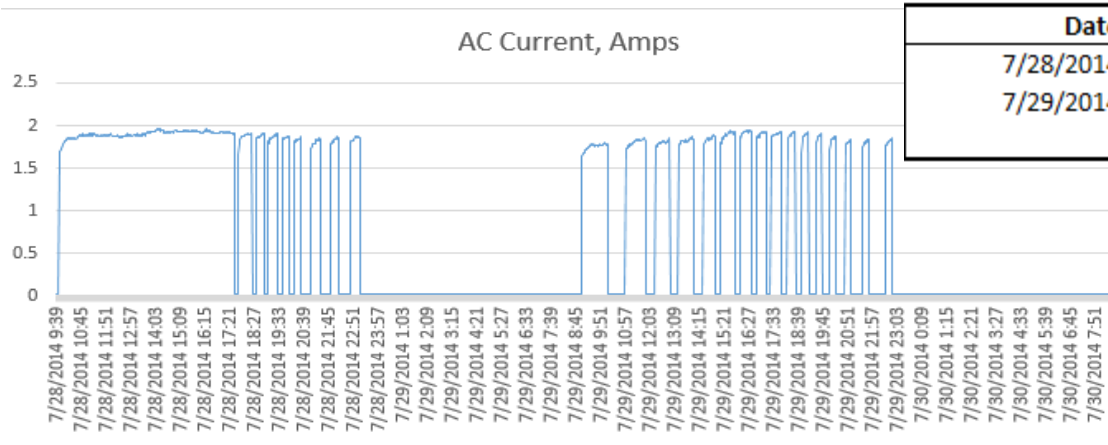




Ice**COLD**®



Bucyrus Rm 157 AC Unit Performance - field testing results for pre- and post-treatment

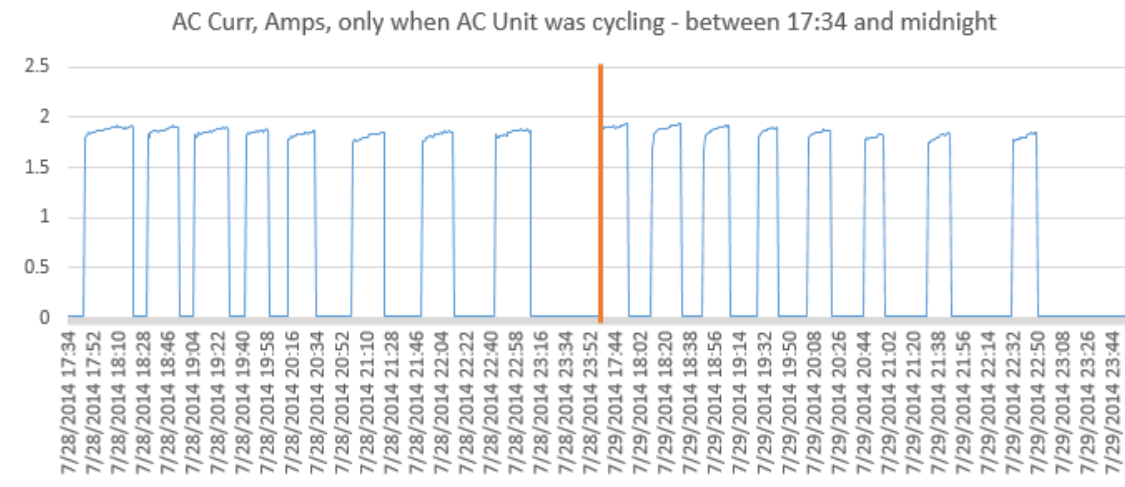


Date	AvgT-Out	AvgT-In	AvgOAT	Amps	Amp-hrs
7/28/2014	52.4	66.4	69.5	1.848	55.7
7/29/2014	54.3	66.4	67.8	1.850	40.8
				100%	73.2%

Chart presents two days of PTAC unit operations - before and after IceCold treatment.

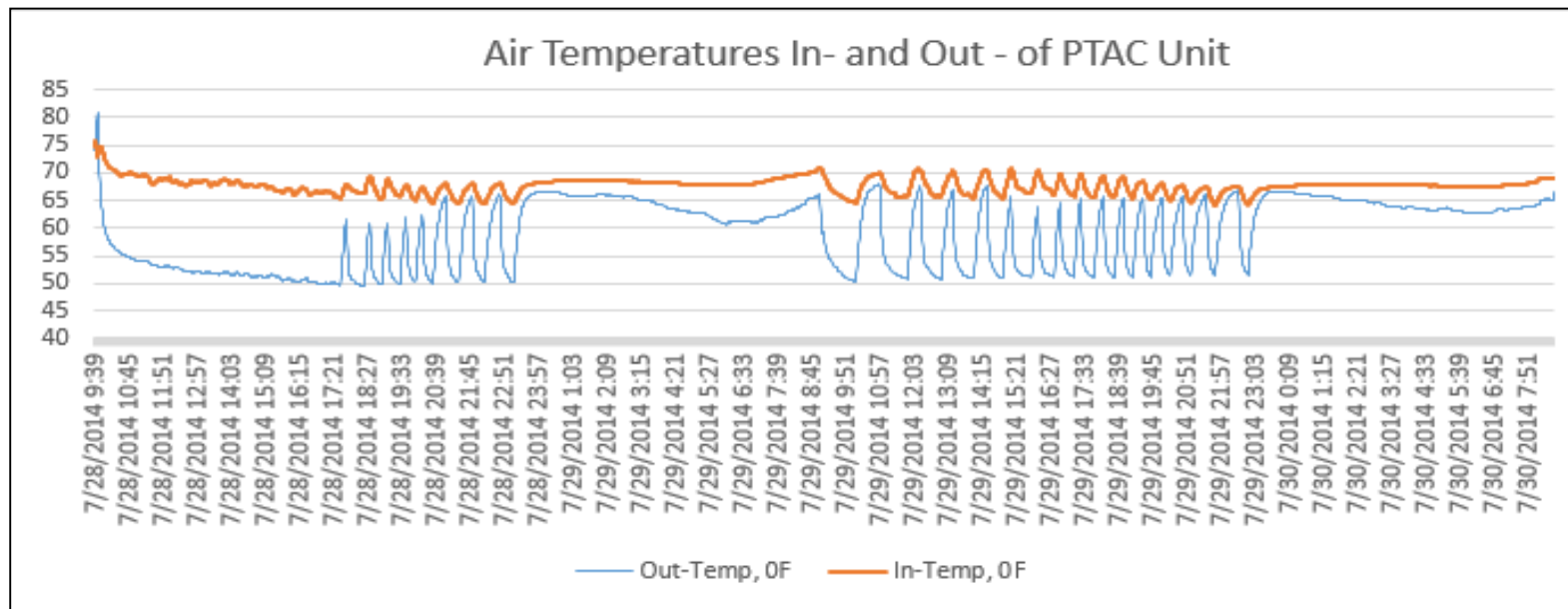
After-treatment data not only shows cycling operation when pre-treatment was consistently loaded (first half of days), but also shows more economical after-treatment cycling during afterhours - larger percentage of time with compressor being unloaded during evening times.

Chart compares evening afterhours only, when compressor was cycling in both days. **Savings of 26.8% was realized in Amp-hours comparison**





Bucyrus Rm 157 AC Unit Performance, continued



In both analyzed days PTAC unit operated between about the same In- and Out- temperatures



Bucyrus Rm 157 AC Unit – Savings

Degree Day Comparison

Average Daily Temperature

BP	Date	AvgT-Out	AvgT-In	AvgOAT	Amps	Amp-hrs	CDD	Amp-hrs/CDD
55	7/28/2014	52.4	66.4	69.5	1.848	55.7	14.47	3.85
CDD/yr	7/29/2014	54.3	66.4	67.8	1.850	40.8	12.84	3.18
2824					100%	73.2%		83%

Location: Columbus, OH

Enter Postal Code, Weather St

Base Year: 2013

Savings, identified from field testing data, was normalized for Cooling Degree Days at the time of testing, and annualized using yearly Cooling Degree Days data presented on the left.

Amp-hrs/CDD savings is estimated as:

$$55.7 - 40.8 = 14.9,$$

and annual Amp-hrs savings as:

$$14.9 \text{ Amp-hrs/CDD} * 2824 \text{ CDD/yr} = 142,116 \text{ Amp-hrs/yr},$$

or $142,116 \text{ Amp-hrs} * 240 \text{ Volt} / 1000 = 10,108 \text{ kWh/yr}.$

Assuming typical for Ohio blended electricity rate (Integritys, Inc., OH – see next slide) of \$0.0799 / kWh, it corresponds to

$$10,108 \text{ kWh} * \$0.0799 / \text{kWh} = \$807.62 / \text{yr}$$

Monthly Degree Day Comparison (Station: OH)

Month	Base Year (2013)		
	HDD	CDD	TDD
January	710	5	715
February	662	0	662
March	545	4	549
April	154	124	278
May	21	372	393
June	0	532	532
July	0	630	630
August	0	585	585
September	0	387	387
October	114	166	280
November	416	10	426
December	637	9	646
Through July	2092	1667	3759
Annual Total	3259	2824	6083

Bucyrus Rm 157 AC Unit – Savings and Carbon Dioxide Footprint

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Integrys Electric Product Offerings in AEP Ohio

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Integrys Energy Services now offers a fixed price electricity rate that will bring you savings compared to AEP Ohio's current electricity rate.

Business Customers

Business Electric Choice Program

Welcome AEP Ohio Customers. You now have a choice from Integrys Energy Services - providing Ohio businesses the opportunity to manage your electrical energy costs with an alternative supplier.

If your business is a large consumer of energy, please view our solutions for [Commercial and Industrial businesses](#).

Rate Tariff

Select Your Rate Tariff:

Enroll	7.990¢ per kWh (6 Billing Cycle Term)	6-Month GS2 Commercial Fixed Price View Rate Info
Enroll	7.840¢ per kWh (12 Billing Cycle Term)	12-Month GS2 Commercial Fixed Price View Rate Info
Enroll	7.740¢ per kWh (24 Billing Cycle Term)	24-Month GS2 Commercial Fixed Price View Rate Info

To enroll online, please be sure to have the following information about your AEP Ohio account:

- SDI Number
- Service and Mailing Address
- Telephone Number

Typical electricity cost
for commercial sites at Columbus, OH
\$0.0799 / kWh
– data for Integrys, Inc. RetailCo.

State of Ohio average CO-2 conversion factors:
0.817 metric Ton CO₂e / gross MWh, or 1.772 lbs/kWh

Carbon Dioxide Footprint
With electric energy savings shown on previous slide, and conversion factors shown above, the CO-2 footprint is estimated as follows:

10,108 kWh * 0.817 * 0.001 metric Ton CO-2/kWh = **8.26 metric Ton CO-2/yr** or **17,911 Lbs CO-2/yr**



Lobby AC Unit Performance - field testing results for pre- & post-treatment

BP		AvgT-Out	AvgT-In	AvgOAT	Amps	CDD	Amp-hrs	Amp-hrs/CDD
55	7/28/2014	44.17	71.18	65.28	2.18	10.28	3,146	306.1
CDD/yr	7/29/2014	44.29	70.61	68.88	2.15	13.88	3,100	223.4
2824					98.5%	135%	98.5%	73%

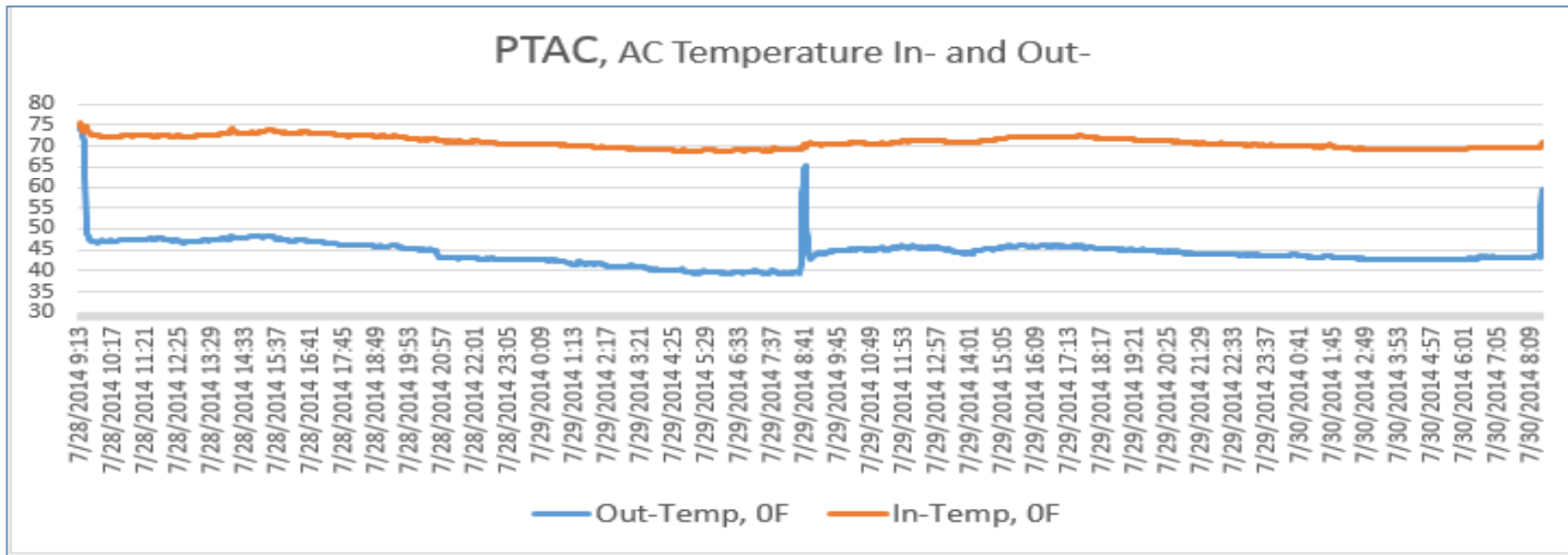
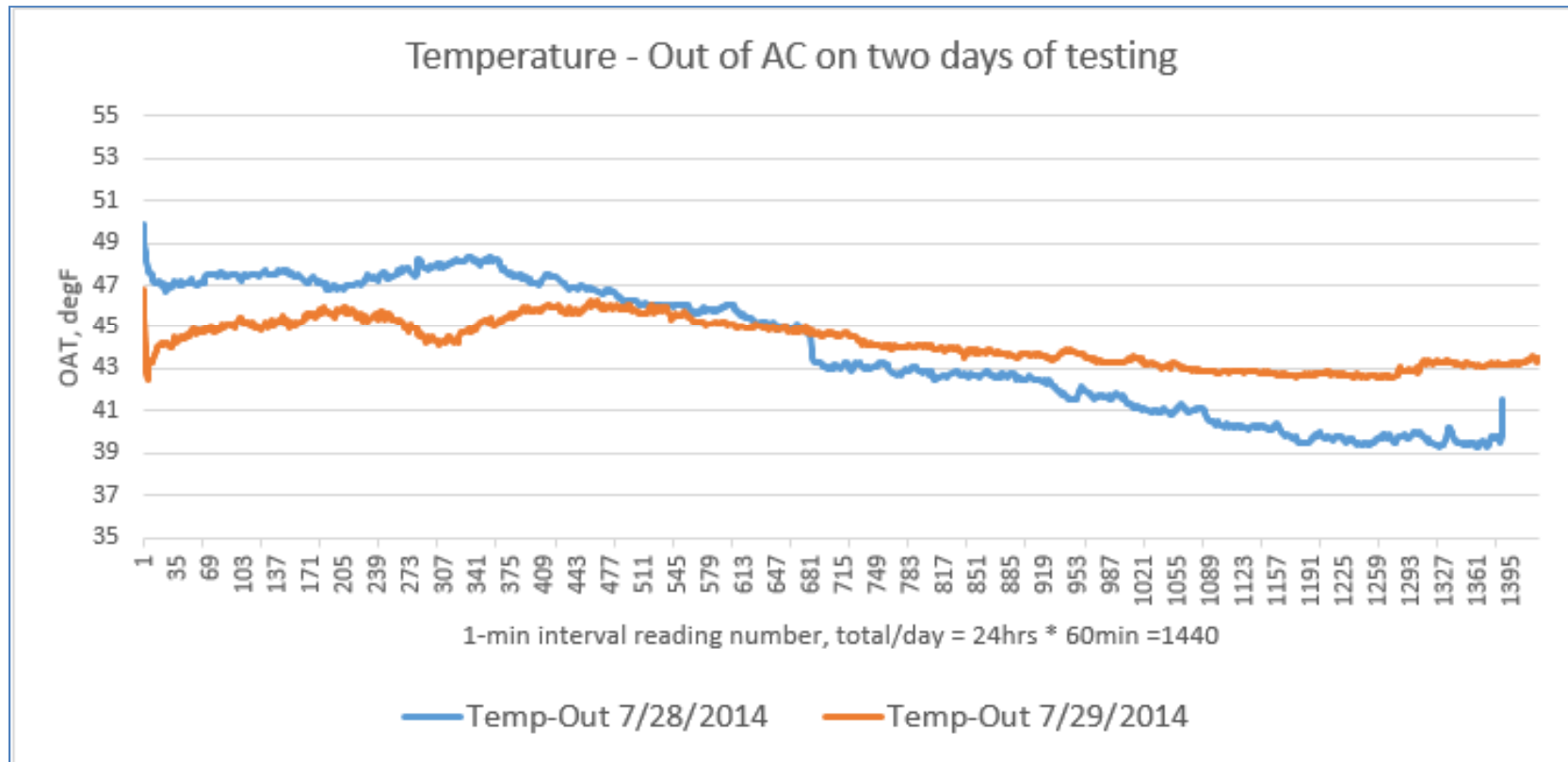


Chart presents two days of Lobby's PTAC unit operations - before and after IceCold treatment. The mode of unit's operation in both days - operating consistently loaded. However, numerical AC currents comparison shows more economical after-treatment operation – **the weather-normalized Amp-hrs reduction (in Amp-hrs/CDD) is approximately 27%.**



Lobby - Temperature Out of PTAC unit in two days of testing, days 7/28/2014 (before) and 7/29/2014 (after)

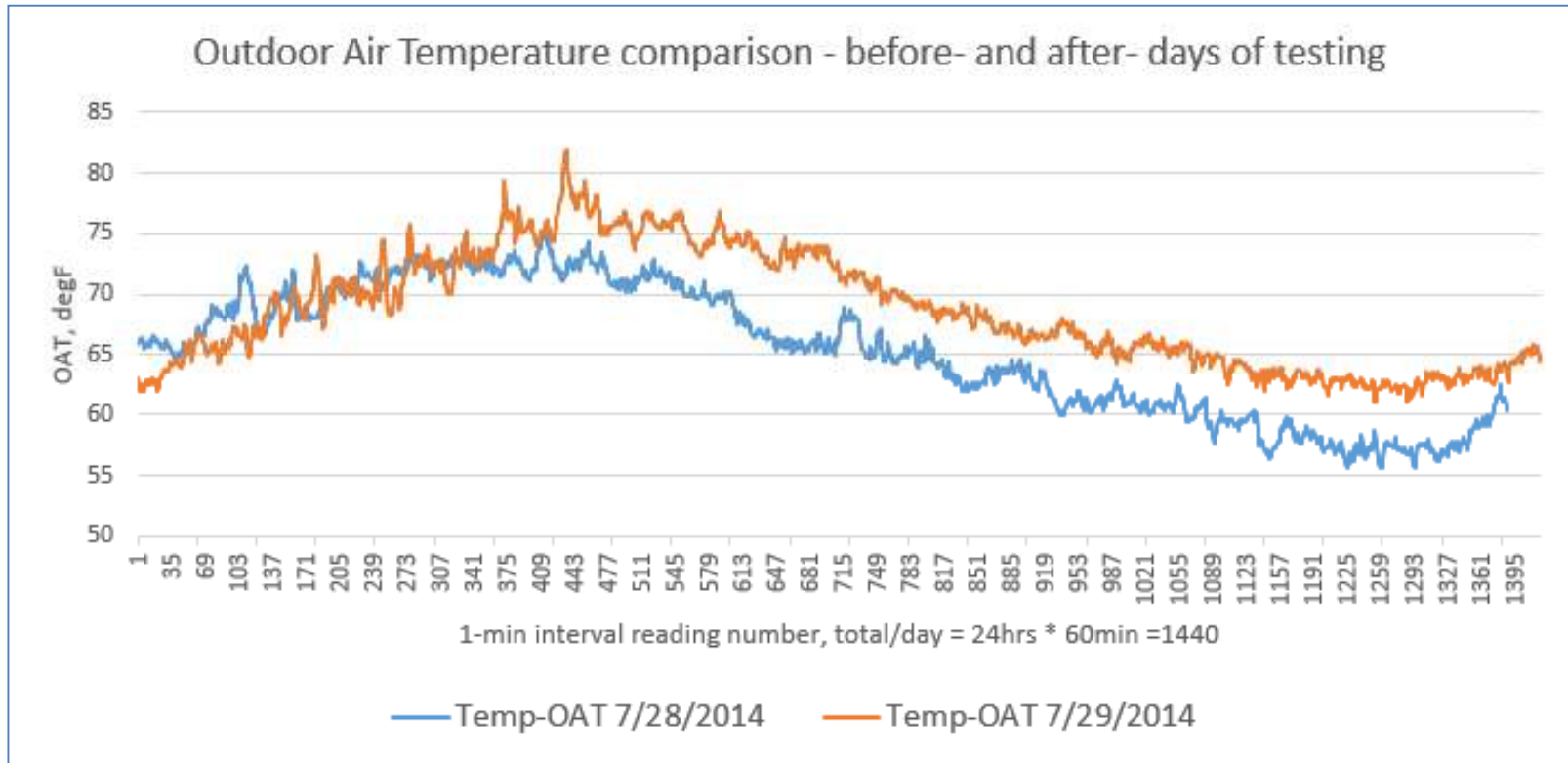


Temperature of air leaving PTAC unit was in average the same in two days of testing.

In after-treatment day it was observed colder air leaving PTAC in the morning, and warmer on evening



Outdoor Air Temperatures comparison, days 7/28/2014 (before) and 7/29/2014 (after)



Comparison of weather-normalized energy usage is important for proper results interpretation. In this case, it should be noted that after-treatment AC current data was collected at 35% warmer outdoor conditions (35% more Cooling Degree Days)