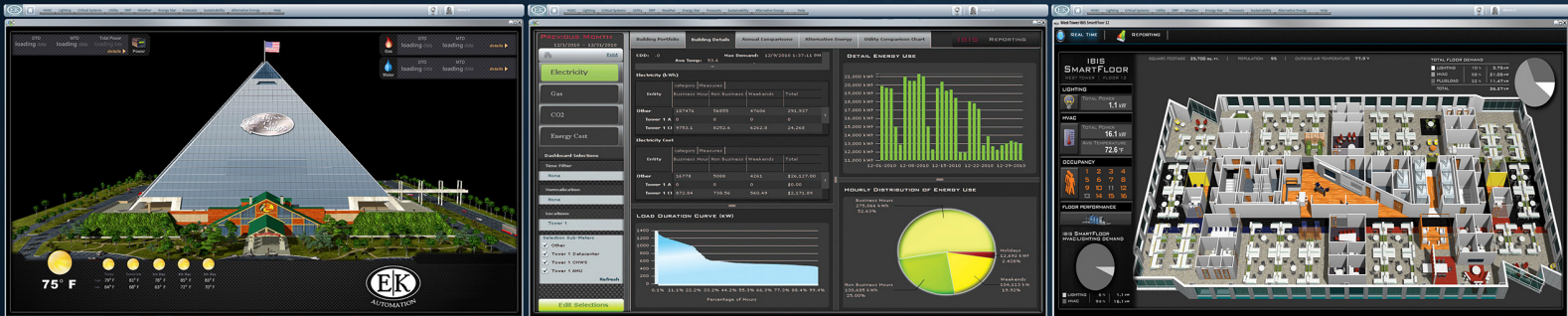




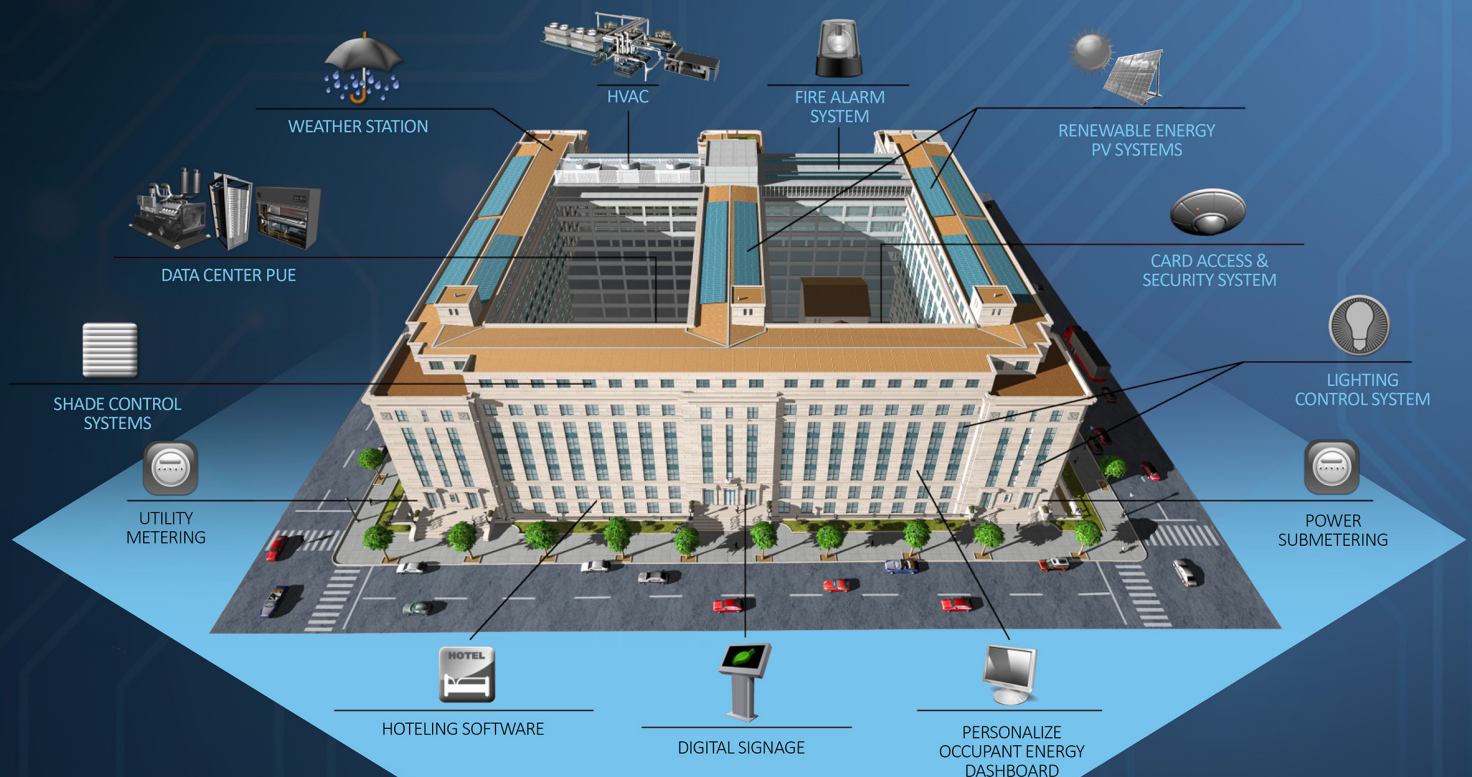
# EKVERIFICATION™ Energy Management System



The smart path to smarter buildings.

powered by  ibis

**EKVERIFICATION™** powered by IBIS (Intelligent Building Integration Software) is the most advanced Energy Management System on the market.



**GSA**

GSA Headquarters  
1800 F Street, Washington DC  
Smart Building Powered By IBIS



The business of managing buildings has never been more complex. You've got multiple systems from a myriad of vendors, each with its own set of communication protocols, monitoring, controls and reports. You're tracking utility meters, data centers, HVAC, lighting, plug loads and occupancy - in one building or in a dozen buildings around campus or across the country. And the stakeholders in your company need you to provide real-time reports of information that will help them achieve their mandates - all of which are different. The whole thing is enough to get you lost in a forest of spreadsheets.

**A picture is worth a thousand spreadsheets.** Introducing EKVERIFICATION powered by IBIS, the smart path to smarter buildings. View your entire enterprise's global real-time energy usage in one exquisite graphic - or zoom in and check the plug load in a single office. Collaborate with colleagues around the globe, communicating information in dazzling visuals that get everyone on the same page quickly. Customize EKV to your needs, building out at your own pace as your enterprise and budget grow, with a variety of modules that show you exactly what you need to know when you need to know it. Receive notification of costly energy anomalies the minute they happen - and fix them from wherever you are, even if you're halfway around the world. And confidently showcase your minimized footprint and savings with reliable, verifiable data.



# It all begins with the Base Energy M&V Platform:

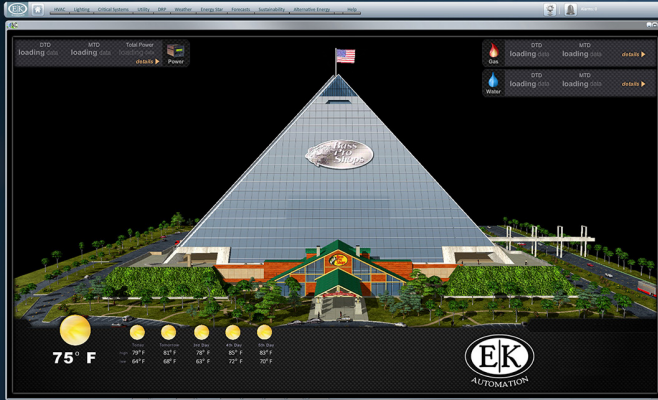
- Energy Dashboard in Real-Time
- Energy Distribution
- Continuous Measurement & Verification
- Weather Station
- Energy Reporting and Analytics



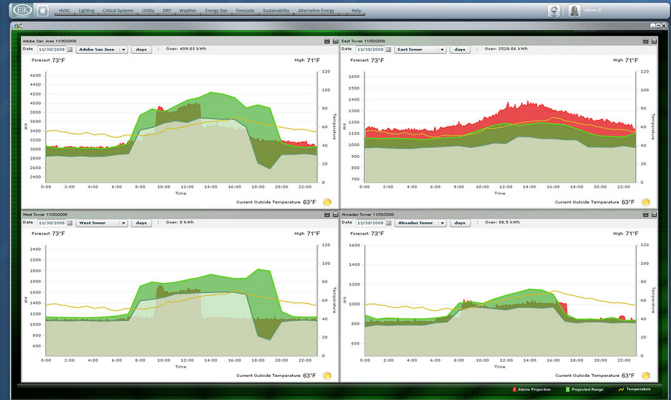


# EKVERIFICATION™ powered by IBIS - Base Energy M&V Platform

## ENERGY DASHBOARD IN "REAL TIME"



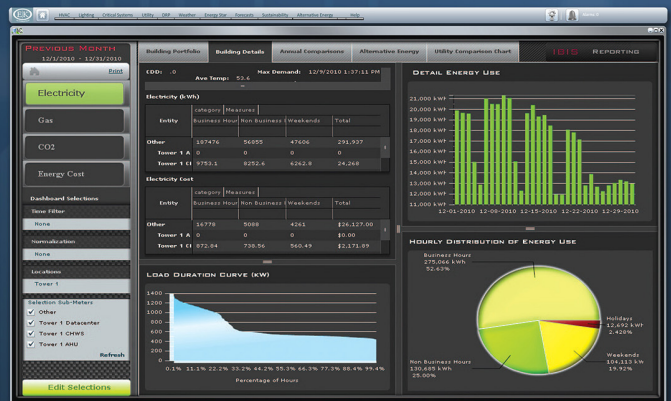
## CONTINUOUS COMMISSIONING



## ENERGY DISTRIBUTION MODULE



## ENERGY REPORTING & ANALYSIS



### Get started on the path.

The first step on the path is Base Energy M&V Platform, which includes all the browser-enabled tools you need to understand the real-time operation of your facility today and predict its performance tomorrow. EK VERIFICATION Base Energy M&V Platform provides the critical information necessary to optimize operations - powerful trending, fault detection-based alerting, weather normalization and building performance and reporting - and identify immediate opportunities for savings.

EK VERIFICATION's Base Energy M&V Platform is easy and affordable, with tiered pricing for multiple buildings. All you need to begin gaining control of your energy consumption is one real-time meter. Don't have one? We can arrange for cost-effective purchase and installation. As your needs, budget and/or enterprise grows, tailor EK VERIFICATION powered by IBIS to your strategic mandates either by adding on additional Base Energy M&V Platform to other buildings or campuses, or by picking and choosing from among our ever-growing number of modules.

EK VERIFICATION powered by IBIS is an integrated system of modules that enable users to monitor and control various pre-set and user-defined parameters. Save money on a package that meets your needs, or mix and match individual modules. Add some now and others later. It's up to you.



# The Smart Floor Module

**ENERGY**

IBIS SMARTFLOOR WEST TOWER FLOOR 12

SQUARE FOOTAGE: 25,700 sq. ft. | POPULATION: 95 | OUTSIDE AIR TEMPERATURE: 77.9 F

TOTAL FLOOR DEMAND

LIGHTING	10%	3.23 kW
HVAC	58%	21.05 kW
PLUGLOAD	32%	11.47 kW
TOTAL		36.27 kW

LIGHTING TOTAL POWER: 1.1 kW

HVAC TOTAL POWER: 16.1 kW | AVG TEMPERATURE: 72.6 F

OCCUPANCY: 1-16

FLOOR PERFORMANCE

IBIS SMARTFLOOR HVAC/LIGHTING DEMAND

LIGHTING	6%	1.1 kW
HVAC	94%	16.1 kW

**LIGHTING**

SMARTFLOOR WEST TOWER FLOOR 12

SHOW LIGHTING DETAILS

TOTAL FLOOR HVAC/LIGHTING/PLUGLOAD DEMAND

LIGHTING	77 kW
HVAC	16.8 kW
PLUGLOAD	3.5 kW

LIGHTING TOTAL POWER: 4.2 kW

HVAC TOTAL POWER: 13.1 kW | AVG TEMPERATURE: 71.7 F

OCCUPANCY: 1-16

SMART WORKSPACE HVAC/LIGHTING DEMAND

LIGHTING	42 kW
HVAC	13.4 kW

**HVAC**

IBIS SMARTFLOOR WEST TOWER FLOOR 12

TEMPERATURE KEY: 64 66 68 70 72 74 76 78 80

CLICK ON A NEIGHBORHOOD TO SHOW VAYS | CLICK AGAIN TO HIDE THEM | CLICK ON A DETAILS BOX TO SEE MORE DETAILS

ADDITIONAL VAYS

NEIGHBORHOOD 1: 72 F | NEIGHBORHOOD 2: 73 F | NEIGHBORHOOD 3: 72 F | NEIGHBORHOOD 4: 74 F | NEIGHBORHOOD 5: 71 F | NEIGHBORHOOD 6: 75 F | NEIGHBORHOOD 7: 75 F | NEIGHBORHOOD 8: 71 F | NEIGHBORHOOD 9: 72 F | NEIGHBORHOOD 10: 72 F | NEIGHBORHOOD 11: 72 F | NEIGHBORHOOD 12: 72 F | NEIGHBORHOOD 13: 71 F | NEIGHBORHOOD 14: 73 F | NEIGHBORHOOD 15: 73 F | NEIGHBORHOOD 16: 71 F

LIGHTING TOTAL POWER: 1.1 kW

HVAC TOTAL POWER: 16.1 kW | AVG TEMPERATURE: 72.6 F

OCCUPANCY: 1-16

FLOOR PERFORMANCE

IBIS SMARTFLOOR HVAC/LIGHTING DEMAND

LIGHTING	6%	1.1 kW
HVAC	94%	16.1 kW

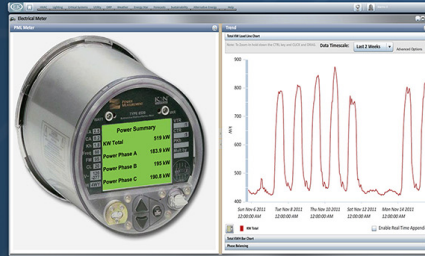


# EKVERIFICATION™ powered by IBIS - Additional Modules

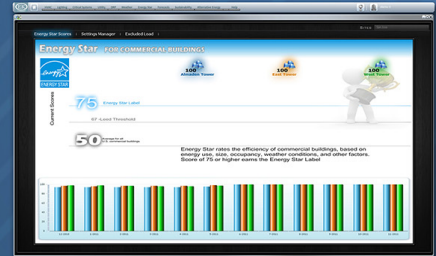
## Smart Floor



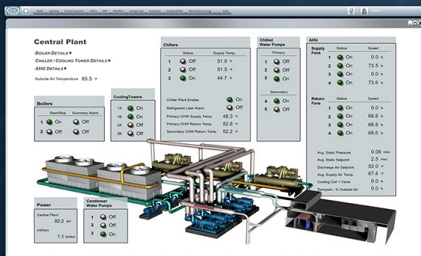
## Tenant Utility Billing



## Energy Star Module



## Central HVAC Plant



## Auto Demand Response



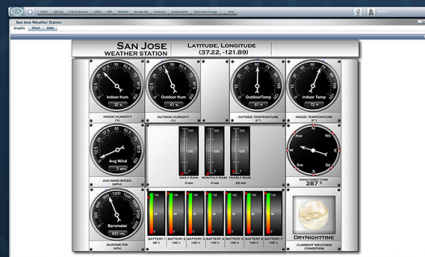
## Lighting Module



## Occupancy Floor



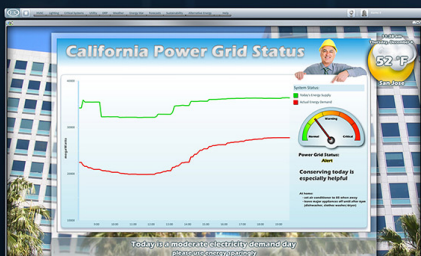
## Weather Station



## Data Center Module



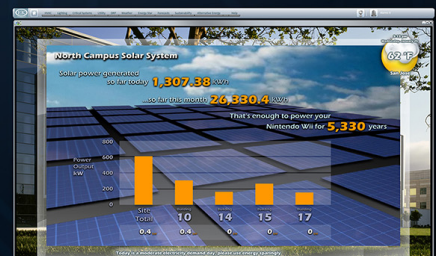
## Green Awareness



## Carbon Emissions



## Renewable Grid Tracking





# The Smarter Classroom

**CAMPUS DASHBOARD**

PowerHouse	Power Demand (kw)	Power Usage Today (kwh)
PowerHouse 1	144.9	1,511
PowerHouse 2	81.3	804
PowerHouse 3	293	2,666
PowerHouse 4	64.6	738
PowerHouse 5	28.9	338
MAL PowerHouse	139.6	1,552
Main PowerHouse	1,156.8	9,612
<b>Total Power</b>	<b>1,920.1</b>	<b>17,222</b>
PV Generation	49.9	261
<b>Total Power from Grid</b>	<b>1,870.1</b>	<b>16,961</b>

Thursday, August 9, 2012 12:16 pm

108 °F

**GREEN AWARENESS**

**California Power Grid Status**

11:38 am Thursday, December 4, 2011

52 °F San Jose

**System Status:**  
 Today's Energy Supply (Green line)  
 Actual Energy Demand (Red line)

**Power Grid Status: Alert**

**Conserving today is especially helpful**

**At home:**  
 - set air conditioner to 85 when away  
 - leave major appliances off until after 8pm (dishwasher, clothes washer/dryer)

Today is a moderate electricity demand day  
please use energy sparingly

**CLASSROOM OCCUPANCY**

Zone	Occupancy DTD	Power	Cost Savings YTD	Zone	Occupancy DTD	Power	Cost Savings YTD
CLASSROOM 1	69%	35% Lighting 1.7 kW 65% HVAC 3.1 kW	\$9.29	CLASSROOM 9	73%	25% Lighting 1.5 kW 75% HVAC 4.5 kW	\$11.78
CLASSROOM 2	72%	38% Lighting 1.8 kW 62% HVAC 2.9 kW	\$21.14	CLASSROOM 10	84%	38% Lighting 1.8 kW 62% HVAC 2.9 kW	\$9.60
CLASSROOM 3	63%	35% Lighting 1.9 kW 65% HVAC 3.4 kW	\$2.91	CLASSROOM 11	71%	35% Lighting 1.7 kW 65% HVAC 3.1 kW	\$0.21
CLASSROOM 4	74%	25% Lighting 1.5 kW 75% HVAC 4.5 kW	\$15.14	CLASSROOM 12	80%	25% Lighting 1.5 kW 75% HVAC 4.5 kW	\$7.51
CLASSROOM 5	39%	38% Lighting 1.8 kW 62% HVAC 2.9 kW	\$7.68	CLASSROOM 13	68%	38% Lighting 1.8 kW 62% HVAC 2.9 kW	\$1.57
CLASSROOM 6	65%	35% Lighting 1.9 kW 65% HVAC 3.4 kW	\$15.56	CLASSROOM 14	29%	25% Lighting 1.5 kW 75% HVAC 4.5 kW	\$12.21
CLASSROOM 7	81%	35% Lighting 1.7 kW 65% HVAC 3.1 kW	\$11.82	CLASSROOM 15	45%	38% Lighting 1.8 kW 62% HVAC 2.9 kW	\$12.03
CLASSROOM 8	96%	38% Lighting 1.8 kW 62% HVAC 2.9 kW	\$8.41	CLASSROOM 16	76%	35% Lighting 1.7 kW 65% HVAC 3.1 kW	\$0.09
<b>Total</b>	<b>62.7%</b>	<b>33% Lighting 6.9 kW 67% HVAC 14 kW</b>	<b>\$146.73</b>				

WEST TOWER | FLOOR 12

**SMARTFLOOR**

**LIGHTING**  
TOTAL POWER 4.2 kW

**HVAC**  
TOTAL POWER 13.1 kW  
AVG TEMPERATURE 71.7 °F

**OCCUPANCY**  
1 2 3 4  
5 6 7 8  
9 10 11 12  
13 14 15 16

SMART WORKSPACE HVAC/LIGHTING DEMAND

SHOW CLASSROOMS

■ UNOCCUPIED ■ OCCUPIED

CLOSE OCCUPANCY



# EKVERIFICATION™ powered by IBIS - Integrates to Existing & Future Systems



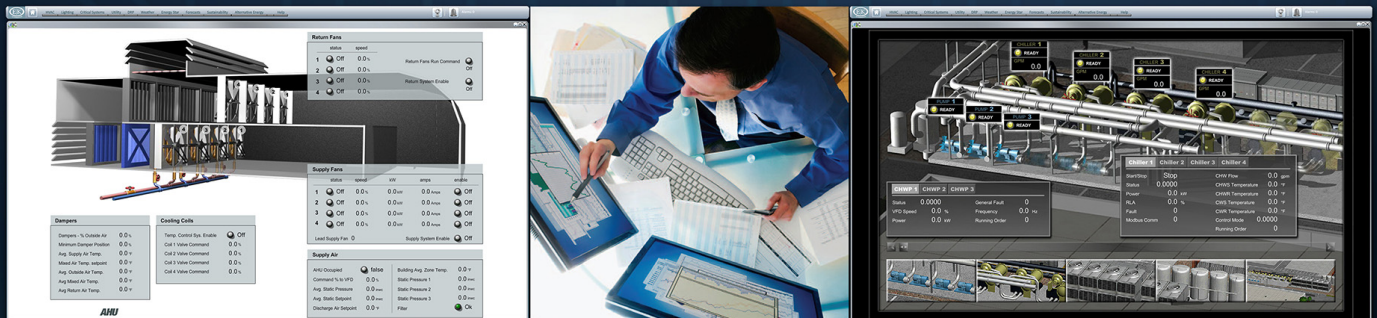
SOLAR ENERGY SCHNEIDER MOM ALERTON AUTOMATED LOGIC EATON  
SIEMENS JOHNSON CONTROLS NOVAR DELTA CONTROLS ABB LUTRON  
TRANE ALBER HONEYWELL ALERTON DATA AIRE INC. NAGIOS LIEBERT  
WATT STOPPER KOHLER BLOOM ENERGY CUMMINS TREND TRIDIUM

Integrate your systems. Improve your vision.

EK Verification is a holistic, comprehensive suite of modular software and expert services that integrates all your existing and future systems and provides you with real-time, easy-to-understand visual overviews of your enterprise's energy usage. It streamlines the information you need and takes automated commissioning to a whole new level. EK Verification is designed as an open-protocol, vendor- and technology-agnostic software platform. This means we can integrate your entire systems portfolio. The result? Improved productivity and opportunities for big savings. Fast.

## The antidote to complexity.

Whether you have one building or 20 campuses spanning the globe, EK Verification streamlines your energy systems' management and reporting. It provides building commissioning and gives you real-time actionable information in a graphically rich, intuitive interface - no more wading through spreadsheet after spreadsheet of extraneous data from disparate systems. Startup is fast and affordable, and you can immediately begin seeing opportunities for savings. As your enterprise and budget grow, choose from a wide variety of macro-to-micro and need-based modules and build out at your own pace.



## We Make Buildings Work.™

All company names, brands and trademarks are the properties of their respective owners.



# Dynamic HVAC Graphical Interface

**CENTRAL PLANT**

[BOILER DETAILS ▶](#)  
[CHILLER / COOLING TOWER DETAILS ▶](#)  
[AHU DETAILS ▶](#)

Outside Air Temperature 65.5 °F

Boilers	Start/Stop	Summary Alarm
1	On	Off
2	Off	Off

Chillers	Status	Supply Temp.
1	Off	51.9 °F
2	Off	51.5 °F
3	On	44.7 °F

Chilled Water Pumps	Primary	Secondary
1	Off	
2	Off	
3	On	
4	On	
5	Off	

AHU	Status	Speed
Supply Fans 1	On	0.0 %
Supply Fans 2	On	73.5 %
Supply Fans 3	On	0.0 %
Supply Fans 4	On	73.6 %
Return Fans 1	On	0.0 %
Return Fans 2	On	68.8 %
Return Fans 3	On	68.8 %
Return Fans 4	On	68.6 %

Boilers	Start/Stop	Summary Alarm
1A	On	
1B	On	
2A	Off	
2B	Off	

Condenser Water Pumps	Status
1	Off
2	Off
3	On

Power	Value
Central Plant	80.2 kW
kWh/ton	1.1 kWh/ton

Chiller Plant Enable	Refrigerant Leak Alarm
On	Off

Primary CHW Supply Temp.	Primary CHW Return Temp.	Secondary CHW Return Temp.
48.3 °F	52.6 °F	52.2 °F

Avg. Static Pressure	Avg. Static Setpoint	Discharge Air Setpoint	Avg. Supply Air Temp.	Cooling Coil 1 Valve	Dampers - % Outside Air
0.06 inwc	2.5 inwc	53.0 °F	67.4 °F	0.0 %	0.0 %

**3D ANIMATED GRAPHICS**

**A103 | AHU D1.1**

**Rooftop AC Unit**

Summary Alarm	Status
Intellipak Comm Loss Alarm	Normal
Duct Smoke Detector Alarm	Normal
Circuit 1 Cooling Status	Off
Circuit 2 Cooling Status	Off
Circuit 3 Cooling Status	Off
Circuit 4 Cooling Status	Off
Supply Fan Status	On
Supply Fan Start/Stop	On
Compressor Lock Out Alarm	Normal
Exhaust Fan Start/Stop	On
Exhaust Fan VFD Feedback	50 %

AHU Total Power	Value
AHU Total Power	15 kW
Duct Static Pressure	0.44 in WC
Underfloor Static Pressure	0.09 in WC
Cooling Capacity	0 %
Supply Fan VFD Feedback	43 %
Discharge Air Temp	88 °F
Supply Air Temp SP	58 °F
Mixed Air Temp	87 °F
Space Temp	53 °F
Return Air Temp	87 °F
Outside Air Temp	74 °F
Outside Air Humidity	72 %
Outside Air Enthalpy	32
Outside Air Damper Position	0 %

**SMART FLOOR ZONING**

REAL TIME | REPORTING

**IBIS SMARTFLOOR**  
WEST TOWER | FLOOR 12

TEMPERATURE KEY: 64 66 68 70 72 74 76 78 80

CLICK ON A NEIGHBORHOOD TO SHOW VAVS | CLICK AGAIN TO HIDE THEM | CLICK ON A DETAILS BOX TO SEE MORE DETAILS

Lighting	Value
TOTAL POWER	1.1 kW

HVAC	Value
TOTAL POWER	17.8 kW
AVG TEMPERATURE	72.7 °F

Occupancy	Value		
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

FLOOR PERFORMANCE	Value
IBIS SMARTFLOOR HVAC LIGHTING DEMAND	6 % 1.1 kW
	55 % 17.8 kW

VAV 12-13	Value
Zone Temperature	74.5 °F
Occupancy Schedule	OCCUPIED
Occupancy Mode	OCCUPIED
Current Zone State	SATISFIED
Discharge Air Temperature	55.9 °F
Hot Water Valve Position	0 %
Active Cooling	76 °F
Active Heating	72 °F
Air Flow	295 cfm
Steady-Mean Air Flow	280 cfm



# EKVERIFICATION™ powered by IBIS - Can Help you Qualify for up to 36 LEED EB Points

LEEDing the way. EK Verification powered by IBIS is at the forefront of sustainable technology, both in achieving a world in which businesses are smarter about energy and in leading-edge research about smart buildings. NASA chose IBIS to be part of Sustainability Base, one of the greenest buildings in the U.S. Federal government. IBIS is an integral part of building operations and control as well as the government's research into creating smarter buildings.

Adobe is partnering with IBIS to research smart-building technologies, including monitoring and control of zone-level energy cost centers, improving natural resource utilization, and developing tools to encourage corporate clients to practice energy conservation. In addition, Vantage Data Centers has chosen IBIS as its energy management system of choice for its next-generation LEED Platinum data centers.

*"IBIS visually and analytically provides operational transparency from the utility power down to the applications our customers rely on. IBIS allows us to understand and share our aggressive energy efficiency optimizations in an intuitive yet granular manner." – Jason Green Director, Vantage Data Centers*



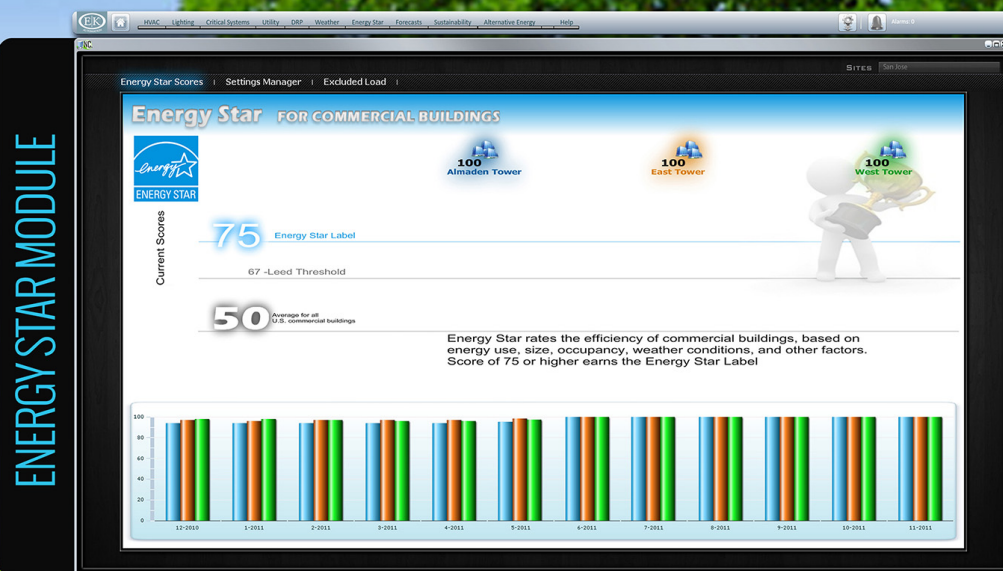
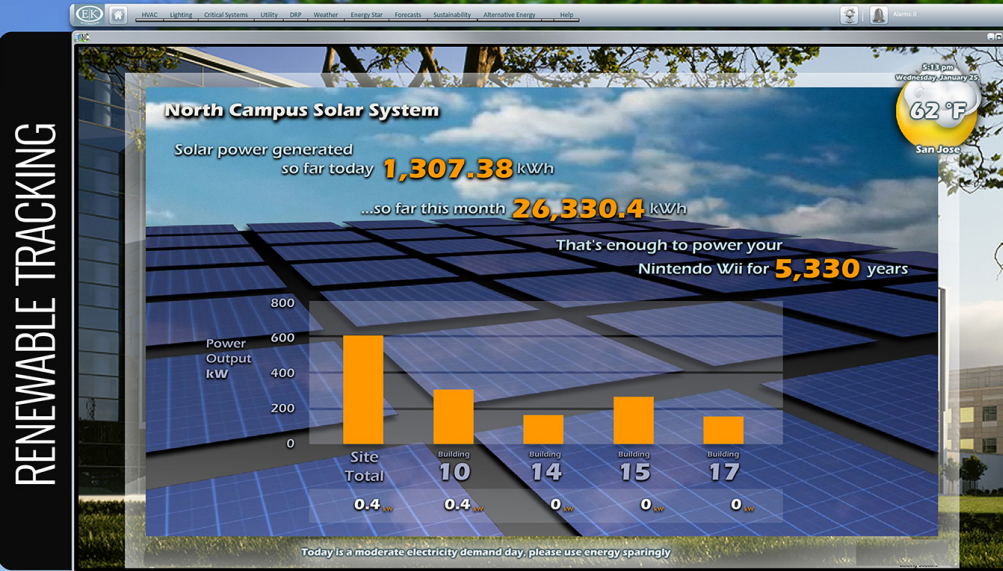
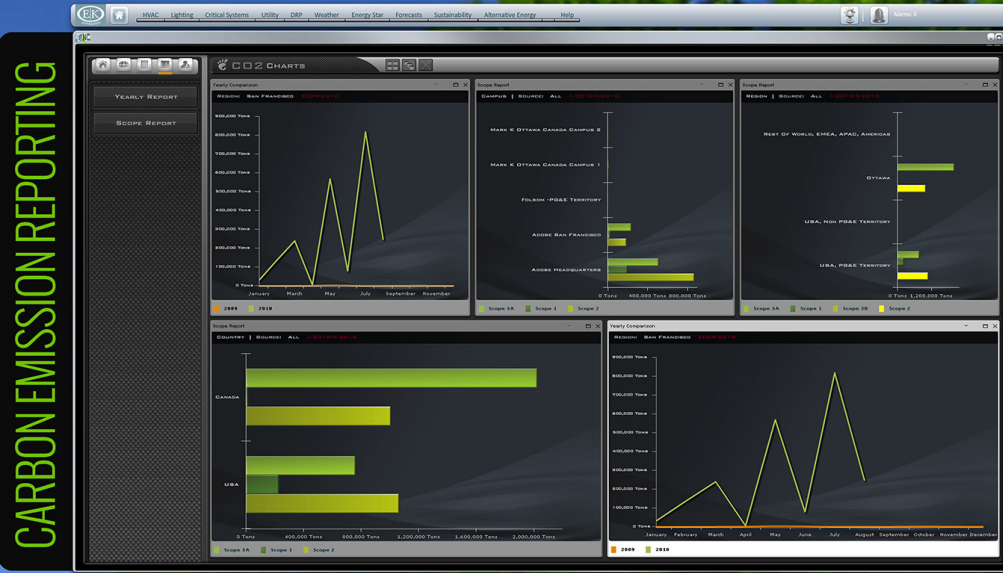
## EKVERIFICATION™ for Facilities is Customizable, Scalable & Expandable

MODULES	BASE ENERGY M&V PLATFORM	MASTER EK VERIFICATION
Building Energy Dashboard	★	★
Sustainability Reporting	★	★
M&V (Measurement & Verification) Reporting	★	★
Weather Station	★	★
Building Performance	★	★
Utility Metering	★	★
Smart Floor		★
HVAC		★
Lighting		★
Plug Load		★
Demand Response		★
Energy Star		★
Critical Systems		★
Green House Gas Reporting		★
Alternative Energy		★
Green Awareness Dashboard		★
Occupancy Based HVAC Metrics		★
Tenant Energy Allocation Billing		★

*EK VERIFICATION powered by IBIS is designed to meet or exceed industry standards, including LEED & Energy Star.*



# A Greener Planet





Get on the right path towards a Smarter Building today.

Contact us to learn more about EK Verification powered by IBIS and schedule a live demonstration.

From our Command Central in Hernando, MS we can show you in “real-time” some of the world’s smartest most energy efficient buildings.



We Make Buildings Work™

INTEGRATION | MOBILIZATION | VERIFICATION

901.654.2394 | [ekautomation.com](http://ekautomation.com)