Update on NYS Geothermal Drilling Regulations

Moderator: **Kevin Moravec – *President – Barney Moravec, Inc.***

Speakers: **Carrie Friello – *NYS DEC – Division of Mineral Resources***

Dave Hermantin – *Brightcore Energy*

NEW YORK STATE | Department of Environmental Conservation

Division of Mineral Resources Update: Regulation of Closed Loop Geothermal Boreholes and Closed Loop Stratigraphic Wells Drilled Deeper Than 500 Feet

October 23, 2024
NY-Geo Conference

Today's Topics

- Program Policy DMN-3: Relief from Requirements to Furnish and Maintain Financial Security for Closed Loop Stratigraphic Test Wells Deeper than 500 Feet
- Rule Making Process: Closed loop geothermal boreholes and closed loop stratigraphic test wells deeper than 500 feet
- Drilling Waste Handling
- Closed Loop Geothermal Completion Reports

Terminology – What is the difference?

Closed Loop Geothermal Borehole

- Intended for geothermal heating/cooling
- No ECL Article 23 permit required until DEC promulgates regulations

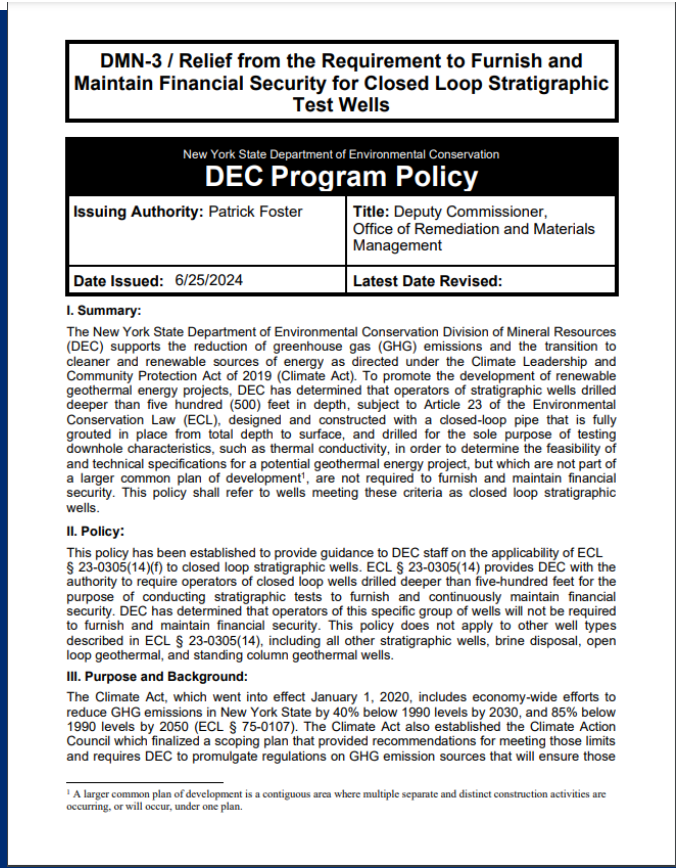
Closed Loop Stratigraphic Well

- Intended to determine feasibility or technical specifications for a potential geothermal project
- Not part of a larger common plan of development
- ECL Article 23 permit required

Program Policy DMN-3

Program Policy DMN-3

- Finalized in July 2024
- Applies to closed loop stratigraphic test wells drilled deeper than 500 feet
- Establishes guidance to DEC staff regarding the applicability of ECL §23-0305(14)(f)
- Eliminates the requirement to furnish and maintain financial security



DMN-3 / Relief from the Requirement to Furnish and Maintain Financial Security for Closed Loop Stratigraphic Test Wells

New York State Department of Environmental Conservation
DEC Program Policy

Issuing Authority: Patrick Foster	**Title:** Deputy Commissioner, Office of Remediation and Materials Management
Date Issued: 6/25/2024	**Latest Date Revised:**

I. Summary:

The New York State Department of Environmental Conservation Division of Mineral Resources (DEC) supports the reduction of greenhouse gas (GHG) emissions and the transition to cleaner and renewable sources of energy as directed under the Climate Leadership and Community Protection Act of 2019 (Climate Act). To promote the development of renewable geothermal energy projects, DEC has determined that operators of stratigraphic wells drilled deeper than five hundred (500) feet in depth, subject to Article 23 of the Environmental Conservation Law (ECL), designed and constructed with a closed-loop pipe that is fully grouted in place from total depth to surface, and drilled for the sole purpose of testing downhole characteristics, such as thermal conductivity, in order to determine the feasibility of and technical specifications for a potential geothermal energy project, but which are not part of a larger common plan of development[1], are not required to furnish and maintain financial security. This policy shall refer to wells meeting these criteria as closed loop stratigraphic wells.

II. Policy:

This policy has been established to provide guidance to DEC staff on the applicability of ECL § 23-0305(14)(f) to closed loop stratigraphic wells. ECL § 23-0305(14) provides DEC with the authority to require operators of closed loop wells drilled deeper than five-hundred feet for the purpose of conducting stratigraphic tests to furnish and continuously maintain financial security. DEC has determined that operators of this specific group of wells will not be required to furnish and maintain financial security. This policy does not apply to other well types described in ECL § 23-0305(14), including all other stratigraphic wells, brine disposal, open loop geothermal, and standing column geothermal wells.

III. Purpose and Background:

The Climate Act, which went into effect January 1, 2020, includes economy-wide efforts to reduce GHG emissions in New York State by 40% below 1990 levels by 2030, and 85% below 1990 levels by 2050 (ECL § 75-0107). The Climate Act also established the Climate Action Council which finalized a scoping plan that provided recommendations for meeting those limits and requires DEC to promulgate regulations on GHG emission sources that will ensure those

[1] A larger common plan of development is a contiguous area where multiple separate and distinct construction activities are occurring, or will occur, under one plan.

https://dec.ny.gov/sites/default/files/2024-07/dmn3-fs-strat.pdf

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Rule Making Process

Rule Making Goals

- Protect public health and safety
- Protect groundwater, surface water, and natural resources while accounting for variable geologic conditions
- Promulgate regulations as expeditiously as possible while ensuring an efficient permitting process
  - Reduce administrative burdens
  - Reduce costs where possible
  - Provide clear, consistent, transparent requirements

Standards and Resources

ANSI/CSA/IGSHPA C448 Series-16 Standards

Closed-Loop Geothermal Heat Pump Systems Design and Installation Standards

Guidelines for the Construction of Loop Wells for Vertical Closed Loop Ground Source Heat Pump Systems

Rule Making Proposal

Draft express terms focus on drilling and installation of closed loop geothermal boreholes and closed loop stratigraphic wells greater than 500 feet in depth

Revised:
Part 550 General

+

New:
Part 561
Closed Loop
Geothermal Wells

+

New:
Part 563
Stratigraphic Wells
(focus on closed loop)

The express terms **do not** cover geothermal boreholes shallower than 500 feet

Rule Making Components

- Permit application requirements
- Qualified Contractor registration
- Appropriate borehole setbacks and surface restrictions
- Borehole design, drilling, and installation requirements
- Reporting (i.e., completion, decommissioning)
- Decommissioning requirements

The requirements under consideration, in combination with the permitting program, are consistent with, but more comprehensive than, the voluntary best management practices issued by DEC to NY-GEO in October 2023

Qualified Contractor

- Permits issued to a Qualified Contractor
- Qualified Contractor: must hold a valid and current certification or accreditation related to the drilling or decommissioning of closed loop boreholes from an approved organization or association
- Certifications/accreditations under consideration:

Organization	Approved Certification/Accreditation
National Ground Water Association	Geothermal Driller (CVCLD)
IGSHPA	Accredited Installer (AI)
IGSHPA	Certified GeoExchange Designer (CGD)

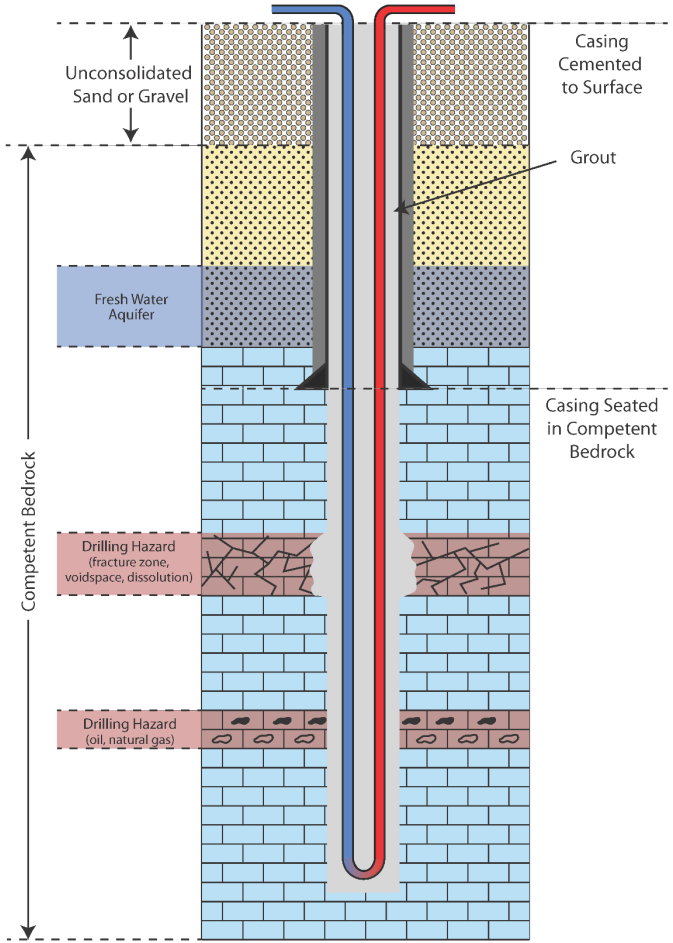
Design and Construction Considerations

- NYS's diverse geology - many areas have increased risk of encountering geologic hazards such as natural gas, oil, or brine in the subsurface
- Borehole drilling, design, and construction standards, including the installation of cemented casing in areas with geologic hazards, are critical to protect aquifers, public safety and the environment

Casing, Cementing, and Grouting Requirements

- The installation of permanent casing may be required if drilling hazards are identified = site-specific determinations
  - If required, all permanent casing must be cemented*
  - Casing and cement must conform to API/ASTM standards*
- Thermally enhanced grouts must be bentonite or cement-based*
  - Grout must be able to maintain the thermal, hydrological, and mechanical properties over the lifetime of the borehole

*Unless otherwise approved by the department = flexibility



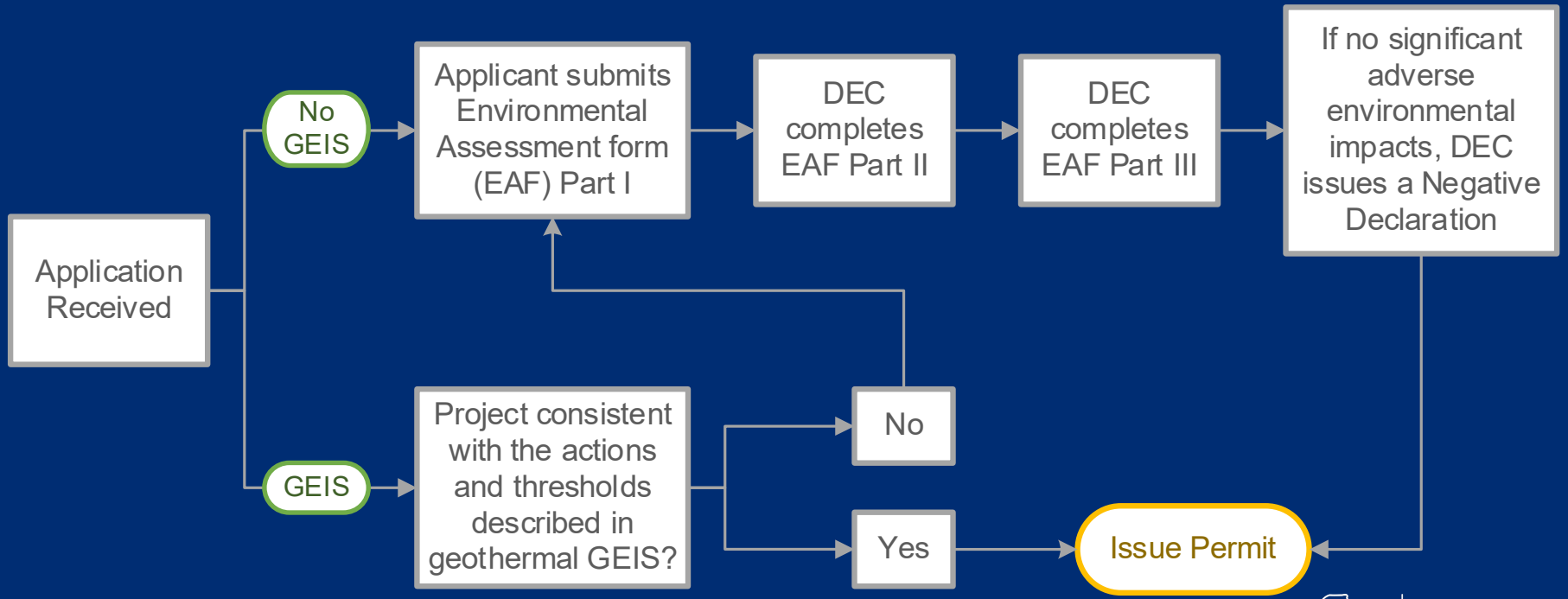
Cost Reduction and Efficiency Measures

- No Financial Security
- No Annual Reporting
- One permit issued per project (single or multi-borehole)
- Nominal project-based application fees (Federal, State, and local agency exemption)
- Streamlined application, completion and decommission report forms specific to closed loop projects
- Development of a Generic Environmental Impact Statement (GEIS) specific to closed loop boreholes/wells = streamlines permit issuance

GEIS Specific to Closed Loop Boreholes/Wells

- Developed concurrent with rule making – Fulfills State Environmental Quality Review Act (SEQR) requirements for the rule making and permitting process
- SEQR requires agencies to determine if actions they approve or permit may have a significant impact on the environment; also applies to rule makings, policies, etc.
- GEIS – Evaluates separate actions having common impacts
- The preparation of a GEIS now will ultimately reduce administrative burden on industry and expedite DEC permitting process

GEIS Permitting Efficiencies



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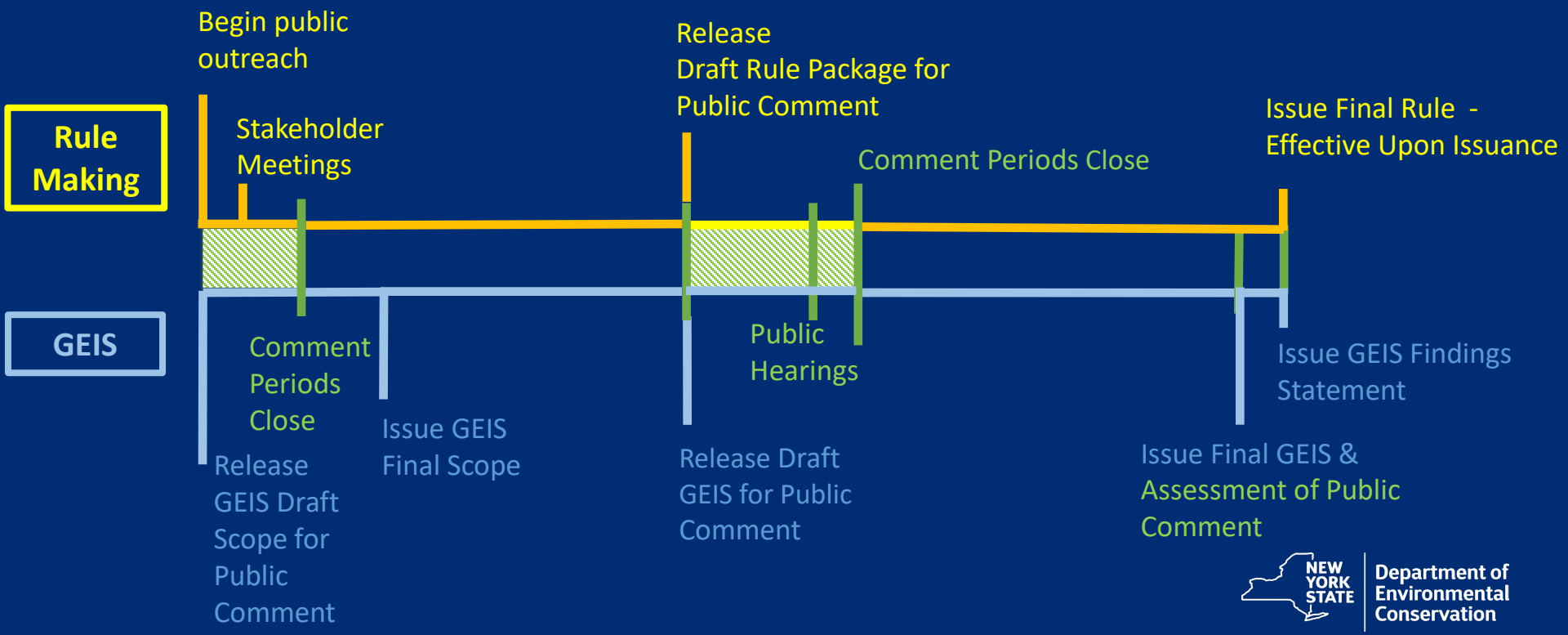
Concurrent Rule Making & GEIS Process Milestones



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Drilling Waste Handling

Drilling Waste Handling

Management of drilling wastes is regulated under DEC's Solid Waste Regulations, 6 NYCRR Parts 360-364

Division of Materials Management, Bureau of Solid Waste Management
Kathleen Prather, P.E. - Kathleen.Prather@dec.ny.gov

Discharges are regulated under DEC's State Pollution Discharge Elimination System (SPDES) Program, 6 NYCRR Part 750

Division of Water, Bureau of Water Permits
Peter Maier, P.E. – Peter.Maier@dec.ny.gov

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Closed Loop Geothermal Completion Reports

Closed Loop Borehole Completion Reports – Request for Voluntary Submission

If you've drilled a closed loop geothermal borehole deeper than 500 feet since October 2023, please submit a voluntary Completion Report to NY-Geo or to NYSDEC.

https://www.ny-geo.org/closed-loop-borehole-page/

This will lend continuity to the recordkeeping of these deep boreholes prior to the new regulations taking effect.

Thank You

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State Geothermal Regulations in States Adjacent to New York

Connecticut
Massachusetts
New Jersey

Dave Hermantin – Brightcore Energy

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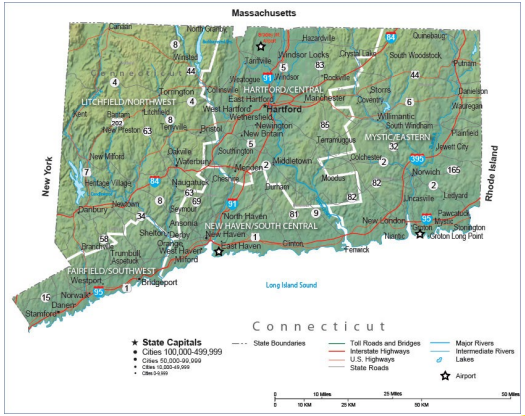
Connecticut

- No depth trigger for special permit.
- Complex Licensing through Dept. Consumer Protection licensing.
- Adopted new regulations for setbacks in late 2023.
- CT Well driller board requested set back comply with new regulations. Concern is infiltration from septic systems in water wells.
- Drilling in urban areas makes setback distances challenging.
- Leniency and variances can be requested.

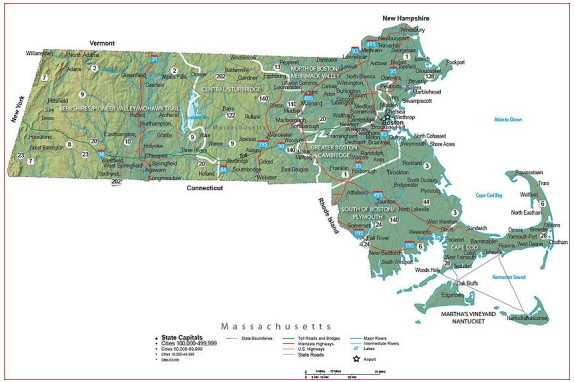
Municipalities and Towns can adopt State Regulations or establish more strict local regulations



Massachusetts

- No depth trigger for special permit.
- Mass guidelines established 2012 .
- Closed loop systems are treated like water wells.
- Hardships can receive a variance.
- NPDES or BWS drain (up to 6 months) unless if you can get an emergency permit or to the ground if it stays on site.

Municipalities and Towns can adopt State Regulations or establish more strict local regulations.



New Jersey

- No depth trigger for special permit.
- Special grout unless permission for the site.
- Disposal of water there's a big concern of grout with WWTPs.

Municipalities and Towns can adopt State Regulations or establish more strict local regulations.

Questions

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