

Green Garage HVAC Design Criteria

- Net zero energy
- Passive energy sources used first
- Top off strategy +/- 1%

Hours and functional uses

- M-F 8 am – 6 pm
- Offices – Historic
- Workshop - Annex

Set points for human comfort

- Winter (Historic): 68F, 3F setback
- Winter (Annex): 65F, 3F setback
- Summer: 78F, 3F setup
- Relative humidity:
 - Minimum 30%
 - Maximum 60%
 - Target 45%

Indoor air pressure

- Summer + 0.5 to + 2.5 Pascal
- Winter - 0.5 to - 2.5 Pascal
- Will be maintained automatically with intelligent controls

Ventilation

- 20 cfm per person required by code
- Target = 500 cfm (25 people)
- Min. = 0 cfm (unoccupied)
- Variable depending on occupancy

Domestic hot water needs: 40 gal/day

DTE Peak and Off-peak rates: Geothermal rates
On-Peak Off Peak

- Normal: \$0.0467 \$0.0346
- Summer: \$0.09925 \$0.03495 (Jun-Sep)
- On-Peak: Mon - Fri 10 a.m. to 7 p.m

Envelope

- 11, 441 sq. ft. total
 - 8720 Historic side
 - 2721 Annex side
- 175, 000 cu. ft. total
- 0.10 ACH
- R-100 (65 annex) roof, R-42 walls, R-10 floor
- Windows 19.1% net wall area
- Window U-value 0.25, SHGC 0.15

Ground Temperature at 8' below grade

- Winter: 42F
- Summer: 58F
- Shoulder: 50F

Outdoor design conditions

- Winter: 6F
- Summer: 88F
- Summer wet bulb: 74F

Heating and cooling peak hours

- Heating 64.7 KBTUh on Jan. 15 at 8:00 am
- Cooling 39.6 KBTUh on July 12 at 4:00 pm

Heating and cooling loads

- Heating 50 KBTUh
- Cooling sensible 40.3 KBTUh
- Cooling latent 11.4 KBTUh
- Sensible heat ratio 0.78