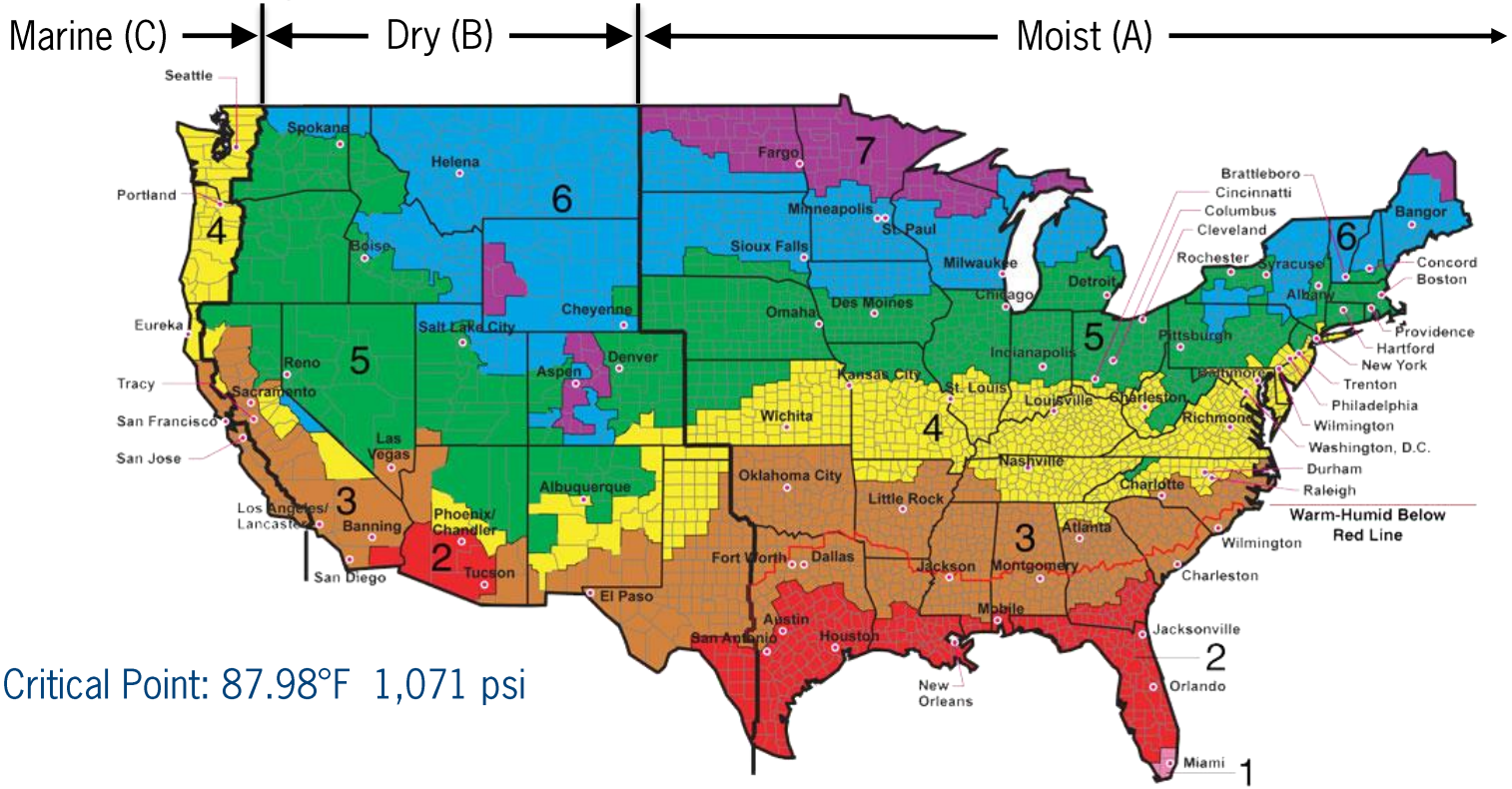

AMERICA
ATMO
sphere

Adiabatic Cooling for CO2 Applications

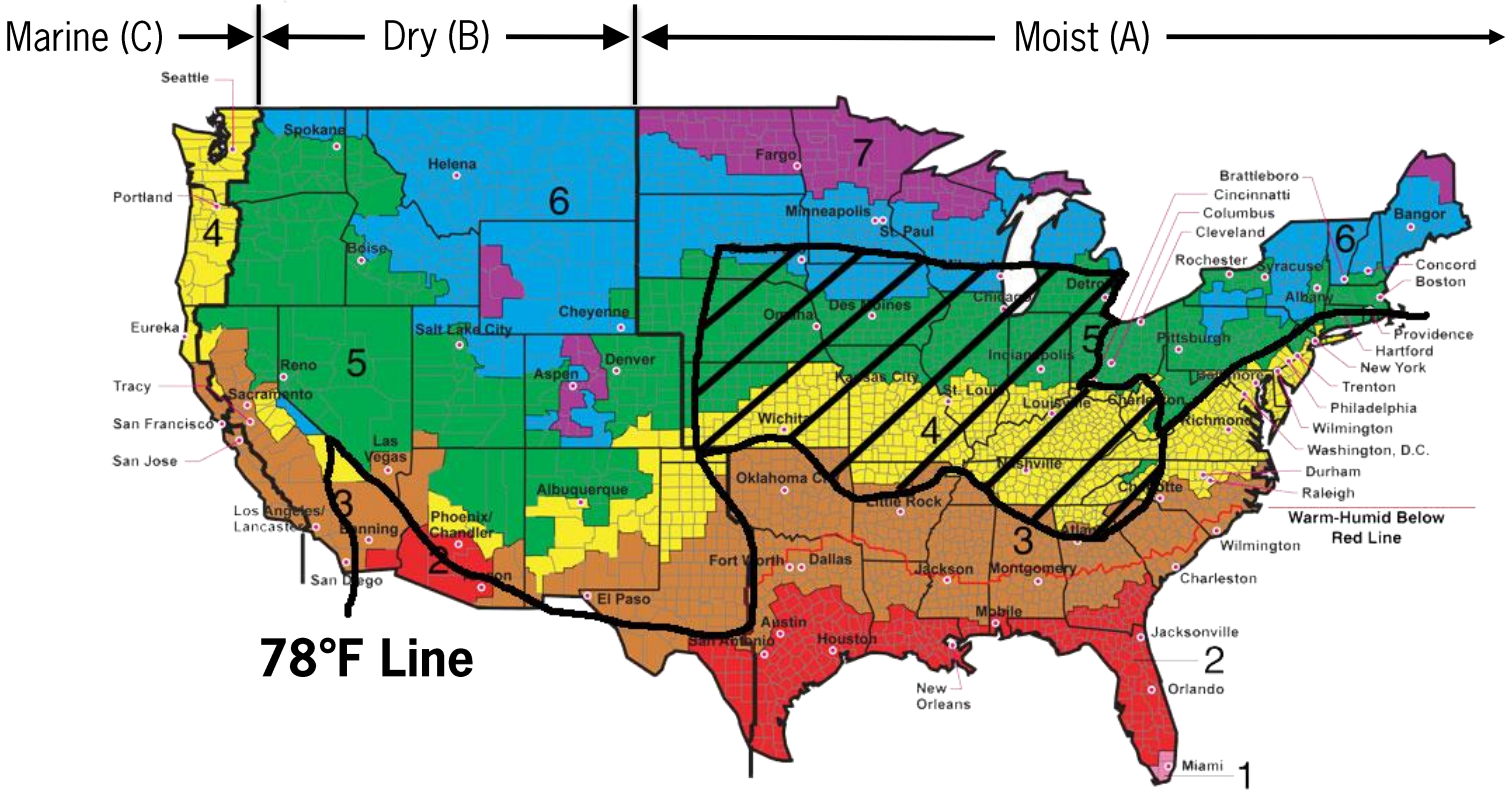
Jerry Lozano

ASHRAE Climate Zone Map

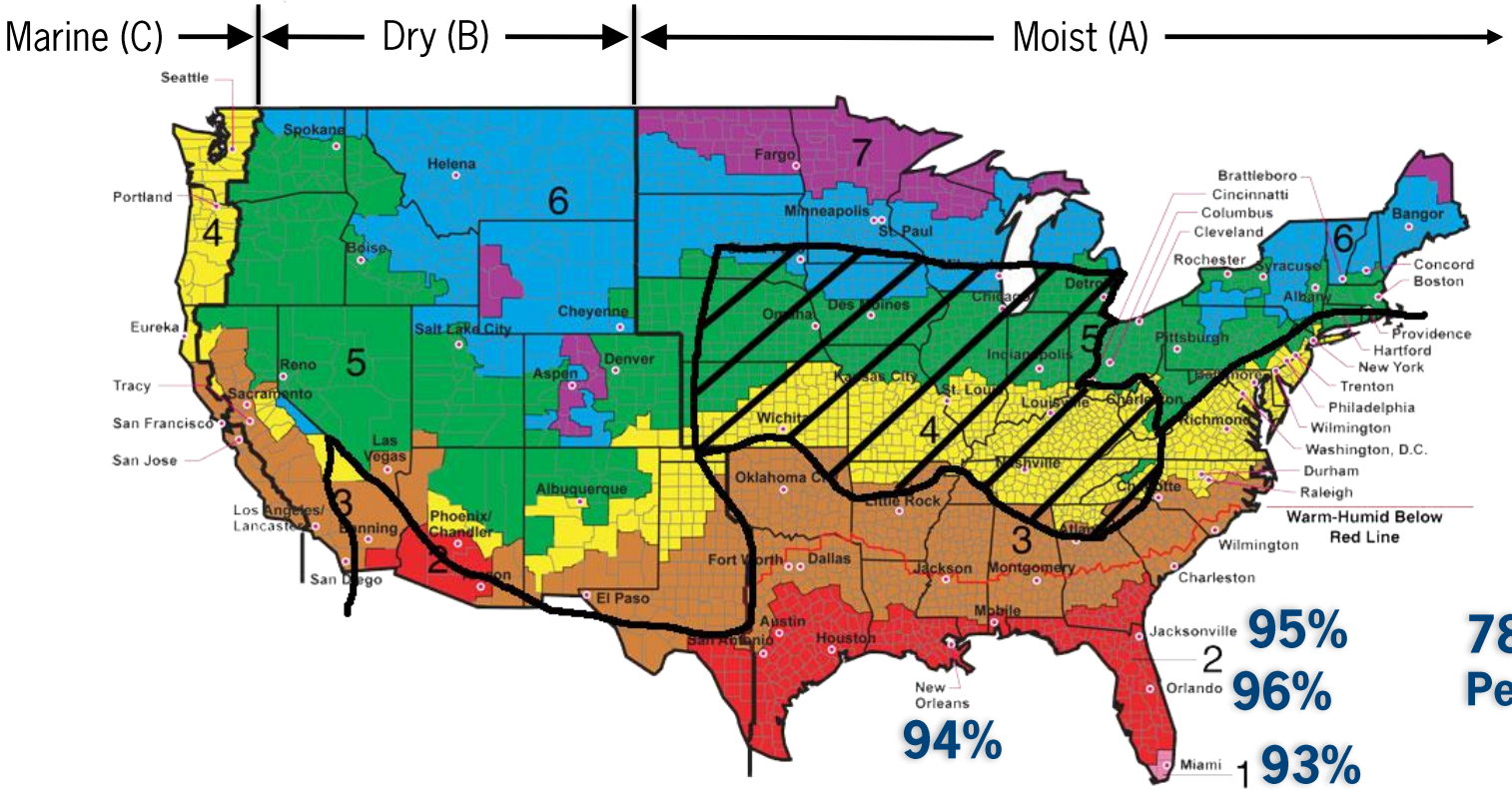


CO2 Critical Point: 87.98°F 1,071 psi

ASHRAE Climate Zone Map



ASHRAE Climate Zone Map



Case Analysis

Supermarket in the East Coast

94°F DB
74.9°F WB

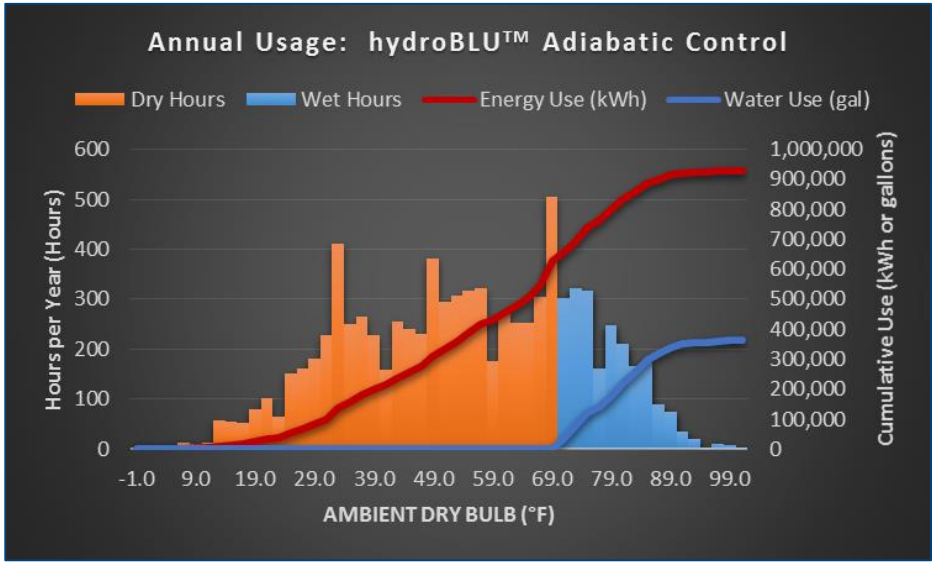
Load:
Medium temp 913,250 BTU
Low temp 456,600 BTU
Heat of Rejection 2,000,000 BTU

Assumptions

Min load: 80%
Min SCT: 70°F
$0.01356 per kWh
$11.0 per kW Demand Charge
$10.0 per kgal Water Makeup & Sewer

	Dry Gas Cooler	Adiabatic Condenser
Fan:	68,462 kW	65,094 kW
Compressor:	1,156,313 kW	929,314 kW
Subcritical:	82.9%	100%
Water use:	———	363 kgal
Peak demand:	362 kW	209 kW

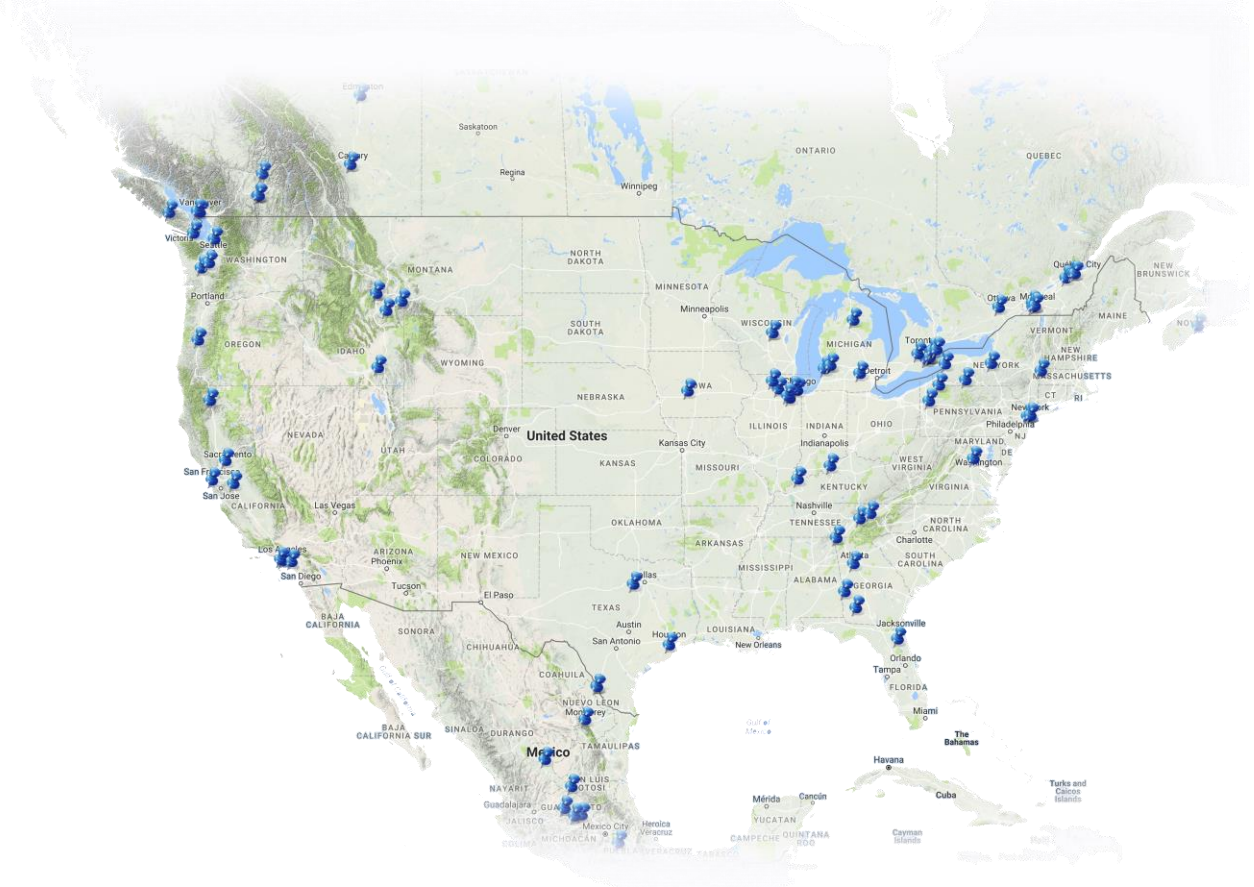
Financials



	Dry Gas Cooler	Adiabatic Condenser
Capital Investment Premium:	———	$41,500
Annual Electric Cost:	$166,079	$134,842
Annual Demand Cost:	$39,077	$22,559
Annual Water Cost:	———	$1,814
Total Op. Costs:	$205,168	$159,582

Simple payback: 0.91 yrs

Adiabatic Installation Locations



Güntner's hydroBLU Adiabatic Unit

Benefits

- Intelligent controls for water and fans
- Low maintenance
- Small footprint
- Low refrigerant charge
- Metered water usage
- NO pump
- NO sump
- NO aerosols
- NO stagnant water
- NO water treatment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