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MARCH 2014

INDIRECT EVAPORATIVE COOLER

OPPORTUNITY

How much energy is used for air conditioning in the U.S.?

15%
OF ENERGY
goes to air conditioning[1]

LARGEST CONTRIBUTOR
to peak demand, grid failures and blackouts[2]

TECHNOLOGY

How do Indirect Evaporative Coolers save energy?

REMOVE HEAT AND MOISTURE
with unique air-processing technology

57-92% MORE EFFICIENT
than code-compliant Roof-Top Units (RTU)[3]

M&V

Where did Measurement and Verification occur?

NATIONAL RENEWABLE ENERGY LABORATORY assessed the performance of 3 multistaged IEC units provided by Coolerado and deployed at the Denver Federal Center in Colorado

RESULTS

How did Indirect Evaporative Coolers perform in M&V?

80%
ENERGY SAVINGS[4]
increased water usage (3 gallons/ton-HR) compared to typical rtu[5]

POSITIVE
THERMAL COMFORT
as defined by ashrae[6]

<15
YEARS
average payback for datacenters[7]

Tarket Markets Favor Dry Climate Zones (Subtype B)

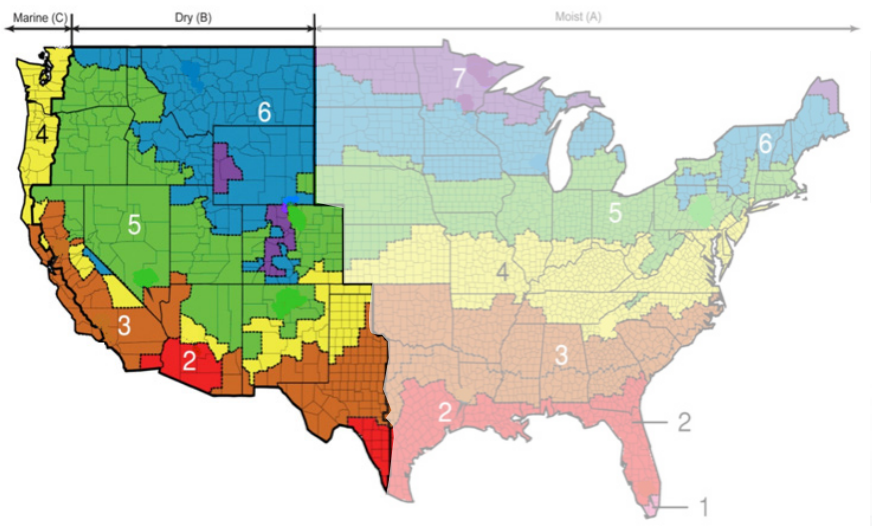
Data centers in ASHRAE climate zones 2B - 6B are top target market

TOP 3 TARGET MARKETS

Data Centers
2B – 6B
Retrofit & New Construction

Outside Air Pre-Conditioner
2B, 3B
Retrofit onto RTUs with EER ≤ 12

Zone Cooler
4B – 6B
Retrofit & New Construction



DEPLOYMENT

Where does M&V recommend deploying Indirect Evaporative Coolers?

DRY CLIMATES

Data centers : ASHRAE climate zones 2B - 6B

Outside air pre-conditioner : ASHRAE climate zones 2B, 3B

Zone cooler : ASHRAE climate zones 4B- 6B

[1]Multistaged Indirect Evaporative Cooler Evaluation. Jesse Dean, Ian Metzger (NREL), March 2014, p.7 [2]Ibid, p.7 [3]Ibid, p.3 [4]Ibid, p.5 [5]Ibid, p.27 [6]Ibid, p.25 [7]Ibid, p.30