

Battery Technology

AARA General Meeting
November 7, 2019

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Questions first

Prismatic cells

mAH

18650

WH

BMS

XT60

Lipo

C rating

Mppt

3P4S

parallel/series

Battery vs Battery Pack vs Cell

Balance Charging top bottom

Rechargeable battery Chemistries

Lead acid based

Nickel based

Lithium based

WH/L

500

400

300

200

100

0

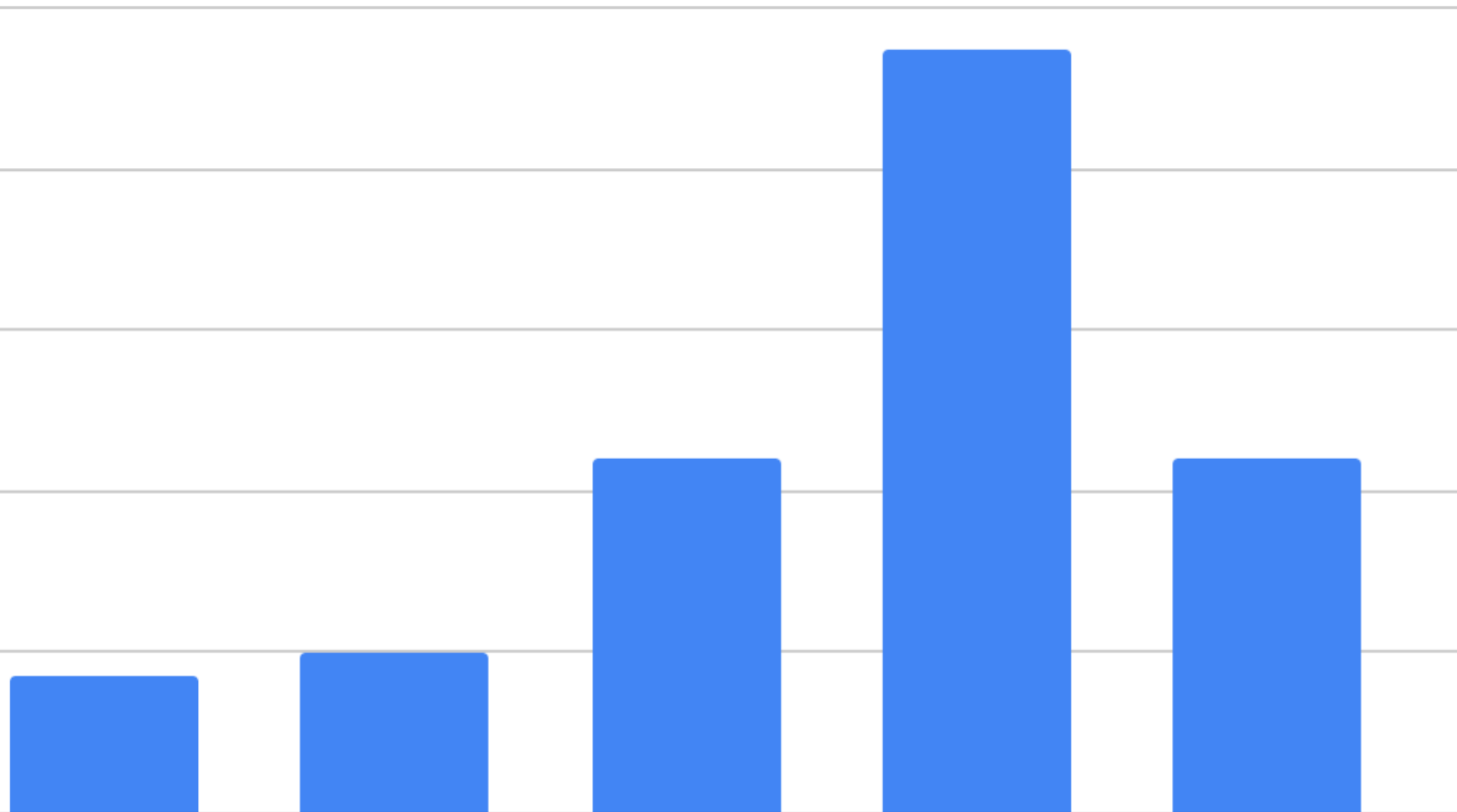
Lead

NiCd

NiMH

LiPo

LiFePO4



Wh/kg

200

150

100

50

0

Lead

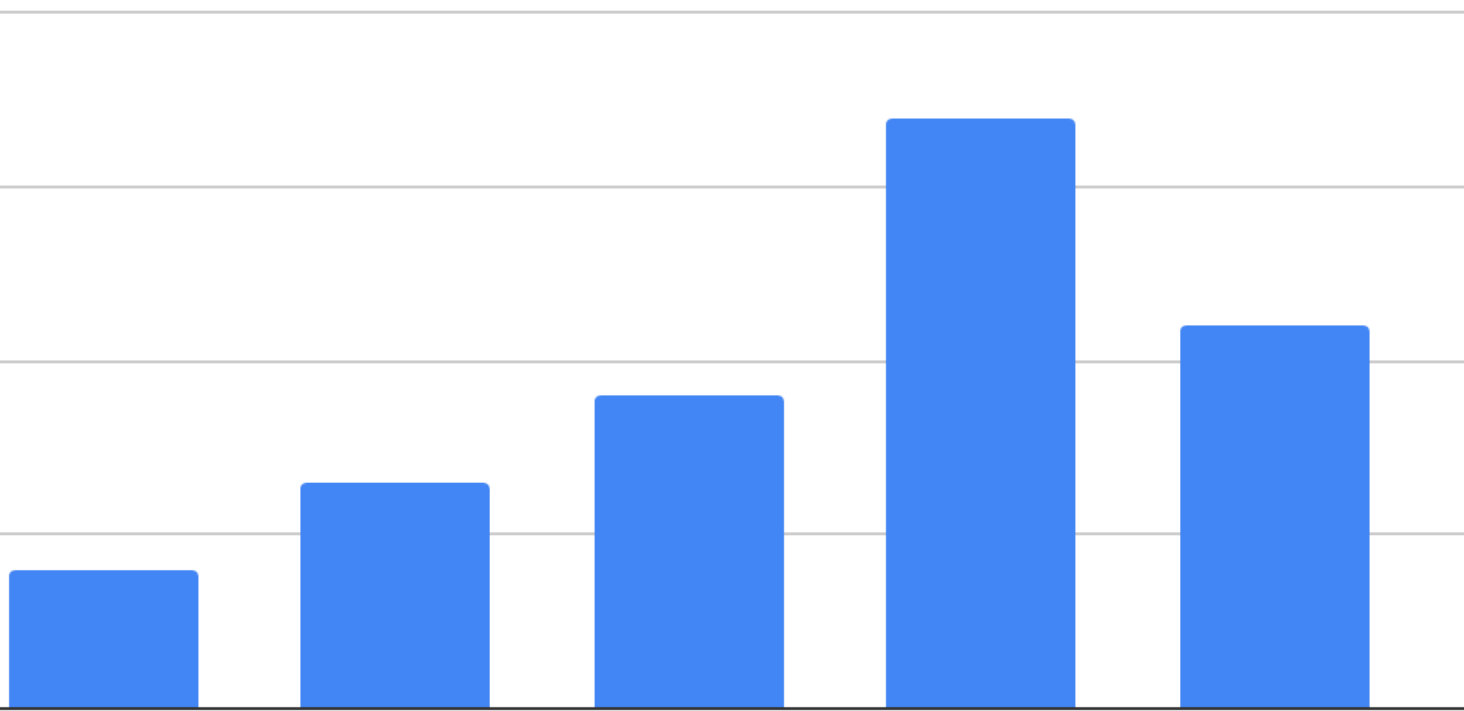
NiCd

NiMH

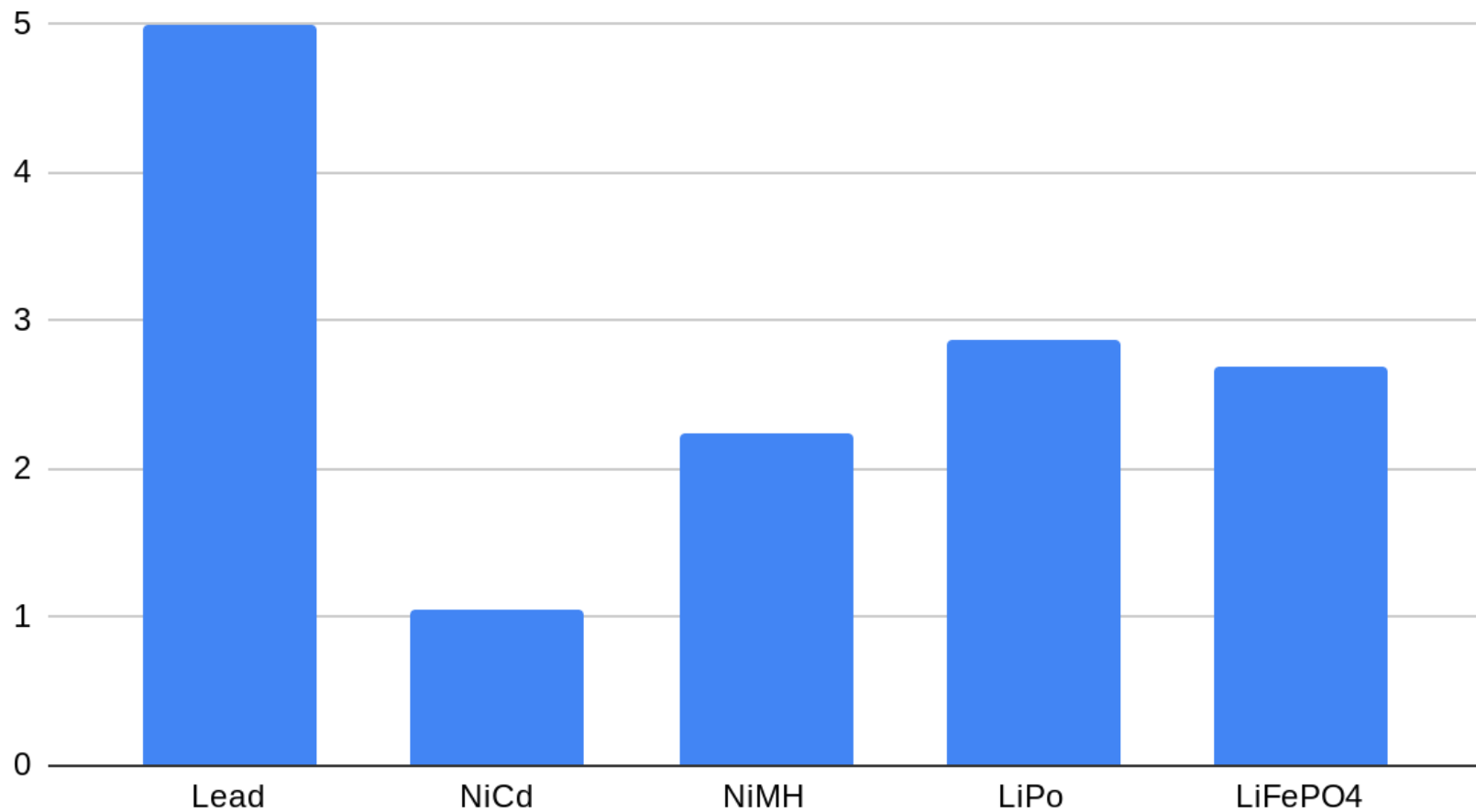
LiPo

LiFePO4

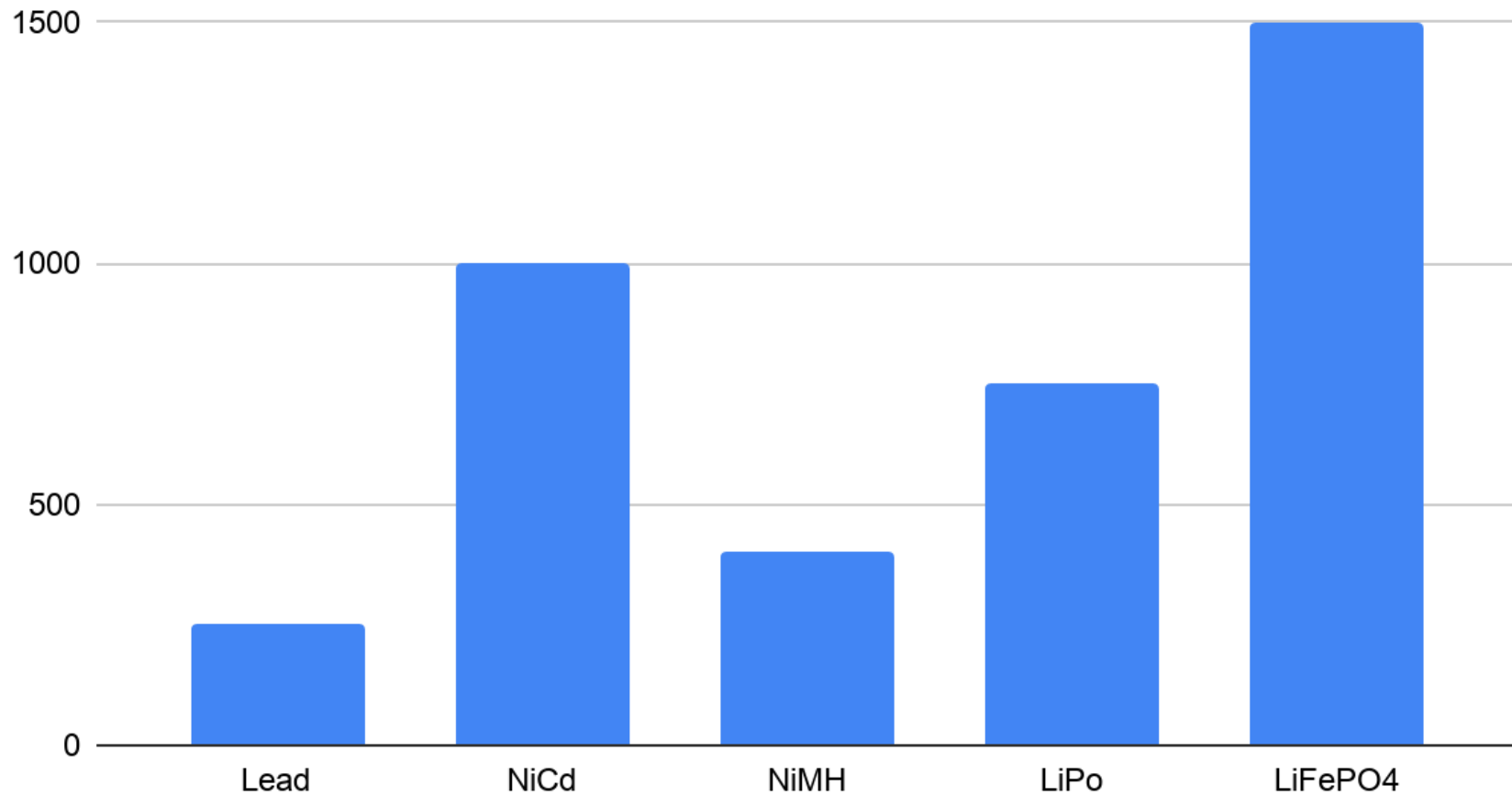
Type



Usable WH/\$



Life Cycles



Define Needs

Portable, fixed, man portable. (size and weight)

Primary power, backup, part of solar system.

What will I power, what voltages do they need

Standard Voltages

3v 2 alkaline batteries cmos

5v Cell phones tablets

9V battery powered items

12v car and car accessories many dc power adapters modem router

18v Cordless tools

19v laptops

24v E-bikes RV systems

40v outdoor battery tools

48v golf carts and cars

Cell voltages

You can only make a multiples of the Cell Voltage

Lead Acid Cell	2.0	1.8	2.3
NiCd /NiMH	1.2	1.5	.9
Lipo Li-Ion	3.7	3.2	4.2
LiFePO4	3.2	2.8	3.5

Safety

No battery is completely safe.

All will cause a fire if shorted

All will do bad things if overcharged

All will be damaged by over Depth of Discharge

What will we need

Cell Holder

A BMS

- A way to prevent over voltage

- A way to prevent under voltage

- Temperature monitor

- A way to balance cells

Appropriate gauge Wire

Fuses

Connectors

DC-DC converter

Solar Charger

Build or Buy

Dakota Lithium

Bioeno

Kodiak

Jakery

Other Communities to find out more

Off grid / prepper

motorhome / camper living

E bikes

Electric Cars

Vaping E-Cigarette

Specific places I would recommend

[Will Prowse DIY Solar /https://www.mobile-solarpower.com/](https://www.mobile-solarpower.com/)

[OH8STN](#)

[Jehu Garcia \(grain of salt he does resale\)](#)

[HBpowerwall](#)

<https://secondlifestorage.com/celldatabase.php>

[Battery University](#)



