

Degree Day Analysis

January 25, 2026

Multi-City Energy Demand Comparison

HIGHEST ENERGY DEMAND Chicago, IL	TOTAL DEGREE DAYS 1509
LOWEST ENERGY DEMAND Houston, TX	CITIES ANALYZED 5

Energy Demand Comparison

City	HDD (Heating)	CDD (Cooling)	Total DD	Dominant Load
Chicago, IL	1509	0	1509	Heating
Denver, CO	1156	0	1156	Heating
Seattle, WA	889	0	889	Heating
Miami, FL	23	438	460	Cooling
Houston, TX	271	166	437	Heating

Energy Planning Implications

City	Avg Temp	HVAC Sizing	Peak Season
Chicago, IL	1.4°C	Heating-dominant system	Winter
Denver, CO	5.3°C	Heating-dominant system	Winter

Seattle, WA	8.2°C	Heating-dominant system	Winter
Miami, FL	22.6°C	Cooling-dominant system	Summer
Houston, TX	16.9°C	Heat pump optimal	Winter

Key Insights:

- Total degree days indicate overall HVAC energy consumption potential
- HDD/CDD balance determines optimal equipment type (heat pump vs single-purpose)
- Cities with balanced HDD/CDD benefit most from reversible heat pumps

Methodology: Degree days calculated using 18°C (65°F) base temperature. $HDD = \sum \max(0, 18 - T_{avg})$ for heating demand. $CDD = \sum \max(0, T_{avg} - 18)$ for cooling demand. 90-day analysis period from Open-Meteo ERA5 data.