Land Use, Building and Fire Permitting for Marijuana

2018 Marijuana Management Symposium
Denver uses licensing laws as the primary regulatory tool for MJ businesses

Decision not to create distinct land uses just for MJ businesses in the zoning code

MJ businesses are regulated within the city’s business licensing laws, which in turn cross-reference zoning land uses and zone districts to specify allowed locations

Lesson Learned: Zoning cross-references added later to reduce permitting confusion and improve customer service
• 2010-11: Denver decided to “grandfather” business locations that existed before city’s permanent MJ licensing regulations were enacted
  – 10 year gap before formal regulation by state or city after Amendment 20’s passage legalizing medical marijuana
• Coincidentally nearly 80% of the city was rezoned in 2010, creating “nonconformities” too
Marijuana businesses are regulated via licensing laws, which initially stated business must be permitted as one of the following specific zoning uses:

- “Plant Husbandry” (MJ optional premises/grow license)
- “Commercial Food Preparation & Sales,” “General Manufacturing,” “Heavy Manufacturing, or “Laboratory, Research, Development and Technological Services” (MJ infused products manufacturing license)
- “Retail Sales” (MMJ dispensary and MJ retail store licenses)

Marijuana must always be grown in a “completely enclosed structure” (as defined in zoning code)
Land Use Regulations

• Zoning doesn’t recognize any difference between medical and recreational MJ

• Licensing code prohibits dispensaries in certain low-scale neighborhood zone districts, even though those districts allow general retail sales

• Zoning amended to conform later
• Street level activation of dispensaries
• Electrical services in accessory buildings
• Food-Based
• Water-Based
• Solvent-Based

Manufacturing:
◦ Custom
◦ General
◦ Heavy

Commercial Food Prep & Sales
• Laboratory, Research, Development, and Technological Services
• Terminal, Freight, Air Courier Services
• Wholesale Trade or Storage, General
• Bazaar, Carnival, Circus or Special Event – Temporary
• Amusement/Ente
After receiving a zoning use permit, plans are then logged in for building permit review by a number of disciplines, including:

- Architectural/Structural
- Mechanical/Plumbing
- Electrical
- Fire
- Transportation
- Zoning for structure
- Environmental Health (some uses)
Plan Review Issues

- **Electrical**
  - Continuous load
  - Lighting coordination with other disciplines as plans often different
  - Listed equipment
  - Upgraded electrical service

- **Mechanical/Plumbing**
  - Plumbing fixtures
  - Providing ventilation as if it’s an occupied space
  - Extraction facilities
  - CO2 enrichment
  - New requirements from Environmental Health for odor control – likely to require modifications to the HVAC system

- **Architectural/Structural**
  - Plumbing fixtures
  - Accessibility
  - Egress
  - Fire rated corridors in non-sprinklered buildings
Wrote a policy in summer 2016 to outline building code occupancy classifications for all marijuana uses

– While most are fairly clear, the policy ensures the City and the public are on the same page

- Grow facilities, including greenhouses – F-1
- Marijuana processing facilities – F-1
- Marijuana testing facilities – B
- Marijuana stores – M (retail)
Prior to 2016, medical dispensaries were treated as a B occupancy and regulated similar to a doctor office/clinic and recreational dispensaries were treated as a M occupancy similar to retail.

Outstanding question is should there should an occupancy distinction between medical or recreational? – Denver’s answer: No

Decided any new store (medical or recreational) that was not yet permitted will be an M occupancy

Developed a policy that clarifies when an existing store would have to seek a change of occupancy from B to M.

– Addition or expansion
– IEBC Level 3 Alteration, with clarifications
Extraction Equipment

- Requirements for listing of equipment with the NEC differ from those of Denver Fire – DFD listing does not include testing of any electrical components as an assembly.
- Equipment requiring power is to be listed as an assembly to an appropriate standard to comply with NEC 110.3.
- Two ways to list equipment:
  - Listed by a nationally approved testing lab and tested to the appropriate standards.
  - Be tested and inspected in the field by a 3rd party company that is certified.
Today’s Challenges

• Extraction segment of the industry continues to grow
  – Decision on Class 1, Div 1 rooms for butane extraction
  – LED lighting
• Unsafe conditions & work done without permits – enforcement/compliance problems (DEH, DFD, CPD)
• Use of a traditional greenhouse and International Energy Conservation Code
Denver Fire Department Staffing
  973 uniformed and 42 civilian staff

Fire Prevention Division
  41 uniformed and 17 civilian
    ▪ Fire Prevention Staff Dedicated to Marijuana
      ▪ 1 Lieutenant
      ▪ 4 Inspectors (Technicians)
      ▪ 1 Fire Protection Engineer
      ▪ 1 Program Coordinator

  ▪ Each marijuana occupancy inspected twice per year
Inspector Safety

- Radios
- Gas detectors
  - 5 gas (O2, LFL, CO, CO2, S02)
  - Tracking output for personal exposure
- Grow light sun glasses
- Tyvek coveralls
- Face masks
- Vaneometer
- Ipad
Area of Marijuana Fire Code Regulation

Residential Occupancies

CO-OPS

Licensed Businesses

Marijuana Infused Product Manufacturing

Growing

Social Consumption

Dispensaries

Testing Labs
Non-commercial Marijuana

Residential Hash Oil Explosions

- Over 30 hash oil explosions in 2014 Colorado
- Colorado Amendment 64 included “Processing”
- Police jurisdiction vs Fire jurisdiction
- IFC “Unsafe Conditions”
- 2014 Ordinance passed
- 2016 State law passed
IRC (Residential Code) Amendment

- Residential home with grow for rent
- Electrical service disconnects
- Firefighter safety

Section E3001.2 Number of services is replaced in its entirety with the following:

E3001.2 Number of services. One- and two-family dwellings and any associated structures shall be supplied by one set of service entrance conductors, as defined in the National Electric Code, whether overhead or underground, unless otherwise approved by the Building Official. (230.2)
Non-commercial Marijuana
Non-commercial Marijuana

Co-Ops (Community Gardens)
- Personal growing & plant counts (6/12)
- Care Givers
- Commercial Building Use
- Unpermitted occupancy / construction
- Inspection burden
- Denver Code Change
  - Max 36 plant count per zone lot
Marijuana Growing

Marijuana Infused Product and Oil Concentrate Manufacturing
FIRE SPRINKLERS
- F1 occupancy per the IBC;
- Sprinkler system required when (IFC 903.2.4):
  • Fire area exceeds 12,000sqft
  • Aggregate F1 fire areas exceed 24,000sqft
- Ordinary Hazard Group 2 to 12FT growing
- IFC 903.2.11 – Stories without openings
CO2 Enrichment:

• Typically growers use a generator or compressed CO2 to elevate CO2 levels to produce greater crop yields
• Typical range is 1,500 ppm or less of CO2 in grow rooms
• OSHA 8-hour TWA limit for human occupancy in a CO2 environment is 5,000 ppm
• 40,000 ppm CO2 is the Immediate Danger to Life and Health (IDLH) by the CDC.
• Potential asphyxiation hazard to occupants in the space and adjacent occupants in multi-tenant buildings
Commercial Grow Hazards

CO2 Enrichment Methods
CO2 Enrichment System Failures
CO2 Enrichment Hazard Mitigation

- Automatic shutoff valve on gas supply
- Hazard signage
- Compressed CO2 piping home run
- CO2 detection & emergency alarm required in the enriched room
  - Detection shall be continuous with no auto calibration / self zeroing
  - Set to alarm at 5000ppm with activation of main shut off valve
- CO detection (Generators only)
  - Continuous detection set at 35ppm
  - Automatic shutoff of gas supply to generator
  - Activate required mechanical exhaust (CFM sized by engineer for combustion requirements)
Marijuana Extractions

Solvent Based Extraction Processes
• Liquefied Petroleum Gas (Butane)
• Carbon Dioxide
• Flammable Liquids (Distillation or boil off)

Non-Solvent Based Extraction Processes
• Cold water extraction / Dry Ice / Food Based / Rosin Tech

Oil Winterization, Dewaxing, Polishing
Marijuana Extractions

LPG Extractions
- Closed-loop
- Passive
- Active recovery
- Butane/Propane

HAZARDS

ALARM 100% LFL

OIL RETREVAL

OFF-GASSING
SPENT PLANT MATERIAL

EQUPT FAILURE
Extraction Equipment Approval

- 2015 IFC 5003.2.3 (NFPA 1-60.5.1.6.4) Equipment processing hazardous materials shall be *listed* or *approved*
- 2015 IFC 104.7.2 (NFPA 1-1.15) Technical Assistance
- Master engineering report with (signed & sealed) site specific approval letter
- Site specific engineering report
- Report content
- Electrical components (listing)
Marijuana Extractions

LPG Extraction Room Hazard Mitigation

• Class I Division I Electrical
  o Grounding and Bonding of Metal equipment in Room
• Hazardous Exhaust System
  o Emphasis on Capture & Containment provisions
• Non-combustible room construction requirements
• Exit door to swing in the direction of egress
• Continuous Gas Detection
• Fire suppression
Capture Velocity
Marijuana Extractions

LPG Extraction Equipment Filling

LPG LIQUID TRANSFER REGULATED PER NFPA 58

CLOSED LOOP EXTRACTION PROCESS

- Diagram showing LPG liquid transfer and closed loop extraction process.
- Photo of LPG extraction equipment filling station.

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