

May 7, 2014

Craig Diamond  
Executive Secretary, CT Energy Efficiency Board  
10 Franklin Square  
New Britain, CT 06051

**RE: CL&P Review of the Connecticut Ground Source Heat Pump (GSHP) Impact Evaluation and Market Assessment**

Dear Mr. Diamond,

The Connecticut Light and Power Company (CL&P) is pleased to submit these written comments with regard to a draft evaluation report: *Connecticut Ground Source Heat Pump Impact Evaluation & Market Assessment* (Study), Revised Draft, April 11, 2014, NMR Group, Inc. and DNV KEMA (authors). The draft Study was submitted to CL&P on April 23, 2014 with a request for comments to be provided by May 7, 2014.

The primary purpose of the Study was to provide performance and savings information on residential GSHPs to the administrators of the GSHP Program in Connecticut: the electric utilities (CL&P, The United Illuminating Company), and the Connecticut Energy Financing and Investment Authority (CEFIA).

CL&P is proud that the Study recognizes that the utility GSHP program has been effective at pushing industry to higher standards of design and installation, providing energy savings, and providing quality assurance to customers. The Study provided validation that the utility Verification of Installed Performance (VIP) GSHP program has been successful at delivering cost effective energy savings in homes: utility savings of 2,206 annual kWh (existing homes) and 3,681 kWh (new homes).

CL&P is providing two comments in regards to the study.

**Net-to-Gross Calculation.** The utility net-to-gross calculations in the Study are based on incorrect assumptions. The utility net-to-gross calculations in the Study are based on customer interviews which assess how effective incentives are at steering customers towards a GSHP, i.e. the net-to-gross estimates are essentially measuring GSHP *installation* free-ridership. This assumption is flawed.

The utility program is not a “fuel switching” program and CL&P is aware that the modest Connecticut Energy Efficiency Fund (CEEF) incentives are not sufficient to drive customers or contractors to install a ground source heat pump. Rather, the sole objective of the utility GSHP program is to reduce energy use in homes that *are already planning* on installing a GSHP through commissioning and documentation

of performance through Verification of Installed Performance (VIP) field testing<sup>1</sup>. Therefore, interviews assessing utility free-ridership should be aligned with the utility program design and reflect customer and contractor willingness to properly design and install systems, i.e. to comply with VIP requirements.

As the Study correctly points out, many customers would install a GSHP without the utility incentive. However, it is likely that some of these systems would underperform due to design and installation problems. CL&P is proud that its VIP program has received national recognition for mitigating problematic installations, thus saving customers considerable energy, expense, and aggravation. Recently, the VIP program was recognized by a national GSHP expert for “properly executed incentives” that weed out unqualified contractors and eliminate “rule of thumb” system installations that plague the industry.<sup>2</sup>

CL&P suggests that the utility net-to-gross ratios should consider how effective the utility VIP program is at ensuring proper installation (and thus generating energy savings), rather than relying exclusively on customer interviews and their decision to install a GSHP. CL&P suggests that the Study net-to-gross ratios should be aligned with the program design and not based on assumptions regarding fuel switching.

**Study Calculations.** CL&P appreciates that the authors provided the calculations (spreadsheets and Manual J calculations) associated with the Study. CL&P is currently reviewing these documents and has noticed that some of the calculations and variables appear to be inconsistent. For example, the window U-values in the spreadsheets for windows (approximately 0.30 BTU/hr/ft<sup>2</sup>/°F ) do not appear to match the U-values used in the Manual J calculations (approximately 0.47 BTU/hr/ft<sup>2</sup>/°F). CL&P plans to perform further analysis on this data and requests that the authors review these documents for accuracy and consistency.

Thank you for the opportunity to provide these constructive comments.

Very truly yours,

*Joseph Swift*

Joseph Swift  
Operations Supervisor

<sup>1</sup> For example, the 2010 C&LM Plan (page 107) states that the objective of the Residential Ground Source Heat Pump Performance Initiative is to reduce the use of energy in homes that are installing geothermal heat pumps by commissioning and documentation of performance through field testing.

<sup>2</sup> <http://www.achrnews.com/articles/126171-geothermal-hp-incentives-done-right>, *Geothermal*. Terry Proffer. March 17, 2014. This unsolicited article portrays Connecticut as a leading edge state on GSHP incentives by “providing a benefit” to the industry in tying incentives to load calculations, loop design, and proper commissioning.