016	52.9
2017	49.6

Cigarette Tax

For Each Fiscal Year to be Forecast:

1. Multiply 1.38 by the logarithm of fiscal year real Indiana Personal Income.
2. Subtract 9.69 from the result of Step 1.
3. Multiply 0.726 by the logarithm of the sum of the real cigarette prices in the four surrounding states.
4. Add the result of Step 3 to the result of Step 2.
5. Multiply -0.619 by the logarithm of the real cigarette price in Indiana.
6. Add the result of Step 5 to the result of Step 4.
7. Multiply -0.153 by the logarithm of the real cigarette excise tax rate.
8. Add the result of Step 7 to the result of Step 6.
9. Subtract 1,965 from the fiscal year of the forecast.
10. Multiply the result of Step 9 by -0.05.
11. Add the result of Step 10 to the result of Step 8.
12. Take the exponential of Step 11 to calculate packs sold.
13. Multiply the result of Step 12 by 0.995 to calculate total revenue.
14. Add the results of Step 15 from the Tobacco Product Tax methodology to the results of Step 13.
15. Multiply the result of Step 14 by 0.5624 to calculate General Fund revenue.

Tobacco Products Tax

For Each Fiscal Year to be Forecast:

1. Multiply 1.59 by the logarithm of fiscal year real Indiana Personal Income.
2. Subtract 14.0 from the result of Step 1.
3. Multiply real tobacco producer price index by Federal Tax Rate on other tobacco products.
4. Multiply -0.281 by the result of Step 3.
5. Add the result of Step 4 to the result of Step 2.

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6. Multiply 100 by the Indiana tobacco products excise tax rate.
 7. Multiply -0.018 by the result of Step 5.
 8. Add the result of Step 7 to the result of Step 5.
 9. Subtract 1965 from the fiscal year of the forecast.
 10. Multiply the result of Step 9 by 0.022.
 11. Add the result of Step 10 to the result of Step 9.
 12. Multiply 0.11 by the federal other tobacco products tax rate.
 13. Add the result of Step 12 to the result of Step 10.
 14. Take the exponential of Step 13 to calculate sales.
 15. Multiply the result of Step 14 by 0.24 to calculate total revenue.
 16. Multiply the result of Step 15 by 0.75 and distribute the amount along with the Cigarette Tax revenue.
 17. Multiply the results of Step 15 by 0.25. Deposit the amount in the Affordable Housing Fund.

Alcoholic Beverage Tax - Beer

For Each Fiscal Year to be Forecast:

1. Multiply 0.742 by the logarithm of fiscal year real Indiana Personal Income.
2. Add 3.32 to the result of Step 1.
3. Multiply -0.0426 by the real beer price
4. Add the result of Step 3 to the result of Step 2.
5. For 1979 and thereafter, multiply -.75 to the logarithm of fiscal year real Indiana Personal Income.
6. For 1993 and thereafter, multiply 0.262 to the logarithm of fiscal year real Indiana Personal Income.
7. Add Step 4, Step 5 and Step 6.
8. For 1979 and thereafter, add 8.9.
9. For 1993 and thereafter, subtract 3.17.

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10. For 2012 and thereafter, subtract 0.077.
 11. Take the exponential of the result of Step 10 to calculate sales.
 12. Multiply the result of Step 11 by 0.115 to calculate total revenue; multiply the result of Step 11 by 0.04 to calculate General Fund revenue.

Alcoholic Beverage Tax - Liquor

For Each Fiscal Year to be Forecast:

1. Multiply -0.59 by the logarithm of fiscal year real Indiana Personal Income
2. Add 16.7 to the result of Step 1.
3. Multiply -0.0717 by the real liquor price.
4. Add the result of Step 3 to the result of Step 2.
5. For 1999 and thereafter, multiply 2.48 to the logarithm of fiscal year real Indiana Personal Income.
6. For 1999 and thereafter, subtract 30.17.
7. Take the exponential of the result of Step 6 to calculate sales.
8. Multiply the result of Step 7 by 2.68 to calculate total revenue; multiply the result of Step 7 by 1.00 to calculate General Fund revenue.

Alcoholic Beverage Tax – Wine

For Each Fiscal Year to be Forecast:

1. Multiply 0.842 by the logarithm of fiscal year real Indiana Personal Income.
2. Subtract 1.32 from the result of Step 1
3. Multiply -0.533 by the real wine price.
4. Add the result of Step 2 to the result of Step 3
5. For 1987 and thereafter, subtract 0.27.
6. Take the exponential of the result of Step 6 to get sales.
7. Multiply the result of Step 6 by 0.47 to get total revenue; multiply the result of Step 6 by 0.20 to get General Fund revenue.

Gaming Taxes

For Each Fiscal Year to be Forecast:

1. Multiply 3,149 by quarterly nominal Indiana Personal Income in millions of dollars.
2. Subtract 6,218,095 from the result of Step 1.
3. Add 1,027,545,137 to the result of Step 2 for each quarter.
4. Subtract 29,973,783 from the result of Step 3 for each quarter.
5. Add 67,168,460 to the result of Step 4 for each quarter.
6. Multiply 4,712 by quarterly nominal Indiana Personal Income in millions of dollars and subtract the result from the result of Step 5 for each quarter.
7. Subtract 11,761,129 from the result of Step 6 if the calendar quarter is the 2nd Quarter or subtract 338,592,621 from the result of Step 6 if the calendar quarter is the 4th Quarter.
8. Sum the quarterly totals from Step 7 for the fiscal year to obtain the total fiscal year adjusted gross wagering receipts of the 11 riverboat casinos and 2 racinos.
9. Divide the total fiscal year adjusted gross receipts from Step 8 between the 11 riverboat casinos and 2 racinos based on the historical percentage distribution of adjusted gross wagering receipts by riverboat casino and racino.
10. Reduce the estimated adjusted gross wagering receipts for Belterra Casino, Grand Victoria Casino, and Hollywood Casino by 40.0% in FY 2015, FY 2016 and FY 2017 to account for potential competitive impacts from new casino operations in Cincinnati, Ohio, and Columbus, Ohio.
11. Reduce the estimated adjusted gross wagering receipts for Horseshoe Hammond, Majestic Star I, and Majestic Star II by 11% in FY 2015, FY 2016 and FY 2017 to account for potential competitive impacts from new facilities and video gaming terminals in Illinois.
12. Reduce the estimated adjusted gross wagering receipts for the Hoosier Park racino by 17.5% in FY 2015, FY 2016 and FY 2017 to account for: (1) potential competitive impacts from new gaming facilities in neighboring states, (2) statutory reduction in taxable AGR from 100% to 91.5%.
13. Reduce the estimated adjusted gross wagering receipts for the Indiana Downs racino by 11.1% in FY 2015, FY 2016 and FY 2017 to account for: (1) potential competitive impacts from new gaming facilities in neighboring states, (2) statutory reduction in taxable AGR from 100% to 91.5%.

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14. Reduce the estimated adjusted gross wagering receipts each facility by \$5,000,000 for Fy 2015, and FY 2016 to account for the Free-Play Deduction allowed in SEA-528 2013.
 15. Use the fiscal year adjusted gross wagering receipts totals for the 14 riverboat casinos resulting from Step 10 to compute the fiscal year riverboat wagering tax for each riverboat casino.
 16. Sum the fiscal year wagering tax totals for each riverboat casino from Step 15 to obtain the fiscal year total riverboat wagering tax collections. Subtract \$7,500,000 from the total to account for a special rate provision for smaller riverboats.
 17. Subtract from the Step 14 result: (1) \$1,100,000 each year to account for reimbursement to the Indiana Gaming Commission for administrative expenses, (2) \$33,000,000 each year to account for local revenue sharing, and (3) \$82,550,627 in FY 2015 and \$80,937,451 in FY 2016 and \$81,617,872 in FY 2017 to account for riverboat wagering tax distributions to riverboat communities and other purposes.
 18. Use the fiscal year adjusted gross wagering receipts totals for the 2 racinos resulting from Step 11 and 12 to compute the fiscal year racino slot machine wagering tax for each racino.
 19. Sum the fiscal year wagering tax totals for each racino from Step 16 to obtain fiscal year total racino slot machine wagering tax collections.