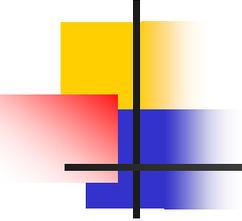


# Regulation of Geothermal Resources in Colorado

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April 8, 2008

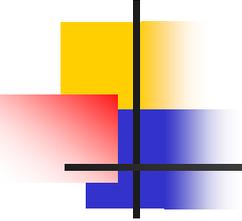




# Regulation of Geothermal Resources in Colorado

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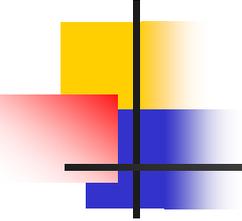
- Derives from:
  - State Statute
  - Promulgated Rules



# Regulation of Geothermal Resources in Colorado

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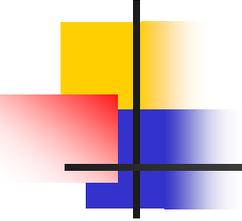
- Statutes 37-90.5-102 – 108



# Regulation of Geothermal Resources in Colorado

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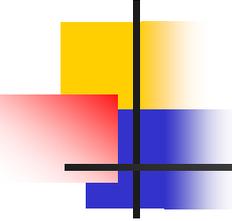
- Statutes 37-90.5-102
  - Intent of statute
  - Objectives
  - Prior appropriation system
    - Applies, but should be modified



# Regulation of Geothermal Resources in Colorado

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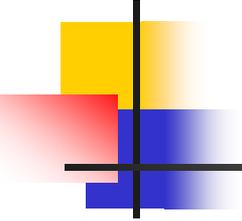
- Statutes 37-90.5-103 – Definitions
  - “Geothermal fluid”
  - “Geothermal resource”
  - “Hot dry rock”



# Regulation of Geothermal Resources in Colorado

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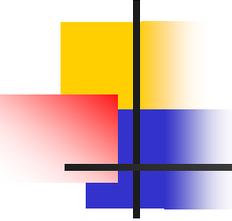
- Statutes 37-90.5-103 – Definitions
  - (2) "Geothermal fluid" means naturally occurring groundwater, brines, vapor, and steam associated with a geothermal resource.



# Regulation of Geothermal Resources in Colorado

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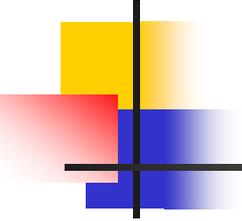
- Statutes 37-90.5-103 – Definitions
  - “(3) "Geothermal resource" means the natural heat of the earth and includes:
    - (a) The energy that may be extracted from that natural heat;
    - (b) The material medium used to extract the energy from a geothermal resource; and
    - (c) Geothermal by-products.



# Regulation of Geothermal Resources in Colorado

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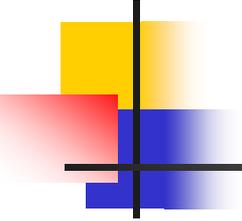
- Statutes 37-90.5-103 – Definitions
  - (4) "Hot dry rock" means a geothermal resource which lacks sufficient geothermal fluid to transport commercial amounts of energy to the surface and which is not in association with an economically useful groundwater resource



# Regulation of Geothermal Resources in Colorado

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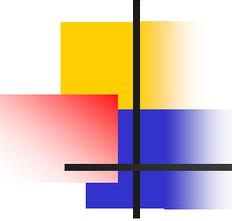
- Statutes 37-90.5-104 – Ownership
  - If “geothermal fluid” is tributary
    - Public resource
    - No property right results from land ownership
    - Pre-1983 rights acknowledged
  - “Hot dry rock”
    - Right originates from land ownership
    - Right can be severed, reserved, transferred



# Regulation of Geothermal Resources in Colorado

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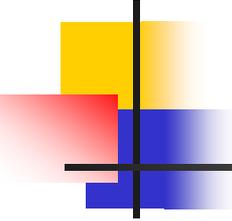
- Statutes 37-90.5-105 – Access
  - “Hot dry rock”
    - *Provides for access if the right is severed from the land*



# Regulation of Geothermal Resources in Colorado

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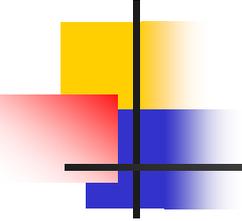
- Statutes 37-90.5-106 – **Drilling** Permits
  - Geothermal well construction
    - Requires a permit from the state engineer
    - State engineer shall adopt rules
      - Well construction
      - Permit fees and processing
    - Coordination with WQCC
    - Conditional coordination with COGCC



# Regulation of Geothermal Resources in Colorado

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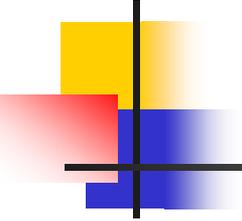
- Statutes 37-90.5-107 – **Water Well** Permits
  - Use of water is a beneficial use
  - (2)(a) – Production of “geothermal fluid” from a well; permit from state engineer is required
    - Does not apply to “nondiversionary” methods
    - Waived if “diversionary” method is “nonconsumptive”



# Regulation of Geothermal Resources in Colorado

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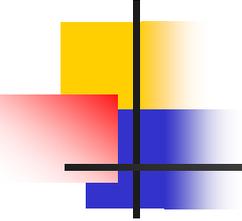
- Statutes 37-90.5-107 – **Water Well** Permits
  - State engineer must find:
    - No material injury to a water right or a geothermal right, or
    - Applicant can offset injury, or
    - Applicant can offer replacement water
  - If geothermal fluid is nontributary, its appropriation shall be in accordance with 37-90-137(4) (land area appropriation, no injury)
  - The water right from a permitted appropriation is for geothermal energy
  - Provisions of articles 90 and 92 of title 37 apply
  - Injury includes any diminution or alteration of quantity, temperature, or quality of a right



# Regulation of Geothermal Resources in Colorado

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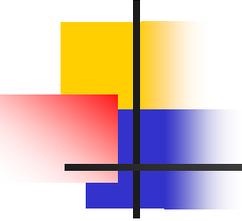
- Statutes 37-90.5-108 – Management Districts
  - State engineer may adopt procedures for the formation of management districts
  - State engineer authority
    - Well spacing, production rates, quantity of geothermal fluid, adopt plan for use
  - State engineer may delegate authority



# Regulation of Geothermal Resources in Colorado

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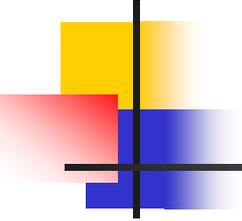
- Rules
  - “Geothermal Rules” – 2 CCR 402-10
  - Effective September 30, 2004



# Regulation of Geothermal Resources in Colorado

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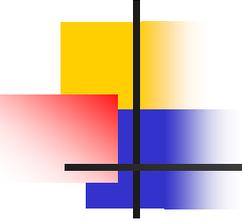
- Geothermal Rules – Rule 3, Scope and Purpose
  - 3.2 Permitting and construction of geothermal wells
  - 3.3 Standards for construction, testing, and operation of wells; and reinjection of geothermal fluids



# Regulation of Geothermal Resources in Colorado

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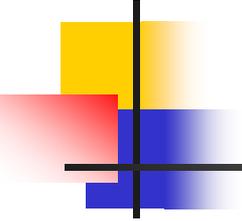
- Rules – Rule 4, Definitions
  - Definitions for specific terms are adopted
    - “Geothermal exchange system”
    - “Geothermal well”
  - Well types
  - Other terms



# Regulation of Geothermal Resources in Colorado

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- Rules – Rule 6, Permit requirements
  - Permit requirements
    - Notice
    - Fees
    - Operational constraints
  - Contractor certification



# Regulation of Geothermal Resources in Colorado

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- Rules – Rule 7, Contractor Certification
- Rules – Rules 8 – 10, Construction Standards
- Rules – Rule 11, Plugging standards
- Rules – Rule 12, Recording