



**MWCOG BEEAC
REGIONAL
CLEAN ENERGY TECHNOLOGY
OPPORTUNITIES**

**Geothermal Feasibility Study
City of Falls Church, VA**



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Origins

- **City of Falls Church Campus Redevelopment Project** – District Energy, CHP, Net Zero, geothermal
- **DoE Notice of Opportunity for Technical Assistance** – Climate Action Champions newsletter
- One paragraph application - \$50,000 grant!

Scope

- **Questions**
 - Is there sufficient space on the site to install ground heat exchangers for both schools?
 - What are the costs and benefits of GHP systems compared with conventional HVAC for the two schools?
- **Partners:** US DOE, ORNL, VA Tech, WGL, MWCOCG, CFC
- **Data needed:**
 - geology;
 - site soil and infrastructure;
 - existing facilities: space, heating/water/cooling systems, energy usage data;
 - planned facilities – DOE reference model for secondary schools

Results, findings, recommendations

	Cost premium for GHP	Payback time (Energy and O&M savings)
New High School	\$375 - 720K	3 - 5 yrs
Existing Middle School	\$370 - 603K	3 - 6 yrs

High School

- Incorporate ASHRAE's 50% Advanced Energy Design Guide energy efficiency measures for K-12 School Buildings.
- Implement a GHP system to serve the full heating and cooling loads of the new high school.
- Develop the new high school as "solar ready" if it is not financially feasible to implement solar during initial development of the new high school.

Middle School

- Upgrade the middle school to a GHP system when the existing system needs to be replaced. It is recommended to have a GHP system and bore field that is separated from the high school.

Implementation

- On-site ground thermal conductivity test.
- Financing – QECBs; PPA-type model
- Include energy efficiency language in schools RFP, including specific language for utilizing the GHP system and solar-ready features
- Education and training for school maintenance staff