

# Agenda

*Presented by  
Jay Egg and Guest Speaker Kristy Egg*

## New York's Emission Reduction Goals

New York's Clean Energy Dashboard  
NYC's Letter Grading System  
Where is the CO2 coming from?  
Emissions comparison between combustion heating and electric heat pumps  
Natural gas is bad for the environment, and it's dangerous

## Building Decarbonization

Beneficial electrification  
How air-source and ground-source heat pumps help with building decarbonization  
Understanding efficiency      Electrical load management is the key  
GHPs and load leveling

## Rating Combustion and Electric Systems

Thermodynamics  
Measuring performance thresholds coefficient of performance (COP)

## Basics of Commercial HVAC Systems

Basic air conditioning systems  
Distribution methods (duct/hydronic/condenser water/chilled water)  
Psychrometrics: temperature, relative humidity  
The effect of air flow and moisture content  
How comfort is measured  
Understanding efficiency

## Understanding Earth Loop Systems

Architecture of closed loop systems  
Horizontal ground loops      Vertical ground loops  
Applications for open loop systems  
• Single well      • Two-well systems  
Evaluating topography      Measuring soil conductivity  
Environments for ground-loop systems:  
beneath yards, fields, parking lots, and buildings  
Choosing system components  
Basic components of geothermal heat pump systems:  
• Pump, compressor, heat exchanger  
Forced air systems  
Hydronic systems  
Domestic hot water options

## Evaluating the Benefits of Geothermal Systems in New York

Incentives to use geothermal      Measuring performance  
Calculating savings and cost      Environmental benefits  
Tax credits, incentives and rebates

**Geothermal Heating and Cooling:  
A Key to New York's Energy Efficiency Programs**  
Live, Interactive Webinar - Monday, March 22, 2021

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# Learning Objectives

## You'll be able to:

**Learn** about carbon emission reduction goals for New York State and New York City.

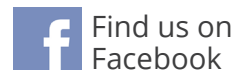
**Compare** carbon emissions of combustion heating systems and electric heat pumps.

**Consider** performance of systems and their ability to deliver thermal comfort.

**Evaluate** sites for horizontal and vertical ground loop geothermal heating and cooling systems.

**Learn** about choosing and sizing system components.

**Evaluate** the economics of geothermal systems from initial cost to return on investment.



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# Geothermal Heating and Cooling: A Key to New York's Energy Efficiency Programs

*Live, Interactive Webinar - Monday, March 22, 2021*



**Identify** New York's carbon emission reduction goals

**Discuss** methods for reducing carbon emissions from the operation of buildings

**Compare** combustion and electric HVAC systems

**Consider** the decarbonization and efficiency benefits of geothermal heating and cooling

**Evaluate** sites for geothermal systems

**Consider** incentives and calculate return on investment

## Continuing Education Credits

### Architects

6.5 HSW CE Hours

### AIA

6.5 LU | HSW

### Professional Engineers

6.5 Continuing Ed. Hours

### International Code Council

.65 CEUs (Energy)

### Contractors

Non-Credit Continuing Ed.



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# Faculty

**Jay Egg** *Founder and Consultant with Egg Geothermal*  
After serving in the US Navy nuclear power field, Mr. Egg began a career in mechanical design engineering and contracting. In 1990, he founded Egg Geothermal in Florida to provide HVAC solutions to the public. He currently focuses his professional efforts as a renewable energy expert on geothermal energy utility efforts, solar/geothermal exchange implementation, aquifer-related environmental issues, and permitting, feasibility and special permitting for projects such as utility-scale geothermal exchange systems. Mr. Egg provides technical validation and insightful speaking and training engagements. Among his clients are international, federal, state and local governments, developers, associations, and private entities. Mr. Egg has written two books for McGraw-Hill Education.

Egg Geothermal is a voting member on the IGHSPA Advocacy Committee, the Uniform Solar Energy and Hydronics Technical Committee and the Uniform Mechanical Code Committee for the International Association of Plumbing and Mechanical Professionals (IAPMO). Mr. Egg is a training and curriculum writer/ facilitator for IGSHA and for the U.S. Department of Energy (DOE) and past technical adviser to the New York State Energy Research and Development Authority (NYSERDA) and the Province of Ontario, Canada on renewable heating and cooling.

**Kristy Egg** *Professional Teacher: Registered Nurse, Public Health and Epidemiology Professional*  
Kristy Egg is a registered nurse, and a public health and epidemiology professional with an emphasis in environmental, community and public health programs. Over the past decade she has studied and developed experience in Legionella outbreaks in cooling towers. Currently she is assisting with water management and is a respected resource on Legionella associated biofilms. Ms. Egg also sits on several technical code committees internationally, and is engaged as a member of the Legionella Task Group for the 2024 IAPMO Uniform Mechanical Code.

# Webinar Information

|                                           |                                         |
|-------------------------------------------|-----------------------------------------|
| Log into Webinar<br>8:00 - 8:30 am EDT    | Break<br>12:30 - 1:30 pm EDT            |
| Morning Session<br>8:30 am - 12:30 pm EDT | Afternoon Session<br>1:30 - 4:30 pm EDT |

**Tuition**  
**\$289** for individual registration  
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***Included with your registration:*** *[Are we doing a book for this?]*

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# Additional Learning

**International Residential Code 2021**  
- Wed., Feb. 24, 2021 | 10:00 am - 2:30 pm CST  
- Thurs., Feb. 25, 2021 | 10:00 am - 12:00 pm CST

**Complying with Fire Protection & Building Codes**  
- Thurs., Feb. 25, 2021 | 8:00 am - 4:00 pm CST

**Construction Scheduling and Cost Control**  
- Thurs., Feb. 25, 2021 | 9:30 am - 2:00 pm CST  
- Fri., Feb. 26, 2021 | 9:30 am - 2:00 pm CST

**International Building Code 2021**  
- Fri., Feb. 26, 2021 | 9:00 am - 5:00 pm CST

**SketchUp for Building Professionals**  
- Thurs., Mar. 11, 2021 | 11:00 am - 2:45 pm CST  
- Fri., Mar. 12, 2021 | 11:00 am - 2:45 pm CST

**2021 International Residential Code: Residential Structural Design**  
- Fri., Mar. 12, 2021, 11:00 am - 3:30 pm CST

For more information and other online learning opportunities visit:  
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**Continuing Education Credit Information**  
This live, interactive webinar is open to the public and offers up to 6.5 HSW continuing education hours to architects and 6.5 continuing education hours to professional engineers licensed in New York.

HalfMoon Education is deemed a New York-approved continuing education provider for engineers and architects via its registration with the American Institute of Architects Continuing Education System (Regulations of the Commissioner §68.14(i)(2) and §69.6(i)(2)).

This event is approved by the American Institute of Architects Continuing Education System for 6.5 LU | HSW (Sponsor No. J885). Visit [www.halfmoonseminars.org](http://www.halfmoonseminars.org) to view complete AIA information under this course listing. Only full attendance is reportable to the AIA/CES.

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HalfMoon Education is an International Code Council Preferred Provider (No. 1232), and this course is approved for .65 CEUs in the specialty area of Energy.

This event offers a non-credit continuing education opportunity to construction contractors. It has not been approved by any state with a continuing education requirement for contractors.

Completion certificates will be awarded to participants who complete this event, respond to all prompts, and earn a passing score (80%) on the quiz that follows the presentation (multiple attempts allowed).

# Registration

**Geothermal Heating and Cooling**  
Live, Interactive Webinar - Monday, March 22, 2021

| How to Register                                                                                                                                                     | Registrant Information                                                                                                                                                 |
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| <b>Phone:</b><br>715-835-5900                                                                                                                                       | <b>Additional Registrants:</b><br>Name: _____<br>Occupation: _____<br>Email: _____<br>Phone: _____<br>Name: _____<br>Occupation: _____<br>Email: _____<br>Phone: _____ |
| <b>Fax:</b><br>715-835-6066                                                                                                                                         | <b>Code:</b>                                                                                                                                                           |
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( ) **I am not attending.** Please send me the webinar recording:

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