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# Land-Use Regulations and Hydraulic Fracturing

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# 1. Fracking

- Extracting gas from shale rock beneath earth's surface - accomplished by injecting millions of gallons of water at high pressure to break up surrounding formation - water is augmented with additives, some hazardous.



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## 2. Fracking concerns

- A. Emergency services demands - firefighting, health care, police, etc.
- B. Contamination of water supply with additives.
- C. Flowback water to well can contaminate soil, surface water, groundwater.
- D. Well casings can leak, allowing chemicals to enter aquifers.



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# Fracking concerns (continued)

- E. Clearing approximately five acres for deep wells.
- F. Flowback water is trucked to injection wells - impact on local roads.
- G. Location of injection wells for flowback water.
- H. Flowback water can be contained in onsite pits for evaporation - regulation.



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# Fracking concerns (continued)

- I. Noise and odor from development wells.
- J. Accommodating large, transient work force, including families, which could have school-age children.
- K. Location of pipelines - for natural gas and possibly for flowback water.
- L. Reclamation of property after wells close.



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# Fracking concerns (continued)

- M. Zoning issues - setbacks, lighting, signage, hours of operation, site plan review.
- N. Stormwater discharge regulation.
- O. Noise regulation.
- P. Environmental concerns.



### 3. MCL 125.3205; Michigan Zoning Enabling Act, Section 205

- A. Subsection (2): County or township shall not regulate drilling, completion, or operation of oil or gas wells.

[This is the exclusive jurisdiction of the MDEQ - Supervisor of Wells]

- B. Subsection (3): Local ordinance shall not prevent the extraction, by mining, of valuable natural resources from any property unless very serious consequences would result.



# MCL 125.3205; Michigan Zoning Enabling Act, Section 205 (continued)

- C. Subsection (5): Defines very serious consequences.
- D. Subsection (6): Subsections (3) to (5) don't limit local unit's reasonable regulation of hours of operation, blasting hours, noise levels, dust control measures, and traffic.
- E. Subsections (3) through (6) do **not** change the preemption established by Subsection (2).





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4. Alcona County v Wolverine  
Environmental Production, Inc.,  
233 Mich App 238 (1998)

- Counties cannot require well owners and operators to obtain additional permits for wellheads, access roads, pipelines, or processing facilities, if the well owners and operators have a permit from the Supervisor of Wells and are in compliance with the Sediment Act portion of the NREPA (MCL 324.9112).



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## 5. However: Addison Township v Gout, 435 Mich 809 (1990)

- Michigan Supreme Court was not convinced that the Michigan legislature intended to give the Supervisor of Wells regulatory control over the entire oil and gas industry. The township could exercise control over processing plants and pipelines.



## 6. Fracking - Two types of activities

- A. Exploration, drilling, and development at the well site. Townships and counties are largely preempted.
  - i. Includes regulating the drilling, completing, operating, abandoning, and locating oil and gas wells.
  - ii. Michigan Zoning Enabling Act preemption pertains to townships and counties.
  - iii. NREPA preemption - may include cities and villages as well.



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# Fracking - Two types of activities (continued)

- B. Processing, refining, and transporting product - happens at other locations – at some point preemption of local units ends and local units can regulate.



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## 7. Clean Air Act, Safe Drinking Water Act, and Clean Water Act

- Natural gas and oil industry is exempt.



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## 8. The Great Lakes Compact

- Prohibits local communities from regulating large quantity groundwater withdrawals.



# 9. So what can be done at the local level?



## 10. Moratoria can be used

- A. Cautious approach - amend zoning ordinance.
- B. Another effective approach - by resolution of governing body - instruct zoning administrator to not issue required permits for term of moratorium.
- C. Generally upheld by courts **if**:
  - i. For a specified, reasonable period of time;
  - ii. For a specific, legitimate purpose (e.g., conduct a study, determine how to regulate).





# 11. Truck route ordinance

- A. Bringing an average horizontal, hydraulically fractured oil and gas well into production requires between 320 and 1,365 truck trips; **then** production begins.
- B. Authorized by general police powers of local units.
- C. Per MCL 257.726.
- D. Cannot apply to State trunk lines.
- E. Must be reasonable - applies to all other persons and businesses also.



# Truck route ordinance (continued)

- F. Townships can work with county road commissions - establish security bond/ performance guarantee for road damage done by repetitive trips by overweight vehicles.
- G. Arlington, Texas requires payment of road damage fee based on road damage assessment formula.
- H. Garfield County, Colorado, in 2008, reduced trucking usage of roads by "closed-loop" system of aboveground water pipelines.



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12. Pipelines located in rights-of-way or other public places - require consent of local unit of government

- A. Article 7, Section 29 of the Michigan Constitution.
- B. Consent cannot be unreasonably withheld.



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# 13. Regulation of pits holding drilling water containing chemicals and fracking fluids (flowback water)

- A. If water not trucked away, may be left in a pit to evaporate.
- B. Require steel linings in pits, rather than plastic linings.



# 14. Injection wells for flowback water

- A. Dart Energy v Iosco Township, 206 Mich App 311 (1994): Townships and counties can regulate surface handling, chemical disclosure, spill conditions (bonds or indemnities); cannot regulate an oil or gas well converted to a brine injection well - exclusively regulated by DNR per MCL 125.3205(2).



# Injection wells for flowback water (continued)

- B. Injection well - defined by Mich Admin Code R 324.102(x) - does not include a fracking well; Hughes, et al. v DEQ, Court of Appeals, 2-11-14 (unpublished).
  
- C. Caddo Parish, Louisiana limited the location of salt water disposal wells to industrial zoned districts, and prohibited them within 500 feet of a protected use (dwelling, church, commercial building, public building, hospital, school, or public park).



## 15. Reclamation bonds

- A. Wells are temporary uses of land.
- B. Must protect land for ultimate end use.
- C. Must plug abandoned wells - require reclamation bond.
  - i. \$15,000.00 to \$20,000.00 per well if no contamination.
  - ii. \$100,000.00 or more per well if there is contamination.



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# Reclamation bonds (continued)

## D. Pine Haven, Wyoming:

- i. \$200,000.00 minimum surety bond.
- ii. \$1,000,000.00 minimum liability insurance for hazardous accidents.





## 16. General zoning regulations

- A. Mandatory setbacks of wells; established in zoning ordinance.
  - i. Schools;
  - ii. Dwellings;
  - iii. Roads;
  - iv. Streams.
  
- B. Require site plan which includes locations of facilities, pipelines, truck routes, storage facilities, water lines, water handling areas, offsite and onsite disposal areas, signage.



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# 17. Stormwater discharge regulation

- A. Federal government has exempted gas drilling from stormwater regulation.
  
- B. But Caddo Parrish, Louisiana prohibited the discharge of anything generated at a well site into any public facility or any body of water.



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## 18. Regulate noise levels

- A. Per standards in a zoning ordinance or a general police powers ordinance.
  
- B. Can't be just directed at oil and gas industry; must be generally applicable.



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# 19. Regulate hours of operation

- A. Regulated activities: road work, site preparation, deliveries, general well servicing.
  
- B. Exempt activities: drilling, completion of well work, reworking operations.



## 20. Regulate earth change activities

- A. MCL 324.9112.
- B. Definition: "a human-made change in the natural cover or topography of land, including cut and fill activities, which may result in or contribute to soil erosion or sedimentation of the waters of the state."



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21. Regulate soil erosion and sedimentation control on public and private earth changes



## 22. General regulation of environmental impacts

- A. Air, water, natural resources, human health, public facilities, parks, etc.
- B. Part 17, NREPA, 324.1701, et seq., prevent or minimize environmental degradation.
- C. Ray v Mason County Drain Commissioner, 393 Mich 294, 305 (1975)



## 23. Air pollution regulation

- A. During well drilling - emissions from target layer or shallower layers.
- B. Water flowback in open pits - volatile compounds can evaporate into the air.
- C. Pollutants: particulate matter, methane, variety of other volatile organic compounds (VOCs).





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# Air pollution regulation (continued)

- D. Increased setbacks can reduce risks.
  - i. May not be totally effective.
  - ii. Won't protect workers onsite.
  
- E. But further regulation likely will require State or Federal cooperation.



## 24. Usage of water resources

- A. Hydraulic fracturing fluids - pumped into wells at high pressure to create rock fractures - 99 percent water.
  
- B. Latest United States Geological Survey ("USGS") in 2005 - all forms of mining accounts for one percent of country's total water use.
  - i. Farmland irrigation - 31 percent.
  - ii. Thermoelectric power generation - 49 percent.
  - iii. EPA: hydraulic fracturing operations may use 70 to 140 billion gallons of water annually.



# Usage of water resources (continued)

- C. Local units have limited authority.
- D. Same is true in Louisiana.
  - i. But Caddo Parish still paid for wells located throughout its boundaries - purpose of wells to monitor level of aquifer and provide reports.
  - ii. Information provided to state and industry to help safeguard the local aquifer.



## 25. Groundwater aquifer contamination

- A. Improperly constructed wells.
- B. Migration of fracturing fluid.
- C. Water wells at the well site - in Michigan are exempt from local health departments.
  - i. Rule 324.403: subject to the Office of Oil, Gas, and Minerals ("OOGM") of DEQ.
  - ii. But local health department can have an impact.



# Groundwater aquifer contamination (continued)

- D. David's Acres well site in Ogemaw County, Michigan.
  - i. Not constructed per MCL 333.12701, et seq.
  - ii. But not discovered by OOGM.
  - iii. Grouting was inadequate.
  - iv. Local health officer convinced DEQ to require improvement.



## 26. Regulate temporary employee housing

- A. Can help avoid excess demand and price spikes when employees come, followed by lack of demand and price crashes when employees leave.
- B. Temporary housing - can vary - mobile homes - modular homes - campgrounds, etc.
- C. Easier for employers to control behavior of employees - misbehavior can lead to expulsion from housing and termination from employment.



# Regulate temporary employee housing (continued)

- D. Need adequate regulation - overcrowding, fire hazards, lack of adequate clean water or waste disposal, etc.
- E. Local unit should regulate under zoning ordinance.
- F. If a building for housing is constructed, best to design one which can be converted to another use when employees leave.



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## 27. Consider updates to master plan and ordinances

- A. Population boom and development demand - local unit will want to adequately plan and regulate.
- B. Greater law enforcement and emergency services needed?





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## 28. Site access regulation

- Prohibit access to well sites across public property, including public roads, without prior consent of local unit of government.



## 29. Floodplain regulation

- A. Any drilling and related activities within a floodplain designated by FEMA must comply with the local unit's responsibilities to FEMA to protect the floodplain.
  
- B. Floodplains - prone to flooding; a flood in an area using fracking chemicals is a significant threat to public health.



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## 30. Dust, vibration, odors

- A. Local unit can establish best practices from industry standards to minimize these nuisances.
  
- B. Operators can be required to incorporate reasonable technological improvements in order to continue to satisfy these industry standards in the future.



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## 31. Lighting

- A. Prohibit well site lighting from shining directly on public roads, adjacent property, or property within 300 feet.
- B. Lighting should be directed downward and internally.
- C. Can be required as part of the site plan review.



## 32. Abatement of exhaust fumes

- All internal combustion engines and compressors on well drill sites should be equipped with exhaust mufflers - designed to suppress noise, disruptive vibrations, and escape of gases.



## 33. Incident reporting

- Any incident involving fire, smoke, or release of flammable or hazardous materials required to be immediately reported to local law enforcement agency and local fire department.
- Immediate notification helps local unit better respond to citizen questions and concerns



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## 34. Aesthetics and screening requirements

- A. Require drill sites to be free of high grass, weeds, and trash.
- B. Impose fencing and screening requirements.
- C. Regulate storage of pipe, equipment, or other materials on a drill site.



## 35. Notifications to townships

- Previously, only county clerks and townships with a population over 70,000 were notified of oil and gas permit applications made to DEQ.
- Now, DEQ has agreed with MTA to notify any township when an application is received.
- Notice provides a township an opportunity to comment on the application.
- DEQ must process a completed application with 50 days.





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## 36. Sample ordinances

- A. Orangeville Township Truck Route and Pipeline Ordinance.
  
- B. City of Cadillac - Chapter 24 of Code of Ordinances, Oil, Gas and Mineral Wells.



## 37. Proposed legislation in Michigan

- A. House Bill 4061: Would require hydraulic fracturing companies to publicly **disclose** all chemicals and additives in their fracturing fluid; would require companies to **evaluate** if there are alternative treatments that would pose less potential risk to public health.
  
- B. House Bill 4070: Would require fracking operations to submit to Michigan's Water Withdrawal Assessment Tool ("WWAT") and would require disclosure of chemicals used 24 hours before drilling begins.
  
- C. Under State law: Withdrawals for oil and gas operations exempted from WWAT.



# Proposed legislation in Michigan (continued)

- D. May 2011: MDEQ issued order requiring use of WWAT for high volume fracking permits (average 100,000 cumulative water gallons over 30 days, or use of 100,000 gallons of hydraulic fracturing fluid).
  - i. NOTE: Safe Drinking Water Act - EPA regulates underground injection of chemicals, but the 2005 Halliburton Loophole exempts chemicals used for fracking unless they contain diesel.
    - a. MDEQ requires only post-hydraulic fracturing disclosure of chemicals in quantities high enough to require Material Safety Data Sheets.



# Proposed legislation in Michigan (continued)

- ii. NOTE: WWAT is said to be an insufficient tool to gauge adverse impact of large water withdrawal.
  - a. The program only evaluates the probable effect on temperature and flowrate of streams or rivers and whether it will change sufficiently to impact fish.
  - b. The program creates predictions for the entire State based on extrapolated data derived from 148 actual monitoring stations. The predictions are not checked for accuracy.



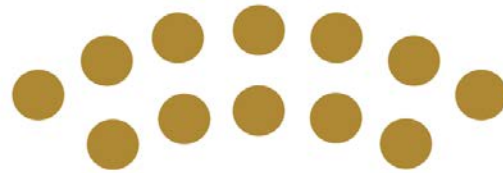
# Proposed legislation in Michigan (continued)

- c. There is no ongoing or consistent monitoring to determine if the tool is accurate as to the assessed impact on a stream or the fish that live there.
- d. The cumulative effect of existing large quantity water withdrawals for public wells, irrigation, or other mining activities is not considered or calculated.
- e. The individual characteristics of the groundwater aquifer from which the water will be withdrawn is not a factor in the program.
- f. Any existing drought conditions are not considered.



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THANK  
YOU



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