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**TAXING & ZAPPING MARIJUANA:
BLOCKCHAIN COMPLIANCE IN THE
TRUMP ADMINISTRATION
Part 2**

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TAXING & ZAPPING MARIJUANA:
BLOCKCHAIN COMPLIANCE IN THE TRUMP ADMINISTRATION
Part 2

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This is the second of a five-part series dealing with Attorney General Sessions' rescission of the Obama-era policy that discouraged federal prosecutors from bringing charges in all but the most serious marijuana cases under the federal Controlled Substances Act (CSA), and the Bank Secrecy Act (BSA). Federal law is at odds with state law in the majority of states. The Trump Administration is re-balancing enforcement. Twenty-eight states and the District of Columbia are in conflict with the CSA and the BSA because of their legalization of marijuana.

Legalization burdens the States that do so with the responsibility of (a) monitoring the *physical flows* of marijuana through the supply chain (making sure the marijuana does not enter inter-state commerce; making sure it stays out of the hands of minors, etc.), and (b) monitoring the *fiscal flows* (making sure the proceeds of marijuana production do not end up in criminal hands).

The type of controls favored by the states are *track and trace* (TAT), or *seed-to-sale* (STS) systems. These systems are reasonably complex, as well as technology-intensive. Nevertheless, there are questions about whether they are adequate to the enforcement needs. TAT is a derivative application of commercial inventory control systems. Radio Frequency ID (RFID) is applied to marijuana plants and products. STS is a derivative application of Artificial Intelligence (AI) and the Internet of Things (IoT). It arises out of the application of technology to "digital food production." Neither TAT nor STS fully satisfy the enforcement needs of the State. Simply stated, these systems leak at both ends, and in the middle.

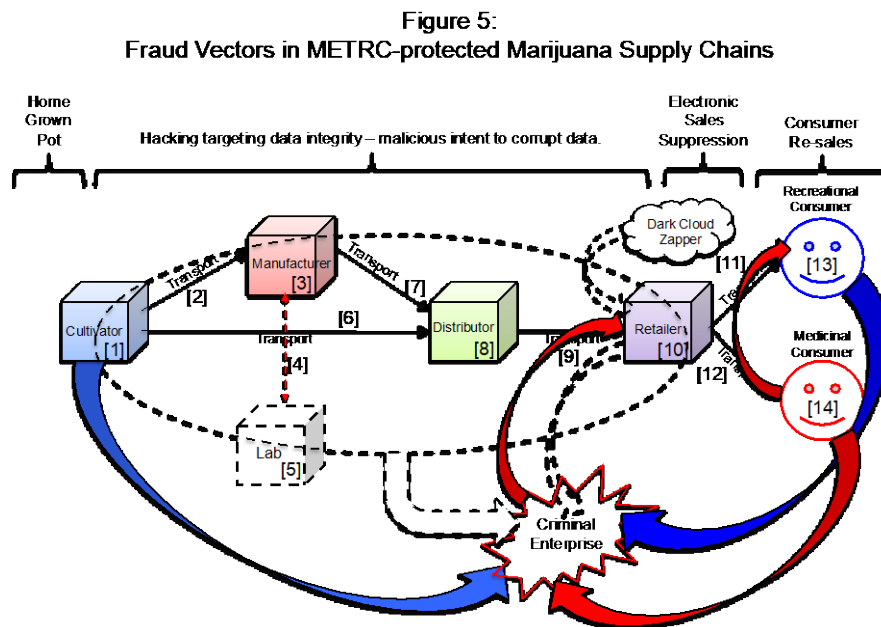
Under TAT and STS each marijuana plant under cultivation is specifically identified (digitally tagged), and then followed. Tracing includes movements within a cultivator's establishment, carriage by third-party transporter along the supply chain, and movement in and out of every lab where the marijuana is sent for external testing.

There are four basic fraud vectors open to criminal organizations seeking to exploit the standard marijuana supply chain. Figure 4 in the previous article listed the 14 "leakage points" in the standard marijuana supply chain. Figure 5 (below) revisits that diagram and sketches the four major fraud vectors in a METRC-protected marijuana supply chain. They are:

- Front-end frauds – exploiting openings at point [1];
- Cyber-attacks on the main commercial chain – producing leaks at points [2] through [12];
- Sales suppression fraud – exploiting insecure transactions at point [10]; and
- Back-end frauds – exploiting illegal re-sale opportunities at points [13] & [14].

We will develop these frauds and explore their prevention in sequence. This part considers the front-end frauds. This is the only section where the fraud prevention mechanisms

are not derived primarily VAT regimes. The following diagram (Figure 5) summarizes the fraud vectors in the basic marijuana supply chain.



The discussion that follows presumes the METRC system is used to monitor marijuana flows. The same analysis would apply just as appropriately if a *seed-to-sale* regime, like MJ Freeway, was in used.

Front-end frauds – criminal exploitation at point [1]

Supplies escape METRC’s *track and trace* at the front end when cultivation is for personal use. By definition, growth for personal use means there is no supply chain. There is nothing for METRC to control. It is pointless to require a personal use cultivator to attach an RFID chip to each plant, record daily inventory, and identify any movement of the plant or plant products to another entity. In other words, METRC is not designed to control *all physical flows* of legalized marijuana. It is designed to impose controls over *large-scale commercial flows*. When “home growth” is authorized, States exercise control over the *person*, not the *plant*. This is a significantly weakened enforcement effort.

Consider the following three examples of weak enforcement at the beginning of the supply chain.

(1) **Maine** allows “home grown” medical and recreational marijuana¹ at a residence (six plants, no more than three of which are mature).² It also permits “home growth” on another person’s land as part of a cooperative (farm), where the State only requires that each plant at this location be tagged with a ticket that records the *owner’s* Maine driver’s license number. There is no *track or trace* of the plant itself. There is no requirement

¹ Because Maine has decriminalized possession of (recreational) marijuana, these rules on home grown medical marijuana carry over to recreational use. The same occurs in Vermont.

² 22 M.R.S.A. § 2423-A(1)(B)

that inventories be taken daily, weekly or even monthly, and reported to the State. Audits are manual. They require a visit by the control officer to the place where the plants are grown, with a manual recording of driver's license numbers and physical counting of the plants.

(2) **Vermont** has legalized medical marijuana and permits home growth. There is a requirement that growers of medical marijuana register and obtain a Registry Identity Card. Securing the ID involves a process whereby a doctor certifies need. A patient (household) can cultivate up to two mature plants (or four immature plants). Audits are manual and are performed by the State. There is no provision for local control, or local audits, nor is there any room for additional regulation by city ordinance. Everything is determined between the doctor and the State. There is no METRC or other technology-based control system.³ Vermont's system is paper-based. Audits are by physical inspection.

(3) **California**, unlike Maine and Vermont, uses technology to monitor marijuana production. METRC is adopted. California allows home grown marijuana and sets a State limit for the number of plants that an individual can grow. Unlike Vermont (which limits legalization and home growth to medicinal marijuana) California allows "home growth" for medical as well as recreational use. California's home-grow limit is three times the limit in Vermont (six mature plants/ twelve immature plants). But even more interesting is the deferral of control in California to the locality. Time will tell if the California approach to regulation drafted centrally, but enforcement carried out locally is effective or not.⁴

By definition, "home grown" marijuana is outside of the technology-intensive *physical control* systems most States point to when asked about their monitoring of legalized marijuana. "Home growth" is not integrated into METRC's RFID controls in California, nor is it otherwise part of the technology-intensive control regimes in any other state. There is simply no *track and trace* system in play in any State for home growth.

For example, when the California Department of Food and Agriculture (CDFA), CalCannabis Cultivation Licensing was contacted about the application of METRC or a similar system by small growers for personal use, the response was:

The track-and-trace system, METRC, is only for annually licensed commercial cannabis cultivation. CalCannabis Cultivation Licensing does not have regulations for personal use. You will need to contact your local jurisdiction regarding personal use.⁵

³ April McCullum, *To Grow Marijuana Legally in Vermont, Know the Law* (January 25, 2018) BURLINGTON FREE PRESS, available at: <http://www.burlingtonfreepress.com/story/news/politics/government/2018/01/25/grow-marijuana-legally-vermont-know-law/1061491001/> (indicating that the Mayor of Montpelier, Vermont wanted this authority but the Vermont law did not permit it).

⁴ CA HSC § 11362.5.

⁵ Personal e-mail by the author, responded to by CalCannabis Cultivation Licensing staff (January 30, 2018) on file with author. Details and supporting regulations in the e-mail reference more information on complying with track-and-trace at Title 3, Division 8, Chapter 1 as follows:

https://static.cdfa.ca.gov/MCCP/document/Proposed%20Emergency%20Regulations%20Final_12.12.17.pdf

The answer is effectively the same in Vermont. Lindsey Wells, the Marijuana Program Administrator for the Vermont Department of Public Safety indicates that there is no *track and trace* system in place for “home grown” marijuana. There is a statutory limit for the number of cultivated plants, and a requirement that the location of cultivation be disclosed. Ms. Wells indicated:

If you want to cultivate marijuana you would need to register as a patient or caregiver for a specific patient. We do not track the number of plants patients and/or caregivers cultivate. We only require applicants to inform us of where they would be cultivating.⁶

States that have legalized both medical and recreational marijuana normally allow home growth. The norm is six plants per person (Massachusetts, Colorado, Maine, and Washington). The limit can be higher, for example twenty-five (Alaska)⁷ or lower, four (Oregon).⁸ Prior to June 8, 2017 Colorado allowed individuals to home-grow 99 plants.⁹ In California there is no limit on the amount of medical marijuana that can be home grown. The assumption is that the individual will grow as much as is needed (and no more).¹⁰

Six plants may not seem significant, but the annual revenue stream for a good cultivator (farmer) who does not consume his output may be a financially significant revenue source if his production makes it to the black market. Take Maine for example where legislation allows a grower to cultivate 36 plants at any one time – six for him/her and the same for another five “patients.” At average yield, these plants will bring in 40 to 50 pounds each 10-week cycle, or 200 to 250 pounds annually. Medical marijuana currently retails for \$1,600 per pound, giving it a black-market cash return of between \$320,000 and \$400,000 for 36 plants.

It is no wonder that Colorado saw significant criminal activity in the marijuana market when it allowed individuals to “home grow” up to 99 plants (16.5 times higher than the individual norm of 6 in most states). Thus, the annual revenue stream of someone cultivating at the Colorado personal limit is roughly \$880,000 to \$1,100,000.¹¹

⁶ Personal e-mail communication from Lindsey Wells to the author (February 1, 2018) on file with author.

⁷ Robert Bergman, *I Love Growing Marijuana*, (“The Alaska Constitution’s right to privacy act allows growers to cultivate 25 plants in a private residence for personal use. However, cultivating more than 25 cannabis plants in Alaska is a Class C felony. A fine up to \$50,000 and 5 years in prison can be imposed.”) *available at*: <http://www.ilovegrowingmarijuana.com/marijuana-laws-alaska/>

⁸ **Alaska** allows 25 plants AK Const. Art. 1, §22, but AS § 17.38.020 limits this to six plants with no more than three flowering, and twelve within a single dwelling with no more than six flowering; **California** allows six plants, H.S.C. § 11362.2(b); **Colorado** allows six plants per person and twelve plants per residence C.R.S.A. Const. Art 18 §14, (4)(a)(II); C.R.S.A. § 25-1.5-106; **Maine** allows an individual to possess, grow, cultivate, process or transport up to 6 flowering marijuana plants, 12 immature plants and unlimited seedlings, and possess all the marijuana produced by the plants at the adult’s residence 7 M.R.S.A. § 2452 (1)(C); **Massachusetts** allows six plants per person and twelve per household M.G.L.A. 94G § 7(2); Nevada allows twelve plants N.R.S. § 453A.200; **Oregon** allows four plants O.R.S. § 475B.245 (1)(a); **Washington** allows six plants R.C.WA 69.51A.210(1).

⁹ HB 1220 reduced the 99-plant limit to 12.

¹⁰ Robert Bergman, *Growing Marijuana in California*, (“California weed growing laws are unique because there are actually no official limits on how much weed can be grown. If you have a medical need to grow marijuana, the state assumes that you will grow as much as you need.”) *available at*: <http://www.ilovegrowingmarijuana.com/growing-marijuana-california/>

¹¹ Colorado’s 99 plant limit created an environment for criminal activity. For example, Megan Schrader reported in the DENVER POST on March 7, 2017 that:

Preventing front-end leakage of marijuana to criminals

The only effective way to stop front-end leakage [1] frauds into the criminal underground is to do what ten (10) states and the District of Columbia have done¹² – prohibit “home grown” marijuana for medical or recreational use.

The down-side to this measure is that individuals with serious illnesses do not have access to inexpensive marijuana. This is a pricing issue. Italian and Canadian health authorities solved it by authorizing the production of medical marijuana on behalf of those patients at secure military facilities.¹³ In both instances, the government kept cost down by using advance growing technologies. Thus, Italy and Canada have succeeded in securing the front-end of the supply chain. See Figure 6 (below).

Most recently, a 230-plant grow in Pueblo was busted in a residential neighborhood. In September, a raid of a dozen southern Colorado homes broke up a network holding 22,400 pounds of plant and product that was marked to be shipped out of state.

available at: <https://www.denverpost.com/2017/03/07/shut-down-colorados-gray-marijuana-market/>

When Maine considered the legal limit for “home grown” marijuana Andrew Freedman, the former director of Colorado’s regulatory agency, told Maine’s Marijuana Legalization Committee that, “Unlicensed residential grows were one of Colorado’s biggest, and most dangerous enforcement problems. Some landowners were growing huge marijuana crops disguised as personal grows and selling the overage at high profits in nearby states where marijuana remained illegal.” Penelope Overton, *Lawmakers Propose Limits on Size of Marijuana Home Grow*, PRESS HERALD (August 3, 2017) available at: <https://www.pressherald.com/2017/08/03/lawmakers-propose-limits-on-size-of-marijuana-home-grow/>.

¹² “Home grown” marijuana is prohibited in Connecticut, District of Columbia, Florida, Georgia, Illinois, Minnesota, New Hampshire, New Jersey, New York, Ohio, and West Virginia.

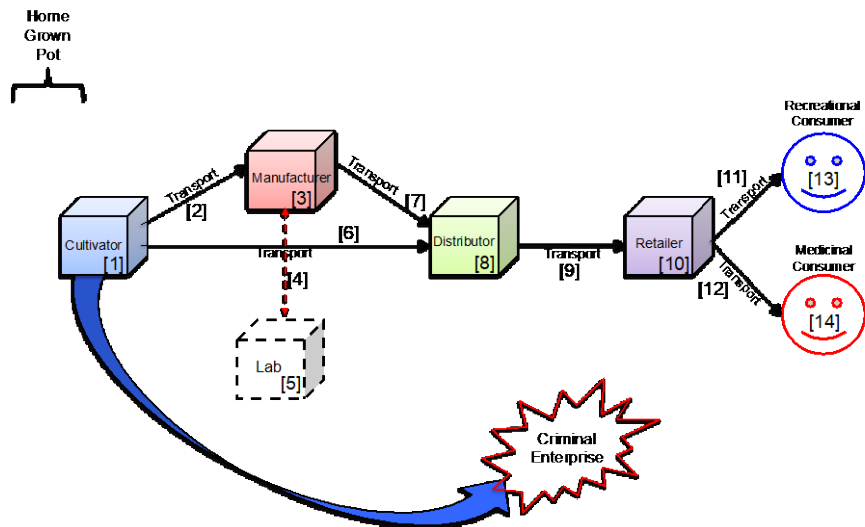
¹³ In Italy home grown medical marijuana is illegal. Expensive supplies are imported from the Netherlands. As a result, the government announced that the Italian Army would begin growing marijuana at a pharmaceutical plant in a secure facility in Florence.

“The aim of this operation is to make available to a growing number of patients a medical product which isn’t always readily available on the market, at a much better price for the user,” [said] Col Antonio Medica.

BBC reporting from *Corriere della Sera* (Italian Television report) *Italy: Army Unveils “cut-price cannabis” Farm*, (April 30, 2015) available at: <http://www.bbc.com/news/blogs-news-from-elsewhere-32531376>

Similar secure military facilities are used in Canada for marijuana farms. JOURNAL OF COMMERCE, *Engineering Insights for Marijuana Facilities Shared at BUILDEX Calgary* (November 17, 2017) available at: <https://canada.constructconnect.com/joc/news/projects/2017/11/engineering-insights-marijuana-facilities-shared-buildex-calgary>

Figure 6:
Cultivator Frauds of Home Grown Marijuana
Front-end Leakage in METRC-protected Marijuana Supply Chains



The story does not end here. In a jurisdiction where marijuana has been legalized, there is a readily available doorway into the black market. Supplies do not have to go underground, or across the border. Retail establishments that are properly selling supplies secured through legitimate channels have a ready clientele, and can easily sell “extras,” if they can “adjust” the cash registers to “skim” sales. The technology that does this is called a Zapper and will be considered in PART four.

In Maine where the *sale* of marijuana is illegal (although both *cultivation* and *use* are permitted) many growers are giving marijuana away “free” as an inducement for consumers to make other purchases. Some cultivators are even giving their “extra” marijuana away without coupling it with another purchase but adding on a mandatory delivery fee of \$200 to \$300 per ounce.¹⁴ There seems to be no end to commercial creativity when it comes to marijuana.

¹⁴ Gillian Graham, *No Sales, But Marijuana “Gifts” Exploit a Legal Limbo*, PORTLAND PRESS HERALD (April 9, 2017) available at: <https://www.pressherald.com/2017/04/09/no-sales-but-marijuana-gifts-exploit-a-legal-limbo/>