BEDFORD UNION ARMORY – DATABASE NOTES

Table 1 Database Notes

Data Collection	Data Logger: Data Collection Interval: Collection Method:	Site's BMS System 15 – Minute Daily Email
Project Information	DER Unit (make & model): Nameplate Capacity: Heat Recovery Medium: Heat Recovery Uses: Excess Heat:	Five (5) Tecogen INV-125 e+ Units 625 kW Hot Water Absorption Chiller hydronic load, DHW, Space Heating Rejected to atmosphere by fluid cooler
DER Electricity Generated	Engineering Units: Energy Measurement (net/gross): Measurement Type:	kWh/hour Net Power kW measurements from Tecogen INV-125e+ Units
Electric Utility Import	Engineering Units: Measurement Type:	kW kW from ConEd electric meter
DER Fuel Consumed	Engineering Units: Measurement type:	cfh Calculated using interval cf data from Pulse Meter
DER Heat Used	Engineering Units: Heat Measurement Type:	MBtu/hr (value calculated by site) MBtu from Onicon System-40 BTU Measurement System, using 15-minute interval data, across all useful loads

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Table 2 Event Timeline

Date	Event
7/6/2022	Data collection begins. Gas use is low leading to elevated electrical and CHP efficiencies.
8/19/2022	Data posted to the DER website.
1/13/2023	A 31.6% correction factor was applied to the gas data to bring measured system efficiencies into alignment with ratings. Reported CHP efficiencies regularly exceeded 100%.

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Range Checks

Table 3 Range Checks

Data Point	Units	Database Lower Range	Database Upper Range	Notes
DER Electricity Generated	kWh/hour	0	650	
Electric Utility Import	kWh/hour	0	1000	
DER Fuel Consumed	cfh	0	7500	
DER Heat Used	MBtu/hour	0	4000	
Ambient Temperature	°F	-20	130	NOAA Airport Code - KLGA

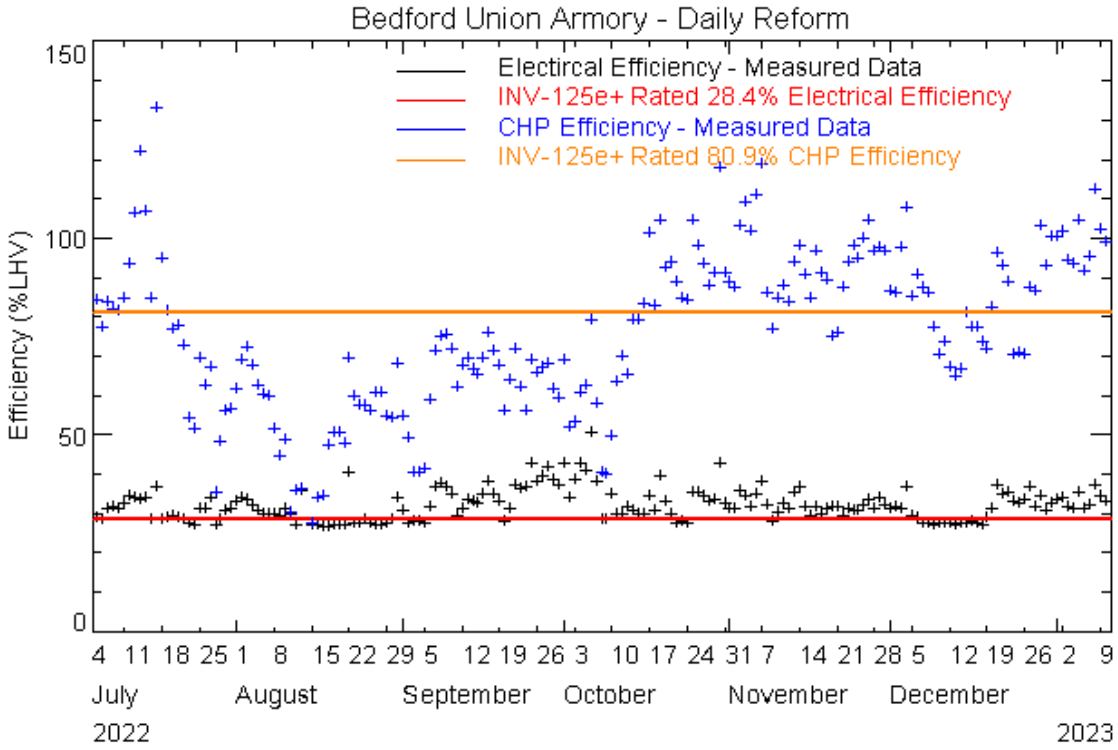
Relational Checks

Table 4 Relational Checks

Evaluated Point(s)	Criteria	Result
Electricity Generated Fuel Consumed	Daily Electric Efficiency < 0% HHV and > 100% HHV	Electricity Generated = invalid Fuel Consumed = invalid Heat Used = invalid Heat Rejected = invalid

Bedford Union Armory – Appendix A

The system operated at an average unadjusted electrical efficiency of 37.4% from July 6th 2022 to January 18th 2023, which is 31.6% higher than the rated electrical efficiency of 28.4%.



To resolve this issue, the gas consumption has been adjusted by 31.6%, which brings the electrical and CHP efficiencies into alignment with system ratings.