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Shaping the intelligent fleet of tomorrow
How data and connected vehicles change
the way fleets are managed
Prof MJ (Thinus) Booysen - Oct 2026



Three designs

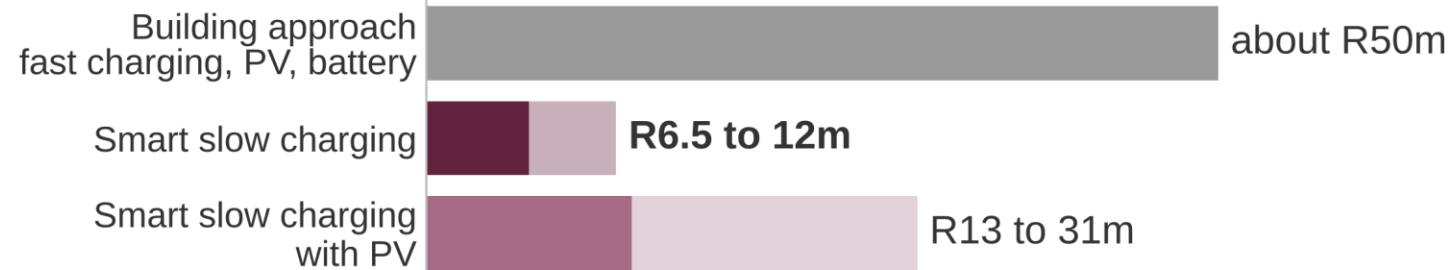
A depot with 500 kVA spare grid capacity

Building approach: fast chargers, solar and batteries. About R50m for 30 to 40 vehicles.

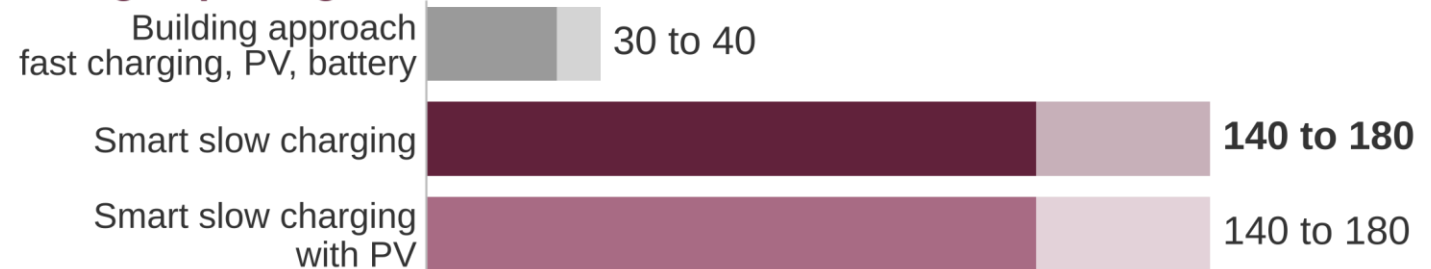
Smart slow charging: one controller on the existing connection. R6.5 to 12m for 140 to 180 vehicles.

Smart slow charging with PV: solar to cover the fleet's annual energy. R13 to 31m, the same 140 to 180 vehicles.

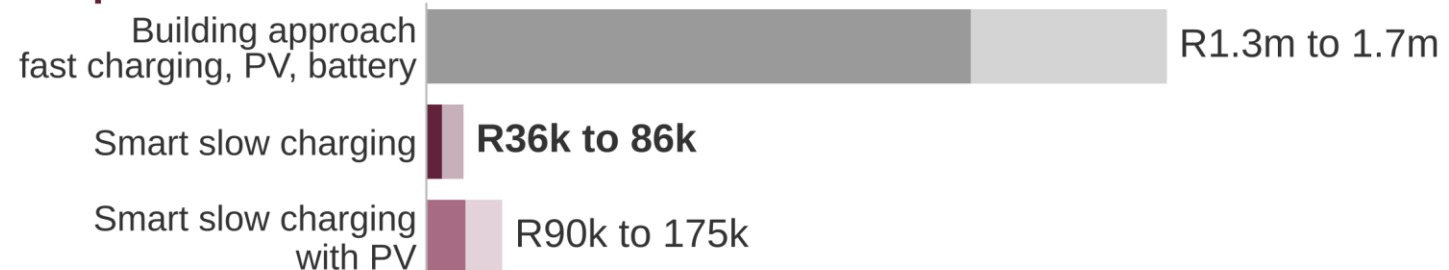
Capital cost



Vehicles charged per night



Capital cost per vehicle



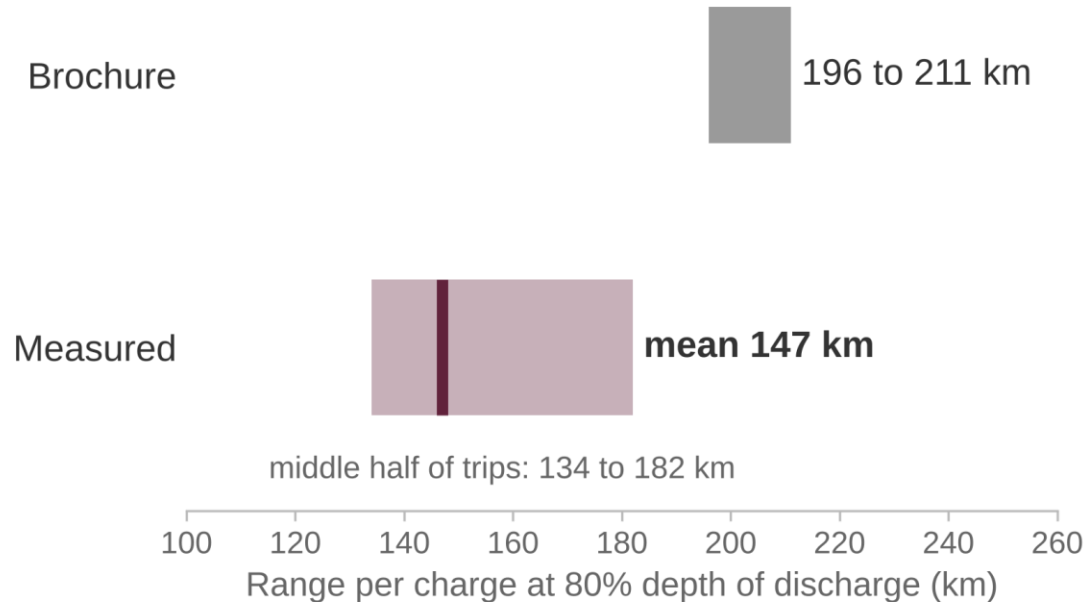
**The difference isn't the technology.
It's the numbers used to size it.**

Borrowed numbers

Most fleet decisions are sized on someone else's numbers (and world views)

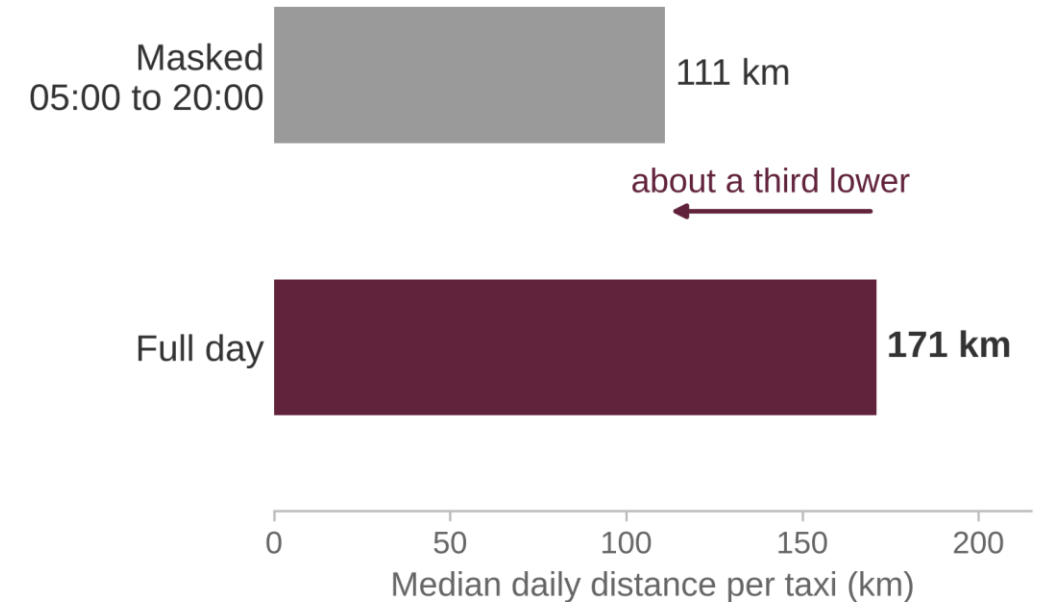
What the vehicle does

South Africa's first electric minibus taxi



What the data shows

Cape Town minibus taxi tracking



Even real data misleads if it doesn't show
how, when and where the fleet actually operates

The intelligent fleet

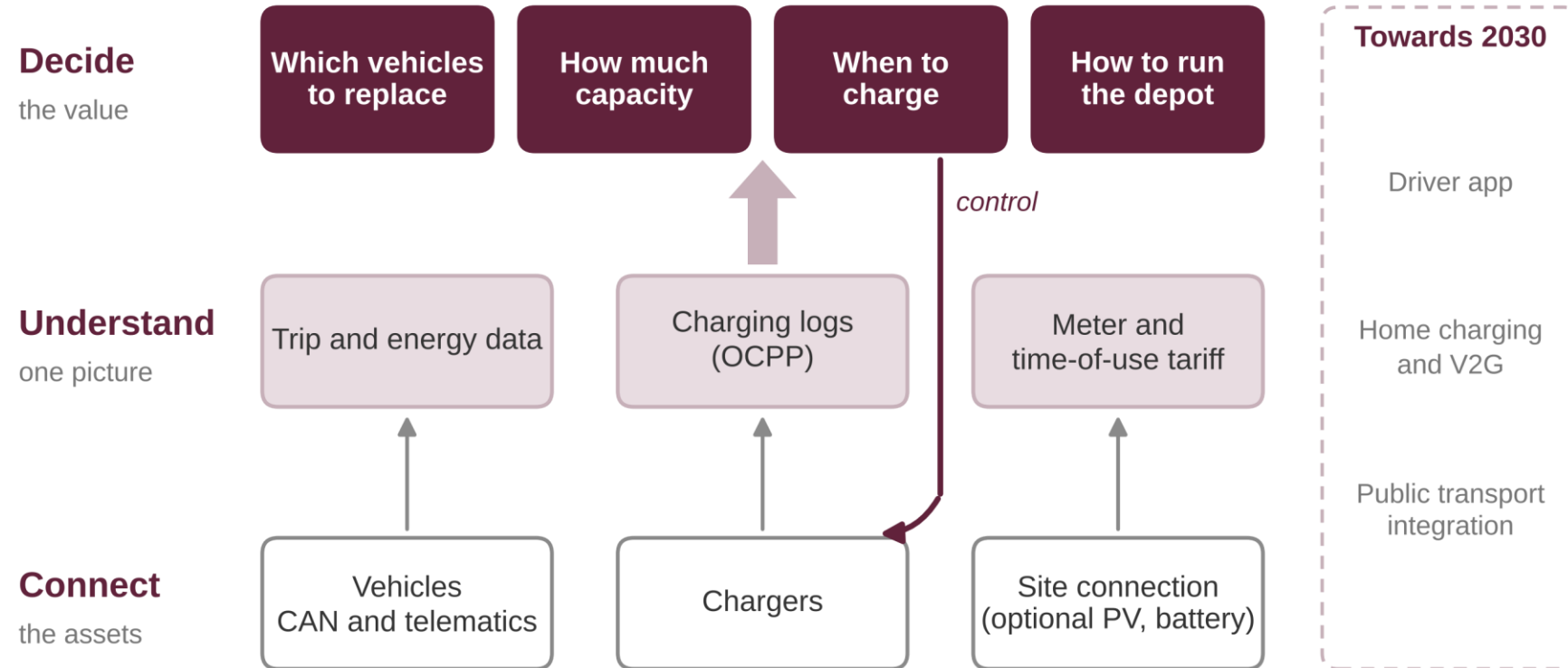
Connect the assets, understand the data, then decide

Connect: vehicles, chargers and the site meter talk to one controller

Understand: telematics, charging logs and tariffs become one picture

Decide: which vehicle, which trip, when to charge, what to buy next

The controller, not the charger, is the asset.



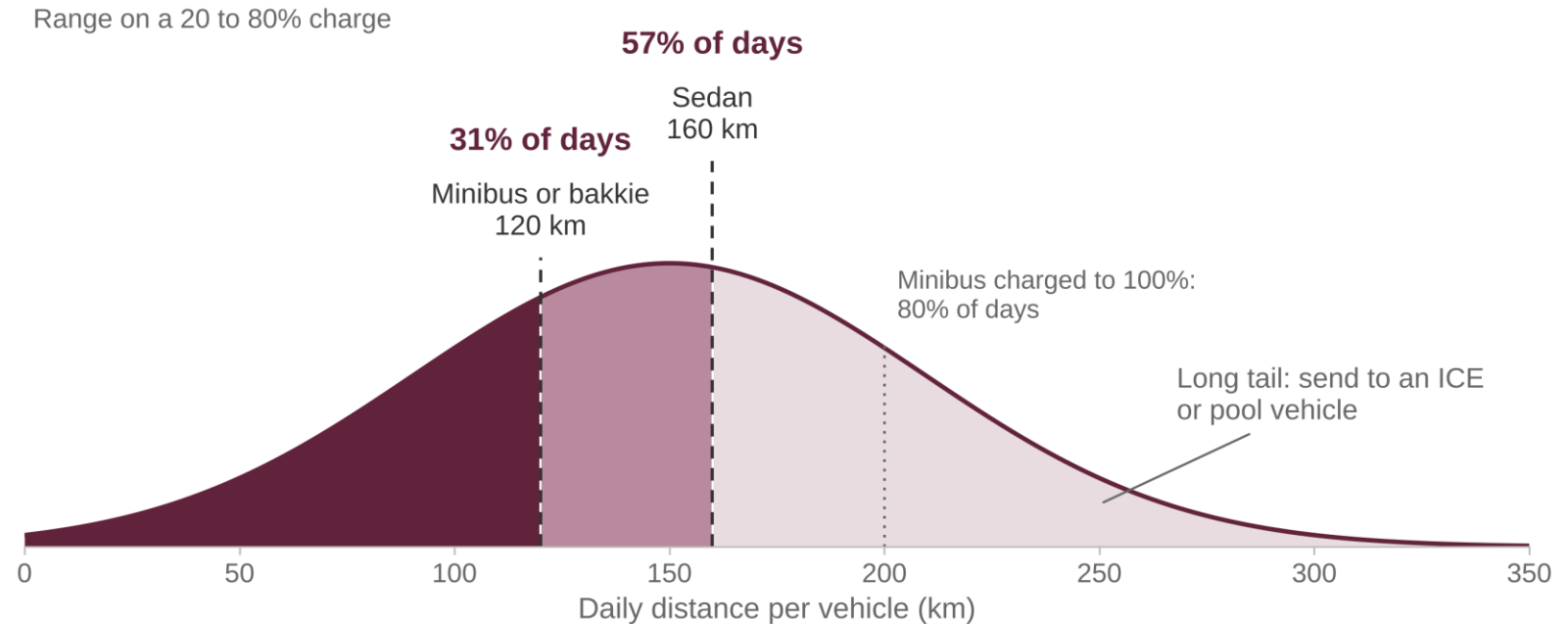
Every decision on the next four slides comes from this one picture.

Which vehicles first

Replace by duty cycle, not by class or age

An electric sedan covers
57% of days;
a minibus or bakkie 31%

Charge to full on the long
days, and the minibus share
rises to 80%.



**You don't need every EV to do every day.
You need the right vehicle on the right trip.**

Assumed daily distance (mean 150 km) from Electric Mobility Lab depot design for WCG Government Motor Transport (2026); range on a 20 to 80% charge at design consumption (150 and 350 Wh/km).

The grid you already have

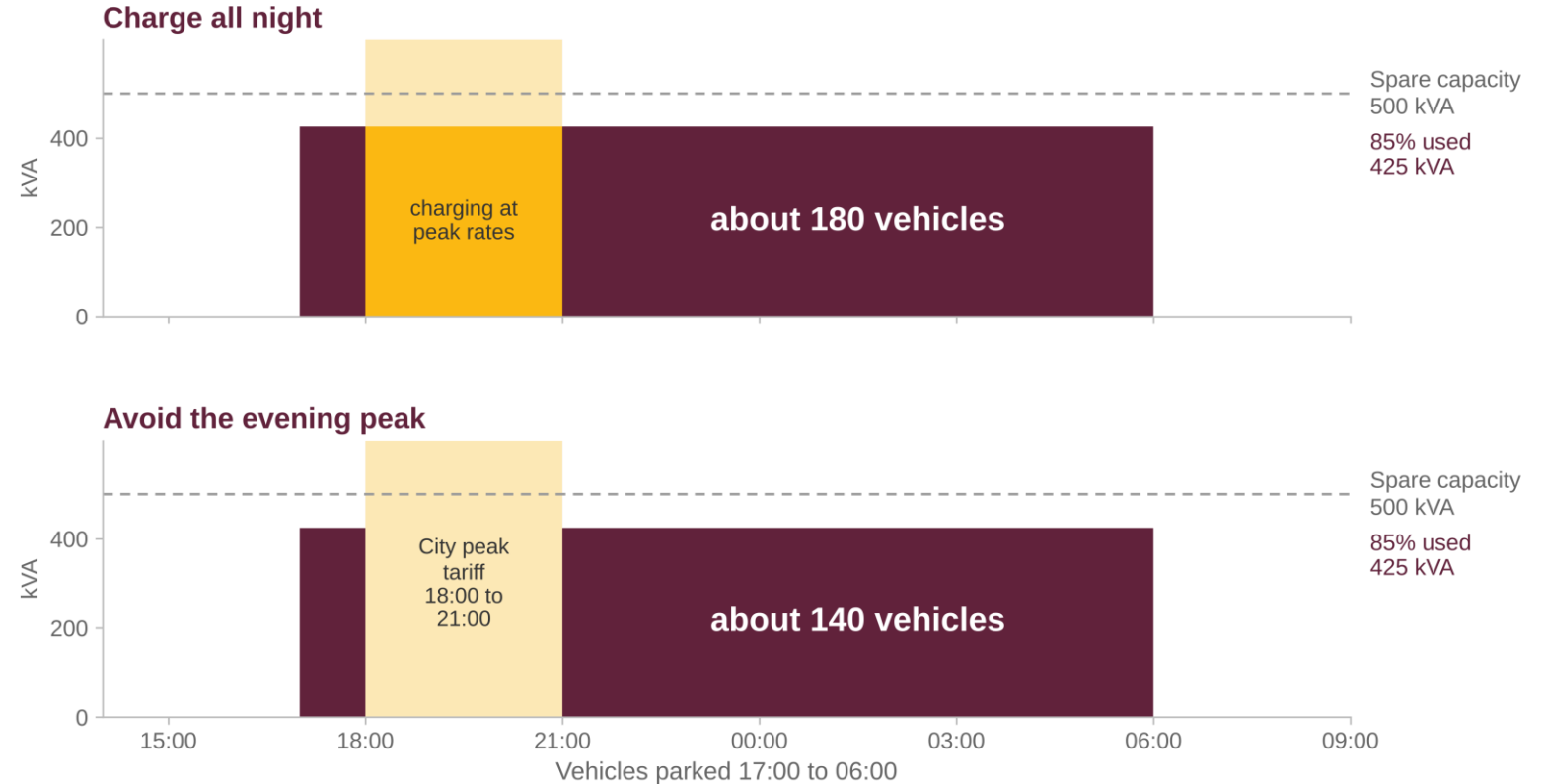
Thirteen hours of standing time is the real resource

500 kVA spare at the site; use 85% =
425 kVA

Vehicles parked 17:00 to 06:00

One controller rotates 7 kW
chargers so the total never exceeds
the limit

About 180 vehicles a night, or 140
avoiding the evening peak tariff



Charging is the most flexible load a site will ever have.
Fit it into the grid; don't build around it.

Digital twin: the vehicle

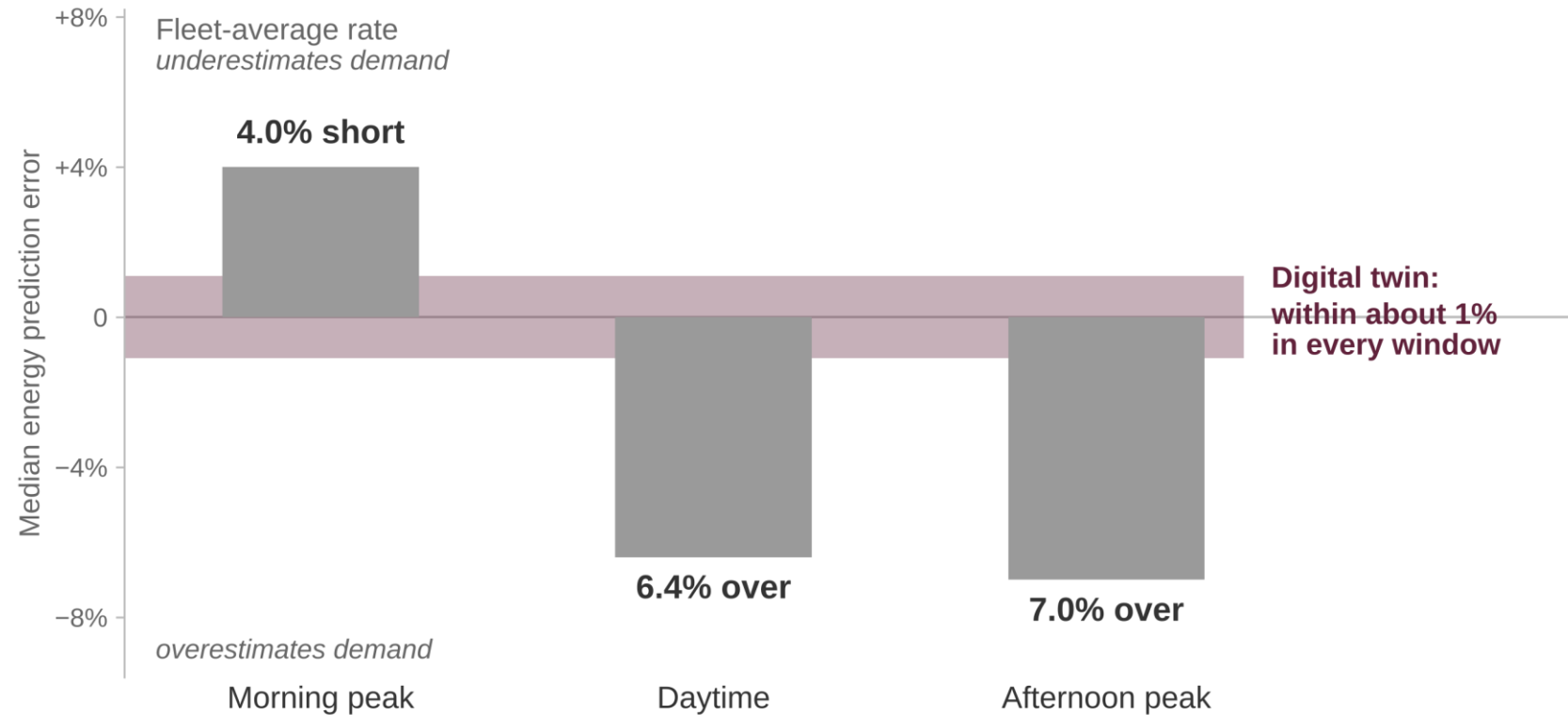
A fleet average is wrong in the same direction every morning

Golden Arrow electric buses,
Arrowgate depot

596 trips of CAN telematics, GPS,
elevation and weather

When and in what conditions a bus
runs matter more than route shape

Arrival state of charge predicted
within about 3 points, or 3.5 on
routes never seen



An average that's wrong every morning:
under-sizes the depot exactly when buses return.



Digital twin: the depot

Size chargers and the grid connection before committing capital

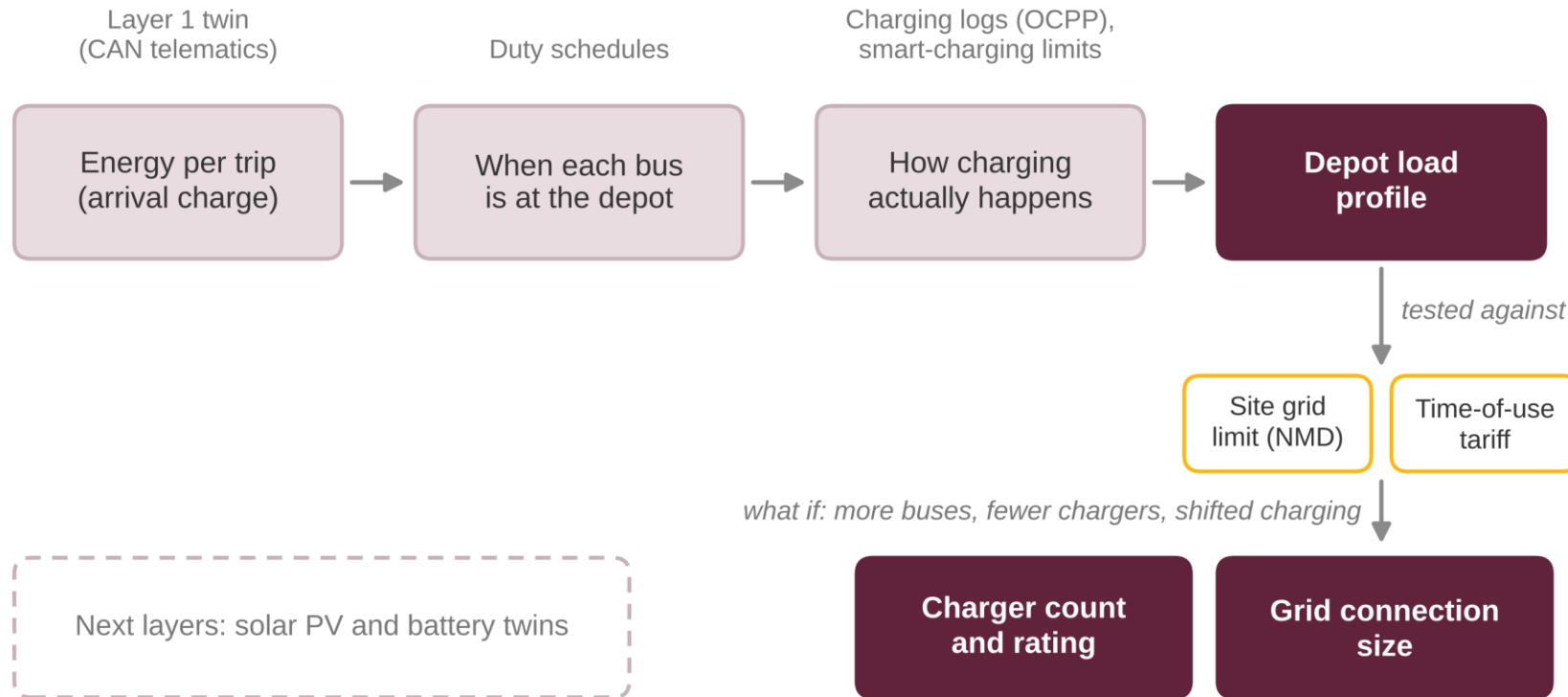
Each bus's energy need (from layer 1)

When each bus is actually at the depot (from duty schedules)

How the chargers actually behave (from charging logs)

Gives a depot load profile, tested against the site's grid limit and the tariff

Test the design on the computer, not on the site.



A validated vehicle number isn't enough.
It has to run through the timetable and the site's grid limit.

What it takes

Three things fleet owners can do now

1 Own the data

Write data access into every vehicle and charger contract: open APIs, CAN access, OCPP and ISO 15118.

Including the diesel fleet you have today.

2 Buy outcomes, not installations

Specify cost per vehicle charged, not kWp or chargers.

Check designs independently against your own fleet data before approval.

3 Build the people

Fleet staff who can read the data, technicians who can manage controllers and fleet.

Training before the vehicles arrive, not after.



The cheapest kilowatt-hour is the one you didn't oversize for.

Fleet data is infrastructure.

Procure it, own it, and use it before you pour concrete.

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