SENSOR OBSERVABILITY

MIKE SCHILLER
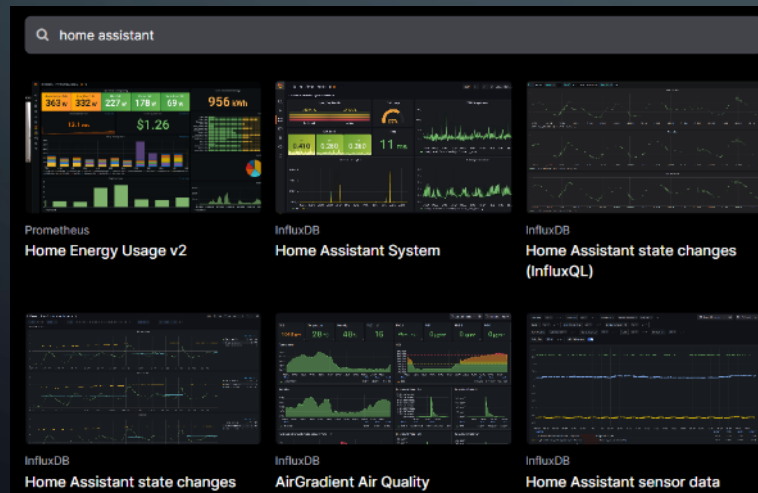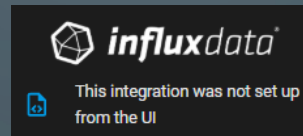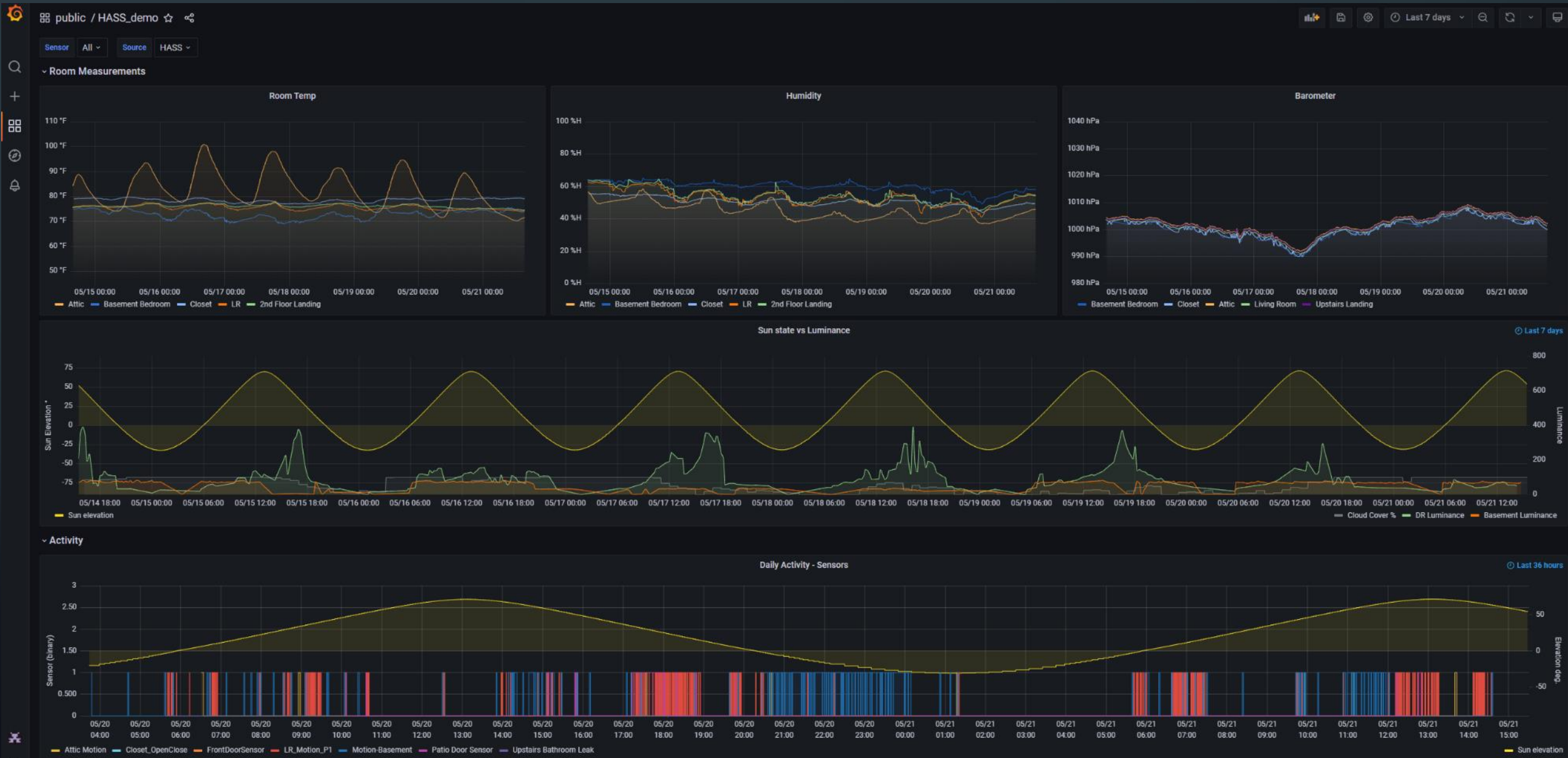
MY 5-YEAR JOURNEY

WHAT'S THE CONCEPT?

- Home Assistant sensors write Time Series Measurements to a database

  - Separate from Recorder – InfluxDB via integration

  - Sensor output configured in yaml

- View dashboards in Grafana

  - InfluxDB is one of many data sources available
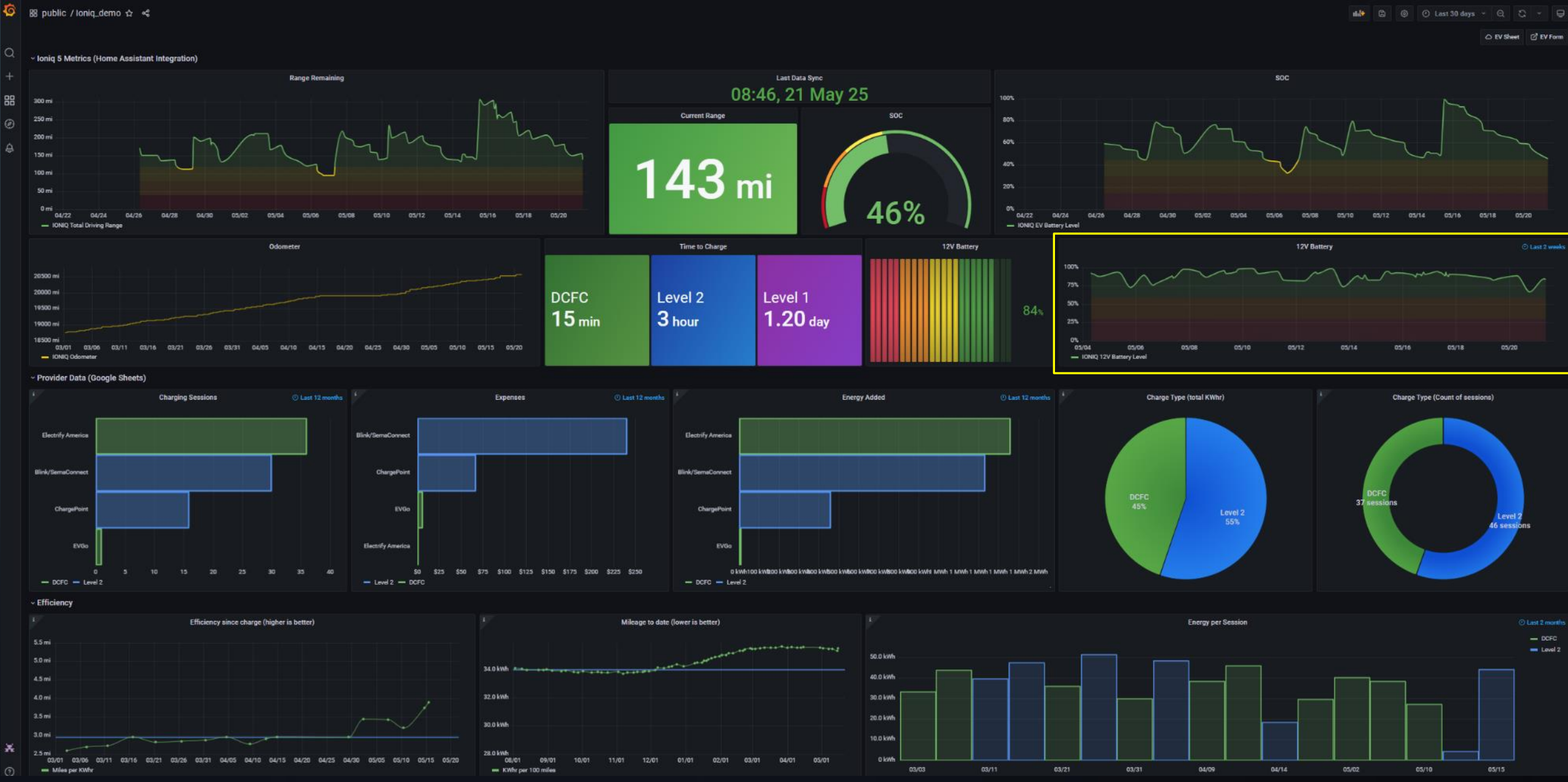
  - Community dashboards available for download

USE CASES / EXAMPLES

- Multi-sensor home activity view

- Electric Vehicle data (via Kia/Hyundai HACS integration)

- Single Pane of Glass – homelab multi-system monitoring

- Grafana alerting based on thresholds

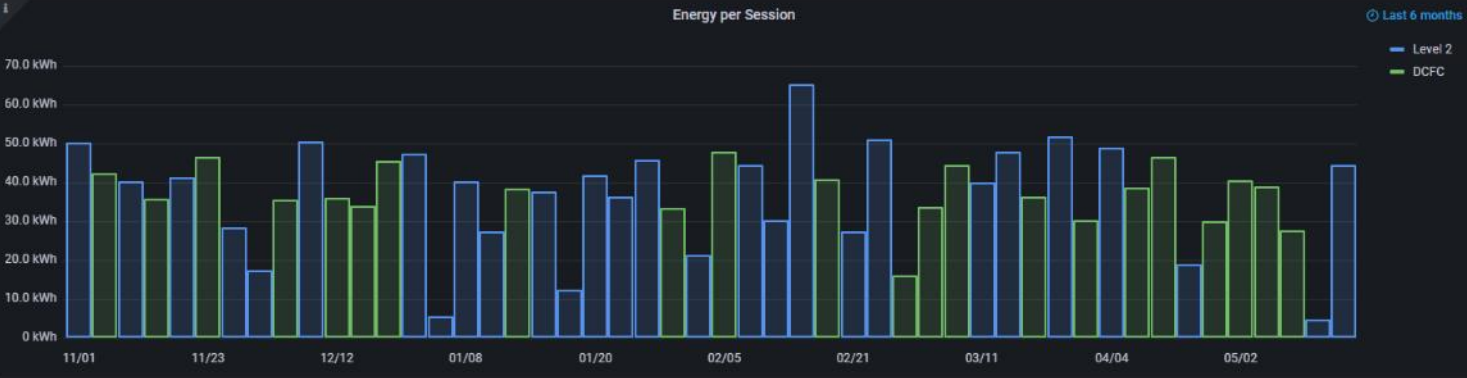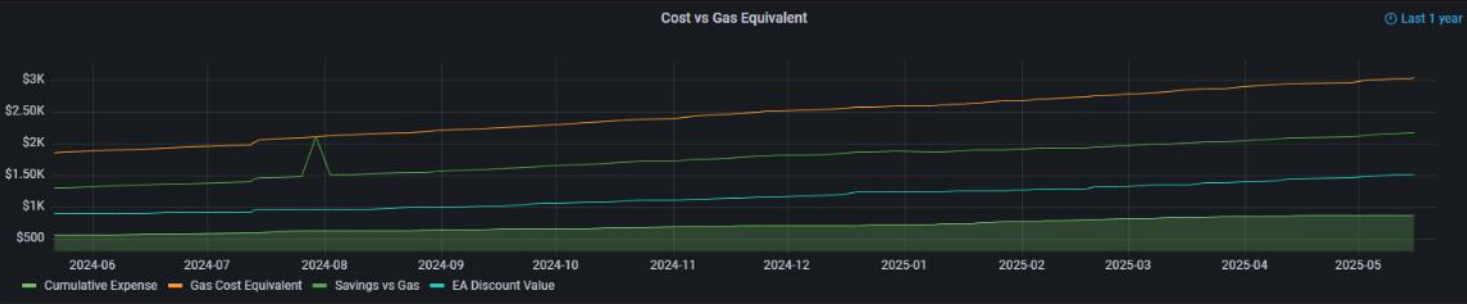HOME ACTIVITY SENSOR HISTORY

EV STATUS

EV CHARGING TRENDS

Charging History

EV Charging History
Last 2 months

Date	Provider	Type	Odometer ↓	Start SOC %	End SOC %	Energy Added	Discounted Price	Effective Charge Rate	Cumulative Expense	Mileage since charge
29-Apr-25	Electrify America	DCFC	19959	41%	80	29.9 kWh	$0	128 kW/hr	$857	91
14-Apr-25	ChargePoint	Level 2	19868	59%	81	19 kWh	$3.33	6.03 kW/hr	$857	48
12-Apr-25	Electrify America	DCFC	19820	26%	80	46.4 kWh	$0	107 kW/hr	$853	121
09-Apr-25	Electrify America	DCFC	19699	30%	80	38.7 kWh	$0	92.9 kW/hr	$853	128
04-Apr-25	Blink/SemaConnect	Level 2	19571	30%	90	48.8 kWh	$10.3	9.70 kW/hr	$853	114
31-Mar-25	Electrify America	DCFC	19457	40%	80	30.3 kWh	$0	140 kW/hr	$843	133
26-Mar-25	Blink/SemaConnect	Level 2	19324	34%	100	51.8 kWh	$10.4	9.68 kW/hr	$843	101
21-Mar-25	Electrify America	DCFC	19223	35%	80	36.3 kWh	$0	90.7 kW/hr	$833	100
16-Mar-25	ChargePoint	Level 2	19123	24%	81	47.8 kWh	$8.36	2.37 kW/hr	$833	146
11-Mar-25	Blink/SemaConnect	Level 2	18977	40%	88	40 kWh	$8.51	10.3 kW/hr	$824	84

Long Term

Mileage Trend (lower is better) — Last 1 year
KWhr per 100 miles

Cost vs Gas Equivalent — Last 1 year
Cumulative Expense — Gas Cost Equivalent — Savings vs Gas — EA Discount Value

Efficiency since charge (higher is better) — Last 1 year
Level 2 — DCFC
Miles per KWhr

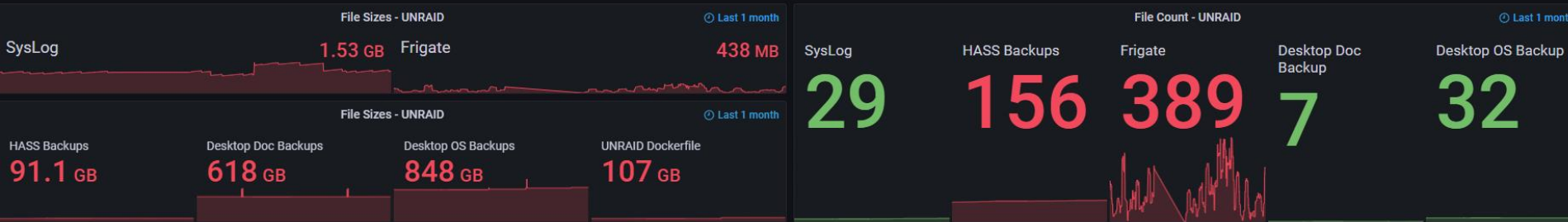Energy per Session — Last 6 months
Level 2 — DCFC

HOMELAB MONITORING

Sampling 1m ⌄   Mountpoint / ⌄   CPU All ⌄   Disk All ⌄   Network interface end0 + eth0 + hassio + igb0 + igb1 + tailscale0 + wlan0 ⌄
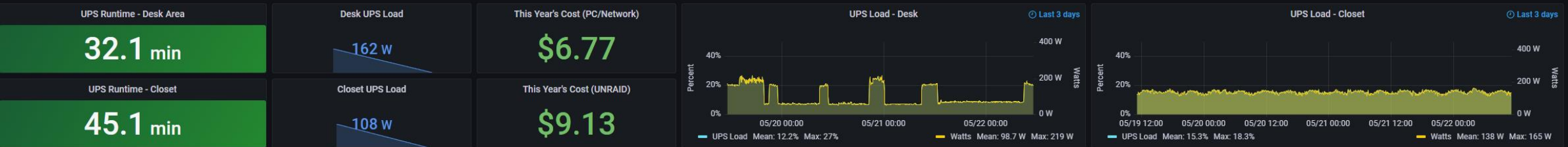
⌄ Container Stats

UNRAID Top Docker CPU usage   ⏱ Last 12 hours

Plex	Frigate	Nextcloud	Telegraf
0.0%	0.3%	0.0%	6.4%

InfluxDB	UNRAID API	Glances
0.0%	1.0%	0.1%

UNRAID Top Docker RAM usage   ⏱ Last 12 hours

PhotoPrism	Frigate	Gitea	Plex	Nextcloud
0.7%	3.9%	1.0%	0.6%	0.8%

Telegraf	InfluxDB	UNRAID API	Glances
0.3%	3.4%	0.7%	0.4%

LXC CPU Usage - Proxmox

Guacamole	Docker	Immich
0.34%	1.14%	1.11%

Jellyfin	Metrics
0.24%	0.64%

LXC Memory Usage - Proxmox

Guacamole	Docker	Immich
24.0%	27.6%	29.6%

Jellyfin	Metrics
14.7%	35.5%

⌄ File Monitor

File Sizes - UNRAID   ⏱ Last 1 month

SysLog	Frigate
1.53 GB	438 MB

File Count - UNRAID   ⏱ Last 1 month

SysLog	HASS Backups	Frigate	Desktop Doc Backup	Desktop OS Backup
29	156	389	7	32

File Sizes - UNRAID   ⏱ Last 1 month

HASS Backups	Desktop Doc Backups	Desktop OS Backups	UNRAID Dockerfile
91.1 GB	618 GB	848 GB	107 GB

⌄ UPS Stats

UPS Runtime - Desk Area
32.1 min

Desk UPS Load
162 W

This Year's Cost (PC/Network)
$6.77

UPS Runtime - Closet
45.1 min

Closet UPS Load
108 W

This Year's Cost (UNRAID)
$9.13

UPS Load - Desk   ⏱ Last 3 days
— UPS Load Mean: 12.2% Max: 27%   — Watts Mean: 98.7 W Max: 219 W

UPS Load - Closet   ⏱ Last 3 days
— UPS Load Mean: 15.3% Max: 18.3%   — Watts Mean: 138 W Max: 165 W

⌄ Temps

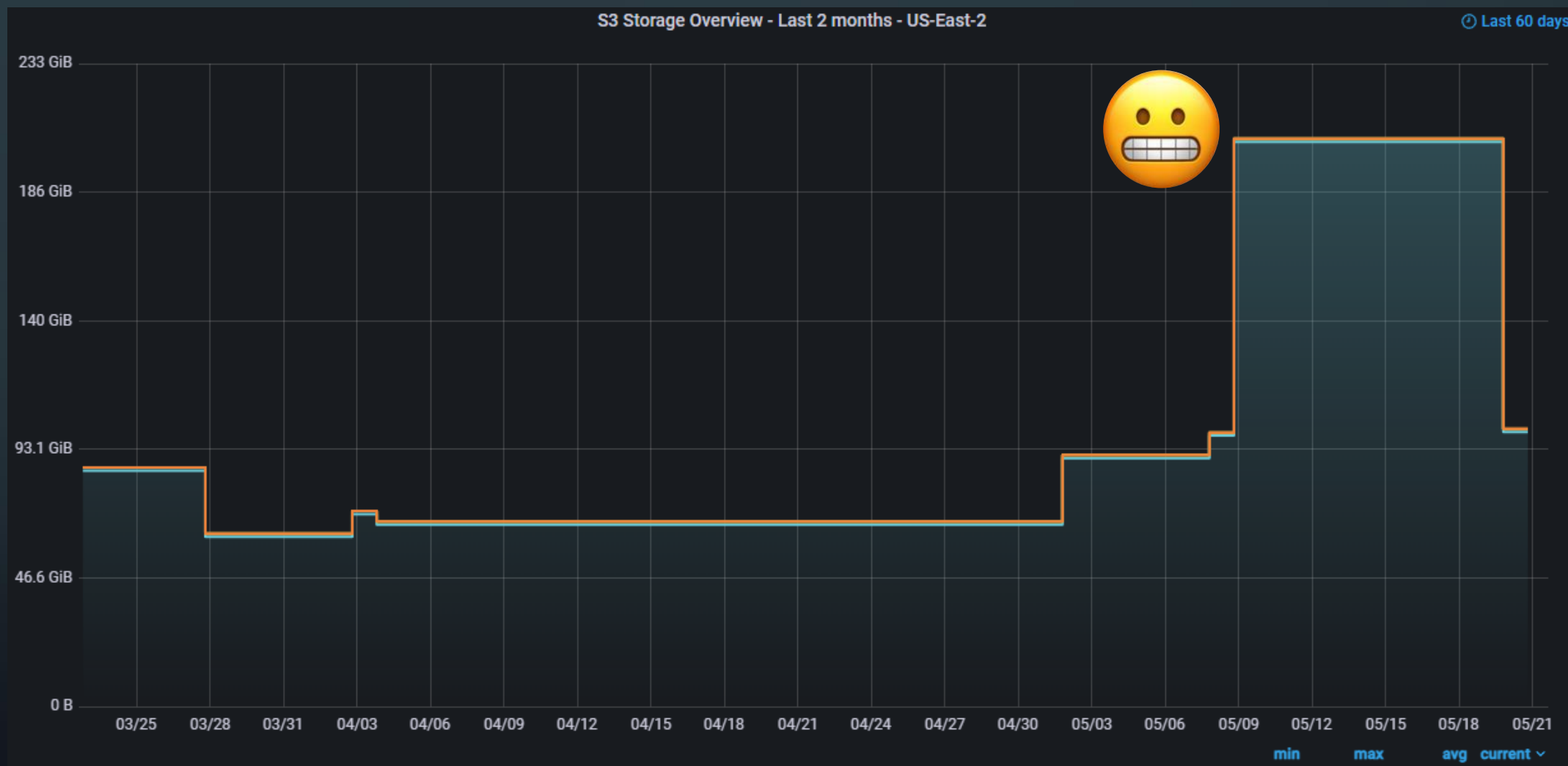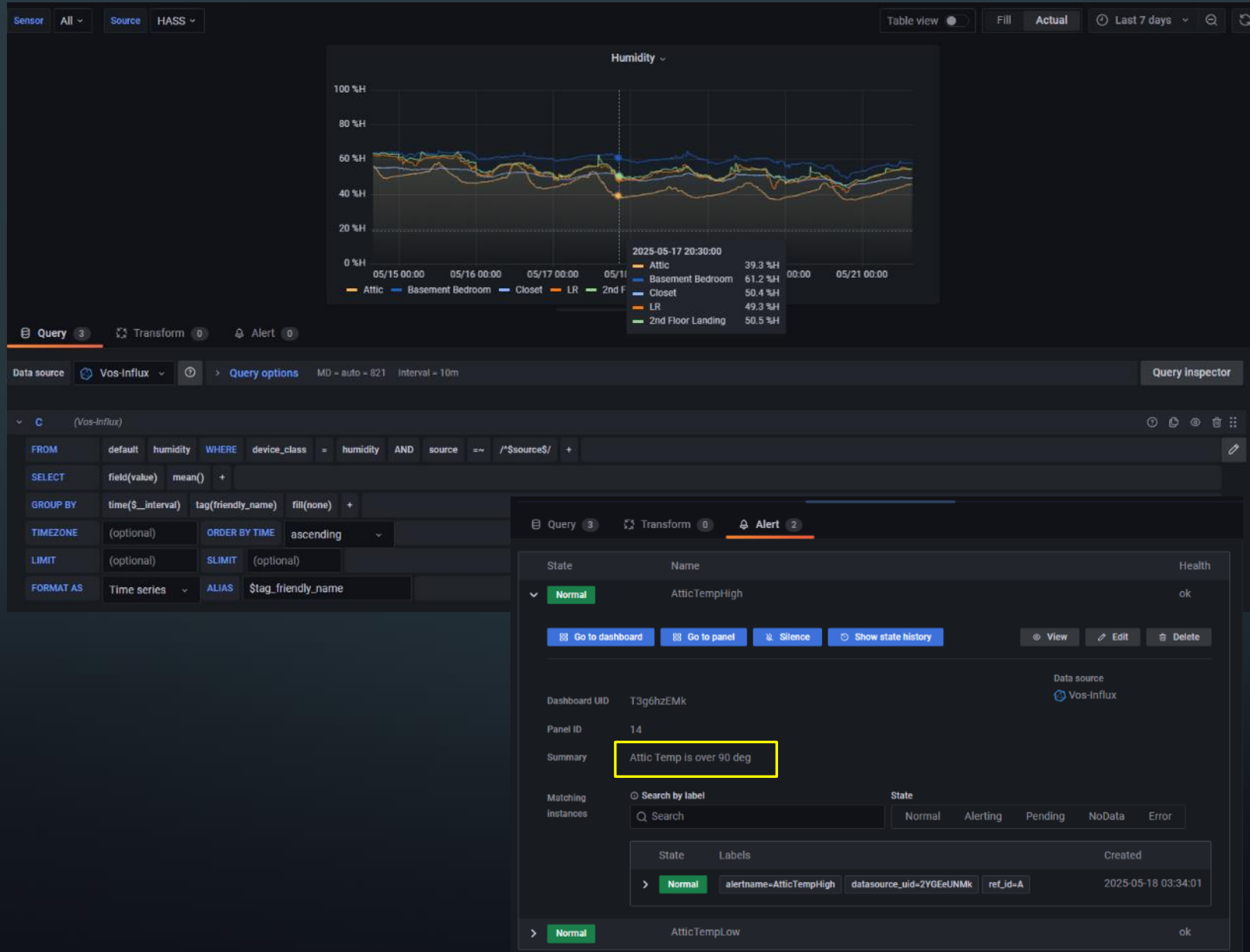| HASS RPi4	Zigbee2MQTT RPi3	Omada Controller RPi4	PiHole RPi3	UNRAID Server	Proxmox Server	Desktop CPU (OHM)	Desktop GPU (OHM)
45.8 ℃	54.2 ℃	46.3 ℃	48.3 ℃	54.0 ℃	42.0 ℃	42.9 ℃	33.0 ℃

WHAT DID I JUST PAY FOR?

GRAFANA DASHBOARD EDITING INTERFACE

THINGS TO CONSIDER

- Dashboard design - what to watch, why do you care, when do you worry?

- Volume of measurements over time
  - Control with retention policy (short/long term) and sampling frequency (sec/min/hour)
  - Think about this up front; changing RPs later makes it difficult to combine historic data

- Maintenance – manual updates as you add sensors – !include influxdb.yaml

- Performance/Storage – Home Assistant add-ons vs. separate server

- Tools – InfluxDB Studio, Chronograph to explore data and test queries

- Learning Grafana queries – grab a community dashboard you like and tweak it

GUIDES

- https://www.influxdata.com/blog/how-integrate-gafana-home-assistant/

- https://www.youtube.com/watch?v=rXF-LycbjoA (Smart Home Junkie)

- https://www.derekseaman.com/2023/04/home-assistant-influxdb-data-management-lxc.html

- Check if the guide you use matches the version of InfluxDB you plan to use,
  as the Influx query language varies significantly across versions
    - InfluxQL (through 1.8), Flux (v2), and soon to be SQL (v3 in beta)

- Community dashboards will be built with a specific type of Influx query and aren't
  interoperable

As usual, thanks to the many people who figured out these things before me!

EV DATA FLOW