Notice of Decision to Take Action
On Proposed Regulation

Re: Regulations Concerning Industry Standards of Practice, Registration Requirements, and Regulations for Well Drilling and Geothermal Systems.

The Department of Consumer Protection opened a public comment period from October 20, 2021 through November 22, 2021 to solicit public input regarding proposed new administrative regulations concerning industry standards of practice, registration requirements, and regulations for well drilling and geothermal systems. Subsequently, the Department received additional industry feedback from geothermal system installers Dandelion Energy and King Energy, LLC. The Department also received feedback from local environmental protection groups, including, Save the Sound, the Acadia Center, Environment CT, People's Action for Clean Energy and the Conservation Law Foundation. These comments submitted to the Legislative Regulation Review Committee were received after the close of the public comment period and are attached herein as Exhibit 1.

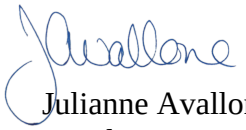
The purpose of the proposed regulation is to govern the construction, repair, development, and abandonment of wells and geothermal systems, in order to safeguard the public health, to provide an adequate supply of clean and uncontaminated water for all persons in the state of Connecticut and to provide for the safe and efficient use of the heating and cooling properties of the Earth. These regulations will amend the existing regulations found at R.C.S.A. Section 25-128-1 through 25-128-64, inclusive.

In response to comments received subsequent to the public comment period, the Department has discussed the feedback with the Plumbing and Piping Work Examining Board and revised aspects of these regulations to promote the viability of the geothermal marketplace in Connecticut. Specifically, R.C.S.A. Section 25-128-39b which governs closed-loop geothermal system fluid, has been revised to increase the maximum level of propylene glycol (antifreeze) from twenty (20) percent to twenty-five (25) percent. This fluid is mixed with water and the increase to twenty-five (25) percent serves to ensure that the geothermal system can withstand the Connecticut climate and function at a maximum efficiency level.

In addition, R.C.S.A. Section 25-128-49a, which governs the depth of geothermal bore hole termination, has been revised to allow for the installation of piping between bore holes and the heated structure at depths shallower than four (4) feet. This revision has been made with the caveat that measures shall be taken to protect the tubing from the elements and accidental damage. The previous version of this section would have required geothermal installers to blast or jackhammer through bedrock in residential areas in order to achieve a four (4) foot depth.

The regulations, as modified based on the comments received, will be resubmitted to the Legislative Regulation Review Committee for consideration at their June 2022 meeting. At the Legislative Regulation Review Committee on May 24, 2022, members of the Committee referenced the changes prompted by industry feedback and substitute pages that were worked on that included the changes outlined herein. The regulations as revised and submitted to the Office

of the Attorney General on May 25, 2022 contain all substantive and technical edits from the Legislative Commissioner's Office, as well as the above referenced changes to Sections 25-1289-39b and 25-128-49a that were raised as concerns for the Legislative Regulation Review Committee.



Julianne Avallone
Legal Director

Dated: June 1, 2022

To: The Department of Consumer Protection
450 Columbus Blvd
Hartford, CT 06103

Re: Two Concerns with the Proposed Regulations: “Well Drilling and Geothermal Systems”
Tracking Number: PR2020-017 Posted: 10/20/2021

Date: May 9, 2022

King Energy, LLC and Dandelion Energy are two of the most active residential geothermal installation companies in Connecticut. King Energy, LLC, based out of Willington, CT, has been installing geothermal systems in Connecticut since 1983. King Energy has been an industry leader in the state, installing thousands of systems across all 8 counties. Dandelion Energy has been active in Connecticut since 2020 and has installed 70 systems with an additional 230 customers contracted for systems to be installed in 2022. Further, Dandelion Energy has grown to be the largest residential geothermal installer in the State of New York since its founding five years ago, where it now installs hundreds of systems every year.

Residential geothermal installations are all we do.

Background Context
Geothermal heat pumps are the most efficient heating and cooling systems available to Connecticut residents. Ground source heat pumps take advantage of the thermal energy stored in the ground – essentially providing access to a “battery” via a closed ground loop. They are the lowest cost systems to operate and provide lower ongoing energy costs for residents than any other heating and cooling system. Ground source heat pumps completely remove the need for any fossil fuel hence aiding in the states’ mission to significantly reduce the carbon footprint.

The Concerns
We have two significant and specific concerns regarding the following proposed regulations by the Department of Consumer Protection.

1: Section 25-128-39b Closed-loop geothermal system fluid #3

The proposed regulation states:

> *“3. Heat transfer fluids containing potable water combined with a maximum of twenty (20) percent propylene glycol [or potassium acetate] that [have] has been approved by the federal Food and Drug Administration.[;] All chemicals used or added to fluids circulating through a closed-loop geothermal system for heat exchange shall be those specified by the manufacturer and shall be subject to industry approved standards…”*

The Problem We are Trying to Solve
Section 25-128-39b would require geothermal installers to use a **maximum** of 20% glycol in the closed loop piping that runs through the vertical bore-hole closed loops, the header lines, and into the heat pump in the customer’s home. Geothermal systems need to be designed to the “freeze-point.” Often this may require installers to use 21%-25% of propylene glycol.

Industry standards for the U.S. and Canada (ANSI/CSA) warn that using less than 20% glycol can lead to bacterial growth. This proposed regulation is contrary to manufacturer recommendations and bi-national industry standards (U.S. and Canada, ANSI/CSA standards). Manufacturers of glycol recommend 22-25%.

We respectfully request Section 25-128-39b be rewritten to state the following:

> *"3. Heat transfer fluids containing potable water* ***combined with between twenty (20) percent and twenty-five (25) percent*** *propylene glycol [or potassium acetate] that [have] has been approved by the federal Food and Drug Administration.[;] All chemicals used or added to fluids circulating through a closed-loop geothermal system for heat exchange shall be those specified by the manufacturer and shall be subject to industry approved standards…"*

2. Section 25-128-49a. Geothermal bore hole termination

The proposed regulation states:

> *"Geothermal bore holes shall be terminated a minimum of four (4) feet below the proposed finished grade and shall be fed to the point of termination, except that bore holes terminating in a structure shall be terminated flush with the finished floor. Casing, if used during bore hole drilling, shall be capped from the time of installation until the installation of the geothermal system piping. As the bore hole is being grouted, the casing may be withdrawn."*

The Problem We are Trying to Solve
This Section would require geothermal installers to undertake blasting or jack-hammering of bedrock in order to install the 'header' piping from the vertical geothermal closed loop bore hole to the home at least 4' deep, even when bedrock is shallower than 4'.

Requiring this regulation of blasting and jack hammering close to foundations -and in people's "back yards"- **causes greater and unnecessary harm** to Connecticut residents then simply insulating the pipe as is currently the standard practice. Today when geothermal installers encounter bedrock at shallower than 4', we insulate the piping with closed cell spray foam that is graded for burial.

Requiring installers to blast or jack-hammer through multiple feet of rock for distances that can be up to 50' of horizontal piping, is unnecessary, since insulation can be used instead. This proposed regulation would add **significant economic impact stress and physical danger and harm** on the installer, the homeowner and surrounding residents.

We respectfully request Section 25-128-49a be rewritten to state:

> *"Geothermal bore holes shall be terminated **ideally at** a minimum of four (4) feet below the proposed finished grade. **When this is not possible, due to ledge or bedrock, it shall be terminated utilizing industry practices for freeze protection** and shall be fed to the point of termination, except that bore holes terminating in a structure shall be terminated flush with the finished floor. Casing, if used during bore hole drilling, shall be capped from the time of installation until the installation of the geothermal system piping. As the bore hole is being grouted, the casing may be withdrawn."*

Conclusion

King Energy, LLC and Dandelion Energy are reputable long-standing geothermal companies. While the Department of Consumer Protection has consulted with the Plumbing Board and the Connecticut Water Well Association on these regulations, they have neglected to consult with the geothermal installation companies that are most active in the state.

We feel our recommendations to the above requested changes in the regulations are not outrageous and accurately reflect the industry standards in geothermal residential installations, while protecting consumer interests.

As uncertainty with natural gas, and with combustible fuel prices rising, we know Connecticut residents and legislatures are becoming more in tune, and more aware, of alternative green energy solutions. Geothermal is a major player in the solution. King Energy, LLC and Dandelion Energy are leaders in the state of Connecticut in reducing the carbon footprint at the home-front level.

Thank you for your consideration of our requested minimal changes to the proposed regulations.

Respectfully Submitted,

Valerie Rogers, MPA
Director of Marketing & Client Management
King Energy, LLC
23 Clover Springs Drive
Willington, CT 06279
Val@KingEnergyLLC.com
860-881-5612

Heather Deese, PhD
Director of Policy & Regulatory *Affairs*
Dandelion Energy
333 North Bedford Road Suite 220
Mount Kisco, NY 10549
hdeese@dandelionenergy.com
207-233-6550

Regulations Review Committee
210 Capitol Avenue
Hartford, CT 06106

Cc:

Governor Ned Lamont
Commissioner Michelle Seagull, Department of Consumer Protection
Commissioner Katie Dykes, Department of Energy and Environmental Protection
Commissioner Manisha Juthani, M.D., Department of Public Health

Honorable Members of the Regulations Review Committee:

The State of Connecticut has committed to ambitious climate and clean energy goals, including carbon reduction targets. As environmental and clean energy supporters, the undersigned organizations are concerned that the proposed State of Connecticut regulations of the Department of Consumer Protection concerning Well Drilling and Geothermal Systems, #2022-006, include provisions that run counter to achieving the state's ongoing investments in achieving its climate and energy goals. We respectfully request that the committee reject the regulations in their current form, until such time that revised regulations can be considered that appropriately address the clear distinctions between well drilling and the drilling associated with installation of geothermal systems.

The EnergizeCT program, administered and funded by our electric utilities, Eversource and United Illuminating, enumerates the benefits of geothermal heating and cooling with ground source heat pumps[1]:

- **Low-cost heating and cooling:** Compared to other heating and cooling systems, ground source heat pumps typically cost less to operate.
- **Low-cost maintenance:** compared to other heating and cooling systems, ground source heat pumps typically have lower maintenance costs.
- **Comfort & Convenience:** Ground source heat pumps provide consistent indoor temperature and humidity levels.
- **Environmentally Friendly:** Ground source heat pumps offer the potential to have zero greenhouse gas impacts when paired with a 100% renewable energy source.

The EnergizeCT program is investing $225 - $244 Million[2] each year during 2022 - 2024 in funding to provide energy efficiency rebates and subsidized loans to Connecticut homeowners and businesses to transition to more efficient equipment for heating and cooling. Geothermal heat pumps are an important and growing part of this program.

[1] Ground Source Heat Pump | Energize Connecticut (energizect.com)
[2] 2022-2024 Conservation & Load Management (CLM) Plan: 2022-2024 (energizect.com)

Given the State's ambitious commitment to increasing energy efficiency and achieving climate and clean energy goals, it is imperative that any new regulations on the heat pump installation industry minimize any disruptions or unnecessary cost increases for the installation of geothermal heating and cooling systems. We need to be transitioning to clean heating and cooling systems as quickly as possible, and keeping the costs down as low as possible for consumers who are investing in their buildings and providing climate benefits for all of us.

Signed,

Charles J. Rothenberger
Save the Sound
900 Chapel Street, Suite 2202
New Haven, CT 06355
Phone: (203) 787-0646, x122
Email: crothenberger@savethesound.org

Amy McLean
Connecticut Director & Senior Policy Advocate
Acadia Center
21 Oak Street, Suite 202
Hartford, CT 06106-8015
Phone: 860-246-7121 x204
Cell: 860 478-9125
Email: amclean@acadiacenter.org

Chris Phelps
State Director
Environment CT
1245 Farmington Ave #1123
West Hartford, CT 06107
Phone: (860) 231-8842
Email: cphelps@environmentconnecticut.org

Bernard Pelletier, Vice President
People's Action for Clean Energy (PACE)
PO Box 134, West Simsbury, CT 06092
Phone: (917) 843-7214
Email: PACE4CT@gmail.com

Shannon Laun
Conservation Law Foundation
Phone: 475-261-9538
Email: slaun@clf.org

Diane Lentakis
Climate Reality Project,
Southern CT Chapter
Phone: 203-922-2151
Email: dlentakis@sbcglobal.net