Beach Green Dunes II

NYC First Affordable Geothermal Housing Building

ZBF GEOTHERMAL

ZBFGeothermal.com

Presented by:
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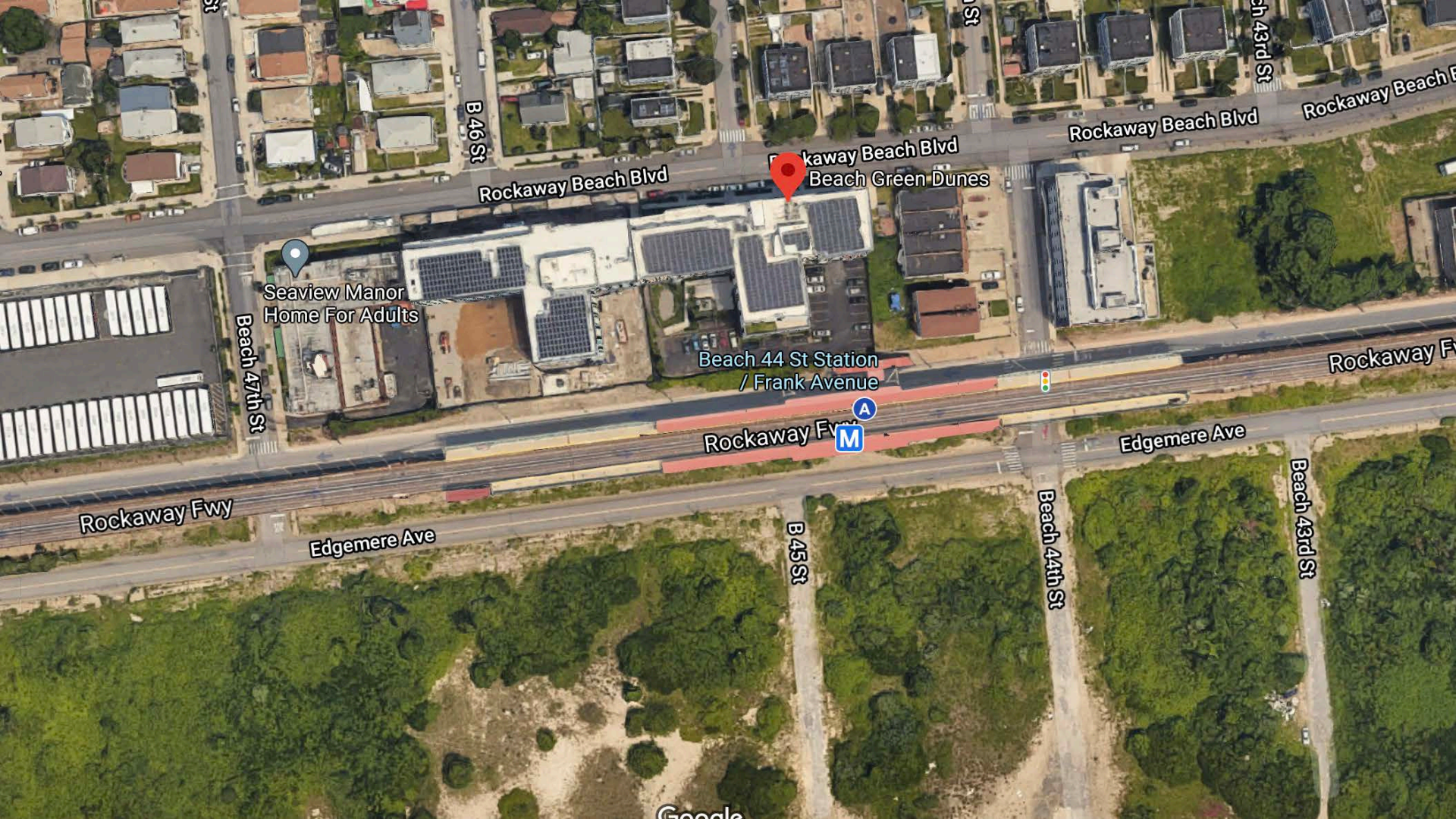
Beach Green Dunes II

- 127-unit affordable housing building located in Far Rockaway, NY
- 121,000 square feet, including 2,500 sq ft of retail space
- Beach Green Dunes I was built with an Air Source VRF system
- Rent starting at $311

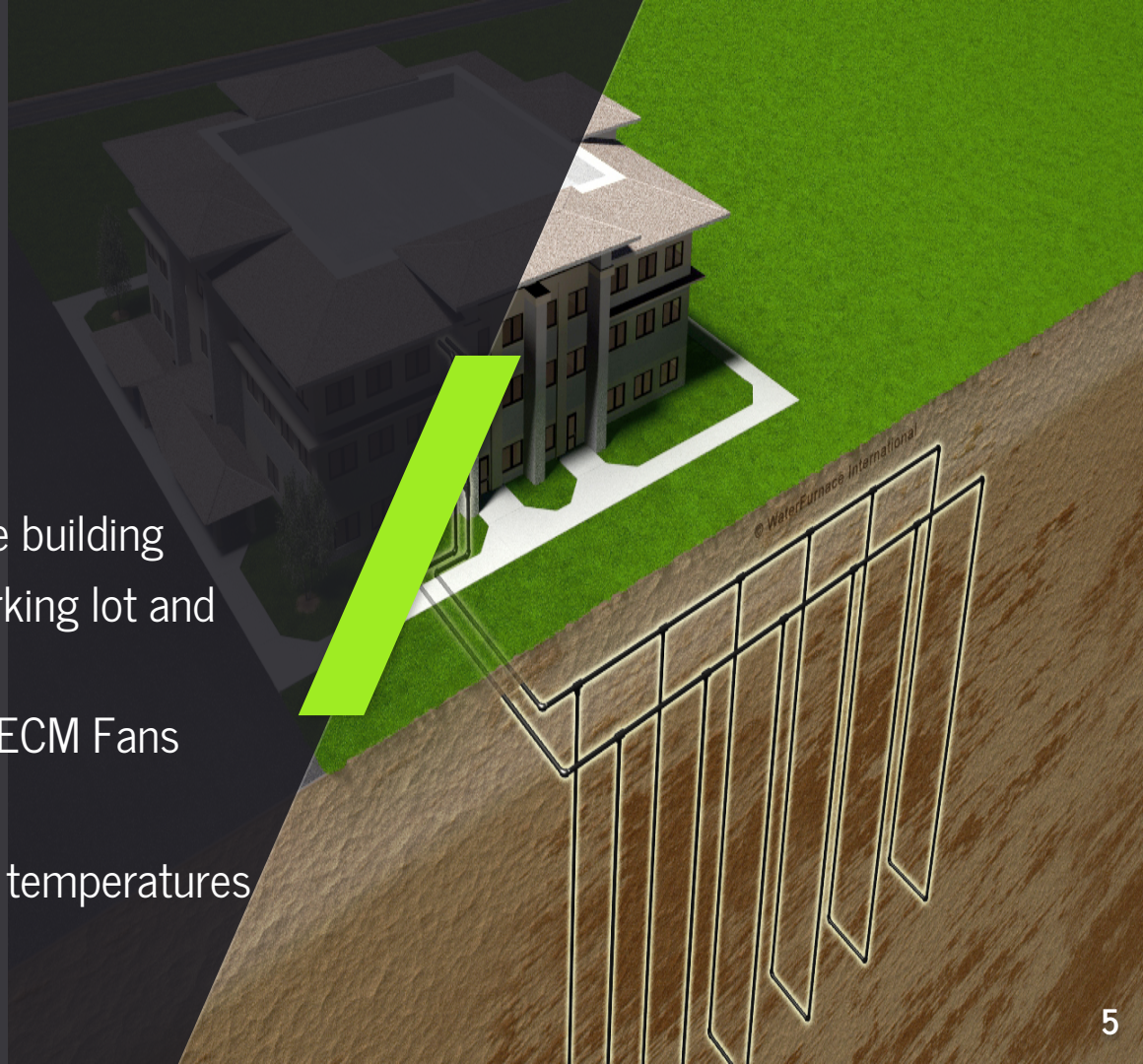
"Beach Green tenants paid roughly $10 a month max for cooling costs during the summer months; in some places in New York, those bills can be $100 or more a month."

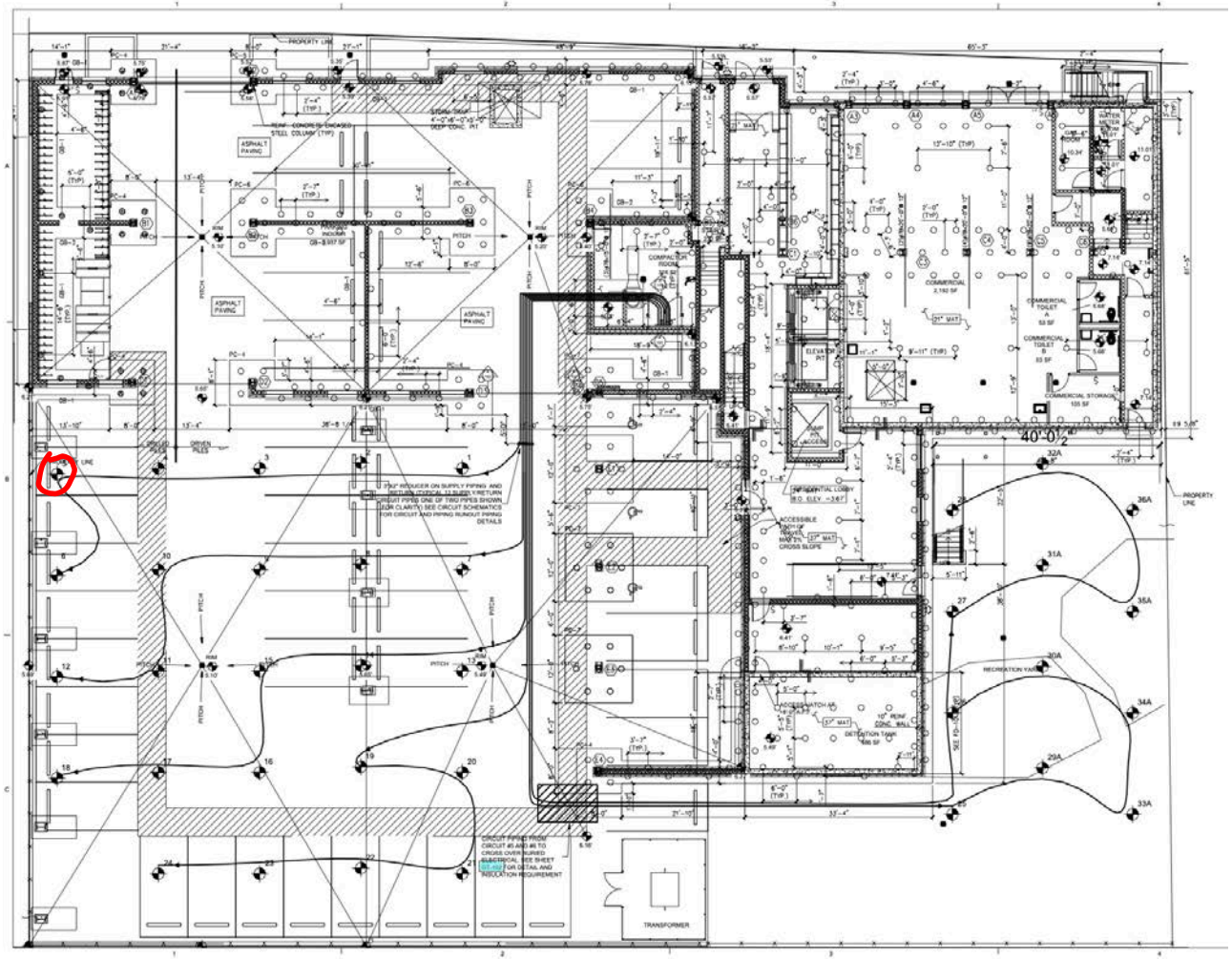
Source: Curbed Magazine, ***In these super-sustainable new apartments, you may never pay a heating bill,*** by Patrick Sisson

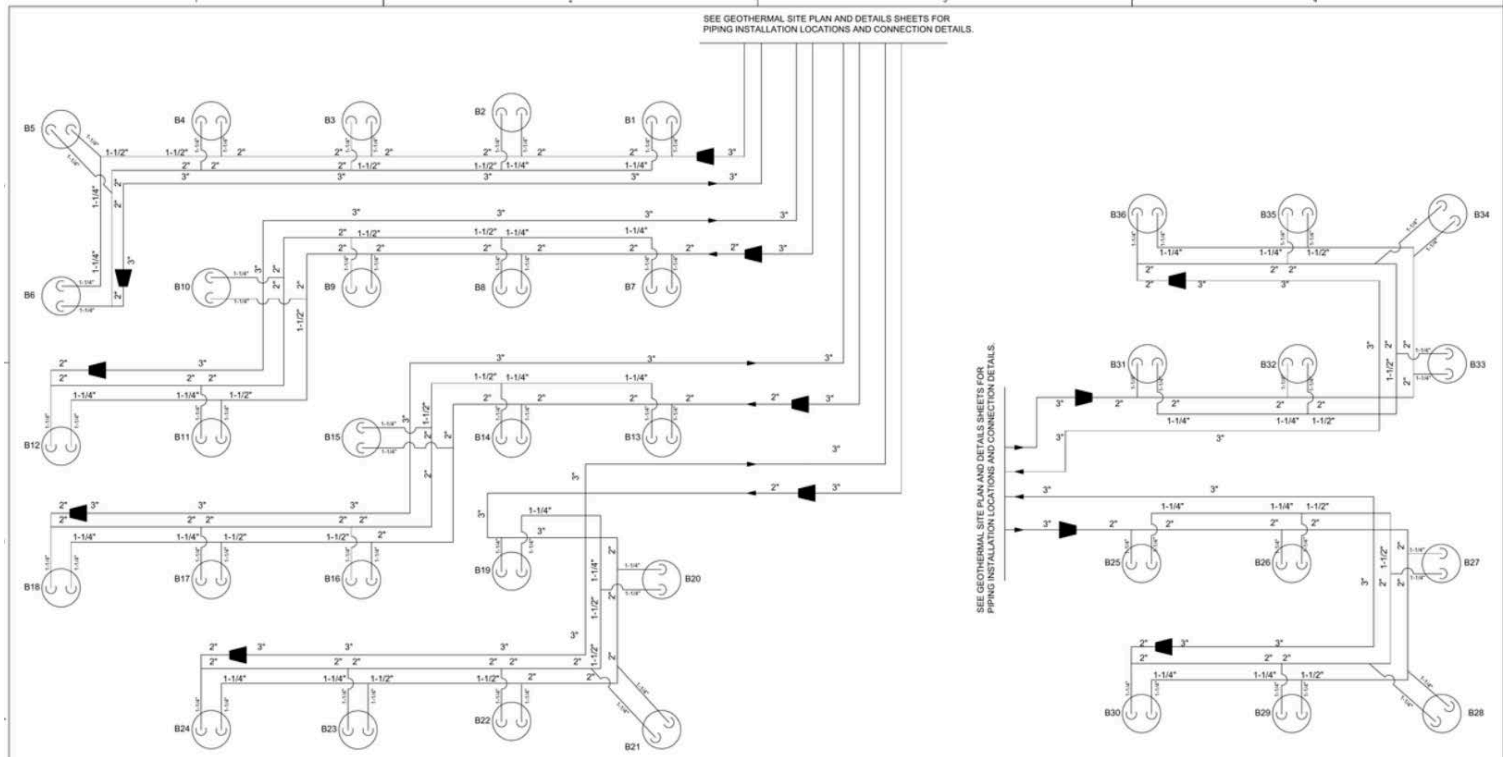

B 46 St
Rockaway Beach Blvd
Rockaway Beach Blvd
Rockaway Beach Blvd
Beach Green Dunes
Seaview Manor
Home For Adults
Beach 47th St
Beach 44 St Station
/ Frank Avenue
Rockaway Fwy
Rockaway Fwy
Edgemere Ave
Rockaway Fwy
Edgemere Ave
B 45 St
Beach 44th St
Beach 43rd St
Google

Geothermal System

- 36 boreholes to a depth of 450’
- 1-1/4” pipe in 5-6” bores
- 6 Circuits of 2 to 3” pipe into the building
- Loop field installed under the parking lot and playground
- Vertical Stack Heat Pumps with ECM Fans
- Sensorless VFD pumps
- Remote monitoring for loop field temperatures




PROPERTY LINE
ASPHALT PAVING
COMMERCIAL 2,192 SF
COMMERCIAL TOILET A 53 SF
COMMERCIAL TOILET B 53 SF
COMMERCIAL STORAGE 105 SF
ELEVATOR PIT
40'-0"
RECREATION YARD
DETENTION TANK 686 SF
TRANSFORMER



CIRCUIT PIPING NOTES

1. ALL CIRCUIT PIPING MATERIAL TO BE HDPE SDR13.5 (4710).
2. CIRCUIT SUPPLY AND RETURN PIPING TO REDUCE FROM 3" TO 2" AT BUILDING AS SHOWN ON GT-100.
3. MINIMUM BURY DEPTH OF PIPING TO BE 4' BENEATH FINISH GRADE.
4. ALL PIPING CROSSINGS TO BE COORDINATED BY GENERAL CONTRACTOR AND RESPECTIVE TRADES.

LEGEND

B1 — GEOTHERMAL BOREHOLE

FLOW DIRECTION ARROW

PIPING REDUCER FITTING

2" — HDPE PIPE SIZE

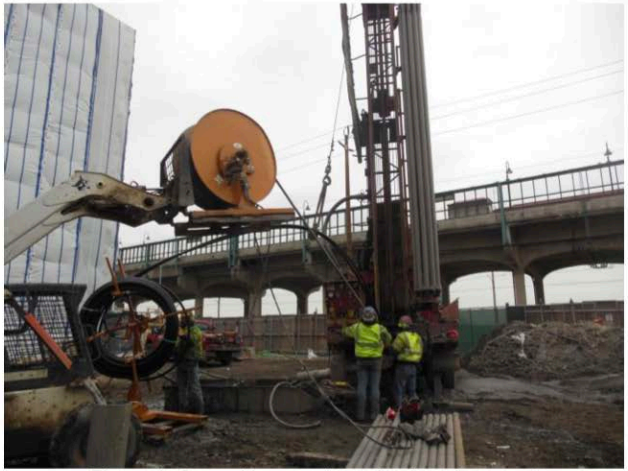
CIRCUIT MANIFOLD SCHEDULE

CIRCUIT 1: B1 - B6
CIRCUIT 2: B7 - B12
CIRCUIT 3: B13 - B18
CIRCUIT 4: B19 - B24
CIRCUIT 5: B25 - B30
CIRCUIT 6: B31 - B36

Geothermal System – "The First"

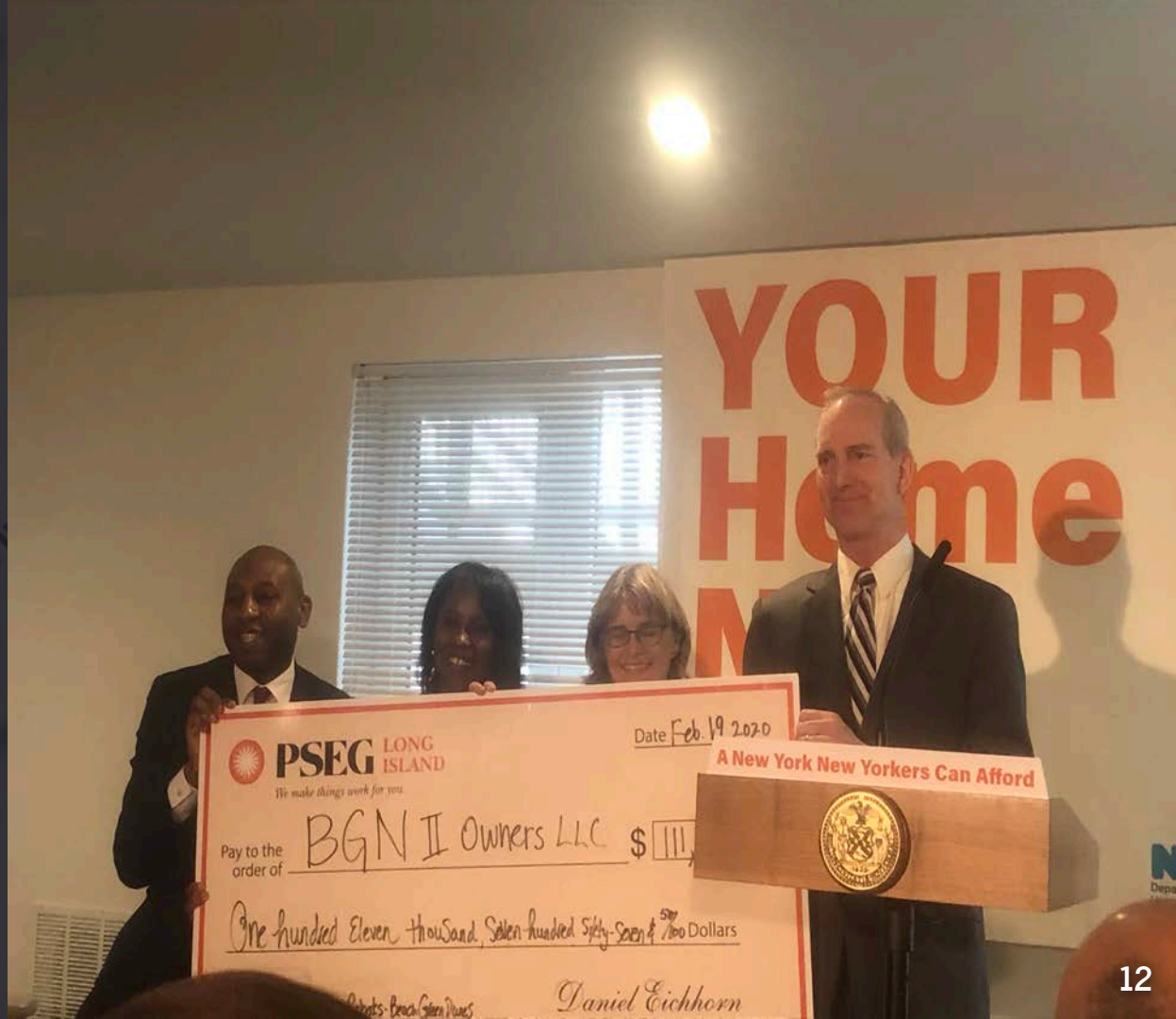
- First Closed Loop affordable housing building in NYC to install a geothermal system
- First TA approval in NYC to drill an uncased geothermal borehole within 200 feet of a TA structure
  - Replicated on 3 additional projects since
- Largest Affordable Housing Building in US to install geothermal at time of installation
- First Geothermal Rebate for a Multi Family Building in PSEG LI's Service Area


Tectonic
291 FR



$111,000

PSEG Long Island Rebate.



$10/month

Cost per apartment for AC.

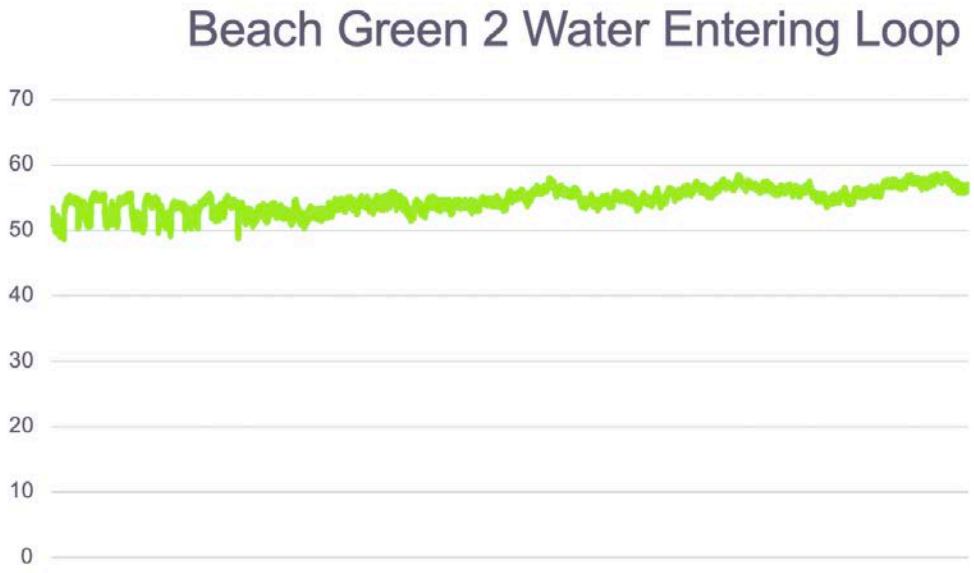
Compared to $100+ for a hydronic PTAC Building

Energy Usage (geothermal) – 7 month period

Time Period	KWh Usage
May 2020	17,640
June 2020	23,310
July 2020	20,160
August 2020	17,640
September 2020	15,540
October 2020	15,750
November 2020	22,050

Average kwh usage per month is 18,870

This is 25% of the average usage of a similar building



Loop Field performing better then expected over 3-month period

- Flowing ground water helps with thermal imbalance
- Passive house construction reduces peak load to ~40 tons instead of ~125 tons for a similar building

Questions?

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