

OIL & GAS

A. OIL & GAS DEVELOPMENT VISION

Recognizing the many challenges facing our community as technological advances in oil and gas exploration and production evolve, Broomfield desires to focus on the health, safety, welfare and environment of our community as our top priority.

B. CURRENT SITUATION & FUTURE TRENDS

Broomfield's Comprehensive Plan promotes the safety, health and welfare of our city and is built around the notion of sustainability, the long-term social, economic and environmental health of our society. Our core values include social responsibility and equity and environmental stewardship for the sake of current residents and future generations. Environmental Stewardship includes protecting our air and open space, conservation of water and promoting the use of renewable energy. In many ways, oil and gas development directly conflicts with the rest of Broomfield's Comprehensive Plan, which is built around the notion of sustainability, including conservation of natural resources (e.g. hydraulic fracturing removes millions of gallons of water from general use), protection of natural resources, and decreased dependence on fossil fuels which impacts the environment for the sake of current residents and future generations.

There has been much debate regarding oil and gas development given its benefits and risks. As the oil and gas industry seeks to obtain approval to extract resources in and around more populated areas, it has begun encroaching on residential domains. Conflict arises when individuals rightfully strive to protect the areas in which they choose to live by trying to keep their communities safe from industrial intrusion. On a regional and local level, people express concern over the health, safety, welfare and environmental impacts of the industry. Legally and politically, Colorado has consistently supported oil and gas development over other concerns. As oil and gas developments move closer to densely populated areas, landowners are sometimes frustrated to learn that state law allows a "split estate". Surface property rights are the landowner's rights to the surface of the land. Mineral rights are property rights to the minerals beneath the surface of the land. Mineral rights include a mineral owner's right to explore, mine, and produce the rocks, mineral, oil, or natural gas below the surface level of a property and the right to enter upon land and extract those minerals or receive a royalty from the extraction of the minerals.

In Colorado, surface and mineral rights for the same area of land may have different owners. Therefore, mineral rights ownership is not necessarily coterminous with surface rights ownership. Disputes may arise between the surface and mineral rights owners about access to the mineral property beneath the surface of the land.

Federal and state law protects the property rights of mineral owners.



Regardless of this apparent conflict, the City and County of Broomfield (Broomfield) is committed to promulgating Oil and Gas Development Guidelines that place the health, safety, and welfare of all residents and our environment as paramount and our primary focus while still allowing mineral rights owners' reasonable access to their mineral property. Recent tragic accidents related to oil and gas development have highlighted the risks associated with this industrial activity, underlining the importance of prioritizing citizen welfare.



The northeastern quarter of Colorado, including a portion of Broomfield, sits within the Denver-Julesburg (D-J) Basin and the Greater Wattenberg Field. Oil and gas have been produced from the D-J Basin since its discovery in 1901. The Greater Wattenberg Field is one of the largest natural gas producing fields in the United States. Broomfield has not previously had an inordinate amount of oil and gas development. In 2017, Broomfield has 38 pads and 96 operating wells.

Broomfield was one of the first local governments in Colorado to update its regulations. In 2013, Broomfield began to secure new technological advances, like closed-loop drilling systems that release lower amounts of harmful air emissions. In November 2013, a ballot question narrowly passed in Broomfield that hydraulic fracturing to extract hydrocarbons within Broomfield be prohibited. This ban was overturned by later court decisions leaving mainly state level rules in place to regulate oil and gas well drilling and completion practices. However, with the use of mutually agreed upon contract language in memoranda of understanding (MOUs) with operators, Broomfield was able to secure additional commitments beyond state-mandated requirements to ensure safer and more technologically advanced oil and gas well drilling and completion practices to provide additional protection of the health, safety, and welfare of all in Broomfield.

The efforts of Broomfield should continue to focus on the goals to eliminate as many older wells as possible, permit drilling as far from residential areas as possible, and ensure that oil and gas facilities are designed, modified, commissioned, constructed, equipped, operated, maintained, suspended, and abandoned in a manner that prioritizes the protection of human health, safety, and welfare. While recognizing that mineral owners have property rights, the health and safety of Broomfield residents is paramount and maintaining the qualities Broomfield is known for is integral to our position. Broomfield should seek to have operators employ state of the art technology and target regulation, whether

federal, state, or local, to mitigate to the maximum extent possible, any and all negative impacts related to oil and gas operations within the city and county. Broomfield should seek to reassure its citizens that negative impacts of oil and gas operations will be adequately mitigated through the implementation of safety precautions that employ the most current technology.

The following recommended goals and policies are intended as guidelines for City Council and City staff to pursue in the development of local, state, and federal laws and regulations, as well as in future MOUs. Until such laws are changed, we recommend the implementation of the Update Committee's guidelines in order to safeguard the health, safety, and welfare of all residents of Broomfield, in light of pending oil and gas development. This update of the Comprehensive Plan pursues goals expanding the Governor's Task Force Recommendation #20. The Update Committee urges the City to continue to work with the state, other local governments and citizens to change laws and regulations regarding oil and gas development.

C. GOALS & POLICIES

Goal OGD: Safeguard Broomfield Residents

Protect the public health, safety, welfare, and environment of the citizens of Broomfield. Regulate oil and gas development to the extent necessary to provide these protections by minimizing the impact of oil and gas operations on the community and by maintaining the qualities that make Broomfield such a desirable place to live, work, enjoy the outdoors, and raise a family.

AIR QUALITY

Policy OG.1: Anticipate and mitigate potential risks associated with air emissions related to oil and gas development, particularly in and around populated areas.

Action Step OG-1.1: Develop, submit, and implement a site specific ambient air quality testing and monitoring plan approved by Broomfield that includes but is not limited to:

- Baseline air quality testing within 500 feet of a proposed oil and gas development site by a consultant approved by Broomfield and paid for by the operator.
- Air quality monitoring of all oil and gas phases, including drilling, completions (principally hydraulic fracturing and flowback), and operations within 500 feet of the oil and gas development site by a consultant.

Action Step OG-1.2: Require oil and gas operators to design and operate facilities in Broomfield by incorporating at a minimum but not limited to the following, with designs and operating procedures subject to approval by Broomfield prior to the start of any site construction:

- Closed loop, pitless drilling, completions and production systems without permanent on-site storage tanks with any required venting channeled through 98% effective emissions control devices;
- Green completion practices;

- Tier 4 or better diesel engines, diesel and natural gas co-fired engines, natural gas fired spark ignition engines or electric line power used to power hydraulic fracturing pumps;
- Pipelines for transport of fresh water, produced water, oil and gas to/from facilities;
- Enhanced Leak Detection and Repair (LDAR) program;
- Electric drilling rigs powered by an electric utility;
- No flaring at well sites except during upset conditions, with flares providing a minimum of 98% hydrocarbon destruction efficiency;
- Ongoing maintenance checks of all equipment to minimize the potential for gaseous or liquid leaks; and
- All oil and gas practices to use Best Management Practices (BMPs).

Action Step OG-1.3: Develop and implement an enhanced Broomfield oil and gas facilities inspection program.

- Broomfield inspector allowed access to oil and gas sites upon notice, which can include notification at the gate;
- More frequent leak detection tests by the inspector; and
- Consider Broomfield purchase / lease / share with other municipalities an infrared camera for emissions inspections.

Action Step OG-1.4: Require oil and gas operators to develop and implement shutdown protocols with detailed notification and inspection requirements in order to ensure safe shutdowns and timely local communications.

Action Step OG-1.5: Require oil and gas operators in Broomfield to commit to compliance with United States Environmental Protection Agency (USEPA) and Colorado Department of Public Health and Environment (CDPHE) standards for emissions, as such regulations exist now and to more stringent requirements adopted in the future.

Action Step OG-1.6: Pursue air quality regulations for activities prior to oil and gas operations, including but not limited to drilling, hydraulic fracturing, and flowback stages, potentially establishing monitoring and specifying emission limits.

Action Step OG-1.7: Require ambient air quality resulting from oil and gas facilities to be in compliance with 2017 Centers for Disease Control (CDC) Agency for Toxic Substances and Disease Registry (ATSDR) and USEPA Integrated Risk Information System (IRIS) ambient air quality guidelines or future more restrictive guidelines for benzene, toluene, ethylbenzene and xylene (BTEX), and other air toxins.

Action Step OG- 1.8: Odor emitting from oil and gas facilities must be controlled. Require operators to prevent odors generated by oil and gas operations from affecting the health and welfare of the public by proactively addressing and resolving complaints filed by impacted members of the community, in coordination with Broomfield Public Health staff.

Action Step OG- 1.9: Operator must show a net reduction in volatile organic compounds(VOCs), through options that can include, but are not limited to, plugging and abandoning existing wells.

SOIL & GROUNDWATER

Policy OG-2: Anticipate and mitigate potential soil and groundwater impacts associated with proposed oil and gas development sites, particularly in and around populated areas and water bodies.

Action Step OG-2.1: Develop and implement a site-specific soils and groundwater testing and monitoring plan approved by Broomfield that includes but is not limited to:

- Baseline soil and groundwater testing within 500 feet of a proposed oil and gas development site by a consultant approved by Broomfield and paid for by the operator; and
- Soil and groundwater monitoring of all oil and gas phases, including drilling, completions (principally hydraulic fracturing and flowback), and operations within 500 feet of a proposed oil and gas development site by a consultant approved by Broomfield and paid for by the operator; and
- Water well sampling and testing all available water sources within one-half (½) mile of the proposed track of a wellbore and within one-half (½) mile from a proposed oil and gas facility.

Action Step OG-2.2: Require soil tests and groundwater testing wells for existing oil and gas wells in the vicinity of water bodies as approved by Broomfield.

Action Step OG-2.3: Require operator to identify and mitigate through location of facilities and berms potential environmental impacts to drainage ways in a form acceptable to Broomfield.

Action Step OG-2.4: Require operator to utilize containment berms and other safety protections to protect water bodies and environmentally sensitive areas that are down gradient of oil and gas sites in a form acceptable to Broomfield.

Action Step OG-2.5: Develop and implement a site-specific soils testing and monitoring plan approved by Broomfield for existing oil and gas wellbores within 150 feet of proposed new wellbores associated with a new oil and gas development project that includes but is not limited to:

- Baseline for the presence of hydrocarbons near any existing wellbores by a consultant approved by Broomfield and paid for by the operator; and
- Periodic monitoring for the presence of hydrocarbons after drilling and hydraulic fracturing of new wellbores in the vicinity of the existing wellbores by a consultant approved by Broomfield and paid for by the operator.



ENVIRONMENTAL ASSESSMENT

Policy OG-3: Anticipate and mitigate potential environmental impacts associated with oil and gas development, particularly in and around other land uses.

Action Step OG-3.1: Require operator to provide a third party baseline environmental impact assessment of the proposed oil and gas facility site to Broomfield for approval, prior to any construction on the site that includes but is not limited to the following:

- Baselines for all relevant biophysical and social science disciplines through an appropriate combination of on-site investigations and technical research;
- Assessment of potential impacts to the environment of the proposed development or project; and
- Propose project design measures or other relevant mitigation measures to avoid unacceptable impacts or to reduce them to levels of insignificance.

HISTORICAL & CULTURAL RESOURCES

Policy OG-4: Anticipate and mitigate potential impacts to historical and cultural resources associated with oil and gas development, particularly in and around other land uses.

Action Step OG-4.1: Require operator to assess historical and cultural resources in and around the proposed oil and gas development and share such information and proposed mitigation measures with Broomfield for advance approval prior to start of site construction.

Action Step OG-4.2: Require operator to have approval from the State Historic Preservation Office detailing required protection and mitigation measures to be implemented to preserve any historical or cultural resources potentially affected by the proposed operations, and to provide a copy of such approval to Broomfield, in consultation with the surface owner and subject to any confidentiality requirements.

Goal OGD: Oil and Gas Facility Siting

Develop a methodology for well siting, based on community priorities and values.

OIL & GAS FACILITY SITING

Policy OG-5: City to work with operator to identify and locate alternative oil and gas facility sites from the perspective of protecting public health, safety, welfare, and the environment.

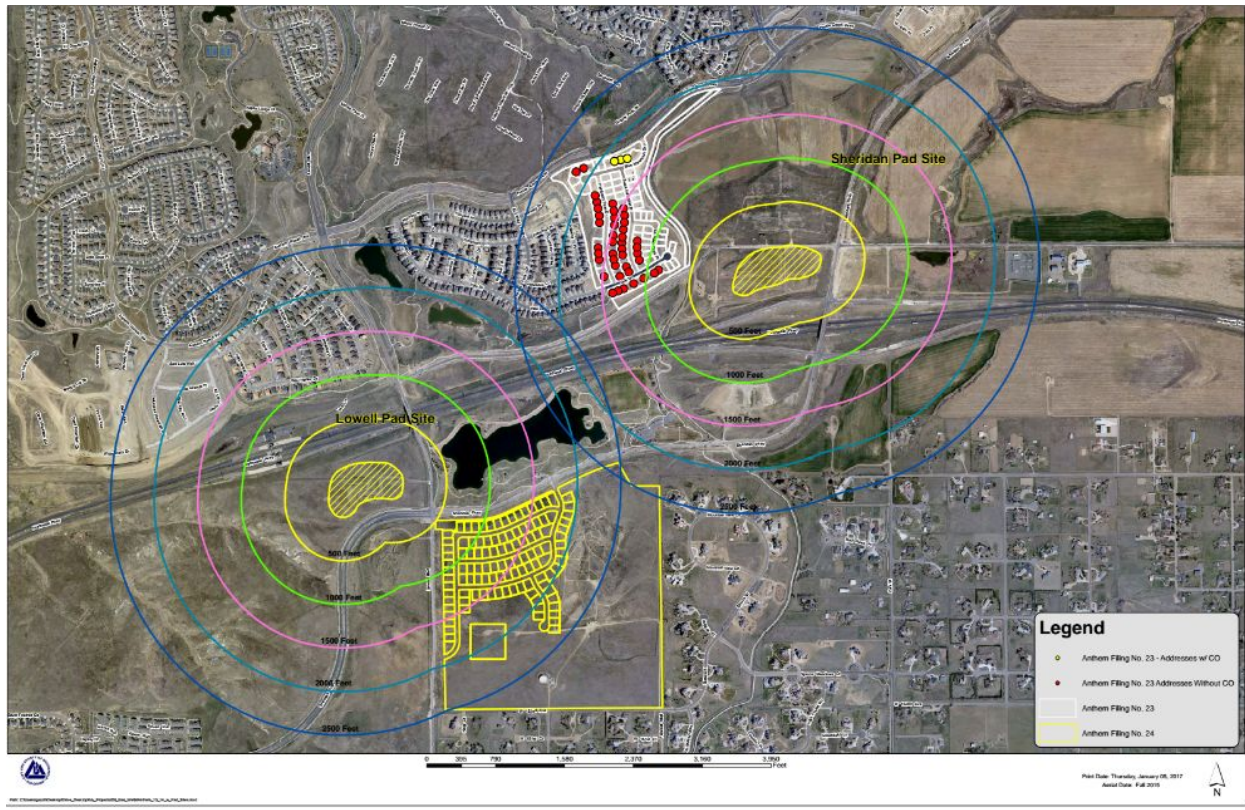
Action Step OG-5.1: Require operator, prior to application submittal to Broomfield, to engage with Broomfield to identify and evaluate alternative oil and gas facilities and well sites (Sites). Possible Sites identified shall be evaluated based upon a Broomfield set of factors, or other mutually agreed methodology, prior to submittal of any spacing application to the Colorado Oil and Gas Conservation Commission (COGCC). Provide alternative site analysis details as outlined in regulations.

Action Step OG-5.2: Require operator to identify distance from the Site(s) to the closest residences, occupied buildings, water bodies, floodplains, and roadways.

Action Step OG-5.3: Broomfield will work with the State of Colorado, other Colorado counties and municipalities to complete a comprehensive evaluation of economic and social effects, including but not limited to impacts to health, quality of life, and property values, of oil and gas operations in close proximity to people, schools, hospitals, recreation areas, etc. This evaluation should meet the standards established under the National Environmental Policy Act (NEPA) approach to project evaluations in these focus areas.

Goal OGD: Application Process

Develop an oil and gas facility application process that is complete and provides all information required of an operator, in a single section of the municipal code.



APPLICATION PROCESS & REQUIREMENTS

Policy OG-6: Gather complete information to assist Broomfield in its analysis of proposed oil and gas development.

Goal OGD: Project Design Standards

Action Step OG-6.1: Create a site application process that includes but is not limited to development of the following documents in a form approved by Broomfield that should accompany an operator's submittal of a proposed oil and gas project to Broomfield:

- Pre-application Alternative Site Analysis;
- Project design documents that comprehensively identify and describe all planned facilities, equipment and operations, both temporary and permanent, including pertinent location and dimensional data;
- Project schedules for all phases, including site construction, pipeline construction, drilling, completions (broken down into activity-based components), commissioning, operations, reclamation and abandonment;

- Administrative fees, as determined appropriate by Broomfield;
- Facility baseline surveys for air quality, groundwater, soil, noise and traffic;
- Facility emissions inventories and air quality impact studies for drilling, completions and operations phases, based upon proposed equipment use;
- Facility noise modeling of equipment proposed for the site for drilling, completions and operations phases;
- Air Quality Impact Mitigation Plan, including additional measures to reduce emissions on Air Quality Action Days;
- Noise Impact Mitigation Plan;
- Hazardous Materials Management Plan, with listings of all potential chemicals brought on site (including chemicals to be disclosed through the “Frac Focus” process);
- Waste Management Plan;
- Traffic Impact and Management Plan;
- Water Quality Control Plan;
- Stormwater Management Plan;
- Risk Management Plan;
- Emergency Response Plan;
- Plan for abandoning existing wells;
- Electrification Plan; and
- Wetlands Protection Plan.

Action Step OG-6.2: Require operator to comply with Broomfield’s Public/Private Improvement Permit and easement processes for all pipelines installed in Broomfield owned property or rights of way.

FACILITIES

Policy OG-7: Continuously identify and require state of the art equipment, protocols, and technology to protect the public health, safety, and welfare.

FACILITIES

Action Step OG-7.1: Require oil and gas operators to design and operate facilities in Broomfield by incorporating, at a minimum but not limited to the following, with designs and operating procedures subject to approval by Broomfield prior to the start of any site construction:

- Closed loop, pitless drilling, completions and production systems without permanent on-site storage tanks with any required venting through 98% effective emissions control devices;
- Operator will commit to using only state of the art technology;
- Drilling activities conducted with electricity provided by electric utility line power;
- Tier 4 or better diesel engines, diesel and natural gas co-fired engines, natural gas fired spark ignition engines, or electric line power used to power hydraulic fracturing pumps;
- “Quiet Fleet” noise mitigation for completions operations;
- Sound walls around well drilling and completion activities to mitigate noise and visual impacts; and
- No open vents to the atmosphere during drilling, completions, and operations, unless specifically approved by Broomfield.

Action Step OG-7.2: Require inclusion of subsurface safety valves in wellbores.

Action Step OG-7.3: Every five (5) years the operator will review its operations at all well sites and retrofit with new beneficial technology or operating practices, if feasible in consultation with Broomfield.

Action Step OG-7.4: Broomfield will inspect oil and gas facilities periodically and post results on the website. Additional information provided by the operator will also be posted on Broomfield's website, as appropriate.

PIPELINES

Policy OG-8: Anticipate and mitigate, through risk assessment, potential risks associated with pipelines related to oil and gas development, particularly in and around other land uses.

Action Step OG-8.1: Require the installation of pipelines for transport of all fresh water, produced water, oil, and gas to/from the oil and gas site on approved rights-of-way, prior to the start of any fluid flow from any wellbore, and subject to approval by Broomfield that includes:

- Public/Private Improvement Permit from Broomfield for all oil and gas pipelines in Broomfield rights of way.
- Enhanced pipeline (includes all pipelines, flowlines, gathering lines, etc.) inspection by operators including quarterly pressure testing and a leak detection program with results provided in writing to Broomfield.



Action Step OG-8.2: Pursue additional state regulation of pipelines to include additional requirements for safety technology and mapping of pipelines.

Action Step OG-8.3: Require mapping of flowlines, gathering lines, and pipelines for Broomfield Planning Division, Broomfield Public Works Department, and Emergency Responder use. Mapping to be recorded in public records, subject to applicable law.

Goal OGD: Community Impacts Mitigation

Regulate oil and gas development to the extent necessary to minimize the impact and to protect public health, safety, and welfare while taking advantage of on-going improvements in technology.

NOISE

Policy OG-9: Ensure the auditory impact of oil and gas development on surrounding land uses, including residential, are within acceptable levels (Based on EPA 2016 guidelines or better).

Action Step OG-9.1: Require the most current equipment to minimize noise impacts during drilling, including, but not limited to, electric drill rigs using utility grid electric power; noise controls on drilling, hydraulic fracturing, and production; and no onsite power generation (other than emergency power).

Action Step OG-9.2: Require sound controlled equipment, including quiet fleets that reduce the noise of the pumps and motors associated with hydraulic fracturing.

Action Step OG-9.3: Require a maximum allowable sound level of 60 dB(A) at 500 feet from new oil and gas facilities for all phases of operation, and 50 dB(A) at 1000 feet from the facilities.

Action Step OG-9.4: Lower the maximum allowable sound level 5 dba between 7:00 p.m. and 7:00 a.m. the following morning.

Action Step OG-9.5: Require the operator to address C scale noise/vibration through the use of containment berms and other associated BMPs.

Action Step OG-9.6: During drilling and completion phases, require at least a thirty-two (32) feet high soundwall to mitigate noise.

Action Step OG-9.7: Develop Broomfield enforcement protocols for use of calibrated noise meters.

Action Step OG-9.8: Require that no unloading of tubular goods will take place between 9:00 p.m. and 8:00 a.m.

Action Step OG-9.9: Require an ambient noise survey for each oil and gas facility for both pre-construction and active drilling, hydraulic fracturing, flowback, and operations.

TRAFFIC

Policy OG-10: Ensure traffic impacts from oil and gas development are manageable, minimize the traffic inconvenience to the community, and do not compromise the public health and safety of the community.

Action Step OG-10.1: Require operators to identify all access routes to proposed oil and gas facilities and to provide a detailed traffic plan for approval by Broomfield prior to the start of construction on any site to include, but not limited to:

- Detail of access locations for each site including sight distance, turning radius of vehicles and a template indicating this is feasible, and turning volumes in and out of each site for an average day and what to expect during the peak hours;
- Convert truck traffic volumes anticipated on roadways that are being accessed to equivalent single axle loads using both existing volumes and proposed with new oil and gas activities;
- Core drill or boring samples of Broomfield roads to be used to determine the adequacy of the existing roadway structure and to determine if roadway sections are adequate for proposed activities;
- Truck routing maps and truck turning radius templates, with a listing of required improvements deemed necessary at intersections along the route;

- Complete traffic report, with a listing of any operational changes and geometric modifications necessary as a result of proposed activities;
- Identification of need for any additional traffic lanes;
- Restriction of traffic to and from Sites to periods outside of peak am and pm traffic periods and during peak school hours (generally 7 to 9 a.m. and 3 to 6 p.m.); and
- A traffic study to determine impacts and required improvements to Broomfield streets.

Action Step OG-10.2: Require that operators follow applicable Hazmat regulations and are adequately insured for exposure related to potential truck accidents.

Action Step OG-10.3: Establish criteria for impacts to streets and supporting infrastructure to accommodate traffic generated by oil and gas operators that may cause long term degradation of Broomfield streets.

Action Step OG-10.4: Require operators to pay for significant degradation caused by their operations and the resulting cost of repairs.

Action Step OG-10.5: Provide for the collection of a truck usage fee.

Action Step OG-10.6: Secure written commitment from operator to fund infrastructure improvements required to support the proposed project.

LIGHTING

Policy OG-11: Minimize the amount of light from oil and gas activities to surrounding properties (especially during drilling and completions), considering applicable safety regulations requiring minimum lighting levels for work areas.

Action Step OG-11.1: Require best management practices, including, but not limited to, downward shielded lighting and lumens measurement outside of oil and gas Sites.

VISUAL SCREENING

Policy OG-12: Require measures that effectively screen oil and gas operations from public view.

Action Step OG-12.1: During drilling and completion phases, require a minimum 32 foot high sound wall to screen oil and gas operations from view and provide noise and light mitigation, with such walls to be colors that blend with the surrounding natural background.

Action Step OG-12.2: Require a landscaping and visual berming plan approved by Broomfield that includes maintenance and irrigation requirements for planted vegetation throughout the duration of operations, including production.



Action Step OG-12.3: Require a well site reclamation plan to include compatibility with neighboring land uses at the time of reclamation to be submitted to Broomfield not later than six (6) months prior to the start of plugging and abandoning of wells or abandonment of an oil and gas facility site. An escrow account must be established to account for future reclamation.

PROPERTY VALUES

Policy OG-13: Implement policies that protect surrounding property values from being negatively impacted by oil and gas drilling and completions operations.

Action Step OG-13.1: Study property values in areas of oil and gas drilling to establish a baseline of property values in neighborhoods within one mile of oil and gas operations at the time of application with Broomfield.

Action Step OG-13.2: Require housing developers and sellers, through regulations and MOUs, consistent with applicable laws, to provide notice to all prospective home purchasers (prior to execution of a purchase agreement) of spacing applications that have been submitted to or approved by the COGCC or negotiated new drilling areas within one (1) mile of a residence.

Goal OGD: Risk Management

Minimize risks associated with oil and gas development and require operators to have Comprehensive Risk Management and Emergency Response Plans in place prior to the start of site construction.

EMERGENCY RESPONSE

Policy OG-14: Maximize preparedness for emergency events related to oil and gas development through emergency response planning.

Action Step OG-14.1: Require detailed emergency response plans that include spill clean-up methods within facility areas, handling of all emergency events, and names and 24-hour contact information for all operators and subcontractors, in a form acceptable to the North Metro Fire Rescue District (NMFRD) and Broomfield, prior to drilling.

Action Step OG-14.2: Secure in writing operator fiscal responsibility certification of covering all costs associated with responding to and remediating impacts of an emergency event as required by federal, state, and local laws



Action Step OG-14.3: Require operators to pay for additional on-site and regional specialized equipment and supplies necessary to respond to any emergency incident at their facilities.

Action Step OG-14.4: Require operators to cooperate and train with Broomfield and NMFRD emergency responders as requested.

Action Step OG-14.5: Require operators to immediately notify Broomfield, surrounding communities, and any nearby schools of an emergency event and develop emergency protocols with the NMFRD, Broomfield's Department of Public Health and Human Services, and the Broomfield Police Department.

Action Step OG-14.6: Develop local and regional communication plans and technologies for community notification in the event of an emergency, like a signup alert for texting or reverse 911 cell phone calling.

Action Step OG-14.7: Develop community notification lists, including schools, healthcare facilities, and emergency responders in the event of an emergency.

Action Step OG-14.8: Require operator to interact with an on-going Citizen Advisory Panel and to provide them with quarterly updates of current and planned site activities.

Action Step OG-14.9: Require operator to provide to Broomfield safety and security protocols for the facility site.

Action Step OG-14.10: Require operator to provide a copy of any Spill Prevention, Control, and Countermeasures (SPCC) plan to Broomfield if required by USEPA rules and a copy of a listing of hazardous chemicals used on site if required by USEPA CERCLA Community Right to Know rules.

Action Step OG-14.11: Require operator to maintain onsite storage of absorption boom and granulated materials for ready deployment in case of leaks. Notify first responders of the location of said materials.

RISK MANAGEMENT PLAN

Policy OG-15: Anticipate potential risks associated with oil and gas development, particularly in and around other land uses, and maintain appropriate response plans in place.

Action Step OG-15.1: Require a site-specific detailed quantitative and qualitative risk management plan from operators, prior to drilling, and subject to approval by Broomfield that includes but is not limited to:

- Risk identification;
- Qualitative and quantitative risk assessment;
- Methods of risk avoidance and control that implement techniques to prevent the accident/loss and reduce the impact or cost of loss after it occurs; and
- Risk transfer through contract, insurance, bonding, etc.

Action Step OG-15.2: Require all operators to report all environmental and safety site incidents to Broomfield, including but not limited to spills over one gallon, fires, explosions, blowouts, and injuries.

Action Step OG-15.3: Develop and implement a plan to inspect all plugged and abandoned wells for leaks and well integrity.

INSURANCE & BONDING

Policy OG-16: Set contractual requirements for insurance and bonding by operators that are site specific.

Action Step OG-16.1: Develop with the assistance of an independent risk management consultant familiar with the oil and gas industry updated insurance and bonding requirements.

Action Step OG-16.2: Develop letter of credit, insurance, and bonding requirements to cover landscape maintenance over the life of the oil and gas facility, the plugging and abandoning of wells, and reclamation of the site.

Action Step OG-16.3: Require operator to provide disclosure documents.

Goal OGD: Monitoring and Inspection Program

Establish and continuously improve a Broomfield centric oil and gas facility monitoring and inspection program.

Policy OG-17: Use all methods available to monitor and inspect oil and gas operations in all phases of development and operation for the protection of public health, safety, welfare, and the environment.

Action Step OG-17.1: Use intergovernmental training and cooperation where necessary to improve the inspection program.

Action Step OG-17.2: Require operator inspections on a routine and documented basis according to established written protocols.

Action Step OG-17.3: Broomfield's full time inspector is to inspect well sites as frequently as possible and to be present, as determined necessary, during key operations like drilling, hydraulic fracturing, flowback, and plugging and abandoning of wells.

Action Step OG-17.4: Provide training and equipment to Broomfield's inspector as necessary.

Action Step OG-17.5: Require operator to file drilling and completion reports with Broomfield.

SETBACKS

Policy OG-18: Use all methods available to pursue oil and gas facility and pipeline setbacks that are protective of public health, safety, welfare, and the environment, and appropriate for oil and gas development in an urban area.

Action Step OG-18.1: Require all new surface developments to be no closer than 1,320 feet to an existing oil or gas well, unless there is written notice and informed consent from each individual surface property purchaser and owner.

Action Step OG-18.2: Require all new oil and gas development wells to be no closer than 1,320 feet from existing or platted high occupancy buildings, hospitals, playgrounds and athletics facilities, and school sites.

Action Step OG-18.3: Require all new oil and gas development wells to be no closer than 1,320 feet to water bodies at design capacity, unless a variance is granted based upon the inclusion of specific safety requirements during site construction, drilling, completions, and operations.

Action Step OG-18.4: Encourage new oil and gas development pipelines to be in public rights of way and no closer than 5 feet from property lines.

Action Step OG-18.5: Require all new oil and gas development wells to comply with buffer zone requirements. Taking into account the number of wells per pad and the number of existing or platted residences within 3,000 feet of such well pad, the following buffer zones shall apply:

Level 1: One well: Buffer zone of 500 feet

Level 2: 2-8 wells per pad, buffer zone of 750 feet, unless there are more than 100 homes within 3,000 feet, in which case it moves to 1000 feet

Level 3: 9-17 wells per pad, buffer zone of 1000 feet, unless there are more than 125 homes within 3,000 feet, in which case it moves to 1,320 feet

Level 4: 18+ wells per pad, buffer zone of 1320 feet

For the purposes of identifying the appropriate buffer zone, if the separation distance between the two nearest wellheads on two different well pads is less than 500 feet, the total number of wells on the two well pads will be treated as if those were located on one well pad. The separation is 500 feet between two nearest wellheads on two pads. If multiple pads are expected to impact a residence, Broomfield will work with the operator to modify siting.

If one or more occupied building(s) is outside the Buffer Zone of two or more well pads for that level of Buffer Zone, but within the Buffer Zone of the next Level, and the combined number of wells for such pads would place the well pads in a higher level of Buffer Zone, then for these occupied building(s) the multiple well pads shall be treated as if the well pads are combined and shall be required to meet the higher Buffer Zone level based upon the total number of well on all such well pads.

Action Step OG-18.6: Broomfield will work with the State of Colorado, other Colorado counties and municipalities to complete a comprehensive quantitative risk assessment(QRA) of oil and gas operations within an urban environment in close proximity to people, schools, hospitals, recreation areas, etc. This QRA focus should be on establishing appropriate setbacks for oil and gas operations.

Action Step OG-18.7: Broomfield should work with other local governments to pursue a rule-making at COGCC based upon consideration of the buffer zone and other proposals in this section.



ENFORCEMENT

Policy OG 19: Use all methods available to enforce the provisions of this Comprehensive Plan.

Action Step OG 19.1: In order to implement the guidelines or regulations that result from this document, Broomfield will ensure that the local conditions of local use permits become conditions of the State COGCC permits.

Action Step OG 19.2: In the event of a violation, notice will be sent to the State to address. Broomfield will also have the option to revoke an Operator's permit to operate if the violation is not addressed immediately. Ultimately, Broomfield will have the authority to request a legal shutdown if the violation is not rectified.

ACKNOWLEDGEMENT

Oil and Gas Comprehensive Plan Update Committee Members:

Ann Byers

Myron Fedak

Patrick Freeman

Brad Gibson

Mark Hopkins

Sarah Mann

Robert Pearson

Patrick Quinn

Steve Reynolds

Tom Silvers

Susan Speece

Tom Yeager

Lois Vanderkooi (1st Alternate)

David Taylor (2nd Alternate)