NEW YORK STATE | Office of Cannabis Management

Cannabis Resource Manager: PowerScore Guidance

1. What is Powerscore?

PowerScore is a data collection and reporting platform that allows cultivators to benchmark their resource consumption and compare their operation's key metrics to emerging cannabis industry data. Developed and operated by non-profit organization Resource Innovation Institute (RII), PowerScore is designed to track resource use for many forms of controlled environment agriculture (CEA), including cannabis. PowerScore can track and report metrics including energy and water use and waste and emissions generation.

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The New York State (NYS) Office of Cannabis Management (the Office) has specified PowerScore as the approved resource manager to meet resource benchmarking and reporting requirements for licensees authorized to cultivate medical and adult-use cannabis.

2. What are the Office's resource benchmarking and reporting rules?

Resource benchmarking refers to collecting data and using it to quantify current levels of resource consumption. Once current levels are known, they can be used as a benchmark to measure future performance. Benchmarking metrics are a key aspect of resource management and environmental protection, as understanding past and present resource intensity allows business, industry and government to identify areas for future improvements.

New York State (NYS) cannabis resource benchmarking and resource usage reporting requirements are outlined in 9 NYCRR Section 113.26(a) and 113.7(e)(7)(ix) of the Office's medical cannabis regulations and Sections 123.4(g)(1) and 123.4(g)(2) of the adult-use cannabis regulations.

9 NYCRR Section 113.26(a) states that *Annual benchmarking of energy and water usage is required, in a manner required by the office with the first report to be completed and submitted to the office no later than one year after registration and with subsequent reports to be submitted annually to the office thereafte*r. This requirement applies to registered organizations (RO).

9 NYCRR Section 123.4(g)(2) states that *Cultivators shall use a resource manager to track energy consumption metrics, as approved by the Office, and report utility and energy bills, together with cannabis yield data, to the Office upon request*. This requirement applies to all licensees authorized to cultivate adult-use cannabis including cooperatives and collectives, cultivators of all tiers, microbusinesses, nurseries, registered organizations with dispensing (ROD) and registered organizations non-dispensing (ROND).

These requirements do not currently apply to any licensed, regulated entities not indicated above.

Cannabis resource benchmarking includes but is not limited to the metrics outlined in 9 NYCRR Section 123.4(g)(1): *(i) energy consumption by source (monthly, including consumption and demand); (ii) water consumption (gallons per month); (iii) on-site generation (monthly); (iv) cannabis yield by dry weight (annual) for the previous 12-month period and for each month of the 12-month period, excluding stalks, stems, and fan leaves; (v) waste (pounds per month); and (vi) any other information as determined by the Office to assist with energy and resource usage reporting*.

123.4(g)(1)(iii) refers to *monthly on-site generation* of renewable energy, including but not limited to solar, wind and geothermal energy.

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9 NYCRR Section 113.7(e)(7)(ix) and Section 125.2(c)(3) authorize the Cannabis Control Board (the Board) to require compliance with resource benchmarking and reporting as a condition of license renewal for licensees authorized to cultivate medical and adult-use cannabis, respectively.

The PowerScore Glossary contains other useful information about definitions and the resource tracking and reporting process.

3. Why are licensees required to track resource consumption?

Cannabis production benchmarking metrics have been limited because of the product's history as a Schedule 1 drug and the differing environmental standards promulgated across the various state-level legalized markets. Lacking uniform standards and a clear understanding of resource consumption metrics makes it difficult for the cannabis industry to measure and lessen its environmental impact.

Minimizing adverse environmental impacts of cannabis production and increasing the State's resiliency to climate change were two key intentions of the Marihuana Regulation and Taxation Act (MRTA), the bill that legalized adult-use cannabis in NYS. By mandating resource tracking for cultivation licensees, the Office meets the MRTA's intentions, positions NYS as a global leader in resource-efficient cannabis production and ensures the industry stays compliant with the greenhouse gas (GHG) emissions reductions required by the State climate law, the Climate Leadership and Community Protection Act (CLCPA). Once benchmarks have been established, the Office can effectively support industry licensees to reach goals of energy efficiency, emissions and waste minimization and water protection. The aggregated data collected through PowerScore will be used to identify program success and challenges for licensed cannabis cultivation in NYS, ultimately serving as guidance for future policy, education, and funding decisions.

For licensees, knowing the level of resource inputs they are using will help them better understand the relationship between their operating costs and their yield. The first year's data will serve as a benchmark licensees can use as an efficiency target to improve resource consumption in future years. This may help licensees to reduce input costs and operating costs, allowing them to maintain greater profit. Licensees who are extremely resource-efficient may also be able to use this information as a tool to earn greater price premiums from consumers who value environmentally friendly production.

4. Will licensees have to pay to use the PowerScore platform?

Licensees will not have to pay to use the NYS PowerScore platform.

5. What information will licensees enter into PowerScore?

To meet the Office's resource tracking and reporting mandates, licensees will be required to enter data from their monthly power and water bills, as applicable, into the PowerScore platform. This will include information about their use of on-site renewable energy sources and their utility service provider. Licensees will enter data from their power and water bills into the system manually.

Licensees must also enter information about harvest cycles, yields and waste generation including but not limited to:

- *Production information:* indoor, greenhouse or outdoor production, square footage and number of lights used;
- *Utility:* utility service provider used, whether and from what source operator uses on- or off-site renewables, electricity consumed, monthly peak demand, alternate sources of energy and fossil fuels consumed;
- *Waste generation:* volume of plant waste generated, waste disposal methods for growing media and other materials and supplies; and
- *Harvest information:* length of cycle per growth phase (i.e. mother, seedling/clone, vegetative, flowering), frequency of harvest and total annual harvest.

The information licensees will be required to enter into the PowerScore platform is included in Appendix A of this document.

6. What information will licensees receive from PowerScore?

Annually, licensees will receive a Performance Snapshot that includes a percentile ranking relative to other anonymized operations on production, facility, lighting and HVAC efficiency.

The Performance Snapshot will include but is not limited to:

- *Energy usage:* by energy consumed per square foot (kBtu/sqft) and energy consumed per pound of cannabis produced (kBtu/lb);
- *Water usage:* by gallons consumed per square foot (gal/sqft) and gallons consumed per pound of cannabis produced (gal/lb);
- *Emissions:* by emissions associated with your energy source calculated as carbon dioxide equivalent per square foot (CO2e/sqft) and carbon dioxide equivalent per pound of cannabis produced (CO2e/lb); and
- *Waste generation:* reported in pounds per square foot (lbs/sqft) and pounds of waste per pound of cannabis produced (lb of waste/lb).

7. How will the Office use PowerScore data?

Minimizing adverse environmental impacts of cannabis production and increasing the State's resiliency to climate change were two key intentions of the Marihuana Regulation and Taxation Act (MRTA), the bill that legalized adult-use cannabis in NYS. By mandating resource tracking for cultivation licensees, the Office meets the MRTA's intentions, positions NYS as a global leader in resource-efficient cannabis production and ensures the industry stays compliant with the greenhouse gas (GHG) emissions reductions required by the State climate law, the Climate Leadership and Community Protection Act (CLCPA). Once benchmarks have been established, the Office can effectively support industry licensees to reach goals of energy efficiency, emissions and waste minimization and water protection. The aggregated data collected through PowerScore will be used to identify program success and challenges

for licensed cannabis cultivation in NYS, ultimately serving as guidance for future policy, education, and funding decisions.

8. How will licensees collect the information needed to submit a report?

RII has put together a "Prepare for Benchmarking" guide that includes a data checklist, outlining the data your operation will need to have available before benchmarking. The "Prepare for Benchmarking" guide can be accessed online or through Appendix B of this document.

9. How can the PowerScore platform be accessed and how do licensees set up their account?

The PowerScore platform can be accessed through the Office's Energy and Environmental Sustainability webpage or through the NYS PowerScore landing page on RII's website.

After your license has been approved by the Office, you will receive an email from RII with account setup and login information. Account information will be sent to the email you have associated with your license through the application process. If you experience issues with setting up or logging in to your account, please contact the RII engineering team at PowerScore@resourceinnovation.org.

Once your account has been set up, you can access the login page through the NYS PowerScore landing page on RII's website by clicking on "Benchmark Now" or "Sign In."

The "Prepare for Benchmarking" guide and data checklist in Appendix B of this document can help you understand what information you need to collect to submit your report.

10. Will training be available?

The Office and RII will each host an informational webinar(s) about PowerScore in late 2024. Current and prospective licensees will be able to register for the live webinar in advance. If you are unable to attend the webinars you will be able to view them after. More information about the webinars, including registration information, will be released in the future.

Additionally, in early 2025 the NYS PowerScore landing page will be updated to contain a series of short videos hosted by the team at RII. Each video will highlight a different stage in the PowerScore reporting process for ease of troubleshooting. You may also consider visiting the Office's Energy and Environmental Sustainability webpage or the NYS PowerScore landing page on RII's website to consult educational resources available at these sites.

11. Who do licensees contact to solve issues with PowerScore reporting?

If you are experiencing technical issues with the PowerScore platform such as difficulties setting up your account, managing your login information or issues with the PowerScore platform itself, please contact the RII engineering team at PowerScore@resourceinnovation.org.

If you have questions about resource reporting timelines that apply to your operation or the rules associated with PowerScore reporting, please contact the Office at PowerScore@ocm.ny.gov or 1-888-626-5151 (1-888-OCM-5151).

You may also consider consulting the Office's Energy and Environmental Sustainability webpage or the NYS PowerScore landing page on RII's website to determine if your question or issue is addressed through resources available at these sites.

12. Are there alternatives to PowerScore to meet these regulatory requirements?

At this time, the Office has only approved the PowerScore platform to meet the resource tracking and reporting requirements in 9 NYCRR Sections 113.26(a) and 113.7(e)(7)(ix) and 9 NYCRR Sections 123.4(g)(1), 123.4(g)(2) and 125.2(c)(3).

Currently, RII is the sole vendor providing cannabis-specific resource tracking. The U.S. Environmental Protection Agency (EPA) manages a similar product, specific to neither cannabis nor controlled environmental agriculture (CEA), ENERGY STAR Portfolio Manager. The Office selected PowerScore over Portfolio Manager because of PowerScore's cannabis-specific, agriculture-based design and because RII has already collected benchmarked cannabis data from multiple states. Existing benchmarked data can be used to help NYS licensees authorized to cultivate understand their performance against their peers, while contributing to the body of research on cannabis resource use.

Additionally, RII has contracts and relationships with other NYS agencies, the U.S. Department of Energy (DOE), utility service providers, product manufacturers and regulatory bodies in other states, presenting the opportunity for enhanced communication between the Office and such entities. As of July 2024, Massachusetts and Mendocino County, California have also mandated PowerScore for cannabis cultivators, and RII works with cultivators in California, Colorado, Illinois, Massachusetts, Michigan, Montana and Vermont.

13. When do licensees have to begin resource tracking?

9 NYCRR Section 113.26(a) states that *Annual benchmarking of energy and water usage is required, in a manner required by the office with the first report to be completed and submitted to the Office no later than one year after registration and with subsequent reports to be submitted annually to the Office thereafte*r. This requirement applies to ROs.

9 NYCRR Section 123.4(g)(2) states that *Cultivators shall use a resource manager to track energy consumption metrics, as approved by the Office, and report utility and energy bills, together with cannabis yield data, to the Office upon request*. This requirement applies to all licensees authorized to cultivate adult-use cannabis including cooperatives and collectives, cultivators of all tiers, microbusinesses, nurseries, registered organizations with dispensing (ROD) and registered organizations non-dispensing (ROND).

These requirements do not currently apply to any licensed, regulated entities not indicated above. All licensees authorized to cultivate who were licensed by the Office prior to the year 2025 must submit their first resource tracking report no later than August 31, 2025 and annually thereafter. Licensees authorized to cultivate who are licensed by the Office in subsequent years must submit their first resource tracking report no later than August 31 of the year following the year of their initial licensure and annually thereafter.

In situations where a licensee authorized to cultivate has been licensed for less than one full year, the licensee will still be required to submit their first resource tracking report on August 31 of the year following initial licensure and annually thereafter.

14. How often will licensees be required to submit tracking reports?

All licensees authorize to cultivate cannabis will be required to submit PowerScore resource tracking reports annually.

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9 NYCRR Section 123.4(g)(2) states that *Cultivators shall use a resource manager to track energy consumption metrics, as approved by the Office, and report utility and energy bills, together with cannabis yield data, to the Office upon request*. The Office will request this information no later than one year after licensure and with subsequent reports to be submitted annually to the Office thereafter. This requirement applies to all licensees authorized to cultivate adult-use cannabis include cooperatives and collectives, cultivators of all tiers, microbusinesses, nurseries, RODs and RONDs.

These requirements do not currently apply to any licensed, regulated entities not indicated above.

While the Office requires only annual submission of PowerScore reports, RII's experience in implementing PowerScore in other markets has revealed that the process is more efficient and effective for licensees if they submit their data on a monthly or quarterly basis rather than entering the data once per year. Licensees might find it useful to set calendar reminders for themselves to enter data monthly or quarterly to become used to this reporting as a regular practice.

15. How will licensees prove compliance with this requirement?

Once you submit your information through PowerScore, the Office will be notified that your operation has submitted a report. You will be able to view your annual Performance Snapshot and download a copy of your report through your PowerScore account.

16. What are the consequences for missing a report?

The purpose of resource tracking and reporting is to empower licensees authorized to cultivate, the Office, the State and the greater cannabis industry with verifiable data on resource consumption in cannabis production.

However, 9 NYCRR Section 113.7(e)(7)(ix) and Section 125.2(c)(3) authorize the Board to make submission and compliance with resource benchmarking and reporting a condition of license renewal for ROs and licensees authorized to cultivate adult-use cannabis, respectively.

If a licensee does not maintain compliance with PowerScore reporting or has missed their most recent reporting due date, they will be issued a Statement of Findings (SOF) and be required to submit a Corrective Action Plan (CAP).

This is consistent with the Office's policies and procedures for non-compliance with other reporting requirements. If the licensee remains out of compliance, the Board may be authorized to decline to renew the license during the next license renewal process.

17. What is aggregated data and how will aggregated data be used?

Aggregated data can be thought of as a summary of data points; it has been combined such that no longer represents the individual level. RII may aggregate the licensee's raw data with that of other participant's raw data or other data sources obtained by RII to create an aggregated dataset. RII may use the aggregated dataset to develop custom reports, forecasts, or other deliverables for any third party, all of which shall involve aggregated data. Licensees will own all raw data. When initiating a new PowerScore report, licensees will enter into an agreement with RII which states that RII will not sell their raw data.

RII has advised the Office that information submitted to RII by licensees is anonymized to protect confidential operational metrics. Although RII does conduct aggregate data analysis and reporting, RII has indicated to the Office that they will not analyze metrics from one geography unless there are three or more licensees in the area where no one licensee comprises more than 70% of cannabis production. Raw data is owned by the licensee, however, RII will own all aggregated data.

18. How will private data submitted to the PowerScore platform be protected?

RII has advised the Office that RII protects licensees' raw data by anonymizing operational metrics and by only analyzing data in aggregate once there are three or more licensees reporting from a given geography where no one licensee comprises more than 70% of cannabis production.

Licensee's raw data will be protected in accordance with all applicable provisions of the Information and Security Breach Notification Act (ISBNA) (Chapter 442 of the Laws of 2005, as amended by Chapter 491 of the Laws of 2005), including but not limited to:

Encryption of any database fields and backup tapes that contain private data elements;

Encryption of data elements and/or any information received by or on behalf of the Office in transit to/from their systems;

Private data elements will not be displayed to users on computer screens or in printed reports except by specific users authorized to view the private data elements and who have been properly authenticated to view/receive such data;

Monitoring for breaches of security to any systems that store or process private data or information received by or on behalf of the Office or the New York State Office of General Services (OGS);

Taking all steps as set forth in ISBNA to ensure private information and/or any information received by or on half of the Office shall not be released without authorization from the Office or OGS;

In the event a security breach occurs as defined by ISBNA, the Office and OGS will be notified within 24 hours of discovery of the security breach with the nature of the breach and the severity of the breach and an investigation will be commenced in cooperation with the Office and OGS to determine the scope of the security breach;

In the event a security breach occurs as defined by ISBNA, the Office and OGS will be notified in writing within 48 hours of discovery of the security breach memorializing the nature of the breach and the severity of the breach;

Immediate and necessary steps will be taken to restore the information security system to prevent further security breaches;

The NYS Attorney General shall have the ability to bring action against RII to enforce all provisions of the ISBNA or to limit RII's liability for any violations of the ISBNA; and

RII is required to comply with all applicable Federal and State laws and regulations and with all applicable policies and procedures as set by NYS, including but not limited to, the confidentiality provisions of section 74 of the Public Officer's Law and provisions of the Privacy Act of 1974, as amended by the Computer Matching and Privacy Protection Act of 1988, 5 USC Section 552a.

In the event of a security breach, the Office will notify all affected parties in a timely manner following all procedures as outlined in ISBNA.

As a government agency, the Office's records are subject to public disclosure under the Freedom of Information Law (FOIL). FOIL provides for exemptions which may allow the Office withhold certain information from disclosure such as trade secrets or confidential information that would cause substantial injury to the competitive position of a commercial enterprise.

If the Office receives a FOIL request relating to an applicant's data, it will notify the applicant and provide an opportunity to review for applicable exemptions. If an applicant seeks to claim a FOIL exemption, they will be required to submit a written request to the Office identifying the specific information they are seeking to withhold from disclosure and a detailed explanation of why an exemption applies. After receipt of the applicant's request, the Office will make a determination as to whether such information will be withheld from disclosure. If the Office denies the exemption request, the applicant has the right to appeal the determination. (See Public Officers Law Sections 84-90).

19. Where can I find more information about resource efficiency in cannabis?

The Office's Energy and Environmental Sustainability webpage hosts information about environmental sustainability and resource efficiency in cannabis. The NYS PowerScore landing page on RII's website also provides information about cannabis resource efficiency.

In 2023, RII, the Office and the New York State Energy Research and Development Authority (NYSERDA) partnered to offer a series of webinars on cannabis production efficiency targeted to current and prospective cannabis businesses operators in NYS. The series of four webinars are available on RII's website, linked below:

- Cannabis Facility Design and Construction;
- Energy and Water Efficiency in Controlled Cultivation;
- Operations and Maintenance for Controlled Environment Cannabis Cultivation; and
- HVAC with Plant Perspective.

RII has also developed multiple webinars and best practices guides on efficiency in cannabis production, including a recent guide on water use circularity in controlled environment agriculture and multiple guides on lighting efficiency and LED lighting in cannabis. Their water efficiency catalogue can be accessed here and their lighting efficiency catalogue can be accessed here, with many resources offered free of charge.

Additionally, RII has developed several guides on HVAC best practices, including Best Practices Guide: HVAC in Controlled Environment Agriculture, a guide for controlled environment agriculture generally, and HVAC for Cannabis Cultivation & Controlled Environment Agriculture, with specific information about HVAC in cannabis including helpful information about appropriate sizing, building your team and tips from system design through installation and operation.

The Cannabis Environmental Best Management Practices Guide was developed by the Cannabis Sustainability Work Group, an interdisciplinary and collaborative workgroup, and published by the City and County of Denver in 2021. The guide provides further information about many energy and environment best management practices.

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In 2020, the National Cannabis Industry Association (NCIA) developed a best practices guide, Environmental Sustainability in the Cannabis Industry: Impacts, Best Management Practices and Policy Considerations, that provides more information about how to implement resource use efficiency methods to your operation.

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Appendix A: PowerScore Platform Licensee Questions

New York: All Survey Questions

This document previews all the questions, other than periodic open-ended questions about your facility's uniqueness. This survey can be found here:
https://powerscore.resourceinnovation.org/NY *or*
https://powerscore.resourceinnovation.org/ny *or*
https://powerscore.resourceinnovation.org/newyork

New York Energy and Water Reporting

Please enter details about your facility for the 12-month period of operation. Resource Innovation Institute will provide you with a confidential Performance Snapshot comparing your performance over time and to national aggregate benchmarks from cannabis cultivators like you.

- Which of your facility's growing spaces do you want to track? *required
  Describe each distinct growing space in your facility for which you want to enter separate data. Naming each space is optional, but it can also help you identify the correct space.
    - What is the type of each growing space?
        - Outdoor
        - Hoophouse
        - Greenhouse/Mixed Light
        - Combination of Outdoor and Greenhouse/Mixed Light
        - Indoor
- What is your production management class/tier? *required

Nursery
- Nursery Outdoor: Maximum area of 100,000 square feet
- Nursery Mixed-Light: Maximum area of 10,000 square feet
- Nursery Indoor: Maximum area of 10,000 square feet

Cultivator
- Tier 1: less than 5,000 square feet
- Tier 2: 5,000 - 12,500 square feet
- Tier 3: 12,500 - 25,000 square feet
- Tier 4: 25,000 - 50,000 square feet
- Tier 5: 50,000 - 100,000 square feet

Combination Cultivator
- Tier 1: Up to but not exceeding 5,000 square feet of outdoor; and up to but not exceeding 2,500 square feet of mixed light
- Tier 2: 5,000 - 12,500 square feet of outdoor; and 2,500 - 6,250 square feet of mixed light
- Tier 3: 12,500 - 25,000 square feet of outdoor; and 6,250 - 12,500 square feet of mixed light
- Tier 4: 25,000 - 50,000 square feet of outdoor; and 12,500 - 15,000 square feet of mixed light

    - Tier 5: 50,000 - 100,000 square feet, and 15,000 - 30,000 square feet of mixed light
- License Number
- Business name *required
- What postal code is this facility located in? *required
- E-mail address *required
- Last reporting month: The last full month you have complete energy, water, and production information you can report. For the most accurate and current results, answer the following questions for the most recent 12-month period. *required
- Please select your electric utility (Select from list)

- How would you like to enter your water measurements or estimates?
    - Gallons
    - Liters
    - CF (Cubic Feet)
    - CCF (100 Cubic Feet)
- What growing and processing activities do you do at your facility? (Select all that apply)
    - Tissue culture laboratory
    - Nursery
        - Seed starts
        - Mother plants
        - Clone plants
        - Vegetating plants
    - Flowering plants
    - Drying and curing
    - Conditioned storage
    - Extracting
        - Solvent based
        - Solventless
    - Post-extraction processing
    - Manufacturing of plant-based products
    - Manufacturing of packaging for plant-based products

Describe your growing environments

Temporary seasonal greenhouse structures such as low tunnels are considered outdoor environments.

- **For Each Growing Space:**
    - What type of environment is Space #1?
        - Indoor, Greenhouse, or Hoophouse
            - (New construction / Renovated space)
            - How many types of light fixtures are used for growing in Space #1? If lights have different wattages, then they are different types.
        - Greenhouse
            - (Ventilated / Sealed)
            - Light Deprivation?
            - Supplemental Electric Light?

                - How many types of light fixtures are used for growing in Space #1? If lights have different wattages, then they are different types.
            - Hoophouse
                - Light Deprivation?
                - Supplemental Electric Light?
                    - How many types of light fixtures are used for growing in Space #1? If lights have different wattages, then they are different types.
            - Outdoor
        - For each crop, what is the average square footage under production throughout the 12-month reporting period in Space #1?
        - Which stages of growth occur in Space #1?
            - Clone or Mother Plants
            - Vegetating Plants
            - Flowering Plants
- What type of building commissioning did/do you use for your facility, if any?
    - Commissioned newly constructed facility
    - Have retro-commissioned your facility's building systems after occupancy
    - Ongoing commissioning of your facility during operation
    - No commissioning yet

Describe your lighting fixtures

- **Details for Each Light Type within Each Space:**
    - Make
    - Model
    - Lighting fixture wattage
    - Lighting fixture photosynthetic photon efficacy (PPE)
    - Number of these fixtures
    - While in operation, how many hours a day are the lights in this space turned on? (hours)
    - How many days a year are the lights in this space in operation? (days)

Describe the heating, ventilation, air conditioning, and dehumidification (HVAC) systems you use

There are many variables in your cultivation facility that impact HVAC equipment selection, unit size and cost of operation. These system types simplify the complex variety of options in grow operations today.

Due to the limited data and unique aspects of greenhouses, we will not yet be able to estimate an HVAC score for systems F and G.

- Describe the HVAC system you use for your cultivation and processing spaces. (Select system, then associate with Spaces)

    - System 0: No Heating or Cooling with Supplemental Standalone Ventilation and Dehumidification Equipment
      Heating, Ventilation, and Air Conditioning (HVAC) systems are not used, and supplemental, standalone ventilation or dehumidification equipment are the only components controlling your grow environments. Outside air may or may not be used for ventilation.

    - System A: Conventional Heating, Ventilation, and Air Conditioning (HVAC) with Supplemental Standalone Dehumidification Equipment
      Conventional factory-built or packaged HVAC equipment with cooling components sized to handle the entire sensible cooling load of the room are used to control your grow environments. Standalone dehumidification equipment in your cultivation spaces and/or HVAC equipment using an internal hot gas reheat coil is used to control your grow environments when lights are off, or to supplement the dehumidification capacity of the cooling components.

    - System B: Conventional Heating, Ventilation, and Air Conditioning (HVAC) and Enhanced Dehumidification
      Conventional factory-built or packaged HVAC equipment with cooling components sized to handle the entire sensible cooling load of the room are used to control your grow environments. Permanently installed dehumidifier equipment containing heat exchanger plates or heat pipes is used to improve the moisture removal capacity effectiveness of your system.

    - System C: Conventional Heating, Ventilation, and Air Conditioning (HVAC) with Split Dehumidification System
      Conventional factory-built or packaged HVAC equipment with cooling components sized to handle the entire sensible cooling load of the room are used to control your grow environments. Split dehumidifiers with remote air-cooled condensers to provide dehumidification and supplemental cooling with improved effectiveness over portable dehumidification equipment installed in cultivation spaces using internal hot gas reheat.

    - System D: Conventional Heating, Ventilation, and Air Conditioning (HVAC) with Desiccant System for Dehumidification and Sensible Cooling
      HVAC equipment with cooling components sized to handle the entire sensible cooling load of the room are used to control your grow environments. Additional desiccant dehumidification equipment with gas or electric heat is used when lights are off or to supplement the dehumidification capacity of cooling components. Your system can be integrated units that provide both sensible cooling and dehumidification for your cultivation spaces.

    - System E: Fully Integrated Heating, Ventilation, and Air Conditioning (HVAC) and Dehumidification System
      Completely integrated equipment is used to control your grow environments using control systems that adjust sensible heat ratios to perform heating,

ventilation, cooling, and dehumidification for your cultivation spaces.(Due to the limited data, we will not yet be able to estimate an HVAC score.)

- System F: Hydronic Chilled Water and Boiler System
  A central chilled water system can allow for heating and cooling for an unlimited number of independent growing zones within your facility. Hydronic fan coil units or air handlers exchange heat between the building and the outdoors, served by air- or water-cooled equipment located outside the building. Air-cooled chiller systems can reject their heat directly to outside air, while water-cooled chiller systems are often located indoors in a mechanical room and are connected to evaporative cooling towers located outdoors via separate condenser water loops in order to reject heat to the outside air.
    - Some portions of the chiller and/or boiler system can recover heat to recycle energy for dehumidification reheat and/or primary building heat
    - Chiller can be heat recovery type, otherwise a secondary source of hot water is required from a site-generated source (like a boiler)
    - Dry coolers can be utilized for free cooling in winter without introducing outside air into the space

- System G: Year-round Greenhouse HVAC Systems
  HVAC equipment addresses the ventilation, cooling and heating loads of your grow environments throughout the year. These systems may be a factory-built central system or may be composed of packaged, standalone components that maintain greenhouse indoor environmental conditions within acceptable ranges.

- Other HVAC Systems: Your system is not described in A thru G above

- Does your facility use any of these thermal technologies? Please describe anything interesting at the end of this page.
  - Air source heat pump
  - Geothermal heat pump
  - Direct use geothermal (not a heat pump system)
  - Energy recovery ventilation system (ERV)
    or heat recovery ventilation system (HRV)
  - Other [Text box to describe technology]

Describe your water sources and recirculation

- Which, if any, sources do you reclaim water from? (Select all that apply)
  - Irrigation
  - Rainwater
  - Condensate / HVAC
  - Grey Water
- Approximately much of your water use comes from these reclaimed sources annually?
  - 0-20%
  - 20-40%
  - 40-60%
  - 60-80%

    - 80-100%
- How do you use water in your facility? (Select all that apply)
    - Irrigation
    - Evaporative pad cooling
    - HVAC Chillers
    - Fogging
    - Sanitation (washdown)
    - Pest management
    - Post harvest activities
- When and how much water do you use during the year? (For each month)

Describe your electricity sources and usage

- Do you purchase renewable energy through community programs such as community solar?
    - Yes/No
    - Name of community renewable program/project [Text box]
- Does your facility produce renewable electricity onsite?
    - What types of renewable electricity does your facility produce onsite?
        - Solar PV
        - Wind
        - Other
    - **For each month of the reporting year:**
        - Renewable Electricity Generated (kWh)
- Over the 12-month period, how many total annual kilowatt hours (kWh) did your facility use? Enter 0 for any months that you did not consume any electricity from the grid.

  For each month of the reporting year:
    - Electricity Usage (kWh)
    - Peak Electric Demand (kW / kVA)

Describe your other energy sources

- Does your facility use an electric utility as a fuel source? We're still building a more complete database of utilities and energy providers.
- Did your facility use natural gas in the last 12 months?
    - What is the name of your natural gas utility?
- Does your operation consume other delivered fuels?
    - What delivered fuels does your operation consume?
        - Diesel
        - Gasoline
        - Propane
        - Fuel oil
        - Biofuels (cord wood, wood pellets, other)

Describe your other energy usage

- **For each month's consumption of the reporting year:**
    - Natural Gas (Therms / CCF)
    - Diesel Generator (Gallons / Liters)
    - Gasoline Generator (Gallons / Liters)
    - Biofuels (Tons / Cords)
    - Propane (Gallons)
    - Fuel Oil (Gallons)
- Do you supplement with CO_2 in your facility?
    - Yes
        - How do you source your CO_2?
            - Purchased canisters
            - Onsite generation
                - Burners or Boilers
                - Other
            - Co-location from off-site process
            - Direct Air Capture (DAC)
    - No

Describe your annual production

- For each crop, what is the total production throughout the same 12-month reporting period? This includes trim but not waste (stems, stalks and leaves). *required
    - Measure Method
        - Dry weight
    - Units
        - Kilograms
        - Pounds
        - Hundredweight (cwt)
        - Units
    - Annual total production

Describe your annual waste production

- How are you disposing of green waste?
    - Landfill
    - Compost
    - Anaerobic Digestion
    - Incineration/Combustion
    - Biochar Production
- Over the same 12-month period, how much waste did your facility dispose of?**:**
    - Total Waste (Pounds)
        - Compost
        - Recycled
        - Landfill

How would you like to move forward?

- Are you considering a lighting, HVAC and/or dehumidification upgrade over the next 12 months? (Y / N)
- Have you used incentives from a utility program? (Y / N)
- Have you had a FlexTech evaluation of your facility performed? (Y / N)
- Yes, I would like to occasionally receive email updates from the Resource Innovation Institute

Confirm Submission?

- Yes, I confirm that, to the best of my knowledge, the information in this survey is truthful and accurate. I am authorizing this record to be sent to the New York State Office of Cannabis Management.
- This is just a test record, not for official reporting.

Cannabis Resource Manager: PowerScore Guidance

Appendix B: Prepare for Benchmarking guide

RESOURCE INNOVATION INSTITUTE

New York

PREPARE FOR BENCHMARKING

What to Prepare Before you Benchmark

At least one year of your facility Performance and Production

- Facility General Information
- Lighting system details
- HVAC system details
- Annual resource use
  - Water consumption
  - Energy consumption
    - Electric & Fuels
  - Energy Production from Renewable Sources *(if applicable)*
- Annual Production:
  - Waste disposal information
  - Annual production of cannabis

See all survey questions in this PDF to help in gathering data

Access Survey Here

Info to Bring: Facility Information

General Information

- ❑ What is the type of each growing space?

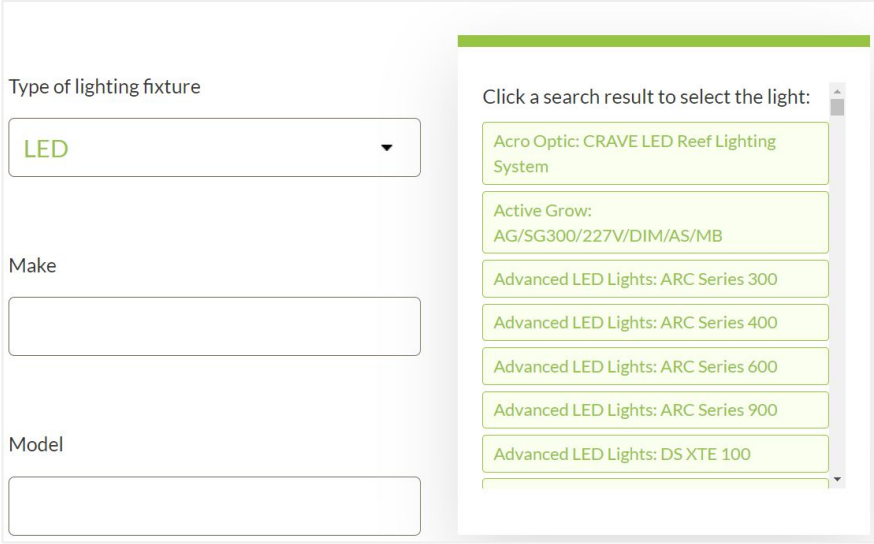
  Indoor, Greenhouse/Mixed Light, Hoophouse, Combination of Outdoor and Greenhouse/Mixed Light, or Outdoor

- ❑ What is your production management class/tier?
- ❑ License Number
- ❑ Business name.
- ❑ Postal code.
- ❑ E-mail address.
- ❑ Growing year.
- ❑ Your electric utility
- ❑ What growing and processing activities do you do at your facility?
- ❑ For Each Growing Space: What type of environment is Space #1?
- ❑ How many types of light fixtures are used for growing in Space #1? If lights have different wattages, then they are different types.
- ❑ What is the average square footage under production in Space #1? *(see page 6 for canopy area calculation)*
- ❑ Which stages of growth occur in Space #1?

Info to Bring: Lighting & HVAC

Lighting

- ❑ Make & model
- ❑ Lighting Fixture Wattage
- ❑ Lighting Fixture Photosynthetic Photon Efficacy (PPE)
- ❑ Number of fixtures
- ❑ Hours per day lights are on
- ❑ Days per year lights are on



With your lighting make and model we can find details in our database to calculate your Lighting KPI

HVAC

- ❑ Understand your HVAC system to be able to select it from a list of typical system types
  - ❑ *You can find the typical system types on Pages 3-5 here*

Info to Bring: Annual Resource Use

Water

- ❑ Water consumption

Energy

- ❑ Total energy consumption

  This can include:

  - ❑ Electricity
  - ❑ Natural gas
  - ❑ Delivered fuels
  - ❑ And/Or Backup generation

- ❑ Renewable energy generation *(if applicable)*

	Electricity Usage (kWh)	Peak Electric Demand kW
Jul '2020		
Aug '2020		
Sep '2020		
Oct '2020		
Nov '2020		
Dec '2020		
Jan '2021		
Feb '2021		
Mar '2021		
Apr '2021		
May '2021		
Jun '2021		

Find this information on your utility bills or building automation system reports

Info to Bring: Annual Canopy Area & Production

Production

- ❑ Average canopy under production during the 12 month period

(Average means - if your 1,000 sq. ft. canopy area grows **only** *crop 1* for ½ of the year and **only** *crop 2* for the other ½ of the year. 500 sq. ft. is assigned to *crop 1* and 500 sq ft is assigned to *crop 2*)

- ❑ Do not include aisles, post production, offices or other non production areas
- ❑ Total annual production of cannabis by weight

Waste

- ❑ How are you disposing of green waste?
- ❑ Total waste produced

For each crop, what is the **total production** throughout the same 12-month reporting period? *required

	Measure Method	Units	Annual Total
Cannabis	select...	-	

What is the **average canopy under production (in square feet)** for each crop in (Space #1)?

A reasonable estimate of a crop's canopy area is defined as the tray and table area used for production, not the total area available for planting. Exclude all aisles, walkways, and non-cultivation areas.

	Average Canopy Area *required
Cannabis	

After Completing the Survey

View your Records

- ❑ Review your KPIs in your Performance Snapshot
- ❑ See how you rank against other facilities like yours
- ❑ Enter multiple records to see your year-over-year performance
- ❑ Learn more about the calculations in the PowerScore Glossary

Questions

- ❑ Email powerscore@resourceinnovation.org if you have any questions