

THE INTERNET OF AIR

Bringing the power
of the cloud to HVAC



“The solution is an **innovative and unique combination** of technologies. The approach is innovative and **impactful.**”

– Department of Energy (Commercial Technology Grant Application Review)

Management Team

Deepinder Singh – CEO

- 20 Years of embedded controllers/networking, 6 startups



Pankaj Chawla – CTO

- 15 years of experience in software development at



Bob French – Chief Evangelist

- 20 years high tech startups and Entrepreneur in Residence Carlson School of Business

The team
previously
founded



which was



ecomaginationSM
2011 winner



Board of Advisors

Jay Schrankler – Executive Director, University of MN Technology Commercialization

- 26 years at Honeywell culminating as VP/GM of \$1.2B Honeywell HVAC Controls

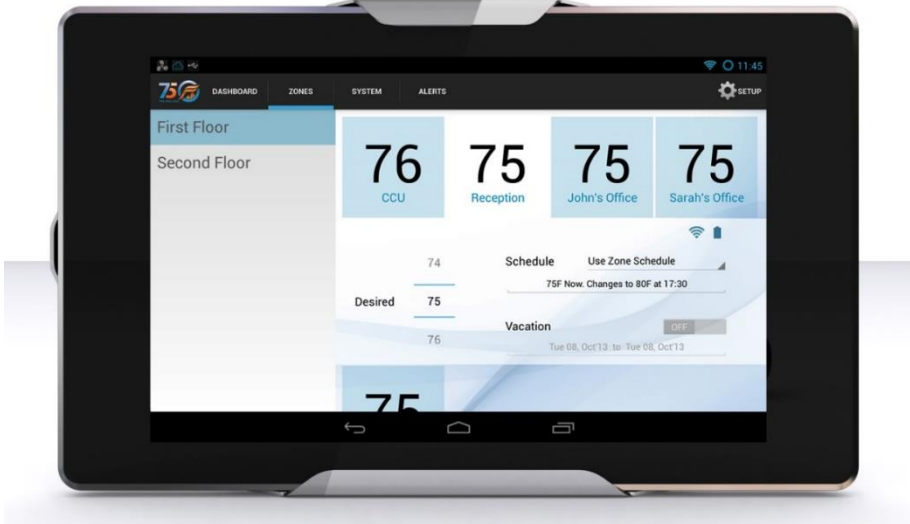
Mil Ovan – CMO, Navitas Systems

- 30 years in high tech. CEO of NextGen Solar. Co-Founder of Firefly Energy

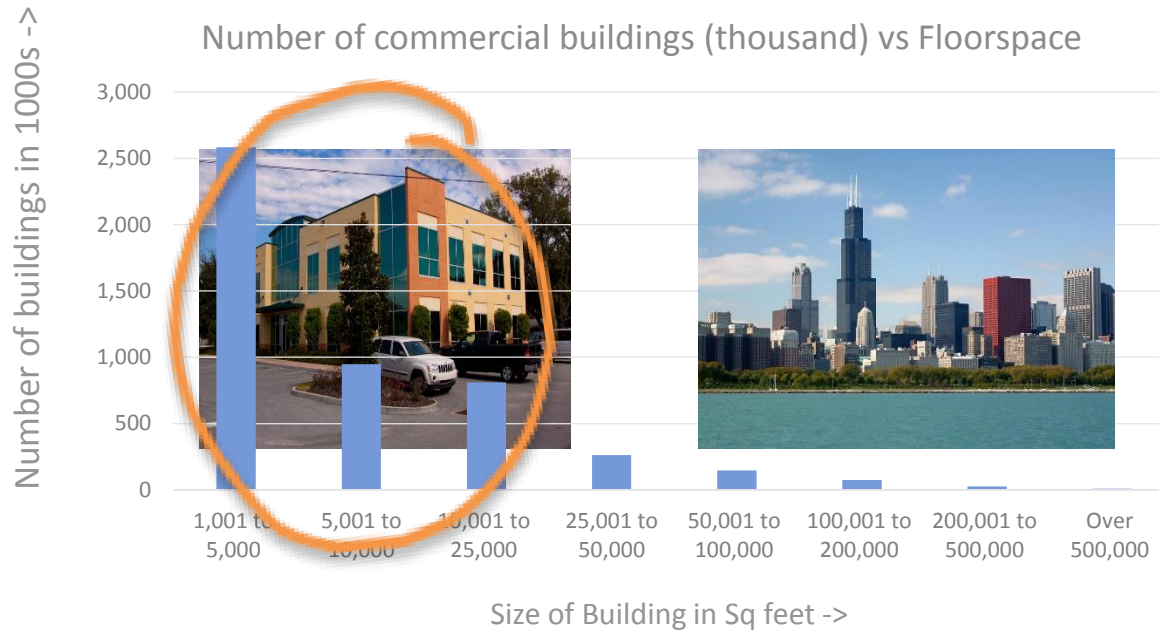
Lance Rantala – Current CEO of Blue Hawk – largest HVAC co-op in the world

Nest Meets Sleep Number

HVAC Dynamic Airflow Balancing



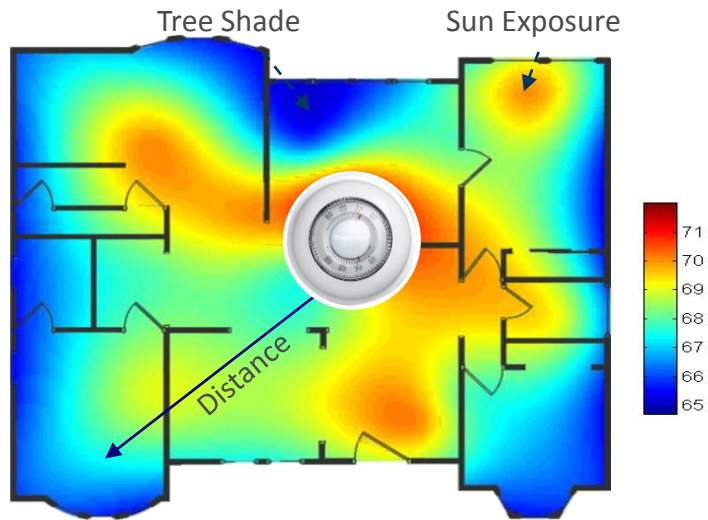
The Market



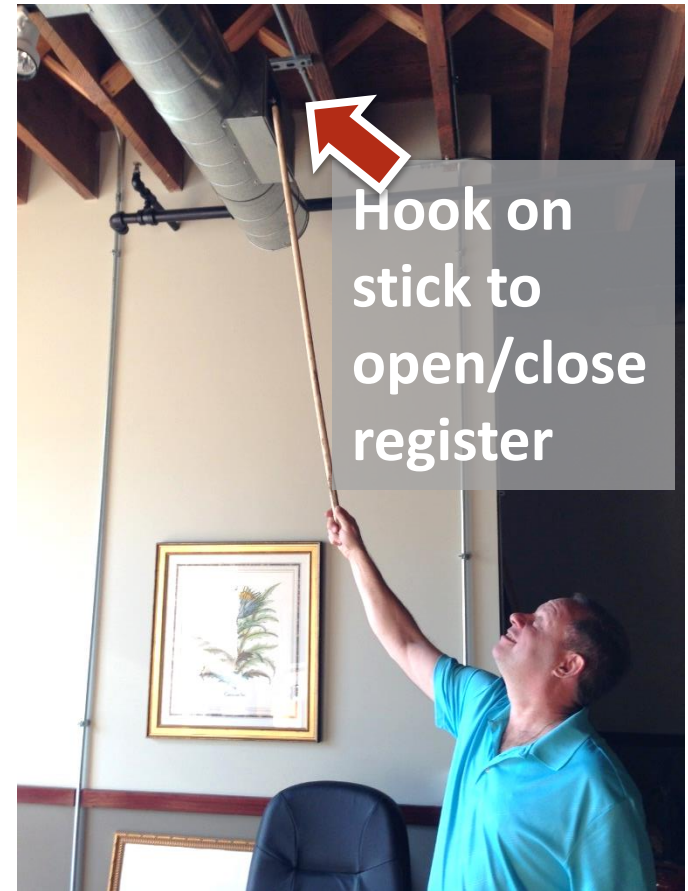
90% of commercial buildings in the US are
light commercial

That's 4,300,000 buildings

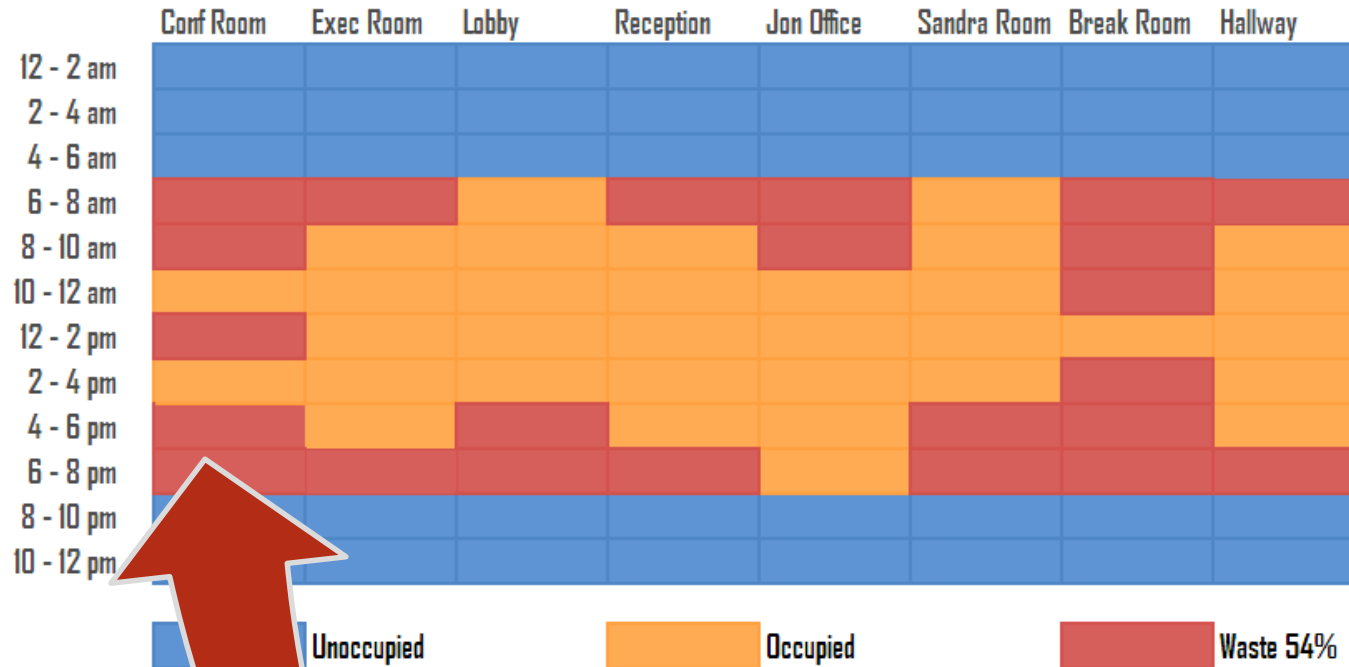
The Problem: Single Thermostat Systems are Ineffective and Inefficient



Sub-optimal temperatures further from thermostat



The Problem: Single Thermostat Cannot Account for Where or When Energy is Required



Zone Control Is One Answer....Or Is It?

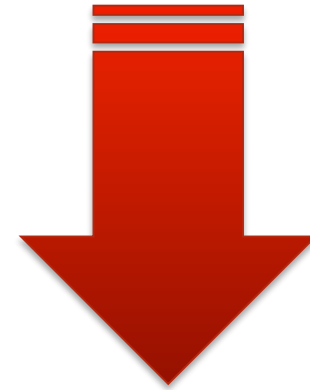


- Cut into ductwork
- Pull control wires
- Too expensive for most light commercial bldgs

Constant Volume Systems Require Bypass Dampers

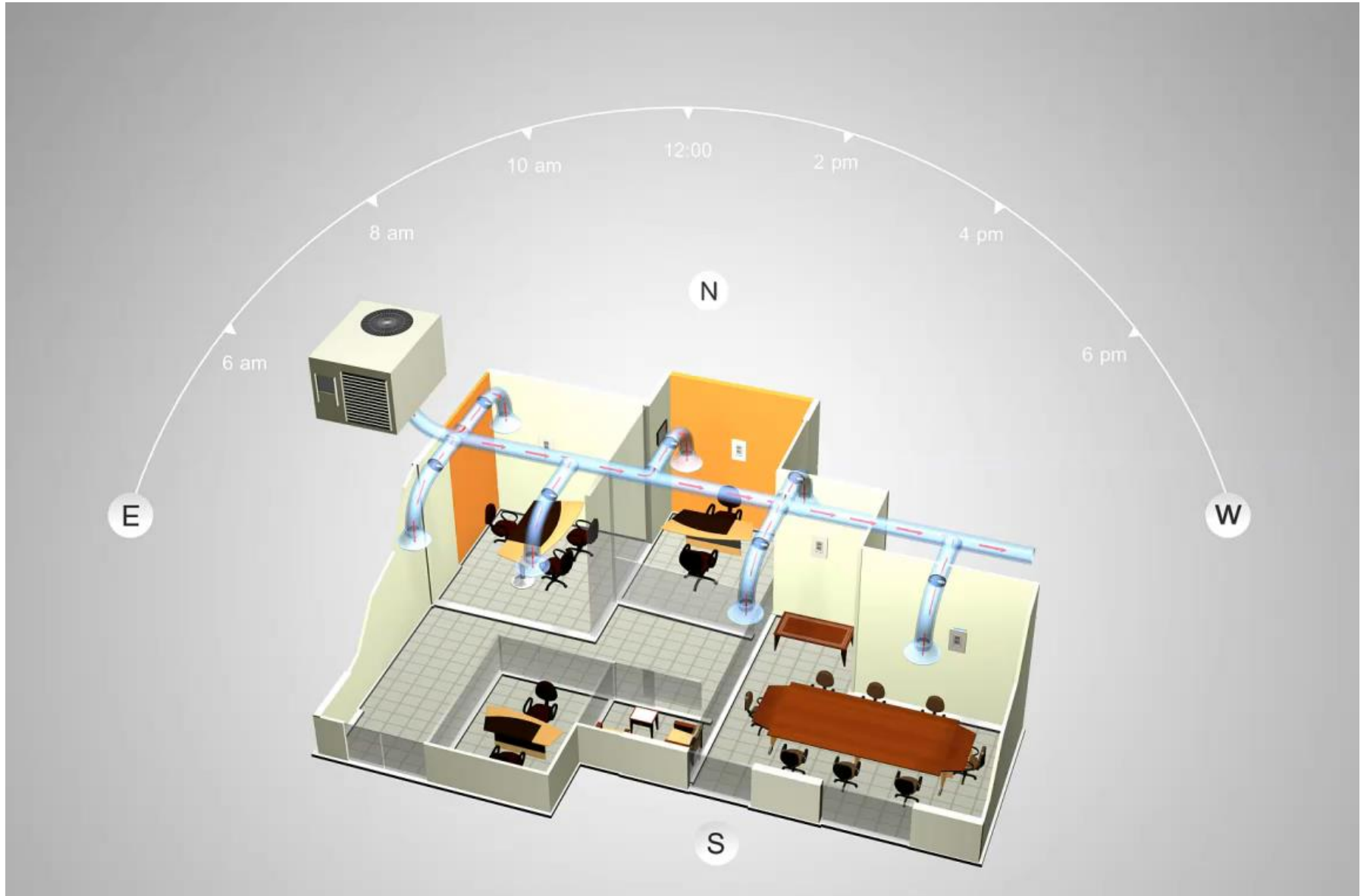


27%



California ban

A Building is Dynamic



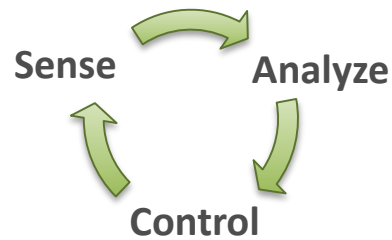
Three Internet Connected Devices



Wireless
Room
Module



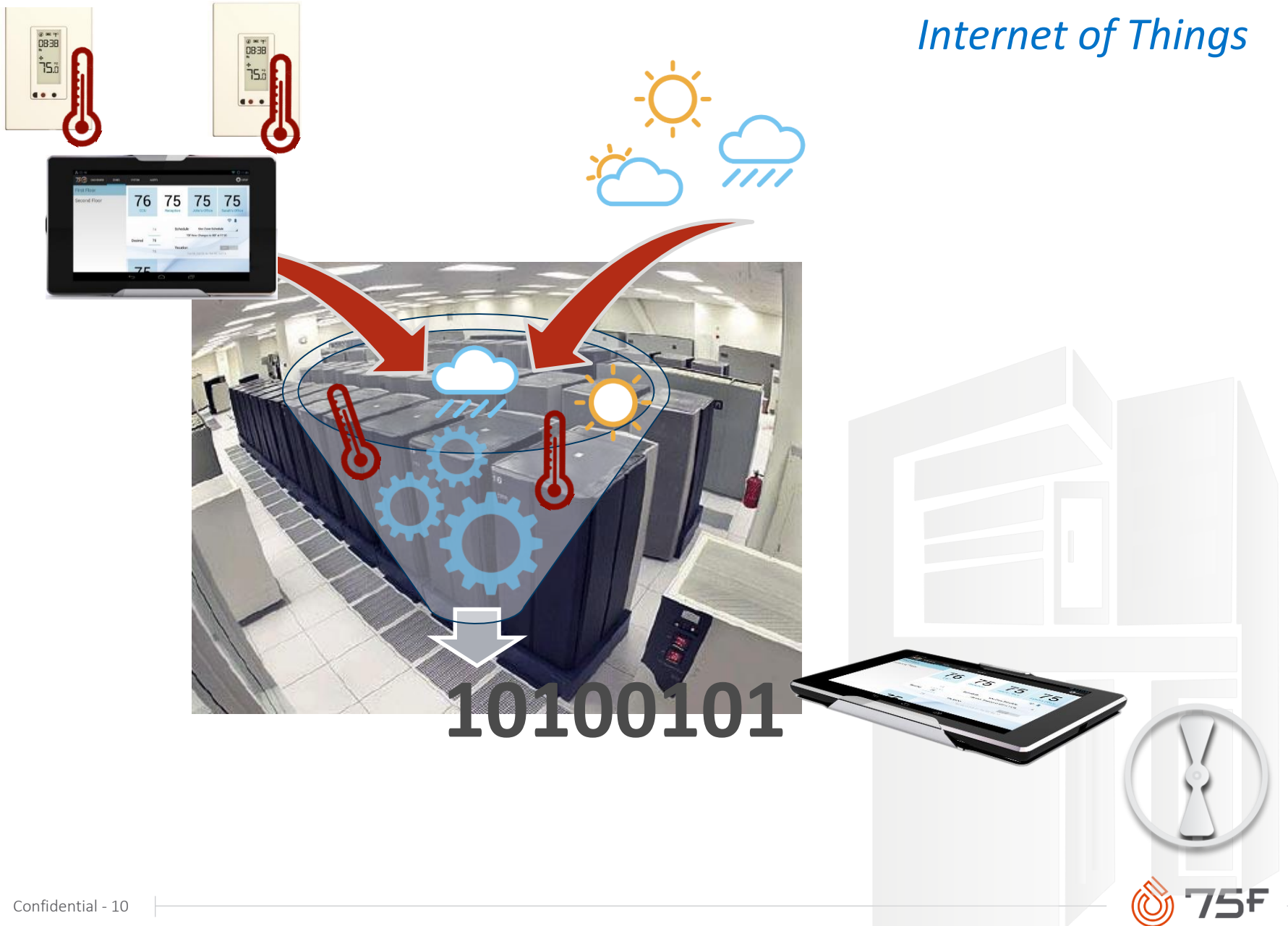
Central
Control
Unit



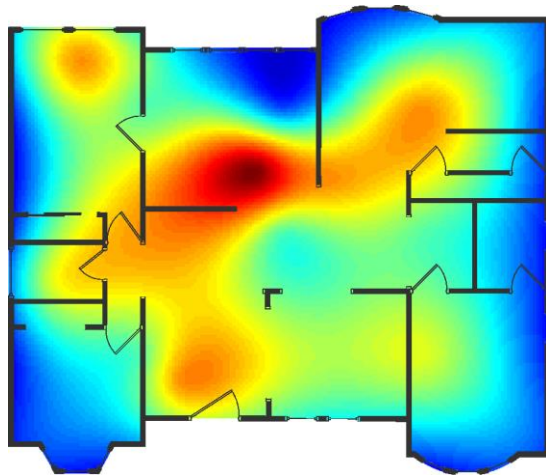
Smart
Damper

Harnessing the Power of the Cloud

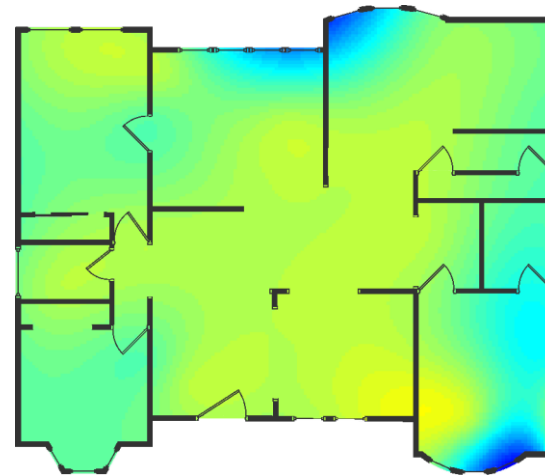
Internet of Things



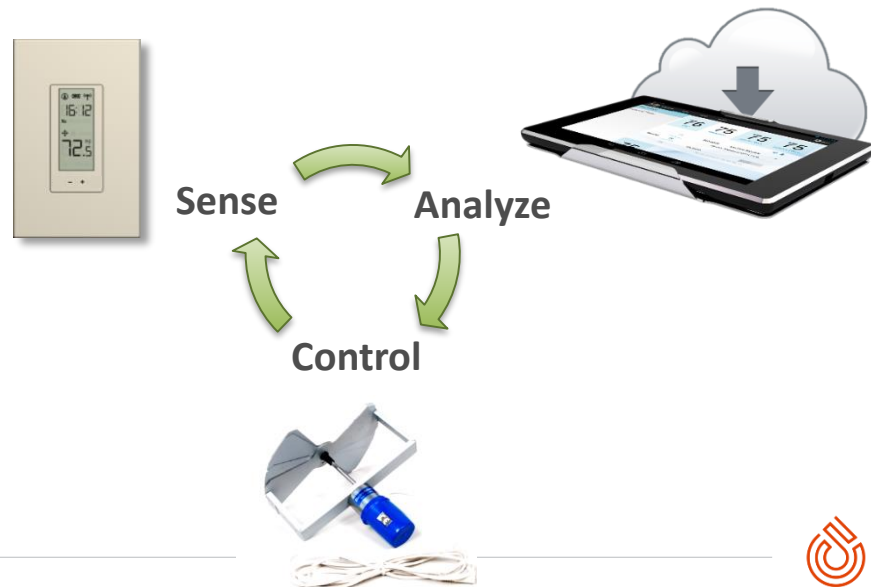
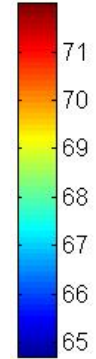
The Result - Dynamic Balancing



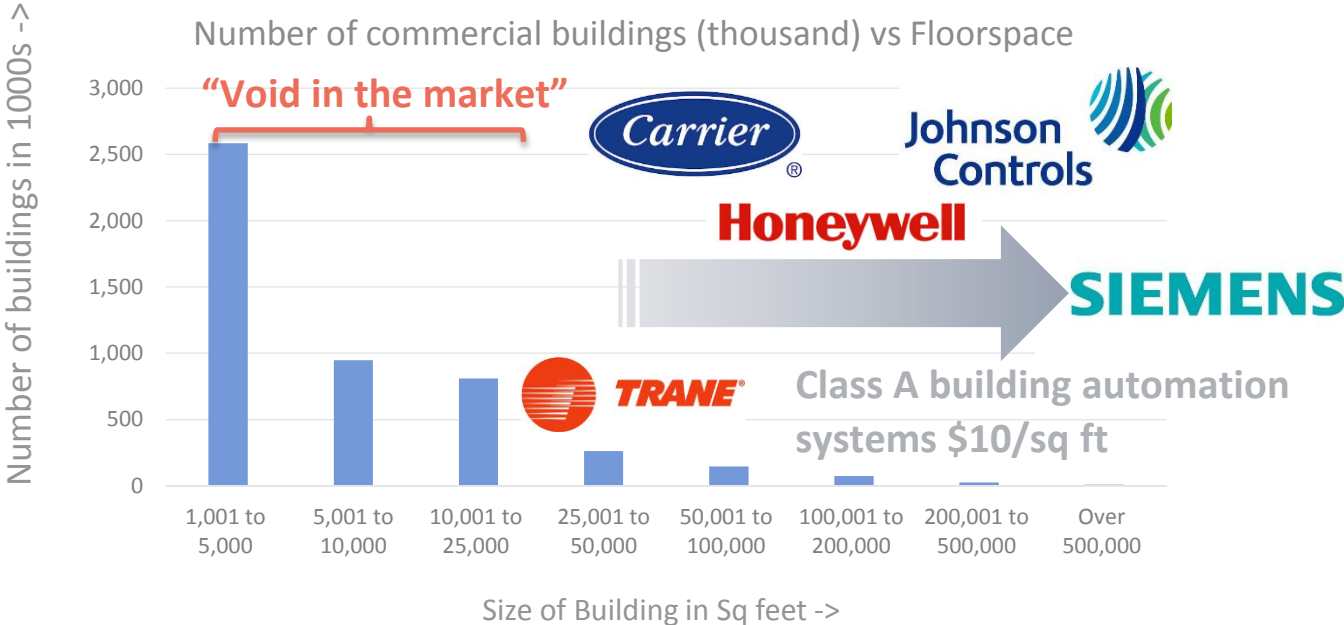
Before



With 75F



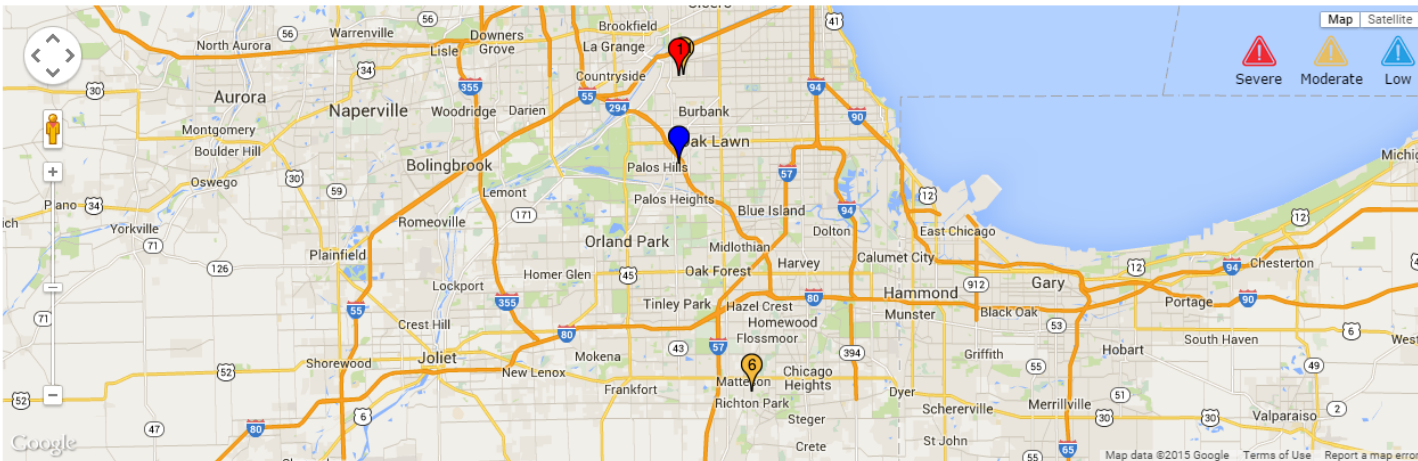
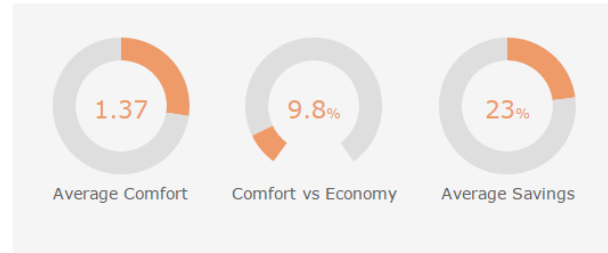
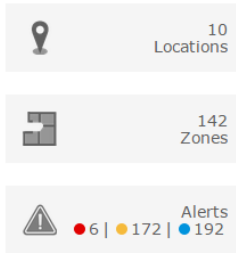
Market Potential



4.3 million buildings with either VVT or no zone control

All existing CV zone control systems use Bypass Dampers

Data Portal

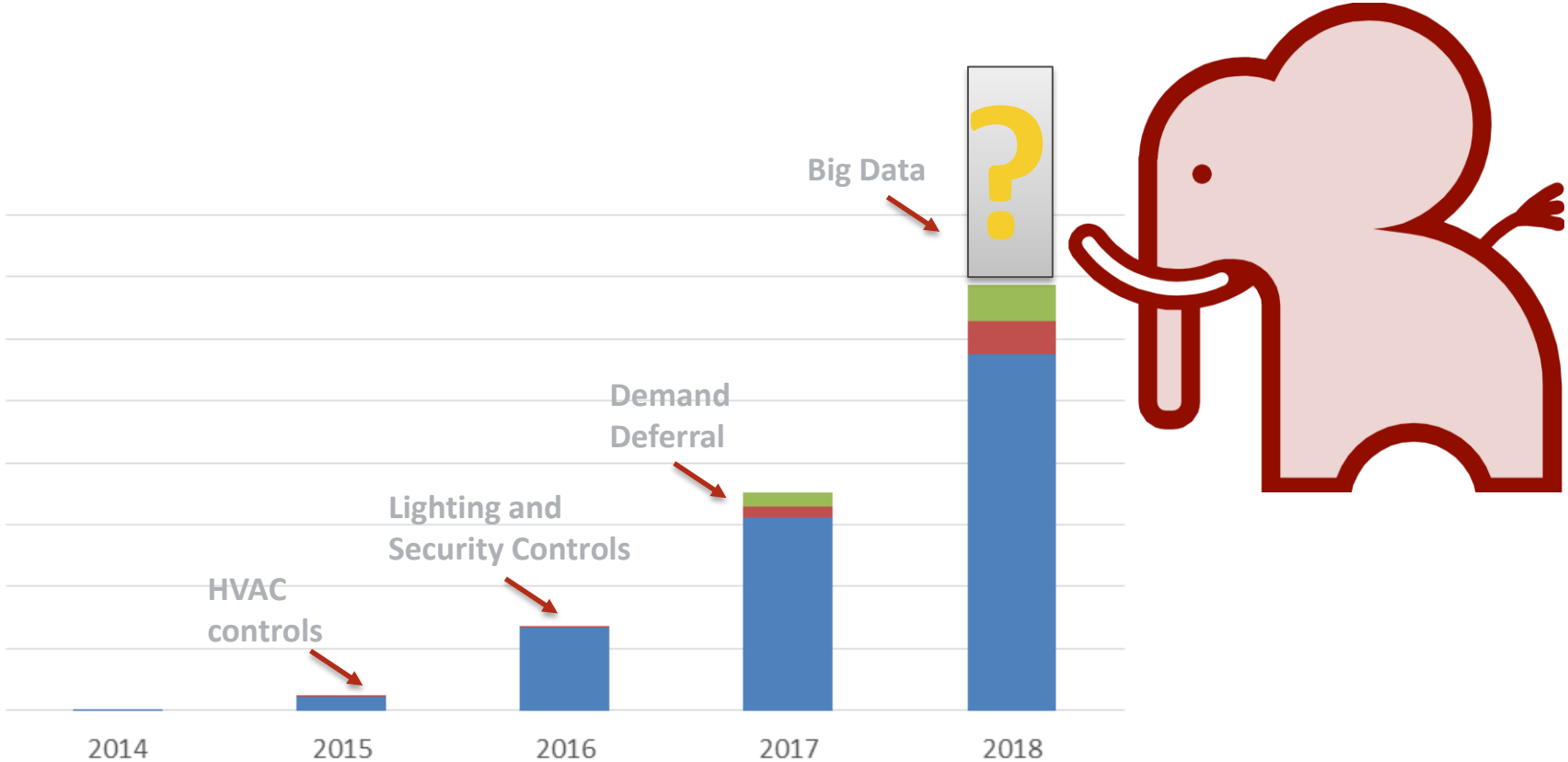


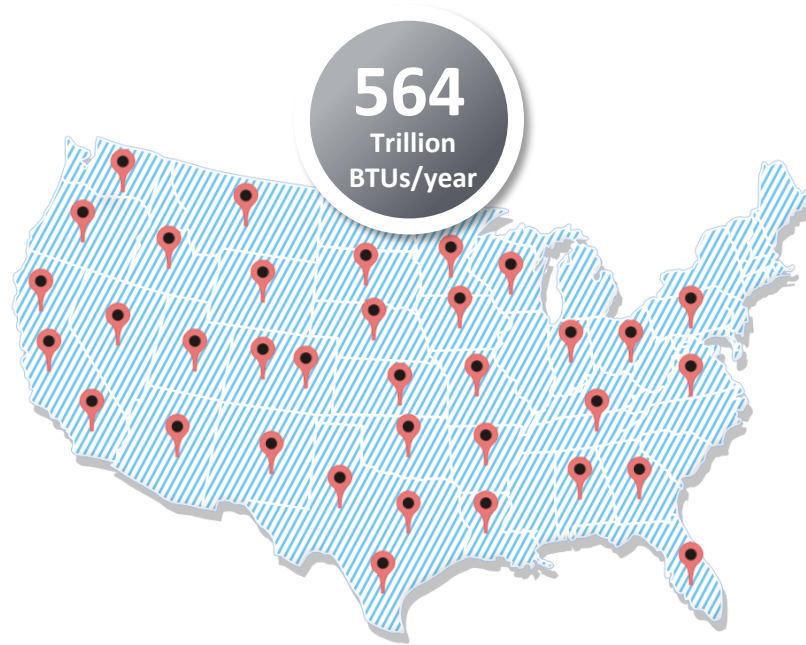
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Search: Show / hide columns

Customer Name	CCU Name	Address	Alerts	Date Installed
d009197f5fdad9f5	MAT West	6235 S. Oak Park Ave. Chicago	● 0 ● 19 ● 18	11/11/2014
e80d74b127dedc7f	MAT	6235 S. Oak Park Ave. Chicago	● 0 ● 16 ● 10	11/11/2014
75F Trials	MAT	6235 S. Oak Park Ave. Chicago	● 0 ● 9 ● 1	07/08/2014
MAT - 14Jul - 26Sep'14	MAT	6235 S. Oak Park Ave. Chicago		07/08/2014
MAT - 9 jun to 3 jul'14	MAT 2	6135 S. Oak Park Ave. Chicago		05/28/2014

Growth Opportunity





Closing **29** coal fired power plants



Keeping **22,400,000** cars off the road



Saving **267,000,000** barrels of oil

Status

- 30 Installations

Illinois, Minnesota

- 2 EEPs

North Shore Gas, People's Gas,
Xcel Energy in progress

- GTI Study In Progress

Sponsored by Nicor Gas



Costs and Savings

Installed cost: \$1.35 to \$3.50 / ft²

Savings:

Occupancy - Only condition areas where and when they need it

12-26%

DOE PNNL-20955 – Support for Variable Frequency Drive fans, Enthalpy Economizers, Demand Control Ventilation

24-35%

Demand Limiting - Active energy cost control through time of day energy usage (pre-cooling and weather forecast considerations)

5-10%

Key Benefits

- Conservation (40% - 50% HVAC costs)

DCV, VFD, Auto Away, Demand Limiting

- Comfort

Account for temperature, humidity and outside weather

Eliminate constant tweaking of thermostat settings

- Control – “BAS in a box”

EM, Insightful portals for building operation

Barriers

- Market Awareness

Start-up phase

- Preconception

VVT zone control high cost / low performance

- Energy Efficiency Program Support

Existing programs do not fully support our technology

Independent efficiency studies needed.

Next Steps

- ETP Studies

 - Nicor Gas / GTI heating efficiency study underway; expected publication 2016

 - Cooling efficiency study needed.

- Help Raise Awareness (Upper Midwest)

 - Lunch N Learn

 - Webinars

 - Marketing Programs

- EEP Participation

 - Only a portion of our technology included

Dynamic Airflow Balancing Solution

Designed for now



Easy Installs

Wireless mesh simplifies connectivity.
No cutting into ductwork to install dampers



No Bypass Dampers

75F's solution dynamically rebalances the airflow without increasing backpressure



Install at Metropolitan Air Technologies



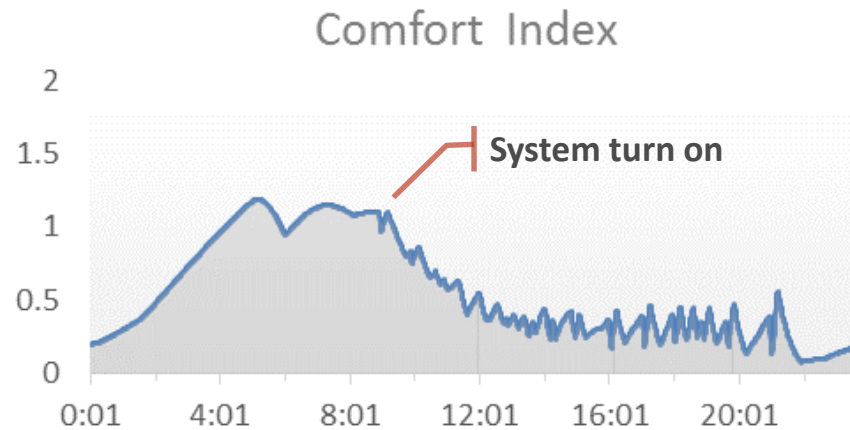
Space heaters

The Result - Active Balancing

Before



After



75F Contact Information

Bob French – Chief Evangelist

bob@75fahrenheit.com

651-261-3942

www.75fahrenheit.com