

American Council for Energy-Efficient Economy

Finance Forum - CSR and Beyond

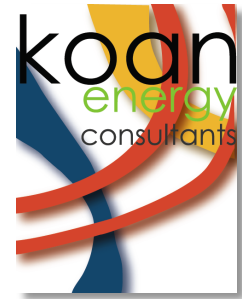
Kathleen Hokanson – President

June 1, 2015



Control costs
*Create **green jobs***
*Improve **our planet***

Kathleen Hokanson – Speaker Bio



Kathleen Hokanson, President of koan energy consultants, Inc and responsible for managing the company's overall vision and leadership. Koan energy is the first energy consultant devoted to leveraging a network of energy, engineering and asset management expertise to the US and Canadian "legalized" cannabis marketplace.

In her 15 years of energy industry expertise, she has identified, developed, and negotiated strategies for sustainable, energy procurement and capital expense investment. Ms. Hokanson has built extensive relationships and market experience that includes; Multi-site, large-scale commercial, industrial energy users, industry associations and electric utilities.

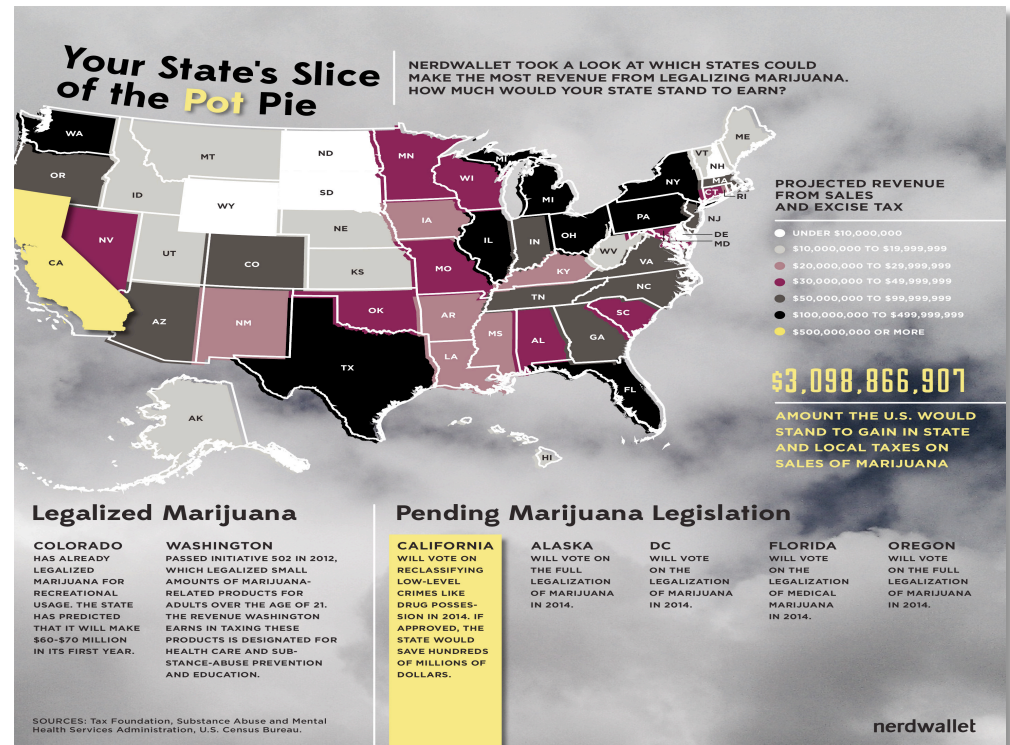
Her career and leadership positions at Carlson Hospitality Worldwide, Target, Coleman Hines (Acquired by Schneider USA) and Philips Lighting & Electronics (LED) offers a unique customer and manufacturing experience and rigorous evaluation of the financial viability of energy efficiency investments and programming deployment.

Kathleen is a proud, Golden Gopher from the University of Minnesota, married and lives in Minneapolis, Minnesota where her husband lives and her stuff is located.

"Saving Energy, Saves Lives."

Legalized Cannabis - Portfolio Evolution

- Legalization in 1996
 - 25 states
 - Up to 3000 cultivation licenses
- 1% of national electricity consumption
- Energy is valued at \$6 billion annually
- Emissions of 15 million metric ton of CO²



Sources:

Tax Foundation, Substance Abuse and Mental Health Services Administration, U.S. Census Bureau- Image courtesy of Nerdwallet

2012 - evanmills.lbl.gov/pubs/pdf/cannabis-carbon-footprint.pdf

Legalized Cannabis - Portfolio Evolution

- Deregulated markets
- Rebate Incentives
 - Solar, wind, CHP and Bio-fuels



- Colorado
 - C&I Vacancy rate @ 3.1%(*)
 - Boulder County .0216/kWh
- Washington
 - 2m ft² under canopy
- California
 - The next frontier

Source*: Brad Calbert, President of Colliers Intl Brokers

Cannabis – What is Driving / Not driving

- Boulder County Sustainability Policy (example)
 - April 30, 2015, a sustainability report
 - documents all electrical energy consumed and any fuels associated with generators or CO2 generation
 - January 1, 2015,
 - Offset 50% by community solar garden, renewable energy generated on site, or approved equivalent
 - By January 1, 2016
 - Offset 100% or
 - Pay the Boulder County Energy Impact Offset Fund (“BCEIOF”)

Cannabis – What is Driving / Not driving

- Federally Illegal
 - Schedule I of the Controlled Substances Act
- Banking - credit
 - Limited banks interaction
- Qualitative analysis and greater transparency of data
 - Improves by policymakers and public decision-making
- Public policymakers have not incorporated energy and environmental considerations of cannabis production
 - Additional adverse impacts
 - Moisture - causing extensive damage to buildings
 - Electrical fires caused by out of compliance wiring
 - Unknown hidden growth of electricity demand on the grid and capacity concerns
 - Obscure energy forecasts and savings of existing energy efficiency programs and policies.

Source: SPREADING THE NET: THE MULTIPLE BENEFITS OF ENERGY EFFICIENCY IMPROVEMENTS OECD/EIA

Cannabis – Factors Beyond Efficiency

Table 1

Carbon footprint of indoor Cannabis production, by end use (average U.S. conditions).

	Energy intensity (kW/h/kg yield)	Emissions factor (kgCO ₂ emissions/kg yield)	
Lighting	2283	1520	33%
Ventilation & dehumid.	1848	1231	27%
Air conditioning	1284	855	19%
Space heat	304	202	4%
CO ₂ injected to increase foliage	93	82	2%
Water handling	173	115	2%
Drying	90	60	1%
Vehicles		546	12%
Total	6074	4612	100%

Note: The calculations are based on U.S.-average carbon burdens of 0.666 kg/kW/h. "CO₂ injected to increase foliage" represents combustion fuel to make on-site CO₂. Assumes 15% of electricity is produced in off-grid generators.

Source: evanmills.lbl.gov/pubs/pdf/cannabis-carbon-footprint.pdf

California incurs 50% of national energy costs... but contributes only 25% of national CO₂ emissions from indoor Cannabis cultivation.

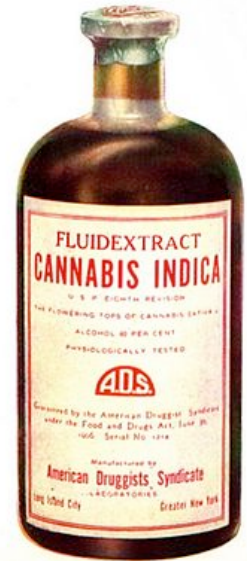


Source: Photo courtesy of HuffingtonPost.com

Cannabis – Factors Beyond Efficiency



- California's outdoor grows...
 - consume 60 million gallons of water a day
 - 50% more used than the residents of SFO
- For every pound of pot grown indoors...
 - 4600 lbs. of CO² goes into the air.
 - equivalent to emissions of 3 million cars.
- One joint, 18 pints of beer and one 100w incandescent bulb burning for 25 hrs...
 - consume the same amount of energy to produce.



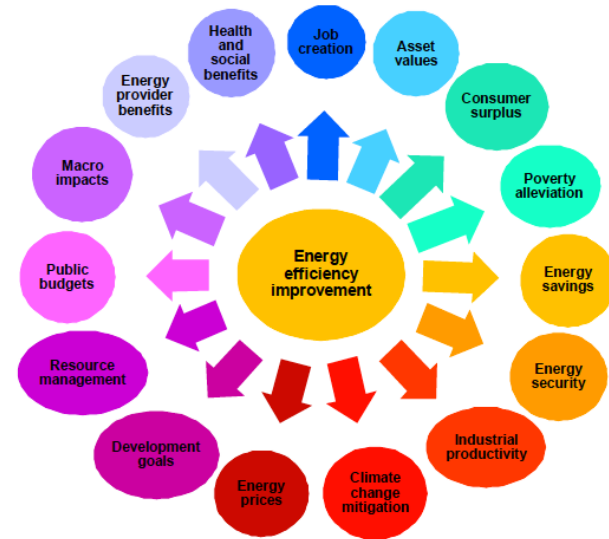
Source: MotherJones.com 2014

Cannabis – Factors Beyond Efficiency

The cost and challenges for cultivators

- The failure to properly evaluate results
- Opportunity costs of failing to prioritize energy efficiency investments.
- Opportunity costs may be very large and represent a cost that we cannot afford to bear.
 - increasing global demand,
 - stress on natural resources
 - climate concerns

Figure 1 • The multiple benefits of energy efficiency



The rebound effect

Source~ SPREADING THE NET: THE MULTIPLE BENEFITS OF ENERGY EFFICIENCY IMPROVEMENTS OECD/EIA

Cannabis – Investments in Clean Energy

- Investments in Renewables
 - On-site generation: Solar electric, wind, geothermal, low impact hydropower, biomass, bio-fuels, landfill to gas, hydrogen fuel cells, and combined heat and power.
- Net Zero? Outdoor vs. Indoor
 - The mismanaged practice of outdoor cultivation imposes multiple environmental impacts aside from energy use.
 - deforestation; destruction of wetlands, runoff of soil, pesticides, insecticides, rodenticides, and human waste; abandoned solid waste; and unpermitted impounding and withdrawals of surface water)
 - All of which compromise water quality, fisheries, and the local ecosystem

Cannabis – koan’s energy approach

- Our approach dedicates solutions that help the cannabis industry produce its own energy independently, managing its own greenhouse gas emissions through implementation of renewable energy resources, demonstrating leadership for global climate

- Real time interval level monitoring software
- Energy management consulting
- Renewable “on-site” energy
- Energy efficient technologies
- Financing & rebates



Control your energy operations from wherever you are, with real-time alerts to your phone or email, and access to your information via any web-capable mobile device.

Thank you.

Kathleen Hokanson

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