2025 GeoStar Top Job Presentations

Moderator: **Joanne Coons** */ NY-GEO Member*

Awardees:

1) COMMERCIAL:

Ithaca Firehouse, Wendel - Rachel Carpitella, Steve Grgas

2) MIXED-USE:

Alafia, Salas O'Brien - Dan Sergison

3) MULTIFAMILY

Steamboat 20, Aztech Geothermal - Geoff Hoffer

(an Albany Housing Authority project),

NY-GEO TOP JOBS 2025

PRESENTER (S): Rachel Carpitella

ORGANIZATION (S): Wendel

PROJECT NAME: Ithaca Fire Station

PROJECT LOCATION: Ithaca, NY

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Overcoming Challenges in One of the First All-Electric Geothermal Firehouses in NYS: *A Case Study from Ithaca*

Presented by: Rachel Carpitella

April 23, 2025

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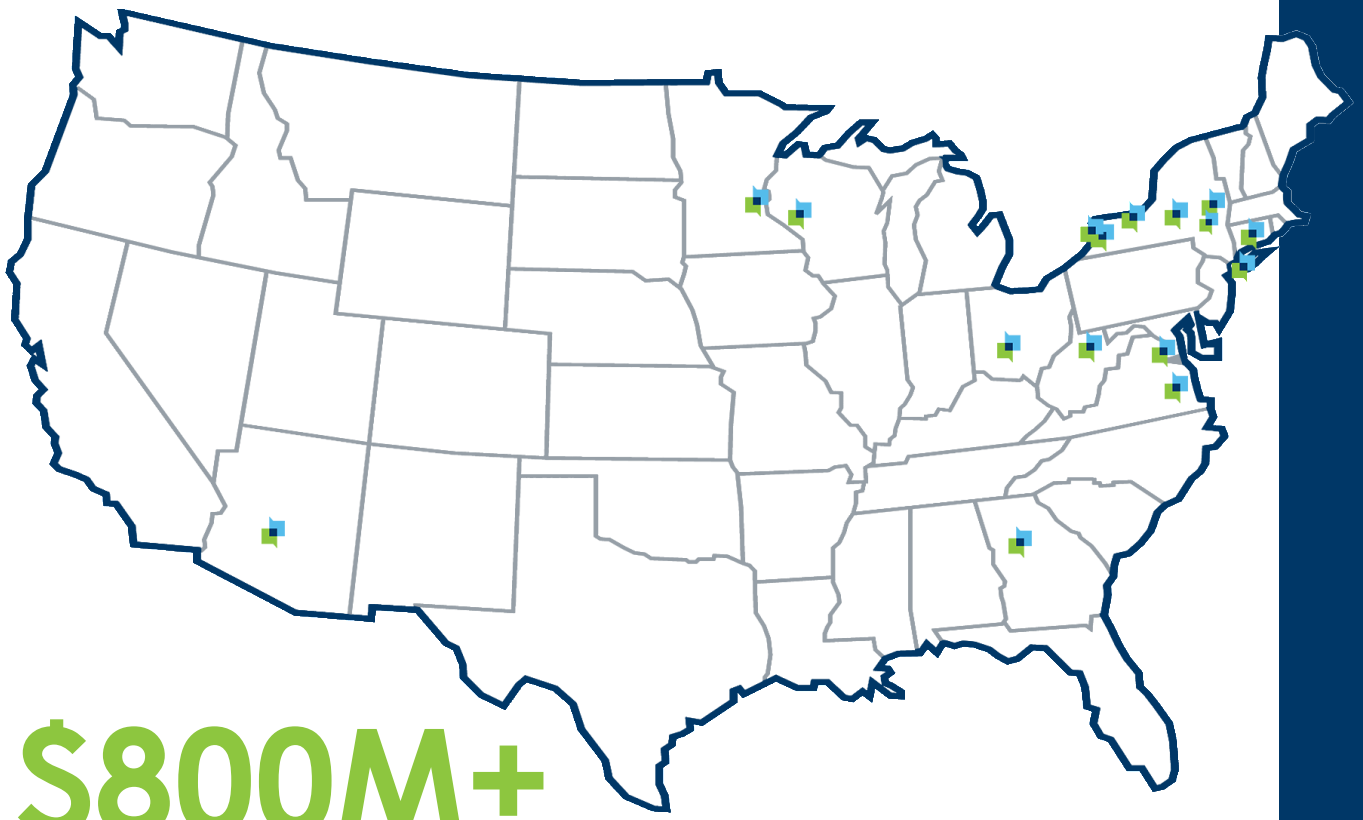
Who is Wendel?



$800M+

Energy Efficiency Projects Since 2001

$350M+

Annual Cost Savings for Clients

85 yrs

in business

16

offices

300+

professionals

- Lighting Improvements
- Photovoltaic Systems
- Site Lighting
- Major HVAC Retrofits
- Chiller/Boiler Plants
- Geothermal
- Heat Pump Systems
- Ventilation system
- Healthcare facilities
- Laboratories
- Dormitory facilities
- Electric vehicle charging stations
- Retro-commissioning

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Home of the Award Winning

Five Bugles Design + Mitchell Associates Architects

Over 300 programming/ feasibility studies completed

with over 150 emergency services facilities constructed!

Experienced Emergency Services Portfolio

EXPERIENCE:
20 years

ROLE / RELEVANCE:
Business Development

EXPERTISE:
Project Management
Community Engagement
Sustainability Expert
Clean Energy and Building
Decarbonization Strategy Expert

NOTEABLE ACHIEVEMENTS
Advised 100+ Large Buildings
Quadrupled Department Revenue
Secured $15+ M in Grants/Incentives

PROJECT HIGHLIGHTS:
Children's Village Thermal Energy Network
Decarbonization Pre-Feasibility Tool
Advanced Codes and Standards Forum
Clean Energy Careers Job Fair

CLIENT SECTORS
Higher Education
Healthcare
Municipal
K-12
Library
Nonprofit

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Introduction

Overview of the Ithaca Fire Station Project

- **Location**: Ithaca, NY
- **Innovative Focus:** Geothermal heat pump (GHP) firehouse in New York State built to the Ithaca Energy Code
- **Key Features**: Sustainable design, GHP system for heating, cooling, and hot water.

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Ingenuity

Innovative Design Elements

- **Hybrid GHP System**: Combination of water-source Variable Refrigerant Flow (VRF) units and water-to-water heat pumps integrated with geothermal loops.
- **Enhanced Efficiency**: Energy recovery ventilation, improved zoning, and space conditioning.
- **Apparatus Room Heating**: Use of radiant floors powered by GHP for efficient heating and faster warm-up times for first responders.

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Efficiency

Energy & Operational Efficiency

- **GHP System Benefits:**
  - Reduced long-term operational costs.
  - Significant decrease in greenhouse gas (GHG) emissions.
  - More efficient heating, cooling, and water heating (including radiant floors).
- **Site Efficiency:** Addressing challenges like sloping terrain and soil conditions with creative engineering solutions, ensuring minimal project delays.

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Quality

High-Quality Infrastructure & Design

- **Long-Term Performance:** Integration of GHP system ensures high-quality, energy-efficient performance over time.
- **Comfort & Reliability:** Constant and controlled environment in the apparatus room, improving the comfort and effectiveness of first responders.
- **Sustainable Materials & Practices:** Designed in line with Ithaca's Green New Deal, contributing to the city's carbon-neutrality goal by 2030.

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Accessibility

Community Engagement & Coordination

- **Addressing Community Concerns:** Managing noise, traffic rerouting, and maintaining good relationships with local residents.
- **Logistical Coordination:** Effective coordination of multiple stakeholders including developers, engineers, and the city.
- **Workforce Accessibility:** Compliance with prevailing wage requirements, ensuring fairness and equity for workers.

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Financial

Financial Benefits & Considerations

- **Cost-Effectiveness of GHP:** Despite initial investment, the long-term operational savings and energy performance will result in significant financial benefits for the city.
- **Recovery of Lost Time:** Overcoming delays from unforeseen soil conditions led to a 75% recovery of time, optimizing financial resources.
- **Support for Ithaca's Green New Deal:** Aligning with the city's climate goals reduces future financial burdens related to energy and emissions.

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Obstacles Overcome

Challenges & Problem-Solving Strategies

- **Site Challenges:** Small, sloping site with a 25-ft grade change, requiring significant earthwork.
- **Soil Conditions:** Unforeseen soil issues delayed key construction activities like sheet pile installation and GHP well placement.
    - *Solution:* Revised construction schedule and creative solution with a self-contained pump unit for slurry management, recovering 75% of lost time.
- **Coordination Challenges:** Navigating land acquisition delays, working with multiple stakeholders, and addressing logistical concerns such as noise and traffic management.
- **Weather Constraints:** Decision to focus on GHP due to dense tree cover and low winter temperatures, overcoming the feasibility challenges of solar and air-source heat pumps.

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Conclusion

Key Takeaways & Future Implications

- **Innovation in Public Safety Infrastructure:** Demonstrates how GHP systems can be integrated into municipal buildings.
- **Long-Term Benefits:** Cost savings, improved efficiency, and sustainability can set a new benchmark for future projects.
- **Overcoming Obstacles:** Resilience in overcoming site, logistical, and environmental challenges ensures success in pioneering projects.

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Thank you!

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