Jon Harrod

Project Manager, Halco Energy

Jon has worked in green energy since 2001 as a building analyst, insulator, HVAC technician, and trainer. His current role involves overseeing design and installation of air source heat pumps in homes around Central NY. He writes on electrification, indoor air quality, and building science for greenbuildingadvisor.com.
Syracuse, NY

- Winter design temp 3F
- Most of heating season 20-59F
- 32 hrs/year below 0F
- Record low -26F (1966, 1979)
Not your grandparents heat pumps!

- Modern refrigerants
- Variable speed fans and compressors
- Modified refrigerant cycle
- Electronic expansion valves
- Sophisticated controls

*Modern cold-climate heat pumps offer solid performance well below 0F!*
Design process

1. Customer interview
2. Building assessment
   a. Envelope: Heating and cooling loads
   b. Electrical service
   c. Existing ductwork
3. Distribution and zoning options
4. System selection
5. Equipment locations
6. Double check!
Building envelope assessment

- Surface areas
- R-values and window types
- Measured air leakage
- Duct location, insulation, and leakage
- Energy bill analysis
- Improvement opportunities
Comfort and air quality

● Comfort
  ○ Addressing poor distribution
  ○ Bonus rooms/additions
  ○ High-quality AC

● Air quality
  ○ Eliminate combustion by-products
  ○ Ductwork issues
  ○ Dehumidification
  ○ Filtration & ventilation*