City of Amsterdam

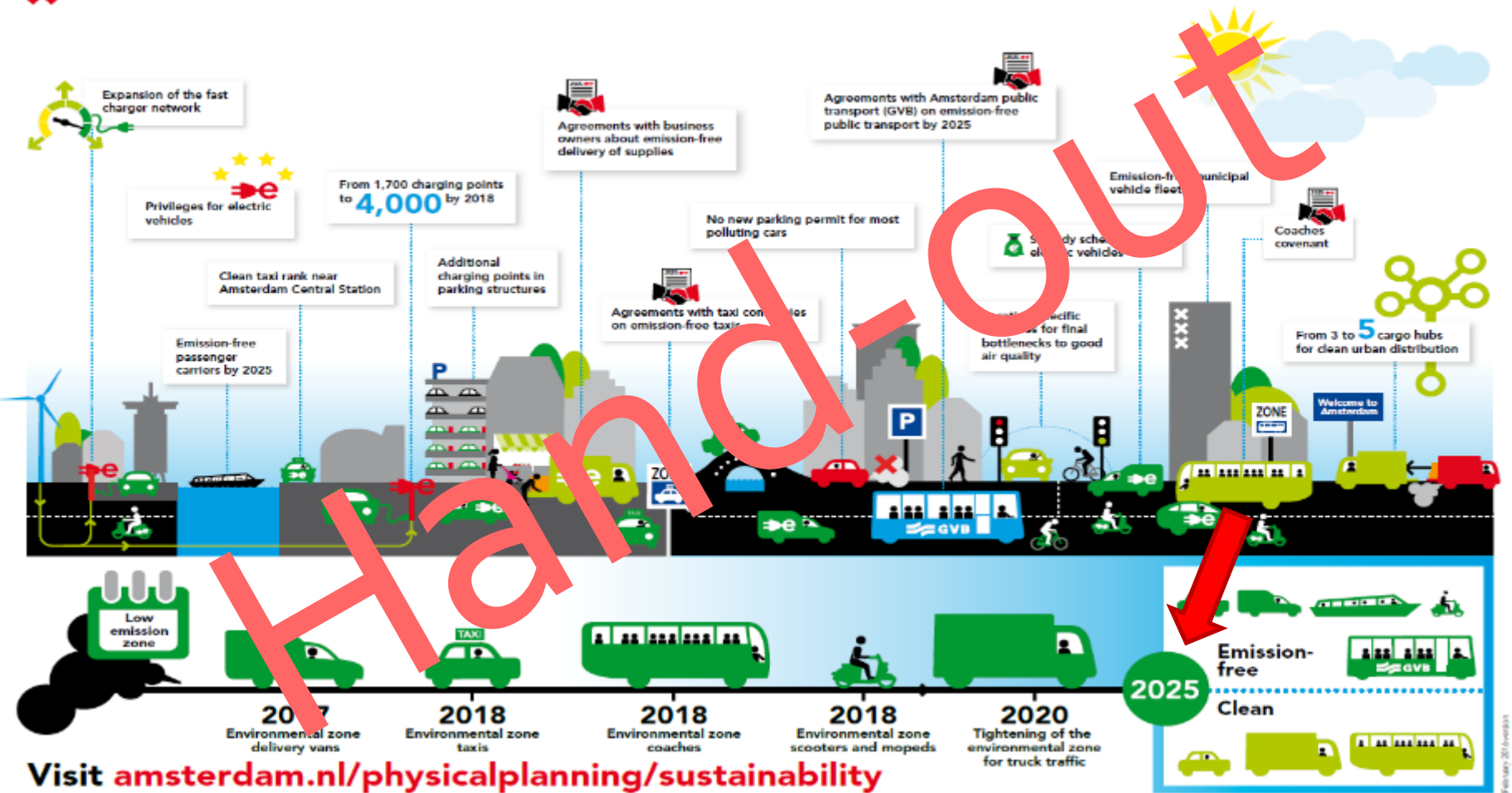
Smart Charging in Amsterdam

Hand-out

May 2017, Art van der Giessen, Frank Geerts

Gemeente Amsterdam

2016: Clean air for Amsterdam

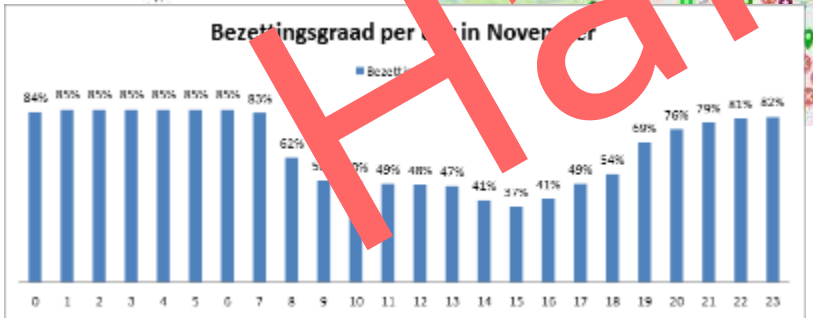


Visit amsterdam.nl/physicalplanning/sustainability

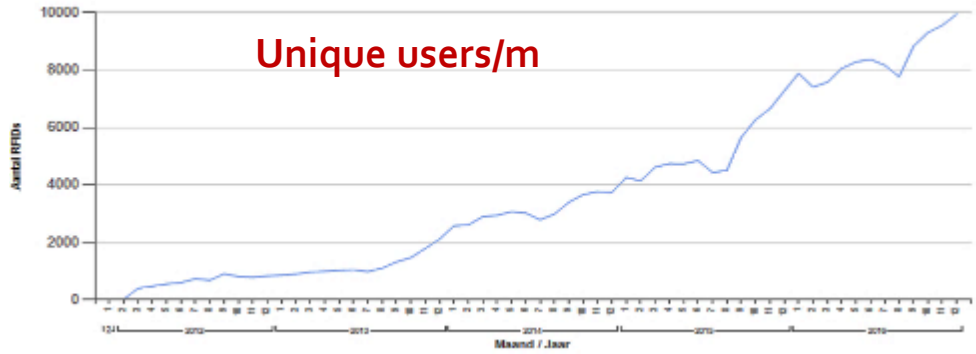
Present: home charging = public charging

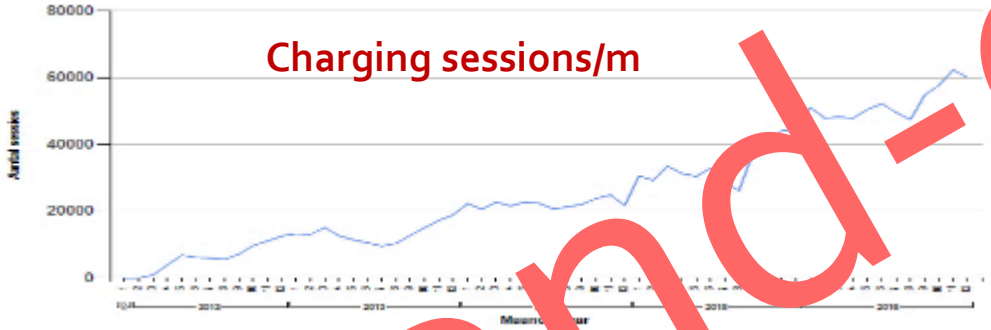
Demand driven roll-out supported by charging data

- 2.2[illegible] public chargers
- [illegible]25 fast chargers
- 2[illegible]00+ private chargers

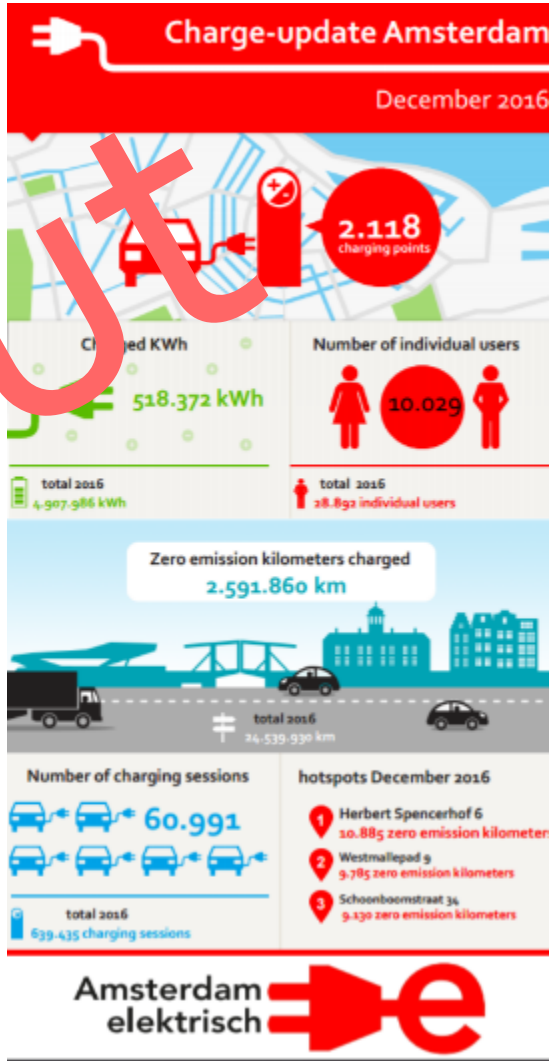


Chargepoint ID:	EVB P1514049				
Adress:	Herengracht 129, Amsterdam				
Walking Distance in m	280				
	november	oktober	september	august	juli
Sessions	85	72	88	45	64
Total use	483	507	508	257	368
Unique RFID	45	40	45	23	38
Average (KWh) per session	6	7	6	6	6
Connectiontime	980	1289	999	679	483
Occupancy rate	68%	87%	69%	46%	32%

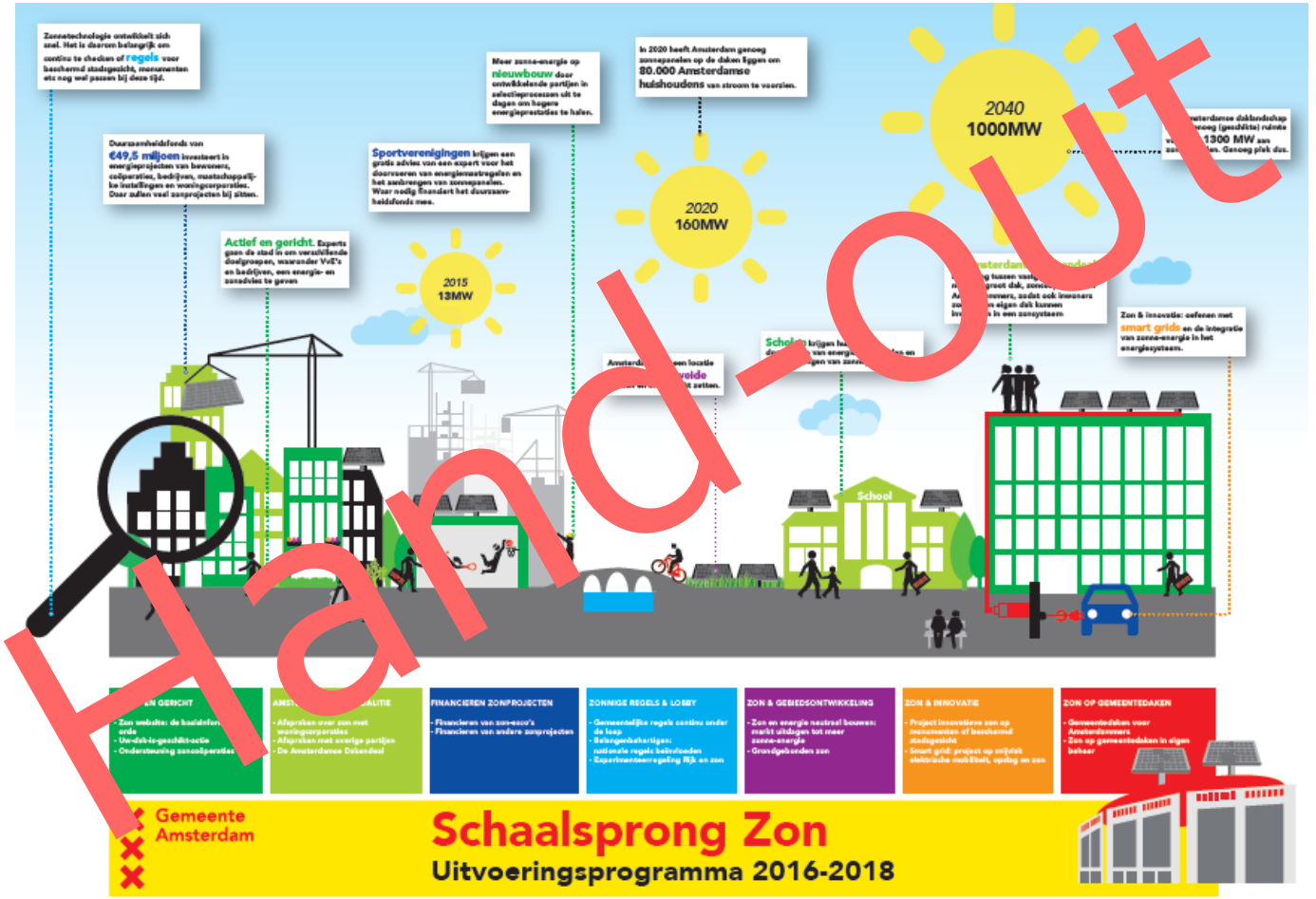

Unique users/m
Aantal RFIDs
10000
8000
6000
4000
2000
0
2012
2013
2014
2015
2016
Maand / Jaar


Charging sessions/m
Aantal sessies
80000
60000
40000
20000
0
2012
2013
2014
2015

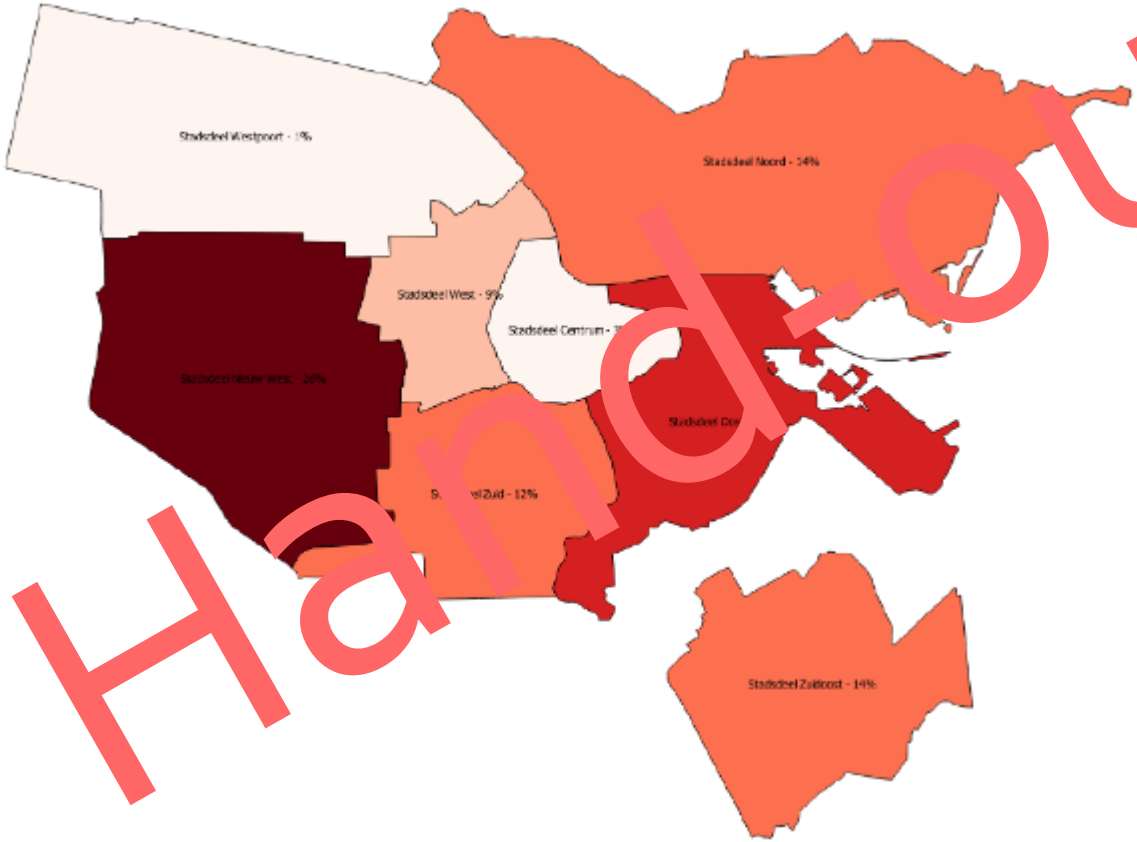

kWh/m
600000
400000
200000
0
2012
2013
2014
2015
2016
Maand / Jaar


Charge-update Amsterdam
December 2016
2.118
charging points
Charged KWh
518.372 kWh
total 2016
4.907.986 kWh
Number of individual users
10.029
total 2016
28.892 individual users
Zero emission kilometers charged
2.591.860 km
total 2016
24.539.930 km
Number of charging sessions
60.991
total 2016
639.435 charging sessions
hotspots December 2016
1 Herbert Spencerhof 6
10.885 zero emission kilometers
2 Westmalleped 9
9.785 zero emission kilometers
3 Schoonboomstraat 34
9.130 zero emission kilometers
Amsterdam elektrisch

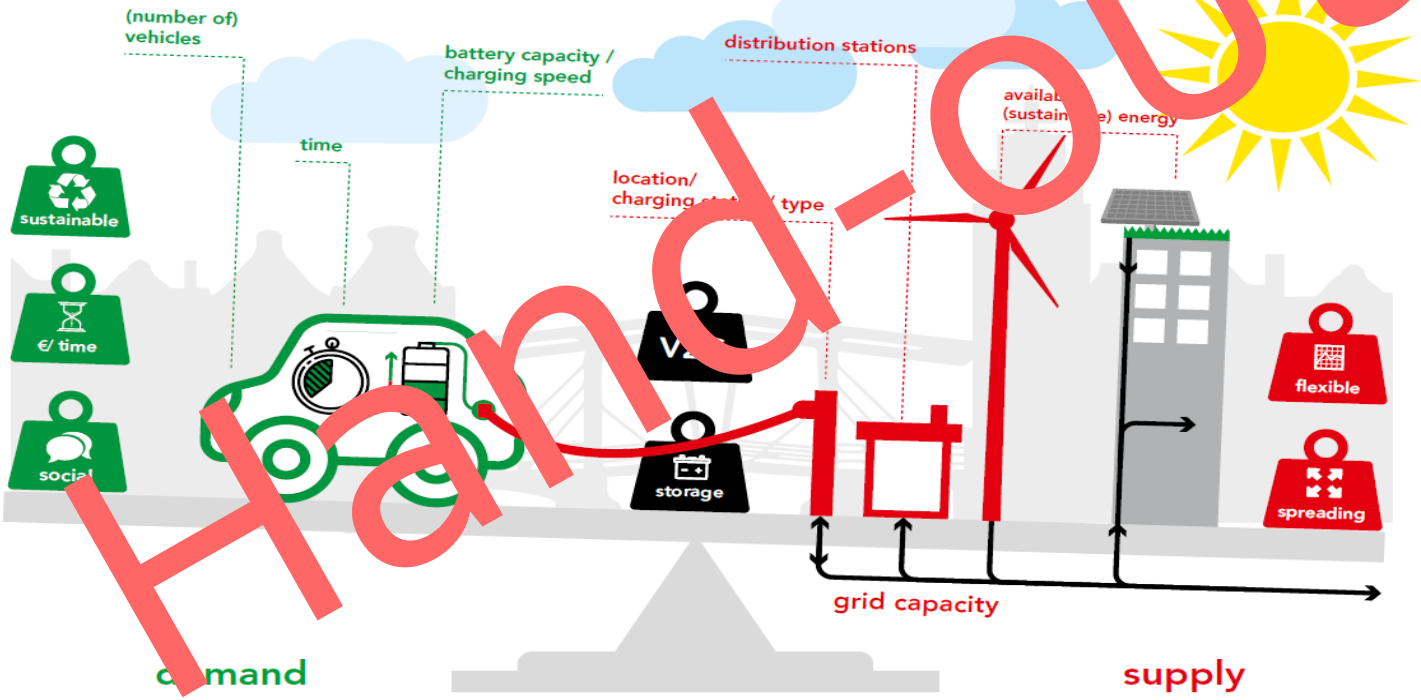
Solar Energy Program Amsterdam



Solar panels (systems) in Amsterdam

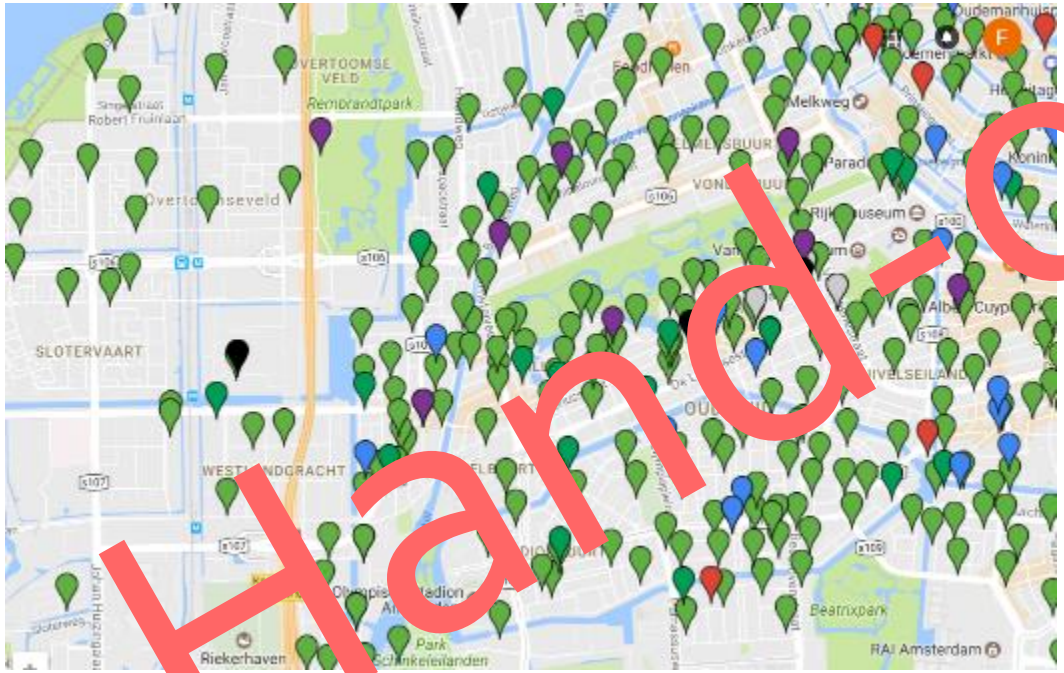


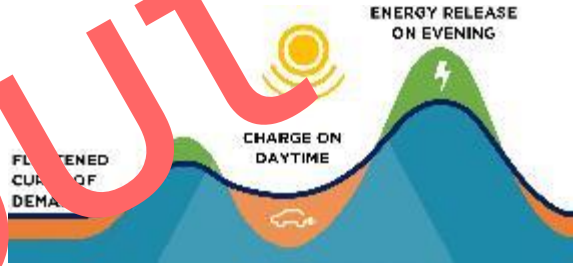
Challenge: building a future proof EV-Energy system



Project: Smart charging & optimizing the grid

100 charging locations






Interreg North Sea Region SEEV4-City

EVS30 Symposium
Stuttgart, Germany, October 9 - 11, 2017

Building a Smart Charging Ecosystem in Amsterdam

Getting ready for mass market of (next generation) EVs

Abstract

"Learn from applying a local capacity profile "

Founded in 2009
and funded by the Dutch DSOs
ElaadNL is a non-profit Knowledge & Innovation Centre in the field of (smart) charging infrastructure

ElaadNL works on the smooth integration of electric vehicles to the power grid by making full use renewable energy

Smart Charging
(Ready)

Mass Market

Base Charging Infrastructure

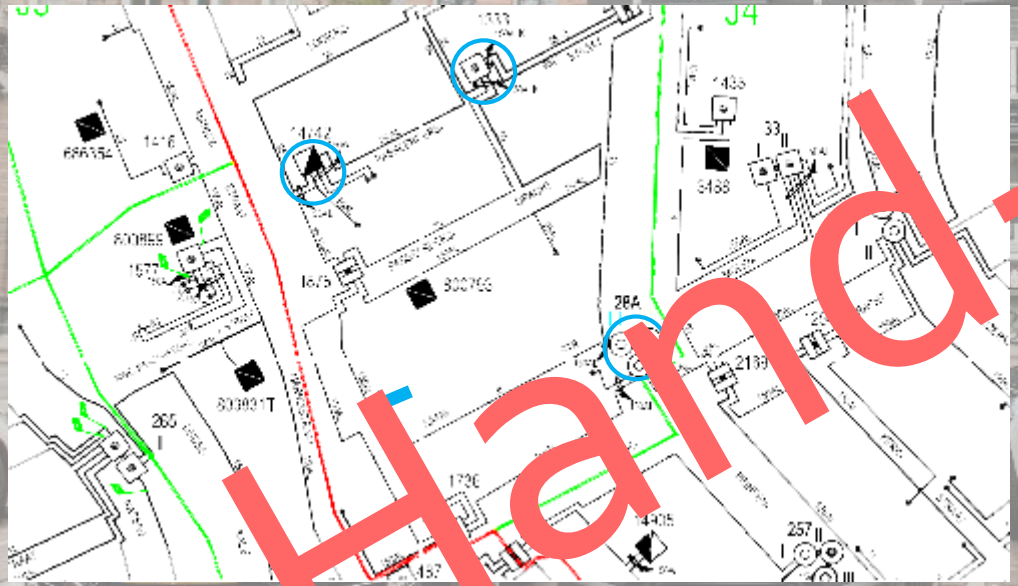
73%

2016

2020

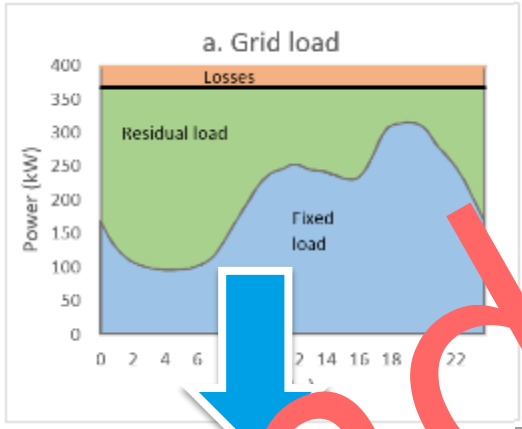
Raamplein

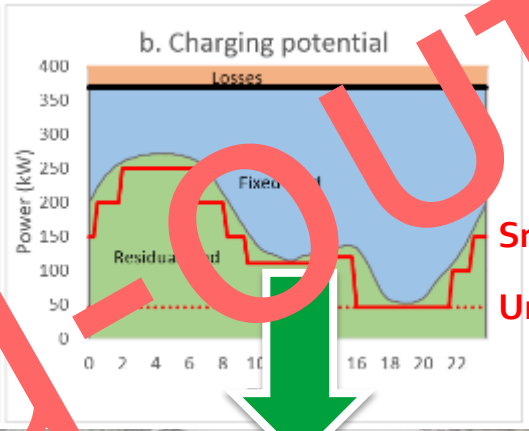
Grid Design



haracte stics
Mesned structure
3 transformer substation
13 Low Voltage cables
Peak demand of 1,1kW per household

Charging Strategy





Smart Charging

Uncontrolled Charging

User type	Raampl		Annu… electricity demand	
	LV C…ble	…S	kWh	kW
Residenc…	1	619	3,000	1,1
Small busi…s	0	3	10,000	Custom
Shop	1	6	35,000	Custom
Hospitality	0	9	9,360	Custom
School	0	2	35,000	Custom
Total	26	678		

Electric Mobility	Raamplein
Average use (kWh/year)	27,000
Number of sessions	878
Number of unique users	402
Charging point deployment (%)	63.8
FEV sessions (% of total)	40.9
Peak kW (per FEV)	11 – 44 kW

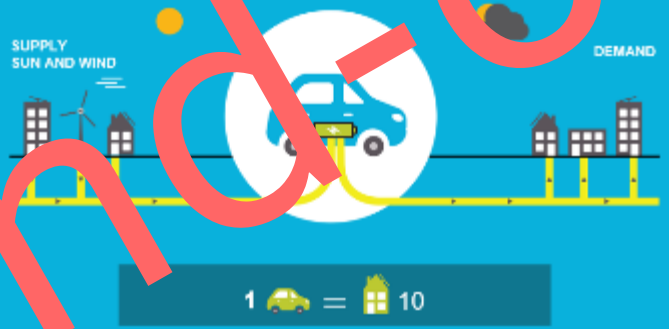
Theoretic Number of Electric Cars

Week	ll day (0:00-23:59)		Resident (17:00-8:00)		Commuter (9:00-17:00)	
	UC	SC	UC	SC	UC	SC
Raampl LV cable	13	217	13	93	13	62
TS	70	1,381	70	632	74	374

Hand-out

Definition Smart Charging

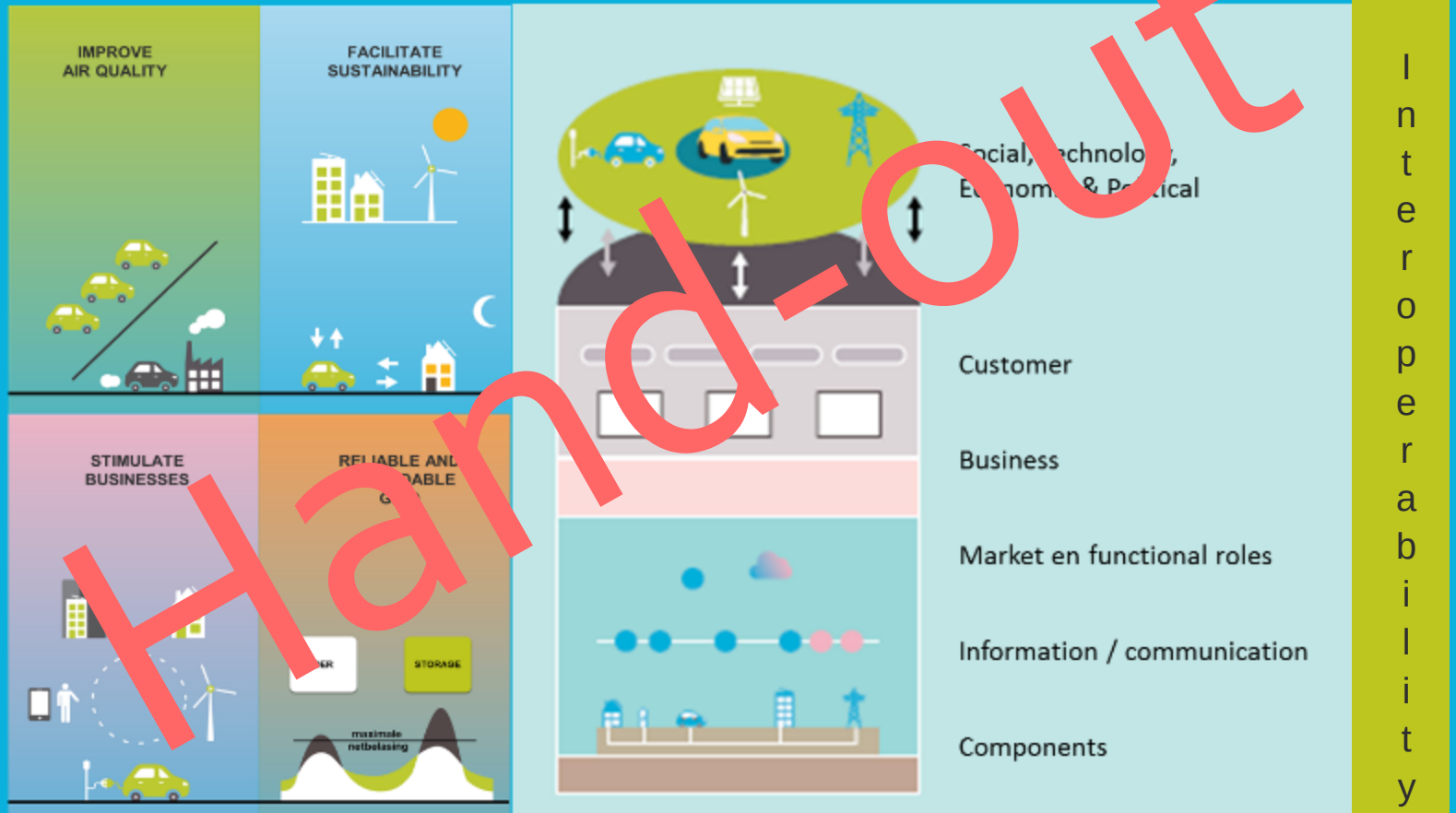
all smart innovative techniques that allow the charging of electric cars at the best moment



Minimal smart charging solutions are able to technically change the speed of charging. The speed of charging is the outcome of an optimization of the demands and constraints of driver, energy system and market players.

Building a Smart Charging Ecosystem

Research Agenda



Let's join forces to make living off the wind and driving on the sun available for Europe and the rest of the world

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