

**An Evaluation of the South Dakota Legislative Research Council Evaluation of Initiated Measure 25
(State Tobacco Tax Increase and Creation of Postsecondary Technical Institute)**

August 31, 2018

In response to the South Dakota Legislative Research Council (SDLRC) evaluation of the tobacco tax ballot measure revenue, the Taxpayers Protection Alliance evaluated the assumptions undergirding the SDLRC analysis.

Introduction

SDLRC evaluated the revenues South Dakota should expect from an increase in the state cigarette excise tax by \$1.00 per pack (to \$2.53 per pack), and an increase in the state tax on other tobacco products (OTP) from 35 percent of the wholesale purchase price to 55 percent of the wholesale purchase price. SDLRC's revenue estimates are evaluated as of fiscal year (FY) 2020 relative to baseline sales for FY 2020 under the current tax rates.

Cigarette Tax Increase

Revenue estimates typically begin by estimating total tax-paid cigarette sales following the tax increase. SDLRC uses the standard methodology of using a price elasticity of demand to estimate total tax-paid sales following the increase. The price elasticity of demand is a measure of how much consumers will change their demand for tax-paid cigarette sales in response to a change in the price of tax-paid cigarettes.

The SDLRC analysis assumed that the price elasticity of demand for cigarettes was -0.25. An elasticity of -0.25 indicates that SDLRC assumed that for every 10.0 percent increase in price, demand for tax-paid cigarettes would decline by 2.5 percent.

On its face, SDLRC's elasticity assumption is more insensitive (i.e. less conservative) than the typical elasticity assumption industry uses to estimate changes in tax-paid cigarette sales (typically -0.30; or for every 10.0 percent increase in prices, demand for tax-paid cigarettes would decline by 3.0 percent).

However, SDLRC made a mistake with respect to its price increase assumptions. SDLRC assumes that the proposed \$1.00 per pack tax increase raises the price of cigarettes by 65.4 percent. According to *The Tax Burden on Tobacco*, the average cigarette sales price in South Dakota, including sales taxes, in FY2018 (as of November 2017) was \$6.87. Even after allowing for prices to rise through 2020, and accounting for the impact of trade margins and sales taxes, a \$1.00 tax increase will only raise prices by 16.9 percent (see Table 2 below for details).

While a \$1.00 cigarettes tax increase does not raise prices by 65.4 percent, a \$1.00 increase in the excise tax rate (from \$1.53 to \$2.53) is a 65.4 percent increase. Presumably, SDLRC used the percentage increase in the tax rate instead of the percentage increase in price to derive its estimated changes in tax-paid sales. If this is what SDLRC did, it is methodologically wrong.

Due to this mistake, SDLRC effectively is using an elasticity of -0.97. This elasticity assumes that tax-paid cigarette sales are significantly more sensitive to changes in price than most studies show, including those cited by SDLRC.

Also due to this mistake, SDLRC is estimating that the \$1.00 increase in cigarette tax revenues will raise a total of \$69.4 million in revenues, which it estimates is a \$20.3 million revenue increase.

Adjusting for SDLRC's Error

Raising \$69.4 million in revenues from a \$2.53 per pack cigarette excise tax implies that SDLRC was estimating that there would be 27.4 million packs sold in 2020 following a \$1.00 tax increase. Similarly, raising \$49.1 million from a \$1.53 per pack cigarette excise tax implies that SDLRC was estimating that there would be 32.1 million packs sold in 2020 under the baseline scenario. Table 1 summarizes these calculations.

**Table 1: SDLRC Revenues and Implied Tax-paid Cigarette Sales
As of 2020**

	Total Revenues	Tax Rate	Implied Tax-paid Sales (packs)
Baseline 2020	\$49,113,000	\$1.53	32,100,000
2020 With Tax Increase	\$69,403,000	\$2.53	27,432,016

Using the baseline tax-paid sales of 32.1 million packs, SDLRC's -0.25 elasticity assumption can be applied correctly by estimating the expected average price per pack of cigarettes in 2020.

According to The Tax Burden on Tobacco, the average price per pack of cigarettes in FY2018 was \$6.87 including the impact of the state and weighted average local sales taxes. Between 2014 and 2018, cigarette sales prices in South Dakota grew 2.9 percent per year, on average, based on the data in The Tax Burden on Tobacco. Using this growth rate, Table 2 projects out the average cigarette sales prices through 2020, and then estimates the average cigarette sales price in 2020 including a \$1.00 tax increase and a 15.7 percent sales margin. State and weighted average local sales taxes are then added.

**Table 2: Tax Burden on Tobacco Estimated Cigarette Prices
FY2017 through FY2020 Baseline and with Tax Increase**

	2017	2018	2019 Baseline	2020 Baseline	2020 w/tax increase
SD Prices Excluding Sales Tax	\$6.25	\$6.46	\$6.64	\$6.83	\$7.99
State Sales Tax	4.50%	4.50%	4.50%	4.50%	4.50%
Weighted Average Local Sales Tax	1.89%	1.89%	1.89%	1.89%	1.89%
SD Prices Including Sales Tax	\$6.65	\$6.87	\$7.06	\$7.27	\$8.50

Relative to the baseline, the \$1.00 tax increase raises the estimated 2020 sales price by 16.9 percent. Based on a price elasticity of -0.25, and a 16.9 percent increase in prices, total tax-paid cigarette sales would be expected to decline by 4.2 percent, or to 30.7 million packs.

Consequently, the SDLRC calculations should have estimated a total revenue figure of \$77.8 million in 2020, not \$69.4 million (see Table 3). This is a \$28.7 million increase in revenues, rather than SDLRC's estimated \$20.3 million.

Table 3: Re-estimated SDLRC Revenues Based on Changes in Cigarette Prices, Instead of Tax Rates

	Implied Tax-paid Sales (millions of packs)	% Change Price	% Change Sales	Tax-paid Sales @ Increase (millions of packs)	Revenues @ Increase (in millions)	Revenue Over Baseline (in millions)
2020 W/Tax Increase	32,100,000	16.9%	-4.2%	30,740,525	\$77,773,527	\$28,660,527

^ Numbers not exact due to rounding

Revised Revenue Estimate

This \$77.8 million revenue estimate is still lower than the typical estimate provided by our revenue estimate calculations. This discrepancy arises due to SDLRC's tax-paid sales assumptions. Based on the implied tax-paid sales estimates, the SDLRC methodology suggests that total tax-paid sales in 2020 before the tax increase would be 32.1 million packs. Following the tax increase, total tax-paid sales would be 30.7 million packs.

According to The Tax Burden on Tobacco, tax-paid sales in FY2017 were 36.0 million packs. Therefore, SDLRC's assumptions are consistent with a decline in baseline tax-paid sales of 3.8 percent per year between 2017 and 2020. This is likely to be too great of a decline – particularly for South Dakota whose tax-paid sales have been declining at a much slower pace over the past ten years.

The revised revenue calculation estimates that tax-paid sales will be higher than 30.7 million packs in 2020 both with and without a \$1.00 tax increase. This model assumes that tax-paid sales under the baseline scenario will decline at a rate of approximately 1.0 percent per year – the average decline in South Dakota tax-paid sales between FY2008 and FY2017 (see Table 4).

Table 4: Revised Revenue Model Baseline Tax-paid Cigarette Sales and Revenues

	2018	2019	2020
Baseline Tax-paid Sales (millions of packs)	35.66	35.30	34.95
Tax Rate (per pack)	\$1.53	\$1.53	\$1.53
Baseline Tax Revenues (in millions)	\$54.56	\$54.01	\$53.47

Based on a 16.9 percent price increase and a more conservative -0.30 elasticity, tax-paid sales in 2020 are estimated to decline by 5.1 percent to 33.2 million packs. At 33.2 million packs and a \$2.53 excise tax rate, total revenues are estimated to be \$83.9 million, or a \$30.5 million increase relative to the baseline. Table 5 summarizes these calculations.

Table 5: Revised Revenue Model Estimated Tax-paid Cigarette Sales and Revenues From \$1.00 Tax Increase

	2020
Percentage Increase in Cigarette Prices from \$1.00 Tax Increase	16.9%
* Assumed Elasticity	-0.30
= Percentage Change in Tax-paid Sales from Baseline	-5.1%
* Tax-paid Sales Baseline (in millions of packs)	34.95
= Tax-paid Sales After \$1.00 Tax Increase (in millions of packs)	33.17
* Tax rate after a \$1.00 increase	\$2.53
Estimated Revenues Following \$1.00 Tax Increase (in millions)	\$83.92
- Baseline Tax Revenues (in millions)	\$53.47
Estimated Revenue Increase Following \$1.00 Tax Increase (in millions)	\$30.45

The revised estimated revenue increase is \$10.2 million larger than the original SDLRC estimate of \$20.3 million, and it is \$1.8 million larger than the re-calculated SDLRC estimate of \$28.7 million. The difference between our revenue estimate and the re-calculated SDLRC estimate is due to our higher tax-paid sales assumption relative to the SDLRC implied tax-paid sales values.

OTP Tax Increase

The proposed increase for OTP tax rates calls for a 57.1 percent increase in OTP taxes. This calculation is summarized in Table 6.

Table 6: Proposed Increase in OTP Tax Rate

	Current	Proposed Increase	% Change
OTP Tax Rate	35%	55%	57.1%

SDLRC is estimating that under the baseline scenario, total OTP tax revenues as of 2020 will be \$9.9 million, or \$750,000 above the FY2017 levels. This estimation is below the 5-year growth rate in OTP tax revenues, and is therefore likely an under-estimate of potential revenues.

According to SDLRC, raising the tax rate from 35 percent to 55 percent will cause tax revenues from OTP in 2020 to increase to \$14.5 million, an increase of \$4.7 million or 47.1 percent above total baseline OTP tax revenues.

On a static basis, and using SDLRC's FY2020 baseline OTP tax revenue estimate of \$9.9 million, raising the tax rate from 35 percent to 55 percent would actually raise an additional \$5.6 million (see Table 7). The SDLRC estimated tax revenues in 2020 following an increase in OTP taxes is 6.3 percent below the static revenue estimate. This suggests that SDLRC's estimate for OTP revenues after raising the tax rate by 57.1 percent reasonably reflects a modest decrease in total OTP tax-paid sales.

Table 7: Static Revenue Estimate for OTP Tax Increase

	Tax Revenues
FY2020 Baseline OTP Tax Revenue Estimate	\$9,868,430
* Percentage Tax Increase	57.1%^
= Static Increase in Tax Revenues	\$15,503,304
Increase in Revenues over FY2020 Baseline	\$5,634,874

^ Calculation is actually OTP tax revenues * 1.571 to "gross up" the FY2020 baseline OTP tax revenues