





#### **ABOUT US**

- Started the company in 2012
- Customer base is NYC metro area
- Controls and monitoring for 200+ heating plants (10mm sqft)
- Service 600+ heating plants
- 100 active mechanical installation projects
- 1,000+ NYC buildings served to date
- 80 Employees





# **Integrated Energy Services**

#### Maximize Comfort, Minimize Costs, Increase NOI



- 24 Hour Emergency Service
- Boilers, Burners, Water Heaters
- Oil to Gas Conversions, CHP
- Triennial, BO-9, Backflow Filings.

#### **Real Time Energy Management**



- Monitor & Control fault detection, reliability, efficiency
- Preventative & Proactive Service
- Demand Management & Load Shifting
- Energy supply risk management



#### ENERGY MARKETS ARE MY PARADIGM

FutureSource									
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									lator 🚯 Forex 🗐 Detailed Quotes 🛅 Waterfall 😭 Web Feeds 🚯 Browser
	H24:NGJ24 + ₽ ► NG MA								Is Options Other Futures Clearport Historical Spreads Basis FWD CURVE CL +
	® ▼ X <sub>6</sub> 0 CL 1!	+ D +		▼ X 60			₽.▶		
G JUL 23 (NATURAL GAS)	CL JUL 23 (LIG	HT CRUDE OIL)		NG J	UL 23 (NATU	JRAL GAS)			HO JUL 23 (NY HARBOR ULSD)
+0.019 (+0.88%)	71.87	+1.77 (+2.52%)		2.	177	+0.019 (+0.	88%)		2.3624 +0.0477 (+2.00%)
Watch List Symbol	List - 🖧 👂 👂 Custom - 1	Watch List 👻	evx e	Vatch List	Symb	bol List 👻 🎝	<b>.</b>	9 <b>-</b> x	ers © Chart MG H241NG J24 + ₽ KD + ₽ KO ► Add + Counce Deete Ø ▼
Symbol Dsc Bid		Low OldSet Net 2.138 2.158 2	wSet Chg Sym 2.172 +0.019 ^ RBOB		Chg	High		NewSet	Views - Studies 🔪 Selection Tool - > Continuation More - Advanced Contraction - Advanced
6 Q23 NAT	2.303 2.355	2.258 2.273 2	2.299 +0.030 XRB N	23 2.505	+0.0688		2.4323	2.5007	MATURAL GAS MAR 24/APR 24 0: 0.200 11: 0.201 12: 0.202 02: 0.202 02: 0.012 %Chg: +4.33%
U23 NAT V23 NAT			2.316 +0.045 XRB 0 2.448 +0.049 XRB 0		+0.0676		2.3735 2.3180	2.4382 2.3765	
5 X23 NAT	2.927 2.946	2.854 2.867 2	2.921 +0.060 XRB V			2.2012	2.1395	2.1919	
5 Z23 NAT 5 F24 NAT		3.340 3.352 3	3.404 +0.064 XRB X	23 2.132		2.1353 2.0970	2.0814 2.0514	2.1283 2.0893	0.400
G G24 NAT	3.600 3.615	3.535 3.547 3	3.669 +0.063 XRB Z 3.598 +0.053 XRB F	24 2.080		2.0864	2.0568	2.0775	
X23 NAT			2.921 +0.060 XRB (			2.0778	2.0565	2.0778	
6 F24 NAT 6 F25 NAT			3.669 +0.063 XRB H 4.481 +0.030 NG N2	24 2.086 3:0.12	+0.0495	2.0868 -0.113	2.0637 -0.128	2.0868	
			XRB J	24 2.249	+0.0469			2.2494	
G N23:NGQ23 NAT G Q23:NGU23 NAT	-0.127 -0.113 - -0.017 -0.003 -	-0.128 -0.115 -0	0.017 -0.012						
U23:NGV23 NAT	-0.132 -0.124	-0.134 -0.127 -0	0.132 -0.005						
V23:NGX23 NAT X23:NGZ23 NAT	-0.473 -0.458 - -0.483 -0.478 -	-0.475 -0.463 -0 -0.488 -0.485 -0	0.473 -0.010 0.483 +0.002	BRENT Bren	Carranda D	000 C			┙╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴╴
Z23:NGF24 NAT	-0.265 -0.260 -		0.265 +0.002						
F24:NGG24 NAT G24:NGH24 NAT	0.071 0.075 0.274 0.279	0.070 0.072 0		Vatch List					R51 (NG H24:NGJ24, 14)=44.88 80.00
H24:NGJ24 NAT	0.289 0.291	0.274 0.277 0	0.289 +0.012 Syml		Chg	High	Low	NewSet	75.00
G J24:NGK24 NAT G K24:NGM24 NAT	0.013 0.015 -0.113 -0.111 -		HO Q2	30.0053	-0.0008	-0.0042	-0.0055	-0.0053	70.00
NZ45WGMZ4 NAT	-0.113 -0.111 -	0.115 -0.116 -0	HO U2	3:0.0040	+0.0001	-0.0031	-0.0045	-0.0040	80.00 55.00
G M23:NGV23 NAT			HO V2 HO X2		+0.0008	0.0011 0.0049	-0.0005	0.0005	
5 V23:NGF24 NAT 5 F24:NGH24 NAT	-1.221 -1.200 - 0.345 0.351	-1.224 -1.215 -1 0.344 0.347 0	HO Z2	3: 0.0007		0.0011	-0.0011	0.0007	
H24:NGJ24 NAT	0.289 0.291	0.274 0.277 0	0.289 +0.012 HO F2			0.0054	0.0036	0.0046	35.00
G F24:NGJ24 NAT	0.634 0.640	0.620 0.624 0	1.634 +0.010 HO H2	4: 0.0211	+0.0019	0.0215	0.0199	0.0211	
G Futures Spreads Strips NG B	isis (via ClearPort) NG Basis (via SNI	L) +	HO J2 HO K2 HO M	4: 0.0105	+0.0014	0.0141 0.0113 0.0045	0.0125 0.0092 0.0032	0.0137 0.0105 0.0039	VOL (NG H24:NG.)24)=2,477 7,000 5,000
Watch List				4: 0.0025	+0.0010 +0.0007 +0.0002	0.0045	0.0032	0.0039	5,000
Symbol Last	Net Change High	Low	NewSet HO U2	4:0.0004	+0.0002	0.0001	-0.0004	-0.0004	4,000
SCRACK1 33.344 SCRACK2 30.685			HO V2 HO X2		+0.0009	0.0020	0.0017	0.0019	
ASCRACK3 28.219	+0.9224 28.21	82 27.3960	HO Z2		+0.0008	0.00055	0.0007	0.0007	
ATCRACK1 27.350 ATCRACK2 27.140	3 +0.2334 27.77 5 +0.2618 27.51								
ATCRACK3 27.70	4 +0.4436 27.91	58 27.2322							
1CRACK 31.34	5 +0.8242 31.563	30 30.4654							Feb 7 9 13 15 17 22 24 Mar 7 9 13 15 17 21 23 27 29 Apr 10 12 14 18 20 24 25 May 4 8 10 12 16 18 22 24 26 Jun Daily
									Symbol Last Net Change
									EIA Stats EIA Natural Gas Storage - Total Region 2446 +1
									EIA Weekly U.S. Imports of Gasoline Blending Components 655
									EA Weekly U.S.E. Fording Stocks of Crude Oil 815093 +19
									EIA Weekly U.S. Crude Oil Imports by SPR 0
/TI Spreads Cracks +			ULSD	Spreads Gas(	NY HARBO		sOil Spread	SIKG (1)	

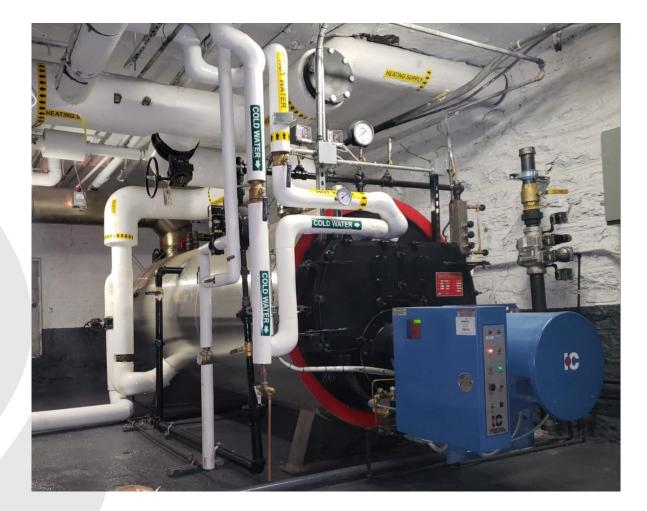


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### OUR BUILT ENVIRONMENT...

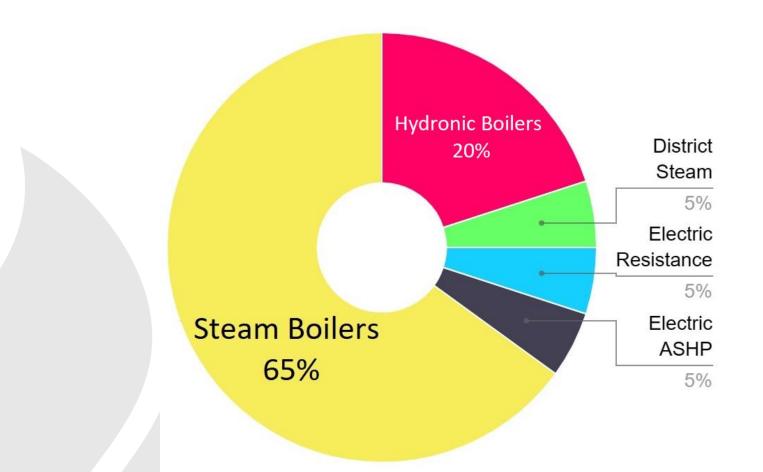


#### HEATING SYSTEMS ARE 80% OF A COMMON AREA ENERGY SPEND





#### NYC HEATING MARKET (ROUGH #'S)





#### OPEN WINDOWS AND OVERHEATING IS VERY COMMON

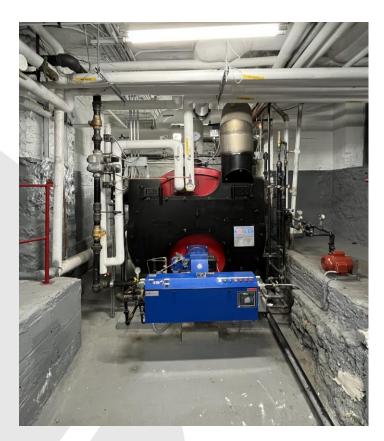


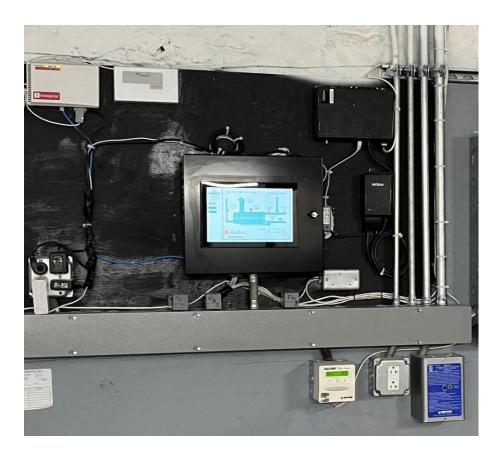






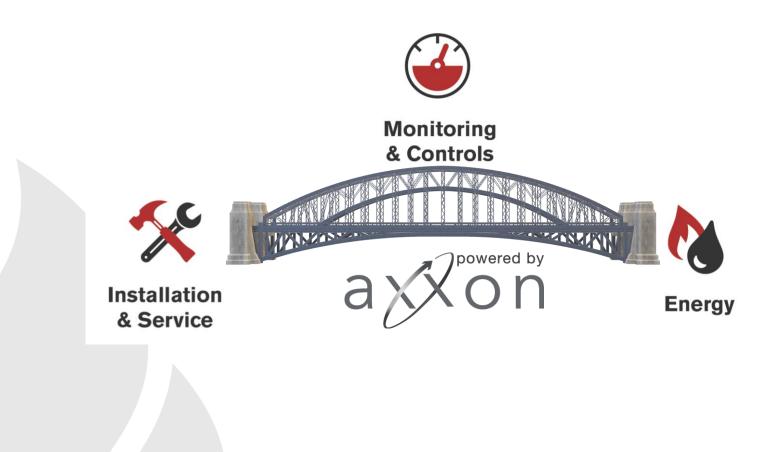
#### AXXON = CLOSED WINDOWS = 20% REDUCTION







#### STEEL GIRDERS BUILT ON HAYSTACK





#### AXXON COULD NOT EXIST WITHOUT HAYSTACK



•Building our own graphics and analytics would have been time consuming and costly from a programming perspective

•We bootstrapped Axxon in 2017 with only 1 FTE

•Enormous amount of time (\$) would have been wasted on how meta data should be tagged and labeled



(Haystack Conn - 804 W 180th Street

Haystack Conn - 804 W 180th Street

Haystack Conn - 804 W 180th Street

Haystack Conn - 804 W 180th Street

O Hot Water Coil Temperature

🔻 🖵 Flue Duct Stack Temperature

🔻 🛄 Makeup Line O Makeup Water

🔻 🛄 Steam Header

O Steam Pressure

#### TAGS ARE CRUCIAL TO OUR OPERATIONS

- 15,000 points ٠
- 205 sites ٠
- Graphics ٠
  - 2 views!
- Analytics
  - 6 spark views •
  - 3 KPI views
  - 4 "heat" views •

<ul> <li>nyc, singleSteamBo</li> </ul>	ler, site	V 📃 804 W 180th Street	
id	p:dualfuel:r:2b4f488f-e4964221	🖲 Boiler Plant	
boilerAppTemplate	singleSteamBoiler	🖲 🛄 Apartment Sensors	
1 boilerCount	1	O Apt 5	Haystack Conn - 804 W 180th
) conns	{haystack:[p:dualfuel:r:2b4f3ef9-35a9c81f], sedona:[p:dualfuel:r:2b4f3f66-d245012c]}	○ Apt 21	Haystack Conn - 804 W 180th
created	9-Jan-2023 Mon 4:50:07PM EST	🔿 Apt 33	Haystack Conn - 804 W 180t
dis	804 W 180th Street	🔿 Apt 36	Haystack Conn - 804 W 180
geoAddr	804 W 180th Street	🔿 Apt 47	Haystack Conn - 804 W 180
		🔿 Apt 54	Haystack Conn - 804 W 180
geoCountry	US	Apt 55	Haystack Conn - 804 W 180
geoState	NY	Apt 61	Haystack Conn - 804 W 180
geoStreet	804 W 180th Street	Apt 62	Haystack Conn - 804 W 180
graphicld	Site	🔿 Apt 63	Haystack Conn - 804 W 180
haystackConnRef	Haystack Conn - 804 W 180th Street	🔿 Apt 66	Haystack Conn - 804 W 180
A isp	Verizon	▶ 🛄 Axxon Control Panel	
primaryFunction	Multifamily Housing	v 🖵 Boiler	
regionDis	Pride Property Management	v 🛄 Burner	
serviceContract	2023	O Burner Command	(Haystack Conn - 804 W 180
shortName	804 W 180th Street	O Burner Status	Haystack Conn - 804 W 180
syncGroupNum	10	Gas	(Haystack Conn - 804 W 180
A tz	New_York	Oil	(Haystack Conn - 804 W 180
		<ul> <li>OII</li> <li>▼ □ Condensate Pipe</li> </ul>	Haystack Conn - 804 W 180
weatherStationRef	Central Park	Condensate Pipe	Haystack Conn - 804 W 180
1) zoneCount	1	Concensate Return Temperature      V      Domestic Hot Water Mixing Valve	maystack Conn - 804 W 180
S mod	4-Jun-2023 Sun 4:00:17AM UTC	Domestic Hot Water Mixing Valve     Domestic Hot Water Temperature	Havstack Conn - 804 W 180t

- Haystack compliance: •
  - nonCompliantTags: 40656, •
  - percentageCompliant: 71.27%, ٠
  - totalTagCount: 141495, ٠
  - totalPointCount: 14282, •
  - compliantTags: 100839 ٠



#### SAMPLE HEATING PLANT DATA MODEL

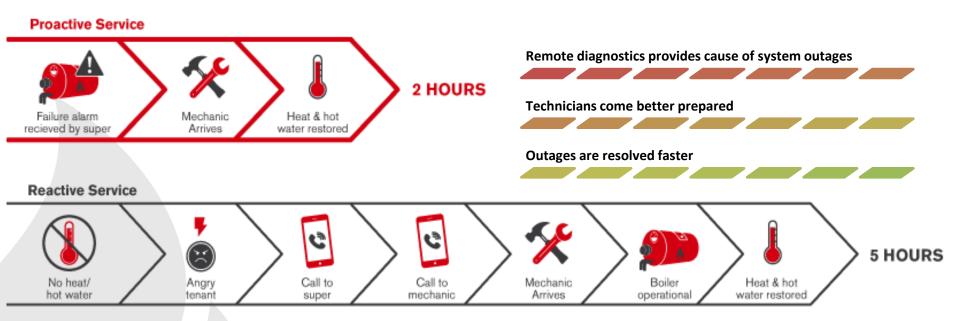
📕 Dual Fuel 🗸	
A - Site App Tag View	
New Site New Child Search	
🔻 🚞 Total Realty	
1010 Sherman Avenue	
▼ 😂 Boiler Plant	
▶ 🛄 Apartment Sensors	
🔻 🛄 Axxon Control Panel	
🔻 🛄 Heat Controls	
▶ 🛄 Heat Timer	
🖲 🛄 Indoor Air Thermostat	
<ul> <li>Daytime Setpoint</li> </ul>	Haystack C
EBT Bypass	Haystack C
C Effective Building Temperature	Haysta
Excluded Apts	Haystack C
Freeze Boost Status	Haystack C
Indoor Air Enable Status	Haystack
<ul> <li>Nighttime Setpoint</li> </ul>	Haystack C
Outlier Apts	Haystack C
C Target Building Temperature	Haystar
🕨 🛄 Outside Air Thermosta	t
Call for Heat	Haystack Co
O Morning Boost Enable	Haystack Co
Season	Haystack Co

🔘 Season	Haystack Co
▶ 🛄 Hot Water Controls	
▶ 🛄 Override	
O Boiler Status	
O Bypass Status	Haystack Con
O Controller Current Hou	r Haystack Con
O Haystack Online Status	3
🔵 Sedona Online Status	
O System Status	
🔻 🛄 Boiler	
▶ 🛄 Burner	
O Aquastat Temperature	Haystack Con
🔻 🛄 Condensate Pipe	
Condensate Return Temperature	Haystack
remperature	
<ul> <li>Domestic Hot Water Mixir</li> </ul>	ng Valve
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Domestic Hot Water Mixin Domestic Hot Water	
<ul> <li>Domestic Hot Water Mixin</li> <li>Domestic Hot Water Temperature</li> <li>Hot Water Coil</li> </ul>	Haystac
<ul> <li>Domestic Hot Water Mixin</li> <li>Domestic Hot Water Temperature</li> <li>Hot Water Coil Temperature</li> </ul>	(Haystac) (Haystack C)
<ul> <li>Domestic Hot Water Mixin</li> <li>Domestic Hot Water Temperature</li> <li>Hot Water Coil Temperature</li> <li>Flue Duct</li> </ul>	(Haystac) (Haystack C)
<ul> <li>Domestic Hot Water Mixin</li> <li>Domestic Hot Water Temperature</li> <li>Hot Water Coil Temperature</li> <li>Flue Duct</li> <li>Stack Temperature</li> </ul>	(Haystac) (Haystack C)
<ul> <li>Domestic Hot Water Mixin</li> <li>Domestic Hot Water Temperature</li> <li>Hot Water Coil Temperature</li> <li>Flue Duct</li> <li>Stack Temperature</li> <li>Makeup Line</li> </ul>	Haystack C Haystack C
<ul> <li>Domestic Hot Water Mixin</li> <li>Domestic Hot Water Temperature</li> <li>Hot Water Coil Temperature</li> <li>Flue Duct</li> <li>Stack Temperature</li> <li>Makeup Line</li> <li>Makeup Water</li> </ul>	Haystack C Haystack C
<ul> <li>Domestic Hot Water Mixin</li> <li>Domestic Hot Water Temperature</li> <li>Hot Water Coil Temperature</li> <li>Flue Duct</li> <li>Stack Temperature</li> <li>Makeup Line</li> <li>Makeup Water</li> <li>Steam Header</li> </ul>	Haystack C Haystack Con Haystack Con
<ul> <li>Domestic Hot Water Mixin</li> <li>Domestic Hot Water Temperature</li> <li>Hot Water Coil Temperature</li> <li>Flue Duct</li> <li>Stack Temperature</li> <li>Makeup Line</li> <li>Makeup Water</li> <li>Steam Header</li> <li>Steam Pressure</li> </ul>	Haystack C Haystack Con Haystack Con
<ul> <li>Domestic Hot Water Mixin</li> <li>Domestic Hot Water Temperature</li> <li>Hot Water Coil Temperature</li> <li>Flue Duct</li> <li>Stack Temperature</li> <li>Makeup Line</li> <li>Makeup Water</li> <li>Steam Header</li> <li>Steam Pressure</li> <li>Weters</li> </ul>	Haystack C Haystack Con Haystack Con



#### VALUE OF DATA IS LIMITED TO YOUR ABILITY TO ACT ON IT!

dualfuel



# \_ / \_

### USING HAYSTACK TO INCREASE OPERATIONAL EFFICIENCIES IN MECHANICAL CONTRACTING



#### IF A CUSTOMER LOGS INTO AXXON WE HAVE ALREADY FAILED

- Initially I built Axxon as a customer facing product
- Over time I realized that my primary customer was NOT the building owner but it was my staff
- If we have the data, we must know about customer issues and inefficiencies BEFORE they call our office!
  - Installations department- make it easy for the PMs to do trend based commissioning of new equipment start ups
  - Service department- make it easy for my service team to get ahead of comfort issues before they become problems
  - Energy management- make it easy for my energy management team to identify opportunities to reduce energy spend
    - Mechanical issues (short cycling, high stack temp, makeup water losses, steam balancing etc.
    - Control issues (setpoints too high or placed on "manual")
    - Energy strategies (i.e. demand response, fuel selection)



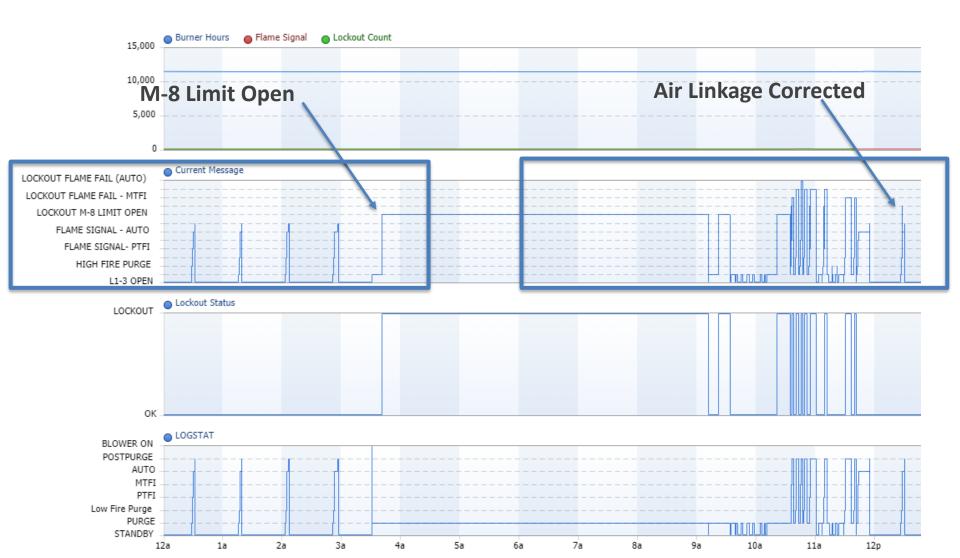
#### ALARMS

- Haystack tags are utilized to direct information to the right departments and the most appropriate personnel
- Comfort alarms (flame failures, DHW, low indoor temps) are directed to: CSRs, Service Manager, Field Supervisor and Dispatcher
- Controls alarms (connectivity, glitches, faulty sensors, system in manual/bypass) are directed to our controls monitoring team

≡ FIN STACK Ĝ →								다 88
				— Alarms —				0
88 TILES II LIST								ACK ALL ON CURRENT PAGE 🛛 🖗
DOMESTIC HOT WATER TEMPERAT		DOMESTIC HOT WATER TEMPERAT	DOMESTIC HOT WATER TEMPERAT	DOMESTIC HOT WATER TEMPERAT.	DOMESTIC HOT WATER TEMPERAT.	PUMP IS READING AS INACTIVE AN	LOST REMOTE CONNECTION TO IN	③ DOMESTIC HOT WATER TEMPERAT ◆
Domestic Hot Water Mixing Valve	Domestic Hot Water Mixing Valve	Domestic Hot Water Mixing Valve	Domestic Hot Water Mixing Valve	Domestic Hot Water Mixing Valve	Domestic Hot Water Mixing Valve	Heat Loop Pump 2 Jun 04, 2023 12:21 am [NEW YORK]	Axxon Control Panel Jun 04, 2023 12:16 am [NEW YORK]	Domestic Hot Water Mixing Valve
Jun 04, 2023 12:48 am <b>[NEW YORK]</b>	Jun 04, 2023 12:47 am <b>[NEW YORK]</b>	Jun 04, 2023 12:44 am [NEW YORK]	Jun 04, 2023 12:39 pm <b>[NEW YORK]</b>	Jun 04, 2023 12:30 am <b>[NEW YORK]</b>	Jun 04, 2023 12:30 am [NEW YORK]	ALARM : Normal	ALARM : Alarm	Jun 04, 2023 12:15 am <b>[NEW YORK]</b>
ALARM : Normal STATUS	ALARM : Alarm	ALARM : Normal STATUS	ALARM : Normal STATUS	ALARM : Normal STATUS	ALARM : Normal STATUS	LAST IN : Jun 04, 2023 03:09 pm	LAST IN : Jun 04, 2023 12:16 am	ALARM : Normal
LAST IN : Jun 04, 2023 02:21 pm	LAST IN : Jun 04, 2023 03:31 pm	LAST IN : Jun 04, 2023 02:17 pm	LAST IN : Jun 04, 2023 12:39 pm	LAST IN : Jun 04, 2023 12:30 am	LAST IN : Jun 04, 2023 03:14 pm	PRIORITY : 255	PRIORITY : 1	LAST IN : Jun 04, 2023 06:33 am
PRIORITY : 5	PRIORITY : 5	PRIORITY : 5	PRIORITY : 1	PRIORITY : 5	PRIORITY : 5	ACKNOWLEDGE	Instructions: 1. Verify that Intellastar	PRIORITY : 5
Instructions: Potential scalding issue exists.Please check the mixing valve operation and insure that it is set to a value between 120°F-130°F. Please call Dual Fuel 24 Hour Emergency Service at 347-669-2427 ext. 9	Instructions: Potential scalding issue exists Please check the mixing volve operation and insure that it is set to a value between 120°F-130°F. Please call Dual Fuel 24 Hour Emergency Service at 347-669-2427 ext. 9	Instructions: Potential scalding issue exists. Please check the mixing valve operation and insure that it is set to a value between 120°F-130°F. Please call Dual Fuel 24 Hour Emergency Service at 347-669-2427 ext. 9	Instructions: Please check the mixing valve operation and insure that it is set to a value between 120/F130 <sup>7</sup> F, if ossistance is needed, please call Dual Fuel 24 Hour Emergency Service at 347-669-2427 ext. 9	Instructions: Potential scalding issue exists.Please check the mixing valve operation and insure that it is set to a value between 120°F-130°F. Please call Dual Fuel 24 Hour Emergency Service at 347-669-2427 ext. 9	Instructions: Potential scalding issue exists. Please check the mixing valve operation and insure that it is set to a value between 120°F-130°F. Please call Dual Fuel 24 Hour Emergency Service at 347-669-2427 ext. 9		device has power.2. Verify that Intellastar device ethemet cable is securely connected to switch. 3. Cycle power to Intellastar device, leaving device off for 10 minutes. 4. For service, call the Dual Fuel Corp 24 hour service line at 347-669-2427 ext 9	Instructions: Potential scalding issue exists: Please check the mixing valve operation and insure that it is set to a value between 120°F-130°F. Please call Dual Fuel 24 Hour Emergency Service at 347-669-2427 ext. 9
ACKNOWLEDGE	ACKNOWLEDGE	ACKNOWLEDGE	ACKNOWLEDGE	ACKNOWLEDGE	ACKNOWLEDGE		ACKNOWLEDGE	ACKNOWLEDGE
DOMESTIC HOT WATER TEMPERAT	EBT BYPASS IN PLACE FOR OVER 2		BOILER WATER LEVEL IS BELOW SP.	O domestic hot water temperat	EBT BYPASS IN PLACE FOR OVER 2	LOST REMOTE CONNECTION TO IN	Domestic hot water temperat	() DOMESTIC HOT WATER TEMPERAT
单 Domestic Hot Water	单 Indoor Air	- Axxon Control Panel	Boiler 2	Domestic Hot Water	单 Indoor Air	- Axxon Control Panel	单 Domestic Hot Water	🛋 Avenue Domestic Hot
Mixing Valve	Thermostat	Jun 04, 2023 12:00 am [NEW YORK]	Jun 04, 2023 12:00 am <b>[NEW YORK]</b>	Mixing Valve	Thermostat	Jun 04, 2023 12:00 am [NEW YORK]	Mixing Valve	Water Mixing Valve
Jun 04, 2023 12:00 am [NEW YORK]	Jun 04, 2023 12:00 am <b>[NEW YORK]</b>	ALARM : Alarm	ALARM : Alarm	Jun 04, 2023 12:00 am <b>[NEW YORK]</b>	Jun 04, 2023 12:00 am [NEW YORK]	ALARM : Alarm	Jun 04, 2023 12:00 am [NEW YORK]	Jun 04, 2023 12:00 am <b>[NEW YORK]</b>
ALARM : Alarm	ALARM : Alarm	LAST IN : Jun 04, 2023 12:00 am	LAST IN : Jun 04, 2023 12:00 am	ALARM : Normal STATUS	ALARM : Alarm STATUS	LAST IN : Jun 04, 2023 12:00 am	ALARM : Alarm	ALARM : Alarm
LAST IN : Jun 04, 2023 12:00 am	LAST IN : Jun 04, 2023 06:05 am	PRIORITY : 1	PRIORITY : 255	LAST IN : Jun 04, 2023 09:32 am	LAST IN : Jun 04, 2023 12:00 am	PRIORITY : 1	LAST IN : Jun 04, 2023 12:00 am	LAST IN : Jun 04, 2023 12:00 am
PRIORITY : 4	PRIORITY : 4	Instructions: 1. Verify that all panel devices	Instructions: 1. Flush low water cutoff to	PRIORITY : 5	PRIORITY : 4	Instructions: 1. Verify that Intellastar	PRIORITY : 1	PRIORITY : 4
Instructions: Please call Dual Fuel 24 Hour Emergency Service at 347-669-2427 ext. 9	Instructions: Check T-Star jobs and ebtBypass point details	have power.2. Verify that all panel devices have active internet connection. Contact ISP if unsure. 3. Cycle power to control panel devices, as well as any downstream routers and/or modems. 4. For service, call the Dual Fuel Corp 24 hour service line at 347-669-	elminate any sediment.2. Fill bailer either manually or with automatic feed system. 3. Reset manual reset low water cutoff switch, if applicable. For assistance, call Dual Fuel	Instructions: Potential scalding issue exists.Please check the mixing valve operation and insure that it is set to a value between 120%-130%: Please call Dual Fuel 24 Hour Emergency Service at 347-669-2427 ext 0.	Instructions: Check T-Star jobs and ebtBypass point details	device has power.2. Verify that Intellastar device ethernet cable is securely connected to switch. 3. Cycle power to Intellastar device, leaving device off for 10 minutes. 4. For service, call the Dual Fuel Corp 24 hour service line at 347-663-2427 ext 9	Instructions: Please check the mixing valve operation and insure that it is set to a value between 120°F-130°F. If assistance is needed, pleaze call Dual Fuel 24 Hour Emergency Service at 347-669-2427 ext. 9	Instructions: Please call Dual Fuel 24 Hour Emergency Service at 347-669-2427 ext. 9

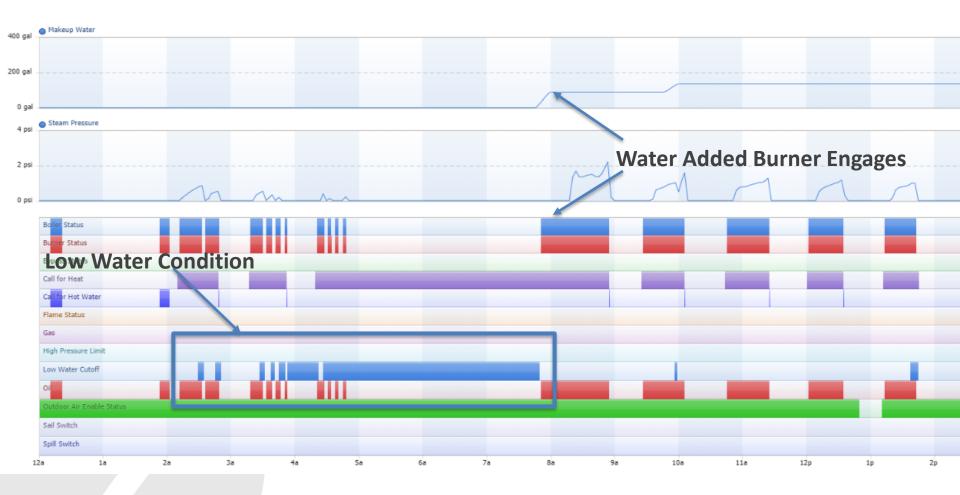


#### REMOTE DIAGNOSTICS $\rightarrow$ EFFICIENT LABOR



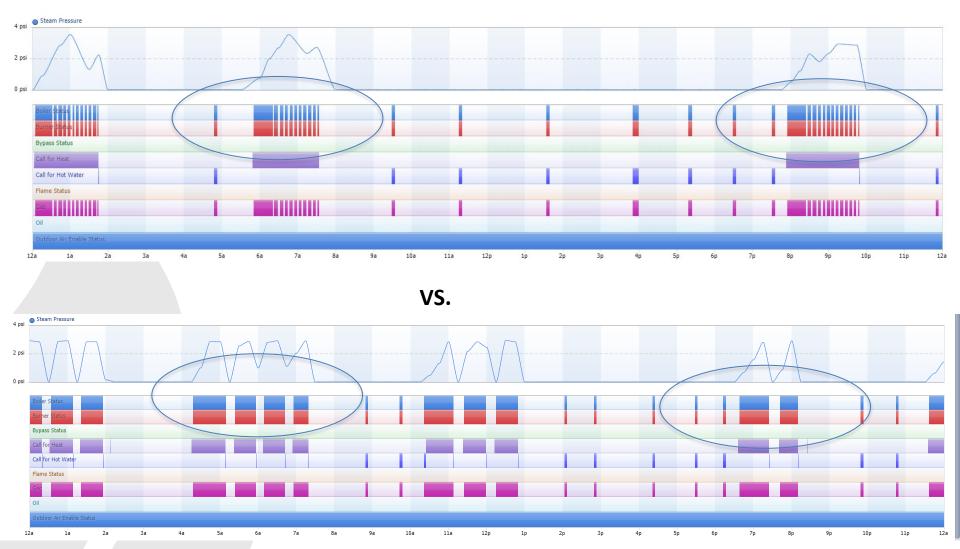


#### DIGITIZATION OF SAFETY LIMITS $\rightarrow$ REMOTE SERVICE



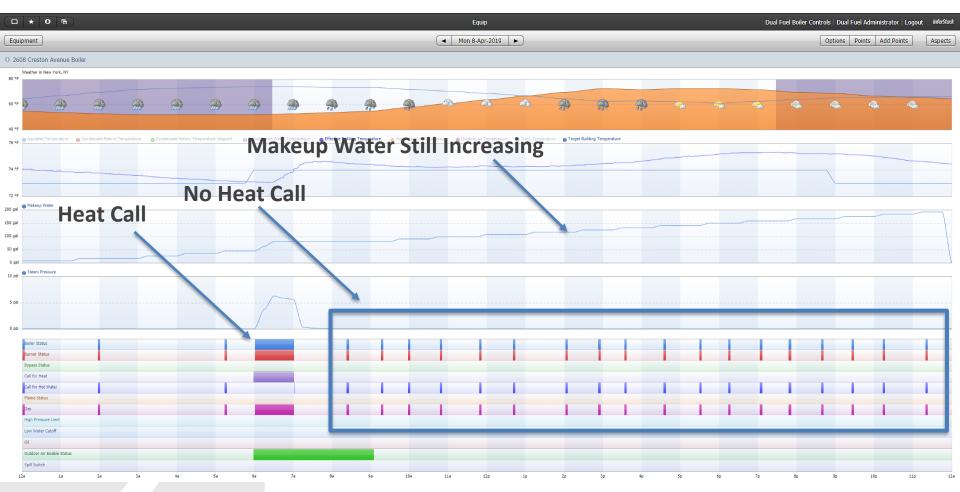


#### **RESOLVING SHORT CYCLYING = 3% GAIN**





#### ANALYTICS DEFINE LEAKING VESSELS = \$12,000 REPAIR





# CASE STUDIES

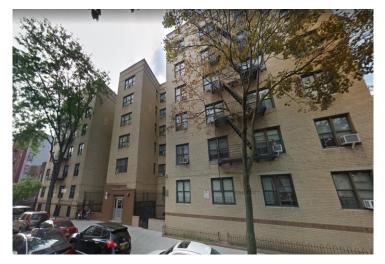


#### WALTON AVE, BRONX NY

- 65-unit Bronx multifamily
- 41% reduction gas spend
- Axxon installed December 2020

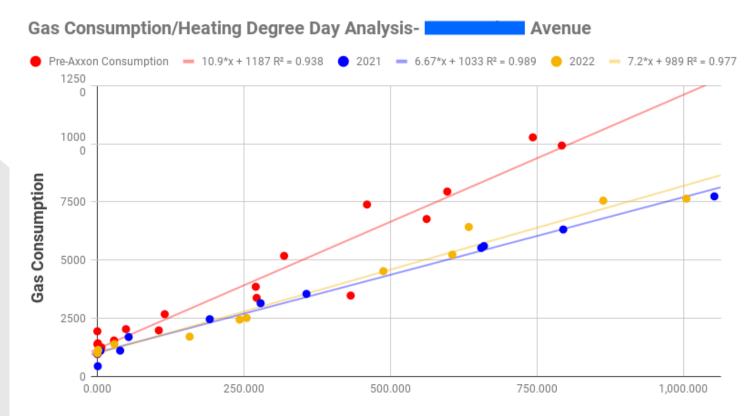


- Job cost: \$18,000
- Rebate: \$15,000
- Net price: \$3,000
- Cumulative savings: ~\$100,000





#### WALTON AVE, BRONX NY (CONT'D)



**Heating Degree Days** 

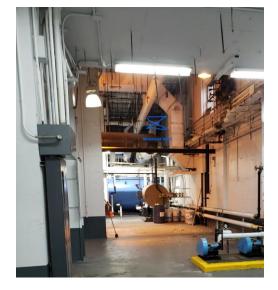


#### OGDEN AVE, BRONX NY

- 400+ unit Bronx multifamily
- 28% reduction gas spend
- Axxon installed October 2020
- 2020/2021 2% improvement
   2021/2022 32% improvement
   2022/2023 28% improvement

- Job cost: \$250,000
- Rebate: \$235,000
- Net price: \$15,000
- Cumulative savings: ~\$565,000



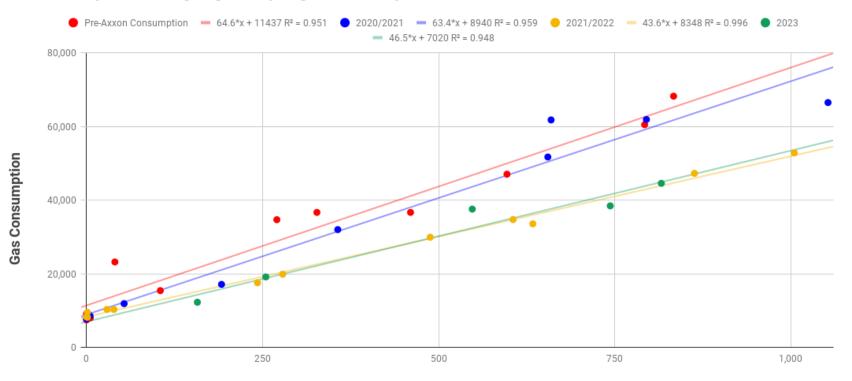






#### OGDEN AVE, BRONX NY (CONT'D)

Gas Consumption/Heating Degree Day Regression Analysis



**Heating Degree Days** 



#### WEST 43<sup>RD</sup> STREET, MANHATTAN

- 350 unit Manhattan multifamily
- 20% reduction gas spend
- Axxon installed May 2023



- Job cost: \$49,500
- Rebate: \$24,700
- Net price: \$24,800
- Project annual savings: ~\$250,000





### WEST 43<sup>RD</sup> STREET, BRONX NY (CONT'D)

Gas Consu	Imption H	leatmap									s outs missio														•••
Thu, 4/20	) - Today		~										l therm	s/hr d	ropped	d by 50	%!!!								Average Temp °F
04/20/23	20	10	20	10	10	20	10	30	30	30	20	30	30	20	20	20	30	20	30	30	20	30	30	30	53
04/21/23	20	10	20	30	20	20	30	30	30	20	30	40	30	20	40	30	30	40	30	40	30	30	30	30	58
04/22/23	40	30	30	30	30	30	30	40	20	40	30	40	30	40	30	30	30	30	30	30	40	30	30	30	59
04/23/23	40	30	20	30	30	30	30	40	30	30	40	30	30	30	30	40	30	30	40	30	30				58
04/24/23	30	30	30	30	30	30	30	30	40	30		30	30	30	40	10	40	30	30	30	30	40	30	30	52
04/25/23	30	30	30	30	30	30	30	40		40	20	30	30	30		30	20	40	30	30	20	40	30	30	52
04/26/23	40	30	30	30	30	20	30	40		30	30	30	30	30	30	20	30	30	30	40	30	40	30	30	52
04/27/23	20		30	30	30	30	30	40	30	40	20	40	20	20	20	20	20	20	30	20	30	40	20	30	51
04/28/23	30	30	30	30	30	30	30	40	20	30	30	30	20	30	20	30	30	30	20	20	30	30	30	30	50
04/29/23	40	30	20	30	30	30	20	30	30	40	30	40	30		30	30	30	10	30	20	30	20	30	20	49
04/30/23	30	20	20	20	20	20	30	10	30	30	30	30	20	30	30	30	30	40	30	20					53
05/01/23		30	30	30	30	20	30	30	40	30	30	30	20	30	20	20	30	20	30	30	30	30	30	30	55
05/02/23	30	30	30	20	30	20	30	40	30		30	30	40	30	40	20	0	0	20	40		30	40	30	50
05/03/23	40	30	40	20	30	40	30	40	40	40	20	20	20	20	20	20	30	30	30	30	40	30	30	30	49
05/04/23	30	30	20	20	30	20	30	40	30	30	30	30	30	30	30	30	20	30	30	30	30	40	10	20	50
05/05/23	20	20	10	20	20	30	30	20	30	20	20	20	20	20	20	20	20	30	10	30	20	20	10	30	54
05/06/23	10	10	20	10	20	10	30	30	20	20	20	20	20	20	20	10	20	10	20	10	20	10	10	10	61
05/07/23	20																								66
05/08/23																									67
	12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	



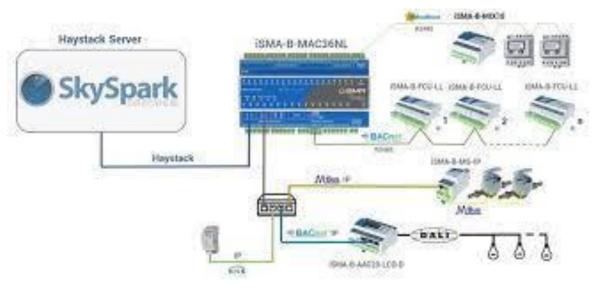
## HAYSTACK IN OUR ROADMAP



#### HAYSTACK BASED CONTROLLERS

- Metalogic extraction
- Less man hours to deploy control logic updates
- Less man hours to initialize sites
- Greater quality control tagging with Haystack at the controller level







#### **HVAC SERVICE**





#### **GREEN BUTTON CONNECT**

Billing 😑 Tariff total		Toriff Co.					
		Tarin Cos	st • 32 CORTLANDT	ST - 52250102000	5027 gas • 2022		



#### THOUSANDS OF C&I EQUIPMENT CONNECTED TO MARKETS

	NAT GAS End		preads NYM	EX Cracks Sp				Clearport I	IGL's SPRE	AD MATRIX			ts   Options   Other Futures   Clearport   Historical Spreads   Basis   FVID CLRVE CL   +	6		
	JUL 23 (INATURAL GAS) .1777 +0.019 (+0.85%) CL JUL 23 (LIGHT CRUDE OIL) 71.877 +1.77 (+2.52%)								23 (NATU	RAL GAS) +0.019 (+0	.88%)		HO JUL 23 (NY HARBOR UL SO) <b>2.3624</b> +0.4477 (+2.86%)			
Symbol	Dsc Bid	lList - K⊈ 🐤 J Ask La	t High		OldSet I	l® ▼ × NewSet Chg	Symbol	h List	Symb Chg	ol List 👻 🎝 High	Low	le ▼ x NewSet		C		
223	AT		177         2.23           303         2.35	5 2.258		2.172 +0.019 2.299 +0.030	RBOB XRB N23	2.5050	+0.0688	2.5149			MATURAL GAS MAR 24/APR 24 0: 0.280 H: 0.291 L: 0.274 C: 0.289 A: +0.012 %Chg: +4.33%	0.		
V23	AT		322 2.36 453 2.48	7 2.390	2.277 2.404	2.316 +0.045 2.448 +0.049	XRB Q23 XRB U23	2.4438 2.3795	+0.0676	2.4505 2.3871	2.3735 2.3180	2.3765		0.		
Z23	AT		927 2.94 416 3.42		2.867 3.352	2.921 +0.060 3.404 +0.064	XRB V23 XRB X23	2.1935 2.1327	+0.0554	2.2012 2.1353	2.1395			0.		
	AT		582 3.68 500 3.61		3.619 3.547	3.669 +0.063 3.598 +0.053	XRB Z23 XRB F24	2.0910 2.0809	+0.0535	2.0970	2.0514	2.0893				
X23	IAT		927 2.94 582 3.68	6 2.854	2.867	2.921 +0.060	XRB G24 XRB H24	2.0778	+0.0509	2.0778	2.0565	2.0778	╎ŸŢ └ŢŢ Ûġġġġġġġġġġġġġġġġġġġġġġġġġġġġġġġġġ			
	AT		181 4.48			3.669 +0.063 4.481 +0.030	NG N23:	-0.127	-0.012	-0.113	-0.128	-0.127				
N23:NGQ23	IAT		127 -0.11	3 -0.128	-0.115	-0.127 -0.012	XRB J24	2.2494	+0.0469	2.2494	2.2308	2.2494		, <b>ġ<sup>♀</sup> │∮</b> ┞ <sup>♀</sup> ∮ <sub>┪→</sub> ,		
Q23:NGU23	IAT	-0-	017 -0.00 132 -0.12	3 -0.019 4 -0.134	-0.004 -0.127	-0.017 -0.013 -0.132 -0.005										
V23:NGX23	IAT					-0.473 -0.010							╵╵───────────────────────────────────	· • • • • • • • • • • • • • • • • • • •		
23:NGZ23			265 -0.26		-0.485	-0.483 +0.002 -0.265 +0.002				IOB Spreads				O		
24:NGG24	АТ АТ	0	071 0.07 274 0.27	5 0.070 9 0.272	0.072	0.071 -0.001	👄 Watc						RSI (NG H24:NGJ24, 14)=44.88	8		
124:NGJ24			289 0.29 013 0.01		0.277	0.289 +0.012 0.013 +0.004	Symbol HO N23:	Last 0.0027	Chg -0.0006	High 0.0053	Low 0.0022	NewSet 0.0027		79		
K24:NGM24			113 -0.11			-0.113 +0.003	HO Q23 HO U23:	-0.0053 -0.0040	-0.0003 +0.0001	-0.0042 -0.0031	-0.0055	-0.0053		65		
M23:NGV23	AT						HO V23		+0.0008	0.0011	-0.0005 0.0032	0.0005		55 50 55		
V23:NGF24	IAT		221 -1.20 345 0.35	0 -1.224 1 0.344	-1.215 0.347	-1.221 -0.006	HO X23: HO Z23:	0.0007	+0.0012	0.0049 0.0011	-0.0011	0.0044				
H24:NGJ24			289 0.29	1 0.274	0.277	0.289 +0.012	HO F24: HO G24	0.0046		0.0054	0.0036	0.0046		35		
F24:NGJ24		0	634 0.64	0 0.620	0.624	0.634 +0.010	HO H24:	0.0211	+0.0019	0.0215	0.0199	0.0211		7.		
Formers Spre		asis (via ClearPort	NG Basis (	ia SNL) +			HO K24:	0.0105	+0.0014	0.0113	0.0092	0.0105	VOL (NG H24:NGJ24)=2,477	7, 6,		
Metels 1 i	-4 🕅 Sumb	l List 👻 👫 🐤 🕹	.i	Watch	iet w	₽▼x	HO M24 HO N24:	0.0039 0.0025		0.0045 0.0027	0.0032	0.0039 0.0025		5,		
Symbol	Last	Net Change	Hi	h		NewSet	HO Q24 HO U24:	0.0008		0.0011	0.0004	0.0008		5,/		
SCRACK1 SCRACK2	33.34 30.68	0 +1.11	6	33.4558 30.6810	32.1566 29.5870		HO V24 HO X24	0.0019	+0.0009	0.0020	0.0017	0.0019		4) 3)		
SCRACK3	28.21	+0.92	4	28.2182	27.3960		HO X24: HO Z24:	0.0031 0.0007		0.0033	0.0029 0.0007	0.0031 0.0007				
ATCRACK1 ATCRACK2	27.35	+0.26	8	27.7774 27.5184	27.0830 26.8528											
ATCRACK3 ICRACK	27.70			27.9158 31.5630	27.2322 30.4654											
	51.54	10.02			00.1001								Feb 7 9 13 15 17 22 24 Mar 7 9 13 15 17 21 23 27 29 Apr 10 12 14 18 20 24 26 May 4 8 10	0 12 16 18 22 24 26 Jun Da		
													Symbol Last	Net Change		
												_	EIA Stats			
													EIA Natural Gas Storage - Total Region 2446 EIA Weekly U.S. Imports of Gasoline Blending Components 655			
													EIA Weekly U.S. Ending Stocks of Crude Oil 815093 EIA Weekly U.S. Crude Oil Imports by SPR 0			

# dualfuel

#### SUMMARY

- Data is worthless if not acted upon
- Real estate owners are busy running their business and prefer turnkey solution providers
- Data creates a culture of scientific and intellectual integrity within your team (can't bullshit the data)
- When multiple contractors are in the mechanical room, data = less finger pointing
- Data allows contractors to be more efficient with their labor
- Data is a valuable lead generation tool (especially in "off season")
- Comfort related repairs have greater profit margin vs. tuning/optimization
- Merging mechanical and controls into one customer experience creates a deeper moat around your customer
- Total cost of ownership = maintenance + repairs + energy spend + management's time



#### INTEGRATED ENERGY SERVICES





Monitoring & Controls



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