

POINTENERGY
INNOVATIONS



Shift

Why Radiant systems are the future of low
energy and decarbonized buildings

Peter Rumsey, PE, FASHRAE
Founder & CEO

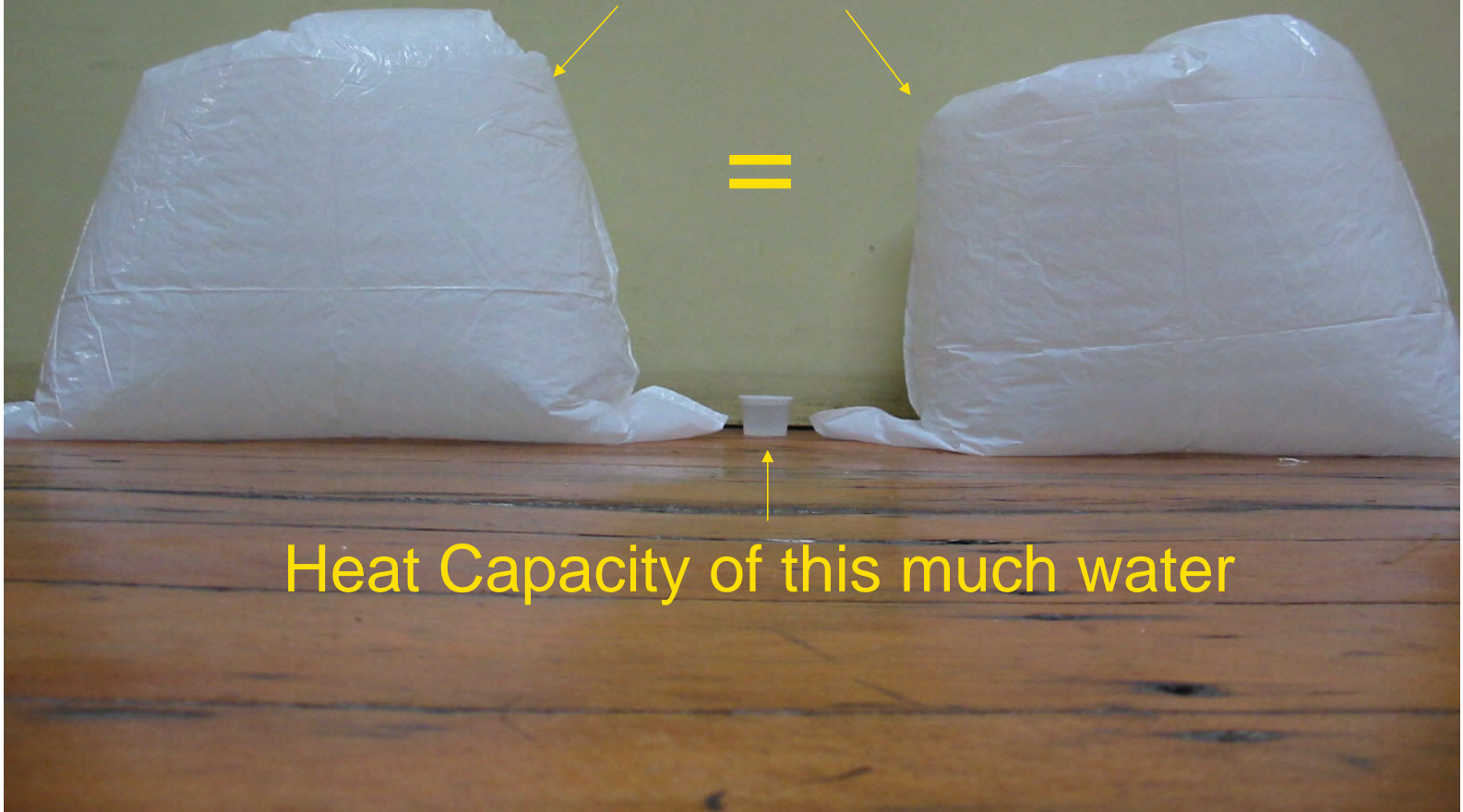
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Why Radiant?

Comfort

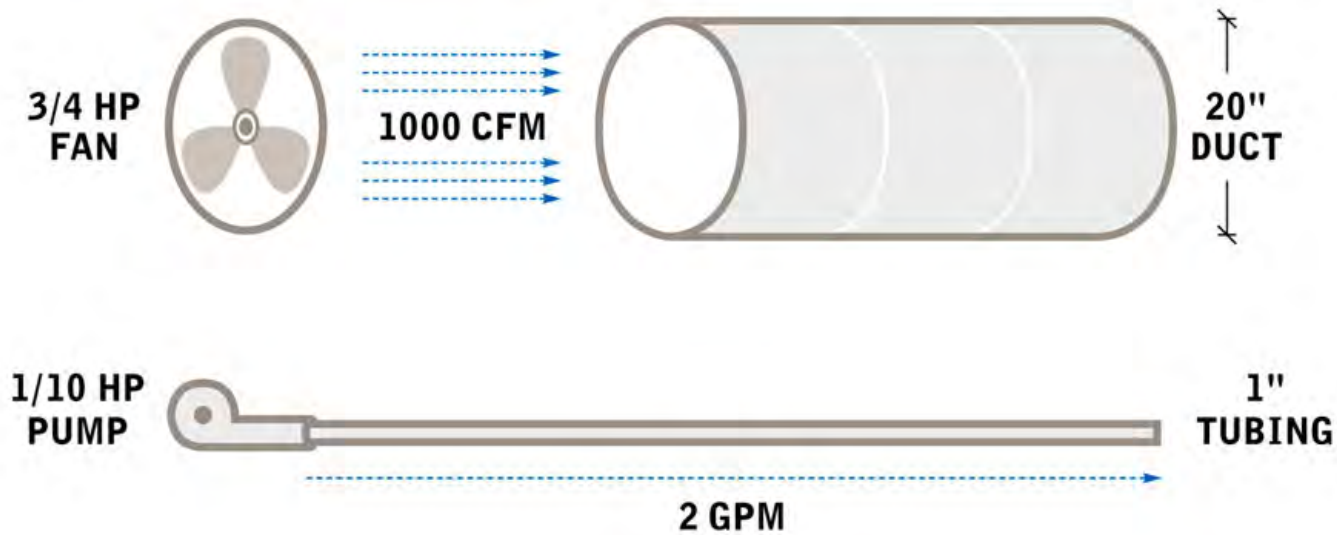


Heat Capacity of this much air

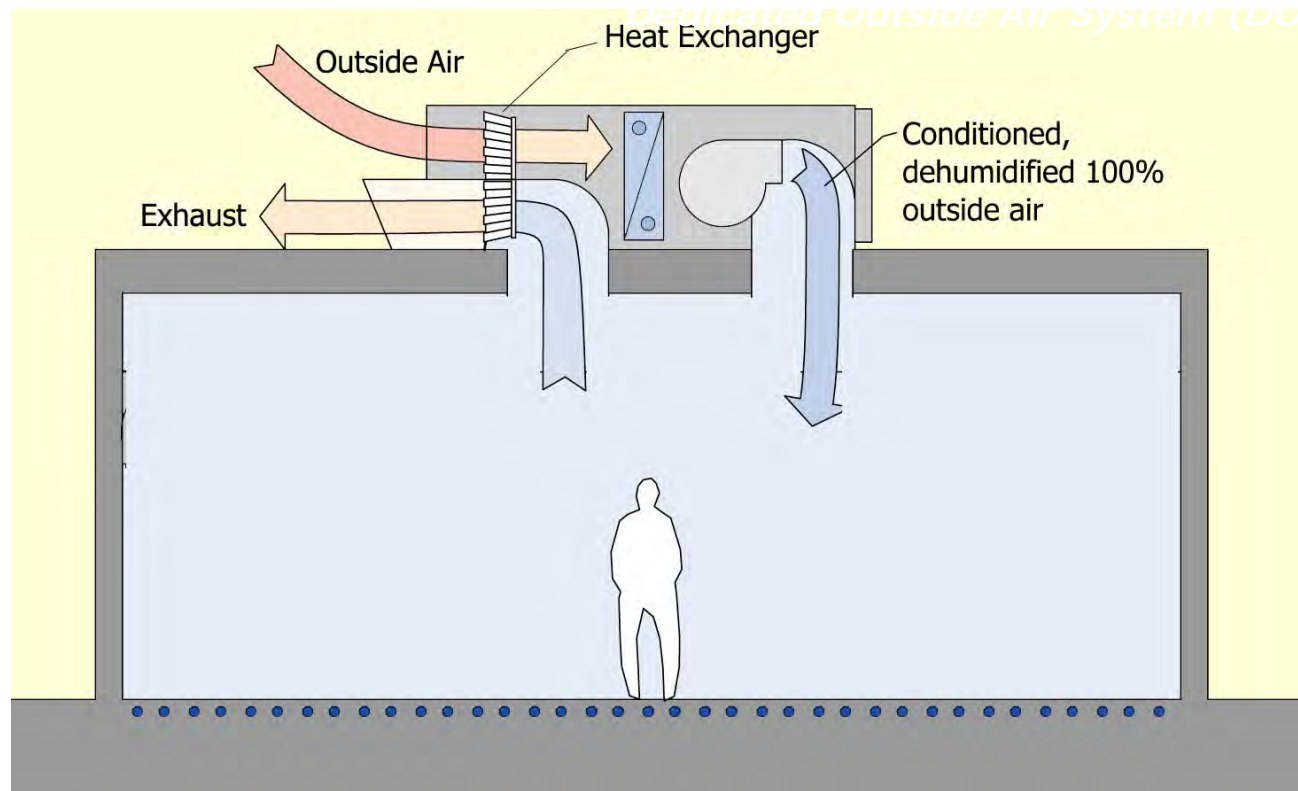


Heat Capacity of this much water

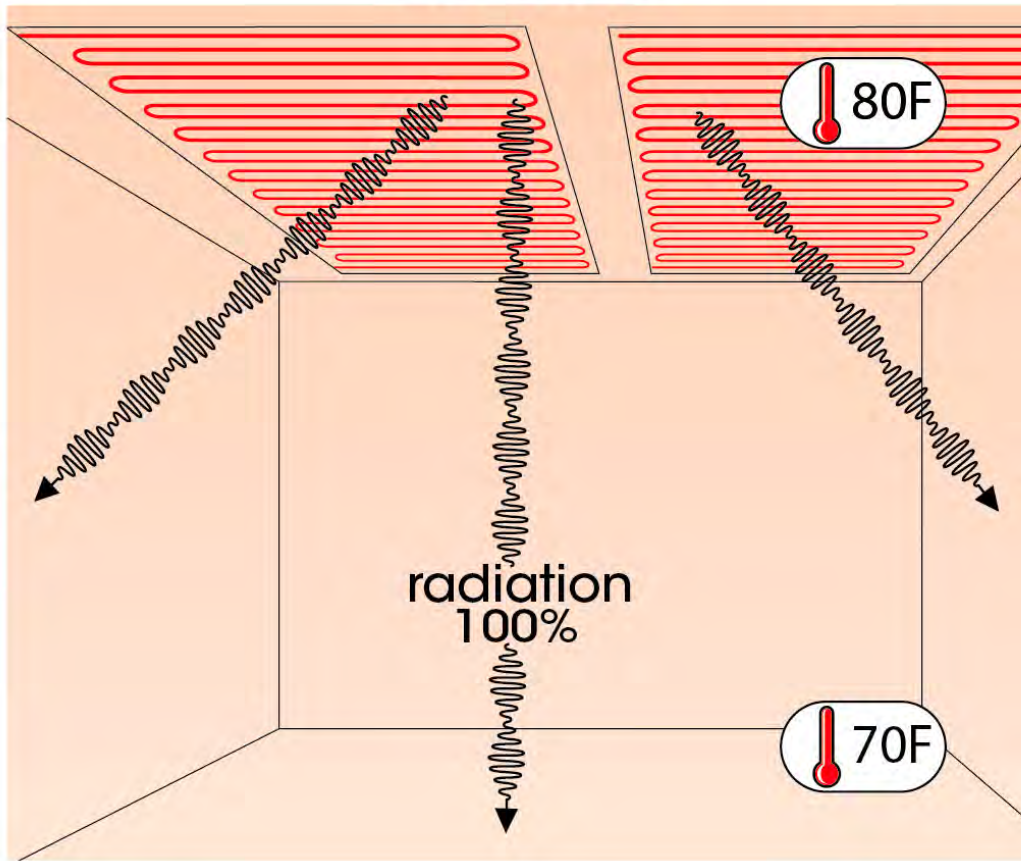
7 x Reduction in Distribution Energy



Air Quality – Decoupled System

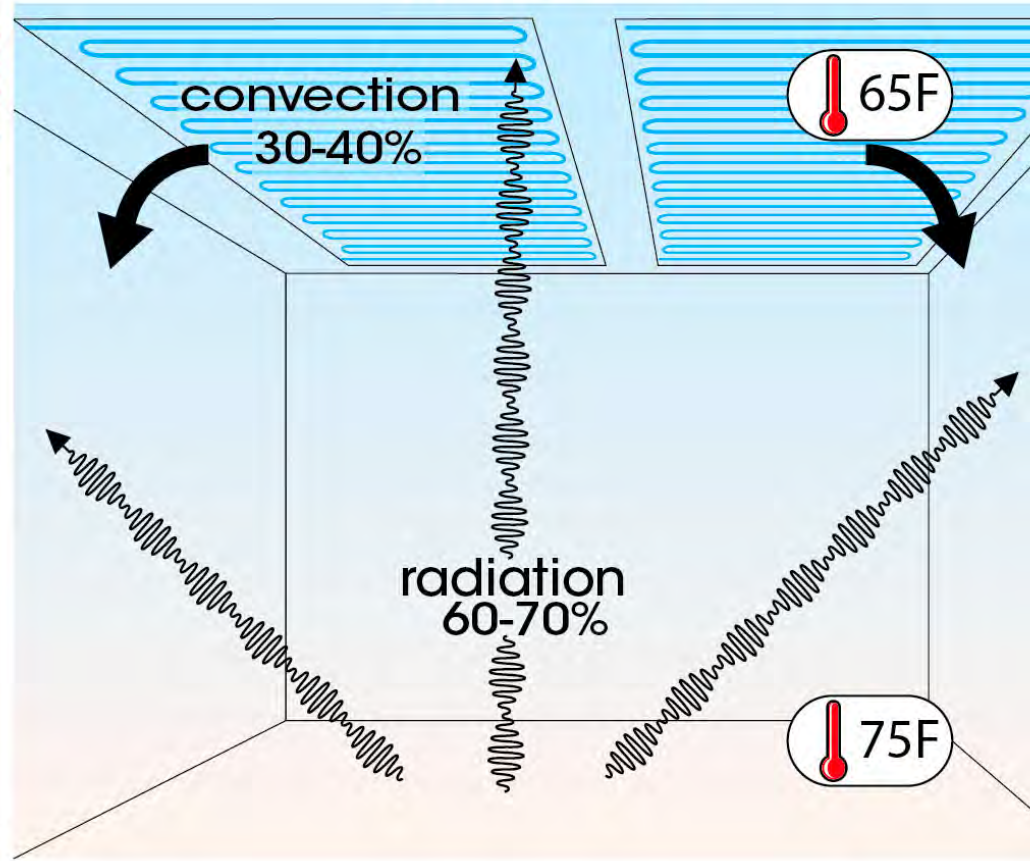


HEATING



Water Supply Temp = 80 – 90 Deg F

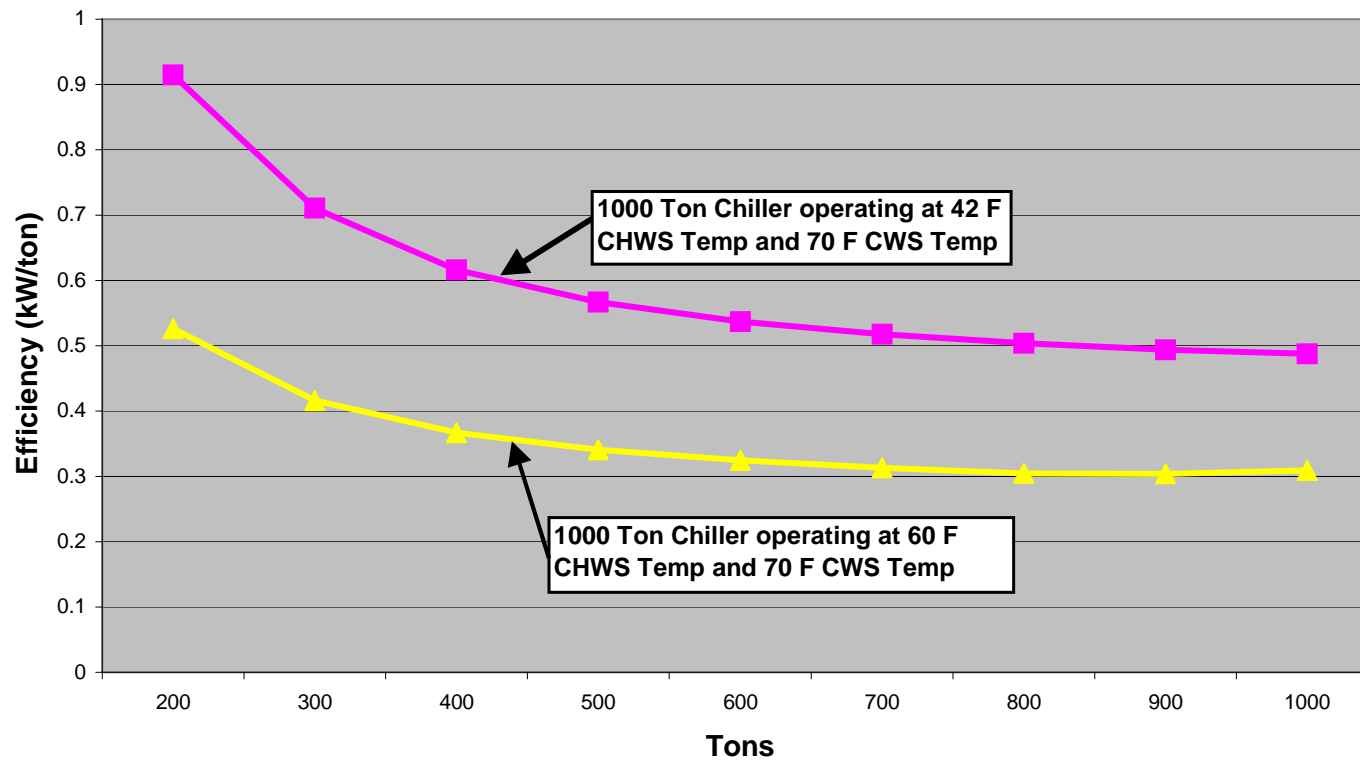
COOLING



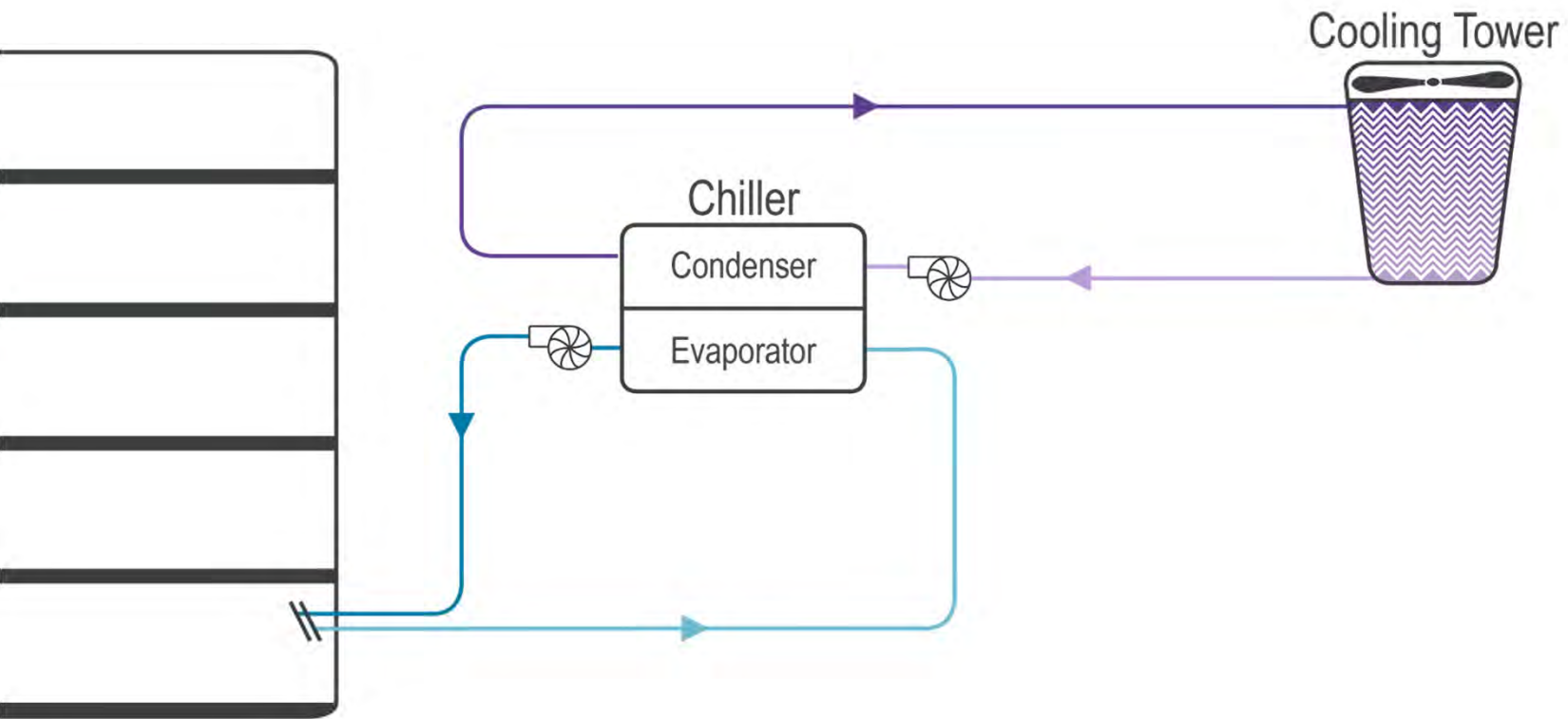
Water Supply Temp = 55 - 65 Deg F

Low Lift Cooling

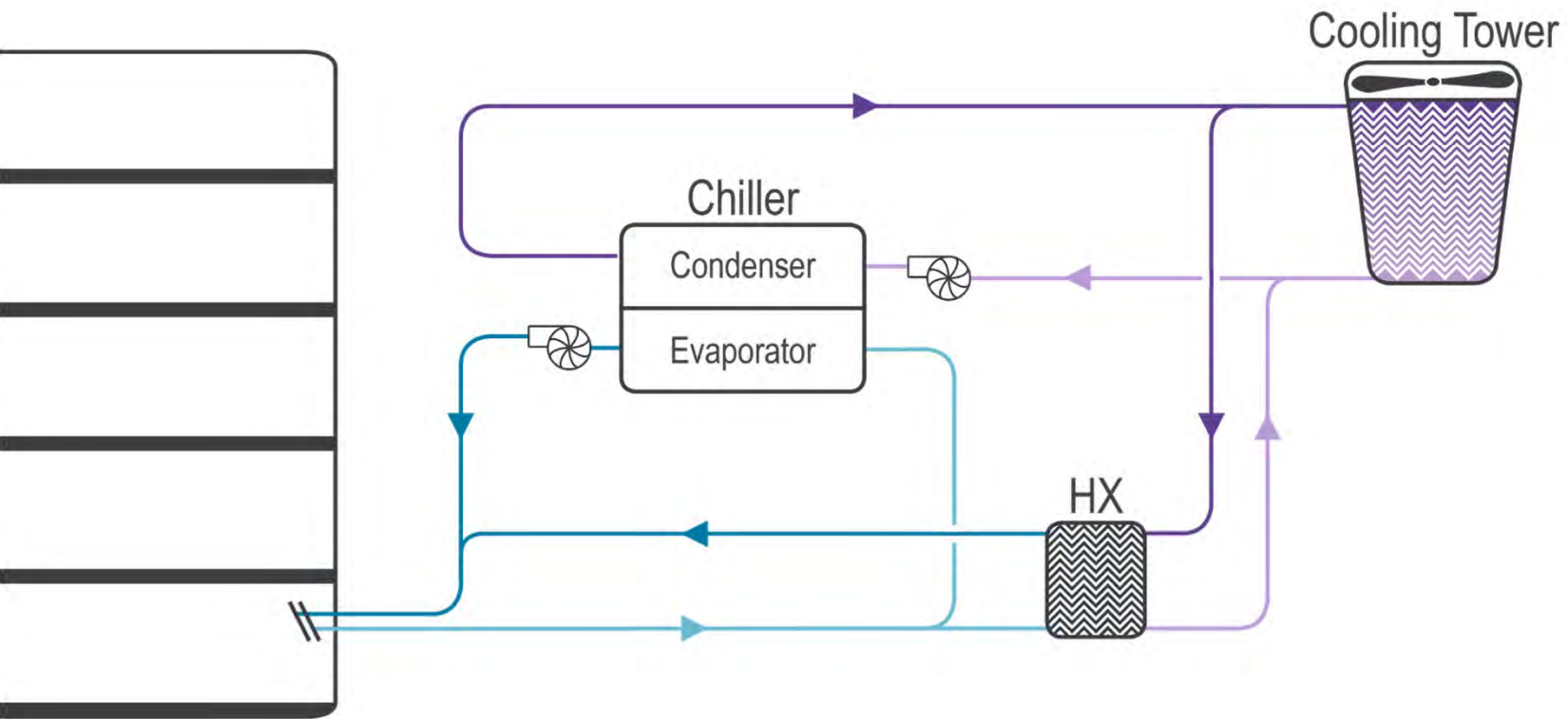
Comparison of Low Temperature and Medium Temperature Chillers



Traditional Chilled Water Plant

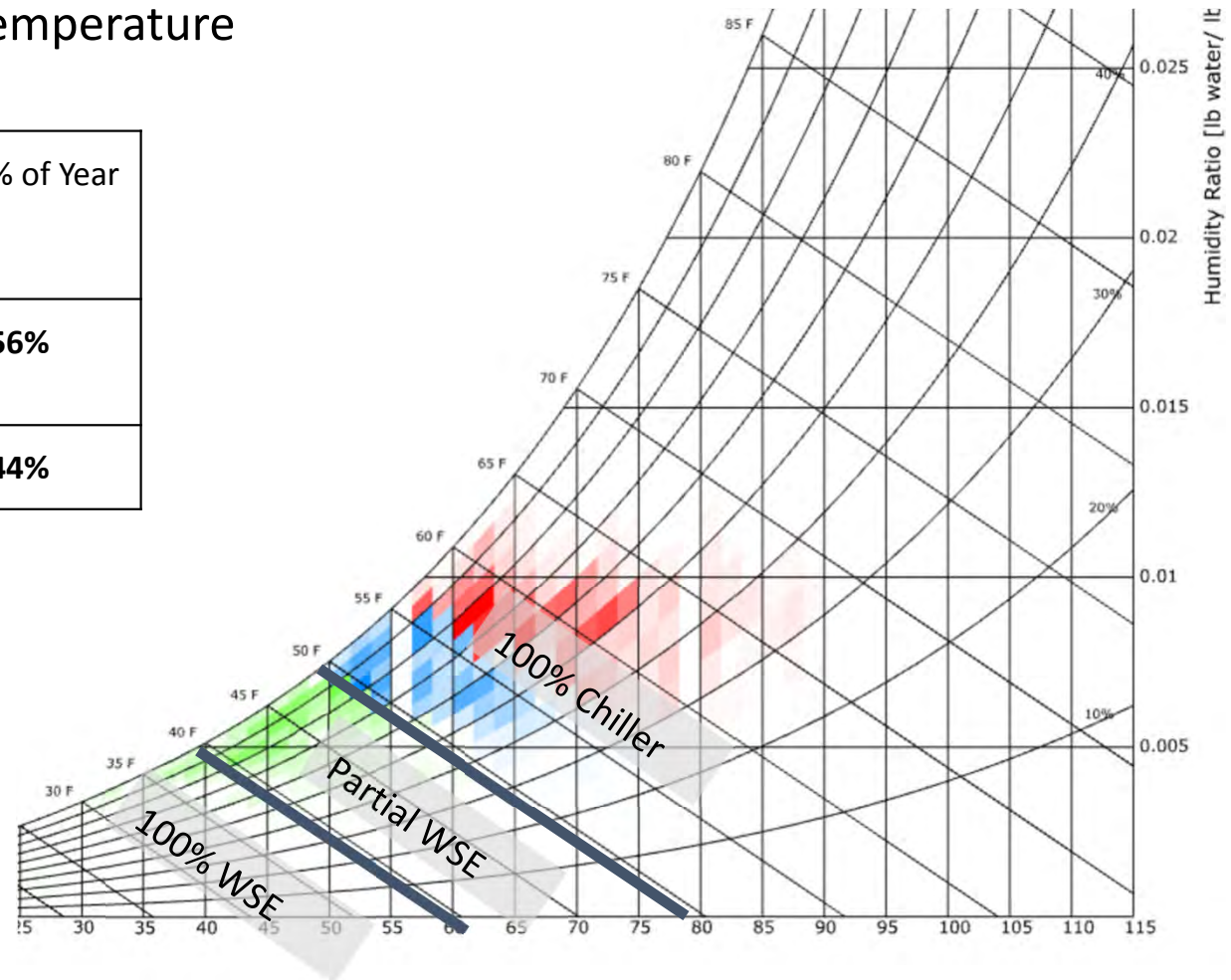


Water Side Economizer



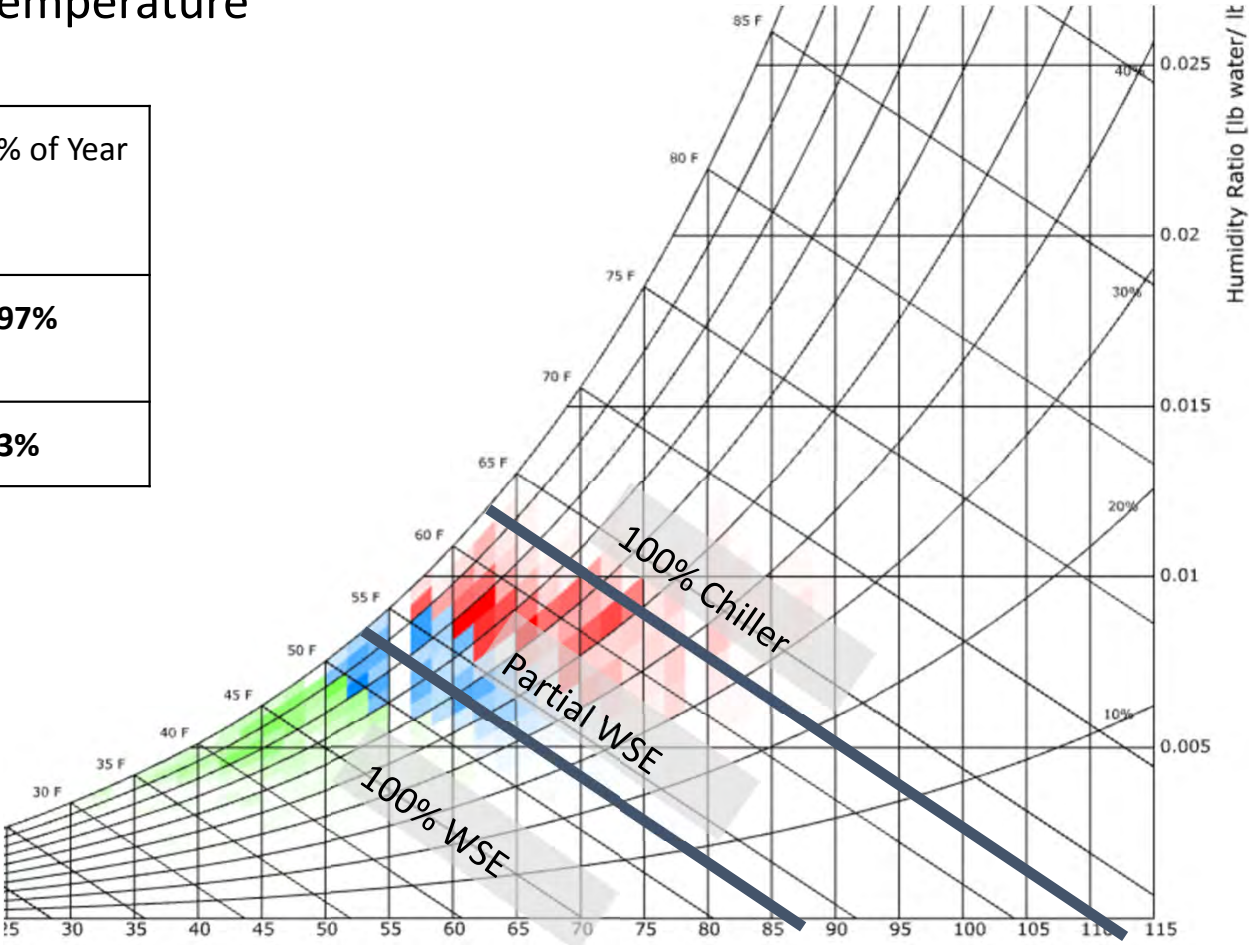
Waterside Economizer Potential 45 Deg F Chilled Water Temperature

	Hours Per Year	% of Year
WSE (Full & Partial)	5692	56%
Chiller	3068	44%



Waterside Economizer Potential
60 Deg F Chilled Water Temperature

	Hours Per Year	% of Year
WSE (Full & Partial)	8,497	97%
Chiller	263	3%



Examples

IDeAs Office

(first net zero commercial building)



Exploratorium



Bullitt Center



Nike HQ



Bangkok Airport



Deutsche Bank



Google Zurich



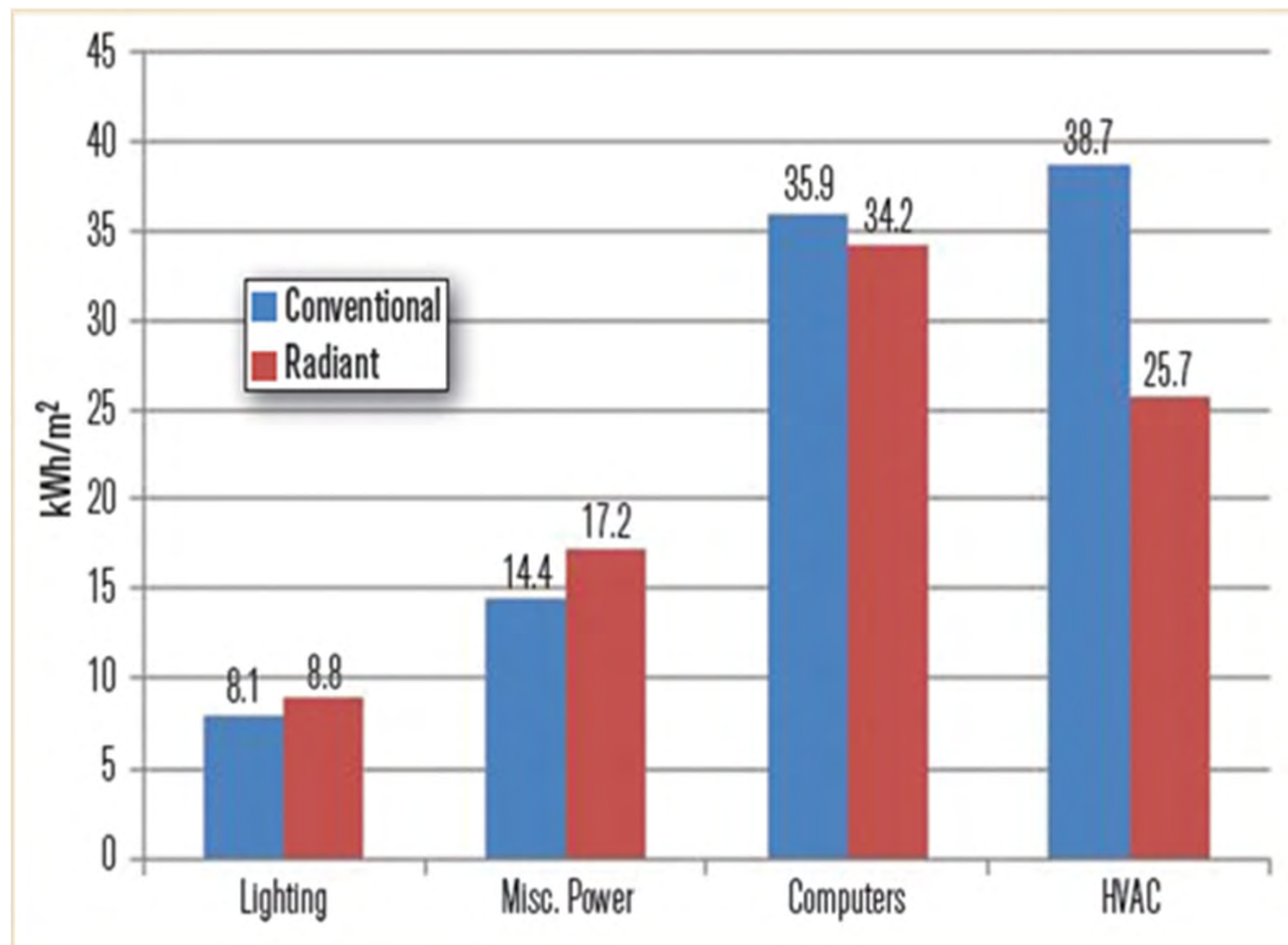


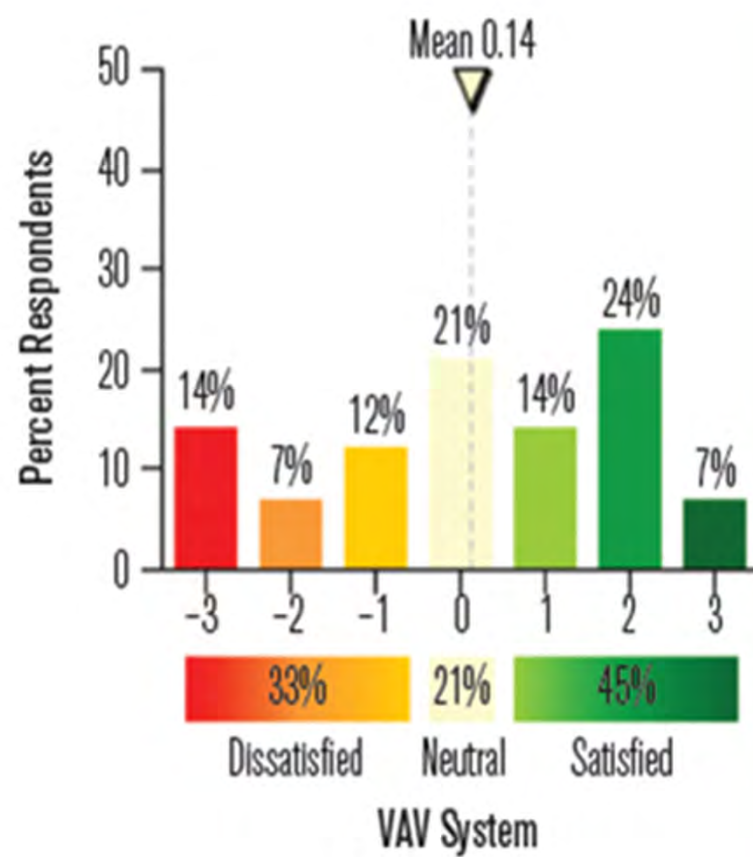
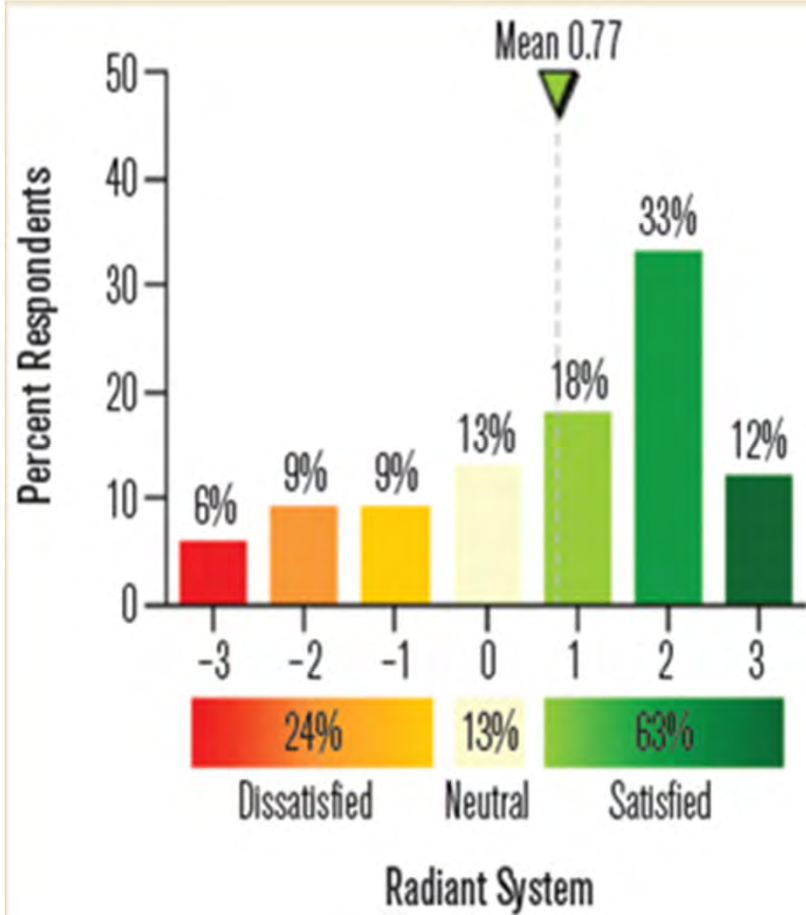
230,000
Employees

Hyderabad SDB 1



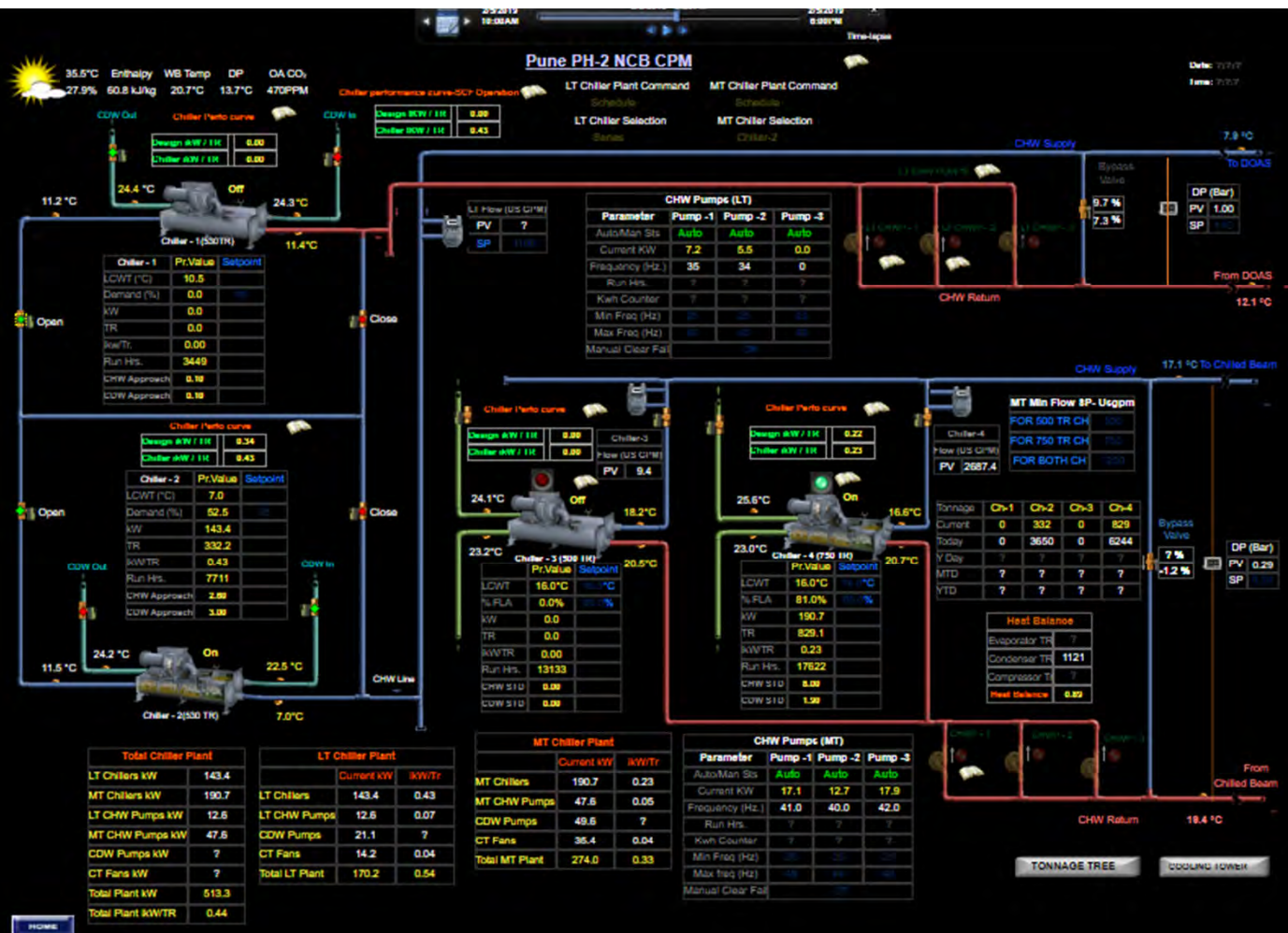












Outside air Temperature 96 Deg F

Total Chiller Plant	
LT Chillers kW	143.4
MT Chillers kW	190.7
LT CHW Pumps kW	12.6
MT CHW Pumps kW	47.6
CDW Pumps kW	?
CT Fans kW	?
Total Plant kW	513.3
Total Plant kW/TR	0.44

LT Chiller Plant		
	Current kW	kW/Tr
LT Chillers	143.4	0.43
LT CHW Pumps	12.6	0.07
CDW Pumps	21.1	?
CT Fans	14.2	0.04
Total LT Plant	170.2	0.54

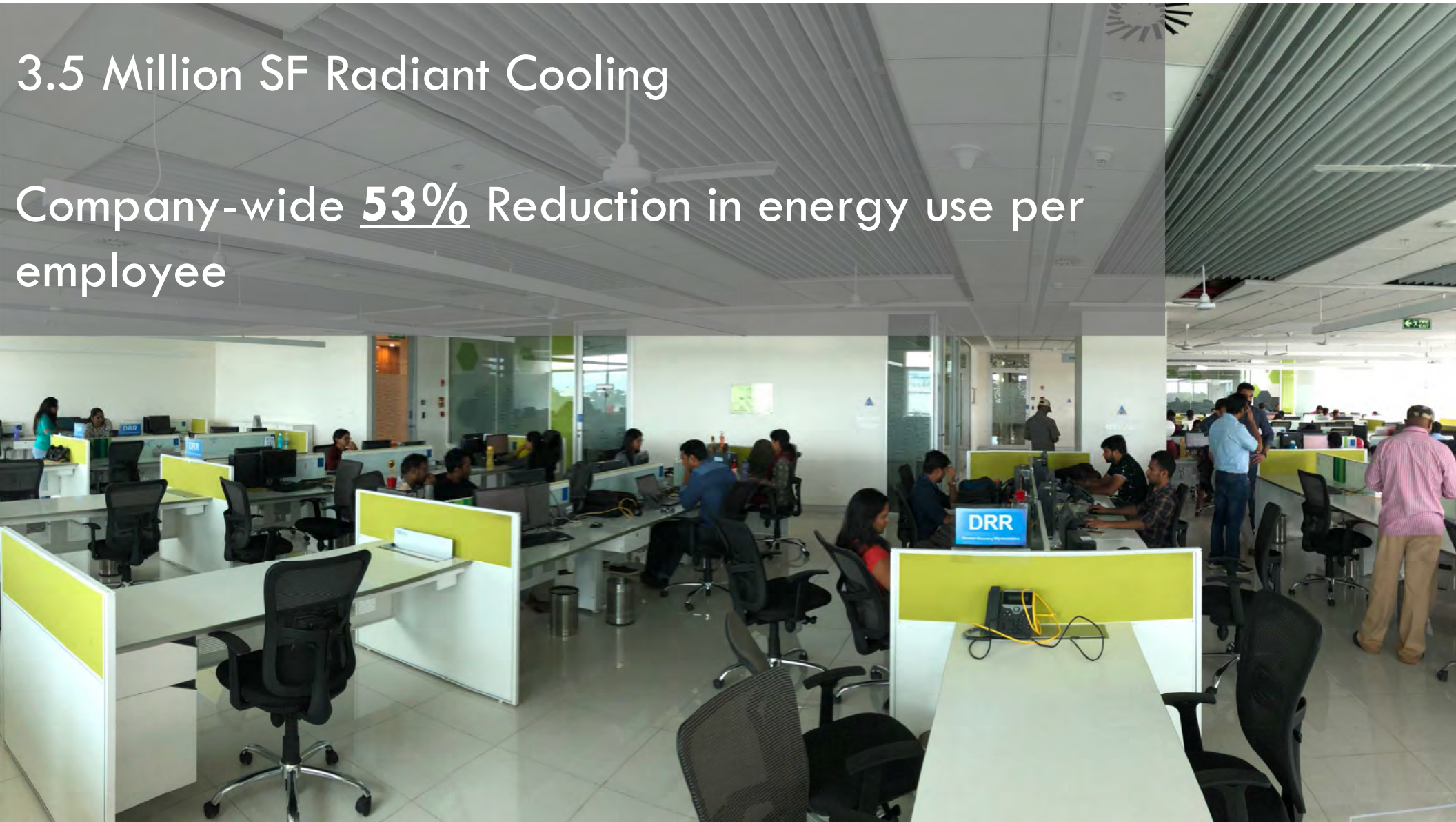
With CW Pumps – LT Plant
Efficiency = 0.58 kW/ton

MT Chiller Plant		
	Current kW	kW/Tr
MT Chillers	190.7	0.23
MT CHW Pumps	47.6	0.05
CDW Pumps	49.6	?
CT Fans	35.4	0.04
Total MT Plant	274.0	0.33

With CW Pumps – MT Plant
Efficiency = 0.39 kW/ton

3.5 Million SF Radiant Cooling

Company-wide 53% Reduction in energy use per employee





United Nations
Climate Change



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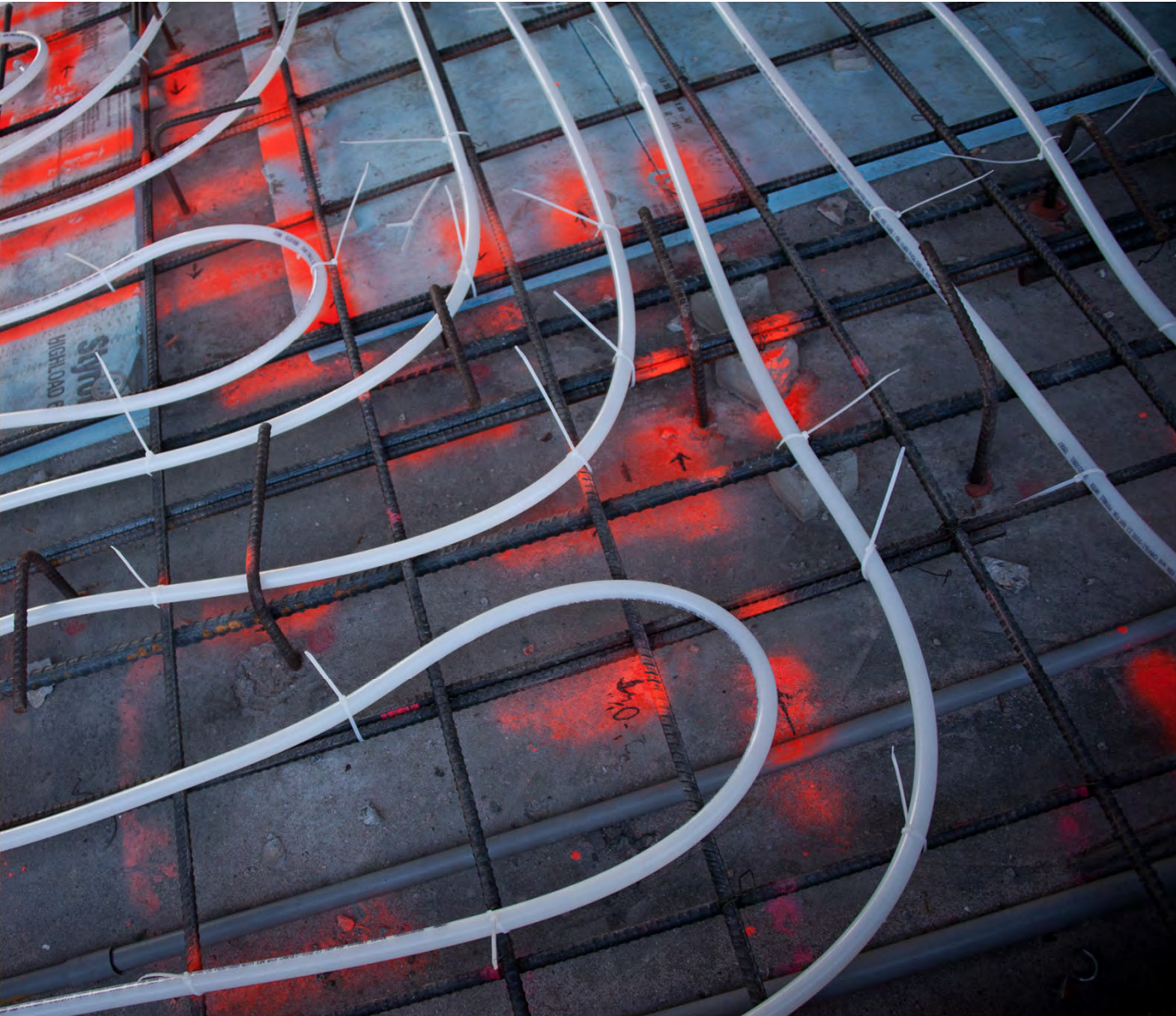
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UN CLIMATE PRESS RELEASE / 26 SEP, 2019

Winners of the 2019 UN Global Climate Action Awards Announced



Costs



100 linear feet per hour

6" spacing

\$200/hour

+50% for manifolds and
tubing

\$6/SF

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VAV Box





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