

IMPLEMENTING PROPOSITION 64: MARIJUANA POLICY IN CALIFORNIA

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FOREWORD

The Law and Policy Lab practicum is an important innovation in the curriculum at Stanford Law School. Policy Lab students address important public policy questions for a real-world client, under the supervision of a SLS faculty member. In some ways, the Policy Lab is similar to a traditional legal clinic, but the focus is on the general public interest rather than advocacy on behalf of a particular individual or organization.

This report is the work of a Policy Lab on marijuana regulation, a subject of extraordinary current importance in California. After 20 years of unregulated medical marijuana, the legislature passed a comprehensive set of rules governing how the industry should operate. Shortly thereafter, the voters approved Proposition 64 (The Adult Use of Marijuana Act), which legalized recreational marijuana. This new environment creates challenges and opportunities for policymakers, including Assemblyman Jim Wood, whose district includes most of the states' marijuana production.

Our Stanford policy lab was very fortunate to have Dr. Wood as our client for this semester. Dr. Wood posed three questions that our students, with our guidance, tried to answer:

- (1) What are the conflicts between the recently passed medical marijuana regulations and Proposition 64, and how can they be reconciled within the constraints of the State Constitution?
- (2) How serious a problem is cannabis-impaired driving, and what technologies and policies could combat it?
- (3) How can policymakers protect the environment from destructive marijuana grows, and how can environment protection officials hold destructive growers responsible when they are shielded under multiple limited license corporations (LLCs).

Our own role was to provide supervision and editorial guidance, but these insightful analyses are very much the students' own. Cari Jeffries, a coauthor of the 2015 Marijuana Law and Policy Lab, provided expert assistance and advice throughout the process. We received extremely useful comments from Dr. Beau Kilmer, Co-Director of RAND's Drug Policy Research Center. Finally, we'd like to thank former deans Paul Brest and Larry Kramer and current dean Elizabeth Magill for their leadership and support of the Policy Lab program.

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PART I:
RECONCILIATION OF AUMA AND MCRSA

I. INTRODUCTION

This portion of the paper seeks to address three broad questions related to the reconciliation of California’s Medical Cannabis Safety and Regulation Act¹ (“MCRSA”, enacted by the legislature in 2015) and Adult Use of Marijuana Act² (“AUMA”, enacted by a citizen ballot initiative in 2016):

1. What are the key conflicts between the MCRSA and AUMA?
2. Does the California Legislature have authority to unilaterally amend the AUMA without requiring a public vote?
3. If so, how can the California Legislature amend the AUMA to reduce potentially negative impacts to Emerald Triangle constituents and California residents more broadly?

Through our analysis, we detail the following key takeaways:

1. There are eight major conflicts between the MCRSA and AUMA, each with significant public policy implications.
2. The Legislature has authority to unilaterally amend the AUMA without a public vote.
3. The Legislature is bound by the purposes and intent of the AUMA, as laid out in Section 3 of the Act.
4. The Legislature should consider voting procedure, initiative purposes, voter’s intent, and the statute as a whole in deciphering an appropriate range of amendments to particular issue areas.

We will proceed initially by detailing each of the eight conflicts and their potential public policy implications. Next, we will discuss the source of the California Legislature’s authority to amend the AUMA by analyzing the constitutional authorization as well as the explicit statutory authorization. Then, constraints on the Legislature’s amending authority will be discussed in broad terms by looking at court holdings on the matter. Finally, these constraints will be applied to the AUMA, with each of the key conflicts analyzed to discern appropriate amendment authority and constraints.

¹ 2015 Cal. Legis. Serv. Ch. 688 (A.B. 243).

² 2016 Cal. Legis. Serv. Prop. 64. (PROPOSITION 64).

II. KEY CONFLICTS BETWEEN AUMA AND MCRSA

1. BACKGROUND

California became the first U.S. state to legalize medical cannabis after Proposition 215, the California Compassionate Use Act, was approved by voters in 1996. The Medical Marijuana Program Act was enacted in 2003 through Senate Bill 420; the Act permitted the medical cannabis industry to organize as collectives and cooperatives. Later, in 2015, the Medical Cannabis Safety and Regulation Act (MCRSA) was enacted through the combination of Assembly Bill 266, Assembly Bill 243, and Senate Bill 643. The MCRSA established California's first regulatory framework for medical cannabis. It was later revised in 2016 through Assembly Bill 2516 and Senate Bill 837, which together made changes to implement the Act and create a new cottage cultivation license.

Proposition 64, the AUMA, was approved by voters in 2016. As enacted, the AUMA created a regulatory framework for recreational cannabis use modeled in some respects on the framework created by the MCRSA as approved in 2015, though it contained policy differences and also did not reflect legislative amendments made to the MCRSA prior to the AUMA's approval. Section 10 of the AUMA permits Legislative amendments that are "consistent with and further the purposes and intent of [the] Act." The AUMA directs state agencies to begin issuing licenses for cultivation, manufacturing, testing, distribution, and transportation of cannabis by the beginning of 2018, leaving the state less than a year (as of the writing of this paper) to implement the regulations and reconcile major conflicts.

2. MAJOR CONFLICTS

Table 1 summarizes the eight major differences between the two laws, each of which we discuss in detail in the ensuing sections.

Table 1: Summary of Major Conflicts between AUMA and MCRSA

| Conflict | Medical Cannabis Safety and Regulation Act | Adult Use of Marijuana Act |
|---------------------------------|---|---|
| <i>Vertical Integration</i> | license limits prevent control of entire market | owning "seed to sale" is permitted |
| <i>Cultivation Size Limits</i> | growth site size limited to 1 acre | no limit on growth site size for Type 5 license |
| <i>Patient Cultivation</i> | max 100 ft ² /patient | max 6 plants/residence |
| <i>Local Permits</i> | state + local licenses required | state license + local "approval" (but no license) |
| <i>Deliveries</i> | local governments can bar deliveries to patients | local governments can't bar licensee deliveries |
| <i>Transportation</i> | only licensed transporters can transport cannabis | any adult can transport cannabis |
| <i>Distributors</i> | cultivators must send product to independent "distributors" | cultivators can distribute for themselves (except large-scale cultivators) |
| <i>Applicant Qualifications</i> | licenses can be denied solely due to past controlled substances offenses; no residency or market requirements | prior controlled substances offense is not in itself grounds for denial; residency requirement; licenses can be restricted based on competitive market conditions |

A. Vertical Integration

“Vertical integration” is a term referring to one company operating in two or more stages of production, each of which are normally operated by separate companies. *MCRSA*: AB 266 Section 19328(a)-(b) generally restricts licensees from holding licenses in more than two categories, which significantly limits direct farm-to-consumer sales. There are some exceptions, however. Type 10A licensees can apply for both cultivation and manufacturing licenses, as long

as their total cultivation area is four acres or less. Additionally, facilities in jurisdictions that require or permit cultivation, manufacture, and distribution to be integrated as of July 1, 2015 may continue to operate that way until January 1, 2026.

AUMA: Licensees are generally permitted to hold any combination of licenses, to include cultivator, manufacturer, tester, retailer, and distributor. The sole exception to owning “seed-to-sale” is Type 5 licensees (large cultivators), who may not hold Type 8 (testing), Type 11 (distribution), or Type 12 (microbusiness) licenses according to Section 26061(e).

Policy Implications: The MCRSA encourages specialization in one or two categories, while the AUMA permits vertical integration and direct farm-to-consumer sales. The AUMA thereby opens opportunities for much larger-scale investments than the MCRSA, leading to more big business that may limit the survivability of current small growers, manufacturers, testers, retailers, and distributors. Also, by permitting more vertical integration, the AUMA limits the number of chokepoints for the state to collect taxes, which also limits the number of independent records and makes it easier to evade taxes through fraud. In Washington, for example, there was a tax on transfers from farm to processor; after residents bought licenses to both stages, the cross-license transfer was eliminated as was any tax or independent record that could allow auditing of tax compliance.

B. Cultivation Size Limits

MCRSA: AB 243 Section 19332(g) limits the maximum allowable cultivation site size to one acre (43,560 ft²) outdoors for Type 3 licensees or 22,000 ft² indoors for Type 3A and 3B licensees. The Department of Food and Agriculture is directed to constrain the number of issued licenses for all three of these license types.

AUMA: A new Type 5 license is created for large cultivators. Section 26061(d) prevents these licenses from being issued before January 1, 2023, but once in place, there is no limit on the size of Type 5 cultivation sites. In addition, the AUMA created a new category of Type 12 microbusiness licenses for small retailers with farms not exceeding 10,000 ft².

Policy Implications: The potential for very large growth sites starting in 2023 under the AUMA will likely create a significant barrier to entry for new smaller growers and make it difficult for existing small growers to compete due to economies of scale. With the bigger scale

of operation, large growers will obtain cost advantages that will decrease the variable cost per plant through fixed cost-sharing across all plants. This, in turn, will boost profitability, and small growers will be unable to compete over time, leading to a few big growers outlasting many smaller growers. However, the farms that survive will generally be more efficient than the smaller farms currently in operation.

C. Patient Cultivation

MCRSA: AB 243 Section 11362.777(g) permits qualified individual patients to receive exemptions from the state license program if cultivating less than 100 ft² for personal medical use. Similarly, primary caregivers with five or fewer patients may cultivate up to 500 ft². Although exempt from state licensing requirements, Section 11362.777(g) does not prevent local governments from additional restrictions in accordance with their constitutional policing powers.

AUMA: Section 11362.1(a)(3) permits adults to cultivate up to six living plants per residence for personal use. To comply with Section 11362.2(a)(2), these growers must keep the harvested marijuana within the person's private residence or on its grounds in a locked space that is not visible from a public place. Cultivation outdoors may be regulated and prohibited by cities and counties, but cultivation inside a private residence or fully enclosed and secure accessory structure cannot be completely prohibited.

Policy Implications: The AUMA permits considerably fewer plants per individual to be grown in households. This may lead to a rise in the number of medical permit applications so that existing non-medical growers with more than six plants reduce their risk. The AUMA regulation may also become difficult to enforce, with infractions only when viewable from a public place or when enforcing authorities have warrants for other alleged activity.

D. Local Permits

MCRSA: AB 266 Section 19320(a) and AB 243 Section 11362.777(b) require all persons engaged in commercial cannabis activity to obtain both a state license and an additional license, permit, or other similar authorization from their local government.

AUMA: State licenses are required, but local government permits are not required. In fact, under Section 34019(f)3(C), if local governments prohibit retail sales or cultivation, including outdoor personal use cultivation, they stand to lose grant funding for law enforcement, fire protection, and other public health and safety programs associated with implementing the AUMA. However, Section 26200(a) places no limit on the ability of local governments to regulate any licensed business or to mandate requirements for local business licenses. Indeed, Section 26055(e) restricts licensing authorities from approving a license application if it will violate any local ordinance. Thus, local “approval” is necessary, but no separate local license is needed to operate.

Policy Implications: The AUMA reduces local government control by not requiring local permits for businesses to operate. Local governments arguably have a better understanding of their district’s needs and constraints than the state government, which could result in a less efficient allocation of businesses than otherwise. However, the process to obtain a permit will likely be sped up by avoiding a second application, which will reduce barriers to entry somewhat.

E. Deliveries

MCRSA: AB 266 Section 19340 requires that deliveries be made to qualified patients only by dispensaries and only in cities or counties where not explicitly prohibited by local ordinance. Although deliveries can be barred, local jurisdictions cannot bar public road transport of delivered products through its locality. All deliveries must be documented, and each delivery transaction may be taxed by the local county. Additionally, Section 19334(a)(4) permits dispensers with three or fewer licensed dispensary facilities (Type 10A) to deliver where expressly authorized by local ordinance.

AUMA: Similar to the MCRSA, Section 26080(b) prevents local governments from barring transportation of cannabis products along public roads by licensees in compliance with the initiative and local law. The AUMA goes further with Section 26090(c), which specifically prevents local governments from barring deliveries. When combined with Section 11362.2(a)(2), which limits local governments from prohibiting possession up to 28.5 grams in a private residence, no cannabis deliveries in any jurisdiction can be barred as long as

the delivery is to and the sale takes place in a private residence.

Policy Implications: The AUMA is significantly less restrictive than the MCRSA in delivery regulation. This will facilitate last-mile delivery services to cannabis consumers and help spur additional product purchases for the nascent industry, while will be particularly helpful for immobilized medical cannabis patients. However, this also takes away control from local governments and thereby impact public safety.

F. Transportation

MCRSA: AB 266 Section 19326(a) limits transportation between licensees only to licensed transporters, and SB 643 Section 19337 requires these transporters to transmit and physically possess a shipping manifest with each shipment. When combined with AB 266 Section 19328(a), licensed transporters can at most be one other type of licensee, whether cultivator, manufacturer, or retailer.

AUMA: Section 11362.1 states that any person 21 years of age or older may legally transport up to 28.5 grams of unconcentrated marijuana and 8 grams of concentrated marijuana. While not explicitly striking down a contrary existing law (California Vehicle Code Section 23222(b)) that makes it illegal to drive in possession of marijuana, the AUMA directly contradicts it; it is unclear which law authorities will or should adhere to during routine traffic stops. The state maintains some regulation over commercial transportation, however, as Section 26070(b) requires the Bureau of Medical Cannabis Regulation (renamed the Bureau of Marijuana Control) to establish standards for types of vehicles and qualifications for drivers eligible to transport commercial marijuana.

Policy Implications: If the vehicle code conflict is left unresolved, there is potential for confusion with both police officers and drivers over whether possession while driving constitutes a violation. Further, when compared to the MCRSA, the AUMA offers more lax standards for transportation, which reduces barriers to entry for commercial delivery services but again reduces local control over marijuana being transported over public roads.

G. Distributors

MCRSA: All cultivation and manufacturing licensees are required to send their product to an independent Type 11 distributor for quality assurance and inspection, who then submits the product to a Type 8 laboratory for batch testing and certification, who in turn sends the product back to Type 11 licensees for final inspection and distribution to another manufacturer or retailer. Section 19326 describes this regime that regulates the flow of cannabis products. Of note, Type 11 distributors and Type 8 testing facilities are barred from holding any other kind of licenses.

AUMA: Cultivators and manufacturers generally do not need to send their products to independent “distributors” and instead can distribute products for themselves. The sole exception to the ability to internally distribute products is Type 5 large-scale cultivators; under Section 26061(e), in 2023, Type 5, 5A, and 5B licensees will not be eligible to apply for or hold Type 8 (testing) or Type 11 (distribution) licenses.

Policy Implications: The AUMA helps cultivators and manufacturers avoid a supply chain layer to Type 11 licensees, thus limiting costs associated with distributing their products to consumers, which helps them be more profitable. However, non-medical cannabis products will be available in a wider variety of mediums, types, and flavors than traditional medical cannabis, and it is not clear that cultivators and manufacturers will have expertise in quality assurance and inspection to deliver as high quality of a product as under the MCRSA regime, posing potential public health and safety concerns. Further, large-scale cultivators will be unable to fully vertically integrate, which will offer small- and medium-scale cultivators an advantage and potentially help them compete for profits. This potentially limits some of the tax assessment and collection issues as described under the “Vertical Integration” section.

H. Applicant Qualifications

MCRSA: SB 643 Section 19323(b)(5) permits licensing authorities to deny applications solely due to past offenses substantially related to qualifications, including any felony controlled substance offense, violent or serious felonies, or felonies involving fraud, deceit, or embezzlement, or any sanctions by a local licensing authority in the past three years. However, there is no requirement for California residency, nor is there a consideration of local market

conditions.

AUMA: Under Section 26057(b)(4)-(5), licenses may be denied for convictions of offenses “substantially related” to the business, similar to the MCRSA. However, prior controlled substance offenses are not considered “substantially related” and cannot be the sole ground for denial of a license, although such offenses after initial license approval may be grounds for revocation or denial of renewal licenses. Additionally, Section 26054.1 requires all licensees to be continuous California residents as of January 1, 2015, although this provision sunsets on December 31, 2019. Finally, Section 26051 permits a variety of market factors to be considered in denying licenses, to include restraints on competition or monopoly power, perpetuation of the illegal market, encouraging abuse or diversion, posing a risk of exposure to minors, environmental violations, and “excessive concentration” in any locality.

Policy Implications: The AUMA simultaneously expands and contracts the number of eligible cannabis licensees. Many California residents with past drug offenses will now be more likely to pass through applicant screening; however, they must be residents as of 2015, and they must plan to operate in an area with the proper market conditions. Application administrators will have some knowledge of the market based on amount, type, and location of licenses approved, but they will likely lack information about market conditions particular to areas. Further, “excessive concentration” is relatively loosely defined in Section 26051(c), and local governments can impose their own limits to more specifically define this, giving local regulators significant leeway. Altogether, AUMA license application qualifications likely institute greater barriers to entry for new businesses than do MCRSA applications.

III. LEGISLATIVE AUTHORITY TO AMEND THE AUMA

1. CONSTITUTIONAL AUTHORIZATION

Article II of the California Constitution vests power in its residents—the electors—to propose and approve state law as initiative statutes.³ For the California Legislature to amend an initiative statute, the Legislature first must derive authority from the Constitution as well. Article II Section 10(c) of the California Constitution grants the California Legislature authority to

³ Cal. Const., art. II, Section 8-10.

amend an initiative statute but only if approved by the electors or if the initiative statute permits amendment without elector approval.⁴ The AUMA falls in the latter category. It authorizes the Legislature to amend provisions of the Act if the amendment is approved by a vote of the Legislature and consistent with the purposes and intent of the statute.⁵ Before examining the AUMA's statutory authority, it is instructive to understand first how California courts have interpreted the Legislature's constitutional authority to amend and what constitutes an amendment to an initiative statute.

People v. Kelly is a seminal case that provides an explanation of the Legislature's constitutional authority to amend an initiative statute and an illustrative example of how amendments are defined and examined for validity.⁶ The California Legislature enacted the Medical Marijuana Program⁷ (the "MMP") to clarify the scope of the Compassionate Use Act⁸ (the "CUA"), an initiative statute approved by electors in 1996 that ensured the right to obtain and use marijuana for medical purposes. The CUA did not set numerical limitations on the legal quantity for possession or cultivation of marijuana; rather, the California Court of Appeals construed the statute to set a subjective standard placing the bar at what was "reasonably related to the patient's current medical needs."⁹ When the MMP was enacted, it established quantity limitations for the possession and cultivation of marijuana.¹⁰ The Legislature passed the MMP with the purpose of providing an objective, uniform standard for law enforcement and patient predictability.¹¹ However, these provisions of the MMP were invalidated because they amended the CUA by explicitly restricting its broad protections with neither voter approval nor statutory authorization.¹²

A law enacted by the Legislature is considered an amendment if it changes the scope or effect of the initiative by addition, omission, or substitution of provisions whether in original form or by an independent act.¹³ Provisions of the MMP were invalidated because the Legislature was precluded from indirectly amending, via the enactment of new legislation, what

⁴ Cal. Const., art. II, Section 10(c).

⁵ Adult Use of Marijuana Act Section 10 (2016).

⁶ *People v. Kelly* (2010) 47 Cal.4th 1008.

⁷ Health and Safety Code Section 11362.7 et seq.

⁸ Health and Safety Code Section 11362.5 et seq.

⁹ *People v. Trippet* (1997) 56 Cal.App.4th 1532, 1549.

¹⁰ *Kelly* 47 Cal.4th. at 1015.

¹¹ *Id.* at 1016.

¹² *Id.* at 1049.

¹³ *People v. Hohanadel* (2009) 176 Cal.App.4th 997, 1012 (citation omitted).

it lacks authority to amend pursuant to the constitutional and statutory limitations.¹⁴

The purpose of the California’s constitutional limitation on the Legislature’s power to amend initiative statutes is to “protect the people’s initiative powers by precluding the Legislature from undoing what the people have done, without the [people’s] consent.”¹⁵ Contemporaneously, the Legislature retains authority to enact laws that address the same general subject matter related to an initiative statute but in a distinct area.¹⁶ And as previously noted, the Legislature still has authority to amend an initiative statute without voter approval when permitted by the initiative itself.

2. STATUTORY AUTHORIZATION

Section 10 of the Adult Use of Marijuana Act permits the Legislature to amend by a majority vote the provisions of the Act relating to Marijuana Regulation and Safety, provided that the amendment is consistent with and further the purposes and intent of the Act as stated in Section 3.¹⁷ All other provisions of the Act may be amended by a two-thirds vote of the Legislature, again, provided that the amendment is consistent with and further the purposes and intent of the Act.¹⁸ Assuming that the California Legislature can meet the sufficient number of votes, it has the authority to propose and approve amendments to the AUMA bound by the purposes and intent of the Act.

3. CONSTRAINTS: PURPOSE AND INTENT

Approved statutes and amendments, whether by the electors’ or the Legislature’s vote, take effect on the day after approval unless otherwise specified by the statute.¹⁹ When the Legislature’s authority to amend an initiative is conditioned upon furthering the purposes of the Act, the California Supreme Court stated, “such a limitation upon the power of the Legislature must be strictly construed, but it must also be given the effect the voters intended it to have.”²⁰ Implementing these principles, the Court prescribed a presumption that the Legislature acts

¹⁴ Proposition 103 Enforcement Project v. Charles Quackenbush (1998) 64 Cal.App.4th 1473, 1487.

¹⁵ Kelly 47 Cal.4th. at 1025 (citation omitted).

¹⁶ Id.

¹⁷ Adult Use of Marijuana Act Section 10 (2016).

¹⁸ Id.

¹⁹ Cal. Const., art. II, Section 10(a).

²⁰ Amwest Surety Ins. Co. v. Wilson (1995) 11 Cal.4th 1243, 1255–1256.

within its authority when it enacts legislative amendments authorized by the initiative itself.²¹

Since approved statutes and amendments are almost immediately operational and presumptively valid, a court does not have an opportunity to interpret or evaluate their constitutionality until a party brings a suit. Generally, a party who has suffered or will suffer an injury from the enforcement of a particular statute may bring a suit to challenge its validity.²² When the validity of an amendment limited by a statute's purpose is challenged, the key factor a court must evaluate is whether the amendment can be reasonably construed to fit within the purpose of the initiative. An initiative is upheld if, by any reasonable construction, it can be said that the amendment furthers the purposes of the initiative.²³ In determining the purposes of an initiative, a court is guided by, but not limited to, the general statement of purpose found in the initiative.²⁴ The purposes and intent of the AUMA are enumerated in Section 3 of the statute. It contains 27 distinct purposes generally related but not limited to strict regulation, local control, taxation, public safety, public health, and enforcement.²⁵ However, a court's interpretation is not limited to the stated purposes of the initiative.

4. ADDITIONAL FACTORS

When interpreting an initiative statute, courts also apply the same principles that govern statutory construction.²⁶ The court's key concern is to determine the intent of the voters to best effectuate the purpose of the law. The primary source for the voters' intent is the language of the statute, giving the words their ordinary meaning. If the language is not ambiguous--having more than one meaning--then the plain meaning of the language governs. Lastly, the language must be construed in the context of the initiative as a whole and the overall statutory scheme.²⁷

When the language of an initiative does not have one definitive interpretation, a court may look to indicia of the voters' intent outside of the language of the statute.²⁸ Since the electors pass an initiative statute, a court cannot look to the statute's legislative history to provide evidence of intent, as it would if passed through the Legislature. For this reason, the arguments

²¹ Id. at 1256.

²² 1 Cal. Affirmative Def. Section 19:3.

²³ Amwest 11 Cal.4th at 1256.

²⁴ Id. at 1257.

²⁵ Adult Use of Marijuana Act Section 3 (2016).

²⁶ 38 Cal. Jur. 3d Initiative and Referendum Section 43.

²⁷ Id.

²⁸ Id.

and analysis contained in the official ballot serve as indicia of the voters' intent.²⁹

Consequently, if the Legislature seeks to amend the AUMA, it should consider the enumerated purposes as stated in Section 3 of the AUMA, the plain meaning of the language, the overall statutory scheme, and voters' intent as indicated by the official ballot arguments.

5. ILLUSTRATION: INVALIDATION OF AN AMENDMENT

To provide further guidance as to how the courts examine whether an amendment fulfills the purpose and intent of its statute, the case of *Gardner v. Schwarzenegger* illustrates how an amendment can be invalidated because it does not meet the purpose condition.

In 2000, California voters passed Prop 36, an initiative that allowed the dismissal of certain drug-related criminal offenses upon completion of approved drug treatment programs. Prop 36's express purposes were: (1) promoting public health by expanding treatment for drug addiction and abuse; (2) enhancing public safety by freeing jail cells for violent criminals; and (3) saving money by affording treatment in lieu of incarceration.³⁰ In 2005, the California Legislature passed legislation that expanded the State's authority to incarcerate Prop 36 probationers for drug-related probation violations. The California Court of Appeals found that the new legislation clearly contravened the second and third purposes of Prop 36 because the amendment would reduce the jail space available for violent criminals and increase the costs incurred in connection with nonviolent drug possession offenders.³¹ According to the court's ruling, by no reasonable construction could allowing incarceration for drug-related probation violations, be deemed consistent with the purposes of the proposition.

²⁹ *Id.* The opinions of drafter or legislators who sponsor an initiative are irrelevant and not included in the analysis of the voters' intent.

³⁰ *Gardner v. Schwarzenegger* (2009) 178 Cal. App. 4th 1366; Voter Information Guide, Gen. Elec. (Nov. 7, 2000) Text of Proposed Law, Section 2-3, p. 66 (Guide).

³¹ *Gardner* 178 Cal. App. 4th 1366.

IV. APPLICATION TO THE AUMA

The ability to amend a provision in the AUMA is constrained by two forces: the voting procedures written into the AUMA and the purposes and intent pertaining to the provision. The voting procedures constraint is straightforward and emanates from one source—Section 10 of the Act itself. The purposes and intent constraint is, on the other hand, born of multiple sources, including the text of provisions within the act, the overall statutory scheme, and the voters’ intent in passing the act. Determining whether an amendment of a provision will permissibly fall within the purposes and intent governing that issue is ultimately an imprecise, probabilistic exercise.

This exercise requires looking prospectively at how a court is likely to interpret the amendment conjunctively with the purposes of the AUMA if the amendment were ever challenged. The rules of interpretation and construction favor the legislator. An amendment will be upheld if, by “any reasonable construction,” it can be said to further the governing purpose or intent. When a court does this construction, legislative findings are given “great weight” and the court starts with the “presumption that the legislature acted within its authority.”³² With that back-drop, each of the eight issues of concern can be analyzed using the tools of interpretation and construction previously introduced. Though there is no definitive answer to how much a given provision of concern can be amended—either to greater resemble, or to move further away from, the MCRSA—moving through example issues will demonstrate the sort of analysis a lawmaker should undertake when seeking to amend.

1. VOTING PROCEDURES

Section 10 of the AUMA gives legislators the statutory authority to amend the Act without seeking voter approval.³³ Any amendment, to any provision within any section in the AUMA, must “further the purposes and intent of [the Act] as stated in Section 3.” However, the voting procedures differ depending on which section the provision is in. A simple majority is required to amend any provision within Section 6, which pertains to commercial recreational cannabis activities. Whereas a supermajority (two-thirds) is required to amend any provision within Section 4, which pertains to personal use of recreational cannabis. In addition, the legislature

³² *Amwest Sur. Ins. Co. v. Wilson*, 11 Cal. 4th 1243, 1253 (1995).

³³ “The Adult Use of Marijuana Act,” Section 10. https://www.oag.ca.gov/system/files/initiatives/pdfs/15-0103%20%28Marijuana%29_1.pdf?

may amend, add, or repeal, any provision in any section, including Section 4, to further reduce the criminal penalties for any offense addressed in the AUMA. Applied to the eight issues of concern, the voting procedures are shown below in Table 2.

Table 2: Summary of Key Conflict Amendment Procedures

| Issue | Relevant § of AUMA | Amendment Procedure |
|---------------------------------|---------------------------|---|
| <i>Vertical Integration</i> | 6 | Simple Majority |
| <i>Cultivation Size Limits</i> | 6 | Simple Majority |
| <i>Patient Cultivation</i> | 4 | Simple Majority-Reduce Penalty Supermajority-Other Amendment |
| <i>Local Permits</i> | 6 | Simple Majority |
| <i>Deliveries</i> | 6 | Simple Majority |
| <i>Transportation</i> | 4 | Supermajority |
| <i>Distributors</i> | 6 | Simple Majority |
| <i>Applicant Qualifications</i> | 6 | Simple Majority |

2. PURPOSES AND INTENT CONSTRAINTS APPLIED TO ISSUES

How a particular amendment will interact with various purposes of the Act depends on the amendment, and the court will undertake fact-intensive, highly specific analysis to determine if the amendment furthers the purpose of the act. No categorical rules exist. As such, analysis done before a specific amendment is proposed is limited to thinking about hypothetical amendments and how they would be construed by courts using the general rules of construction and analogizing to specific past cases. The vertical integration issue is examined closely here as an example of the full analysis a legislator should undertake. Three other issues of concern are analyzed as further examples.

A. Vertical Integration

The purposes of the Act can be gleaned from general statements of purpose and looking at the statute as a whole. To reiterate, discerning purpose is not limited to looking solely at the

“Purpose and Intent” Section 3. For example, Section 2J of the AUMA “ensures the nonmedical marijuana industry in California will be built around small and medium sized businesses by prohibiting large-scale cultivation licenses for the first five years.” Section 2J also states the AUMA should protect “consumers and small businesses by imposing strict anti-monopoly restrictions for businesses.” In addition, Section 3(x) states one governing purpose is to “reduce barriers to entry into the legal, regulated market.” These are clear statements of purpose that small and medium sized businesses should be protected, monopolies should be prevented, and barriers to entry into the legal market should be reduced.

Consider a scenario in which a legislator wanted to amend the AUMA to make it more difficult to vertically integrate, and thereby move more towards the MCRSA. The legislator might justify the amendment as furthering the purposes of protecting small businesses, preventing monopolies, or reducing barriers. The lawmaker would need to show that, by “any reasonable construction,” amending to reduce vertical integration furthers the purposes of the AUMA. In undertaking this construction, legislative findings are afforded great weight. Therefore, the legislator should first prove that vertical integration is at least related to one of these purposes such that amending to prevent vertical integration would pass the “any reasonable construction” test.

Legislative findings might rely on reputable, scholarly articles explaining the connection between vertical integration and big business and monopoly. For example, one scholar suggests that there is in fact a mild association between size and degree of vertical integration.³⁴ This, along with other similar scholarly citations, would be accepted by a court as true (because of the great weight given to legislative findings) to show that the vertical integration issue is related to the purpose of preserving small and medium sized businesses.

Another scholar suggests that vertical integration “implies neither monopoly nor absence of monopoly. In so far [sic] as the monopoly problem is concerned, it [vertical integration] is a neutral term.”³⁵ A lawmaker might look at this statement and conclude that vertical integration is not reasonably related to monopoly for the purposes of judicial interpretation. However, the standard is not “a conclusive relationship”, but rather “any reasonable relationship”. It may be

³⁴ M. A. Adelman, “Concept and Statistical Measurement of Vertical Integration,” *Business Concentration and Price Policy* 281, 289 (1955), <http://www.nber.org/chapters/c0965>.

³⁵ Edwards, Corwin D, "Vertical Integration and the Monopoly Problem," *Journal of Marketing* 17, no. 4 (1953): 404-10. doi:10.2307/1247017.

true that vertical integration does not inexorably lead to monopoly, but it could under certain circumstances. Elsewhere in the same article, the scholar notes that when supply and demand are “out of balance,” vertically integrated businesses are likely to enjoy a bargaining power advantage that is conducive to monopoly.³⁶ Using this information, the legislator could make the following argument. There is currently tremendous demand for recreational cannabis.³⁷ However, the small growers that existed before passage of the AUMA cannot produce commensurate supply. Therefore, supply and demand are out of balance. Under this particular circumstance, vertical integration can lead to monopoly. Thus, preventing vertical integration is related to furthering the purpose of preventing monopoly. A court would probably consider this as furthering the purpose under the any “reasonable construction” standard. Yet another article suggests that vertical integration is related to barriers to entry,³⁸ thus an amendment could be valid under a “reasonable construction” of the purpose in Section 3(x).

There seems to be a strong case that a hypothetical amendment to reduce the ability to vertically integrate would fall within one of the purposes in Sections 2 and 3. However, the legislator should still look to see if there are any countervailing purposes which suggest the overall governing purpose of the AUMA cuts against the amendment. If there are seemingly inconsistent, countervailing purposes that leave the overall governing purpose ambiguous, the court is likely to defer to the legislature’s view as to what constitutes the overall governing purpose. However, it is important to look at potential countervailing purposes to make sure there are no clear purposes that would remove ambiguity and cause the court’s judgment to trump legislative deference. There are no clear statements of purpose in Sections 2 and 3 saying that vertical integration must be allowed or encouraged. However, in Section 2D, the act states the AUMA should “incapacitate the black market.” Looking beyond the purpose provisions in Sections 2 and 3 to the statute as a whole, Section 6, provision 26051(a)(2) requires licensing agencies to consider how denying licenses to applicants will “perpetuate the presence of an illegal market for marijuana.”

If the prices in the black market remain much lower than the prices in the legal market, it

³⁶ Id. at 408.

³⁷ Miles K. Light, Adam Orens, Brian Lewandowski, and Todd Pickton, “Market Size and Demand for Marijuana In Colorado,” *The Marijuana Policy Group*, 3, <https://www.colorado.gov/pacific/sites/default/files/Market%20Size%20and%20Demand%20Study,%20July%209,%202014%5B1%5D.pdf>

³⁸ John Stuckey and David White, “When and when not to vertically integrate,” *Sloan Management Review*, Spring 1993, 71-83.

is difficult to incapacitate the illegal market.³⁹ Vertical integration lowers costs which allows companies to charge lower prices.⁴⁰ Thus, an opponent of the hypothetical amendment could argue that reducing the ability to vertically integrate undermines the purpose of incapacitating the black market.

The question becomes whether this seemingly countervailing purpose would be enough to cause a court not to defer to legislative findings. As explained, the court will defer to the legislative findings supporting the amendment if they are consistent with the purposes of the act and the court will presume the amendment valid. In addition, the case law suggests that amendments will be struck down only if they clearly contravene the purposes of the act. In *Amwest*, an amendment to an act to exempt a certain type of insurance company from an insurance rate regulation scheme was struck down because the act specifically covered all types of insurance, with no exceptions.⁴¹ In *Gardner v. Schwarzenegger*, the court struck down an amendment to Prop 36 which would have allowed the incarceration of first-time drug-related probation offenders. The court reasoned that this amendment contravened “specific language” in Prop 36 that limited incarceration following a first or second drug-related probation violation.⁴²

Here, even if amending to make vertical integration more difficult made it harder to incapacitate the illegal market, the amendment wouldn’t be contravening any clear purpose or “specific language.” Whether the amendment would in fact undermine the goal to “incapacitate the legal market” is not a clear question of law but a complex policy question, so the court will likely defer to the legislature. Moreover, there are other ways to further that goal, such as lowering taxes on legal marijuana or increasing enforcement efforts against illegal producers.⁴³ Therefore, preventing vertical integration wouldn’t necessarily prevent prices from falling in the legal market.

The strongest argument against the hypothetical amendment would be premised on the fact that the AUMA purposefully left out the restriction that license holders may only hold

³⁹ “Pot black market still thrives after Colorado legalization,” <http://www.pbs.org/newshour/bb/nine-months-colorado-legalized-recreational-marijuana/> (last visited Mar. 12, 2017)

⁴⁰ Robert D. Buzzell, “Is Vertical Integration Profitable?” *Harvard Business Review*, Jan. 1983, <https://hbr.org/1983/01/is-vertical-integration-profitable>

⁴¹ *Amwest*, 11 Cal. 4th at 1259.

⁴² *Gardner v. Schwarzenegger*, 178 Cal. App. 4th 1366, 1378 (2009)

⁴³ Jonathon P. Caulkins and Peter Reuter, “How Drug Enforcement Affects Drug Prices,” *Crime and Justice – A Review of Research*, vol. 39 University of Chicago Press, 213-272.

licenses in two categories. Since the AUMA is largely patterned off the MCRSA,⁴⁴ this omission could show the purpose of the AUMA is to encourage vertical integration, or at the least, unlimited multiple license holding. This argument finds support in *Amwest*. In *Amwest*, Prop 103 added a provision to Chapter 9 of the McBride-Grunsky Insurance Regulatory Act that changed the way insurance companies were regulated, but it didn't change which types of insurance were regulated.⁴⁵ The court held this showed that one purpose of Prop 103 was to regulate the same insurance types the prior act did.⁴⁶ Here, even though there is no purpose statement addressing multiple license holding or vertical integration, the intent of the AUMA is to allow multiple license holding, otherwise the AUMA would have kept the two-license restriction from the MCRSA.

On balance, it is difficult to say whether the hypothetical amendment would be upheld without knowing exactly what the amendment would entail. For example, an amendment to place a categorical restriction on multiple license holding, like the MCRSA had, would probably be held invalid as contravening the purpose of the statutory scheme. On the other hand, an amendment which requires businesses to pay higher taxes for each additional license they hold or prohibits multiple license holders from achieving a certain size or market share would probably be valid. These amendments could be justified as furthering the purpose of preventing monopoly while not contravening the purpose that multiple license holding be allowed. In any case, the foregoing analysis suggests the issues a lawmaker should consider when looking prospectively at whether a given amendment will be held valid or invalid.

B. Transportation

Whereas clear statements of purpose encouraging vertical integration do not exist, clear statements do exist vis-a-vis transportation of recreational cannabis. Section 26080(b) of the AUMA clearly states that “A local jurisdiction shall not prevent transportation of marijuana or marijuana products on public roads.” In addition, looking at voter intent, the analysis by the legislative analyst in the Prop 64 official ballot materials says localities “could not ban the

⁴⁴ “Cal NORML Guide to the Adult Use of Marijuana Act”
http://www.canorml.org/news/Cal_NORML_Guide_to_AUMA.html

⁴⁵ *Amwest*, 11 Cal. 4th at 1258.

⁴⁶ *Id.* at 1259.

transportation of marijuana through their jurisdictions.” Both specific language in the Bill and indicia of voters’ intent clearly show that an amendment attempting to give local jurisdictions the power to ban transportation would be invalid.

C. Deliveries

The AUMA is silent on the question of whether localities can ban the delivery of medical cannabis by dispensaries to medical patients, whereas the MCRSA permits localities to ban delivery by dispensaries. At first blush, this may suggest that localities could continue to ban medical delivery under the AUMA. Indeed, the California chapter of the National Organization for the Reform of Marijuana Laws (CalNORML) states it “is unclear whether local governments retain the power to bar deliveries to medical patients in their jurisdiction, as they are authorized to do under MMRSA.”⁴⁷ Could a legislator seize on the silence in the AUMA to pass an amendment making it explicit that, like under the MCRSA, localities could ban medical deliveries? The answer is almost certainly no.

This answer is reached using the interpretive tools of viewing the statutory scheme as a whole and attempting to avoid absurd or anomalous consequences. The same argument that the AUMA was patterned on the MCRSA applies here. If the intention was to allow localities to ban medical deliveries, the drafters of the AUMA would have carried the same language over from the MCRSA. In addition, in Section 6 of the AUMA, the section dealing with recreational cannabis, provision 26090(c) reads, “A local jurisdiction shall not prevent delivery of marijuana or marijuana products on public roads ... ” The Compassionate Use Act of 1996 (CUA) decriminalizing medical marijuana was passed a full twenty years before the AUMA legalized non-medical marijuana in 2016. This in itself suggests that the California legislature is more keen to protect patients’ rights and access to medical marijuana than recreational users’ rights to non-medical. Moreover, there is no sensible policy reason why medical deliveries would be banned but non-medical not. Without an intelligible policy reason, one could argue it would be absurd, as a matter of statutory construction, to interpret the AUMA to allow localities to ban medical deliveries but not non-medical deliveries. A third argument looks at the text of provision 26090(c) itself. Though the provision is in the non-medical marijuana section, it

⁴⁷ “Cal NORML Guide to the Adult Use of Marijuana Act”
http://www.canorml.org/news/Cal_NORML_Guide_to_AUMA.html

doesn't seem to cabin the prohibition to non-medical marijuana because it says "marijuana or marijuana products" without using the "non-medical" qualifier.

The argument in favor of an amendment allowing localities to ban medical delivery under the AUMA would look primarily to the voters' intent as revealed in the official ballot analysis. The official ballot analysis states, "Local governments will continue to have the ability to regulate where and how medical marijuana businesses operate."⁴⁸ However, this merely states localities retain the power to regulate *where* and *how*, not *if*, medical marijuana businesses can operate. Moreover, the AUMA's provisions prohibiting localities from banning transportation and deliveries in their jurisdictions are consistent with this continued local power to regulate and the AUMA recognizes this power explicitly. Purpose Section 3(d) states, "Allow local governments to ban nonmedical marijuana businesses as set forth in this Act." The AUMA recognizes the local power to regulate but it specifically designates transportation and delivery as two limits on the local plenary power to ban. The rest of provision 26090(c) reads "by a licensee acting in compliance with this division and local law as adopted under Section 26200." The provision simultaneously recognizes the local right to regulate while explicitly stating localities *shall not* ban deliveries. It is not as if the prohibition on banning deliveries merely overlooked localities' right to regulate deliveries and other business types.

Because it would be absurd to ban medical but not non-medical deliveries, because the AUMA conspicuously dropped the language from the MCRSA allowing localities to ban medical deliveries, and because prohibiting localities from banning medical deliveries is consistent with the intent to let localities continue to regulate how and where deliveries operate, it is clear the AUMA intends to prohibit localities from banning medical marijuana deliveries.

D. Patient Cultivation

The difference between the MCRSA and the AUMA with respect to personal cultivation is how much an individual is permitted to grow before having to apply for some sort of license. Under the MCRSA, patients with a "medical card" from a doctor may grow up to 100 square feet for personal use. Under the AUMA, any adult may cultivate up to six plants before having to

⁴⁸ "Analysis by the Legislative Analyst."
<http://voterguide.sos.ca.gov/en/propositions/64/analysis.htm>

apply for some type of license. It is clear that the AUMA intends to keep the general MCRSA scheme for regulating medical marijuana. Section 3(k) states one purpose of the AUMA is to strengthen the existing medical marijuana scheme signed into law in 2015 (the MCRSA). Thus, the intent appears to be to allow different patient cultivation limits depending on whether a person is a medical user or recreational user. However, could a legislator amend the AUMA to change the personal cultivation limits for recreational users?

Analogizing to a past case provides some insight. In *People v. Kelly*, the California Supreme Court ruled that an amendment to the CUA to place a numeric cap on the amount of medical marijuana a patient may possess was unconstitutional.⁴⁹ The court noted that the ballot arguments (embodying voter intent) for the CUA stated the only limit on how much a patient could possess is that the amount must be “reasonably related to the patient's current medical needs.”⁵⁰ Therefore, the legislature imposing a numeric cap without approval from the voters was an impermissible amendment. The CUA isn’t a perfect analogy because, unlike the AUMA, it didn’t have a section permitting amendment by the legislature. However, the court’s analysis still provides insight. The crux of the analysis was that the amendment was impermissible because it reduced the rights granted by the CUA, which were clearly laid out in the ballot arguments. Here, the ballot analysis for Prop 64 states that adults will be able to cultivate up to six plants for personal use. Analogizing to *Kelly*, it would be fair to conclude amending the AUMA to reduce that number below six would be impermissible.

However, Section 3(l) states that the intent of the AUMA is to “Permit adults 21 years and older to use, possess, purchase and grow nonmedical marijuana within defined limits for use by adults 21 years and older as set forth in this Act.” “Within defined limits” might suggest the legislature could redefine these limits through amendments and those amendments would further the purpose of the act. Cutting against this interpretation is that, if that were true, then the ballot analysis could’ve said as much rather than specifying six plants. Therefore, a legislative amendment to reduce the number below six would likely be held invalid under *Kelly*.

Kelly doesn’t provide any guidance as to whether an amendment to increase the number above six would be valid. In *Kelly*, the invalidity centered around the legislature reducing rights granted by the CUA. Increasing the number could be construed as increasing rights. Again,

⁴⁹ *People v. Kelly*, 47 Cal. 4th 1008, 1028 (2010).

⁵⁰ *Id.* at 1027.

however, looking at the voters' intent in the ballot analysis, if this were the case then the ballot analysis would have read: adults will be allowed to grow "at least six plants."

Another argument is that it would be absurd to set in stone the number of plants an adult could cultivate. This is a brand new legislative scheme and the legislature will need the flexibility to respond to unforeseen challenges and new circumstances, such as the possible contingency that six plants is too many and leads to increased consumption by minors because there is more diversion of marijuana to minors than anticipated. Another contingency is if the concentration of THC in home-grown plants rises due to advances in horticulture. However, the flexibility must still operate within the confines of the purposes and intents. A court might find that changing the number fits, by "any reasonable construction," within the purpose in Section 3(l) requiring merely "defined limits." A court might, on the other hand, note the statement in *Kelly* that the "flexibility to make desirable or even *necessary* adjustments to initiative statutes long has been, and remains, foreclosed by article II, section 10 [of the California constitution]."⁵¹ This of course applies more to initiatives that don't permit amendment by the legislature (like the CUA), but the guiding principle that legislatures cannot lightly contravene the voters' intent (to have six plants in this case) still applies.

E. Synthesis

In the interest of brevity, cultivation size limits, local permits, distributors, and applicant qualifications were not analyzed here. However, the techniques used to analyze the preceding four issues should be employed whenever a legislator seeks to amend any provision of the AUMA. To summarize, the legislator should use the general rules of construction and look to past cases to understand how a prospective amendment would be viewed by a court. The general rule of construction is that the amendment must further the purpose of the AUMA "by any reasonable construction." The court will place specific weight on the voters' intent and attempt to avoid absurd consequences in undertaking an interpretive construction. To discern the purpose of the AUMA with respect to a given amendment, the lawmaker should look at specific language within the AUMA (such as clauses in Section 3 and Section 2), the statutory scheme as a whole (for example, noting that the AUMA is patterned off the MCRSA or looking at how various

⁵¹ *Id.* at 1045.

provisions within the AUMA interact with each other), and the voters' intent in the official ballot analysis. In support of an amendment, the lawmaker could use outside scholarly sources to show an amendment fits under one of the purposes or he could argue that a similar amendment was permitted or not permitted in a past case. In sum, the legislator should undertake a rigorous analysis in order to increase confidence that a prospective amendment will fit within the purposes of the AUMA.

VI. CONCLUSION

This portion of the paper attempted to reveal the following key takeaways:

- There are eight major conflicts between the MCRSA and AUMA, each with significant public policy implications.
- The Legislature has authority to unilaterally amend the AUMA without a public vote.
- The Legislature is bound by the purposes and intent of the AUMA, as laid out in Section 3 of the Act.
- The Legislature should consider voting procedure, initiative purposes, voter's intent, and the statute as a whole in deciphering an appropriate range of amendments to particular issue areas.

Without any amendments to the AUMA as enacted, key conflicts will remain between the MCRSA and AUMA that have significant public policy implications. When many of the law's regulations take effect in 2018, a lack of AUMA amendments before that time would leave constituents with unclear guidance on how to carry out many of the critical functions necessary for the California cannabis industry's operations and growth. Left as is, some of the key implications of the AUMA compared to the MCRSA would be a significant reduction of local control over deliveries, public road transportation, enforcement, and license authorization, among others, as well as greater likelihood for big businesses to out-compete smaller ones. Hence, understanding how to appropriately amend the AUMA is a critical component to regulating the industry.

PART II:
DUI IMPAIRMENT TESTING AND
STANDARDIZATION

I. DRIVING UNDER THE INFLUENCE (“DUI”) IMPAIRMENT POLICY

In legislating around the topic of marijuana consumption for either legitimate or illegal use, policymakers must navigate the complex, and often emotional, topic of marijuana DUI policy. Lawmakers are faced with the difficult task of weighing imperfect science, intent of impairment policies, and enforceability. Stakeholders in this debate come from many different constituencies and are sometimes faced with competing interests. This portion of the overall report will illuminate and consider several facets of the DUI impairment policy debate in order to best equip policymakers to draw informed conclusions from unbiased, objective analysis on this contentious topic.

This section will proceed in three parts. Part I will discuss the marijuana DUI regimes of Washington and Colorado. Part II will discuss the science behind marijuana impairment and intoxication as well as provide an overview of the current technology in marijuana detection. Part III will then discuss the relative merits of three different legal standards for Marijuana DUIs.

1. DUI REGIMES IN WASHINGTON AND COLORADO

This section provides an overview of the marijuana DUI regimes in two of the states that have legalized recreational marijuana (Colorado and Washington) and discusses their outcomes with regard to DUIs and traffic fatalities. The primary difference between the two states is that Washington established a “per se” legal limit, whereas Colorado established this limit as allowing a “permissible inference” of guilt.

A. Washington

On November 6th, 2012, the people of Washington voted to enact proposition 502⁵², legalizing recreational marijuana use, and providing that the State license retail distributors by December 1, 2013.⁵³ The first retail stores opened in July of 2014.⁵⁴ The initiative amended the

⁵² Washington Secretary of State, *November 06, 2012 General Election Results*, <http://results.vote.wa.gov/results/20121106/Measures-All.html>.

⁵³ Washington Secretary of State, *Initiative Measure No. 502* (filed July 8, 2011), available at https://sos.wa.gov/_assets/elections/initiatives/i502.pdf at 18.

previously existing DUI laws to account for marijuana, introducing a standard of 5 nanograms per milliliter of Tetrahydrocannabinol (THC) (as measured within 2 hours after driving) as a per se violation.⁵⁵ This means that whether or not a person appears or is impaired is irrelevant if they test above this limit. A violation is counted as a “gross misdemeanor”.⁵⁶

Figure 1: Percentage of Traffic Fatalities Involving Marijuana

Source: Washington Traffic Safety Commission

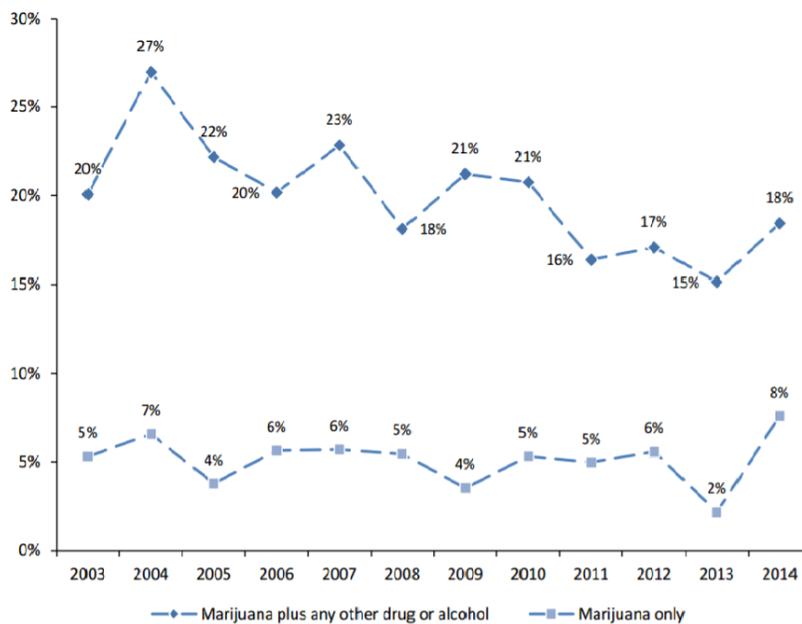


Figure 1⁵⁷ shows the percentage of traffic fatalities in which marijuana was involved

in Washington State. However, these data are difficult to interpret for several reasons. A blood test of the deceased to determine blood alcohol or THC content was only available in half of

⁵⁴ *First Pot Goes on Sale in Washington*, KIRO 7 (July 8, 2014 2:56 AM), <http://www.kiro7.com/news/wa-issues-first-recreational-pot-shop-licenses/81741165>.

⁵⁵ Wash. Rev. Code Ann. § 46.61.502(1)(b) (West).

⁵⁶ Wash. Rev. Code Ann. § 46.61.502(5) (West).

⁵⁷ Forecasting and Research Division, Washington State Office of Financial Management, *Monitoring Impacts of Recreational Marijuana Legalization 12* (2016), http://www.ofm.wa.gov/reports/marijuana_impacts_update_2015.pdf [hereinafter FRD, *Monitoring Impacts*].

reported fatalities.⁵⁸ Additionally, the testing procedure in Washington State labs changed in 2014, lowering the threshold for a positive test from 2 ng/mL to 1 ng/mL (both of which are below the per se illegal limit of 5 ng/mL).⁵⁹ Due to the small sample size⁶⁰ the increase in percentage of fatalities involving marijuana only from 2013 to 2014 is not statistically significant.⁶¹ Another issue with this data is that a blood test showing the presence of THC does not necessarily imply impairment.⁶² Additionally, according to a study by the American Automobile Association (AAA) on this same data, “[p]ost hoc analysis suggest this was largely a function of seatbelt use: drivers positive for alcohol and/or other drugs in addition to THC had much lower rates of seatbelt use than did drivers positive for THC alone, and thus were more likely to die given involvement in a crash.”⁶³ The study continues, stating that “[d]rivers whose license was suspended or revoked at the time of the crash were much more likely than drivers with a valid license to have been THC-positive (23.9% vs. 8.1%)”⁶⁴ Ultimately, as the AAA study explains, “the new law [Washington Initiative 502] was not associated with a significant shift in the average proportion of fatal-crash involved drivers who were TCH-positive (P=0.65), but was associated with a statistically significant change in the slope of the trend . . . [though] the change in the slope of the trend appeared to have actually occurred several months after the effective date of Initiative 502.”⁶⁵

The impact of legalization is not clearly evident from DUI arrest rates, as demonstrated

⁵⁸ Brian C. Tefft et al., AAA Foundation for Traffic Safety, *Prevalence of Marijuana Involvement in Fatal Crashes: Washington, 2010-2014* 9 (2016), <https://www.aaafoundation.org/sites/default/files/PrevalenceOfMarijuanaInvolvement.pdf>.

⁵⁹ *Id.*

⁶⁰ *See id.* at 8.

⁶¹ FRD, *Monitoring Impacts*, *supra* note 6, at 12.

⁶² For the relationship between THC levels and impairment, see Part II *infra*.

⁶³ Tefft et al., *supra* note 7, at 9.

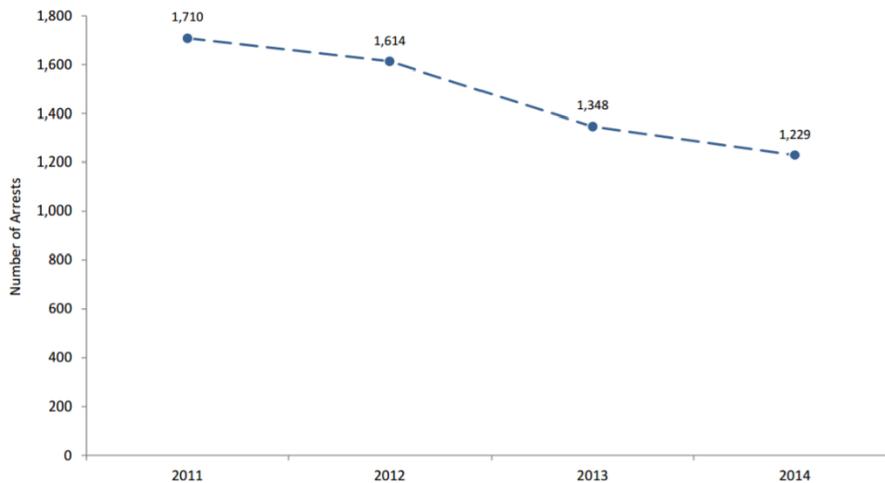
⁶⁴ *Id.*

⁶⁵ Tefft et al., *supra* note 7, at 10.

by Figure 2. Drug only DUI arrests decreased by 28% from 2011 to 2014, from 1,710 to 1,229.⁶⁶ This statistic does not differentiate marijuana from other drugs. While an increase in the prevalence of DUI arrests might be expected following legalization, the opposite has occurred. However, the data do not indicate what proportion of those arrested were ultimately convicted, or how many tested above the limit of 5 ng/mL of THC.

Figure 2: DUI Arrests in Washington

Source: Washington State Patrol



B. Colorado

Colorado passed Amendment 64 to the State Constitution on November 6th, 2012,⁶⁷ legalizing recreational marijuana use.⁶⁸ Retail distribution began on January 1st, 2014.⁶⁹ The

⁶⁶ FRD, *Monitoring Impacts*, *supra* note 6, at 18.

⁶⁷ Office of the Secretary of State, State of Colorado, *2012 Abstract of Votes Cast* 145, <http://www.sos.state.co.us/pubs/elections/Results/Abstract/pdf/2000-2099/2012AbstractBook.pdf>.

⁶⁸ COLO. CONST. art. XVIII, § 16 (amended 2016). The text of the proposed amendment can be found at <http://www.fcgov.com/mmj/pdf/amendment64.pdf>.

⁶⁹ John Ingold, *World's First Legal Recreational Marijuana Sales Begin in Colorado*, DENVER POST (Jan. 1, 2014 12:27 AM), <http://www.denverpost.com/2014/01/01/worlds-first-legal-recreational-marijuana-sales-begin-in-colorado/>.

Amendment made clear that the State would maintain authority to enact DUI offenses.⁷⁰ The State General Assembly mandated⁷¹ that 5 nanograms of delta-9-THC (the active component of THC, often used synonymously) per milliliter shall give rise to a “permissible inference” that defendant was under the influence of drugs.⁷² This standard is non-exclusive, meaning that even someone testing under this level can still be prosecuted if the officer determines that the driver is impaired.⁷³ The “permissible inference” standard is deliberately not equivalent to a per se standard—the accused driver can proffer evidence during trial for the DUI offense that he or she was not under the influence of drugs at the time of arrest.⁷⁴ Furthermore, during trial defendants can offer evidence that the testing devices were inaccurate or improperly operated.⁷⁵

The State Department of Transportation notes that many of its officers are trained in Advanced Roadside Impaired Driving Enforcement, and the State employs 227 Drug Recognition Experts who are specially trained to subjectively determine impairment in addition to blood tests.⁷⁶

Colorado did not test drivers involved in fatal crashes for marijuana prior to legalization

⁷⁰ COLO. CONST. art. XVIII, § 16, cl. 6(b) (amended 2016).

⁷¹ 2013 Colo. Legis. Serv. Ch. 331 (H.B. 13-1325) (WEST).

⁷² Colo. Rev. Stat. § 42-4-1301(6)(a)(IV) (West).

⁷³ Colo. Rev. Stat. § 42-4-1301(6)(b) (West); Colorado Department of Transportation, *FAQs: Cannabis and Driving*, <https://www.codot.gov/safety/alcohol-and-impaired-driving/druggeddriving/marijuana-and-driving>.

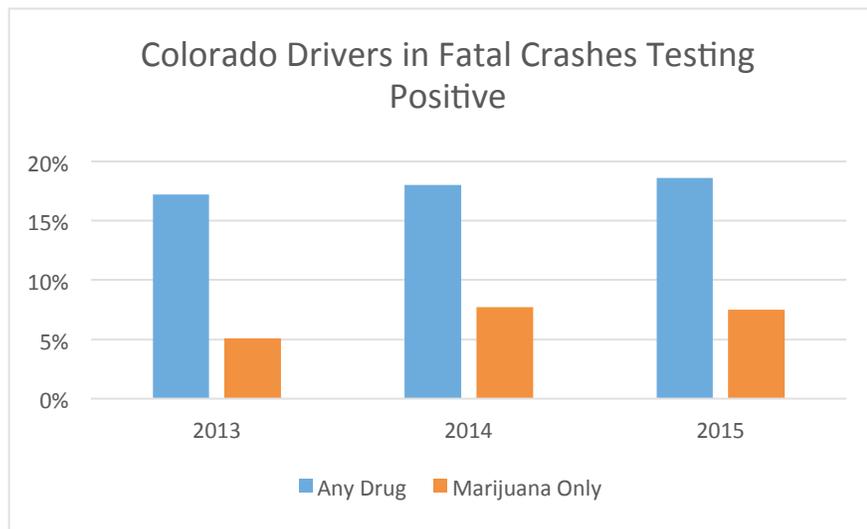
⁷⁴ H.B. 13-1325 (Colo. 2013), available at http://www.leg.state.co.us/clics/clics2013a/csl.nsf/fsbillcont3/746F2A0BF687A54987257B5E0076F3CD?Open&file=1325_enr.pdf. Regarding the “permissible inference” standard for alcohol offenses, the bill “removes this [per se] presumption and states instead that such fact gives rise to a permissible inference that the defendant was under the influence of alcohol.” *Id.*

⁷⁵ Colo. Rev. Stat. Ann. § 42-4-1301(6)(c)(II) (West).

⁷⁶ Colorado Department of Transportation, *FAQs: Cannabis and Driving*, <https://www.codot.gov/safety/alcohol-and-impaired-driving/druggeddriving/marijuana-and-driving>; Colorado Department of Transportation, *Drug Recognition Experts (DRE) Program*, <https://www.codot.gov/safety/dre/drug-recognition-expert-dre-program.html>.

in 2012, so the data available are from 2013 to 2015.⁷⁷ Figure 3 below compares the percentage of drivers involved in fatal crashes who tested positive for any drug, including alcohol and marijuana with those testing positive for marijuana only. These statistics derive from only those drivers who were tested, which is slightly less than half of the total of drivers involved in fatalities.⁷⁸

Figure 3. Percentage of Colorado Drivers Involved in Fatal Crashes Testing Positive for Drugs and Alcohol⁷⁹



II. SCIENCE ON MARIJUANA IMPAIRMENT AND OVERVIEW OF CURRENT TECHNOLOGY

In 2014, alcohol related crashes were responsible for 10,000 lives lost and \$44 billion in damages.⁸⁰ Decades of research has solidified understanding of the effects of alcohol on the

⁷⁷ Colorado Department of Transportation, *Drugged Driving Statistics*, <https://www.codot.gov/safety/alcohol-and-impaired-driving/druggeddriving/drugged-driver-statistics/view>.

⁷⁸ *Id.*

⁷⁹ *Id.*

⁸⁰ CDC. Behavioral Risk Factor Surveillance System (BRFSS), 1993–2014.

brain. Science has established how alcohol depresses motor function and how much alcohol is necessary to achieve those effects. Anti-DUI laws and public education campaigns communicate rules of thumb to drinkers so that they can estimate if they're over the legal limit before they drive.

However, there are critical differences between intoxication from alcohol and intoxication from marijuana. These differences pose challenges in how to craft a legal regime to address the dangers of marijuana impaired driving. This section firstly summarizes the science concerning marijuana intoxication and impairment, then examines the options for detecting cannabis in the body and lastly discusses potential legal standards for a cannabis DUI. We conclude by presenting a menu of policy options to fit these considerations.

1. MARIJUANA INTOXICATION

Scientific understanding of how alcohol is absorbed into the blood and distributed to the brain has been fundamental to the design of DUI laws. To rationally set standards for cannabis impairment, policymakers must understand how cannabis travels through the body and how measurements of cannabis in certain bodily fluids relate to impairment.

A. Pharmacokinetic Differences between Alcohol and Cannabis

When someone consumes alcohol, roughly 20% is absorbed rapidly into the bloodstream while the rest is absorbed as the alcohol travels through the gastrointestinal tract, a process which typically takes around 45 minutes, but can take up to 3 hours.⁸¹ Crucially, alcohol is water soluble. As blood travels throughout the body, it distributes alcohol to organs and tissues in proportion to the water contents of each.⁸² The pharmacokinetics of alcohol described above lead to one important conclusion: when one can determine how much alcohol is in the blood, one can reliably determine how much alcohol is distributed to the body's organs, including the brain. Once alcohol is in the brain, it acts as a depressant of the central nervous system; it binds onto

⁸¹ Alcohol Awareness, West Virginia University School of Public Health, *Alcohol Metabolism* available at <http://publichealth.hsc.wvu.edu/alcohol/effects-on-the-body/alcohol-metabolism/>

⁸² K M Dubowski, *Absorption, distribution and elimination of alcohol: highway safety aspects*, Journal of Studies on Alcohol, Supplement 98–108, 98-108 (1985).

receptors and disrupts the communication between neurons.⁸³ This disruption of the neurotransmitter systems in the brain reduces cognitive and psychomotor skills, significantly impairing a drinker's ability to drive. Thus, blood alcohol content is a reliable predictor of impairment from alcohol. Furthermore, alcohol is a volatile compound; it turns from a liquid into a gas in the lungs, where it is exhaled.⁸⁴ Through Henry's Law, the amount of alcohol exhaled in the breath reveals the alcohol contained in the blood.⁸⁵ This insight enables a breathalyzer test to accurately determine BAC (blood alcohol content) from exhaled breath.

There are two key differences between the pharmacokinetics of alcohol and THC, the psychoactive constituent of cannabis: THC is fat soluble, not water soluble, and isn't volatile. When cannabis is smoked, THC is rapidly absorbed into the blood from the lungs. THC concentrations in blood and plasma peak before the last puff.⁸⁶ THC ingested orally takes longer to be absorbed into the blood as it must pass through the stomach and GI tract like alcohol.⁸⁷ Once in the bloodstream, THC is quickly distributed to the brain. Whereas peak blood levels occur immediately upon absorption and decrease quickly, THC levels in the brain take longer to reach a peak - studies suggest it can take 2-4 hours - and dissipate at a much slower rate.⁸⁸ Because of its lipophilic nature, THC accumulates in fatty tissues, reaching peak concentrations in 4 or 5 days. THC is then slowly released back into the bloodstream. As a result of the sequestration in fat, the tissue elimination half-life of THC is roughly 7 days, and complete elimination of a single dose could take up to 30 days.⁸⁹ Heavy users of cannabis will have significant amounts of THC stored in fatty tissues that can lead to THC detection in the blood days or weeks after abstinence from smoking, with some users staying above 5 ng/mL for days after last use. Occasional users, on the other hand, will be under a 5 ng/mL limit within 3 hours.

The pharmacokinetics of THC reveal that the levels of THC in the blood are not

⁸³ Module 2: The ABCs of Intoxication, The Alcohol Pharmacology Education Partnership, <https://sites.duke.edu/apep/module-2-the-abc-of-intoxication/content-alcohol-disrupts-the-communication-between-neurons/> (last visited Mar 27, 2017).

⁸⁴ Module 4: Alcohol and the Breathalyzer Test, The Alcohol Pharmacology Education Partnership, <https://sites.duke.edu/apep/module-4-alcohol-and-the-breathalyzer-test/content-the-breathalyzer-assumes-a-specific-blood-to-breath-ratio-to-calculate-the-bac/> (last visited Mar 27, 2017)

⁸⁵ *Id.*

⁸⁶ N. A. Desrosiers et al., *Phase I and II Cannabinoid Disposition in Blood and Plasma of Occasional and Frequent Smokers Following Controlled Smoked Cannabis*, 60 *Clinical Chemistry* 631 (2014).

⁸⁷ Marilyn A. Huestis, *Human Cannabinoid Pharmacokinetics*, 4 *Chemistry & Biodiversity* 1770 (2007).

⁸⁸ *Id.*

⁸⁹ C. H. Ashton, *Pharmacology and effects of cannabis: a brief review*, 178 *The British Journal of Psychiatry* 101-106, 101-106 (2001).

predictive of the levels of THC in the brain. Postmortem analyses of a dozen smokers revealed no correlation between THC levels in the blood and the brain.⁹⁰ Because the central concern in DUI policy is the effects of THC on the brain's cognitive and psychomotor functions, the divergence between blood and brain THC levels poses serious challenges for designing a rational DUI standard.

B. Impact of THC Intoxication on Simulated Driving Tasks

Studies of THC's effects on simulated driving tasks have shown decreases in psychomotor and cognitive functioning for the intoxicated driver.⁹¹ Intoxicated drivers have slower reaction times, greater tracking error, affecting their ability to stay in the center of the lane, and less capacity to divide attention. These effects are significant within 3.5 hours of smoking⁹², but generally last between 3 to 5 hours.⁹³ These effects are more pronounced for occasional THC users than for frequent users, reflecting some level of tolerance buildup for frequent users. Accident culpability increases dramatically for THC users within 1 hour of use, illustrating the dangers posed by decreases in psychomotor and neurocognitive functioning.⁹⁴

2. THC DETECTION TECHNOLOGIES

A. Urine Testing

Urine testing is a method of establishing prior cannabis use, used commonly by employers to screen out potentially undesirable candidates. However, urine tests have serious limitations as tools to establish levels of intoxication or impairment in drivers.

⁹⁰ Huestis, *supra* note 15.

⁹¹ N. A. Desrosiers et al., *Smoked Cannabis' Psychomotor and Neurocognitive Effects in Occasional and Frequent Smokers*, 39 *Journal of Analytical Toxicology* 251–261, 251-261 (2015).

⁹² *Id.*

⁹³ National Highway Traffic Safety Administration, Department of Transportation, *Drugs and Human Performance Fact Sheets*, available at http://www.wsp.wa.gov/breathtest/docs/webdms/DRE_Forms/Publications/drug/Human_Performance_Drug_Fact_Sheets-NHTSA.pdf.

⁹⁴ R. L. Hartman & M. A. Huestis, *Cannabis Effects on Driving Skills*, 59 *Clinical Chemistry* 478–492, 478-492 (2012).

Unlike alcohol, the parent compound THC does not pass into the urine. A urine test designed to find evidence of cannabis use will instead look for metabolites of THC, indicating prior use.⁹⁵ Additionally, the detection window of THC metabolites in urine is greater than the impairment window by orders of magnitude. As discussed previously, the impairment window from THC is roughly 5 hours. A urine test can be expected to pick up cannabis use in an occasional user dating back 1-3 days.⁹⁶ Heavy users can have THC metabolites in their urine significantly longer due to the buildup of THC in fatty tissues and the slow release over time. The detection window for these users is a period of weeks. In all cases, the detection window is long after the neurocognitive and psychomotor effects of THC have dissipated.

Urine tests also present administrative difficulties for police officers in that they cannot be administered easily on the roadside. Additionally, there are marginal costs for each urine test, although each test costs less than a blood test.

B. Blood Testing

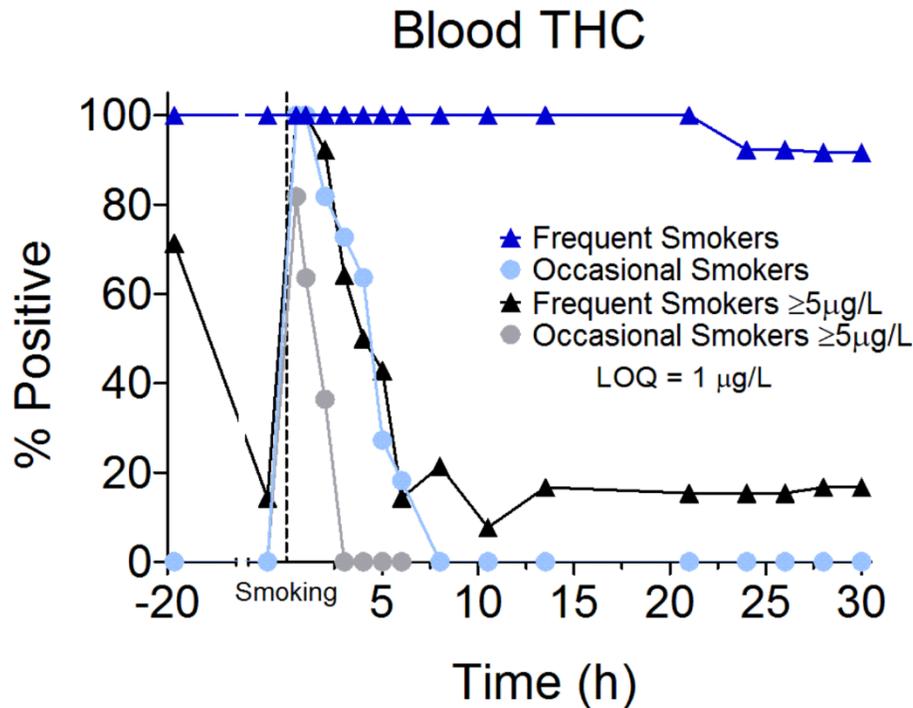
Blood testing is currently the gold standard for detecting THC in drivers. As described in the preceding sections, multiple states have codified per se DUI laws around levels of THC detected in the blood. Blood tests have one critical advantage over urine tests: they can test levels of the psychoactive THC currently in the blood. This crucial component enables the tester to come to more accurate conclusions about a driver's level of impairment, based on our biological understanding of how THC moves through the body.

Figure 4. Source: Clinical Chemistry⁹⁷

⁹⁵ NHTSA, *supra* note 33.

⁹⁶ *Id.*

⁹⁷ N. A. Desrosiers et al., *supra* note 26.



However, because of the pharmacokinetics of THC, blood testing is an imperfect solution. The intensity of physiological effects of THC and the concentration of THC in the blood are not perfectly correlated. Figure 4 above shows how THC concentrations in the blood vary for different users depending on their frequency of use. In occasional users, THC blood level concentrations drop incredibly quickly, usually below legal DUI thresholds within 3 hours. This is more troubling when considering the likely delay in between DUI arrest and an actual blood draw. The median time from arrest to blood draw is 2 hours.⁹⁸ Some states have codified that blood draws must take place within 2 hours to support a DUI charge.⁹⁹ However, this testing delay creates difficulties in supporting a DUI charge. One study found that between 42 and 70% of all cannabinoid-positive traffic arrests tested below 5 ng/ml THC in blood.¹⁰⁰

Not only are many occasional cannabis users likely to be below applicable legal thresholds, but many frequent cannabis users are likely to be positive long after the impairment effects of cannabis have worn off. Figure 1 shows that around 20% of frequent cannabis users are positive for concentrations above 5 ng/mL over 20 hours after ingestion of a single dose.

⁹⁸ Ed Wood, Ashley Brooks-Russell & Phillip Drum, *Delays in DUI blood testing: Impact on cannabis DUI assessments*, 17 Traffic Injury Prevention 105 (2015).

⁹⁹ *Id.*

¹⁰⁰ *Id.*

Given that the average impairment window of cannabis is approximately 5 hours, there are likely to be many false positives THC blood tests in the frequent user population.

C. Oral Fluid (OF) Testing

In response to a market need for efficient and non-intrusive cannabis impairment roadside testing, there has been rising interest in the development of oral fluid (OF) drug testing mechanisms¹⁰¹. For the purposes of this report, we use the terms OF and saliva interchangeably; however, we acknowledge that technically OF does include other secretions in addition to pure saliva. OF testing methods generally have objective advantages because they are immediate and easily administered. When collected roadside, there are three traditionally accepted methods to collect an OF sample: expectoration (spitting), swabbing, and a passive drool by the suspect. Furthermore, early scientific research points to a direct correlation between impairment levels of drivers and THC saliva concentration¹⁰². Logistically, OF testing is considered less susceptible to oft tried cheating techniques like substitution and modification because it is much easier and socially acceptable for a second or third party to monitor the OF testing than urine testing¹⁰³. Another advantage of an OF test is that the detected compound in saliva is the parent compound as opposed to a metabolite as is detected in a urine sample. This phenomenon is significant because the correlation between the parent compound and impairment is more scientifically understood than the correlative relationship between a metabolite and impairment.

One of the primary shortcomings in OF detection mechanisms is that there is no standardized or generally accepted procedure to measure THC levels in human saliva. Another pitfall of the OF testing regimen is that the provider of the sample (in this case, a DUI suspect) must be able to willfully secrete a sample size sufficient for the testing mechanism. Several studies indicate that both nervousness and recent THC ingestion can induce dry mouth, which could potentially hamper OF sample collection¹⁰⁴. Additionally, some studies have demonstrated a ‘dilution effect’ when other liquids are placed in the mouth. One study indicates that drinking a beer after consuming smokable marijuana can dilute the presence of THC in the saliva, even

¹⁰¹ Drummer OH. Drug Testing in Oral Fluid. *Clinical Biochemist Reviews*. 2006; 27(3):147-159.

¹⁰² Lee, Choi, Shultz and Wang. Small Molecule Detection in Saliva Facilitates Portable Tests of Marijuana Abuse. *Analytical Chemistry*. 2016; 88 (15) 7457 - 7461.

¹⁰³ *Id.*

¹⁰⁴ *Id.*

though there may or may not be an effect on impairment¹⁰⁵. Much like the difficulty of correlating THC levels to personal impairment, the time that THC will be present in an OF test is also highly variable depending on an individual's use patterns and the potency of the marijuana consumed. For example, a heavy user's levels of THC in saliva may subside more quickly after consumption than a rare user. The relationship between impairment and the rate of decline of THC in OF isn't fully understood.

Testing for impairment by sampling THC levels in OF is also susceptible to false positives, particularly from environmental secondhand marijuana smoke. In two studies, participants sat in enclosed areas while other individuals smoked marijuana. There were detectable levels of THC in the non-smokers' OF, indicating that OF can be positive for secondhand marijuana regardless of whether or not the person ingested marijuana¹⁰⁶. Lastly, the tactical act of collecting an OF sample can lead to contamination. If an OF sample is collected by the suspect spitting, or if an officer conducts a tissue swab, food particles can contaminate a sample or impair the measurement device¹⁰⁷.

Techniques and procedures used in the scientific community to detect THC in OF include lateral flow, breathalyzers, and small molecule biosensors. A lateral flow technique is an assay that uses a strip or device to detect the presence of an analyte, defined as a chemical the components of which are being measured, (in this case, THC), very similar to a common pregnancy test. From a policy and law enforcement perspective, it is a weakness that this technique does not well lend itself to quantitatively measuring the amount of THC in someone's saliva; rather, it simply indicates dichotomously the presence or absence of THC. For example, a leading device must be pre-programmed with an acceptable THC threshold and then can return only the results "Positive" "Negative" or "Invalid"¹⁰⁸. Breathalyzers, at first glance, may seem like an attractive tool to detect THC roadside impairment because of their widespread use by law enforcement to detect alcohol impairment. Furthermore, breathalyzers also seem appealing because there is a longstanding body of accepted case law around breathalyzer usage and prosecution. Despite their appeal; however, because of the aforementioned highly complex and

¹⁰⁵ *Id.*

¹⁰⁶ Bosker WM, Huestis MA. Oral Fluid Testing for Drugs of Abuse. *Clinical chemistry*. 2009; 55(11):1910-1931. doi:10.1373/clinchem.2008.108670.

¹⁰⁷ *Id.*

¹⁰⁸ Desrosiers NA, Lee D, Schwoppe DM, et al. On-Site Test for Cannabinoids in Oral Fluid. *Clinical chemistry*. 2012;58(10):10.1373/clinchem.2012.189001. doi:10.1373/clinchem.2012.189001.

not yet understood pharmacokinetics of THC, the scientific community has not established an objective relationship between the presence of THC or THC metabolites in a human's breath and a level of impairment. That is not to say that a relationship does not exist; rather, if it does exist, it is not yet fully understood. Additionally, a breathalyzer wouldn't necessarily indicate if a person had ingested THC in a method other than smoking, through edibles for example¹⁰⁹.

Lastly, magnetic biosensor technologies are in development that could be deployed roadside to test for marijuana-induced impairment. Biosensors leverage technology and magnetic fields to quantitatively measure the levels of THC small molecules in human saliva. Just as with a breathalyzer, the biosensing technology may not indicate detect if an individual consumed edibles because saliva originates from mucous depots, not the blood stream¹¹⁰.

When considering the issues above, it is informative to consider the approaches tried by policymakers in other countries. Policymakers in the United Kingdom have implemented a two-tiered approach to saliva-based cannabis detection in suspected impaired drivers. If a law enforcement professional suspects marijuana impairment, she may execute a saliva swipe as a first-line test. If that test indicates there is the presence of THC past a given baseline (2 ng/mL), then the officer will move the subject to the police station for a follow-on blood sample¹¹¹. It is important to note that the UK law only considers marijuana usage by a suspect, not his or her level of relative impairment. There are several pilot programs in Canada and throughout the United States that are placing prototype handheld devices in the hands of officers for roadside usage; however, those programs have not yet progressed into full-fledged adoption.

There is currently no optimal OF device on the market that adequately satisfies all testing considerations. There are indications that several private companies will have market ready devices in the coming years. In the past several years, the prevalence of testing devices, and the capabilities of those devices, has greatly increased. Furthermore, the scientific community's understanding of THC's presence in saliva has been improved upon; however, there is not yet wholly conclusive evidence on the topic.

Much like each of the individual testing devices in the OF testing scheme, there does not exist a clear frontrunner for best overall testing mechanisms. Our analysis indicates that there is a groundswell of research and commercial activity that will likely better illuminate the

¹⁰⁹ <http://www.washingtontimes.com/news/2015/dec/2/new-breath-test-device-to-detect-levels-of-thc/>

¹¹⁰ Lee, Choi, Shultz and Wang.

¹¹¹ <http://www.forsterdean.co.uk/cannabis-driving-limit/>.

relationships between THC levels in saliva, blood and urine and the devices used to measure those levels.

III. LEGAL STANDARDS FOR DRIVING UNDER THE INFLUENCE

There are three types of legal standards available to lawmakers for regulating DUIs: a per se standard, an impairment standard, and a combination standard. The largest differences between these three standards are the amount of officer discretion in making an arrest, whether roadside testing is currently available, the risk of wrongful conviction, and the strength of a prosecutor's case against an impaired driver. Both per se and impairment standards have been enacted in other states that have legalized recreational marijuana.

A. Per Se Standard

The first option for policy makers is enacting a per se standard under which drivers can be convicted of DUI if the prosecutor shows that they were driving with an amount of cannabis in their blood that exceeds the legal limit. Per se standards were enacted in Washington, Colorado, and the District of Columbia following legalization of recreational marijuana, with D.C. enacting a zero tolerance policy for driving with any detectable amount of cannabis in the blood.¹¹² Per se intoxication can be measured using a saliva or blood test. Saliva tests can currently only be used by jurisdictions which enact a zero-tolerance policy. Blood tests can be used to detect the amount of cannabis and metabolites currently in the blood, and most jurisdictions set the acceptable amount at under five nanograms per milliliter of blood.

¹¹² Wa. Rev. Code Ann. § 46.61.502(2); Co. Rev. Stat. Ann. § 42-4-1301; DC Official Code § 50-2201.05(b)(1)(A)(i)(II).

A per se standard for marijuana DUIs has two main benefits: reduced officer discretion and increased ease of prosecution. A per se standard reduces officer discretion because the charge is not based on an officer's subjective impression of whether a driver is impaired, but rather on an objective blood or saliva test. This benefit increases horizontal equity across different kinds of drivers by reducing the influence of implicit biases such as racial prejudice.¹¹³ However, it does not completely eliminate officer discretion because officers must still decide when to pull over a driver and when to make an arrest. A per se standard strengthens prosecutors' cases because a prosecutor does not need to rely on officer testimony to prove the driver's guilt. Generally, prosecutors under a per se regime only need to prove that the person was actually driving and that the test that generated the result was properly calibrated and administered and is therefore an accurate representation of the level of cannabis in the person's blood.¹¹⁴

A per se standard for marijuana DUIs has three primary disadvantages: over- and under-inclusiveness and its potential adverse effects on medical users' ability to drive legally. A per se standard is over-inclusive because all drivers who meet the 5ng/mL threshold are not necessarily impaired to the same degree, and there is a significant difference between frequent and occasional users. Frequent users may see little or no impairment at the 5ng/mL threshold while occasional users may be impaired at even lower doses.¹¹⁵ The typical problems with the over- and under- inclusiveness of a per se standard are compounded by the fact that the available blood testing technology is relatively inaccurate. Frequent users may show 5ng/mL in their blood levels up to 30 hours after initially smoking, meaning that the law will punish them for driving up to 24

¹¹³ There is a wealth of scholarship that supports the assertion that police officers are affected by implicit biases, which historically and currently result in discriminatory policing against marginalized black communities. See Richard R. Banks et al., *Discrimination and Implicit Bias in a Racially Unequal Society*, 94 Cal. L. Rev. 1169. .

¹¹⁴ See West's A.C.A. § 5-65-103(a); *Stewart v. State*, 373 S.W.3d 387 (Ark. 2010).

¹¹⁵ This point is discussed in greater detail in Part II of this Section.

hours after they are no longer impaired. The result of this over-inclusiveness is that there is an increased risk of wrongful prosecution, especially for historically marginalized communities and medical users. The potential for under-inclusiveness means that officers may be unable to effectively keep unsafe drivers off the road. The third disadvantage of a per se standard is that because blood testing is the only currently feasible technology for enforcing a per se standard, roadside testing is not yet feasible.

B. Impairment Standard

The second legal standard available is an impairment standard under which a driver can be convicted of a DUI if the prosecutor shows that the driver was impaired. In California, a prosecutor must be able to show that the person's driving was impaired "to an appreciable degree."¹¹⁶ Currently, California regulates driving under the influence using an impairment standard. Under California Vehicle Code 23152 (e) and (f) it is illegal to drive while under the influence of drugs or under the influence of drugs combined with alcohol.¹¹⁷ An impairment standard was also adopted in Oregon following legalization of recreational marijuana.¹¹⁸ Impairment is measured according to the officer's subjective determination and a series of roadside coordination and cognitive tests which have been supported by both scientific and legal research.¹¹⁹

An impairment standard for marijuana DUIs has two main benefits: it reduces over-inclusiveness, and officers already have the necessary training to determine impairment. An

¹¹⁶ *People v. Canty*, 32 Cal. 4th 1266, 1278 (2004).

¹¹⁷ West's Ann. Cal. Vehicle Code § 23152.

¹¹⁸ O.R.S. § 813.010.

¹¹⁹ "Psychologists and ergonomic specialists have developed a wide variety of valid psychomotor tests, and many are already in use in the military and other 'mission-critical' organizations." Robert MacCoun, *Testing Drugs Versus Testing for Drug Use: Private Management in the Shadow of Criminal Law* 56 DePaul L. Rev. 507, 520.

impairment standard focuses on the actual criterion of impairment, rather than relying on a biological proxy. Focusing on impairment reduces over-inclusiveness because frequent users can be unimpaired at the same blood cannabis level that would impair an occasional user. An impairment standard also benefits from the lower cost of implementation. Because California already uses an impairment standard to enforce marijuana-related DUIs, officers are trained in detecting impairment and there would be no additional cost to continued implementation.

An impairment standard has two primary disadvantages: heavy reliance on officer observation and weakening of a prosecutor's case. An impairment standard is implemented by individuals who are imperfect and must try to standardize implementation across a variety of conditions, such as weather, time of day, and ground conditions.¹²⁰ In addition, individuals are potentially subject to a wide range of explicit or implicit biases, meaning that while an impairment test is neutral in theory, in practice historically oppressed populations such as black drivers could be subject to additional discriminatory enforcement. Black drivers in California are two to seven times more likely than white drivers to be arrested for similar traffic infractions.¹²¹ This inequality in enforcement ensures that black drivers may be much more likely to be arrested than white drivers if they are judged impaired. Using an impairment standard also increases the difficulty for prosecutors in securing a conviction because they must show that the driver was impaired "to an appreciable degree."¹²² Because standards like impairment are meant to be flexible, they are also more open to interpretation, allowing defendants more room to negotiate

¹²⁰ Keith Humphreys, Why Biological Tests of Driving Impairment are Superior to Behavioral Tests, The Reality-Based Community (May 6, 2013) <http://www.samefacts.com/2013/05/drug-policy/why-biological-tests-of-driving-impairment-are-superior-to-performance-tests/>.

¹²¹ See Stopped, Fined, and Arrested, Back on the Road California, (Apr. 2016) http://lccr.com/wp-content/uploads/Stopped_Fined_Arrested_BOTRCA.pdf; see also Tanzina Vega, The Steep Cost of Driving While Black in California, CNN Money (Apr. 11, 2016, 11:07 AM ET) <https://www.lccr.com/newsroom/cnnmoney-the-steep-cost-of-driving-while-black-in-california/>.

¹²² *People v. Canty*, 32 Cal. 4th at 1278.

what an “appreciable degree” of impairment is, whereas a per se standard is a bright-line rule which is easier to interpret but also less flexible and responsive to individualized situations.

C. Combination Standard

The third possible legal standard is a combination standard under which a prosecutor must show both that the level of cannabis in the driver’s blood exceeded the legal limit and that the person’s driving was impaired. This standard joins the per se and impairment standards.

A combination standard for marijuana DUIs has two significant benefits: it targets actual impairment while providing a measure of horizontal equity and it reduces the burden on unimpaired frequent users. Because accused individuals will also need to test positive for a given amount of cannabis, officer bias alone cannot drive prosecution. This standard might also be potentially preferable to law enforcement who are concerned with implementing a workable standard because a combination standard would allow them to back up their subjective observations with scientific data. The second advantage of a combination standard is that it allows unimpaired users to legally drive even if their blood still has a measurable amount of cannabis present. A combination standard thus permits medical users who use cannabis daily to drive so long as they are not impaired. Medical users may meet the five nanogram limit up to twenty-four hours after consuming cannabis, long after they are able to safely drive. Because of the fat-soluble nature of cannabis, medical users’ blood will contain THC and THC metabolites even after the THC has left their brain and they are no longer impacted by the neurological effects of THC. When technology becomes available that can measure a biological corollary to impairment then a combination standard would become more redundant.

A combination standard for marijuana DUIs has two main disadvantages: under-

inclusiveness and partial reliance on officer discretion. A combination standard will be under-inclusive in the same way that a per se standard is under-inclusive because both standards rely on the faulty assumption that the 5ng/mL level affects all users equally, and because both rely on blood testing which also brings in its own under-inclusiveness. A combination standard is also hindered by the fact that it is more time-consuming for police departments who must expend resources both on the officers who administer the impairment test and on sending biological samples to a lab for testing.

Each of these standards has potential benefits and disadvantages, and policymakers must carefully consider which populations will be the most impacted by either over- or under-inclusiveness, as well as how police departments and officers will practically implement the laws. Each of these legal standards could include a sunset provision which would force the legislature to readdress this issue in a few years when saliva testing is projected to be feasible for roadside testing. Additionally, lawmakers could consider setting different penalties for drivers who could demonstrate that they were frequent versus occasional users or different penalties for medical consumers.

PART III:
ENVIRONMENTAL IMPACT

I. INTRODUCTION

Much of the debate surrounding the passage of the Prop 64 centered on the implications of cannabis cultivation for land use and the environment.¹²³ Concerns in this area arise because cannabis cultivation, when left unregulated, can involve a number of techniques and practices that are detrimental to the surrounding environment. These practices include illegal water use and diversion, clearing of forests and vegetation, over use of fertilizers and pesticides, negligent and improper disposal of waste, and erosion.¹²⁴

Some of these general concerns associated with the cannabis industry are exacerbated in California due to the unique conditions and climate in the region. Most notable is the fact that the majority of California cannabis is grown outdoors, which is a more water-intensive method compared to indoor cultivation, which is more energy-intensive.¹²⁵ This is problematic because cannabis is a relatively ‘thirsty’ crop to begin with, and its May to September growing season occurs simultaneously with California’s dry season.¹²⁶ Thus, while California’s watersheds are stressed by seasonal drought conditions, cannabis cultivators are illegally diverting surface water and springs to irrigate their crops.¹²⁷ This places both wildlife and plant life at risk, specifically aquatic habitats that contain many vulnerable species.

The heavy use of chemical fertilizers and pesticides on California’s outdoor grows can also have damaging implications for both surrounding wildlife and watersheds. As cannabis cultivation becomes larger in scale, it increasingly relies on fertilizer and pesticides, and fertilizer application rates have been recorded on some cultivation sites at amounts as high as one pound for every six plants.¹²⁸ Such levels are concerning because

¹²³ Baird, G., Harrower, J., Sepaniak, S., Short Gianotte, A. *The quasi-legal challenge: Assessing and governing the environmental impacts of cannabis cultivation in the North Coastal Basin of California*. Land Use Policy 61 (2017) 126–134. Carah, J.K., Howard, J.K., Thompson, S.E., Short Gianotti, A.G., Bauer, S.D., Carlson, S.M., Dralle, D.N., et al., 2015. *High time for conservation: Adding the environment to the debate on marijuana liberalization*. Bioscience 65 (8), 822–829.

¹²⁴ *Id.*

¹²⁵ Carah et al., 2015.

¹²⁶ Baird et al., 2017.

¹²⁷ *Id.*

¹²⁸ Baird et al., 2017, citing [USFS] US Forest Service, 2009. *Forest Focus: National Forests in California – Episode 5 Marijuana: Cultivation and Eradication on*

excess chemicals at these sites will often run off into surrounding water sources. This, in turn, contributes to wider problems such as eutrophication—or the process whereby an ecosystem becomes enriched with chemical nutrients, causing explosive algal blooms that ultimately depletes the surrounding watersheds of oxygen—as well as the introduction of pesticides into the food chain of surrounding wildlife, with fatal effects.¹²⁹

The ecological impact of illegal water use and excessive pesticide use, along with a range of other environmental concerns, could increase with the legalization of recreational marijuana in the state of California. Not only will more grows come online, but the rise of competition in the industry could incentivize cost-cutting techniques that are detrimental to the environment. Even for those growers who wish to be in compliance with the AUMA, the sheer number of regulations and licenses that must be obtained can be overwhelming, and the process costly and time consuming. And while enforcement agencies that are tasked with regulating this industry are doing the best they can with the resources they have, these agencies may find themselves underfunded or understaffed as the cannabis industry experiences unprecedented growth across the state. Thus, it is critical to evaluate policy options that are aimed at anticipating, addressing, and mitigating the environmental damage caused by cannabis cultivation.

When considering how to address the major challenges facing environmental compliance in the cannabis industry, we have identified three potential policy options that will be contemplated in the following analysis. First, requiring limited liability corporations (LLCs) to disclose their beneficial owners during the AUMA licensing process. Second, changing how the state of California distributes available funding to enforcement agencies. And finally, methods for helping officials at both the state and local level work to address barriers to legal compliance and streamline the licensing process. When assessing these policy options, we suggest they be evaluated against a number of criteria including cost, ease of implementation, impact on environmental regulation, and the capacity for adaptation. We will dive deeper into each of the criterion as they apply to each policy option as we progress through this discussion

California's National Forests; Podcast and transcript:
<http://www.fs.fed.us/r5/podcasts/marijuana/transcript5.php> [accessed 30.11.15.].

¹²⁹ Baird et al., 2017.

II. POLICY 1: LLC DISCLOSURE

A. The Problem

Shell companies are often used to obscure the identities of cannabis cultivators, particularly those who are in violation of environmental regulations. It is often the case that cultivation sites are not purchased by individuals, but instead, purchased by limited liability corporations (LLCs) that are owned by individuals. When this is true, regulatory agencies need to know who owns the LLC so that they know who to hold accountable in the event that any illegal activity takes place on the site. However, regulatory agencies are struggling to identify who owns the LLCs for a number of reasons.

First, disclosure of certain identifying information associated with LLCs is often not required under state law. For example, when an LLC is formed in California, or when it is formed in a different state and simply operates in California, there is no requirement that the LLC disclose any information identifying its beneficial owners. Beneficial owners are the individuals who enjoy the benefits of ownership while the title of the property might be in another's name.¹³⁰ This concept will be discussed in more detail below.

The second challenge arises when certain information that is disclosed is out of date. While beneficial ownership information is not required in California, the name and address of a 'registered agent' must be disclosed when forming an LLC.¹³¹ This is significant because the address provided for the registered agent must be a physical address, and the registered agent is expected to be available during the course of normal business hours to accept notices, government correspondence, legal and tax documents, and other action items. However, issues arise for environmental regulatory agencies when the registered agent on file is no longer associated with the LLC. In this situation, regulatory agencies will visit a site owned by an LLC, assess any environmental damage, and initiate action by sending a letter to the registered agent on file. However, upon

¹³⁰ State of California Franchise Tax Board, CA.gov, <https://www.ftb.ca.gov/businesses/structures/llc-filing-requirements.shtml>, accessed March 3, 2017.

¹³¹ *Id.*

receipt of the letter, the individual listed as the registered agent may claim to have no ties to LLC and no knowledge of his or her replacement. While law enforcement could theoretically investigate further in such instances, they often do not have the resources to do so.

Third and finally, regulatory agencies are struggling to identify individuals to hold accountable because of LLC ‘layering.’ This refers to a situation in which one LLC is owned by another LLC, which in turn can be owned by another LLC, with no legal limit to how many layers deep this can go. Once again, while hypothetically it might be possible to tease out the ownership eventually, regulatory agencies do not have the time or resources to investigate six layers of LLCs to get to a responsible party in order to hold someone accountable.

B. New York: A Case Study

The use of LLCs to obscure ownership identity, and the obstacles it presents for regulatory enforcement, is not a problem that is entirely unique to the cannabis industry. Over the course of the past few years, a similar issue was identified in the real estate industry, and the city of New York adopted new, industry-specific disclosure requirements that can provide valuable insight for the California cannabis industry moving forward.

In 2014, over half of the condo sales above \$5 million in New York City were sales made to LLCs. And because most states allow LLCs to be formed without disclosing the identities of the owners, there was a concern in New York that these LLCs were being used to hide the identity of buyers who were claiming residency outside the city or even the country, and thereby avoiding city income taxes. To quantify the problem, in 2014 it was estimated that about 89,000 of the condos in New York City—with an estimated collective fair market value of \$80 billion—were owned by individuals claiming residency outside the city.¹³²

To address this growing concern, new disclosure requirements for LLCs seeking to purchase condos in New York City were passed in 2015. The change was relatively

¹³² Saul, Stephanie. *New Disclosure Rules for Shell Companies in New York Luxury Real Estate Sales*. New York Times. July 20, 2015.

simple. Before the new disclosure requirements, only one member of an LLC was required to disclose his or her identity in order for the LLC to buy property in the city.¹³³ Now, under the new regulation, it is required that all members of an LLC disclose both their identities and their taxpayer ID numbers to the Finance Department in order for the LLC to make a real estate purchase or sale in New York City.

While this regulatory change is still relatively new, there are a few lessons that can be learned from its implementation over the past year. On the one hand, the new rule has served as a tool for city officials and law enforcement personnel seeking to trace tainted assets and identify tax evaders. On the other hand, the new rule might not be doing enough. Specifically, the new disclosure form does not require that LLCs include the name of the beneficial owner, who might not be one of the LLC's members. Consequently, the true beneficial owners may continue to remain anonymous as they buy or sell property. Concerns have also been raised that the new disclosure requirements are infringing on real estate purchasers' privacy rights. However this concern has largely fallen flat with regulators because the disclosures made under the new rule are not a matter of public record, and only the Finance Department is privy to the identifying information provided on the new form.

C. Potential Solutions

To address the LLC issue in the cannabis industry, an industry-specific change in the disclosure requirements could be adopted similar to the change implemented in New York City. Ultimately, if an LLC is going to be involved in the cannabis industry in California, then the name of the beneficial owner—not just an agent or a member—would be provided at some point in the licensing process. This way, LLCs will still be free to own cultivation sites and engage in activities associated with the marijuana business. But in order to obtain the proper licenses for those sites and activities, the LLCs would meet certain disclosure requirements.

The term “beneficial owner” warrants elaboration, as its interpretation will be crucial for understanding the issues posed by LLCs, as well as understanding how to address them. In the legal realm, the term ‘beneficial owner’ generally describes a

¹³³ *Id.*

situation in which “specific property rights in equity belong to a person even though legal title of the property belongs to another person.”¹³⁴ In other words, as mentioned above, the beneficial owner enjoys the benefits of ownership while the *title* of the property is in another’s name. On its face, this definition is broad and seemingly vague, and it is hard to imagine how it can be translated into clear disclosure requirements. But there are ways to avoid an ill-defined and imprecise idea of beneficial ownership for LLCs.

First, an industry-specific definition can be useful, as well as a clear, quantifiable bar that establishes bright-line disclosure triggers. To better imagine what this might look like in practice, it is helpful to examine a successful example in a different realm: Securities regulation. In securities law, the term ‘beneficial owner’ is defined under SEC rules to include “any person who directly or indirectly shares voting power or investment power.”¹³⁵ This distinct and industry-specific definition is then accompanied by very specific thresholds that trigger disclosure requirements. For example, when a person or group of persons acquires beneficial ownership of more than 5% of any class of a publicly traded company’s securities, they must file certain disclosures.¹³⁶

This SEC example could be mimicked in the cannabis industry. To start, a beneficial owner would be specifically defined. This could be done by ownership percentage or membership units, both of which conceivably confer the right to vote and share in profits. It is important to keep in mind, however, that an individual’s control or ownership of an LLC might be indirect (i.e., layered behind a chain of corporate entities, hidden behind contractual agreements, etc.). Consequently, creating a definition that fully captures and closes potential loopholes will not be any easy task.

Second, quantifiable filing requirements could be established. Much like with the SEC requirements, these could be done as a percentage, and could be triggered when the beneficial owner has more than X% of the voting power of the LLC or X% of the value of assets owned by the LLC. In determining an appropriate minimum threshold, it is important to keep in mind the number of owners that certain percentages could yield. For

¹³⁴ Black's Law Dictionary (2nd Pocket ed. 2001 pg. 508)

¹³⁵ U.S. Securities and Exchange Commission. *Schedule 13D FAQs*. December 5, 2012. <https://www.sec.gov/fast-answers/answerssched13htm.html>, quoting 17 CFR 240.13d-3.

¹³⁶ *Id.*

example, if a threshold of 25% is established—whereby a beneficial owner is defined as anyone owning *more than 25%* of the shares or who holds *more than 25%* ownership in the company—there could be a maximum of three beneficial owners listed. While there may be more than three beneficial owners (suppose there are 4 individuals with exactly 25% ownership, or perhaps even 5, each with 20% ownership), the three names that are listed will give regulatory agencies three more leads than they currently have when trying to hold someone accountable for environmental damage. In other words, it may not be necessary for the threshold percentages that are established to be so low that they guarantee a complete picture of an LLC’s beneficial ownership structure—but the percentage that is determined needs to be low enough to at least point to one individual who can be held responsible.

Once a clear definition of beneficial ownership is determined and a threshold filing requirement is established, it is necessary to determine to whom disclosure will be made. To best organize and ensure proper disclosure, there are four potential agencies with whom LLCs could be required to report certain ownership information. These four agencies were identified because they are each responsible for overseeing or administering licenses at a different stage in the cannabis production process. First is the California Department of Food and Agriculture, which licenses and oversees marijuana cultivation. Second is the Department of Consumer Affairs, which licenses and oversees marijuana retailers, distributors, and micro-businesses. Third is the Department of Public Health, which licenses and oversees manufacturing and testing. And finally, the State Board of Equalization, which collects marijuana taxes for both cultivation and retail.

Ultimately, the most practical option may be the State Board of Equalization. This is because, while the other three agencies are responsible for overseeing and licensing a certain step in the production process—either cultivation or retail—the State Board of Equalization captures both. Under the AUMA, growers be subject to a cultivation tax of \$9.25 per ounce for marijuana flowers (or buds) and \$2.75 per ounce for marijuana leaves, while marijuana retailers will be subject to a 15% excise tax on retail sales. And because the State Board of Equalization will be responsible for collecting both of these taxes, they will be able to cast a wider net and account for a larger number of LLCs without involving or coordinating with multiple agencies.

D. Evaluative Criteria

When assessing each policy option, we suggest they be evaluated against a number of criteria including cost, difficulty of implementation, impact, and the capacity for adaptation. Here, the cost of implementation is relatively low and theoretically, there would be little difficulty of implementation. This is particularly true if the new disclosure requirement is absorbed by one of the four agencies mentioned above, and effectively integrated into an already existing licensing process. This would conceivably only require minimal changes to the forms that already exist and the records that are currently kept, which can continuously be updated and adapted as the need arises. This ease of implementation and capacity for adaptation, coupled with a low cost, is significant because the expected impacts of the new disclosure requirements are optimistic. Ultimately, the new disclosure requirements would ease the strain on regulatory agencies by eliminating the need to undergo intensive investigation in order to identify a responsible party. This, in turn, will make it much easier to hold certain individuals accountable for environmental violations. Furthermore, by eliminating the degree of anonymity that some individuals are able to maintain under the current rules, these new disclosure requirements could increase the sense of risk those individuals feel about engaging in illegal behavior in the first place, thereby reducing the number of violations that need investigation.

III. POLICY 2: EFFECTIVELY DISTRIBUTE FUNDING¹³⁷

A. The Problem

Enforcement of environmental rules requires funding, and Proposition 64 has some gaps in this regard. As context, we provide a primer on how the funds are distributed. Tax revenues collected pursuant to the AUMA are allocated to the new California Marijuana Tax Fund, which allocates funds in the following sequence: (1) Tax revenue first reimburses state agencies for “reasonable costs” incurred in the implementation of their respective AUMA duties.¹³⁸ (2) There are then specific allocations for research, enforcement, and treatment—including 10 million dollars to public California universities to “research and evaluate the implementation and effect” of the act.¹³⁹ (3) Of the remaining funds, 60% funds the Youth Education, Prevention, Early Intervention and Treatment Account, 20% funds the State and Local Government Law Enforcement Account, and 20% funds the Environmental Restoration and Protection Account.¹⁴⁰

The Environmental Restoration and Protection Account distributes funds to the California Department of Fish and Wildlife (CDFW) and the California Department of Parks and Recreation for various tasks, including, the “cleanup, remediation, and restoration of environmental damage in watershed affect by marijuana cultivation,” and for “the stewardship and operation of state-owned wildlife habitat areas” in ways that

¹³⁷ This section draws heavily upon our interviews with state agents and NGO affiliated researchers intimately involved with cannabis cultivation reclamation efforts in the Emerald Triangle region. In particular, two interviews are most directly cited. The first, Interview A, was conducted with a field scientist whose work constitutes a substantial amount of the peer-reviewed studies of cannabis related environmental harm in the Emerald Triangle region. The second, Interview B, was conducted with a field scientist whose work, although not as prolific as Interview A’s, has provided similar documentation. Interviews with those at state agencies, including the CDFW, provide general support throughout. We have decided to protect their anonymity in the interest of providing an unbiased assessment.

¹³⁸ CAL REVENUE AND TAXATION CODE § 34019(a)(1)-(4).

¹³⁹ CAL REVENUE AND TAXATION CODE § 34019(b)-(e).

¹⁴⁰ CAL REVENUE AND TAXATION CODE § 34019(f)(2).

discourage illegal cannabis cultivation.”¹⁴¹ Although the Secretary of the Natural Resources Agency can determine the allocation of funds between departments, first consideration is given to the CDFW and the Department of Parks and Recreation for the aforementioned efforts during the first five years of implementation.¹⁴²

Our interviews with key stakeholders revealed hopeful optimism regarding the thoughtfulness with which the Environmental Restoration and Protection Account allocates tax funds, resistance to a reprioritization of fund allocation, and concern that the language of the text currently fails to guarantee certain provisions. These include: (1) a system that encourages interagency and interdisciplinary approaches to reclamation and enforcement, (2) a competitive grant process for ongoing monitoring, and (3) delineated guarantees for various funding best practices, including language that prevents tax revenue from being used to support general operating expenditures.

(1) Lack of Cross-agency Coordination

Per the Environmental Restoration and Protection Account, the CDFW and Department of Parks and Recreation can use funds to “support local partnerships” for their cleanup, remediation, and restoration efforts.¹⁴³ A variety of organizations—including state, tribal, and NGO actors—have historically played significant roles in reclamation efforts throughout the Emerald Triangle region.¹⁴⁴ Indeed, the majority of

¹⁴¹ CAL REVENUE AND TAXATION CODE § 34109(f)(2)(A)-(E).

¹⁴² CAL REVENUE AND TAXATION CODE § 34109(f)(2)(A).

¹⁴³ CAL REVENUE AND TAXATION CODE § 34019(f)(2)(A).

¹⁴⁴ Synopses of various trespass grow reclamation operations indicate the significant multidisciplinary approach of such efforts. For example, reclamation efforts of 7 trespass grow sites between October 12-16th, 2014 throughout the Emerald Triangle region involved nine organizations, including Integral Ecology Research Center (IERC), the CDFW Law Enforcement Division (CDFW-LED), the Hoopa Tribe, the Army and Air National Guard, and the Trinity County Resource Conservation District (TCRCD). OPERATION SYNOPSIS: OCTOBER 12-16, 2014, “Science with Solutions: Documentation, remediation and monitoring of the ecological impacts of marijuana cultivation on endangered species within California’s Public and Tribal Lands,” (provided by Dr. Mourad Gabriel of the IERC).

non-regulatory environmental programs initiated throughout the Emerald Triangle region have been initiated by non-profit organizations.¹⁴⁵

Water rights administrators in California have suffered from historic “[c]hronic under-funding” and “low-levels of staffing.”¹⁴⁶ The Little Hoover Commission’s 2010 assessment of California’s water governance determined that for Fiscal Year 2009-2010, within the State Water Resources Control Board, the Division of Water Rights’ budget of \$14.2 million represented just 2 percent of the Board’s total budget—contributing to a significant backlog of permits and petitions.¹⁴⁷ And as of 2012, the Department of Parks and Recreation had a backlog of over \$1 billion in deferred maintenance.¹⁴⁸ These departments, and others involved in the monitoring and enforcement of cannabis related environmental concerns, would likely find the experience and expertise of historically active organizations an especially valuable asset in their effort to keep pace with the growing supply of cultivators. We heard concerns in our interviews, however, over whether the language of the Environmental Restoration and Protection Account adequately encourages cross-program discourse and projects.¹⁴⁹

(2) Does Not Adequately Guarantee Competitive Grants for Ongoing Monitoring

¹⁴⁵ Anne G. Short Gianotti, et. al., *The Quasi-legal challenge: Assessing and governing the environmental impacts of cannabis cultivation in the North Coastal Basin of California*, 61 LAND USE POLICY, 131, (February 2017), ISSN 0264-8377, (<http://www.sciencedirect.com/science/article/pii/S0264837716307517>)

¹⁴⁶ Grantham, Theodore E., “100 years of California’s water rights system: patterns, trends and uncertainty.” *Environmental Research Letters* 9.8, Page 8, (2014): 084012.

¹⁴⁷ *Managing For Change: Modernizing California’s Water Governance*, LITTLE HOOVER COMMISSION, 36-37 (August 2010); see also Ellen Hanak, *Managing California’s Water: From Conflict to Reconciliation*, PUBLIC POLICY INSTITUTE OF CALIFORNIA, (2011).

¹⁴⁸ *Beyond Crisis: Recapturing Excellence in California’s State Park System*, LITTLE HOOVER COMMISSION 51 (March 2013).

¹⁴⁹ A database search of the UC Davis Library system, EcoTox, Wildlife and Ecology Studies, Zoological Record, and Google Scholar revealed that of 26 scientific peer-reviewed book chapters or studies covering the environmental harm of cannabis cultivation in the Emerald Triangle region that are published, in press, or in review, 21 were produced by the IERC as principle investigators or scientific collaborator. Research database search provided by Dr. Mourad Gabriel of the IERC on March 17, 2017). Other related works include Trish Regan, *JOINT VENTURES* (March 8, 2011) and Dr. Ralph Weisheit’s publications covering the region.

Efforts to document and analyze the environmental harm occurring in the Emerald Triangle region from cannabis cultivation are limited by research challenges linked to cannabis’s quasi-legal status.¹⁵⁰ Many scientists are either unable, or unwilling to research the topic out of both ethical and safety concerns.¹⁵¹ As a result, there are relatively few peer reviewed articles assessing the environmental impact of cannabis cultivation in Emerald Triangle region, and those that are published come from only a handful of research teams.¹⁵² Furthermore, all of these articles represent snapshots, as no organization has the resources to conduct ongoing monitoring.¹⁵³

The Environmental Restoration and Protection Account stipulates that the CDFW “may distribute” a portion of the Account’s funds “through grants specified in this paragraph.”¹⁵⁴ This language, however, in the opinion of those we interviewed is not specific enough to guarantee the creation of a competitive grant process. Additionally, \$10 million is allocated to California state universities for research. Environmental harm, however, represents only 1 of the 11 enumerated areas schools are expected to research.¹⁵⁵ Universities are also both physically and practically not well situated to tackle the problem. Trespass grows are often booby-trapped, protected with armed guards, and field researchers have expressed significant fear in working alone during cannabis growing seasons.¹⁵⁶ Even more, the research itself entails handling hazardous and illegal materials, and even getting to work sites requires extensive coordination with law enforcement personnel.¹⁵⁷ Universities are also physically far away from the issue—of the 32 public four-year universities in California, only Humboldt State University is located in the Emerald Triangle.

(3) Continual Monitoring of Fund Allocation

¹⁵⁰ Short, *supra* note 145, 129 (as recently as 2008, “agency staff reported. . . an inability to conduct research due to the lack of legislative direction).

¹⁵¹ *Id.*

¹⁵² Interview A.

¹⁵³ *Id.*

¹⁵⁴ CAL REVENUE AND TAXATION CODE § 34019(b)(1)-(11).

¹⁵⁵ CAL REVENUE AND TAXATION CODE § 34019(b)(2)(C).

¹⁵⁶ Short, *supra* note 145, 129.

¹⁵⁷ *Id.*

The Environmental Restoration and Protection Account stipulates that it neither “replace[s] [the] allocation of other funding” toward their respective purposes, nor does it take the place of “General Fund appropriations” per the Budget Act of 2014.¹⁵⁸ As mentioned, the allocation of funds is also guaranteed on a “first consideration” basis for the first five years of implementation.¹⁵⁹ We heard concern in our interviews, however, that this language is not stringent enough in guaranteeing the allocation of funding as intended.¹⁶⁰ In particular, Interview B stressed the importance of not using funds, no matter how tempting, for general operating expenditures. This is particularly relevant given the considerable backlogs previously mentioned.

B. Potential Solutions

The problems presented here are not mutually exclusive—a lack of coordination between departments extends to research opportunities, and general fund allocation is pervasive throughout the entire Environmental Restoration and Protection Account. The interventions proposed here have thus been selected for the ways in which they overlap and support each other.

These problems could be addressed, in the simplest manner, by importing language from relevant sections of other Accounts. For example, the Youth Education Account is currently required to “solicit input from volunteer health organizations . . . treatment researchers. . . and professional education associations with relevant expertise as to the administration of any grants made pursuant to this paragraph.”¹⁶¹ Relevant departments within the account also have the ability to, at their discretion, use “up to 4 percent of the moneys allocated to the Youth Education, Prevention, Early Intervention, and Treatment Account for administrative costs related to implementation, evaluation and oversight of the programs.”¹⁶² Mirroring this language could, at least at a base level, assuage field researchers’ fears regarding (1) a lack of coordination between involved organizations, and (2) a lack of delineated oversight for the distribution of cannabis

¹⁵⁸ CAL REVENUE AND TAXATION CODE § 34019(f)(2)(E).

¹⁵⁹ CAL REVENUE AND TAXATION CODE § 34019(f)(2)(D).

¹⁶⁰ Interview A; Interview B.

¹⁶¹ CAL REVENUE AND TAXATION CODE § 34019(f)(1)(O).

¹⁶² CAL REVENUE AND TAXATION CODE § 34019(f)(1)(M).

reclamation funds. The State and Local Government Law Enforcement Account also allows the Department of the California Highway Patrol to fund grants to “qualified nonprofit organizations and local governments” for a variety of delineated purposes.¹⁶³ Changing the Environmental Restoration and Protection Account’s grant language from “shall” to “may,” while also specifying the areas of research, would—so long as the delineated areas are broad enough—better facilitate ongoing research. Section I of this report on amendment powers of the legislature is relevant if this option is pursued.

A more involved approach would involve changing the Environmental Restoration and Protection Account’s language to more explicitly incentivize interagency, multidisciplinary research and reclamation efforts. Such a change could entail creating a program that allocates grants competitively, judging the merit of proposals through a point system that considers both the potential ecological impact of the project or research, and the amount of multidisciplinary agencies involved. More involved assessments could, in greater detail, assess the marginal benefit to impact from each additional discipline and expertise added.

Furthermore, agencies could be encouraged to form joint task forces and otherwise work together when their responsibilities overlap. The Watershed Enforcement Team, a joint effort of the CDFW and the State Water Resources Control Board, provides a model. Created because of the two departments overlapping and related responsibilities, the team is capable of directly issuing fines for certain CDFW code violations without going to the District Attorney.¹⁶⁴ The project thus efficiently allows the two departments to leverage their expertise in tackling similar, overlapping problems, while streamlining their enforcement in cost efficient ways. Similar opportunities involving, notably, the California Department of Pesticide Regulation, Department of Consumer Affairs, and Department of Public Health, could be explored.

C. Evaluative Criteria

¹⁶³ CAL REVENUE AND TAXATION CODE § 34019(f)(3)(B).

¹⁶⁴ Sandy Feretto, *Agency partnership pilot program no in place*, WILLITS NEWS (12/10/14), <http://www.willitsnews.com/general-news/20141210/agency-partnership-pilot-program-now-in-place>

Getting agencies to better coordinate their efforts could ultimately save costs while increasing the impact of each organization. As with WET, joint coordination can save costs by reducing redundancy between groups. It can also, by allowing them to leverage the expertise and multidisciplinary skills of other groups, make them more effective. Although there may be some initial implementation costs associated with these efforts, more effective organizations would save costs over the long run. Similarly, although setting up a competitive grant process could route funds away from the CDFW, the information it would return has the potential to exceed its investment costs by prioritizing agency and policymakers' efforts.¹⁶⁵

A counter to these programs is that it spreads limited resources too thin—limiting the overall capability of any one organization. Coordinating between many groups of agencies diffuses responsibility while increasing coordination costs. The downside of mandating interagency cooperation is that resources are wasted overseeing joint efforts that are each too resource strapped to effectuate change, which, in turn, further extenuates the problem. Furthermore, given the inherent multidisciplinary nature of the reclaiming and overseeing trespass grows, mandating interagency coordination may be unnecessary—these organizations, on their own, would potentially enlist the expertise of others when needed. Indeed, allowing state agencies and organizations to coordinate among themselves sans mandate—if they would naturally do so—is the most efficient way of enabling it. In this instance oversight would be redundant.

Still, we believe that the interventions provided, particularly those that involve importing language from other sections, are an effective and cost sensitive compromise. These suggestions are also likely to be uncontroversial—at their core they simply work towards efficiency, and they do so using language already approved by the electorate in a tangential context. The greatest difficulty, however, is likely to be in their actual implementation—we recognize that the language of the Environmental Restoration and Protection Account itself is unlikely to be amended. Instead, internal codification by the CDFW of the Environmental Restoration and Protection Account would, most likely, need to hold itself to the more stringent standard discussed here. Given that these

¹⁶⁵ Short, *supra* note 145, 130.

standards work towards achieving the same ends that the CDFW seeks, however, we do not find doing so to be inhibitive or burdensome.

IV. POLICY 3: STREAMLINE LEGAL REQUIREMENTS FOR SMALL GROWERS

A. The Problem

Our third policy option concerns the balance between environmental regulation and compliance. Namely, the more complicated and fragmented the system of environmental rules, the less likely growers are to comply with them. Bringing growers out of the black market and into compliance is a clear goal of the AUMA, and therefore policymakers should be conscious of how new rules might incentivize growers to enter or leave the legal market. Currently, even some growers who believe in sustainable cultivation find the legal complexity, cost, and time required for compliance to be burdensome. This problem is especially difficult for small growers. Our focus on this issue reflects concerns we've heard from individuals involved in the industry, as well as our own experience researching and trying to understand the regulatory environment. This is not to dismiss the responsibility of growers who violate environmental laws. We appreciate the need for strong regulations to protect against the potential environmental harms of cannabis cultivation, but too much regulatory complexity might incentivize growers to remain in the black market, which often leads to greater environmental damage in the long run.

While exact figures for environmental compliance among growers are impossible to determine, they are generally believed to be low. In one representative study looking at marijuana cultivation sites in the North Coast region, investigators found that the total number of water diversions in the area registered with the State Water Resources Control Board was less than half (and in some watersheds as low as 6%) of the number of

marijuana cultivation sites observable through aerial photography.¹⁶⁶ One state official estimated that less than 5% of grows have all the necessary permits they would need to be fully compliant.¹⁶⁷ While we cannot be sure of the exact relationship between regulatory complexity and compliance, we believe that part of the reason compliance is so low is because growers find it difficult to understand and navigate the rules and permitting processes of the various agencies tasked with regulating cultivation.

There are several main causes of complexity in the regulatory regime. First is the ability of local governments to set their own regulatory standards under AUMA Section 26201. This section establishes any state standards for cannabis health and safety, environmental protection, testing, security, food safety, or worker protections as minimums, and allows local jurisdictions to establish further standards on top of those.¹⁶⁸ Localities can also require growers to seek additional licenses and permits. While Section 26201 provides a desirable degree of self-government for cities and counties, it makes it difficult for growers to determine exactly which rules apply to them and what permits they need. There is currently no centralized information repository to consult about city or county ordinances.

The second cause of complexity is the breakdown of regulatory responsibilities across multiple state agencies. State agencies with potential environmental regulatory or enforcement authority over cannabis producers include the Bureau of Marijuana Control (within the Department of Consumer Affairs), the Department of Food and Agriculture (CDFA), the Office of Manufactured Cannabis Safety (within the Department of Public Health), the State (and regional) Water Control Board, the Department of Pesticide Regulation, and the Department of Fish and Wildlife. This is in addition to any state agencies which would have authority over cultivators simply for their land use and agricultural activities.

The third complication is the existence of parallel medical and recreational

¹⁶⁶ Bauer, S., Olson, J., Cockrill, A., van Hattem, M., Miller, L., Tauzer, M., Leppig, G., *Impacts of Surface Water Diversions for Marijuana Cultivation on Aquatic Habitat in Four Northwestern California Watersheds*. PlosOne (2015), <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0120016>.

¹⁶⁷ Interview C. Conducted with a scientist at a state agency.

¹⁶⁸ Adult Use of Marijuana Act, Section 26201 (2016).

regulatory regimes with slightly different rules. Growers must determine exactly where they fit within the cannabis ecosystem. And they face additional oversight and permitting if they become involved in other activities related to cultivation like processing their cannabis (to produce edibles for example), testing, or distributing their products.

The state cannabis regime is complicated in part because California is complicated, and regulating it effectively requires taking into account the varied interests and expertise of state and local stakeholders. But the system can also be difficult for growers to understand, especially for those who only have experience in the black market. For some small growers, the cost of hiring attorneys and consultants to help them navigate the regulatory landscape may outweigh the benefits of entering the legal market. Given that California supplies a large portion of the nation's cannabis (estimated at up to 79% of the national market)¹⁶⁹ and moving it across state lines remains illegal, there will likely be healthy demand in the black market for the foreseeable future. The cost of compliance may also increase when Type 5 licenses for large cultivators begin to be issued in 2023.¹⁷⁰ Small growers will be forced to compete on cost with larger businesses that can achieve economies of scale. Given these conditions, the state should make it as easy as possible for small growers to enter and thrive in the legal market while still obeying all environmental regulations.

B. Potential Solutions

To reduce the regulatory burden on growers while maintaining high environmental standards, state agencies should focus on two things: coordination and simplification. The better agencies are able to coordinate on implementation of the AUMA and the simpler the presentation of regulations, the more likely growers are to comply with environmental laws.

Specifically, the CDFA might coordinate with cities and counties to ensure that local licensing requirements complement each other. One scientist at an NGO suggested that the CDFA only recognize local licenses that explicitly require compliance with

¹⁶⁹ Corva, D., 2014. *Requiem for a CAMP: The life and death of a domestic US drug war institution*. *Int. J. Drug Policy* 25 (1), 71–80.

¹⁷⁰ Adult Use of Marijuana Act, Section 26061 (2016).

relevant environmental laws and permits.¹⁷¹ The state might carry this out through communication and outreach programs to local governments to educate them about their environmental responsibilities with regards to cannabis cultivation.

State agencies with overlapping jurisdictions might be encouraged to work together to streamline permitting efforts where possible. California Senate Bill 837, approved in June 2016, provides a good example of the kind of coordination we believe would be helpful. It provides that cultivators who have received a license from the CDFA are exempt from the requirement to enter into a separate lake or streambed alteration agreement with the Department of Fish & Wildlife.¹⁷² However, the bill still maintains much of the original functionality by requiring the “exempt” organization to still submit a written notification, a copy of the license, and a fee to the Department of Fish & Wildlife. As the body in charge of cultivation licensing, the CDFA might coordinate with the State and regional Water Control Boards, the Department of Fish & Wildlife, and the Department of Pesticide Control to ensure that cultivators seeking licenses are in full compliance and meet all the conditions for receiving permits from those bodies before they are approved for a license. Where possible, state agencies could even consolidate relevant permits into the cultivation licensing process, as in the example in Senate Bill 837, to reduce the burden on growers.

One way to potentially increase compliance without having to alter rules would be to present growers’ obligations in a clear and consolidated way. The ideal might be for the California Department of Food and Agriculture, the Department of Fish and Wildlife, the State Water Resources Control Board, and the Department of Pesticide Regulation to develop and publicize a single set of environmental guidelines for cannabis growers. This would allow growers to easily consult one source to ensure compliance with the regulations of each separate agency. Agencies should focus on making their guidelines easy to understand and adopt, with the goal of helping black market growers enter the legal market.

Another way the state might encourage growers to comply with environmental

¹⁷¹ Interview B.

¹⁷² CA SB 837 (2016), https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160SB837.

laws is through an “ecolabeling” program. Because cannabis is illegal federally, even the most environmentally-friendly and sustainable growers cannot use the USDA’s “organic” designation. This removes a powerful market incentive to work within the legal market and use environmental best practices. Private groups such as “Clean Green”¹⁷³ and “Certified Kind”¹⁷⁴ have arisen to offer certification programs based on organic standards. They sometimes even go further to require more stringent sustainable practices. The state could either create its own certification program or coordinate with and encourage a private certification. Any certification should require that growers comply with all state and local environmental regulations and permitting requirements. By recognizing a single certification or “ecolabel,” the state can help to ensure that certification demands a higher price in the market, and incentivize growers to meet all environmental standards required for that mark.

C. Evaluative Criteria

When assessing each policy option, we suggest they be evaluated against a number of criteria including cost of implementation, difficulty of implementation, ultimate impact on the environment, and the capacity for future adaptation by regulators. More coordination between state and local bodies on rules and messaging is unlikely to significantly affect the cost of overseeing cannabis cultivation. However, coordinating effectively to make it easier for small cultivators to enter the legal market may be difficult. It would require sustained effort and creativity from stakeholders. The environmental impact of these proposed changes is uncertain, because we can’t be sure now how much of noncompliance is driven by regulatory cost and complexity. Relaxing regulations so that they are easy to comply may also raise the risk of becoming too lenient on environmentally harmful practices. The capacity for future adaptation is also uncertain. Once licensing requirements for cultivators are in place, it will become difficult to add new requirements. This is why coordination among state and local agencies at the beginning of the AUMA regime may be particularly effective. There is also the possibility of policy changes at the federal level. If cannabis becomes legal

¹⁷³ <https://www.cleangreencert.org/>

¹⁷⁴ <http://certified-kind.com/>

federally at some future point, there will likely need to be changes made to conform to federal standards. And any state certification program resembling “organic” for cannabis may be undermined if the federal “organic” designation become available.

V. CONCLUSION

The three policy options discussed here have the potential to improve environmental compliance and enforcement within the cannabis cultivation industry. First, requiring limited liability corporations (LLCs) to disclose their beneficial owners during the AUMA licensing process might help ensure those who do environmental damage are held responsible. Second, by increasing and changing the distribution of funding to enforcement agencies, California may be able to achieve greater compliance among growers. And finally, by streamlining the licensing process while maintaining high environmental standards, the state may be able to incent small growers to enter and thrive in the legal market. These policy options were evaluated against a number of criteria including cost, difficulty of implementation, impact on the environment, and the capacity for future adaptation by regulators.