Indoor Cannabis Growing

Taming the Wild West

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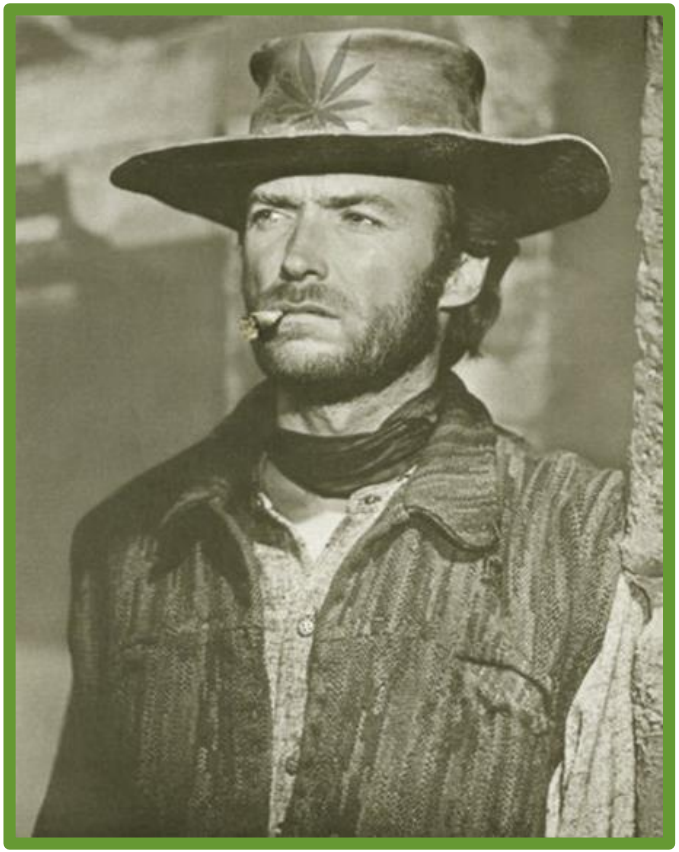
2018 ACEEE Summer Study on Efficiency in Buildings

ACEEE
American Council for an Energy-Efficient Economy

What We'll Cover



- Energy Use Overview
- Grow Room Energy Balance
- Dope EEMs!
- Barriers to Serving this Market
- Key Takeaways

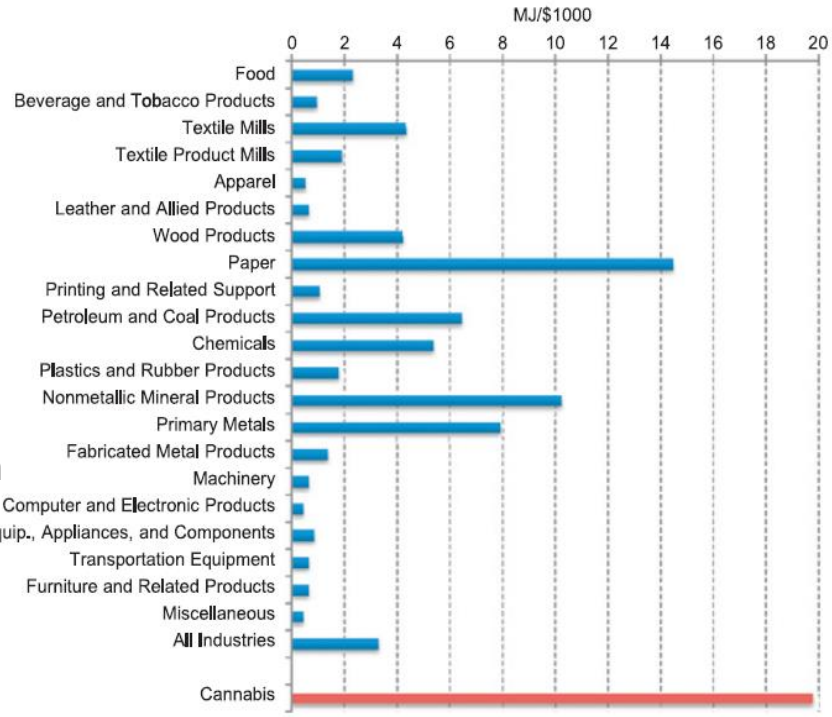
Who is Energy 350?

- Portland based engineering firm (n=25)
- EE Program Management & Delivery
  - Energy Studies
  - Building Tuning/RCx
  - SEM
- Research
- Evaluation
- LEED/Green Building Assistance

Energy Intensity

ENERGY 350

- Highest relative energy costs
- EUI > 1,000 kBtu/SF
  - CBECS Median Office Building = 67 kBtu/SF
- 50% increase in per-capita residential energy use in Humboldt County when California legalized MMJ
- 50% of Colorado's load growth in 2015
- Energy can represent 50% of overall production costs
- 1 joint = 18 pints of beer



Code – A Chronic Problem

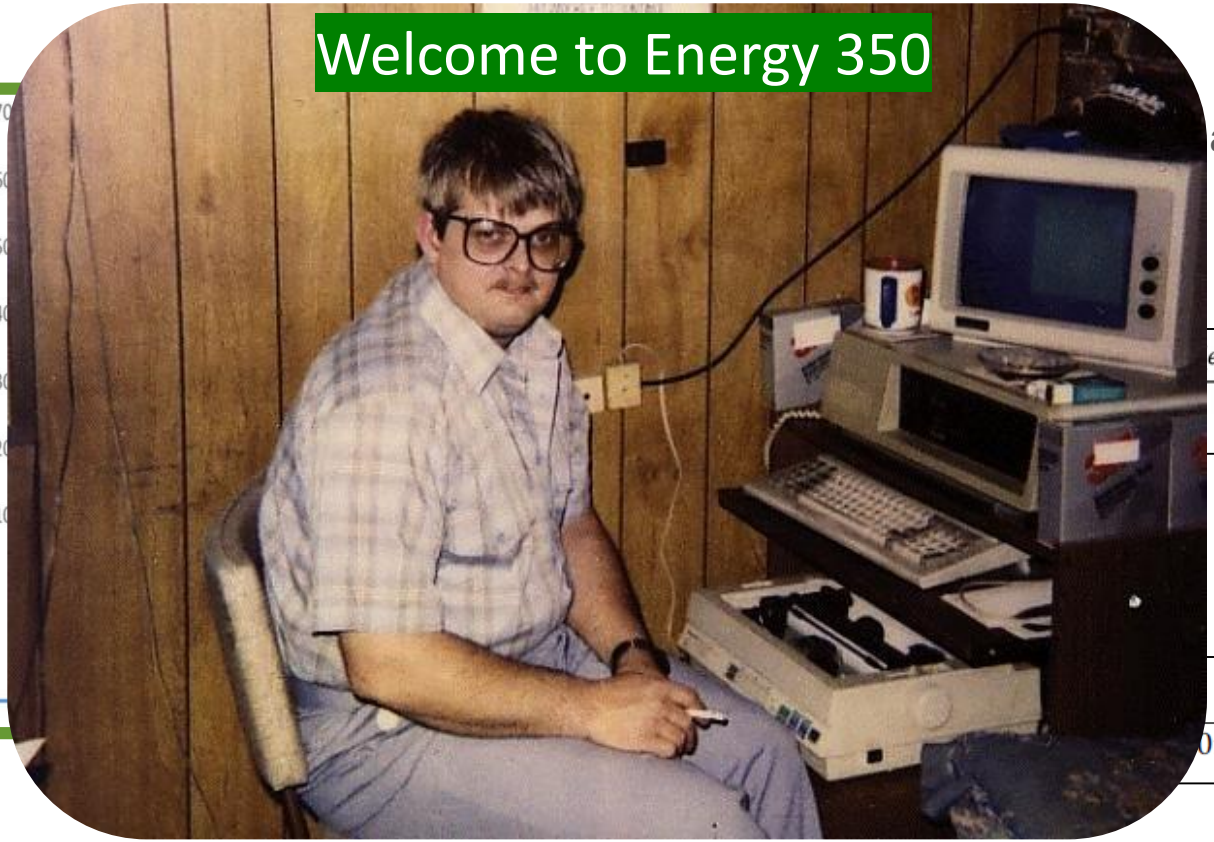
- Portland Building Code
  - All spaces that are conditioned (cannabis) are regulated unless specifically exempted
  - Cannabis production facilities must comply with all provisions of OEESC 2014, including the economizer requirement.
- 3 Compliance Paths

QUEST

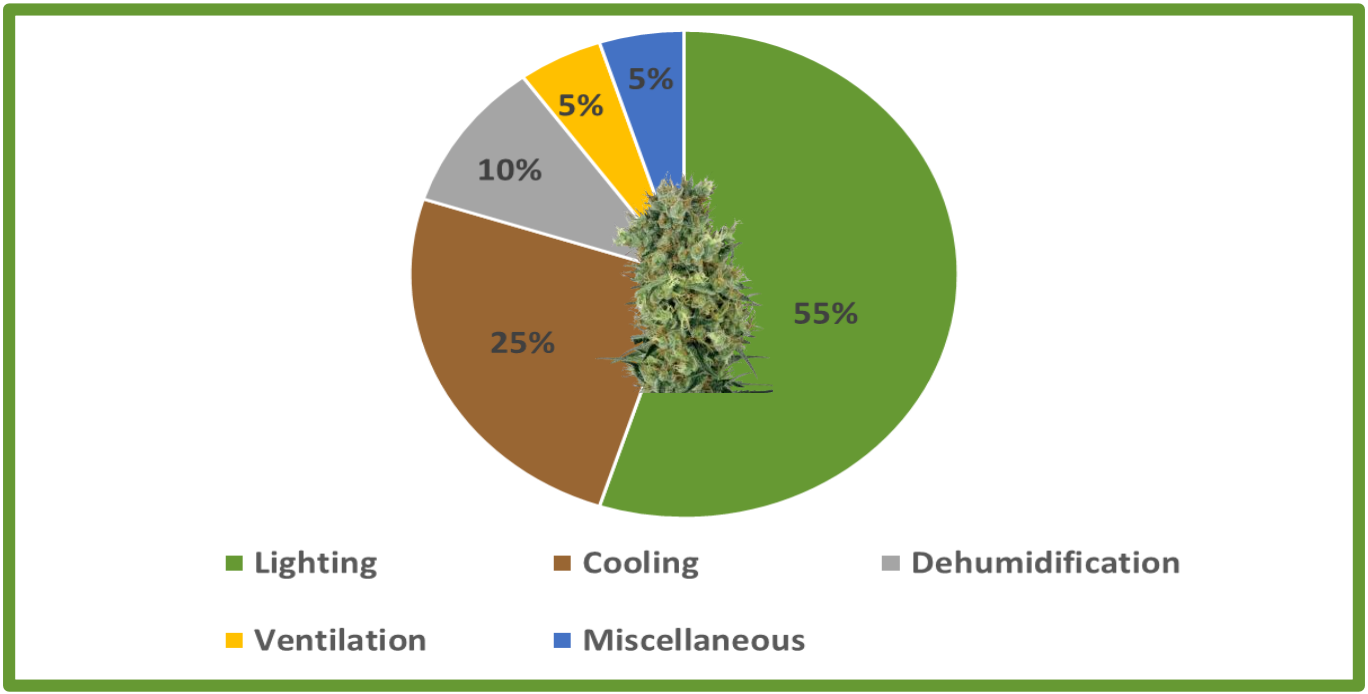
QUEST

Botaneering

Energy Cannalysis



Energy Accounting



High Efficiency Dehumidifiers

Hot Gas Reheat

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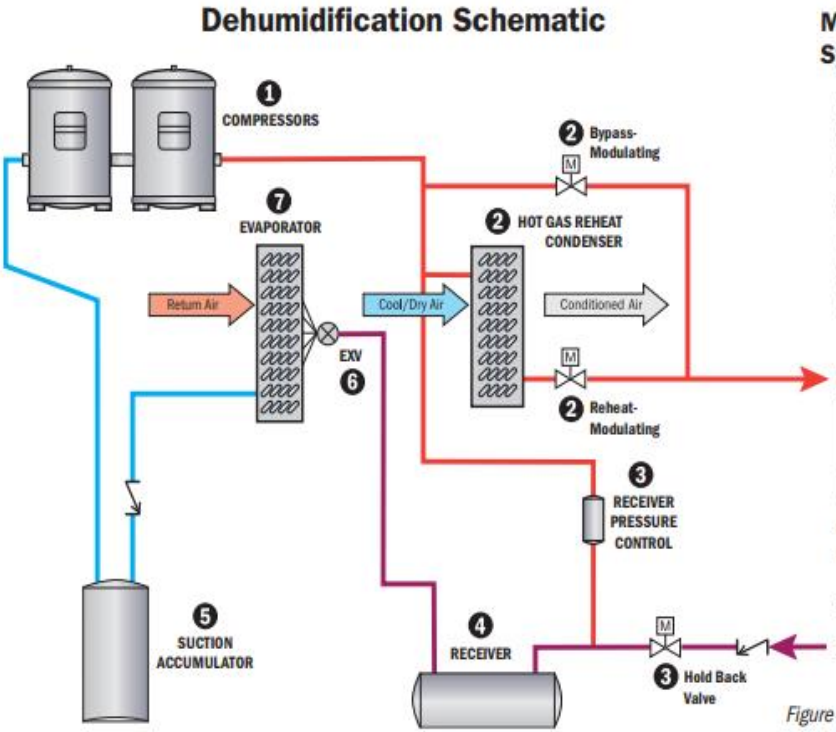

Figure 3 - GrowAire™ Dehumidification Schematic

Major Differences Between GrowAire™ Systems And Air Conditioners

1. Tandem Compressors
2. Modulating Reheat Valves and Hot Gas Reheat Coil
3. Low Ambient Control (Receiver Pressure and Hold Back Valves)
4. Receiver for Refrigerant
5. Accumulator (> 15 Ton)
6. EXV for Superior Evaporator Control
7. Evaporator Optimized for Humidity Removal

Water Cooled HVAC

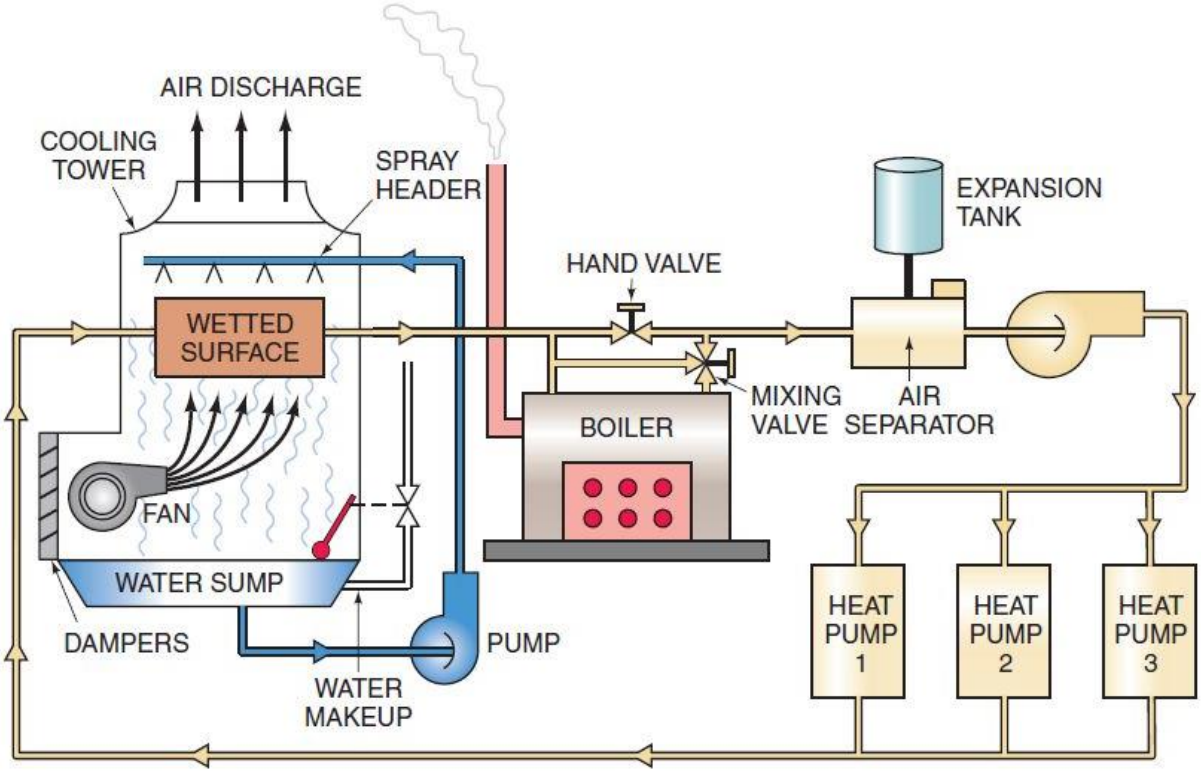

Figure 44–3 An open-loop, water-source heat pump with boiler and cooling tower to maintain the loop temperature

Barriers – Tradition

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Barriers – A Budding Industry

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OREGON LIQUOR CONTROL COMMISSION

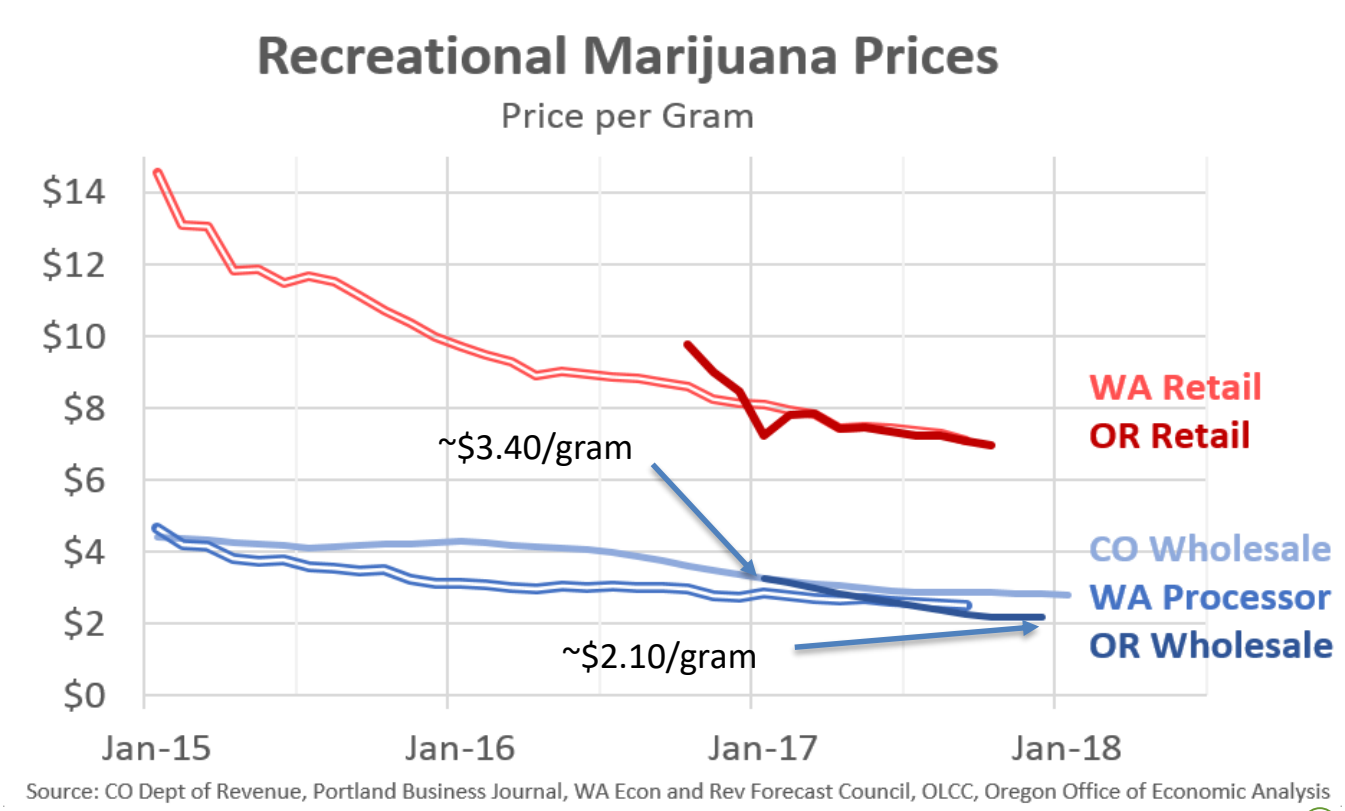
Marijuana License Applications

As of 8:00 AM May 11, 2018

Marijuana License Application Statistics as of May 11, 2018

	License Active	Approved Not Paid	Assigned	Ready For Assignment	Without Approved LUCS	Surrendered	Grand Total
Laboratory	22	1	10	0	0	4	**37**
Processor	163	0	145	59	20	9	**396**
Producer	992	15	543	336	70	50	**2006**
Retailer	552	3	103	50	14	35	**757**
Wholesaler	121	3	60	24	12	6	**226**
Research	0	0	2	0	1	0	**3**
Grand Total	**1850**	**22**	**863**	**469**	**117**	**104**	**3425**

Barriers – Wholesale Prices



Source: CO Dept of Revenue, Portland Business Journal, WA Econ and Rev Forecast Council, OLCC, Oregon Office of Economic Analysis

Takeaways

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ENGAGE EARLY

UNDERSTAND BARRIERS

3RD PARTY = ADDED VALUE

SHARPEN YOUR PENCILS

Thanks for Listening!

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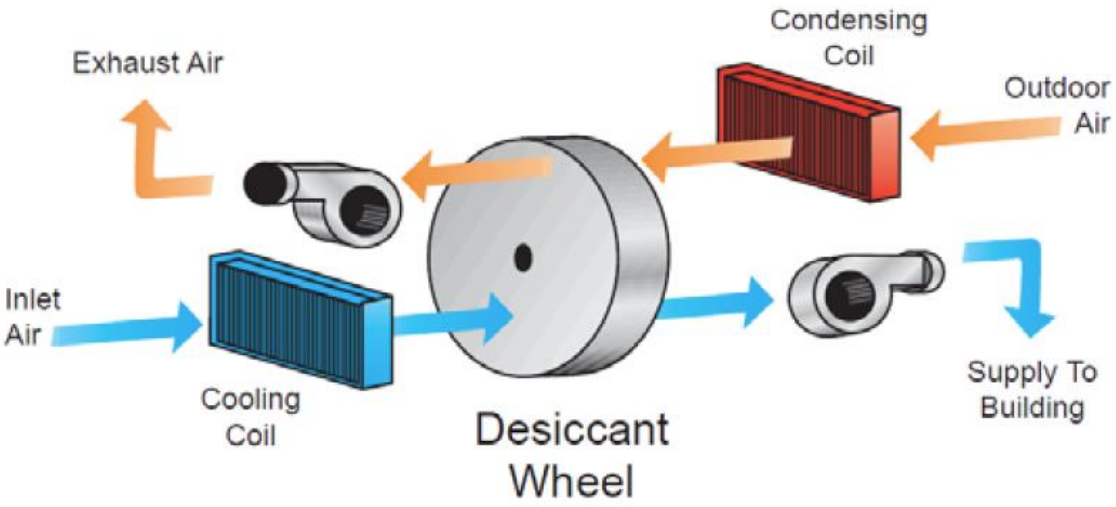
Backup

Energy Efficiency Measures – DX Assisted Desiccant