

— *Confidential Report* —

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**Research and Determination of Appropriate Plant Count
Restriction Level for the New Mexico Medical Cannabis Program**

Overview

To calculate the proper number of plants to be granted, per license, to the cannabis producers in the New Mexico Medical Cannabis Program (MCP) we have developed a simple formula based on known variables and determined factors. We have provided that formula in this document complete with explanations of how the assumptions were determined.

The New Mexico Department of Health (NMDOH) is tasked with determining the amount of production plants each licensee is permitted to cultivate while striking a balance between providing safe access to medicine for an expanding program, and maintaining a restriction that guarantees public safety concerns are met. By regulating the amount of cannabis plants in the state, it minimizes the amount of cannabis that is available for diversion to the black market and allows regulators to monitor producers and hold them accountable to production numbers, testing criteria, and reporting standards.

We began by analyzing data collected by the MCP over the past two years and establishing a number of assumptions on which we based our analysis. We additionally extrapolated as much information as possible from the data provided by the Department of Health in their quarterly production and patient statistic reports. The plant count number is not derived from static data, but rather is based on a program that is growing rapidly and changing each year.

The MCP has changed the plant count twice since the program's inception, from 95 plants to 150 in 2011, and from 150 to 450 in January 2014. Since January 2014, the program has grown from 20,000 patients to over 70,000 currently enrolled. (*The program is overdue for a plant count reassessment and it is our recommendation that the MCP complete an assessment annually to allow for the correct regulatory parameters to be determined.*) This report shall examine the facts available and present a plant count number that is based on empirical data and that achieves both goals of meeting the legislative mandate of the program while responsibly regulating producers.

Based on extensive analysis, patient enrollment rates, and producer and DOH data, it is clear that the plant count needs to be modified to meet the adequate supply definitions as mandated by law. We have developed a proposed formula to give guidance to the DOH in determining what will be the best mathematical approach to meet the needs of the medical cannabis program.

NMDOH Formula for Plant Count Determination

$$(AEY \times \text{Plant Count}) \times NLP = (((TPE-PPP) \times LPA) \times PGR)$$

$$(1,589 \times Y) \times 35 = ((65,222 \times 920) \times 1.37\%)$$

$$\frac{(1,589 \times Y) \times 35}{35} = \frac{82,205,809}{35}$$

$$1,589 \times Y = 2,348,737$$

$$\frac{1,589 \times Y}{1,589} = \frac{2,348,737}{1,589}$$

$$Y = 1,478$$

TPE - Total Current Patient Enrollment - Total number of patients enrolled in the Program. (68,995)

PPP - Personal Production Patients - Estimated total of patients growing personal medicine. (3,773)

PGR - Current Patient Growth Rate - Current rate of program enrollment. (37%)

LPA - Legal Patient Allowance - The amount that a patient can legally purchase (per annum.) (920units)

AEY - Average Expected Yield - The average amount the DOH can expect a LNPP to produce. (1,589units/plant/year)

NLP - Number of Licensed Producers LNPP (35)

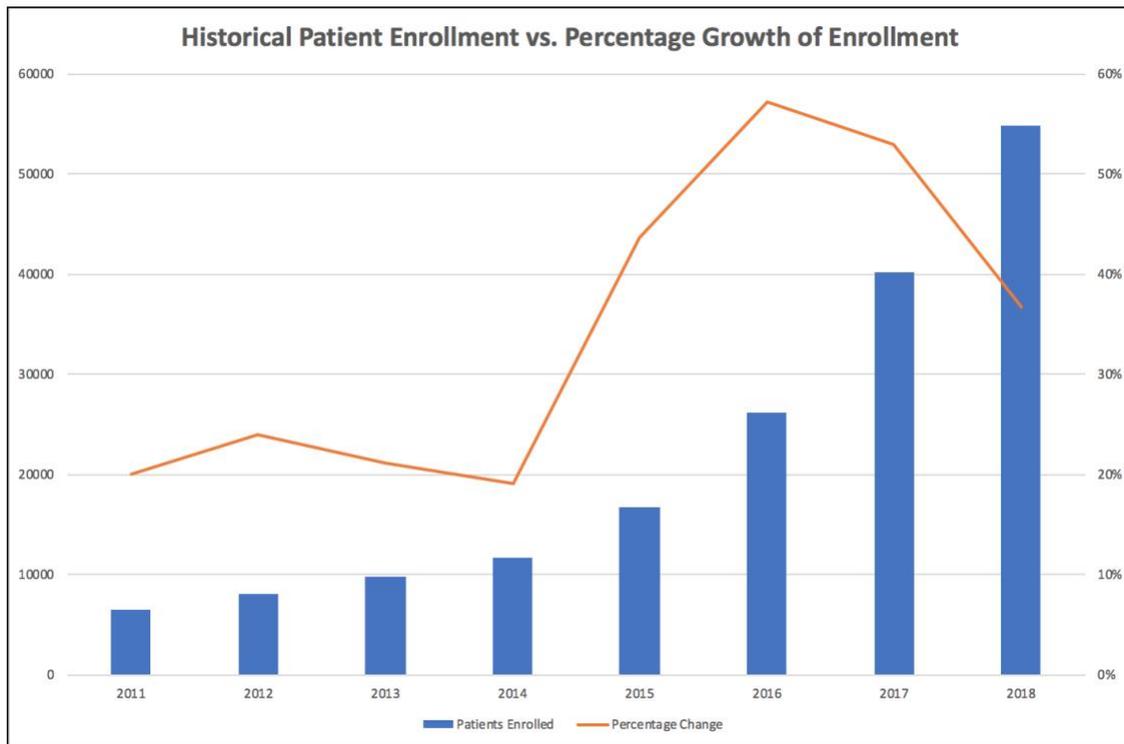
Plant Count - Plant Count Restriction (Unknown is represented as Y in Formula)

Calculations to Support Formula

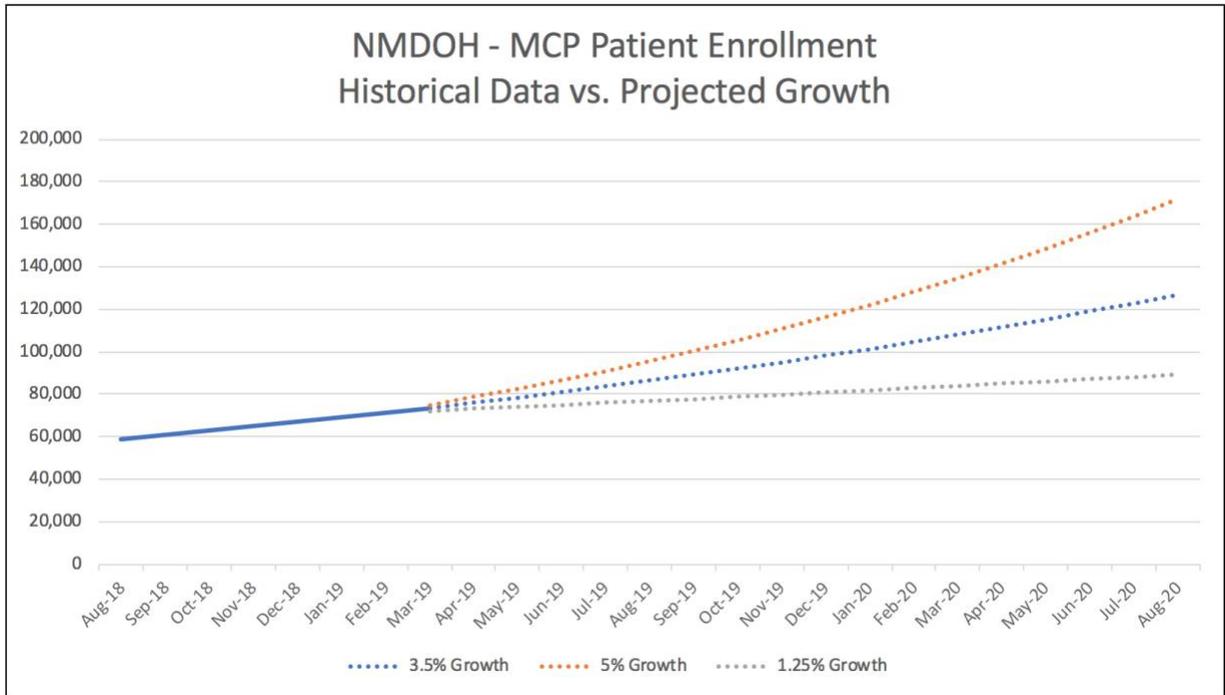
Total Current Patient Enrollment (TPE) &

The Growth Rate of New Mexico's Medical Cannabis Program Enrollment (PGR)

The New Mexico Medical Cannabis Program has grown at varying rates over the last eight years. There is a definite analog curve showing increasing enrollment from 2011 to 2016 (*with an anomaly in year 2014 due to the process of enrollment being suppressed either by design or by inefficiencies in the system.*) Looking at the data, the jump from 2011 to 2012 was nearly 20% (previous data is available and shows slow growth of the program in the early years). The increase in enrollment over the seven following years is represented in the following graph:



Enrollment is currently trending at 3.08% per month (or 37% annually for 2018/19 and declining.) The formula should take into account the possibility of an increased rate as shown in the following chart, however, any allowance for growth is countered by the declining trend in enrollment numbers. Currently, the formula utilizes a **TPE** of 68,995 (the current enrollment number from January 2019) and the **PGR** can be fairly represented at 37%.



Following this projection, the expected patient count for August 2020 would be ~170,000

Legal Patient Allowance (LPA)

Highest Possible Demand Allowed By Regulation

Medical Cannabis Program patients are limited in the amount of cannabis they can purchase. The current restriction is based on the MCP’s interpretation of "adequate supply" (*from the Lynn and Erin Compassionate Use Act*) and restricts patients to 230 units within a “rolling period” of 90 days. If every patient currently enrolled in the program exercised their right to purchase the maximum amount of cannabis within the year, totaling 920 grams, with 68,995 patients registered in the program, the total amount of cannabis needed to meet this demand would be 63,475,400 grams per year.

Personal Production Patients (PPP)

Number of patients producing their own medicine.

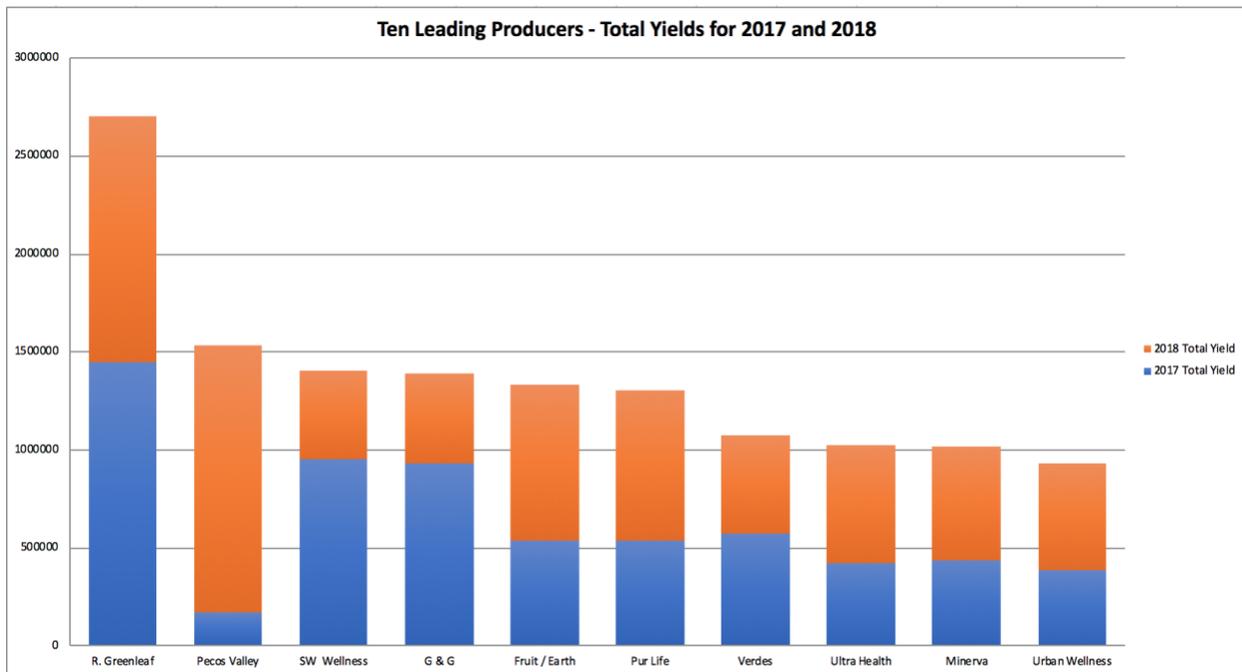
As well as the ability to purchase medicine in the program, patients - who are properly registered and licensed - have the right to grow and harvest their own medicine. These patients are referred to as Personal Productions Licenses (PPLs) and make up over 10% of the total number of patients in the program. As of January 2019, there were 7,546 PPLs in the system. PPLs are allowed four flowering plants and twelve immature plants in their homes to provide medicine for personal use. Utilizing conservative estimates, if each PPL harvested four mature plants two times a year with a yield of half a pound per plant, this represents 1,816 grams of medicine per license (or almost 200% of the legal possession limit for patients.) Calculating the PPL production capacity for 2019 results in a total 13,703,536 grams (30,184 pounds) of potential medical cannabis produced by PPLs. Because PPLs have fees associated, include extra

forms, and involve extra security and attestations, it is safe to assume that patients apply for, and maintain their PPLs because they are actively growing and harvesting their own medicine. Currently there is no required mechanism to report yields or harvest data and no site inspection of PPL grow sites. It is important to recognize PPLs total production capacity but it is also important to understand that not every PPL is producing cannabis and that the process of cultivating cannabis can be very difficult. Therefore, we have included an estimated failure rate of PPLs calculated at 50% bringing the total Personal Production Patient (**PPP**) number to 3,773.

Average Expected Yield (AEY)

Determining Production Capacities of Current Licensed Producers

There are currently 35 active Licensed Non Profit Producers (LNPPs) in the Program. LNPPs vary greatly in their ability to produce cannabis on a large scale, distribute to a wide area, or produce a desirable end product. For the purposes of this report we will not be considering the quality of cannabis, but solely the quantity of cannabis produced and made available to the patient populous. Looking at production numbers provided by the DOH, we can see a definite trend in supply increasing as the MCP and licensees mature. However, for the purposes of this report, we want to develop a metric known as Average Expected Yield (AEY) to represent a realistic expectation of the production abilities based on historical data related to the ability of a licensed group of LNPPs to produce cannabis. To calculate the AEY we look at the yields of the top ten producers who have demonstrated an ability to produce at a rate that should be expected by the department. Looking at their production data over the last two years we get a representative sample size of the yields that should be expected by producers. Their average annual yield of the ten leading NLPPs is 686,486 grams. When, divided by the 432 average licensed plants we get an **AEY** of 1,589 grams, per licensed plant per year.



Summary

Since January 2014, the program has grown from 20,000 patients to nearly 70,000 currently enrolled. With the current data available regarding the existing medical cannabis market, purchases made in areas with adequate access, referencing variable facets of the market including expected patient count growth, rural purchasing potentials and impending rural access, the plant count limit for LNPPs must be raised to sufficiently serve the patients of New Mexico.

Data provided by the DOH indicates that an increase to 1,478 plants is appropriate at this time to ensure patient needs will continue to be met by the MCP. This number will allow LNPPs to adequately supply the program, while allowing for reasonable annual growth of the patient base.

This conclusion was reached based on the following data:

NMDOH Formula for Plant Count

- $(AEY \times Plant\ Count) \times NLP = (((TPE - PPP) \times LPA) \times PGR)$

AEY - Average Expected Yield (AEY)

- 686,486 grams harvested from 432 plants (average 10 leading producers)
- 1,589 AEY, per licensed plant

Plant Count - Number of Plants a LNPP can license

- 450 PCR, currently

NLP - Number of Licensed Patients

- 35 NLP, currently

TPE - Total Patients Enrolled

- 68,995 TPE, currently

PPP - Personal Production Patients

- 7,546 patients with PPL/2 to account for actual PPLs producing adequate supply
- 3,773 PPP, currently

LPA - Legal Patient Allowance

- 68,995 (current patients)* 920 (maximum units)
- 63,475,400 grams annually

PGR - Patient Growth Rate

- 3.08% monthly growth (37% annually)
- 0.37% PGR, annually (represented in formula as 1.37)

As demonstrated, it is irrefutably in the best interest of the patients of the MCP that the plant count be raised to a limit deemed reasonable by the department so an "adequate supply" can be provided by LNPPs. We believe that reasonable limit to be 1,478, and that the data and mathematics justify the findings due to the continuing growth of the program and the definition of adequate supply found in the Lynn and Erin Compassionate Use Act.