



# Chris Ewing

Founder, Chairman and CEO

Ewing Kessler

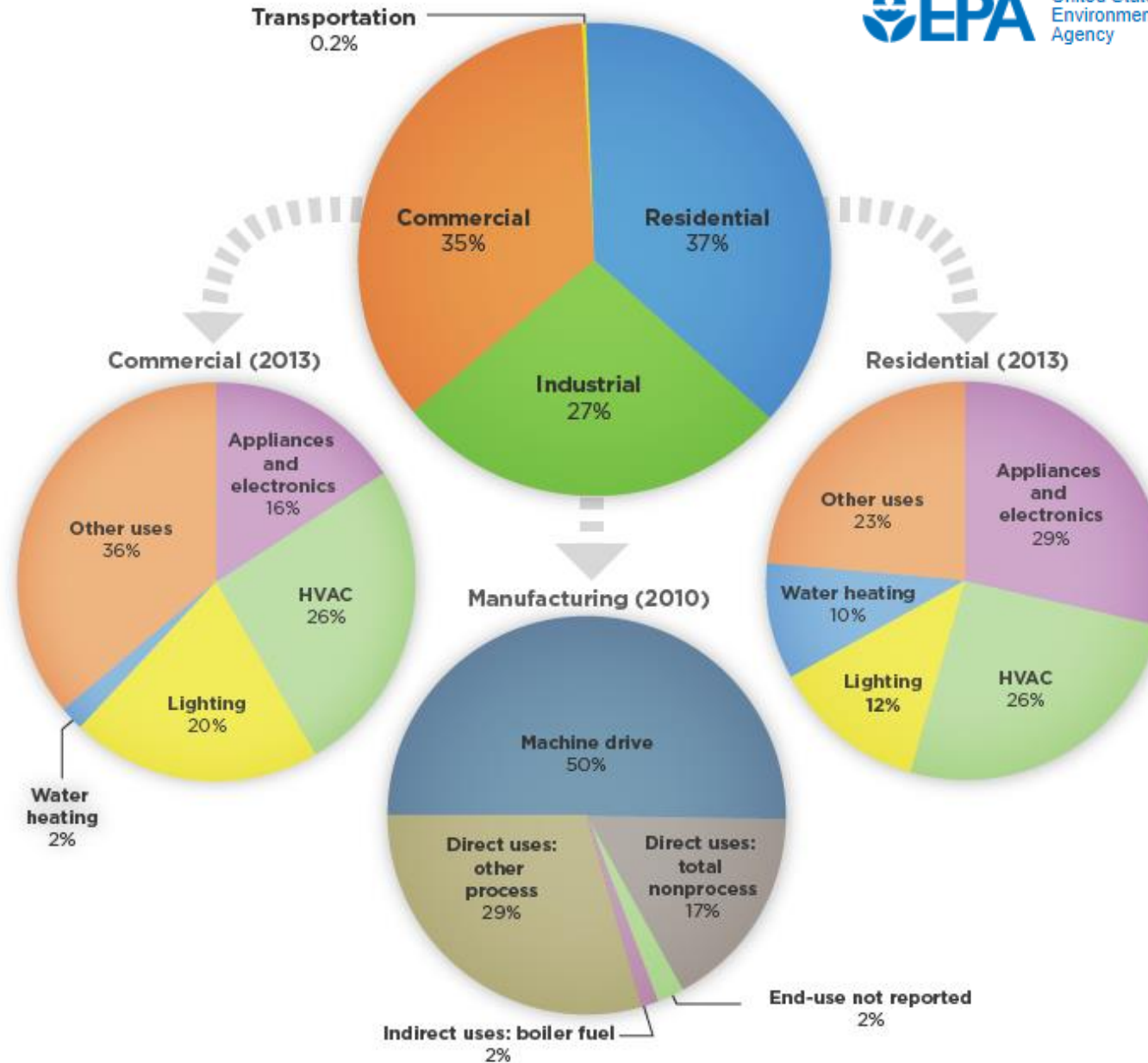
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# Electricity Consumption by Sector (2013): Commercial, Industrial, and Residential



# Identify and Sequence Low Cost Improvements

Low cost opportunities to improve  
facility and portfolio-wide energy  
performance



O & M

28.1%



Occupants'  
Behavior

15.1%



Lighting

38.8%



Controls

22.9%



Equipment

15.9%



Use a staged approach



# Bi-Polar Ionization



Few human activities lead to an increase in ions. Most activities cause a depletion.

According to research conducted by Columbia University, Ion depletion can cause sleepiness, attention deficit, discomfort and headaches

These effects can be controlled by artificially increasing ion levels using needlepoint bipolar ionization, which has been reported to reverse the issues.



No research has reported any adverse effects on people from even high concentrations of balanced or monopolar ionization



# “POPE” – NPBI Benefits



Item 1

**Particle Reduction** – Technology makes particles clump together and a lower efficiency filter can capture them from the air.

Item 2

**Odor Control** – Odors, volatile organic compounds and the like are oxidized to gases already prevalent in the air such as oxygen, nitrogen, water vapor or carbon dioxide, eliminating the odors.

Item 3

**Pathogen Control** – Independent testing by CDC Affiliate Labs confirms kill rates as high as 99.9% of various pathogens and mold spores.

Item 4

**Energy Savings** - Outside Air Reduction cleaning indoor air and recirculating it – Less Outside Air is required. Less OA = Less Load on Cooling/Heating System – ASHRAE 62 & IMC Compliant.



# BI-Polar Products



Typical Location Install on Ductless Wall System:

Figure 6



Affix iFlex power pack to back of cabinet.

Affix iFlex to the top of coil on plastic strip (or top of fins) to treat coil, blower and living space.



**iMOD**  
MODULAR IONIZATION SYSTEM



Engineering Air for a Better World  
**Engineering Air for a Better World**



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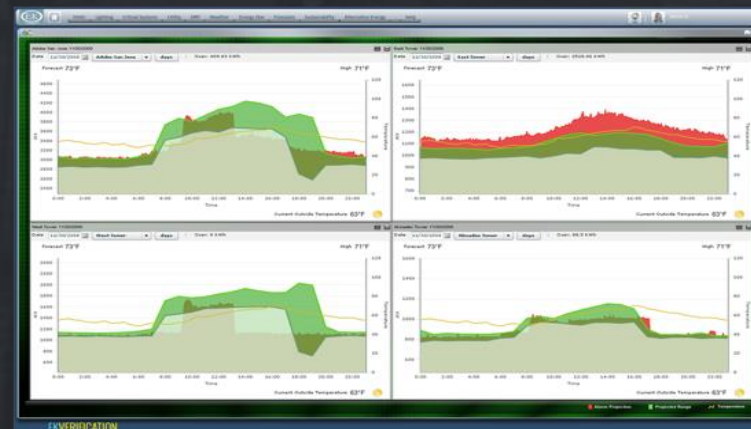
# BUILDING AUTOMATION

**EKVERIFICATION™** powered by IBIS  
Base Energy Management Platform

## Energy Dashboard



## Continuous M&V



## Energy Distribution



## Reporting & Analysis





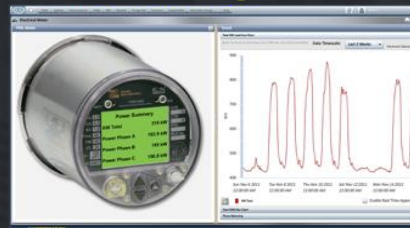
# BUILDING AUTOMATION

**EKVERIFICATION™** powered by IBS on a Siemens Platform

Smart Floor



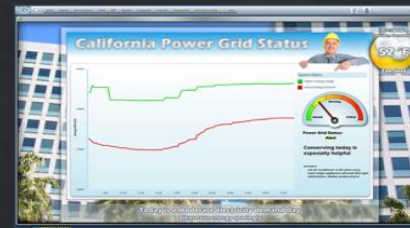
Tenant Utility Billing



Energy Star



Green Awareness



Central HVAC Plant



Auto Demand Response



Lighting Module



Carbon Emissions



Occupancy Floor



Weather Station



Data Center Module



Renewable Grid Tracking





# INTELLIGENT EQUIPMENT = MORE THAN BUILDING AUTOMATION



## IE Provides:

- › Multi-job site access and management for better visibility
- › Trending and unlimited data collection in the Daikin IE Cloud
- › ENERGY STAR portfolio manager
- › Maintenance recommendations and reports for optimizing equipment



# Identify and Sequence Low Cost Improvements

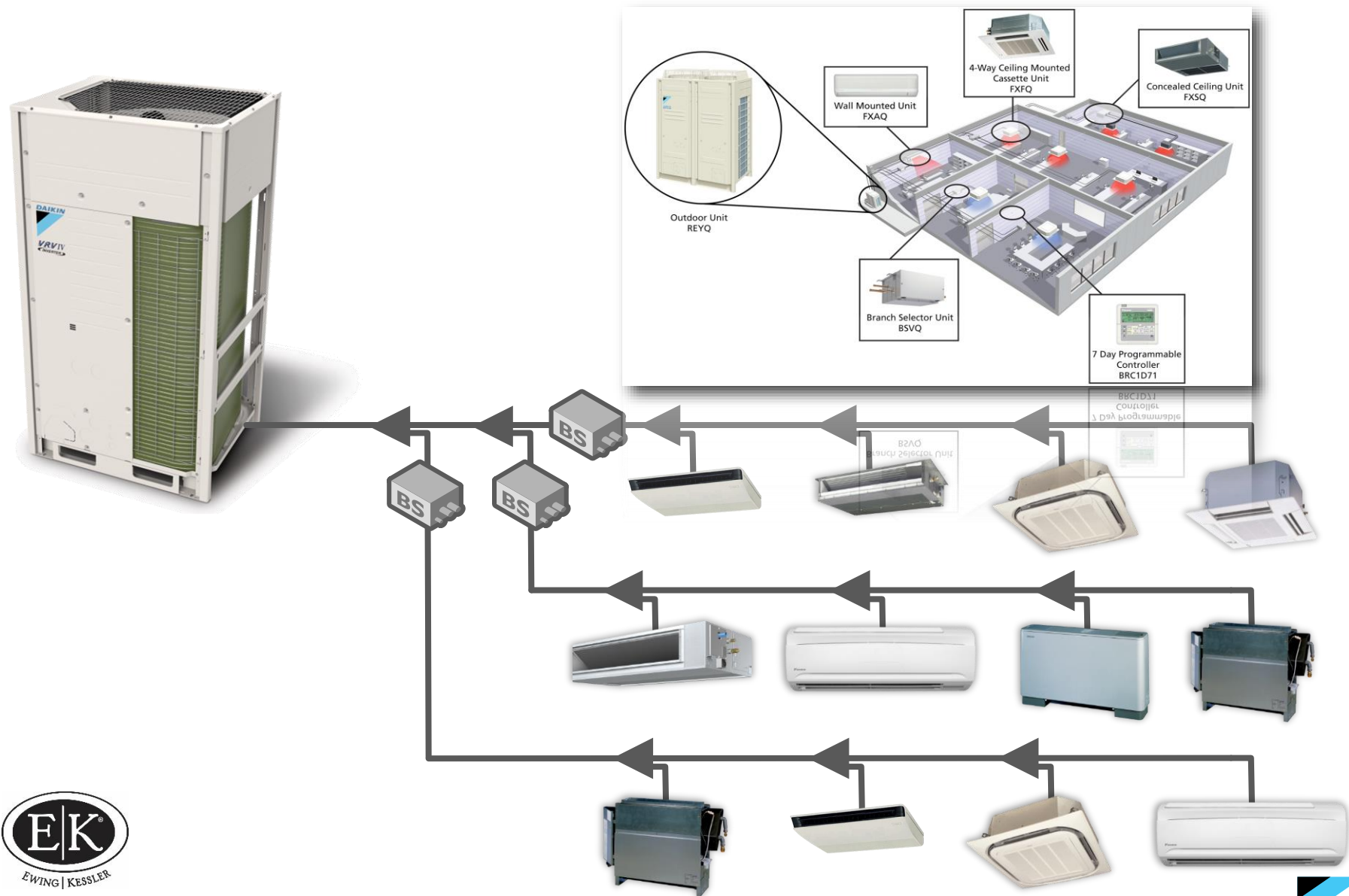
Low cost opportunities to improve facility and portfolio-wide energy performance



Use a staged approach



# Daikin VRV (Variable Refrigerant Volume)



# DAIKIN ROOFTOP “REBEL” ENERGY SAVING TECHNOLOGIES

## Rebel Cooling & Heat Pump with Inverter Compressor

### High return on investment

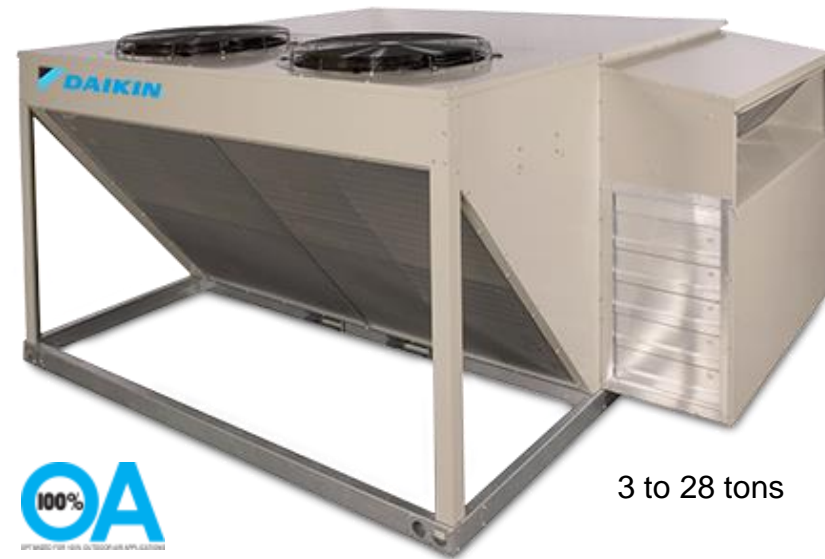
- Lowest cost of ownership, 2-year payback with 20.8 part-load IEER that surpasses ASHRAE 90.1 by 75%

### Energy saving technologies

- ERW, variable speed inverter compressor, heat pump and ECM motors, MHGRH, electronic TX valves

### Superior sound performance

- Ultra-quiet composite condenser fans and internal variable speed inverter compressor minimizes on/off cycling



*“The Rebel is the product that is the centerpiece that everything else will get sold around. It’s such a high end piece of equipment. It’s the core of the job.”*  
– Independent sales representative

## Pathfinder® Air-cooled Screw Chiller

### 100% Configurable

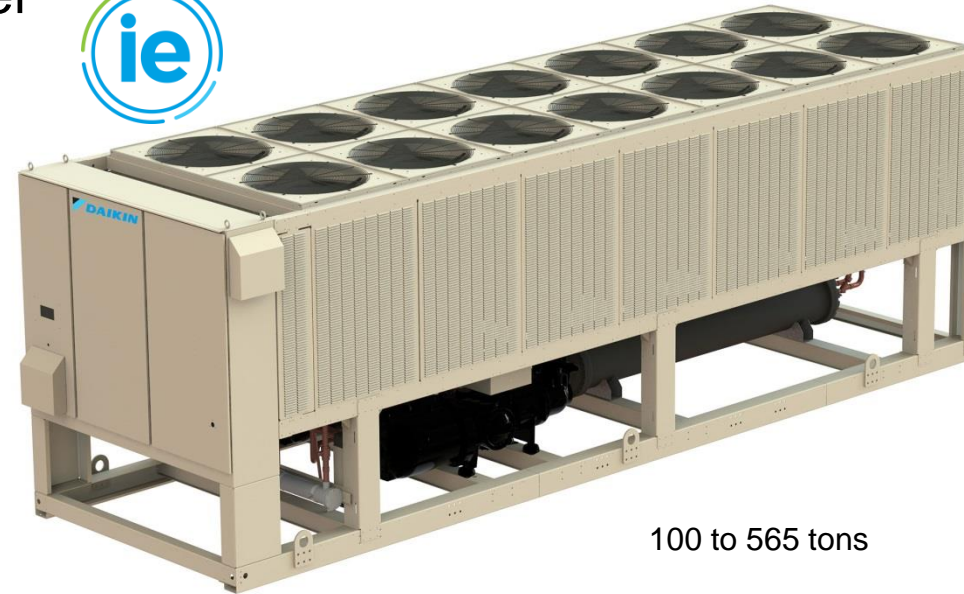
- Flexible design and component options allow you to balance price and performance to best meet requirements

### Award-winning VVR® Technology

- Variable Volume Ratio (VVR®) technology adjusts the compression ratio to achieve the highest operating efficiencies at off-design conditions

### RapidRestore®

- Restarts after power loss in as little as 35 seconds with full-load cooling in under 4 minutes



100 to 565 tons

*“Significant energy savings...really sold the chiller.”  
– 24/7 support center customer*

## Magnitude<sup>®</sup> Magnetic Bearing Centrifugal Chiller

Reliability and Performance
<ul style="list-style-type: none"><li>Over 40% more efficient than standard chillers with improved part-load energy</li></ul>
Lower Total Cost of Ownership
<ul style="list-style-type: none"><li>Magnetic bearing technology eliminates oil contamination for peak efficiency year after year</li></ul>
Largest Installed Base
<ul style="list-style-type: none"><li>Proven dependability with over 4,665 installations around the world</li></ul>



86 to 1,500 tons

*“It’s a unique machine and a major step forward in chiller technology.”*  
– Higher education customer





## Summary HVAC Building Technology ROI

Follow the Staged Approach (EPA) to Implement the Technology

- Bi-Polar Ionization: \$\$ Reduces Outside Air
- Building Controls: \$\$ Off Position, \$\$ Energy Profile
- Equipment: \$\$ VRV, \$\$ VVR, \$\$ Oilless Compressors