COLORADO CENTER on LAW & POLICY

Amendment 64 would produce $60 million in new revenue and savings for Colorado

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Executive Summary

This paper explores the state and local government budget impact of Amendment 64.[1] Using the latest research and best available estimates of consumption and price, this analysis concludes that Amendment 64 would, in the years prior to 2017 generate over $32 million in new revenue for the state budget, over $14 million in new revenue for local governments and would result in savings of more than $12 million in state and local law enforcement spending. Of the new state dollars, Amendment 64 would direct $24 million to the Building Excellent Schools Today (BEST) program that would result in the creation of 372 new jobs in cities and towns across Colorado with 217 of those jobs in the construction industry.

Key Findings

Amendment 64 will create

- $12 million in instant savings for the year following legalization because of reduced criminal costs. As courts and prisons adapt to fewer and fewer violators, annual savings (compared to a pre-legalization year's budget) will rise toward the long run savings level of $40 million.
- $24 million new tax revenue generated from excise taxes on the wholesaler (all of which is promised to the Colorado Public School Capital Construction Assistance Fund)
- $8.7 million in new state sales tax revenue
- $14.5 million in new local sales tax revenue
- 372 new jobs (217 of which are construction) from school construction projects on behave of the Building Excellent Schools Today Program
- **$60 million total in combined savings and additional revenue for Colorado's Budget with a potential for this number to double after 2017.**

[1] DESCRIPTION OF A64

Description of Amendment 64

Amendment 64 proposes to treat marijuana similarly to alcohol — adults 21 and older would be able to consume, possess and purchase marijuana from legitimate, taxpaying businesses. Like alcohol, driving under the influence of marijuana will remain illegal as would the transferring of marijuana to individuals under the age of 21. Also known as the Regulate Marijuana like Alcohol Act, the proposal bill would provide a system to regulate and tax marijuana's production and distribution with both an excise and a sales tax. The excise tax of no more than 15 percent will be levied upon the marijuana produced by a cultivation facility prior to 2017, after which the rate would be permitted to rise. The first $40 million in excise tax revenue raised annually is credited to the Public School Capital Construction Assistance Fund, a program that provides funding for the nearly $18 billion dollars in unmet school construction needs across Colorado.[2] A state sales tax (2.9 percent) and a local sales tax (rate varying depending on the local jurisdiction) will also be levied upon marijuana purchases. In addition, A64 requires the general assembly to enact legislation concerning the cultivation and sale of industrial hemp.

Context for Discussion of Regulating Marijuana like Alcohol

Marijuana is the most frequently used illicit drug not only within the state of Colorado but nationwide, accounting for approximately 80 percent of all criminal drug use.[3] An estimated $35 billion worth of marijuana is cultivated in the US, making it the nation's leading cash crop, even exceeding the value of corn and wheat sales combined. In 2010, there were 853,838 marijuana arrests in the United States with nearly 90 percent of those arrests linked to simple possession.

Marijuana became illegal in the 1930s in the United States. Yet, despite its illegality marijuana prohibition is enforced irregularly across federal, state, and local levels. While federal law still prohibits the possession, cultivation, and consumption of hemp, state and local governments are increasingly moving toward legalization of marijuana**.** In 1996, only Oregon and California had successfully passed legislation decriminalizing marijuana. By 2007, approximately 12 states (excluding the District of Columbia) had passed medical marijuana laws and patient protections. Now in 2012, 17 states including the District of Columbia have followed suit[4].

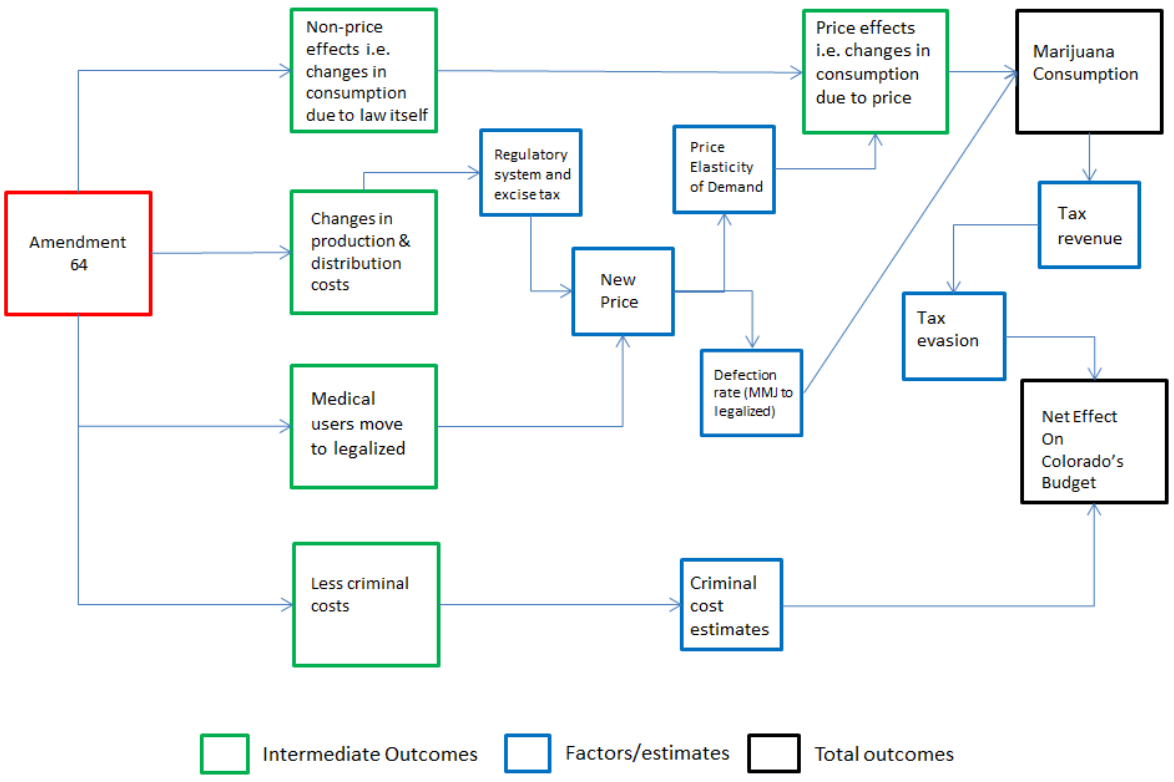
During the last decade a significant number of states have approved marijuana use strictly for the treatment of prescribed medical conditions. Since the summer of 2011 one-third of states (including Colorado since 2004) and the District of Columbia have made provisions for medical marijuana. As of November 2011, Colorado has approximately 96,709 medical marijuana card holders. Attorney General Holder has stated that the Obama administration will not prosecute persons abiding by the provisions stipulated by their respective state governments, but these state provisions may not completely safeguard medical marijuana users from prosecution at the federal level.

[2] Interview with Mary Wickersham- Chair of the BEST Assistance Board, CCAB chair (July 2012)
[3] Porter, Mackenzie, (2011). "Mitigating Prohibition: A Look into Lowering the Costs of Colorado's Marijuana Policy Regime" p.6, 11: Frank Batten School *of* Leadership *and* Public Policy University of Virginia.
[4] Pros and Cons of Controversial Issues, "17 Legal Marijuana States and DC" Chart, http://medicalmarijuana.procon.org/view.resource.php?resourceID=000881/ (accessed 13, July 2012).

Building our Model

There are many factors to consider when attempting to predict the effects of Amendment 64 on tax revenue. Current marijuana usage, the degree of responsiveness of marijuana users to changes in price, the level of tax to be levied, changes in production techniques/costs, cost and nature of the regulatory scheme, the extent of tax evasion, and costs associated with criminalization are all factors that must be considered and estimated. The model used to determine the budget impact of A64 includes all these factors.

The following flow chart or logic model illustrates the many factors that affect how much tax revenue can be generated from regulating marijuana like alcohol. The chart is meant to identify those economic mechanisms and steps that aren't intuitively obvious and illustrate assumptions inherent in the model. The red box represents the decision to legalize marijuana through Amendment 64, which will induce the intermediate outcomes (green). The magnitudes of these intermediate effects are influenced by our estimates (blue). The consumption levels and the net effect on the state's budget (black) are what this report is ultimately seeking.



Starting from the left of the chart, Amendment 64 would remove penalties for possessing and selling marijuana, which cause changes in consumption, changes in criminal costs, and changes in the consumption patterns of medical-card holders.

The amount of marijuana consumption will be impacted by a number of factors (blue). First there are changes in social norms and the perceived perception that influence marijuana consumption. Then there are the changes in consumption because of the change in price. The model involves more intermediate steps when considering price-effect changes in consumption. Users must compare the current price with the new price. Estimating the new price requires consideration of the new costs of production, regulatory scheme, and excise tax rates.

The nature of the regulatory structure that will be imposed upon the marijuana producers also will affect price. Higher regulatory costs on the producer will cause a higher new price. This higher new price influences the number of users who would switch from medical marijuana to newly legalized products. Price affects consumption and a more expensive product will have a downward effect on consumption. Higher taxes will also create greater incentives to evade taxes. Any adjustment in the blue factors in the model will indirectly impact the final outcomes.

Methodology

Calculation of how much tax revenue can be raised on the sale of marijuana, starts with estimates of current consumption. That number is then adjusted to account for changes in consumption based on the new regulatory approach. The consumption estimate is then multiplied by the estimated sales tax and excise tax per ounce to get an estimate of total revenue generated from sales. The specifics of the calculation are explored below.

Current Users

There are a variety of methods used to calculate the size of drug markets. Supply-side approaches combine estimates about production with information regarding prices. Demand-side approaches either rely on consumer-reporting or utilize prevalence estimates in conjunction with quantity-consumed per capita estimates. Consumer-reporting is subject to uncertainty because respondents are not always honest and general population surveys often miss heavy drug users who are in treatment or difficult to locate. This is a particular concern with highly addictive drugs but much less of a problem with a more commonly used drug like cannabis. This report uses a demand-side approach because it allows the use of micro and macro approaches to produce Colorado-specific estimates.

To estimate the current number of marijuana users in Colorado, survey data from the 2010 National Survey on Drug Use and Health from the Substance Abuse and Mental Health Services Administration in conjunction with the Colorado census population[5] was used. Based on that data, an estimated 12.9 percent (495,050) of Colorado residents 21 and older are current users. Following the methodology of

[5] It is difficult to give an exact percentage particularly because the survey asks respondents if they have used in the past month and in the past year. A respondent only using marijuana once would be lumped into the same category as a respondent using many times. Additionally the survey breaks numbers down by ages 12-17, 18-26, and 26+ which makes finding an estimate of the percentage of people 21 and older more complicated.

Kilmer and Pacula[6] that 20 percent of users under report their usage, the number was revised upward for a total of 594,060. Of that total, 96,709 are medical marijuana (MMJ) cardholders.[7]

If Amendment 64 is approved by voters, it is likely that the MMJ users will begin purchasing their marijuana from the now-legal distributors. The MMJ users' decision to defect (buy legalized instead of medical) depends upon the price differential between medical marijuana per ounce and legalized marijuana per ounce. [8] Comparing the projected-legalized price[9] per ounce to the medical price and utilizing our "defection percentage" as estimated 76,689 of the MMJ users will become legalized users, for a total of 574,040 users.

12.9% of adults consuming an average 3.5 ounces a year results in 2,026,360 ounces consumed annually in Colorado.

Current Consumption

Across the marijuana literature, estimates of global marijuana use per person vary between 94 to 116 grams per year.[10] Focusing on research about American consumption, the model uses an estimate of 100 grams per year or 3.53 ounces. Thus 574,040 multiplied by 3.53 ounces a year gives Colorado roughly 2,026,360 ounces of marijuana consumed annually.

Future Consumption

The next issue is how consumption will change with the passage of Amendment 64? To answer this question, we must consider exogenous effects (non-price effects) and endogenous effects (changes due to price differentials). Economic theory suggests that demand increases as prices falls — this is an endogenous effect. What about changes in marijuana based solely on attitudes irrespective of price? There are two generalized exogenous factors that work to increase/decrease the amount of consumption once a substance is deemed legal. Many people claim that people would be more inclined to use marijuana once the taboo of an illegal substance is removed. Under this thought process, consumption should increase. Others claim that the "forbidden fruit" aspect of using an illegal drug also adds to the

[6] Kilmer, B. and Pacula,R.L. (2009) "Estimating the Size of the Global Drug Market: A Demand-Side Approach—Report 2." Santa Monica, CA: RAND Corporation, TR-711-EC.
[7] http://www.cdphe.state.co.us/hs/medicalmarijuana/statistics.html
[8] To determine a "defection percentage," that is proportional to the price differential between legalized and medical marijuana, we added $ $42.50 per ounce, due to doctors' fees and medical card fees, to the current price of approximately $150 per ounce that is charged by medical distributors.

[9] Calculated below
[10] Bouchard, M. (2008) "Towards a Realistic Method to Estimate the Cannabis Production in Industrialized Countries." *Contemporary Drug Problems*. Vol. 35. Pp. 291-300 estimates Quebec used on average 94 grams in 2003. Kilmer and Pacula (2009) estimates the U.S. average around 93 grams. Slack et alia. (2008) "New Zealand Drug Harm Index: Report to the New Zealand Police." calculated a New Zealand figure of 98 grams. United Nations Office on Drugs and Crime (2006) uses a weighted average of casual, regular, daily and chronic users to estimate 116 grams per year.

enjoyment. Once the added "daring" is removed from using an illegal substance, consumption might decline. Recent evidence from the Centers for Disease Control[11] suggests that enacting regulations on the production and sale of marijuana might actually lower consumption use among teens.[12]

For the purposes of our analysis a non-price effect of 14 percent was used.[13] Or that there will be a 14 percent increase in consumption due to non-price effects. (Note: this does not mean 14 percent more of the population will begin smoking. It means that the current level of consumption will increase). This yields 2,310,050 ounces of consumption a year.

Cost of producing marijuana	
Cost per pound of marijuana	$1,000
Excise tax of 15 percent	$150
Distribution costs	$40
Producer mark-up, 25 percent	$298
Retailer mark-up, 33 percent	$491
Sales Tax	$153
Total per pound	**$2,132**
Total per ounce	**$133**

The last step is to calculate how much more consumption will be induced by price-effects. To do so requires a calculation of future price, production costs, and price elasticity of demand.

Production Cost and Future Price

To calculate the price effects of consumption, production costs of marijuana under the legalized scenario must be estimated. There are several reasons why production costs will fall under Amendment 64. Workers' wages will fall because producers will not have to pay a risk premium for participating in illegal growing. Legalization will permit economies of scale as growers can expand their operations without worrying about attracting police attention. Green houses are also much cheaper than less traditional growing environments. Reductions in production costs will take time as growers adjust/perfect their technique in accordance to the new regulation. This transition is accounted for by calculating both short term and long term production costs.

There is very little research on the cost of production of marijuana in the current gray-market. Further, no modern nation has legalized commercial production, so there is no data to estimate production costs in a legalized environment. The regulatory structure that will be put in place for growers, if A 64 passes, is also unknown — the extent to which growers will be able to utilize larger scale production, allowable techniques are unclear, etc. so it is difficult to definitively determine how far production costs will fall. The best analysis of cost of production of marijuana comes from the Kilmer et alia, which, with a few modifications, is used here to determine future costs of production.[14] The analysis starts with a rough

[11] Morbidity and Mortality Report (June 2012) http://www.cdc.gov/mmwr/pdf/ss/ss6104.pdf (page 97)
[12] Nationwide past-30-day marijuana use for high school students rose from 20.8% in 2009 to 23.1% in 2011 while it dropped from 24.8% to 22% in Colorado. During this period, CO enacted regulations on the sale of medical marijuana.
[13] Given the uncertainty of such an estimate it could range from 5-45%. The Kilmer et alia study uses a 35% estimate. Given the Colorado's reaction to medical marijuana regulations and marijuana's growing acceptance, our estimate of increased consumption due to non-price effects is much lower.
[14] Kilmer et al, (2010) "Altered State? Assessing How Marijuana Legalization in California Could Influence Marijuana Consumption and Public Budgets, RAND Corporation.

estimate of growing cost per pound.[15] Added to that initial cost are additional fees/mark-ups that are held constant between both the short and long term: transportation and distributional costs ($40 per pound or $6.65 per ounce), producer mark-up (25 percent) retailer mark-up (33 percent).[16] The variables that change between the short and long term are growing costs and amount of excise tax imposed on the wholesaler.[17] It is important to note that the excise tax is applied directly to the wholesaler. Hence if the growing cost per pound of marijuana is above an estimated $1,000, excise tax revenue will increase.

Elasticity of Demand: How price changes influence consumption

Kilmer et alia estimate a price elasticity of demand for marijuana consumption of -0.54.[18] Comparing their estimate to a study that measured marijuana consumption patterns in Australia[19] which concluded a price elasticity of demand -0.5, this analysis assumes an elasticity of -0.52. How much will lower prices influence consumption? Based on current costs identified on a website[20] utilizing crowd-sourcing to report prices of marijuana across the country, the current cost is estimated at $225 an ounce. A reduction in price to $133 an ounce amounts to a 51 percent drop in price. Given an elasticity of -0.52, this would lead to roughly a 26 percent increase in quantity consumed. This analysis, however, assumes a constant elasticity. The estimated elasticity of -0.52 should be accurate for small changes in prices, but for such a large drop in price of 51 percent, estimates would bring in considerable margin of error. Because economic theory suggests that elasticity drops as price falls and products that are habitually consumed are also much more inelastic, elasticity of demand was adjusted down to -0.22 when considering a price per ounce of $133. This gives a price effects change in consumption of roughly 11 percent.

Future Consumption

Adding the endogenous price effects to the consumption estimate above, the pre-2017 scenario with the new price per ounce at $133, the analysis reveals an increase in consumption of 11 percent or an annual consumption amount of 2,570,560 ounces. Evidence suggests that there might be a spike in consumption directly after marijuana's legalization pushing up consumption above this estimate. 2,570,560 ounces is the amount once the "honey-moon" period subsides.

[15] Differences in marijuana reflect different THC levels. The Kilmer et alia study assumes the THC content comparable to "sinsemilla." They focused on sinsemilla-grade marijuana because it constitutes a large share of domestic production in California and would likely be the type grown under the legalization scenarios because of grow-house production.
[16] A typical agriculture mark-up figure: whether these percentages are comparable to typical agriculture mark-up is certainly up for debate.
[17] For a full treatment of cost estimations see Kilmer et alia. "Altered State? Assessing how marijuana legalization in California could influence marijuana consumption and public budgets." pp. 19-20
[18] A rule of thumb implies that a 10-percent fall in price will increase the number of users by about 3% which implies a participation elasticity of -0.3. It is important to remember that we need the effect on entire consumption not simply participation. Using estimates from the tobacco literature, participation elasticity is about 1.5 or 2 times that of total elasticity. Multiplying -0.3 by 1.75 equals a baseline elasticity of -0.54.
[19] http://www.drugpolicy.org/docUploads/Mari.pdf

[20] Priceofweed.com: CCLP used the medium grade estimate

Tax Revenue

The final component of the analysis is to apply the anticipated tax rate to the anticipated consumption amount. Currently there is no state-level excise tax on medical marijuana, so the state budget stands to benefit if MMJ users move their consumption into the legalized scenario and pay the excise tax.

Medical marijuana is subject to both state and local sales taxes. In order to avoid double counting of sales tax of MMJ users switching to legalized marijuana, the sales taxes generated by current MMJ purchases are subtracted from the estimate.

Excise Tax

A 15 percent excise tax is charged directly on the wholesale growing cost. Fifteen percent of the $1,000 per pound divided by 16 ounces, produces $9.38 excise tax per ounce.

Additional annual tax revenue prior to 2017

Excise tax	$24,099,000
State Tax	$8,751,533
Local Sales Tax	$14,545,651

State Level Sales Tax

A 2.9 percent sales tax will be imposed at the state level. $133 per ounce would produce $3.85 per ounce in state sales tax. The analysis is estimated consumption in ounces multiplied by price per ounce and minus the MMJ tax already paid.

Local Level Sales Tax

Using Denver's local sales tax of 4.82 percent, $133 per ounce would produce $6.41 per ounce in local sales tax.

Tax Evasion

Just because taxes are levied, does not mean they will be collected. If taxes are imposed to push the price of marijuana higher than what it currently is on the gray-market, people will be inclined to continue buying marijuana from that gray-market. In the A64 scenario however, legalization will reduce production costs that will offset the tax cost so there is little concern about evasion affecting revenue. Tax evasion might be a factor to consider in the post-2017 scenario if taxes raise the price per ounce to prices similar to the grey market.

Law Enforcement Costs

One of the arguments for marijuana legalization is that it would reduce government costs by reducing law enforcement budgets including costs of arrests, prosecution, sentencing, and incarceration. The savings in criminal cost come from three main components: reduction in police resources; reduction in prosecutorial and judicial resources, and the reduction in correctional (prison) expenses.

Many reports utilize a static cost model which fails to recognize the fact that government agency budgets are fixed and operate independent of the level of arrests/prosecutions.[21] Static estimates are calculated as follows. If the number of arrests for marijuana in a given state reflects five percent of total arrests then legalizing marijuana would create an equal five percent savings in total law enforcement costs. Such calculations make a flawed assumption — a reduction in arrests does not automatically result in a 5 percent reduction in police salaries.

The Static Cost Savings Model using Average Costs.

This study adopts the methodology of Dr. Jeffrey Miron's analysis entitled *The Budgetary Implications of Drug Prohibition*, in which marijuana-related expenditures are totaled for each state. Using the most recent data that is Colorado-specific,[22] this report improves upon Miron's estimates. The calculation is straight forward: find the percent of arrests, court cases and inmates that are marijuana related and multiply that by Colorado's corrections budget.

Colorado's direct budget costs for enforcing marijuana prohibition

Agency	Total spending	Percent spent enforcing prohibition	Amount spent enforcing prohibition
Police	$82,676,491	4.41	$3,646,033
Judicial	$340,243,578	7	$23,817,050
Corrections	$634,934,029	2	$12,698,681
Total			**$40.1 million**

Adjusted for Marginal Costs

Many agency costs are related to personnel costs (salaries) which do not change based on the number of violators arrested/prosecuted/incarcerated. Because static cost analysis relies on average costs instead of marginal costs, the cost savings from legalizations are often overstated.

To make a better estimation of criminal cost savings, we must make the distinction between fixed costs and marginal costs. Fixed costs are paid irrespective of activity. So a police officer earns his salary whether he makes few arrests or many. Marginal costs are the additional costs associated with arresting

[21] Austin, James. (2005) "Rethinking the Consequences of Decriminalizing Marijuana" http://norml.org/pdf_files/NORML_Rethinking_Decriminalizing_Marijuana.pdf

[22] United States, State of Colorado Joint Budget Committee**,** *Appropriations Report: Fiscal Year 2011-2012* (Denver: 2011) p.16 Endnote for judicial and corrections spending.

the additional marijuana violator. Amendment 64 will generate its criminal costs savings from the marginal cost reductions on account of less marijuana-related arrests.

Approximately 70 percent of criminal justice agency budgets are fixed and thus do not vary based on incremental usage[23]. Thus only 30 percent of total criminal costs will be reduced as the number of violators is reduced until fixed costs can be adjusted.

Direct Budgetary Costs (average cost estimate) X (% of criminal costs that are marginal costs)

Direct Budgetary Costs (marginal cost model) $12 million

As long-run fixed costs are reduced (for example, as less capacity in jails are needed and contracts are readjusted to accommodate the need for less guards, attorneys, etc.) the $12 million savings will increase each year as compared to the current budget before Amendment 64. $12 million in savings is a conservative estimate, the savings will approach the $40.1 million level in the long run. Compare this to other state estimates. Miron's 2002 assessment of the marijuana laws in Massachusetts estimated a savings of $24.3 million.[24] Miron's estimate assumed the average cost model, while this report uses the marginal cost model.

Addition Savings, Benefits and Considerations of Amendment 64

Because this report focuses on the state budgetary outcomes of Amendment 64, it ignores other, indirect costs or savings that may result from legalization of marijuana.

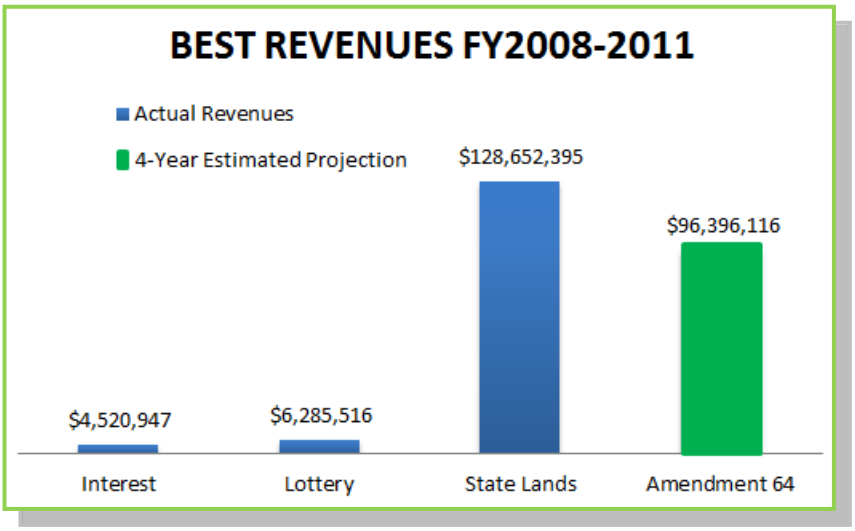
Impact on Colorado Public School Capital Construction Assistance Fund

Enacted in 2008, the Building Excellent Schools Today (BEST) program is a division of the Public School Capital Construction Assistance Fund. This statewide fund assists school districts in building new facilities in order to provide first class, 21st century, healthy, safe school grounds for Colorado's students. The BEST program generates between $30 million to 60 million in revenues for Colorado schools annually with 2011 representing the high water mark at $60 million. The fund can also leverage revenues with a $40 million debt service limit. A portion of the revenue raised for the BEST program is also matched by the local school district that receives the grant money.

Local school districts requesting grant money from BEST must match a certain percentage of the grant. The local matching percentage is calculated from income-level criteria like: district's median household income relative to the state average and percentage of pupils in the district who qualify for free and/or reduced lunch. Higher income districts are required to match a larger percentage of the grant award than lower-income districts, allowing lower-income school districts to procure grant money more easily.

[23] Austin, James. (2005) "Rethinking the Consequences of Decriminalizing Marijuana" page 11

[24] Miron, Jeffrey A. (2002), "The Effect of Marijuana Decriminalization on the Budgets of Massachusetts Governments, With a Discussion of Decriminalization's Effect on Marijuana Use."



Most of the funding from the BEST program comes from School Trust Lands and State Lottery revenues, but the current revenue is not nearly enough to accomplish the unmet school construction needs of Colorado. Currently there is $18 billion[25] in unmet school construction projects that are waiting for funding. New regulations on marijuana would contribute significantly to the BEST program. As the bill is currently written, the first $40 million dollars in revenue raised annually from excise taxes on marijuana production is credited to the Public School Capital Construction Assistance Fund. That excise tax cannot exceed 15 percent prior to 2017. The Colorado Center on Law and Policy has estimated that Amendment 64 would generate $24 million in excise tax revenue annually under the current 15 percent scheme. Over a four year period that would add over $96 million to BEST revenues. The chart compares four years of Amendment 64 revenue raised to the revenue over the program's first four years.

The schools with the most need are the first in line to receive BEST funding. Because the schools with the most need are in lower-income districts, their local match percentages are lower. As more and more projects get built from the unmet construction needs list, the local match percentage will increase because more projects will be built in higher-income districts whose local match percentage is even higher. Currently the program is operating around a 30 percent local match rate. A 50 percent match rate is the future target.

Calculations

The earlier excise tax revenue estimate of $24 million was adjusted upward by 30 percent to $31.3 million to account for the local matching money. The BEST program is also able to leverage that money, but because their $40 million debt service limit is expected to be reached this coming year, the assumption cannot be made that the $31.3 million will be leveraged into additional money available for school construction.

According to the most recent round of BEST grant awards, 70 percent of unmet needs will be new school construction and 30 percent will be renovations. Coding the $31.3

Jobs created by Amendment 64 prior to 2017

Impact Type	Employment	Output
Direct Effect	217	$31,328,738
Indirect Effect	63	$9,731,715
Induced Effect	92	$11,790,611
Total Effect	**372**	**$52,851,064**

[25] Interview with Mary Wickersham- Chair of the BEST Assistance Board, CCAB chair (July 2012)

million as either new construction or renovations, CCLP ran this through an input/output model to calculate the economic impact of additional construction spending on the Colorado economy[26].

The excise tax revenue from Amendment 64 would directly create 217 new construction jobs. In addition, the construction projects would create 155 indirect jobs as the spill-over effects of those construction worker's salaries permeate through the Colorado economy. In total, the excise tax revenue generated from Amendment 64 would create 372 jobs.

As the construction industry in Colorado has lost 34.6 percent of its employment since the Great Recession began in 2007[27], an addition of 217 new construction jobs would be a healthy boost to the sector. Furthermore, the $31.3 million in additional construction spending will translate into $52.8 million in spending for Colorado's economy.[28]

Forecasting Five Years Later

There are a few critical factors that will change from now until 2017 that directly influence tax revenue, police costs, and the BEST program funding. First the excise tax percentage charged to marijuana production is allowed to exceed 15 percent after 2017, and that decision is subject to voter approval. The production cost of marijuana is expected to fall as growers adapt to new regulations and utilize economies of scale. As fewer Coloradans are arrested and incarcerated for marijuana, law enforcement will adapt to changed demand lower prison levels which could mean more cost savings than in the first year. The local match rate from the BEST program will increase from the current 30 percent level to the 50 percent. The BEST debt service limit might increase, which would allow that capital construction fund to be leveraged, creating more money for school construction.

[26] Calculations were made using the input/output modeling software IMPLAN

[27] http://www.cclponline.org/uploads/files/State_of_Working_Colorado_2012_final_b.pdf

[28] *Direct impact*: Represents the primary wave of employment, income and production. The direct employment impact is the number of new construction workers. The direct economic output is the value of the goods and services the workers produce. *Induced effects*: Measures secondary and tertiary spending. The stage captures the "ripple effect" of the direct impact. For example, it includes the impact of increased production of concrete used by a construction worker and the impact as that worker spends wages on groceries.

Three scenarios for benefits from Amendment 64			
Item	Pre-2017	Post-2017 scenario No. 1	Post-2017 scenario No. 2
Excise tax rate on wholesaler	15 percent	28 percent	55 percent
Sales cost of marijuana	$133 per ounce	$133 per ounce	$160 per ounce
Law enforcement savings	$12,046,048	$36,046,048	$36,046,048
Excise tax revenue	$24,099,000	$40,473,800	$73,173,225
State sales tax revenue	$8,751,533	$8,765,553	$10,271,430
Local sales tax revenue	$14,545,600	$14,568,140	$17,030,140
Total new revenue	$47.3 million	$64 million	$100 million
Total savings and revenue	$59.4 million	$100 million	$136 million
BEST revenue, including local match	$31.3 million	$60 million	$60 million

To make the post-2017 scenario-1 projections comparable to the pre-2017 scheme, the cost per ounce of marijuana is held constant at $133. Production costs are assumed to drop an additional 10 percent. Based on the regulatory scheme in A64, the model assumes that excise taxes will increase (a rate of 28 percent or $15.75 per ounce) to offset the savings from lower production costs. The model also assumes a BEST local matching percentage at 50 percent and includes a growth in law enforcement savings of 10 percent per year of the long-run savings level.

The percentage of tax the government will impose after 2017 is still uncertain.[29] The post-2017 scenario-1 shows projections under the assumption that the price per ounce will remain at $133 per ounce. Given that the current price per ounce on the street is over $200 and MMJ users are paying nearly 195$ per ounce (once doctor visits and card fees are added up), a price of $133 per ounce gives a great deal of room for further taxation. The post-2017 scenario-2 shows the result of a $30 excise tax per ounce which raises the price to $160 per ounce. Economic theory suggests that taxing inelastic goods will raise the most revenue. Given marijuana's inelastic demand, the government has the potential to easily generate $100 million in new tax revenue from the sale of marijuana.

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[29] Rates are subject to voter approval