Building and Fire Code Impacts for Marijuana

October 2016
How Land Use and Building fit into the Licensing Process

- **Zoning Permit Process** (Community Planning and Development)
- **License Application** (Excise and Licenses)
- **Public Hearing Process** (Excise and Licenses)
- **Inspection Process** (Multiple agencies: Excise and Licenses, Environmental Health, Fire Prevention, Community Planning and Development)
- **License Issuance Process** (Excise and Licenses)

*Building permits are required in order to modify the premises. Building permits must be finalized before a business license can be issued. However, you may apply for building permits and a business license at the same time.*

**Public hearings are only required for Medical Marijuana Dispensaries and Retail Marijuana Stores.**
Building Permit Review – Existing Buildings

• 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)

• Separate permit submittal required for Sewer Use and Drainage Permit (SUDP)
Building Plan Review – Common Issues

- Electrical
  - Continuous load
  - Lighting coordination with other disciplines as plans often different
  - Lack of listed equipment
  - Need for 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
  - Roof structural analysis for new Roof Top Units
Occupancy Classification Policy

• Policy developed 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
Occupancy Classification for Dispensaries

- Medical dispensaries were treated as a B occupancy and regulated similar to other doctor office/clinic uses
- This was decided prior to knowing Denver would have recreational marijuana.
- Outstanding question is should there should an occupancy distinction between medical or recreational? – Denver answer: No
- Decided any new store not yet permitted will be an M occupancy
- Working to develop criteria related to when an existing store might have to seek a change of occupancy from B to M
• Investors are buying homes and wanting to add an electrical service to a detached garage to make them grow facilities for rental tenants
• There are zoning and building implications to this
  – Adding the same size electrical service to the garage as feeds the house makes it no longer an accessory structure
  – Requires adding heating and cooling to a previously unconditioned space – now must comply with the Energy Code (IECC)
  – Electrical being added will easily accommodate more than the # of plants allowed by zoning
SF/Duplex Accessory Grow

• Electrical implications:
  – Potential for electrical fires from overloaded electrical services or subpanels due to lighting loads
  – Separate service to the garage would have a separate meter increasing the possibility that the garage could be rented separately from the house
  – Poor installation of wiring, i.e. extension cords, running through holes in walls, plugs cut off, etc.

• Fire Department implications:
  – Concern on a property having two electrical disconnects in the event of a fire
Local IRC Amendment to Section E3601.2

• 2015 Base IRC
  – One- and two-family dwellings shall be supplied by only one service. (230.2)

• 2015 Amendment for Denver
  – Section E3601.2 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)
• Requirements for listing of equipment with the NEC differ from those Denver Fire has developed as their 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.
• Extraction segment of the industry continues to grow
  – Decision on Class 1, Div 1 rooms for butane extraction – DFD to discuss but has electrical and mechanical implications

• Equipment from other industries being used for marijuana, but not listed for such
  – Paint booths – good from M/P perspective but challenging from DEH as require sink if handling food

• Unsafe conditions & work done without permits – enforcement/compliance problems (DEH, DFD, CPD)

• Inspection issues
  – Improper installation of materials – unistrut for example
  – Electrical developed an inspection guideline handout to help owners and electrical contractors be better prepared for inspections
Fire Department Overview

- Denver Fire Department Staffing
  - 988 Uniformed and 43 Civilian staff
- Fire Prevention Division
  - 38 Uniformed
  - 17 civilian – 7 Fire Protection Engineers, 10 Administrative Support
- Prevention Staff Dedicated to Marijuana
  - 1 Lieutenant
  - 4 Inspectors (Technicians)
  - 1 Fire Protection Engineer
  - 1 Program Coordinator
Fire Department Overview

• Operations
  – Approximately 21,000 occupancies
  – Pre-plan inspections, Referrals, Incidents

• Fire Prevention Division
  – 6,000+ Fire Prevention inspections
  – 625 Marijuana occupancies

• Certificate of Occupancy, License Sign Off, Fire Safety Systems Testing
Fire Department
Inspections

• Identifying marijuana facilities
  – CO/ License signoffs
  – Referrals and Incidents
• Legal vs. Illegal locations
• Construction & Operational Permits
• Evolving hazards, policies
• Training, equipment
• 2014 ordinance limiting extractions to 16 oz of alcohol and a non fuel fired / electrified heat source OR non flammable/combustible extraction processes

• Later modified and adopted into CO State law
Fire Department
Cooperative Grow

- Collectives, CO-OPS, Community Gardens, etc.
- Non licensed growing
- Extraction process regulated under residential ordinance
- 2015 Ordinance passed limiting to 36 plants per zone lot
Fire Department
Cooperative Grow

2nd STORY
• 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
CO2 Enrichment using CO2 Generators
- Unvented fuel fire appliance with Potential Elevated CO2 & CO Hazard Mitigation
- CO2 Detection & Alarm w/ auto gas shutoff
- CO detection with exhaust w/ auto gas shutoff
- Signage
• CO2 Enrichment using Compressed or Liquefied Gas
  - Potential Elevated CO level
CO2 Enrichment using Compressed or Liquefied Gas

Hazard Mitigation
- Hazard Signage
- Home run piping
- Fail closed main shutoff valve at supply**
- CO2 detection & emergency alarm
  - Continuous detection with no auto calibration
  - Set to alarm at 5000ppm
  - Automatic shutoff of CO2 on alarm
• CO2 Enrichment System Failures
Fumigation / Pesticide Application

- Using Sulfur burner to create Sulfur Dioxide
- Application of pesticide and occupied spaces
• **F-1 Occupancy**

• **Types of Extraction**
  – BHO (Butane Hash Oil)
  – Carbon Dioxide
  – Flammable Liquids (Distillation or boil off)
  – Cold water extraction / Dry Ice / Food Based / Rosin Tech

• **Oil Winterization, Dewaxing, Polishing**

• **Decarboxylation**
• Open Blast Extraction
• LPG Extractions
  • Closed-loop
  • Passive
  • Active recovery
  • Butane/Propane
• LPG Extraction Rooms
  • Closed loop
    = **No Release of Flammable Gas?**
  • Non-Classified Electrical
  • 1 cfm/sqft low exhaust
    = **Hazardous Exhaust?**
  • Hydro Carbon Alarm
Fire Department
Extractions

ALARM
100% LFL
• LPG Extraction Room Hazards
  - Equipment Failure
  - Off-gassing spent plant material
  - Off-gassing oil during removal

OIL RETRIEVAL AT 100% LFL

OFF-GASSING SPENT PLANT MATERIAL AT 100% LFL
• 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
  • Engineered Equipment
LPG Extraction Equipment Filling
CO2 Extractions Hazards
- High Pressure Equipment
- Potential Asphyxiation

CO2 Extraction Hazard Mitigation
- Pipe any CO2 discharges outdoors
- Continuous CO2 detection
- Doors swinging in the direction of egress w panic hardware
- Engineered Equipment
• Flammable Liquid Extraction & Post Oil Processing
  - Exhaust with capture hood
  - Electrical location classification determined by engineer based on process
  - Room construction requirements similar to LPG with doors swinging in the direction of egress with panic hardware
  - No equipment engineering approvals. Most equipment is available listed for its intended use and therefore listing standards are available.
• Soak Process
Fire Department
Extractions

• Distillation or Boil-Off
- **Oil Winterization, Dewaxing, Polishing**
  - Flammable liquid is added to oil concentrate and chilled or frozen
  - Lipids waxes are strained
  - Distillation or boil-off process of filtered flammable liquid solution
Thank You!

Questions?