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SPP 609 WORKSHOP
DEERFIELD CASE PROFILE
APRIL 2026

Town of Deerfield Networked Geothermal

A HEET Kickstart feasibility study in rural Franklin County that found networked geothermal technically viable but economically noncompetitive under current conditions, illustrating the density thresholds this technology requires.

LOCATION
South Deerfield, Franklin County, Massachusetts

PROJECT TYPE
Community (HEET Kickstart)

CURRENT STATUS
Feasibility completed (August 2025)

LEAD ORGANIZATION
Town of Deerfield

SYSTEM SCALE
3 iterations modeled: 25–expanded networks, 35–130 boreholes

ESTIMATED COST
$11.0M–$27.5M gross (varies by iteration and drilling cost)

KEY OBSTACLE
Not cost-competitive vs. air-source heat pumps in any scenario modeled

PROJECT DESCRIPTION

The Town of Deerfield, a rural community of just over 5,000 residents in Franklin County, pursued a networked geothermal feasibility study through the HEET Kickstart Massachusetts program, funded by a $50,000 grant from HEET and MassCEC.[1] The study, conducted by Buro Happold, evaluated three network iterations centered on the South Deerfield village core, encompassing municipal buildings including Town Hall, the Police Department, Tilton Library, and Deerfield Elementary, along with commercial anchor tenants such as Berkshire Brewing Company, which could provide industrial waste heat to the network.[1]

Deerfield is distinctive in several respects. It was the first town in the Commonwealth to enter the Municipal Vulnerability Preparedness program. The area is under a Berkshire Gas hookup moratorium due to pipeline deliverability constraints, making fossil fuel alternatives structurally necessary rather than aspirational.[3] The feasibility study

TIMELINE

June 2023: First discussed at Energy Committee

March 2024: $50,000 Kickstart grant announced

July 2024: Presentations to town committees

Feb 2025: Draft feasibility report

Aug 2025: Final report (not cost-competitive)

POLICY ANCHOR

Massachusetts Global Warming Solutions Act (net-zero 2050); DPU Order 20-

concluded that while all three configurations are technically viable, none is cost-competitive with individual air-source heat pump installations over a 60-year lifecycle, primarily due to low residential density and insufficient building diversity along the proposed corridors.[1]

KEY ACTORS AND GOVERNANCE

The project was initiated by town government officials without utility involvement.[1,3] Selectboard Chair Tim Hilchey served as the primary political champion, pursuing the HEET grant after a visit by State Climate Chief Melissa Hoffer in October 2023. Planning Board Chair Denise Mason coordinated community outreach and grant administration, and Town Administrator Christopher Dunne served as the bridge between the technical study team and the town's committees.[3]

Buro Happold produced both the draft (February 2025) and final report (August 2025). HEET provided strategic guidance and connections to other pilot communities. UMass Landscape Architecture and Regional Planning contributed outreach materials. Frontier Regional School was the only external institution to proactively respond with interest during the study process.[1,3]

FUNDING AND COSTS

The only confirmed funding is the $50,000 Kickstart feasibility grant.[3] No construction funding has been identified or committed. The study produced cost estimates across three iterations at three drilling cost levels ($40, $60, and $80 per linear foot), ranging from $11.0 million (Iteration 1 at $40/lf) to $27.5 million (Iteration 3 at $80/lf).[1] Net costs after incentives were not calculated because no construction funding has been pursued.

The economic comparison against individual air-source heat pumps is the study's primary benchmark. In all three iterations at all drilling cost levels, the ASHP alternative is less expensive over the 60-year modeling period, with the fastest geothermal payback exceeding 50 years (Iteration 2).[1] Potential future incentives include the federal ITC, Mass Save rebates ($4,500/ton), and DOE block grants, but none have been formally pursued.[1]

PERMITTING AND APPROVALS

The feasibility study identifies a multi-layered permitting environment with complexity increasing for the expanded iterations.[1] Required approvals include a Planning Board stormwater permit ($150) and site plan review ($300), a mechanical trench permit ($50), gas and plumbing permits for building-level conversions, Conservation

80; Berkshire Gas moratorium on new hookups in Franklin County; Town's MVP program and Green Community designation.[1,3]

NEXT STEP

Re-evaluation recommended if future housing development increases density along the network path. Standalone ground-source heat pumps for the school system and cold-climate ASHPs for individual homes are the recommended near-term alternatives.[1]

Commission approval for any crossing of Bloody Brook and its 200-foot Riverfront Area, and MassDEP driller certification.[1]

The most significant regulatory challenge is the Bloody Brook riparian constraint. The brook runs through the municipal campus and between school buildings, and any piping crossing for Iterations 2 or 3 would require Conservation Commission review under the Wetlands Protection Act.[1] High water table and flooding challenges further constrain development density through local bylaws. No permits have been applied for or obtained, and the study does not address NPDES permitting for drilling discharge, which is required in comparable Kickstart projects.[1]

COMMUNITY ENGAGEMENT AND EQUITY

Engagement was led by the town's MVP Core Group, Energy Conservation Committee, and UMass LARP, using public meetings, surveys, and informational sessions.[3] Key activities included presentations to the MVP Core Group and Energy Conservation Committee in July 2024, a UMass LARP presentation in October 2024, an online survey in July 2025 (29 responses), and a final public information session with Buro Happold in July 2025.[1]

Survey results showed 67% interest in participating, 29% responding "maybe," and only 4% responding "no."[1] However, community readiness was mixed: Frontier Regional School was the only institution to respond proactively. Deerfield does not fall within a formally designated environmental justice zone, but the Berkshire Gas moratorium makes the project relevant to energy access equity, as residents cannot connect to new gas service and have limited heating alternatives.[3] No income-based affordability analysis or EJ-specific engagement strategies were employed.[3]

WHY THIS CASE MATTERS

Deerfield offers a rare example of a feasibility study that reached a clear negative conclusion: technically feasible but economically noncompetitive. This outcome illuminates a structural tension in the Kickstart model, which is designed to generate shovel-ready projects but is precisely where rural, low-density communities are most vulnerable.[1,3] The finding that air-source heat pumps dominate on lifecycle cost is not a failure of geothermal technology but a function of density thresholds. Networked geothermal requires sufficient building diversity and residential participation to justify the capital cost of a distribution loop, a condition that South Deerfield's sparse residential fabric cannot yet meet.[1] The case suggests that the Kickstart program may need complementary mechanisms, such as density-contingent grants or integration with planned

> municipal development, to convert feasibility investments into deployable projects in rural communities.

Sources

1. Buro Happold Consulting Engineers, "HEET Kickstart — Deerfield Networked Geothermal Feasibility Study: Technical Report," August 21, 2025. PJ7_Feasibility_Study_01.pdf
2. Buro Happold Consulting Engineers, "HEET Kickstart — Deerfield Networked Geothermal Feasibility Study: DRAFT Technical Report," February 24, 2025. PJ7_Feasibility_Study_Draft_02.pdf
3. HEET / Town of Deerfield, "Kickstart Massachusetts Tier 2: Community Report for Deerfield, MA," 2025. PJ7_Kickstart_Project_Summary_03.pdf
4. Chris Larabee, "$50K grant will fund geothermal heat study in South Deerfield," *Greenfield Recorder*, March 7, 2024. PJ7_Deerfield_Town_Local_Newspaper_05.pdf — https://recorder.com/2024/03/07/50k-grant-will-fund-geothermal-heat-study-in-south-deerfield-54279659/
5. Town of Deerfield Energy Committee, Meeting Notice and Agenda, June 1, 2023. PJ7_Deerfield_Town_Meeting_Initial_Hearing_04.pdf

Sources still needed: NPDES permitting analysis for drilling discharge (not addressed in the feasibility study despite being required in comparable Kickstart projects); any FRCOG regional energy committee meeting materials where results were presented; documentation of Berkshire Gas moratorium terms and geographic scope.
