Using Prometheus and Grafana for monitoring my power usage

Erwin de Keijzer

Linux Engineer @ Snow

@erwindekeijzer

github.com/gnur

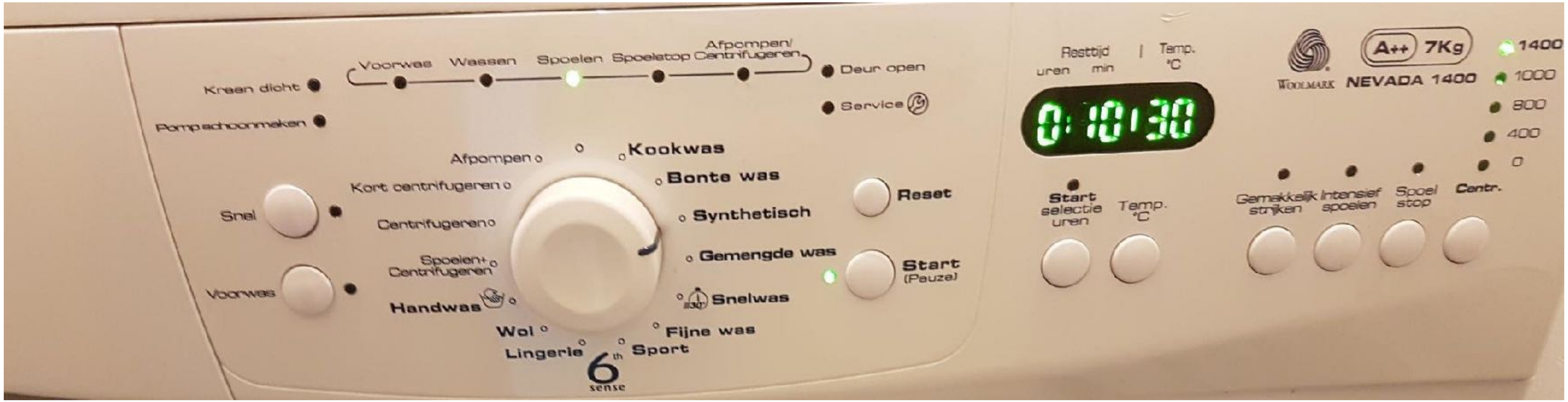
https://snow.nl

This is about my washing machine

13:30 (ETA: 14:46)

14:48 (ETA: 15:03)

15:04 (ETA: 15:14)



15:23 (ETA: 15:33)

Let’s go from pulling to pushing

Main quest: get notifications when the washing machine is done

Side quest: secure, private web interface for exploring power usage

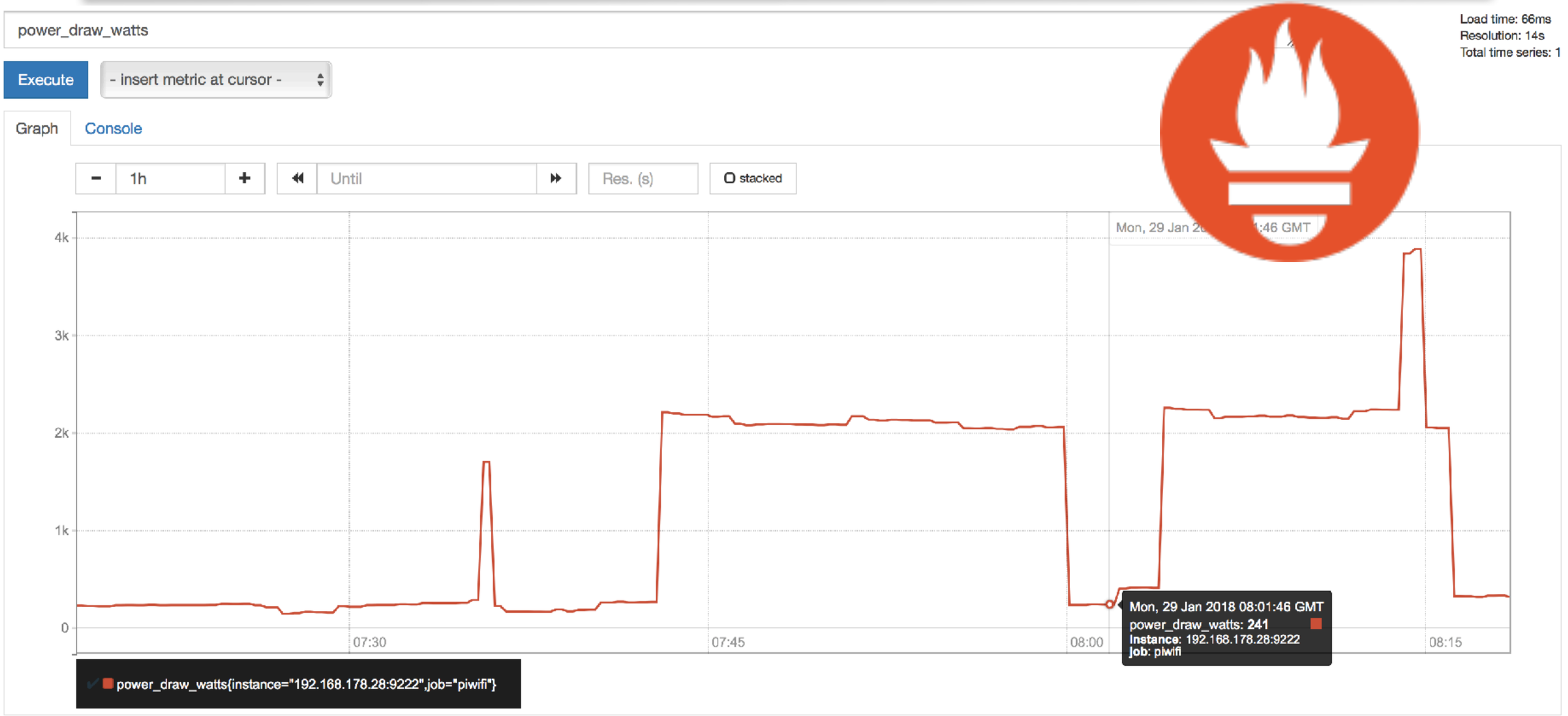
The Setup

Prometheus-p1-exporter

- Reads /dev/ttyUSB0
- Stores relevant info in global vars
- Exposes these metrics using the promhttp library (official go prometheus library)
- Prometheus scrapes the endpoint

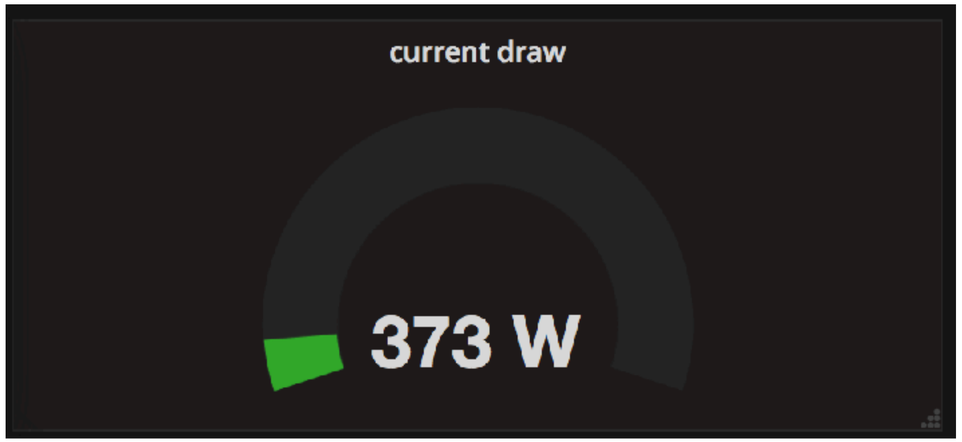
prometheus
p1
exporter

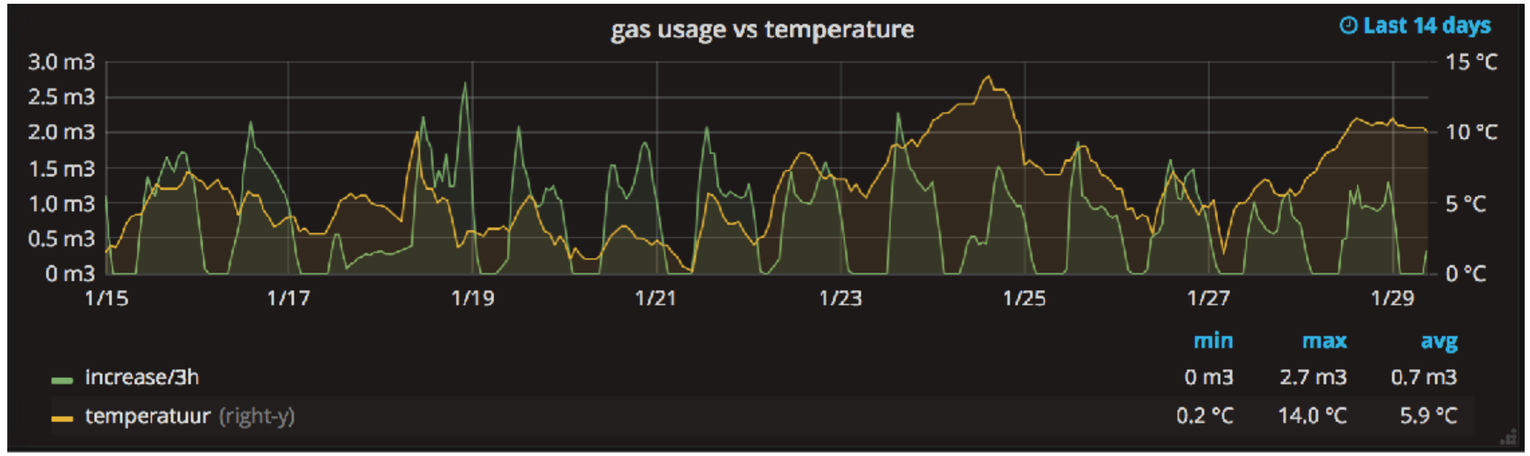
Prometheus

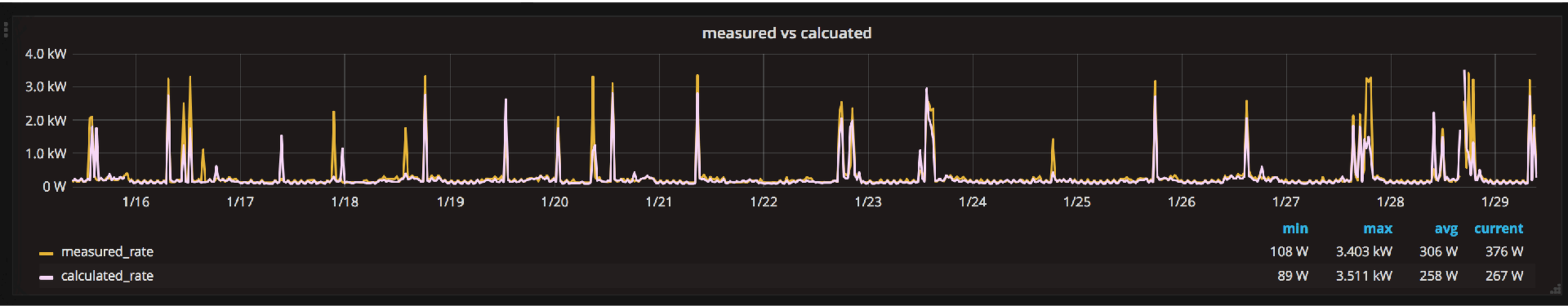

power_draw_watts
Execute
- insert metric at cursor -
Load time: 66ms
Resolution: 14s
Total time series: 1
Graph
Console
1h
Until
Res. (s)
stacked
4k
3k
2k
1k
0
07:30
07:45
08:00
08:15
Mon, 29 Jan 2018 08:01:46 GMT
power_draw_watts: 241
Instance: 192.168.178.28:9222
Job: piwifi
power_draw_watts{instance="192.168.178.28:9222",job="piwifi"}
Remove Graph

prometheus
p1
exporter

Grafana

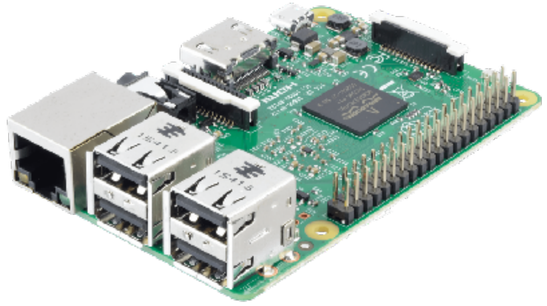

current draw
373 W


gas usage vs temperature
Last 14 days
3.0 m3
2.5 m3
2.0 m3
1.5 m3
1.0 m3
0.5 m3
0 m3
15 °C
10 °C
5 °C
0 °C
1/15
1/17
1/19
1/21
1/23
1/25
1/27
1/29
min
max
avg
increase/3h
0 m3
2.7 m3
0.7 m3
temperatuur (right-y)
0.2 °C
14.0 °C
5.9 °C


measured vs calcuated
4.0 kW
3.0 kW
2.0 kW
1.0 kW
0 W
1/16
1/17
1/18
1/19
1/20
1/21
1/22
1/23
1/24
1/25
1/26
1/27
1/28
1/29
min
max
avg
current
measured_rate
108 W
3.403 kW
306 W
376 W
calculated_rate
89 W
3.511 kW
258 W
267 W


Grafana
prometheus
p1
exporter

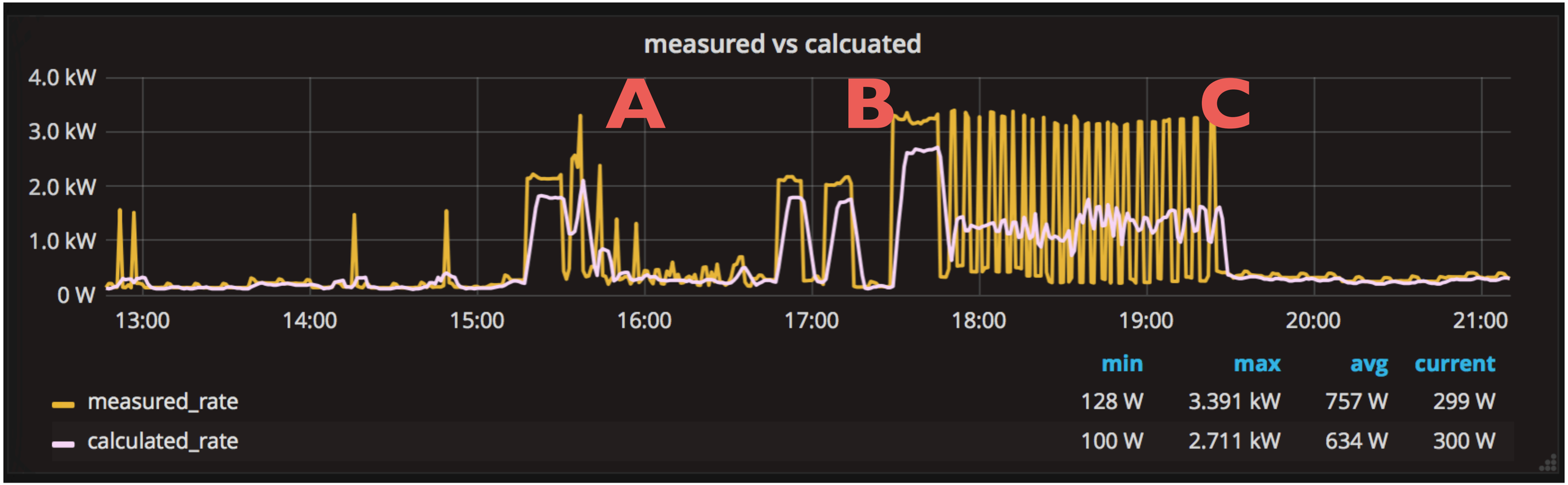
Caddy



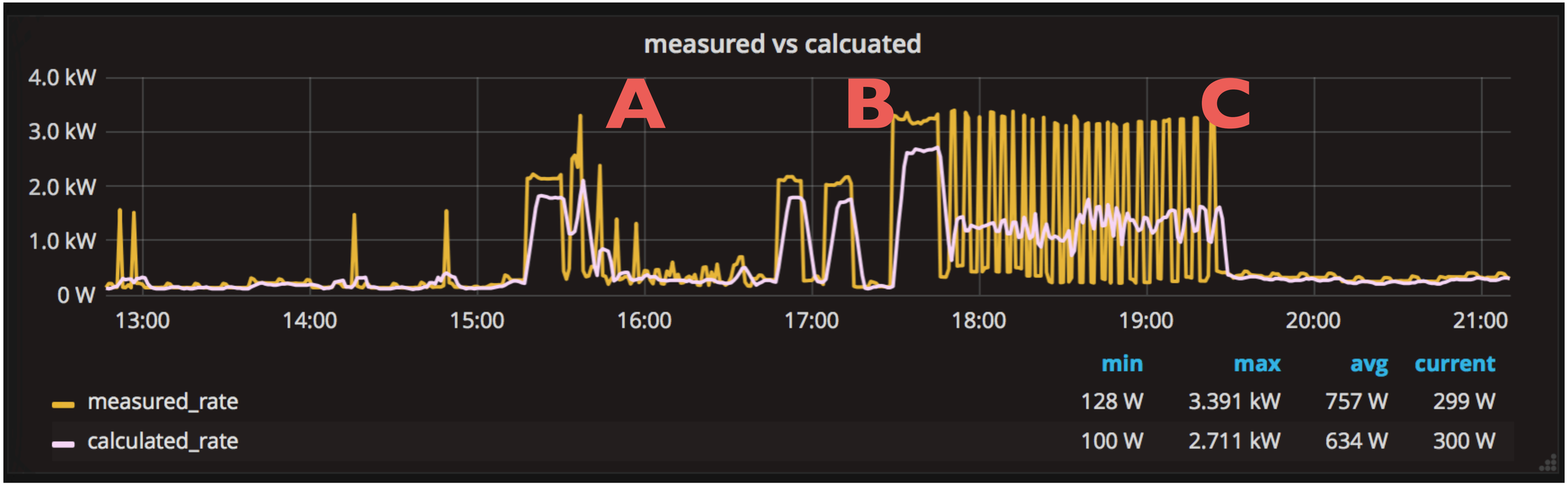
Grafana

prometheus
p1
exporter

Quiz


measured vs calcuated
4.0 kW
3.0 kW
2.0 kW
1.0 kW
0 W
A
B
C
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
min
max
avg
current
measured_rate
128 W
3.391 kW
757 W
299 W
calculated_rate
100 W
2.711 kW
634 W
300 W

Quiz



Washing machine

Oven

Microwave

Let’s go from pulling to pushing

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Side quest: secure, private web interface for exploring power usage

Let’s go from pulling to pushing

~~Main quest: get notifications when the washing machine is done~~

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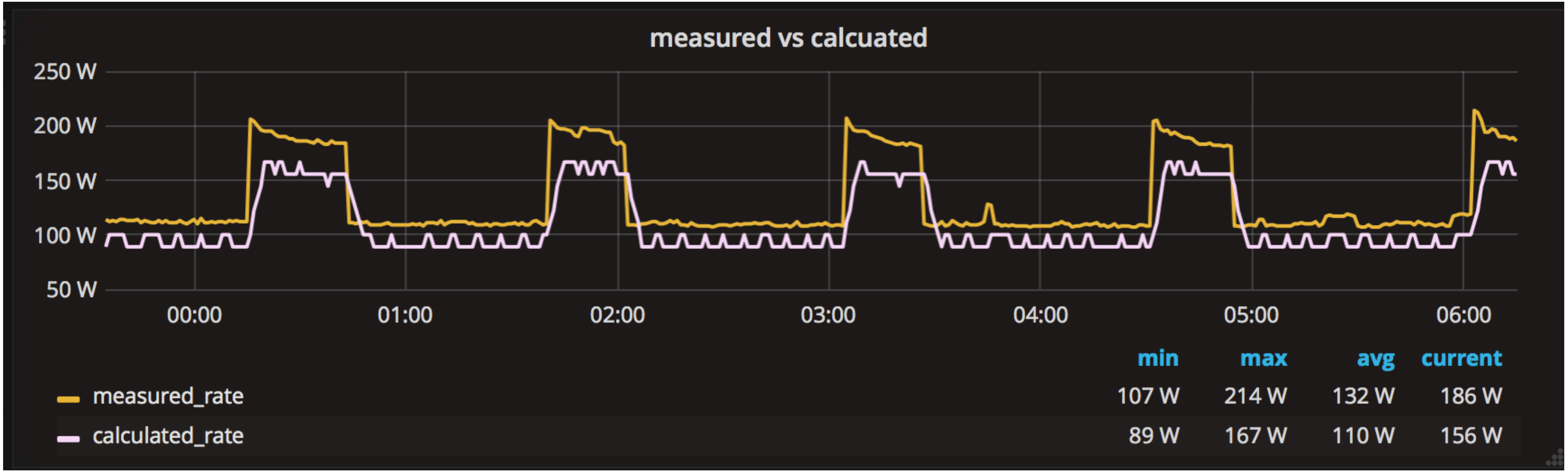
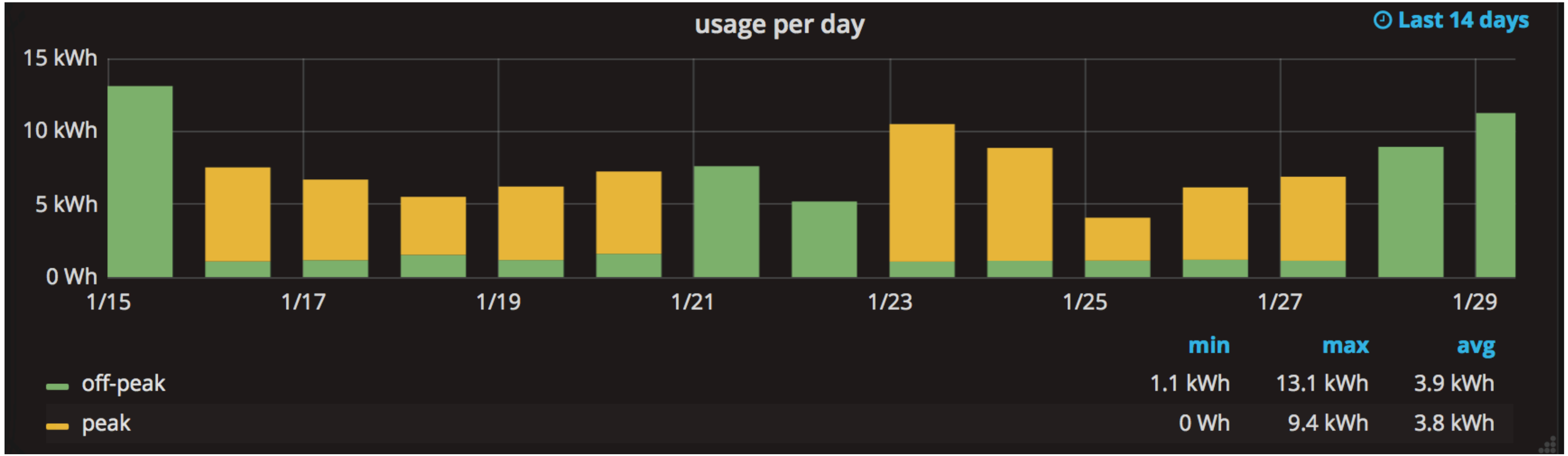
Interesting graph #1



Interesting graph #2



Sources

- https://prometheus.io
- https://grafana.com/
- https://caddyserver.com/
- https://github.com/gnur/prometheus-p1-exporter
- https://github.com/prometheus/client_golang
- https://github.com/prometheus/alertmanager