



Photo: Birger Elvestad

Impact of electromobility + parking measures in Trondheim

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Description - EV's parking history

Before 2017

No parking fee for electric vehicles
5 hours maximum parking duration

Problem

- Low replacement
- Commuters to work by EVs leaving no spaces for visitors
- EVs just swap spaces
- Growing search traffic

After 2017

Full parking fee for EVs and 3 hour maximum parking all vehicles

Impact

- Commuter parking disappeared
- Visitor vehicles took on free spaces
- Less search traffic for a parking space

Park4Sump and link to the SUMP objectives

CBA Framework: About parking & the use of public space

- 2016 Strategy, coordinated with "Miljøpakken"
- 2020 PARKPAD and adopted plan, scope for 2030
- 2021/22 Extend parking regulations and reduction of spaces

Stakeholder working groups consensus

- YES please: More zero emission mobility
Increased share of off-street parking
- NO thanks: Commuting to work by cars
Increased traffic by car into the CBA

EV parking + charging standards

2008: A QUALIFIED MUNICIPAL START



Photo: Birger Elvestad

- 2017: New national parking regulation:
- *Always 1 available charging space, but no obligation above 6 % of total spaces*
- 2018 – 2021 (Park4SUMP period) exponential growth of EVs
- Charging and parking gradually split. EV development required separate charging stations due to fast or ultra fast DC 50 kW – 350 kW

EV parking goes off-street

**Off-street parking space
for charging: 22kW**

**Euro 30 per month
added to the
subscription fee for a
parking space**



Photo: Birger Elvestad

EV parking + charging standards

CONCLUSIONS

- The growing demand of charging goes beyond the regular municipal on-street parking service.
- Do not challenge private sector on the price of charging. Private sector dominate the charging services
- Experience: 22kW charging attractive part of residential parking regulation in urban areas when lack of access to private spaces



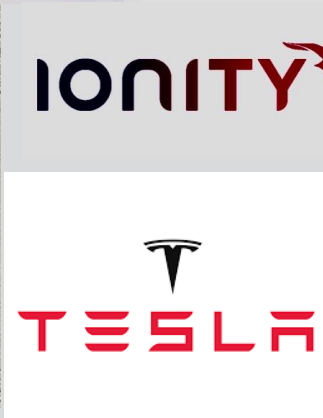
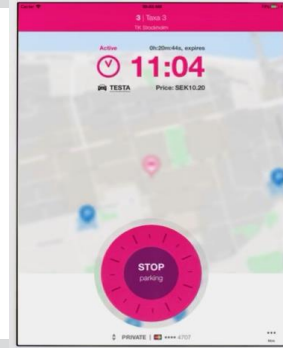
Photo: Birger Elvestad



Photo: Trondheim parkering

Vehicle to grid value chain - fierce competition

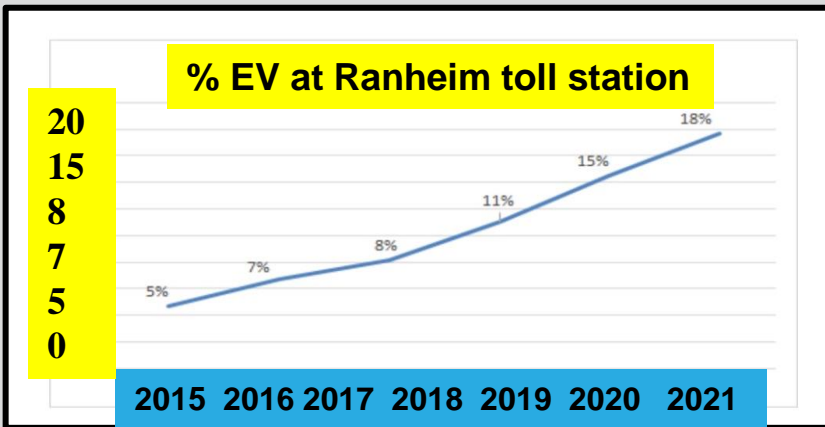
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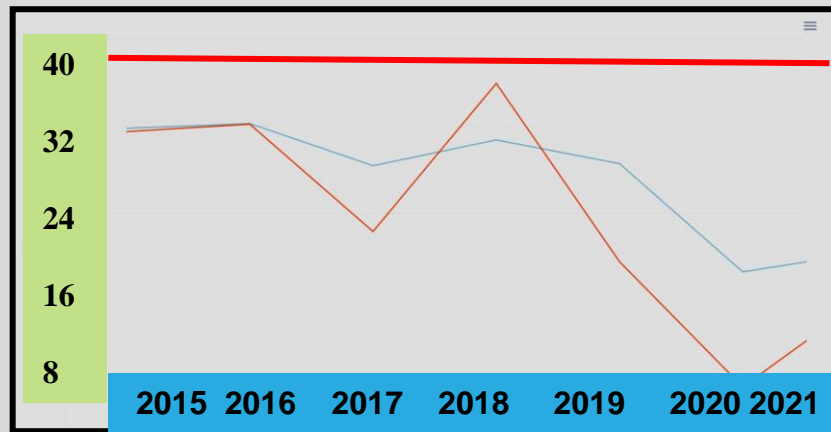
The magnitude of wireless user interfaces for payments, APP's memberships and loyalty programmes is escalating. Standards required.

The Traffic Index, share of EVs and NO₂ pollution

Multiple correlations towards objectives likely



Graf: Miljøpakken



Micro g No₂ per kbm air, annual mean

Graf: NILU

EV parking and lessons learned

- Power supply is a fast growing challenge
- Mobility hubs with EV option is part of early stage planning
- Free parking is an attractive incentive but not sustainable
- EVs take the same space as a fossile car



Photo: Miljøpakken

EV and Trondheim Park4Sump final results

- Among car users benefits of the EV are widely accepted
- Powergrid capacity is a matter of concern
- Smart charging applications in households and do support EV ownership
- EVs contribute to improve the air quality
- Technology push the standards for EV charging



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