

Building Monitoring EE Now 2017

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Building Performance

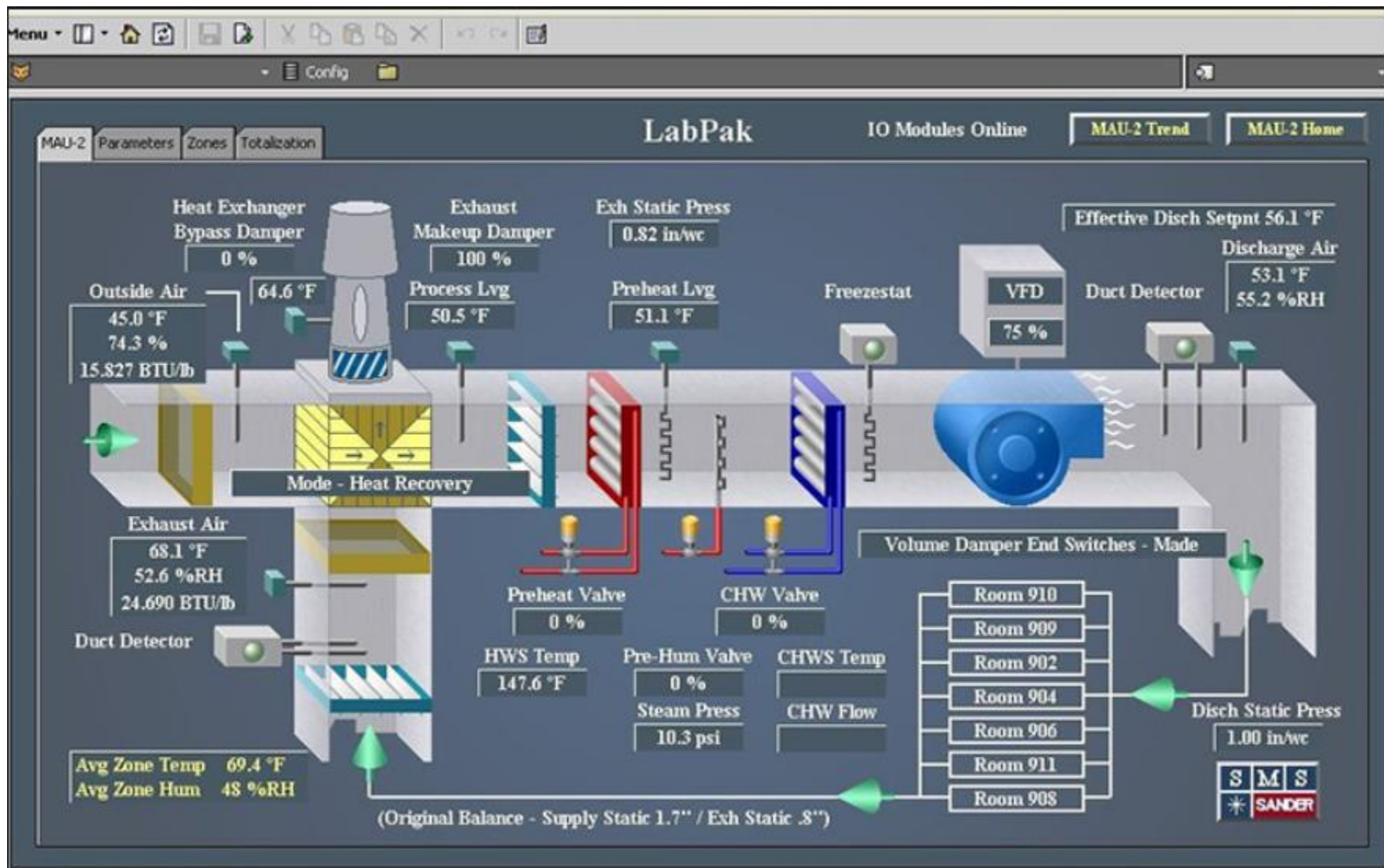
- Benchmarks
- Energy Audits
- Utility Bill usage
- Enhanced
Commissioning

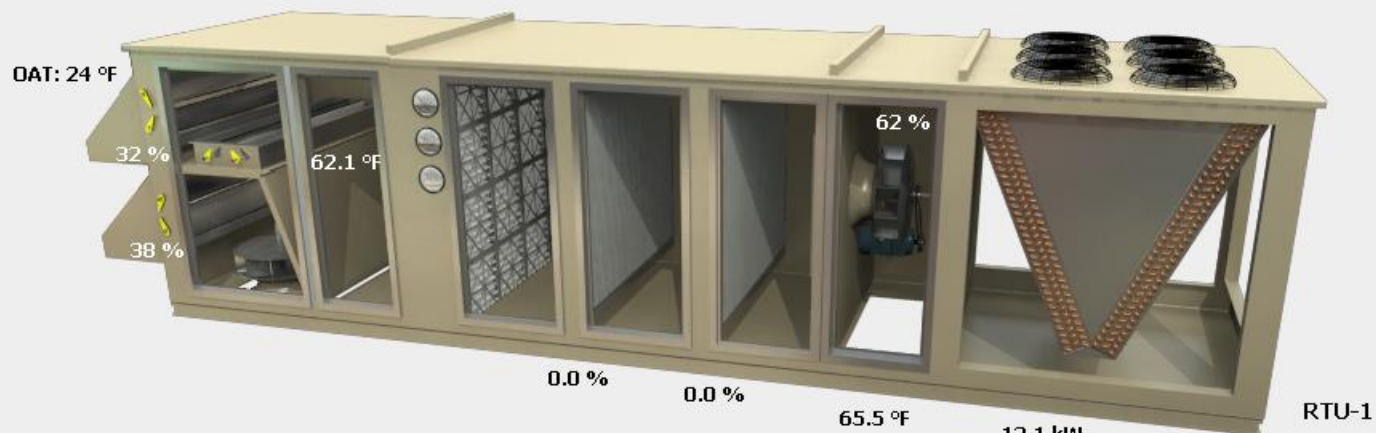


Building Monitoring

- Direct Digital Control (DDC) for larger or more complex buildings.
 - Can monitor and control operations of pumps, lighting, HVAC, and exhaust fans.







Setpoints and Values

Discharge Air Temp	65.5 °F
Discharge Air Setpoint	65.2 °F
Duct Static Pressure	1.20 in/wc
Duct Static Setpoint	1.20 in/wc
Building Static Pressure	0.01 in/wc
Building Static Setpoint	0.01 in/wc
DX Lockout Setpoint	50.0 °F
Minimum Outside Air	5 %
RTU ON/OFF Control	On
RTU Mode Status	6

0=Off, 1=Initial Delay, 2=Opening Dampers
3=Dampers Open, 4=Fan Starting, 5=On
6=Economizer, 7=Heating, 8=DX Cooling
11=Unoccupied, 12=Manual, 13=Remote Off
14=Alarm

Inputs

Mixed Air Temp	62.1 °F
Return Air Temp	74.5 °F
Outside Air Temp	24 °F
Outdoor Humidity	74.6 %
Return Air Humidity	18.3 %
DX AB Coil Temp	59.9 °F
DX CD Coil Temp	64.6 °F
Supply Fan 1 Airflow	15661 cfm
Supply Fan 2 Airflow	10201 cfm
Return Air CO2	457 ppm

Alarms: [View Current](#) [Reset](#)

Power History

Outputs

Economizer Control Loop	29 %
Outside Air Dampers	32 %
Return Air Damper	71 %
Supply Fan VFD Control	62 %
Relief Fan VFD Control	38 %
Duct Press Control Loop	58 %
Bldg Press Control Loop	29 %
DX AB Coil Control Loop	0 %
DX CD Coil Control Loop	0 %
Htg Coil Control Loop	0.0 %
Global Alarm	Normal

[HVAC Schedules](#)

[Boiler Room](#)

[First Floor](#)

[Second Floor](#)

[Third Floor](#)

[Fourth Floor](#)

VAV 209

Primary Flow: 112 cfm
Primary Flow Sp: 110 cfm
Percent of Max Flow Sp: 30 %

Damper: 21 %

Effective Occup: Occupied
Application Mode: Heat



Cooling: 0 %
Heating: 100 %

Room Temp: 72 °F
Eff. Setpoint: 72 °F

DAT: 95 °F

Heat: 100 %

AHFC – Building Monitoring System

- Open source monitoring system ideal for any organization that wants to monitor conditions in their properties. <https://bms.ahfc.us>
- Real-time energy use
- System capable of tracking occupancy, temperature, electricity, and fuel use.
- Access data from multiple web enabled sources
- Programming – new systems and products being added to library
- Customizable monitoring dashboards

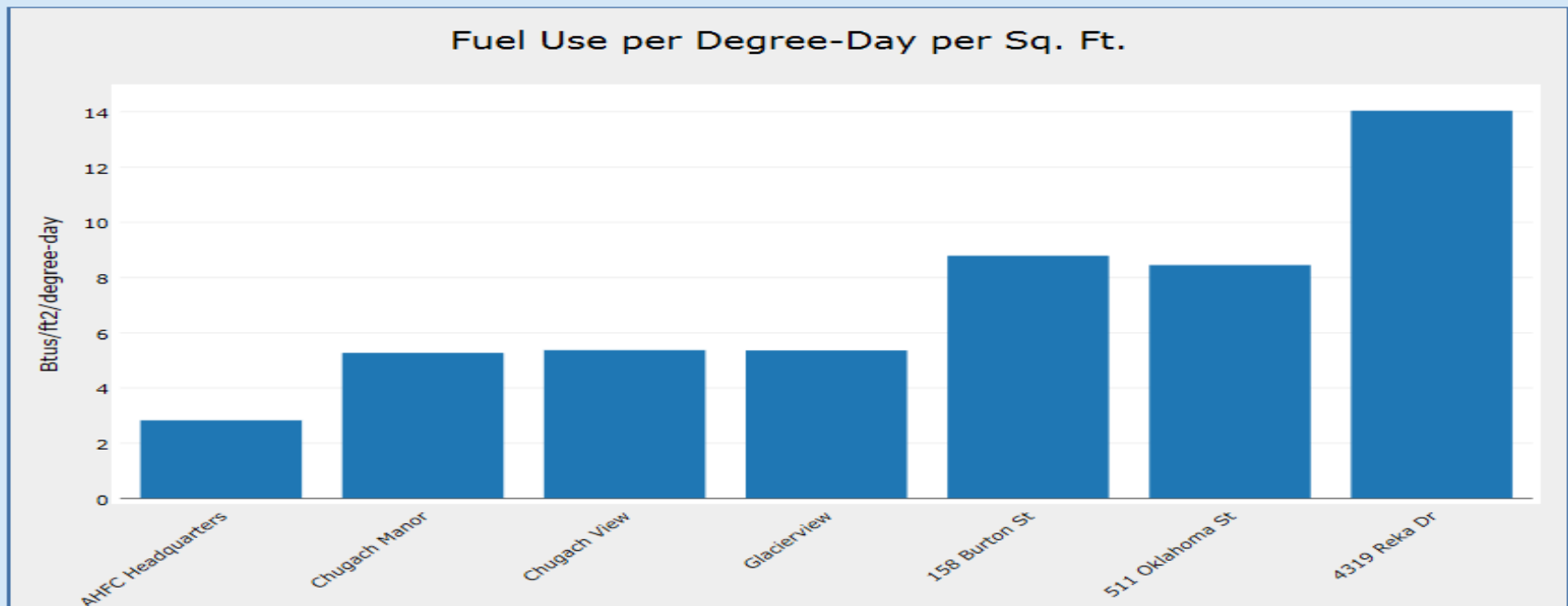
AHFC Building Monitoring

Map Data Charts and Reports Custom Reports Training Videos and Project Reports

Charts and Reports

Group: Facility: Report:

Select Time Period:



-- Get Link --

Glacierview Dashboard

Boiler Info

Boiler #1 Alarm



OK status

Boiler #2 Alarm



OK status

Primary Loop Temp



166 deg F

Bldg Heating Supply T



152 deg F

Domestic Hot Water

DHW Temp to Bldg



133 deg F

DHW Return Temp



125 deg F

DHW Temp from Tanks



144 deg F

-- Get Link --

AHFC Headquarters Dashboard

Energy Use

Electric Use (KW)



132 kW

Gas Meter



452,700 Btu/hour

Boniface/Tudor Temp



32.2 deg F

Operations

Heating Supply Temp



137 deg F

Heating Return Temp



129 deg F

Bldg Avg Heating Demand



16.1 %

Return Air CO2



530 ppm

Supply Fan VFD %



64.9 %

Building Avg Cooling Demand



25.1 %

Outside Air Damper Position



37.6 %

3rd Fl Lighting,
Accounting
(1/green=on)



Select Values to Plot: 5 selected

Data Averaging: None

Shade Occupied Periods

Select Time Period:

1 da

3 da

1 wk

2 wk

1 mo

2 mo

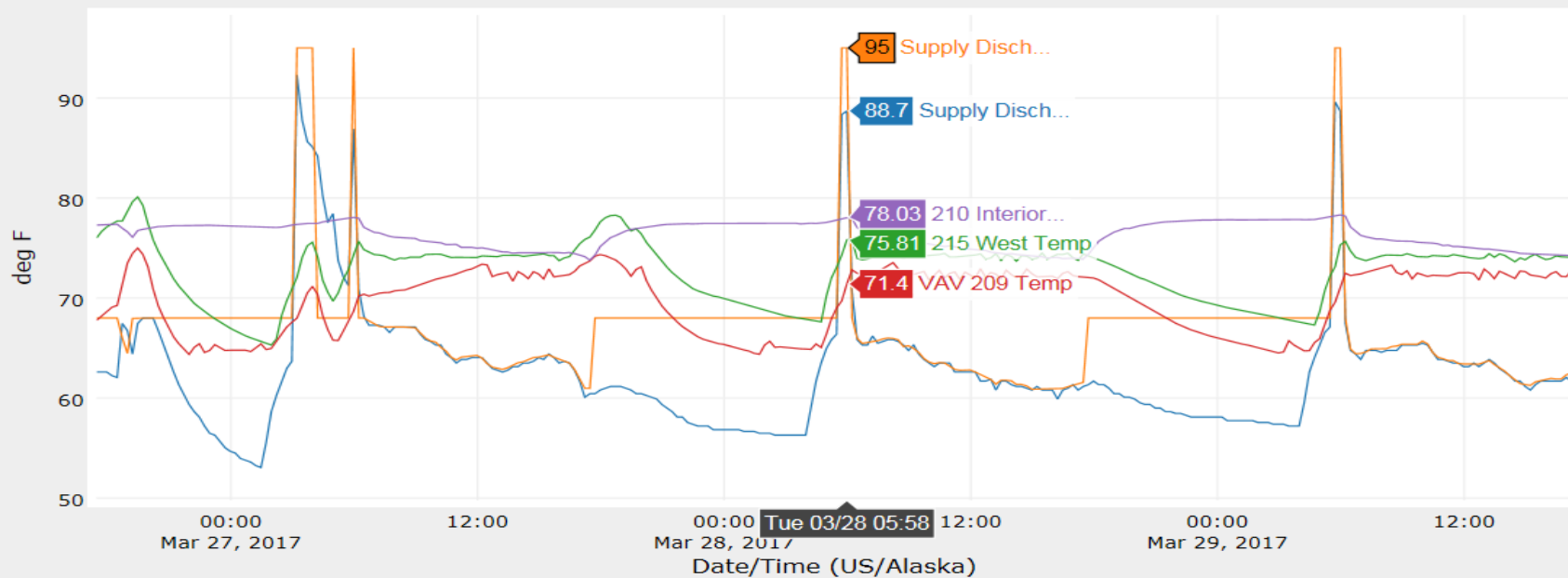
4 mo

1 yr

All

Custom

Plot Sensor Values over Time: AHFC Headquarters



Supply Discharge Air Temp Supply Discharge Air Setpoint 215 West Temp
VAV 209 Temp 210 Interior Space Temp

VAV 209

Primary Flow: 112 cfm
Primary Flow Sp: 110 cfm
Percent of Max Flow Sp: 30 %

Damper: 21 %

DAT: 95 °F

Effective Occup: Occupied
Application Mode: Heat

Heat: 100 %



Cooling: 0 %
Heating: 100 %

Room Temp: 72 °F
Eff. Setpoint: 72 °F

Select Values to Plot: Gas Meter, Electric Meter

Data Averaging: None

Shade Occupied Periods

Select Time Period:

1 da

3 da

1 wk

2 wk

1 mo

2 mo

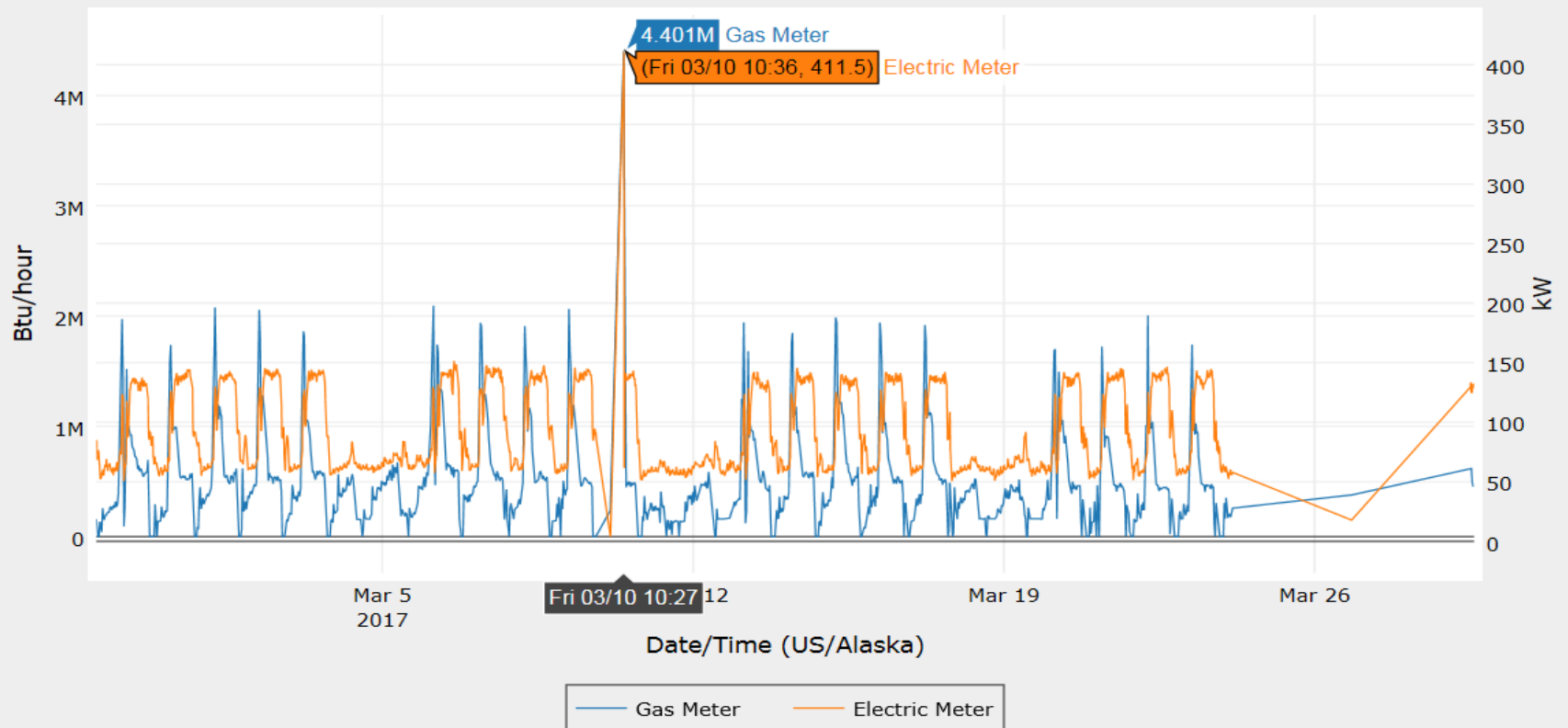
4 mo

1 yr

All

Custom

Plot Sensor Values over Time: AHFC Headquarters



Lighting Levels:

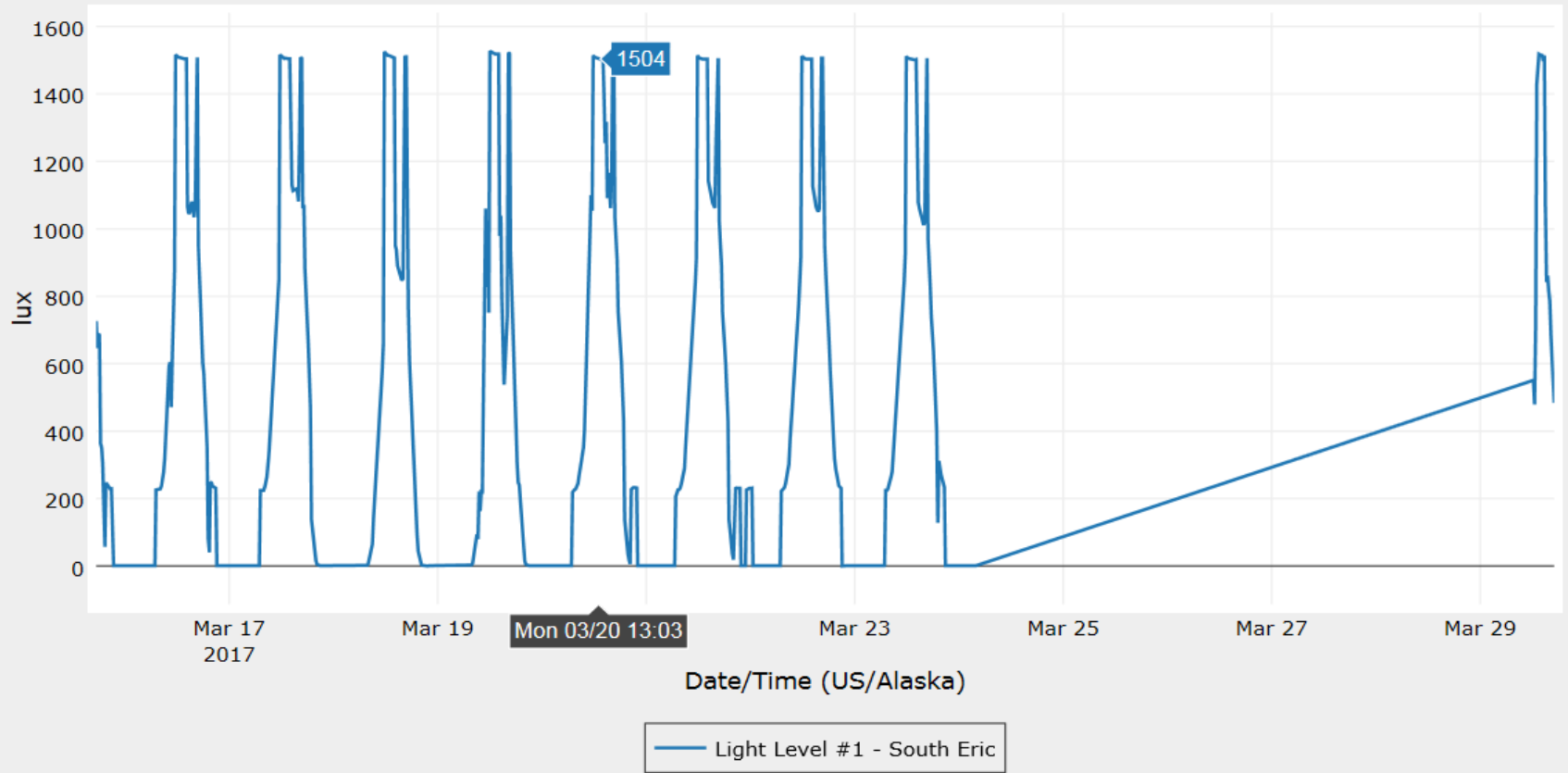
- Normal levels ranged between 100 – 300 lux
- Today levels range between 500 -1000 lux, even higher for precision detailed work.

Daylight Harvesting:

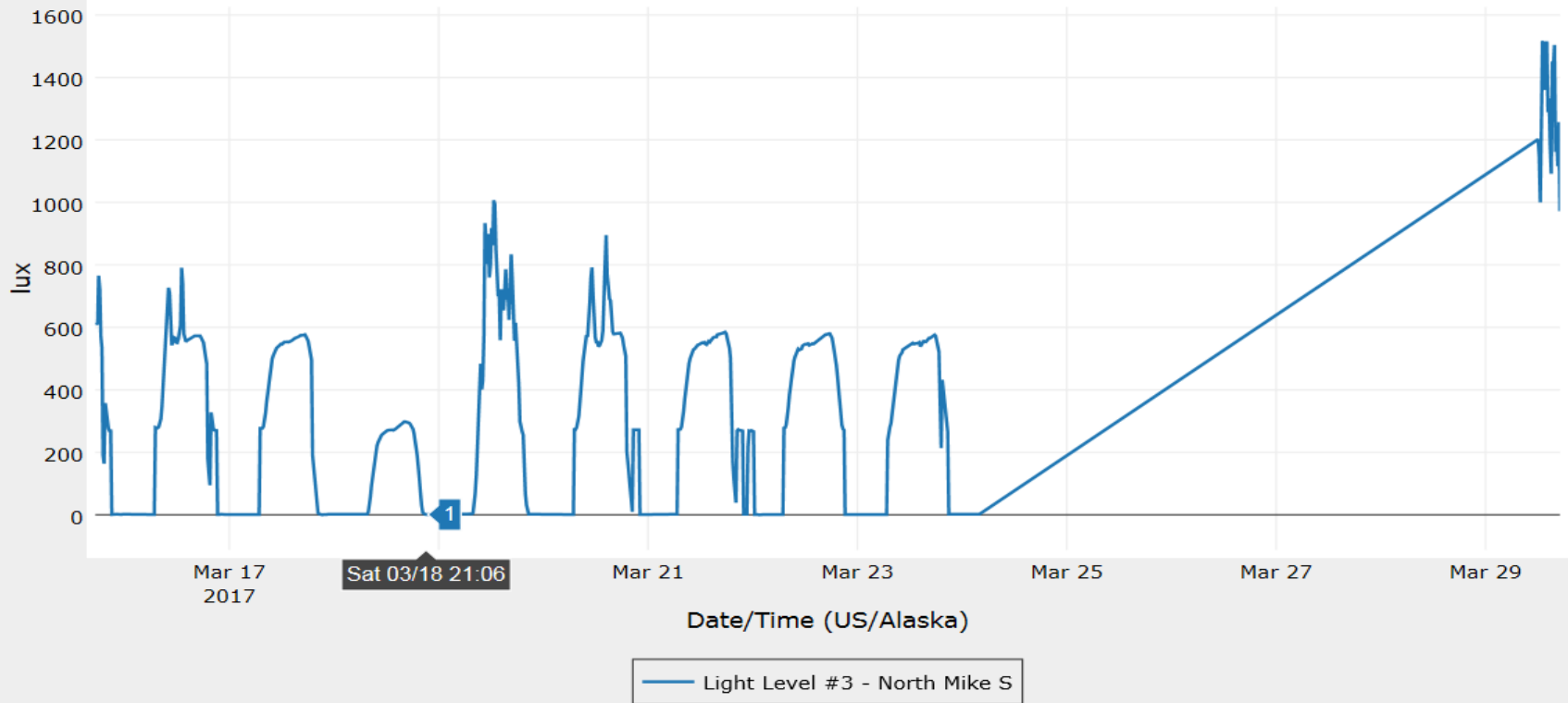
- Reduce artificial lighting, by dimming or switching off overhead lighting, and use ambient light in the space.

Select Time Period: 1 da 3 da 1 wk 2 wk 1 mo 2 mo 4 mo 1 yr All Custom

Plot Sensor Values over Time: AHFC Headquarters

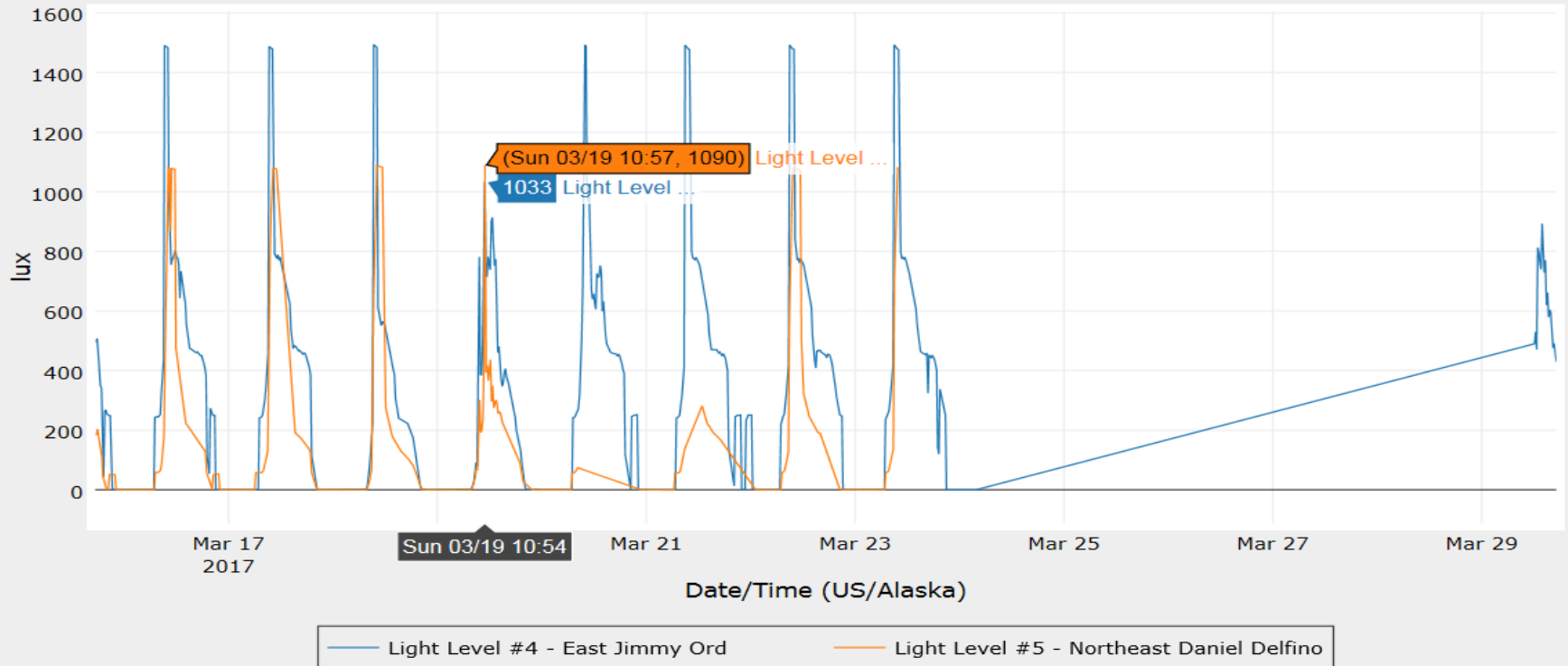


Plot Sensor Values over Time: AHFC Headquarters



Select Time Period: 1 da 3 da 1 wk 2 wk 1 mo 2 mo 4 mo 1 yr All Custom

Plot Sensor Values over Time: AHFC Headquarters



Public Housing Division & BMS

- Two years ago – Seven systems were deployed. Today that number is eighteen.
- Public Housing operates 402 buildings in thirteen communities. Anchorage alone accounts for 132 of those.
- Through the use of BMS, property managers can quickly check status of properties and dispatch staff to troubled systems.

Questions?