INTRODUCING THE
ENERGY SOLUTIONS PROGRAM

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Billy Blackburn is the Business Development and Account Manager at Harris Integrated Solutions.

- *30 years veteran in the HVAC and DDC control industries*
- *An Accredited Commercial Energy Manager (ACEM)*
- *A former factory-certified centrifugal chiller technician and manager*

Billy holds certifications

- *Allen Bradley PLC*
- *Network Plus and CCNA training*
- *Factory certified DDC control Technician*
- *Former ALC/HIS Trainer and Training Manager*
- *A regular contributor to *GroundBreak Carolina*.*

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Tony Holcomb is an Energy Consultant with Harris Integrated Solutions

- *Retired Director of Maintenance and Operations for the Georgetown County School District.*
- *Served three years as Vice Chairman of the Association of South Carolina Energy Managers.*
- *An Accredited Commercial Energy Manager (ACEM)*
- *Named South Carolina Energy Manager of the Year in 2016 and received the South Carolina Energy Project of the Year award in 2013.*
- *Board member and HVAC advisor HGTC*
- *A regular contributor to *GroundBreak Carolina*.*

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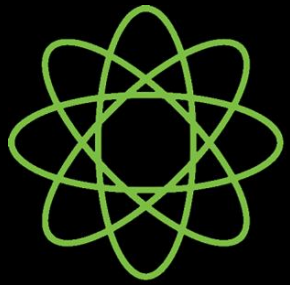
ENERGY SOLUTIONS PROGRAM
ESP
HARRIS Integrated Solutions

What is ESP?


The Energy Solutions Program (ESP) is a 3-tier strategy
OUR GOAL is...
Reduce Energy Use and Maintain Building Comfort
ESP



1

What is the Energy Solutions Program?

Technology

The Building Automated System

ESP ENERGY SOLUTIONS PROGRAM
HARRIS Integrated Solutions

Technology

WebCTRL®

Flexibility Energy Optimization

Ease of use

- Real-time data access
- Scheduling Platform
- Demand Response
- Setpoints Optimization
- Automated and Promptly

ESP ENERGY SOLUTIONS PROGRAM
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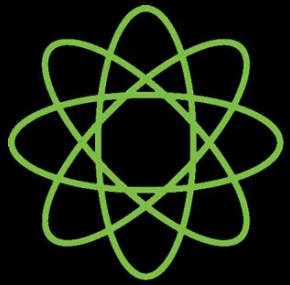

2

What is the Energy Solutions Program?

Tracking

ESP
ENERGY SOLUTIONS PROGRAM
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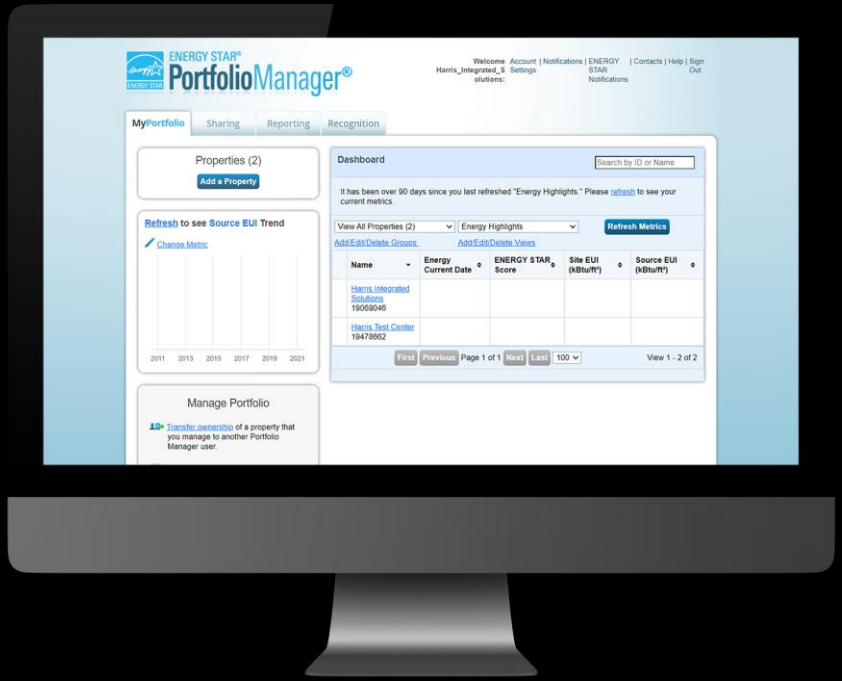
Tracking



- Track and Benchmark Energy Usage
- Make informed decisions to reduce your energy costs.

Tracking

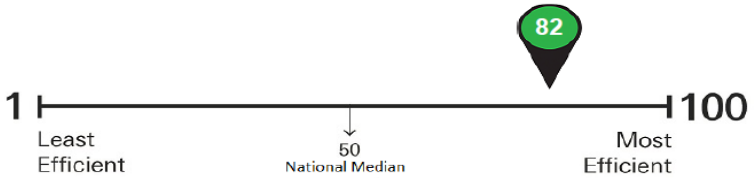
ENERGY STAR® Energy Performance Scorecard

82

out of 100

McLeod Health (Seacoast)

For Year Ending	July 31, 2024
Property Address	4000 Hwy 9 East Little River, South Carolina 29566
Primary Function	Hospital (General Medical & Surgical)
Gross Floor Area (ft²)	325,060
Year built	1991
Energy Use per sq. ft.*	153.5 kBtu



What is the ENERGY STAR Score?
The ENERGY STAR score rates commercial building's energy performance relative to similar buildings nationwide. Expressed as a number on a simple 1-100 scale, the score rates performance on a percentile basis: a building with a score of 50 performs better than 50% of its peers. Higher scores mean better energy efficiency, resulting in less energy use and fewer greenhouse gas emissions. If a 1-100 score for a specific building type has not been developed, Site Energy Use Intensity (EUI) will be displayed on this scorecard.

Learn more at:
energystar.gov/scorecard

*Site energy use

EPA United States Environmental Protection Agency

Date Generated: September 03, 2024

What is the Energy Solutions Program?

3 Communication

HIS ENERGY IQ REPORTS

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Communication

HIS ENERGY IQ REPORTS

Winner of the 2013 South Carolina Energy Project of the Year

Identify areas of:

- Inefficiency
- Conserve energy & Save Money
- Provides proof of ECM's savings
- Kiosks and Websites
- To inform and educate about energy performance

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What is

SMART ROOM AGENDA

- What is ESP ***Smart Room***?
- The ***Smart Room*** **Beta** Test Results
- Power **Consumption** Reduction
- R**O**I

ESP ENERGY SOLUTIONS PROGRAM
SMART ROOM

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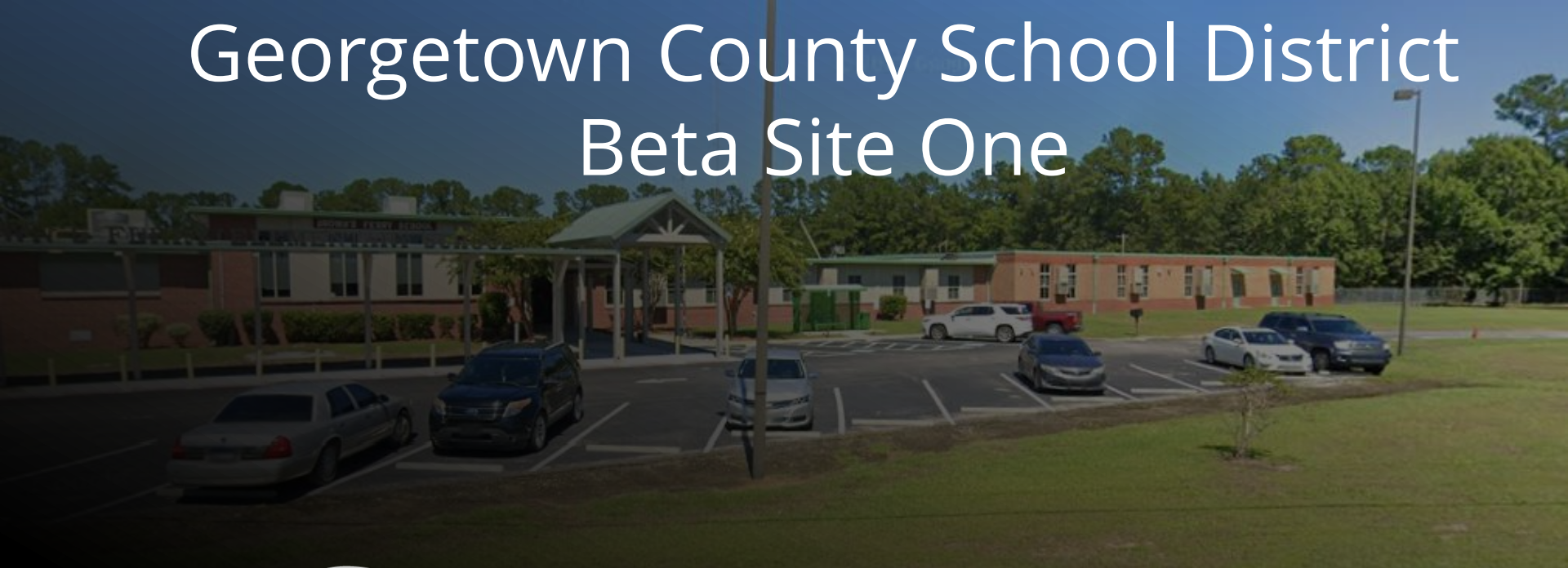
Smart ***Room***: Utilizing Algorithms across **Various Features**

- Motion **Detection**
- **Maintenance** Tracking
- **Fault** Detection
- Unit **Efficiency**

Georgetown County School District
Beta Site One



ENERGY SOLUTIONS PROGRAM
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SMART ROOM

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RTU-C2 RM303

To: Area C

Module Status

76.2 °F
00 %RH

97 kW

Electric Heat
S/S Off

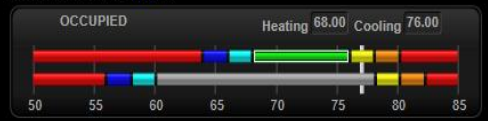
Supply Fan
S/S On

Dehumidification
S/S Off

Mode cooling
Reversing Valve On

NOTES:

Environmental Index 40.0 %



Zone Temp 77.1 ° F
Effective Cool Setpt 73.0 ° F
Effective Heat Setpt 65.0 ° F
Setpt Adj, by -3.0 ° F
Zone Humidity 75.0 % RH
Humidity Setpt 60.0 % RH
Schedule State Occupied
until 2:30 PM on 9/30/2024

RTU-2 RM301

To: Area C

Optimum Start

Smart Room begins 1 hours

transitioning from unoccupied to occupied temperatures

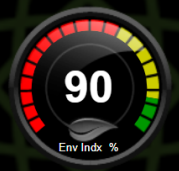
91.5 °F

00 %RH

108 kW

Zone Temp 73.5 °F

Supply Air 55.9 °F



Cooling Delta T 17.60 °F

HVAC Performance Capacity Chart

HEAT	COOL
Degree Rise	Degree Rise
5.06 °F per Hr	5.18 °F per Hr

Maintenance Hours

Component	Run Hours	PM Hours	Next PM	Alarm	Reset
Filter	22	100	78	Off	
Belt	22	325	303	Off	
Indoor Coil	22	650	628	Off	
Compressor	14	650	636	Off	

Set PM Hours according to manufacturer's recommendations

Unit Alarms

Zone Sensor Communication	Normal
Zone Sensor Temp Reading	Normal
Low Capacity	Normal
Discharge Air Out of Range	Normal
Zone RH Too High	Normal
Zone RH Too Low	Normal
Zone Humidity Sensor Reading	Normal
Ion Generator	Normal

Thermographic

Zone Temperature

73.5 °F

Zone Humidity

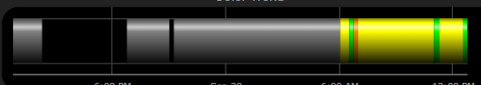
60.0 %RH

Supply Fan

Compressor

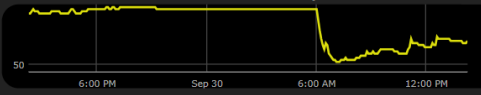
Dehumidification

Color Trend

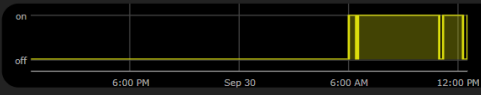


Zone Temp

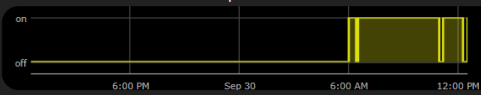
Zone Relative Humidity



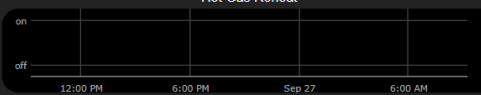
Sup Fan S/S



Compressor S/S



Hot Gas Reheat



RTU-C2 RM303

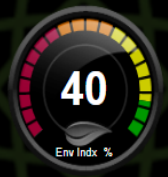
To: Area C

76.1 °F
00 %RH

97 kW

Optimum Start
Smart Room begins 4 hours
transitioning from unoccupied to occupied temperatures

Zone Temp 77.1 °F
Supply Air 73.0 °F



Cooling Delta T 4.10 °F

HVAC Performance Capacity Chart

	HEAT	COOL
< Best		
< Average		
< Poor		
	Degree Rise	Degree Rise
	5.00 °F per Hr	5.00 °F per Hr

Maintenance Hours

Component	Run Hours	PM Hours	Next PM	Alarm	Reset
Filter	14	500	486	Off	
Belt	14	200	186	Off	
Indoor Coil	14	500	486	Off	
Compressor	14	500	486	Off	

Set PM Hours according to manufacturer's recommendations

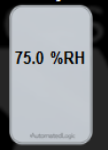
Unit Alarms

Zone Sensor Communication	Normal
Zone Sensor Temp Reading	Alarm
Low Capacity	Alarm
Discharge Air Out of Range	Alarm
Zone RH Too High	Normal
Zone RH Too Low	Normal
Zone Humidity Sensor Reading	Normal

Thermographic

Zone Temperature

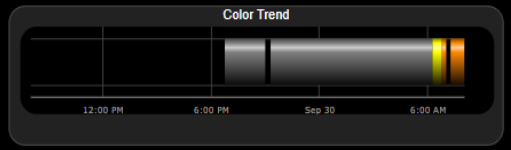
Zone Humidity

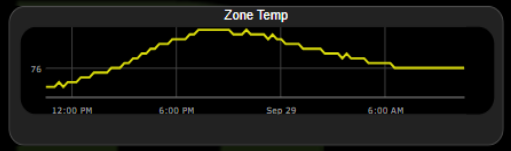


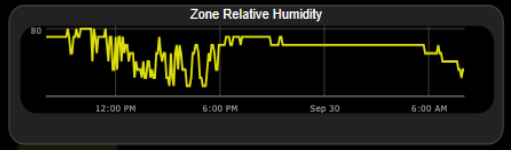
Supply Fan

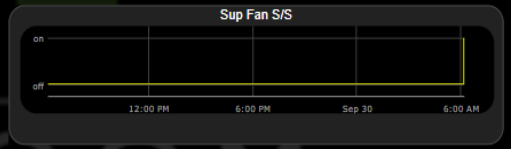
Compressor

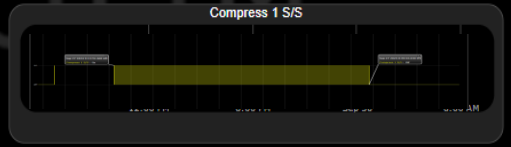
Dehumidification

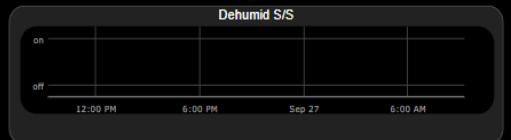













Compress 1 S/S
Compress 1 S/S
Notes
Sep 27 2024 9:13:51.660 AM
Compress 1 S/S : On
Sep 27 2024 8:49:03.030 PM
Compress 1 S/S : Off
on
off
Sep 27 2024
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
Sep 28
2024

ESP ENERGY SOLUTIONS PROGRAM
SMART ROOM

THE RESULTS

- First beta test was 12 units
- Found 23 ongoing issues first week
- Were able to identify energy saving and system issues.

1. **RTU-2 RM301:** Dehumidification is disabled, extended compressor operation.

2. **RTU-C14 RM44:** Low Env Index, Filter alarm, Discharge Air sensor failure.

3. **RTU-5 RM305** (Media Center): Dehumidification is disabled, compressor has operated in 24 hours.

4. **RTU-C4** (Media Center): Compressor operation for 11 hours; dehumidification is disabled.

5. **RTU-10**: Dehumidification is disabled; ion generator alarm.

6. **RTU-13:** Requires preventive maintenance for air filter; experiencing poor Delta T; dehumidification is disabled.

Beta Rooms

ASHRAE 36 Unoccupied Mode Strategies

1.Temperature Setback – When the space is unoccupied, heating and cooling setpoints are adjusted to reduce energy use

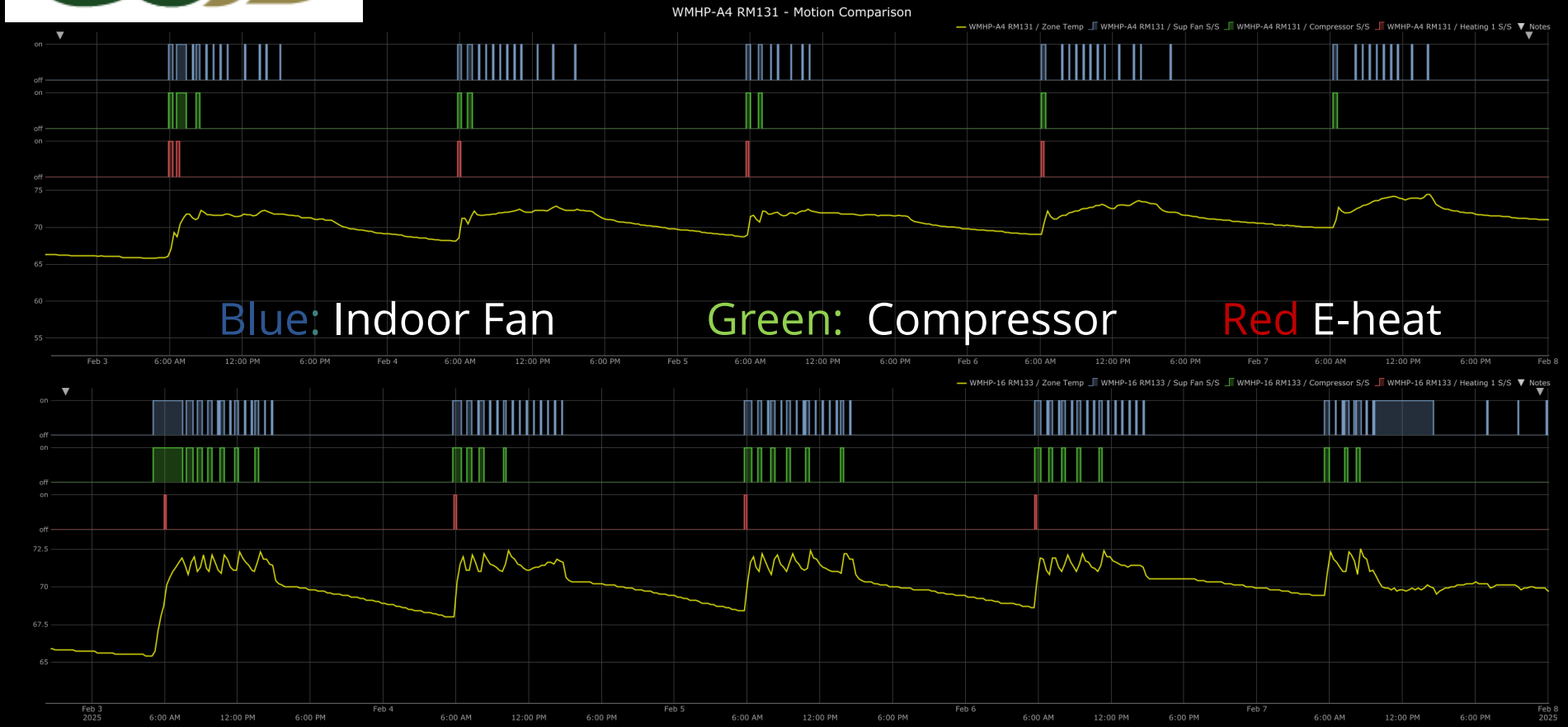
2.Ventilation Reduction – Outdoor air ventilation is minimized or shut off to prevent unnecessary conditioning of outside air.

3.Fan Operation – Fans are typically off unless required for setback temperature control or pressure maintenance.

4. Humidity Control – If necessary, humidity control may activate to prevent excessive moisture accumulation or dryness.

5. Reactivation Before Occupancy – Systems start before scheduled occupancy to ensure comfortable conditions when occupants arrive.

Normal School Week



Savings per Sensor

Normal School Week

Normal School Week (2/3-2/7)

	Room 131 kW	Hours	kWh	Room 133 kW	Hours	
Supply Fan	1.2	2.75	3.3	1.2	16	19.2
Compressor	4	2.75	11	4	11	44
Electric Heat Strips	9	1	9	9	1	9
		Total kWh	23.3		Total kWh	72.2
		Cost/kWh	$0.18		Cost/kWh	$0.18
		Total Cost	$4.19		Total Cost	$13.00

	Week	Year	
SAVINGS	$8.80	$396.09	(based on 42 full weeks)

Holiday School

Savings per Sensor

Holiday School Week

Holiday Week (2/17-2/21)

	Room 131			Room 133		
	kW	Hours	kWh	kW	Hours	
Supply Fan	1.2	1.5	1.8	1.2	36.25	43.5
Compressor	4	1.5	6	4	36.25	145
Electric Heat Strips	9	0.25	2.25	9	2	18
		Total kWh	10.05		Total kWh	206.5
		Cost/kWh	$0.18		Cost/kWh	$0.18
		Total Cost	$1.81		Total Cost	$37.17

	Week	Year	
SAVINGS	$35.36	$247.53	(Based on 7 holiday weeks)

Brown's Ferry Total Savings

Rooms	Normal	Holiday	Total Savings
27	$10,694.43	$6,683.31	$17,377.74

2023-24 Cost Reduction	$60,576.79 28.68%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SMART ROOM
McLeod Health Seacoast Campus
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ESP ENERGY SOLUTIONS PROGRAM
SMART ROOM

Occupancy Indicator

Occupancy Optimization

- Medical rounds happen ***every 45 minutes***
- When no motion is detected for 2 hours, setpoints move to the ***unoccupied setting***.
- Countdown will begin 2 hours after the ***last motion is detected***.
- Shows ***occupancy status*** on graphics page
- Can be ***manually overridden*** from graphic page
- ***Does not interfere*** with hospital operations or patient care.

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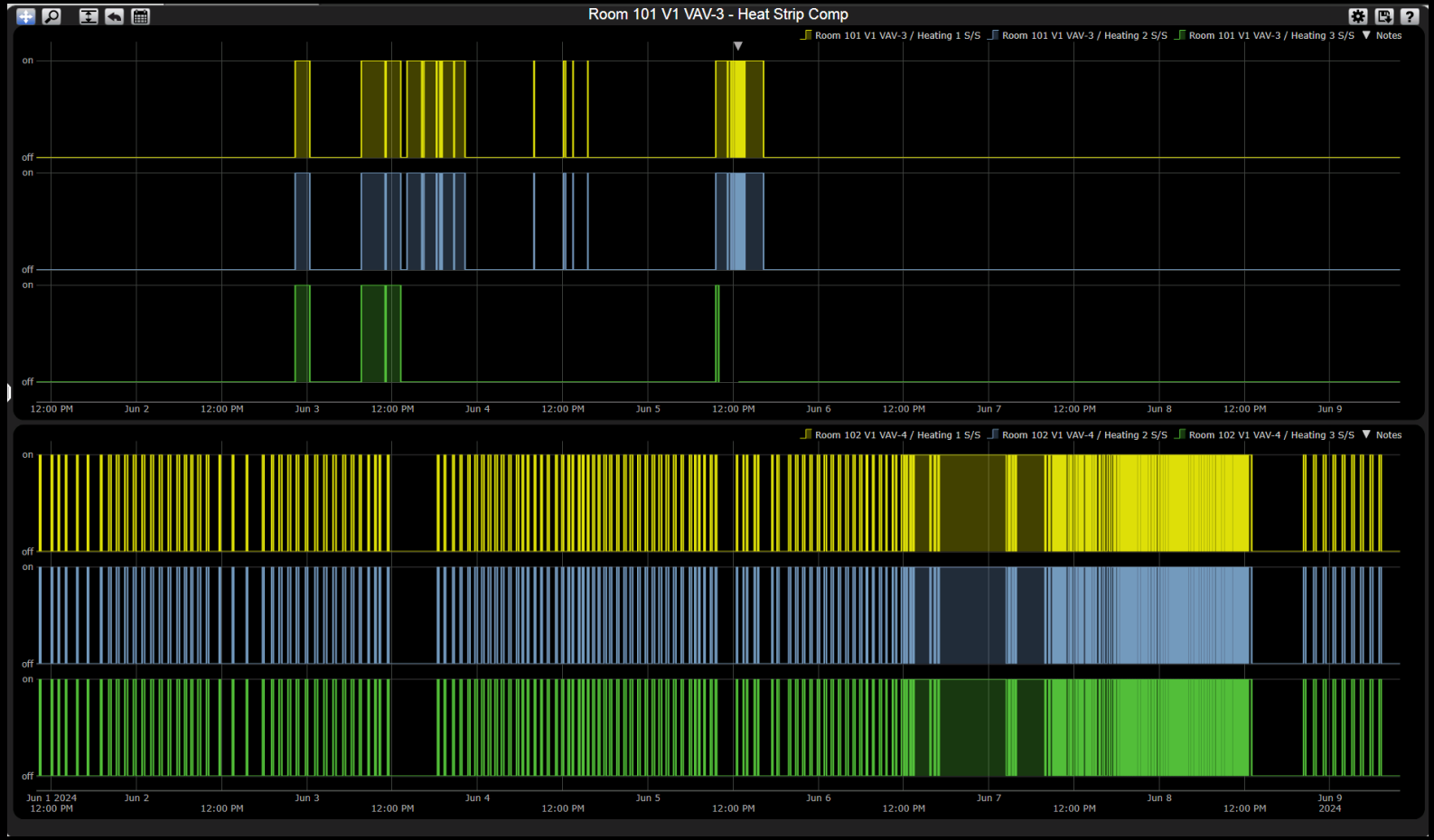
SMART ROOM

BETA TEST RESULTS ROOM 101 & 102

THE RESULTS

- Both rooms are same size
- Same air handler supply air to both rooms
- Both VAV's has 3 banks of 3 KW of electric heat strip



ESP ENERGY SOLUTIONS PROGRAM
SMART ROOM

78.0 ° F
36.9 % RH

Module Status

Room 101 V1 VAV-3

To: Bed Tower 1st Floor Pods A and D
RTU-1 Pods A & D

Actual 275 CFM
Setpt 270 CFM
Damper 57 % Open

AHU Status
Supply Air Temp 57.8 F°
Supply Air Static Actual 1.3 in. H2O

SA

DA

Supply Air Temp
58.8 F°

Electric Heat
Stage 1 Off
Stage 2 Off
Stage 3 Off

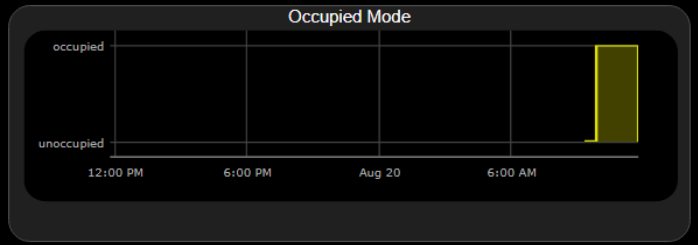
Occupancy Indicator

ESP SMART ROOM

Smart Room Mode

Sensor Bypass

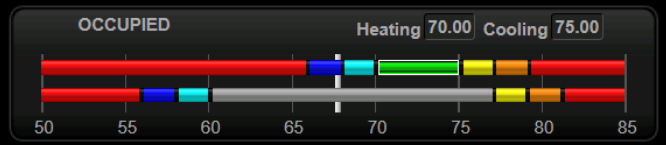
Zone Temp 67.8 ° F
Effective Cool Setpt 72.0 ° F
Effective Heat Setpt 67.0 ° F
Setpoint Adj. by -3.0 ° F
Scheduling Mode 24/7



NOTES:

runs 24/7

Environmental Index 100.0 %



75.8 ° F
42.3 % RH

Module Status

Room 102 V1 VAV-4

To: Bed Tower 1st Floor Pods A and D
RTU-1 Pods A & D

Actual 41 CFM
Setpt 0 CFM
Damper 0 % Open

AHU Status
Supply Air Temp 57.4 F°
Supply Air Static Actual 1.3 in. H2O

SA

DA

Supply Air Temp
73.0 F°

Electric Heat
Stage 1 Off
Stage 2 Off
Stage 3 Off

ESP SMART ROOM

UNOCCUPIED

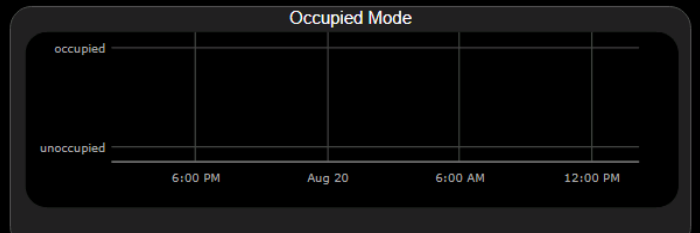
Will unoccupy in 0:00 Mins/Seconds

Smart Room Mode

Activated

ON

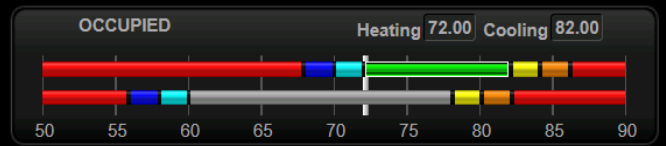
Zone Temp 72.2 ° F
Effective Cool Setpt 78.0 ° F
Effective Heat Setpt 60.0 ° F
Setpoint Adj. by 0.0 ° F
Scheduling Mode 24/7



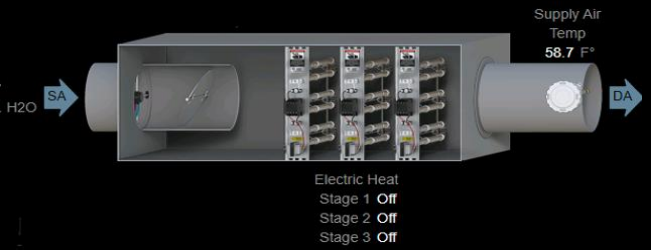
NOTES:

runs 24/7

Environmental Index 0.0 %



ROOM 102
(NORMAL ROOM)



ESP ENERGY SOLUTIONS PROGRAM
SMART ROOM

DAY	HEAT 1 HOUR	HEAT 2 HOURS	HEAT 3 HOURS
MONDAY	6.11	6.11	6.11
TUESDAY	5.9	5.9	5.9
WEDNESDAY	5.5	5.5	5.5
THURSDAY	8.3	8.3	8.3
FRIDAY	5.5	5.5	5.5
SATURDAY	15.9	15.9	15.9
SUNDAY	3.2	3.2	3.2
TOTAL	**50.41**	**50.41**	**50.41**
Hours of Operation Per Week: 151.23 Hours			
Kilowatt Hours: 453.69 kwh / Cost $36.30 Per Week			

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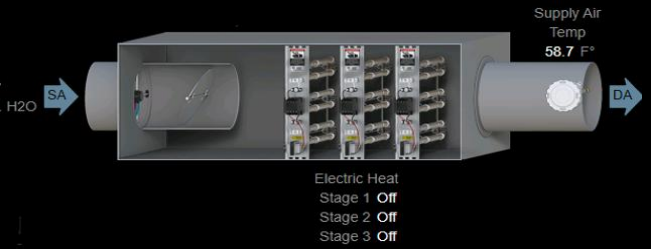
ROOM 101
(SMART ROOM)



DAY	HEAT 1 HOUR	HEAT 2 HOURS	HEAT 3 HOURS
MONDAY	0.0	0.0	0.0
TUESDAY	2.1	2.1	0.0
WEDNESDAY	3.0	3.0	0.0
THURSDAY	0.4	0.4	0.0
FRIDAY	3.2	3.2	0.4
SATURDAY	0.0	0.0	0.0
SUNDAY	0.0	0.0	0.0
TOTAL	**8.7**	**8.7**	**0.4**
Hours of Operation Per Week: 17.8 Hours			
Kilowatt Hours: 53.4 kwh / Cost $4.27 Per Week			

ESP ENERGY SOLUTIONS PROGRAM
SMART ROOM

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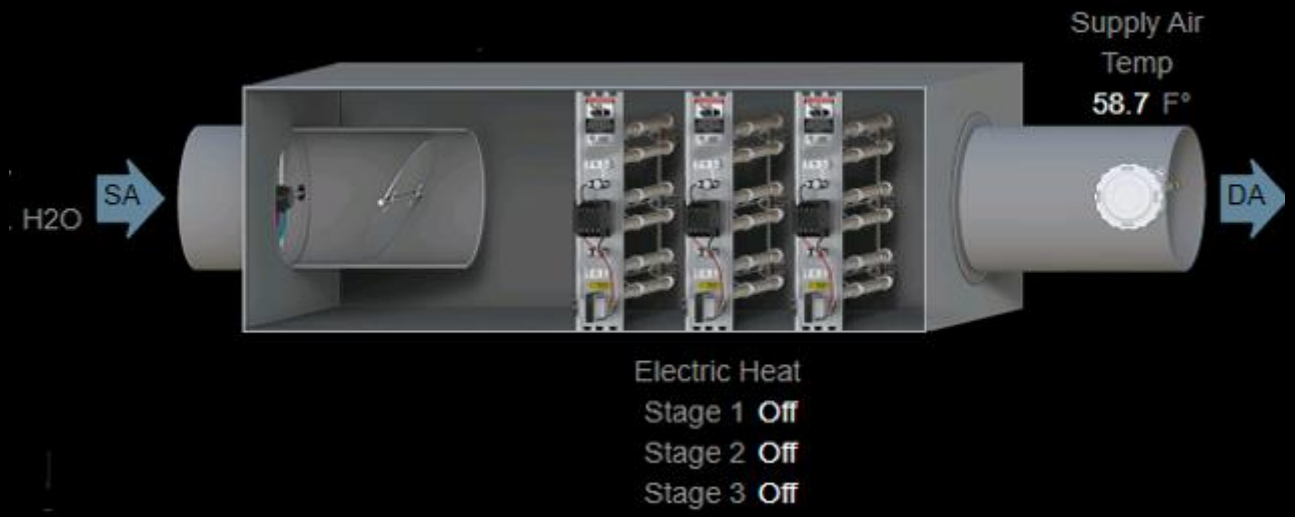
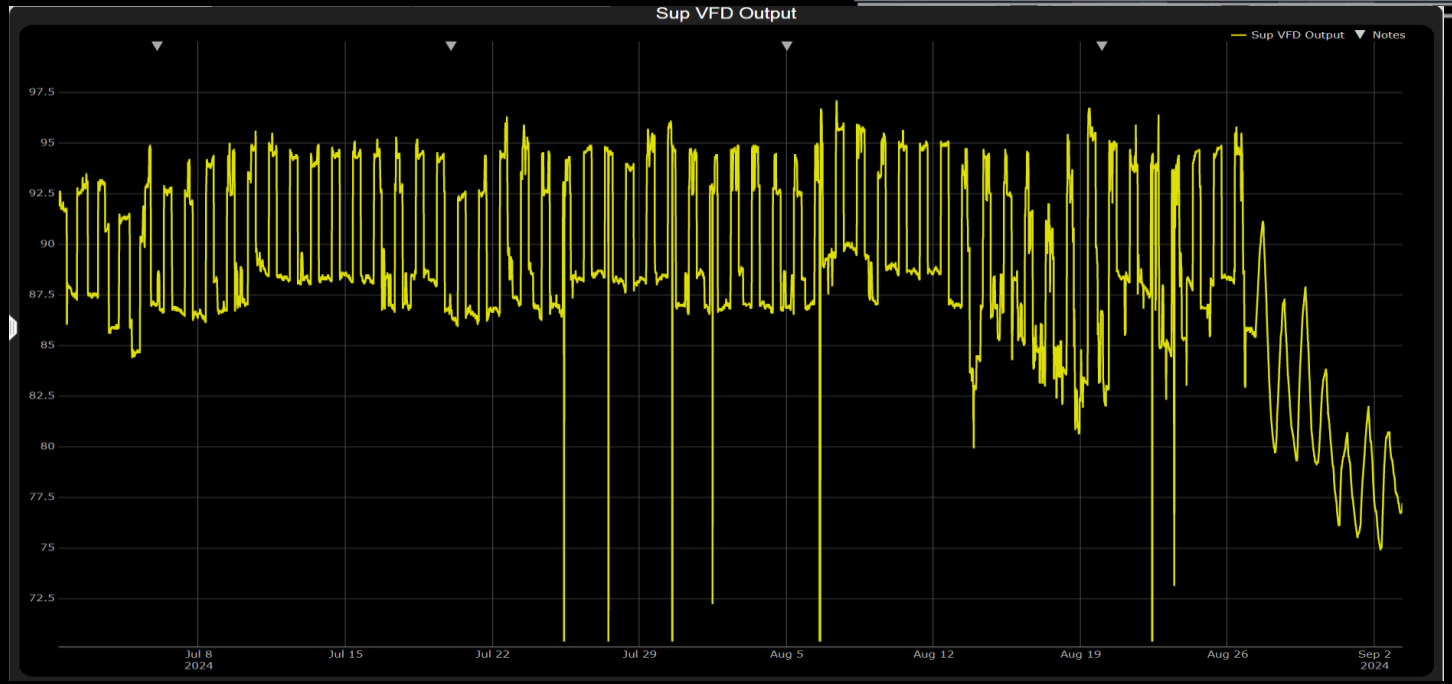
SMART ROOM SUMMARY

- Annual **savings $1,665.21** (per unit)
- Savings for **one wing (34 Rooms) $56,617.14** (annually)
- ROI was **under 6-Months** (E-Heat)



ESP
ENERGY SOLUTIONS PROGRAM
SMART ROOM

ADDITIONAL SAVINGS



ESP
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SMART ROOM

1st Floor Pods ESP Smart Rooms

To: 1st Floor Pods A, B, C, and D

63.8 °F
47.2 %RH

= Occupied
= Unoccupied

ENERGY SOLUTIONS PROGRAM
ESP
SMART ROOM

Room 101 V1 VAV-3
Unoccupied

Room 102 V1 VAV-4
Unoccupied

Room 103 V1 VAV-5
Occupied

ROOM 104 V1 VAV-6
Occupied

Room 105 V1 VAV-8
Occupied

Room 106 V1 VAV-9
Occupied

ROOM 107 V1 VAV-10
Unoccupied

Room 108 V1 VAV-11
Occupied

ROOM 109 V2 CAV-1
Unoccupied

ROOM 110 V2 VAV-3
Occupied

Room 111 V2 VAV-4
Occupied

Room 112 V2 VAV-5
Occupied

ROOM 113 V2 VAV-7
Occupied

Room 114 V2 VAV-8
Occupied

Room 115 V2 VAV-9
Occupied

Room 116 V2 CAV-10
Unoccupied

B/C Pod Waiting Area V2 VAV-11
Occupied

1 PCU V2 VAV12
Occupied

2 PCU V2 VAV-13
Occupied

3 PCU V2 VAV-14
Occupied

4 PCU V2 VAV-15
Occupied

5 PCU V2 VAV-21
Occupied

6 PCU V2 VAV-20
Occupied

7 PCU V2 VAV-19
Occupied

8 PCU V2 CAV-18
Occupied

Room 117 V1 VAV-19
Occupied

Room 118 V1 VAV-20
Unoccupied

Room 119 V1 VAV-21
Occupied

Room 120 V1 VAV-22
Occupied

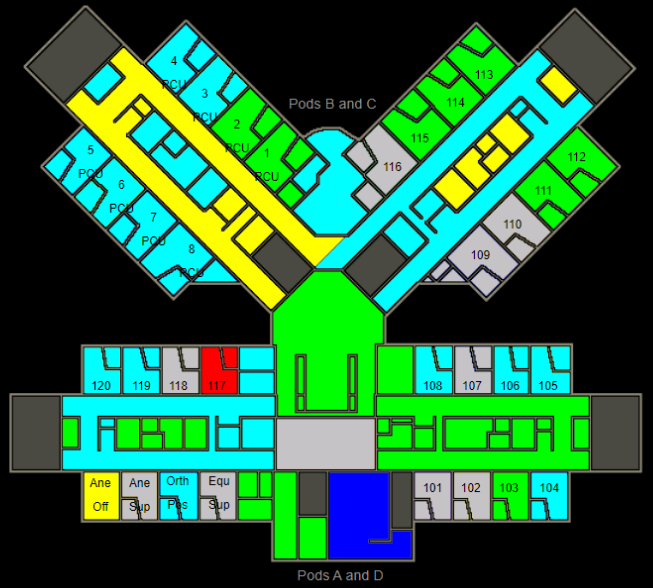
Anesthesia Office V1 VAV-26
Occupied

Anesthesia work room V1 VAV-25
Unoccupied

Orth. Pos. Supply V1 VAV-24
Occupied

Room 132 V1 VAV-23
Unoccupied

Break Room V1 VAV-12
Occupied



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Any Questions

HARRIS Integrated Solutions