

SPRUCE HAVEN – DATABASE NOTES

Table 1 Database Notes

Data Collection	Data Logger: Data Collection Interval: Collection Method:	Red Lion (Carbon Catcher System) 15-minute Interval Connect directly to Red Lion via HTTP to retrieve data.
Site Information	DER Unit (make & model): Nameplate Capacity: Heat Recovery Medium: Heat Recovery Uses: Excess Heat:	Capstone C600S 502 kW (de-rated from 520 kW) Hot Water Digester heating, and scrubber heating Rejected to atmosphere by dump radiator
DER Electricity Generated (WG)	Engineering Units: Energy Measurement (net/gross): Measurement Type:	kWh Gross Accumulated kWh/int, via RS-485 signal, from Wattnode power meter.
Biogas to Generator (FGE)	Engineering Units: Measurement type:	cf Calculated from cfm output from Sage gas meter.
Biogas to Flare (FGF)	Engineering Units: Measurement type:	cf Calculated from cfm output from Sage gas meter.

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Table 2 Event Timeline

Date	Event
November 7, 2014	Frontier Energy on site to verify power meter data. Website data begins.
March 26, 2019	Issues with gas meter begin.
March 5, 2020	Gas data after March 26, 2019 marked as invalid. Relational checks added.
May 12, 2022	Data reporting ends. System was shut down on 5/8/22 to begin a retrofit project to upgrade the system over to renewable natural gas.
October 2022	Renewable natural gas upgrade project was completed the first week of October 2022.

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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	600	
Biogas to Generator	cfh	0	9,000	
Biogas to Flare	cfh	0	9,000	
Ambient Temperature	°F	-20	130	NOAA Airport Code - KSYR

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Relational Checks

Table 4 Relational Checks

Evaluated Point(s)	Criteria	Result
Electricity Generated Fuel Consumed	Fuel Consumed > 0 and Electricity Generated Invalid Electricity Generated > 0 and Fuel Consumed Invalid	Fuel Consumed = invalid Electricity Generated = invalid