California Public Utilities Commission

Speaker Solicitation:
Energy Impacts of Cannabis Cultivation Workshop

February 28, 2017, 1 p.m.-5:15 p.m.
CPUC Auditorium, 505 Van Ness Ave., San Francisco

The California Public Utilities Commission (CPUC) is holding this workshop to examine the increase in electricity demand that may be expected from increased cannabis cultivation in California.

Cannabis is an energy intensive crop when grown indoors. According to a 2012 study, conducted when medical cannabis was legal in California but recreational cannabis was still prohibited, indoor cannabis cultivation is responsible for about 3 percent of California's electricity consumption, which is equivalent to the electricity consumption of 1 million California homes.[1]

On November 9, 2016, California voters approved Proposition 64, which legalized the recreational use of cannabis by adults. Given the electricity use attributable to cannabis cultivation noted above, an increase in cannabis cultivation may be a significant driver of electricity consumption in California.

Other states have experienced an increase in electricity demand after legalizing recreational cannabis. For example, half of load growth in Colorado is now attributable to new cannabis cultivation.[2] This workshop is designed to explore the opportunities for ensuring that expected

[1] Mills, Evan. "The Carbon Footprint of Indoor Cannabis Production." *Energy Policy* 46 (2012), 58-67, at 59.
[2] https://www.theguardian.com/us-news/2016/feb/27/marijuana-industry-huge-energy-footprint (See also, e.g., outages in Oregon attributable to residential cannabis cultivation: https://www.pacificpower.net/about/nr/nr2015/marijuana.html, and cannabis-related load growth forecasts in Seattle: http://www.calmac.org/publications/SDG%26E_Cannabis_Ag_Energy_Demand_Final_Report_071516.pdf at 9).

load growth associated with cannabis cultivation in California is consistent with California's clean energy goals.[3]

After the workshop, CPUC staff will issue a report summarizing the workshop and making recommendations for the CPUC's consideration.

Staff is soliciting stakeholders to participate on the panels. Any stakeholder interested in participating should contact April Mulqueen (april.mulqueen@cpuc.ca.gov) and Rebecca Lee (rebecca.lee@cpuc.ca.gov).

***NOTE**: This workshop is independent of any CPUC proceeding, and panelists are forbidden from making ex parte comments related to open proceedings during their presentations or discussions.*

DRAFT AGENDA

1 p.m.-1:15 p.m. Welcome & Opening Remarks

1:15 p.m.-2:45 p.m. Panel One: Energy Impacts in Other States After Recreational Legalization

Voters in Washington and Colorado legalized recreational cannabis in 2012, and Oregon voters legalized recreational cannabis in 2014. Stakeholders will discuss the experience in their respective states concerning the increase in cannabis cultivation, the increase in electricity consumption associated with cannabis cultivation, and energy efficiency measures that have been proposed and/or adopted. Potential questions/topics of discussion:

- How much did the electricity consumption attributable to cannabis cultivation increase after recreational legalization? Has the load growth been steady, has it levelled off, or have there been peaks? What are the projections for load growth in the future?
- What proportion of cannabis in your respective states is grown indoors, outdoors, or in greenhouses? How do electricity consumption and energy efficiency measures differ when cannabis is grown indoors, outdoors, or in a greenhouse?
- Please describe efforts undertaken in your respective states to reduce the energy consumption associated with cannabis cultivation, including equipment upgrades or special tariffs. Have these efforts been compulsory or voluntary? What energy efficiency measures have worked and what measures have not? Do cannabis growers and utility companies agree on what works best?
- Have the utilities and cannabis growers experienced challenges working with each other concerning energy efficiency measures?
- How do the differences between state and federal cannabis laws affect the ability of state governments or utilities to engage with cannabis growers concerning energy efficiency?

[3] Although there may be other environmental impacts associated with cannabis cultivation, such as water consumption, this workshop is limited to a discussion of the electricity required for cannabis cultivation.

- Have energy efficiency measures altered the manner in which cannabis is grown? Does the type of bulb used by an indoor cannabis cultivation operation alter the growth cycle of cannabis plants or the resulting concentrations of CBD and THC?
- Has legalization reduced black market cannabis cultivation? Are there any estimates on the energy consumption associated with illegal cannabis cultivation?
- In areas where cannabis-specific rate schedules have been implemented, how responsive have customers been in shifting electric demand?

2:45 p.m.-3 p.m. Break

3 p.m.-4:30 p.m. Panel Two: Cannabis Cultivation in California: Challenges and Opportunities

California stakeholders will discuss current and projected in-state cannabis cultivation, the increase in electricity consumption associated with current and projected cannabis cultivation, and energy efficiency measures that have been proposed and/or adopted. As part of their remarks, panelists are asked to discuss whether anything they heard in Panel One regarding the experiences of utility companies and cannabis growers in other states surprised them. In addition, panelists are asked to discuss whether solutions and practices from other states would or would not work in California, and why. Potential questions/topics of discussion:

- What are the best estimates concerning electricity consumption attributable to cannabis cultivation in California? How is consumption projected to increase in the future? Did the electricity consumption attributable to cannabis cultivation in California increase after the legalization of medical cannabis?
- What proportion of cannabis in California is grown indoors, outdoors, or in a greenhouse? How do electricity consumption and energy efficiency measures differ in California's microclimates when cannabis is grown indoors, outdoors, or in a greenhouse?
- Prior to recreational legalization, California was the largest cannabis producer in the U.S. Are California utilities and cannabis growers already taking measures (e.g., equipment upgrades or special tariffs) to improve the energy efficiency of cannabis cultivation? What are these measures? Have these measures changed in response to recreational legalization?
- Are there energy efficiency measures relevant to cannabis cultivation that have not been tried yet in California? Are there energy efficiency measures that have been tried and subsequently abandoned? If so, why were the measures abandoned?
- Are there any barriers to making cannabis cultivation in California more energy efficient?
- Are the requirements of Proposition 64, such as seed to sale tracking, consistent with outdoor cannabis cultivation? Will legalization drive some current cannabis cultivation indoors and cause an increase in electricity consumption unrelated to an increase in cultivation?
- What are the characteristics of renewable electricity generation in California, i.e., megawatts available at what times of day and year? Can cannabis cultivation support better use of excess renewable generation in specific regions of California?

- Are cannabis cultivation operations good candidates for demand response or other distributed energy resource programs? Does the answer depend on whether the cannabis cultivation operation is indoors, outdoors, or in a greenhouse?

4:30 p.m.-4:45 p.m. Wrap-up

4:45 p.m.-5:15 p.m. Public Comment