Policy: Right Sizing NY's Energy Playing Field & Scaling Up the Adoption of GSHP

Moderator: **Bill Nowak - *NY-GEO Board Member***

Speakers: **Allison Considine - *Building Decarbonization Coalition***

John Rath – *NY-GEO Director of Operations*

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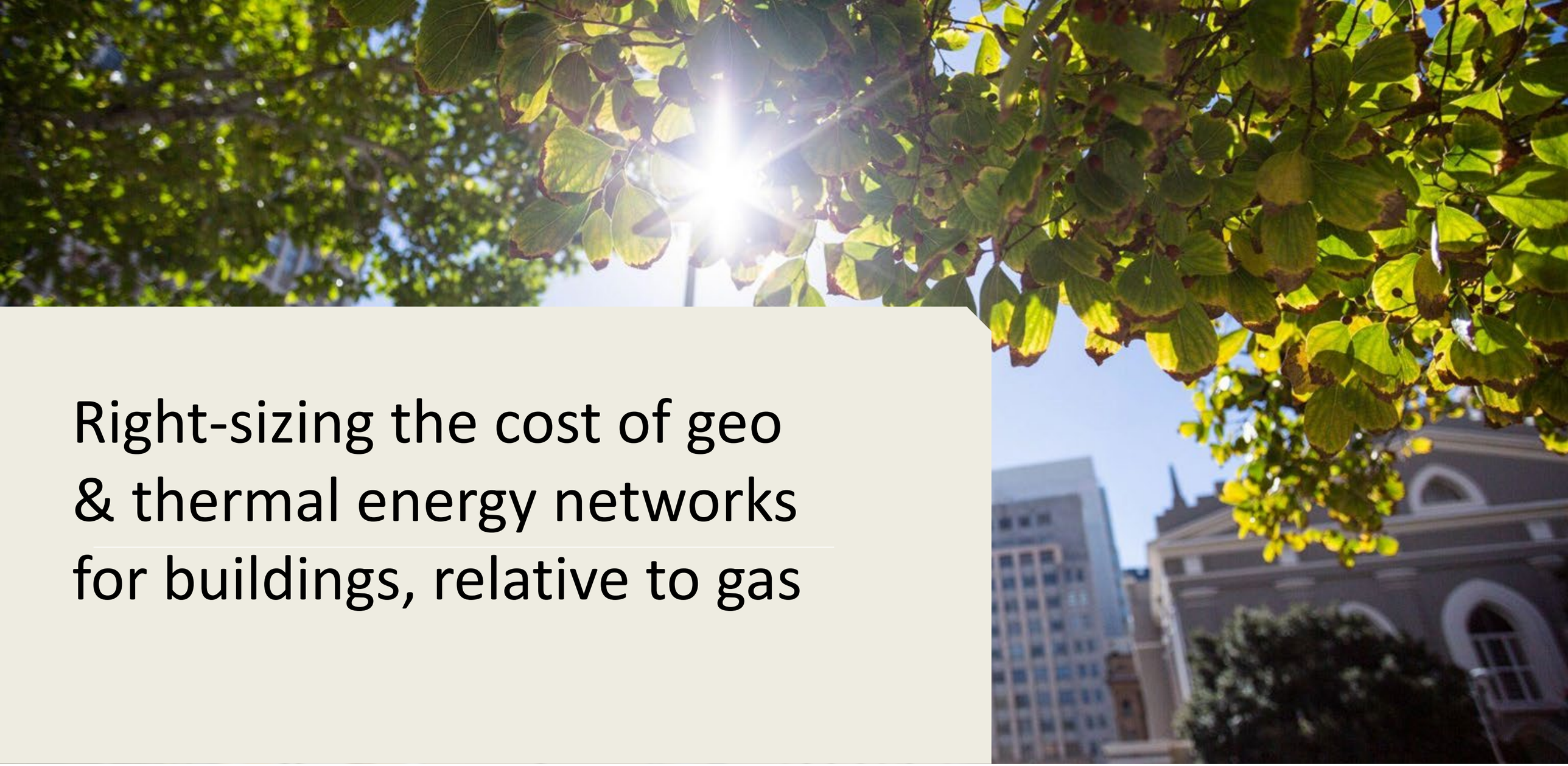
Kevin Moravec – *Barney Moravec, Inc.*

Policy Track – 1:30 October 22nd

The Building Electrification and Equity Platform

Allison Considine
New York Senior Manager, Campaigns & Communications
Building Decarbonization Coalition

BUILDING
DECARBONIZATION
COALITION

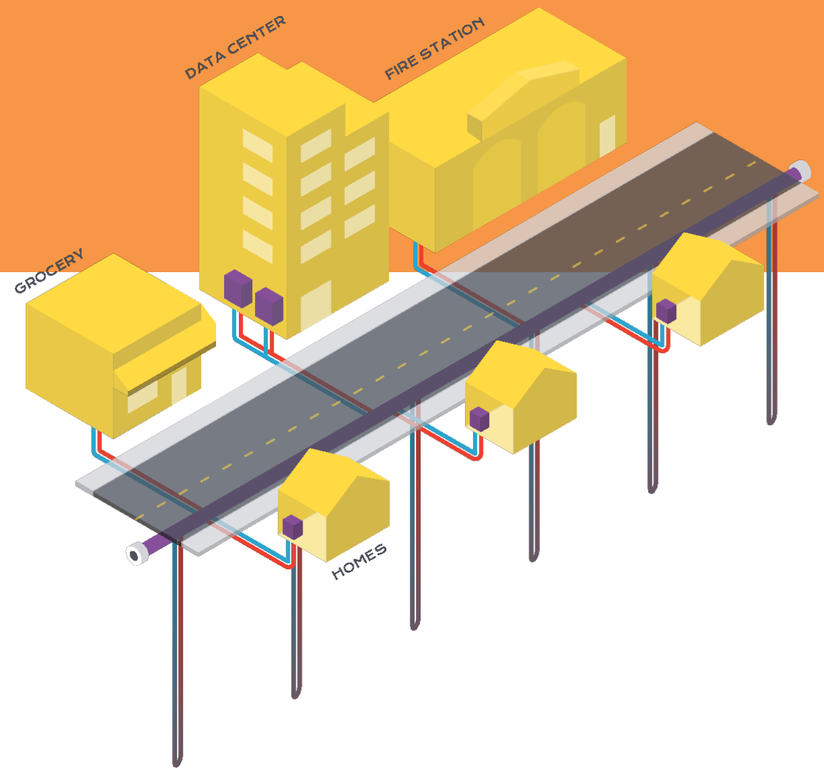


Right-sizing the cost of geo & thermal energy networks for buildings, relative to gas

BDC

How we approach the transition

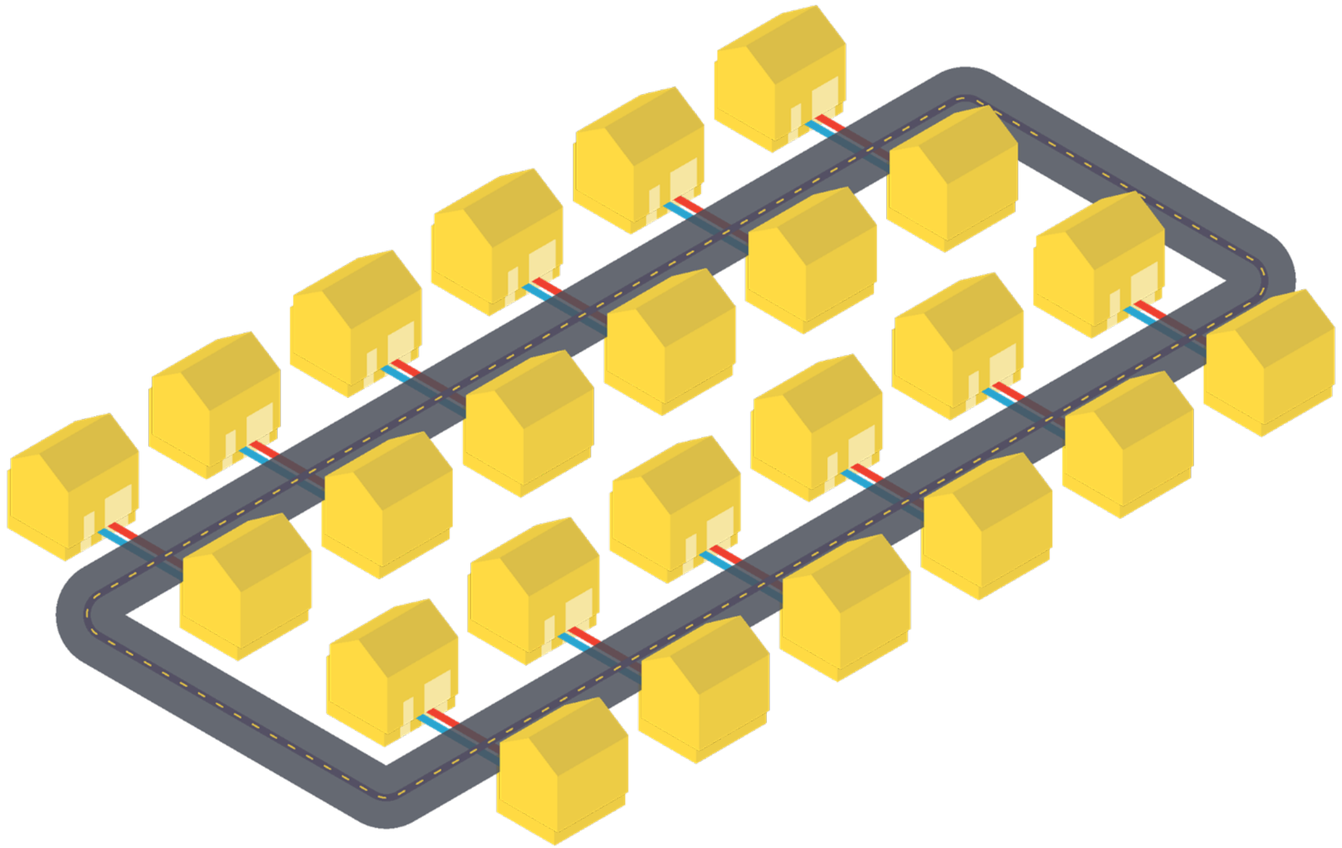
- Unmanaged transition - house by house



- Neighborhood-scale managed transition

House by House approach

Equitable Neighborhood-Scale Transition Benefits



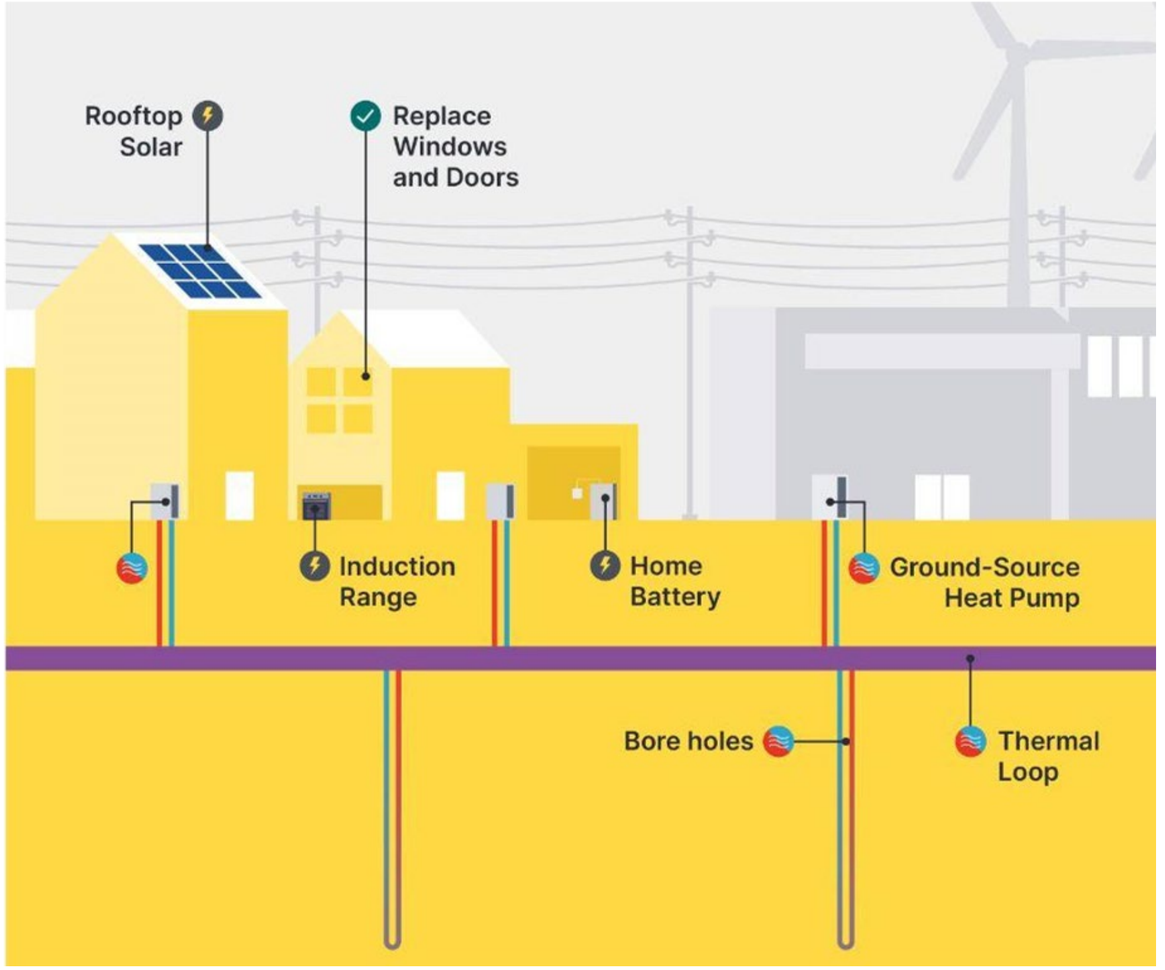
- Enables strategic electrification to avoid gas system costs
- Enables faster pace and bigger scale
- Equitable transition - no one left behind on stranded gas pipes
- System energy efficiency

BDC

Neighborhood scale approach

To scale up building decarbonization and meet our climate goals, we need a coordinated, managed strategy that engages many, many stakeholders to lift entire blocks and neighborhoods off of methane gas and toward clean energy and electrified homes.

There are different pathways for neighborhood-scale decarbonization, but we'll be focusing on the thermal energy network. In this scenario, all the homes get a ground source heat pump and are connected to a water pipe on the street.



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Building Electrification & Equity Platform Letter 2024-25

- Include the full NY HEAT Act in the budget to enable an affordable gas transition
- Fund Retrofit Readiness
- Require Gas Utilities to do their part by setting binding emissions limits
- Fund innovative state projects to lead by example

NY HEAT Act to Enable an Affordable Gas Transition

- Amending the obligation to serve or “pro-gas mandate”

- Ending the 100’ rule subsidizing gas line extensions

Emissions reductions limits on gas utilities

Require gas utilities to do their part to address the climate crisis: Gas utilities deliver 35% of the fossil fuels that New York consumes, and they must be required to plan and execute strategies to reduce their fair share of greenhouse gases in their service territories each year at a rate sufficient to meet the greenhouse gas emissions limits in the CLCPA.

Funding retrofit readiness

Fund retrofit readiness: Fund a $200 million Green Affordable Pre-Electrification Fund (GAP Fund) program in the state budget to remediate older houses and apartments of low- and moderate-income New Yorkers, readying them for weatherization and electrification.

Thermal energy networks at State Facilities & Campuses

Fund innovative state projects to lead by example: Decarbonizing the State Capitol and other high-emitting state-owned facilities is an opportunity for New York to demonstrate how we can use innovation to upgrade and modernize our state buildings. New York can lead by example by funding thermal energy networks at the Empire State Plaza and 14 of the highest-emitting state-owned campuses and facilities.

Right Sizing the Costs of Ground Source vs. Air Source Heat Pumps

John Rath
Director of Operations
NY-GEO

“What you get from the borehole you don’t need to get from the grid.”

Jens Ponikau

GHP’s Reduce Peak Grid Buildout & Use

Key points:

- GHP market saturation < $ than Electric and gas grid buildout
- Much better COP’s than ASHP’s
- GHP’s shave peak continuously; e batteries do not

Solutions:

- Quantify the value of grid savings from GHP’s
- Use $ savings for more geo installations
- Eliminate the 100’ rule/obligation to serve gas

GHP's Require Much Less Electricity & Infrastructure than ASHP on Cold (and Hot) Days

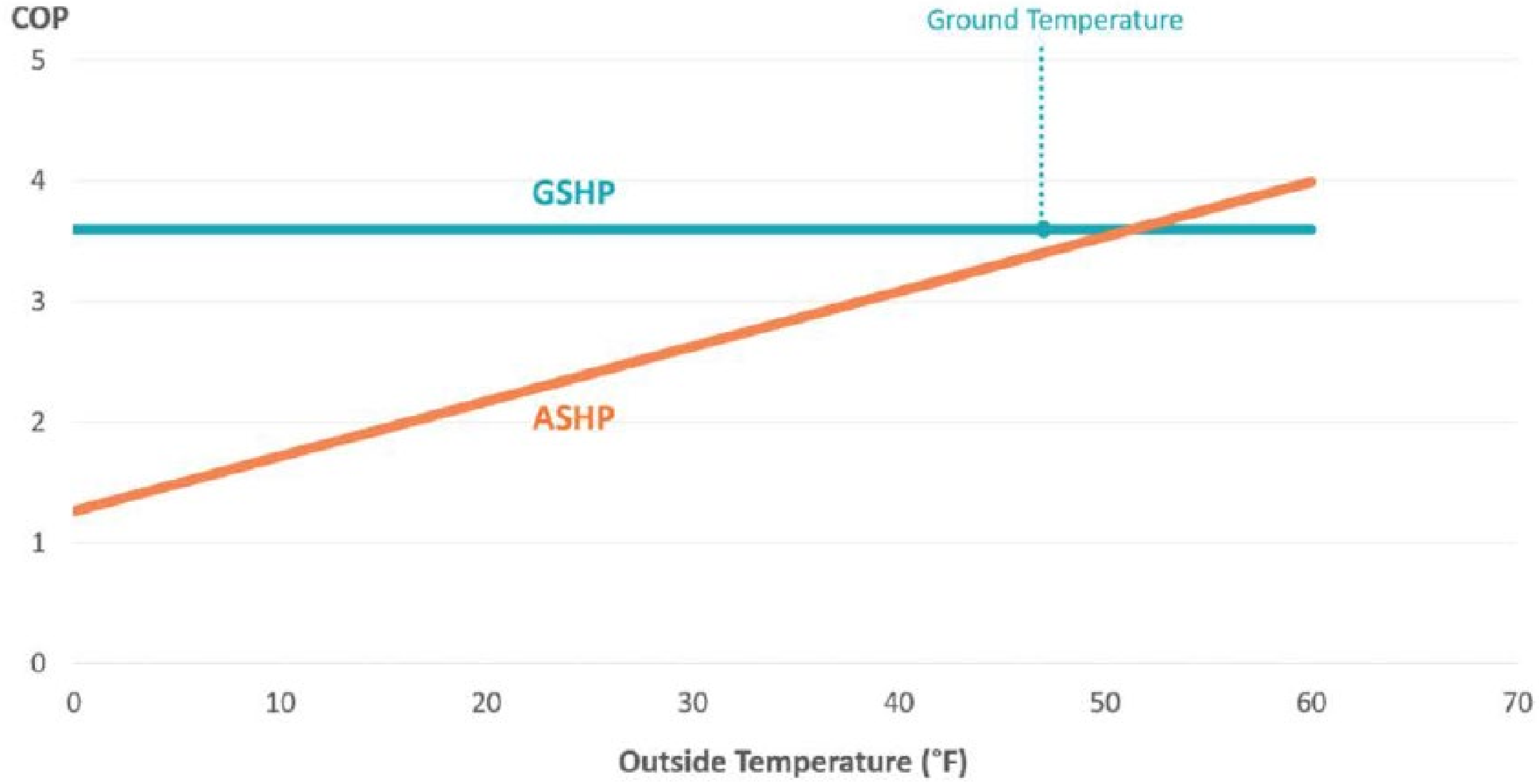

FIGURE 9: RELATIONSHIP BETWEEN OUTDOOR TEMPERATURE AND HEAT PUMP EFFICIENCY (COP)

Current Rate Structures Penalize GHP Users

Key Points:

- Volumetric rates undervalue GHP grid infrastructure benefits
- GHP's maximize grid electric system utilization (wires, poles etc.), minimize peak demand & keep costs lower for all customers
  - –ASHP's DO NOT

Solutions:

- Utilities should offer voluntary demand-based rates
  - –E.g., Con Edison's "Select Pricing Plan" pilot program
- Customers need to be informed by geo providers & NYSERDA's Clean Energy Hubs

Increase NYS Geo Tax Credit to $10 K with REFUNDABILITY

Key Points:

Current credit is $5,000

Additional increase opens up market rate potential

REFUNDABILITY opens up LMI and DAC potential

(REFUNDABILITY means no tax liability required for refund)

Solution:

Governor, Senate, Assembly education

“Persistent persistence” from geo industry

Right-Sizing the Gas System to Meet NYS Climate Goals

Jeanne Bergman, PhD

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The New York State Climate Leadership and Community Protection Act (CLCPA)

- Signed into law by Gov. Cuomo in 2019
- 2030: Statewide greenhouse gas emissions capped at 60% of 1990 levels
- 2050: Statewide greenhouse gas emissions capped at 15% of 1990 levels
- Already way behind schedule

Local Law 97: Greening NYC Buildings

- Passed in 2019
- Emissions caps and efficiency requirement on most buildings over 25,000 square feet as of 2024
- Stricter limits coming into effect in 2030, to reduce emissions by 40% and net zero by 2050.

How will we get there?

Scale up geothermal systems and Thermal Energy Networks in new and existing buildings

- DL 15 and RCA
- NYPA
- Schools and multifamily housing
- Municipal thermal energy networks

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Decarbonization Leadership 15 and Renewable Capital Act

- Decarbonize the 15 highest GHG-emitting state-owned properties
- Renewable power, heating, and cooling for Empire State Plaza
- Important environmental justice components:
  - Healthier state colleges, hospitals, and a prison
  - Decommissioning the Sheridan Avenue Steam Plant in Albany.
- Issue is speed: 17 year timeline

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New York Power Authority (NYPA) and the Build Public Renewables Act

- NYPA mandated to fill NYS renewables gap
- Challenged to build enough grid-scale renewable energy generation capacity
- Transition schools and public housing to geothermal
    - Reduce demand for electricity production and distribution

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Municipal Thermal Energy Networks

- Growing interest around the state
- Cut muni energy bills
- Experience with managing and billing for water and waste utilities
- Control over facilities and streets

New York Cap and Invest

- Potentially powerful tool to move buildings off gas and invest in clean energy
- Includes 35% to disadvantaged communities, to cut pollution and create jobs
- Regulations still highly contentious: billions at stake
- Must ensure it aligns with CLCPA targets

Get Community Buy-in First

- New technologies demand community-based public education and input
- Publicize large-scale geo for affordable housing to inform neighborhoods
    - Village East Towers
- Ensure benefits reach residents

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Thank you!

Scaling Up Ground Source Heat Pumps in NY

Kevin Moravec
President
Barney Moravec, Inc.

How to Scale Geothermal

Measures that help Geothermal Scale Up

- Non-Pipe Alternatives – NPA’s
- Direct Owner Benefit vs District or UTEN
- 3rd Party Ownership
- Loop based incentives
- Correct Sizing
- Removal of Fear of the Technology
- LONG TERM PLANNING

Long Term Planning

The Carrot

- Key to Scale is Everything
- More Projects – More Drilling Capacity – Lower Cost (has to be this order)
- Incent people/projects in a different way – Start with the loop
- Improve design confidence – collaborate/measure/share
- Tax Credits, 3rd Party, Utility – All are tools in the belt

The Stick

- Policy – it has to be this way
- Remove Gas – A dimmer switch vs a light switch
- Even the playing field – 100’ rule, refundability of tax credits, better financing options

NPA's – How They Help

- Various Examples
  - –Lansing NPA (NYSEG)
  - –District NPA (NYSEG)
- All Utilities have used various types – Industry does not know impact
- In General – these are Rate Based solutions – Many pay for the few
- High Cost – many layers – what does the CBA say?
- How Inflated are the costs – its usually not the boots on ground that impact the final cost

Which is Better ?

Direct Benefit

- Dedicated, custom, adaptable
- Typically simple systems – loop/pump system/Heat Pump/Distribution
- Can be Fast
- Costs are direct to owner – can be tough on Capital side

UTEN/District

- Shared, many possible applications
- Complicated – who owns the system, who maintains it, what happens when something fails
- Can serve a wider population
- Rate Based, 3rd party (someday?)

3rd Party Ownership

- No real experience with this – we can extrapolate
- Solar
- Utilities
- Short term cost reduction for projects vs Ongoing payments
- Risk vs reward – probably the biggest piece here
  - The risk cannot be on the people doing the work – it has to be on the those investing

Ground Loop Specific Benefit

- Makes sense – Slightly controversial
- 8 years of incentives are based on the Box – not the actual technology
- Incentives don’t change price like most people think
  - –$1500, $2500, $5800 per ton of Box
  - –Prices typically went up due to incentives
  - –Nominal amount of incentives allocated to loop – ASHP benefited more than GSHP in most cases (we refuse to learn)

Correct Sizing

Designs don’t Change

- Many people have many opinions on how to size a loop or system
- Again – opinions
- Data? M&V?
- 5 people, 5 different designs…
- Heat Pump, Load, Peak – which one?

Example – Anecdotal – loads similar for each system, TC of ground Similar

- 14x400’ - 67,000sqft – multi (12’ per sqft)
- 30x400 – 80,000sqft – multi (6.5’ per sqft)
- 92x500 – 150,000sqft – multi (3.25’ per sqft)
- 50x350’ – 158,000sqft – multi (9’ per sqft)
- 12x500 – 20,000sqft – Mixed use (3.33’ per sqft)
- 6x400 – 18,000sqft – Mixed use (7.5’ per sqft)
- 1x500’ – 4,000sqft – Single Family New Build
- 2x400’ – 2,500sqft – Single Family New Build

Sizing plays a role in Cost???

- 30,000’ of drilling – Heat pump load
- 60 bores, 500’ each, 6 Circuits of 10
- Fake price of $1.6M to contractor doing work
- 20% Margin Added from Mech
- 15% Margin Added from CM/GC
- $2.2M to Building owner

- 20,000’ of drilling – building load
- 40 bores, 500’ ea., 5 Circuits of 8
- Fake Price of 1M to contractor doing work
- Sell directly to building owner???
- Over 1m in net savings on project?
- Means we can do 2 jobs instead of 1

Geothermal Doesn’t Work - FEAR

- We need to remove the “It doesn’t work thinking”
- ASHP has been accepted more readily than GSHP? How?
  - Do we talk about the risk of this – Peak is Peak, Peak drives all utility cost….
- Boiler Backup
- Oversized Design – Load/Equipment/Safety Margin
  - Once you are oversized on 1 piece, it escalates all aspects of cost
- Who Guarantees design? Fingers get pointed when something doesn’t “meet spec” – usually because something was off to begin with
- There are thousands of examples of systems working – what makes them successful and how do we improve those!

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