CANNABIS ENVIRONMENTAL BEST MANAGEMENT PRACTICES GUIDE

DENVER
PUBLIC HEALTH &
ENVIRONMENT

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The Cannabis Environmental Best Management Practices Guide (Guide) is the product of the Denver Environmental Health (DEH) Cannabis Sustainability Work Group (CSWG), an interdisciplinary collaborative sustainability work group convened in 2016 for the purpose of providing sector-specific sustainability resources and guidance to the local cannabis industry. The CSWG includes experts from cannabis business, sustainability science and engineering firms, legal experts and local government.

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FROM THE EXECUTIVE DIRECTOR

From the Executive Director

Denver's Department of Public Health & Environment (DDPHE) is pleased to release this update to the Cannabis Environmental Best Management Practices Guide.

Developed by Denver's Cannabis Sustainability Work Group, a collaborative effort that involves both DDPHE sustainability advisors and cannabis industry professionals, the guide aims to help cultivators reduce waste and conserve resources, turning this ever-expanding industry into a network of environmental leaders.

Specifically, the guide offers recommendations related to increasing energy efficiency while reducing waste and water use that have been tailored to the needs of cannabis cultivation operations. Each recommendation supports DDPHE's overall goal of helping Denver residents live better, longer. The health of our environment is inextricably linked to our physical health, and DDPHE works extensively with businesses across all industries, helping them to operate as sustainably as possible.

It is encouraging to see the interest and passion from cannabis cultivators throughout the industry who have come together to craft this guide. Denver is now home to nearly 500 active cultivation licenses that have the capacity to consume a significant amount of natural resources. However, the opportunity also exists for each of these facilities to lead Denver toward lower resource consumption, bringing the community in line with Denver's 80x50 Climate Goal of reducing greenhouse gas emissions 80 percent below 2005 levels by 2050. This plan sets Denver at the forefront of efforts to address climate change by creating strategies to target the largest sources of emissions, commercial energy use chief among them.

By partnering with the cannabis cultivation industry, DDPHE sees endless opportunities to continue our commitment to partnerships and community collaboration, and to aggressively work to combat the threats and broad-reaching impacts of climate change.

As Mayor Michael B. Hancock stated in the City and County of Denver's 2015 Climate Action Plan, "climate action is the biggest opportunity of the 21st century to protect public health, grow our economy and secure a bright future for generations to come, and we have the technology to move to cleaner, more sustainable forms of energy. We must commit to being bold and inclusive about how we will meet this goal together."

Sincerely,

Robert M. McDonald

Executive Director

Denver Department of Public Health & Environment

INTRODUCTION

CANNABIS SUSTAINABILITY SECTOR OVERVIEW

Under the leadership of Mayor Michael B. Hancock, Denver has committed to reducing greenhouse gas emissions (GHG) 80 percent below 2005 levels by 2050 (80x50 Climate Goal). Commercial buildings represent 35 percent of citywide emissions, and – as cannabis businesses occupy an increasing amount of commercial building space – the cannabis industry plays an important role in helping the community meet its emission reduction targets.

National and international attention is increasingly being focused on the sustainability impacts of the cannabis industry in states where cannabis has been legalized. Some cannabis businesses have initiated sustainability programs to reduce environmental impacts and have partnered with local communities for environmental and social good. However, because sector-wide baseline sustainability metrics are not currently available, overall industry sustainability performance remains unverified – leaving public perception open to individual interpretation.

In 2016, Denver Department of Public Health & Environment collaborated with local cannabis industry representatives, sustainability practitioners and regional stakeholders to create the Cannabis Sustainability Work Group. The group's mission is to promote sustainability in the cannabis industry through education, the development and dissemination of best practices, and the facilitation of dialogue between the cannabis industry, the community and technical experts.

BEST PRACTICES GUIDE PURPOSE

The Guide provides recommendations for cannabis-specific sustainable practices based on an analysis of existing data from individual case studies and regional and national performance standards as well as individual technical expertise. The purpose of the Guide is to provide cannabis cultivation businesses with a snapshot of relevant sustainable practices and a starting point for process optimization techniques that facilitate continual improvement.

In addition, the recommendations were designed and written with Denver's energy and climate sustainability goals in mind, including the 80x50 Climate Goal.

Alignment with regional stakeholders is critical to partnering for success in pursuit of social, economic and environmental sustainability. Longevity is key, and collaborating for healthy communities and holistic growth will ensure strong performance in the short and long term.

LIMITATIONS

This 2019 release is the third version of the Guide, which was originally released in 2017. The authors recognize that sustainability encompasses many topics, not all of which are addressed by this document. The Work Group strives to add timely and relevant new content annually.

CANNABIS CULTIVATION SIGNIFICANT ASPECTS AND RELATED IMPACTS IN DENVER

The Denver 2020 Sustainability Goals, as well as the 80x50 Goals mentioned on the previous page, help guide sustainability work in the City and County of Denver. The cannabis industry's significant environmental aspects and related impacts are listed below and highlighted throughout this document.

SUSTAINABILITY DRIVERS

ECONOMIC COMPETITIVENESS

COMMUNITY RELATIONS

ENVIRONMENTAL IMPACT

RELATED IMPACTS

- CLIMATE
- ECOSYSTEMS
- WATER QUALITY
- COMMUNITY RELATIONS
- EMPLOYEE WELL-BEING
- REGIONAL STAKEHOLDER ALIGNMENT
- OPERATIONAL AND COMPLIANCE BUDGETS

SIGNIFICANT ASPECTS

- MATERIALS USE
- INDOOR AIR QUALITY
- GHG EMISSIONS
- WATER CONSUMPTION
- ODOR CONTROL
- EFFLUENT DISCHARGE
- REGULATORY COMPLIANCE
- SOLID WASTE GENERATION
- ENERGY CONSUMPTION
- LAND USE