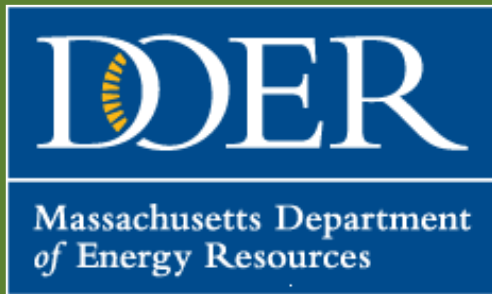


Cannabis Energy Guidance



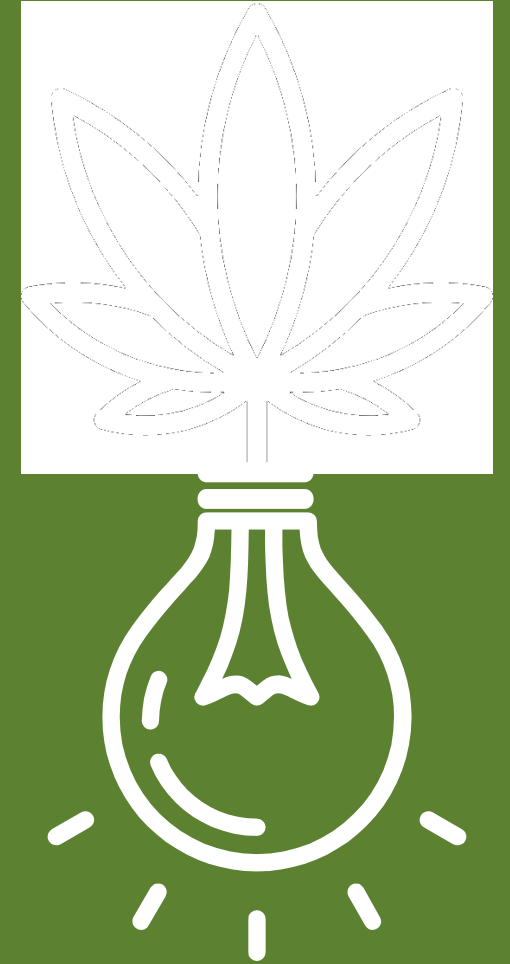
MA Department of Energy Resources

February 2019



Agenda

- Background
 - Process to date
 - Goals
- Guidance for Establishments
- Guidance for Cultivators



Background on Cannabis Energy Regulations and Guidance

- Process to Date
 - CNB Regulations Published in March 2018
 - Incorporated EEA comments regarding energy and environmental regulations
 - CNB Energy and Environment Working Group Convened June 2018
 - Held 2 public listening sessions
 - Received public comment letters from stakeholders – September 2018
 - 2 guidance documents are being developed that are being discussed today
 - Presenting proposed changes to regulations at a later date
- Goals in developing guidance
 - Expand on requirements to demonstrate compliance with regulations
 - Integrate guidance with existing programs and initiatives
 - Clarify requirements
 - Respond to stakeholder feedback

Two Energy Guidance Documents

Establishments

- Important to consider energy and environmental impact when use of a facility starts. Easier to do efficiency upgrades before the space is being used.
- License Types:
 - Microbusiness
 - Manufacturing
 - Retailer
 - Transporter(s)
 - Craft Marijuana Cooperative
 - Independent Testing Laboratory
 - Research Laboratory
 - Cultivators

Cultivators

- Indoor cultivation is a very energy intensive activity because of the horticultural lighting, dehumidification, and HVAC systems that are used.
- Higher energy use in cultivation than other uses, therefore there are specific requirements for cultivators.



Lighting



Dehumidification



HVAC

Demonstrating Compliance

- Policies and procedures are submitted as part of the “Management and Operations Profile”
- Work with CNB to determine best steps in reviewing licenses to demonstrate compliance.



Establishment Guidance



Areas of Compliance for Establishments

- Establishments must demonstrate compliance in four areas:
 - 1) Energy Efficiency - Identification of potential energy use reduction opportunities (such as natural lighting and energy efficiency measures), and a plan for implementation of such opportunities;
 - 2) Renewables - Consideration of opportunities for renewable energy generation, including, where applicable, submission of building plans showing where energy generators could be placed on the site, and an explanation of why the identified opportunities were not pursued, if applicable;
 - 3) Demand - Strategies to reduce electric demand (such as lighting schedules, active load management, and energy storage); and
 - 4) Mass Save - Engagement with energy efficiency programs offered pursuant to M.G.L. c. 25, § 21, or through municipal lighting plants.



Energy Efficiency



Demand



Renewables



Establishments Requirements - #1 Energy Efficiency

- Background: There are many opportunities in a Marijuana Establishment to reduce energy usage and costs through energy efficient equipment and operations.
 - Lighting is used by everyone, and there have been many advances in LED lighting over the past few years. Office space, warehouse, horticultural lighting, etc.
 - Heating drives building energy use in the northeast
- Policies and procedures reflect the following elements:
 - A. How energy efficiency decisions will be part of operations and when equipment fails
 - B. How is energy usage being monitored and adjusted
- Ways to demonstrate compliance:
 - A. Listing of energy efficiency upgrades, and the cost and energy savings
 - B. If there are items not being implemented, an explanation of why they are not being implemented

Establishments Requirements - #2 Renewables

- Background: Renewable energy such as solar panels, wind turbines, and renewable thermal can reduce and stabilize energy costs for a Marijuana Establishment.
- Policies and procedures reflect the following elements:
 - A. How establishment is making energy supply decisions, including renewables
- Ways to demonstrate compliance:
 - A. Renewables that were considered for the project
 - B. Where renewables could be placed on site
 - C. If there are items not being implemented, an explanation of why they are not being implemented

Establishments Requirements - #3 Demand

- Background: Demand is how much electricity and Establishment can use at a given time in your facility – more demand means more electricity capacity is needed, and Establishments pay for this capacity on electricity bills.
- Policies and procedures reflect the following elements:
 - A. How energy demand decisions will be part of operations
 - B. How is energy demand being monitored and adjusted
 - C. If the establishment is participating in active demand curtailment programs
- Ways to demonstrate compliance:
 - A. List of strategies to reduce electric demand, with projected demand savings calculations

Establishments Requirements - #4 Mass Save Engagement

- Background: The Mass Save® programs provide financial incentives for energy efficiency measures, including efficient lighting, HVAC, and other equipment, and are available to homes and businesses across the Commonwealth.
- Policies and procedures reflect the following elements:
 - A. How is the establishment regularly engages with energy efficiency programs to be aware of new opportunities
- Ways to demonstrate compliance:
 - A. Engagement with Mass Save® or the local Municipal Light Plant (MLP) energy efficiency programs
 - B. If the establishment received an incentive for energy efficiency

Transporter Specific Requirements

- Background: Vehicles that use alternative fuels, such as biodiesel, electricity, and natural gas help to reduce carbon emissions and increase our energy security.
- Policies and procedures reflect the following elements:
 - A. How establishment makes fleet decisions, and considers new transportation technologies
- Ways to demonstrate compliance:
 - A. Describe the process to select vehicles, and the various options considered
 - B. A description of other energy and water conservations strategies.

Cultivator Guidance



Areas of Compliance for Cultivators

- Per 935 CMR 500.120(11):
 - a) Building Envelope - *The building envelope for all facilities, except greenhouses, must meet minimum Massachusetts Building Code requirements and all Massachusetts amendments (780 CMR: State Building Code), International Energy Conservation Code (IECC) Section C.402 or The American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE) Chapters 5.4 and 5.5 as applied or incorporated by reference in 780 CMR: State Building Code, except that facilities using existing buildings may demonstrate compliance by showing that the envelope insulation complies with code minimum standards for Type Factory Industrial F-1, as further defined in guidelines issued by the Commission.*
 - b) Horticultural Lighting Power Density - *The Lighting Power Densities (LPD) for cultivation space must not exceed an average of 36 watts per gross square foot of active and growing space canopy, but for Tier 1 and Tier 2 a requirement of 50 watts per gross square foot of active canopy or growing unless otherwise determined in guidelines issued by the Commission.*
 - c) HVAC and dehumidification systems - *Heating Ventilation and Air Condition (HVAC) and dehumidification systems must meet Massachusetts Building Code requirements and all Massachusetts amendments (780 CMR: State Building Code), IECC Section C.403 or ASHRAE Chapter 6 as applied or incorporated by reference in (780 CMR: State Building Code).*
 - d) Safety - *Safety protocols must be established and documented to protect workers and consumers (e.g., eye protection near operating grow light).*

Demonstrating Compliance for Cultivators

- A letter and supporting documentation ideally would be prepared by a building professional working on the project such as:
 - Professional Engineer or
 - Registered Architect
- Modified requirements could be considered for smaller facilities or agricultural operations (such as submission of certification by Certified Energy Auditor, etc.)

Cultivators Requirements - #1 Building Envelope

- Background: A building envelope is what separates the outside from the inside of a building. Building envelope items include insulation, roofs, windows, doors, walls, etc. Having a tight building envelope is fundamental to good energy performance. Poor performing building envelopes results in wasted energy, increase energy costs, and may have ancillary impacts like neighbor smell complaints.
- Ways to demonstrate compliance:
 - Confirm compliance with building code and submit output from COMcheck™ software

Cultivators Requirements - #2 Horticulture LPD

- Background: Indoor and some greenhouse Cultivators use Horticultural Lighting Equipment to grow plants. These lights are very powerful and have significantly higher energy use and light intensity compared to typical screw in light bulbs. Because there are numerous horticultural lighting technology options, 935 CMR 500.120 (11)(b) sets a lighting power density (LPD) to provide flexibility for Cultivators to make technology decisions that meet the requirements.
- Ways to demonstrate compliance:
 - How the facility complies with LPD standard, including
 - Calculations
 - Plans showing equipment placement and square footage
- Based on public comment, the LPD calculations and requirements will be clarified, including how to measure square footage.

Cultivators Requirements - #3 HVAC and Dehumidification

- Background: HVAC, as well as dehumidification are primary drivers of energy use in a cultivation facility. Air Conditioning is used to cool the air to offset heat generated from lighting. Dehumidification is necessary to remove water used by plants from the air. Cultivator HVAC and dehumidification systems must meet building code.
- Ways to demonstrate compliance:
 - State that systems meet code
 - Provide system details including:
 - Equipment properly sized for the facility
 - Listing of all HVAC and dehumidification equipment and specifications
 - Details on energy recovery ventilation
 - Information on odor mitigation equipment

Cultivators Requirements - #4 Safety

- Background: Long term exposure to horticultural lighting may impact vision. It is important that eye safety protocols be established at time of initial operations and are regularly updated and implemented as part of the Cultivator's detailed written operating procedures. These eye protection requirements are in addition to any other safety protocols required under state, federal, or local law (e.g. OSHA)
- Ways to demonstrate compliance:
 - Description of eye safety plan
 - How eye safety is communicated
 - How safety equipment is provided

Exemptions for Cultivators

- A Cultivator that generates 100% of their energy onsite from a clean or renewable resource is exempt from the Lighting Power Density, and the HVAC and Dehumidification requirements.
 - Listing of application requirements
 - Plan to suggest a revision in regulations
- RMD Grandfathering period, proposed to be extended in guidance
 - A RMD with a final certificate of registration before Xxxx XX 2019, shall have until Yyyy YY, 2021 to comply with 935 CMR 500.120(11) with the exception that any additions or renovations to the facility comply with 935 CMR 500.120(11). A RMD without a final certificate of registration before Xxxx XX, 2019, shall demonstrate compliance with 935 CMR 500.120(11) at time of application.

Annual Energy and Water Reporting

- Per 935 CMR 500.120 (11), “A Marijuana Cultivator ... shall provide energy and water usage reporting to the Commission in a form determined by the Commission.”
- Background: Cultivators provide annual energy and water usage reporting using the Resource Innovation Institute’s Cannabis PowerScore tool that is located on the web at <https://www.cannabispowerscore.org> .
- Requirements: Cultivator provides monthly energy and water reporting, and annual cannabis yield.
- Recommend that this be submitted to CNB as part of annual license renewal.

Thank you

Alex Pollard

Energy Efficiency Commercial Programs Manager

MA Department of Energy Resources

Alexander.Pollard@mass.gov

