

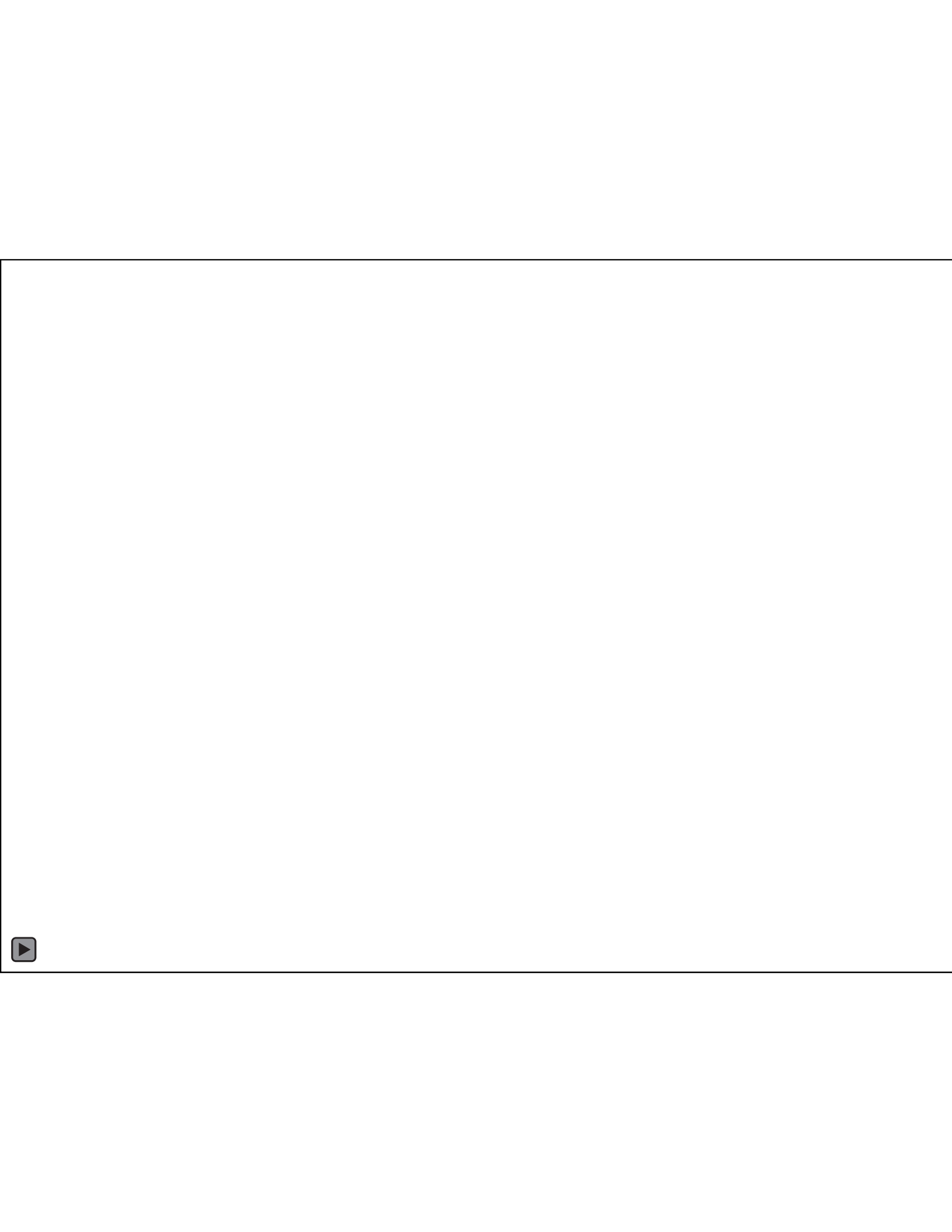
The Lockport Housing Authority Geothermal Conversion

Most Efficient Design
Verifiable Results



BUFFALO
GEO THERMAL
HEATING™

www.BuffaloGeothermalHeating.com



The Building

- 72 housing units
- Located in Lockport NY
- Geo system installed Fall 2015 – Summer 2016

Lockport housing project installing geothermal heating system

With electricity too costly, the Lockport Housing Authority turns to an alternative heating source at Autumn Gardens

Buffalo News 2015 09 13

<http://www.buffalonews.com/city-region/lockport/lockport-housing-project-installing-geothermal-heating-system-20150913>



NYSERDA

- Originally declined the application
 - Total Resource Cost (TRC)
- Received Waiver from DPS
- BGH was shouldering the risk for the application
- Received \$68,000 grant, plus \$21,000 due after 29% annual efficiency is demonstrated
- DPS director called and mentioned that TRC was eliminated statewide

Loop field

- 9 loop fields
- 4 bores at 225ft
- 1.25" pipe
- 2" supply and return header pipe, 200 ft

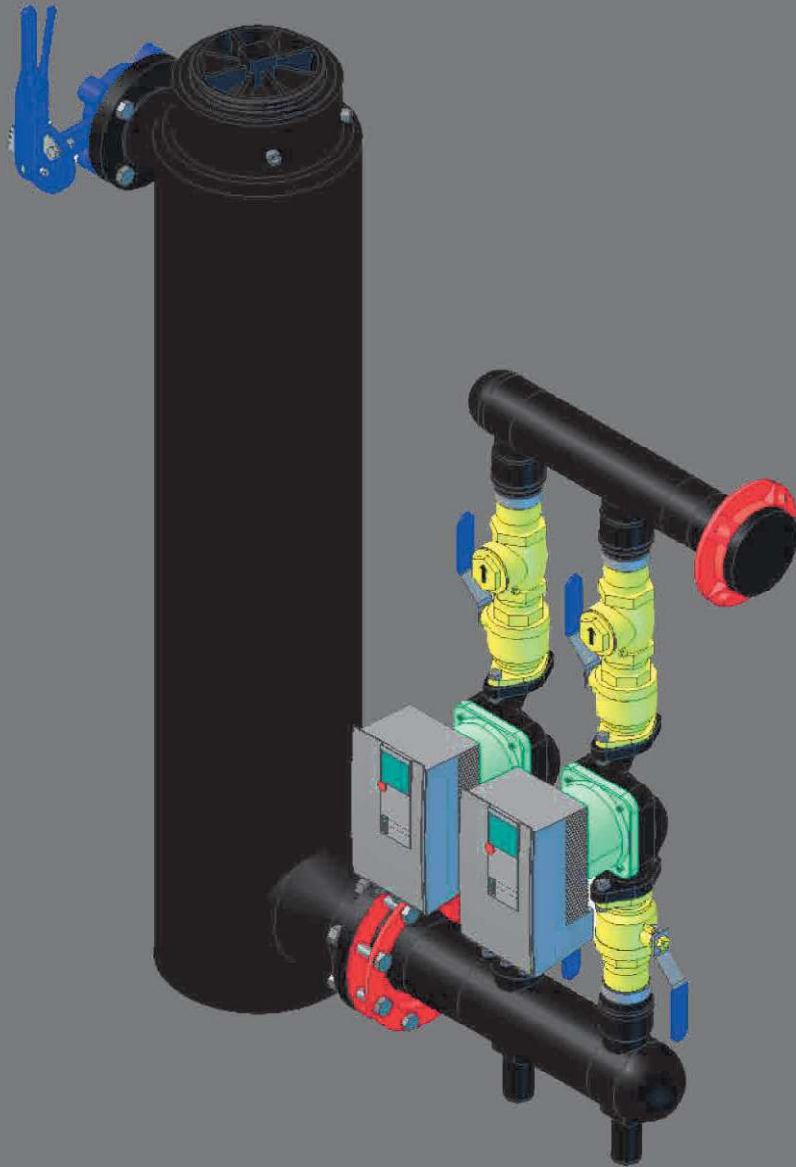


The Authority

- Low income federal housing authority
- Low income tenants
- Electric Baseboard heat
- Electric hot water heat
- Bonding and federal requirements

New Equipment

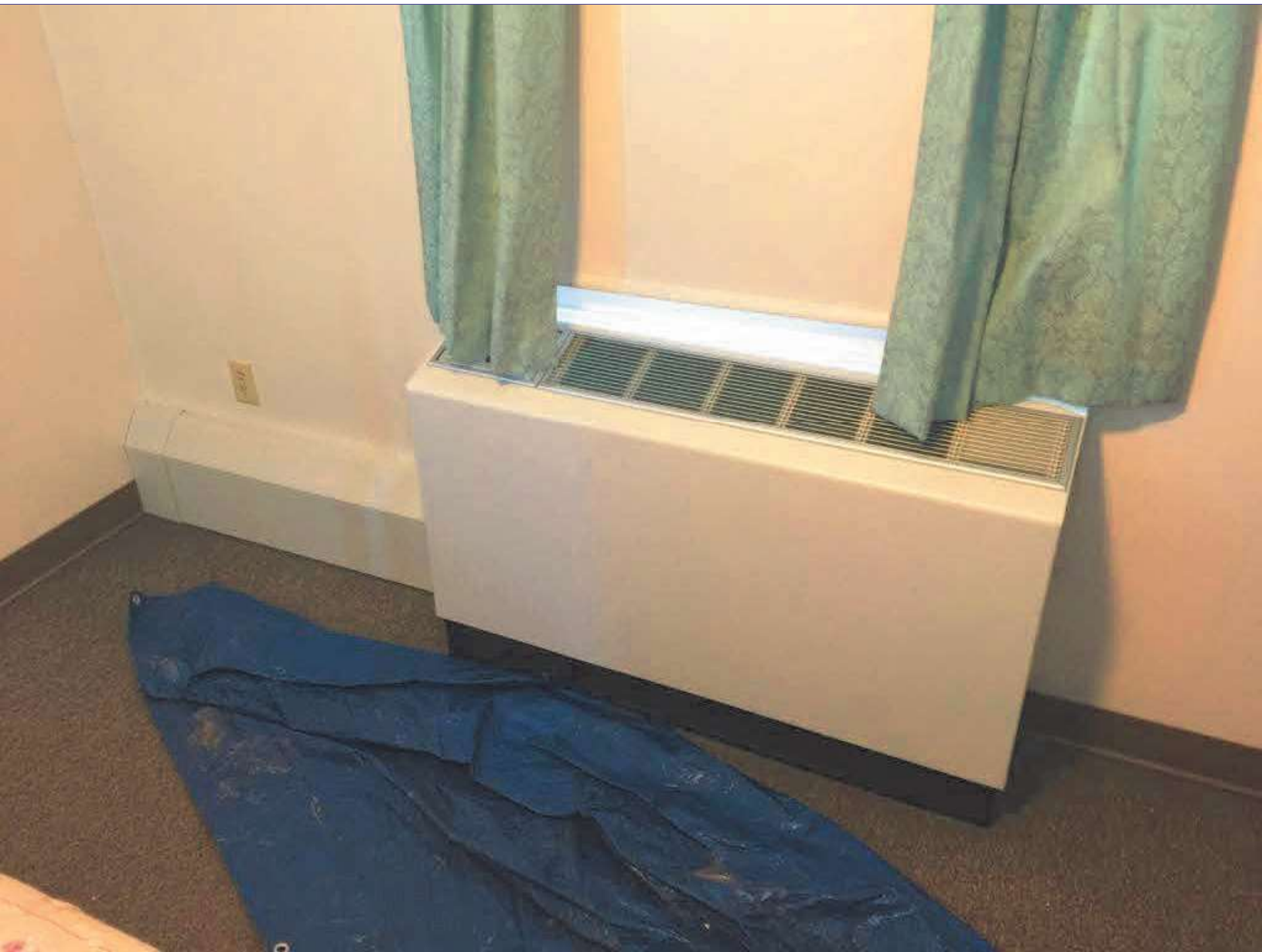
- Each building
 - 8 apartments
 - 16 Waterfurnace 009 Console Units
 - 2 Console units for both stairways
 - 1 water-water units for domestic hot water
- 19 heat pumps / building
- 171 total heat pumps



Central Flow Center

- GV-06
- (2) ultra efficient DC inverter driven variable speed pumps
- Redundancy
- Variable pressure set
- 21- 310 watts
- 19 stages of flow



















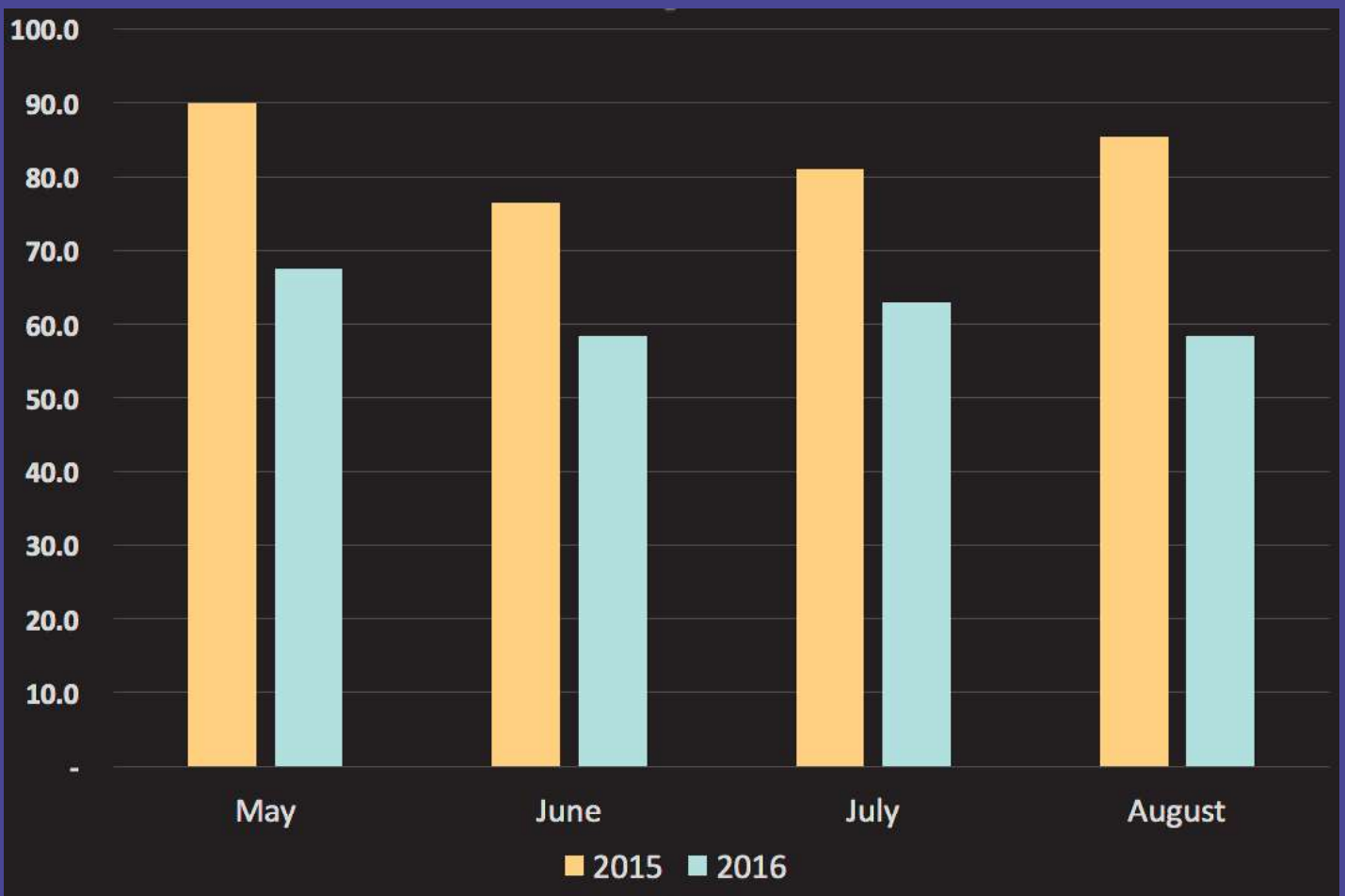
Challenges

- Test bore = no problem
- 20 ft to the side
 - Gas at high pressure
 - Had to do pressure grouting on 5 boreholes
 - Re-drill 4 boreholes
- Conversion with the tenants living in the apartments
- Board meeting with console units running

Outcome?

- Electricity from utility bills
- Electric to electric conversion
- Data provided by Housing Authority

Summer Peak Demand Reduction 25-34%



Summary

- Keep it simple
 - Sufficient Loop Size
 - Low Pressure Drop
- Variable speed efficient pumping
- Changed thinking at State Level
- Provides desperately needed data for multifamily geothermal conversion
- Geo on a small foot print

Summary

- Most importantly
 - Renewable technology is being made available to low income housing
 - Set a precedence and a geo success story
 - All buildings on one meter was unique opportunity
- Authority wants to implement geo in other projects
- Other authorities show interest

Autumn Garden

