PUBLIC PROCUREMENT OF ELECTRIC VEHICLE CHARGING INFRASTRUCTURE AND LESSONS LEARNED
- CASE TAMPERE

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CONTENT OF THE PRESENTATION

1. Tampere as a city
2. E-mobility Action Plan in Tampere
3. Planned charging network in Tampere
4. Public procurement of charging infrastructure
    i. Overview of the process
    ii. Key results
    iii. Lessons learned
5. Guidelines for municipalities
6. Conclusions

TAMPERE CITY

Population: ~225 000 (Tampere region ~313 000)

- Third biggest in Finland
- Biggest inland city in Scandinavia
- Yearly population growth around 2 000 people (~1 %)

Traffic:

- Very small number of EVs
- Some congestion, but relatively little at the moment
- Around 15 000 people commute to Tampere daily to work
- Public transport: busses + tram system in the future (?)

Environmental goals:

- Reduction of total emissions by 40 % until 2030 (compared to 1990 level)
- Reduction of traffic emissions by 20 % until 2030 (compared to 1990 level)
- Share of renewable energy in traffic up to 10 % until 2020

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TAMPERE'S E-MOBILITY ACTION PLAN

Project to electrify traffic in Tampere started in 2013 with a background study

- Some projects had been performed already earlier
  - E.g. a small scale pilot regarding modification of conventional cars to EVs
- Supports city's strategy and goals
- Closely linked to the development of the ITS sector in Tampere
  - Tampere has an ITS test area called ITS Factory

In 2014 the city chose to pursue a national forerunner's role in electric mobility

- Leading by example
- Proactive actions to speed up the development of EV numbers
- Maximized effects on traffic

Based on the decision, an e-mobility action plan was developed during 2014-2015

TAMPERE'S E-MOBILITY ACTION PLAN

2015	2016	2017	2018-
2 passenger EVs and 2 electric vans	12 passenger EVs and 3 electric vans	15 passenger EVs and 5 electric vans	Pedelec station at Railway Station
Decision on whether or not city departments are supported in EV acquisitions	Building of 18 municipal charging stations (in total 27)	Building of 14 municipal charging stations (in total 18)	Expanding the charging network for pedelect
Building of 11 municipal charging stations (in total 28)	Bus line operated fully with electric fleet	Implementation of pedelecs as part of the municipal bike rental service	Study on autonomous vehicles' potential in Tampere
Collaboration with private sector to enlarge EV charging network	Acquisition of electric bus charging infrastructure	Research and pilots on electric utility vehicles	
Launching of light pole charging pilot	Making use of departments' mobility policies to support travelling with pedelecs	Launching of electric car sharing service at Tampere	
Pedelec pilot for city staff	Building of pedelec charging stations to most significant locations locations		
Acknowledgement of EV charging in city's building code and land plot owning conditions	Modifying the vehicle procurement criteria to favor low-emission vehicles		
Free parking for low-emission vehicles			
Discounts for parking clearances for low-emission vehicles			
Providing free charging at city-owned charging locations			

Active communication in media about on-going activities and procurements

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TAMPERE'S E-MOBILITY ACTION PLAN
BUILDING OF CITY-OWNED CHARGING INFRASTRUCTURE

Why publicly funded charging stations?

1. Private sector investments in charging have been very limited
   - Local energy company is not willing to invest in e-mobility, contrary to other Finnish municipalities

2. To speed up the development of the sector
   - Solving the famous "chicken or the egg" problem of e-mobility

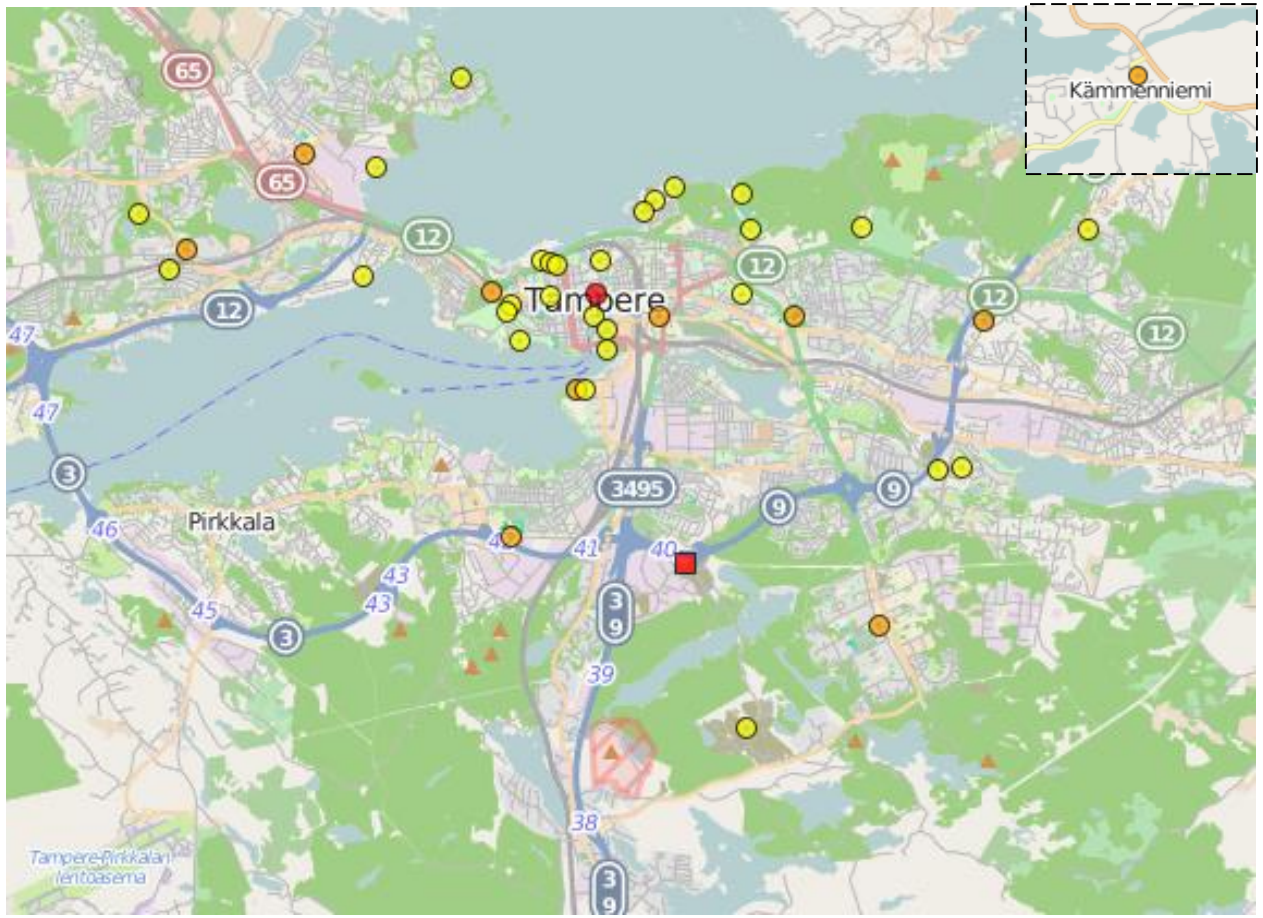
3. To act as an example to citizens and companies – e-mobility is already possible
   - To lower the barrier to invest in EVs

4. To support city's own EV acquisitions

TAMPERE'S E-MOBILITY ACTION PLAN
BUILDING OF CITY-OWNED CHARGING INFRASTRUCTURE

- 1 quick charging station
- 13 three-phase stations
- 30 one-phase stations

- To be installed to locations where people often visit with cars
  - Exhibition and Sports Centre
  - Congress and Concert Centre
  - Ice hockey stadium
  - Amusement park
  - Etc.



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PROCUREMENT OF THE CHARGING INFRASTRUCTURE

Why public procurement?

- Estimated costs for the charging stations exceeded the national purchase limit of 30.000 €
- Investment costs can (usually) be minimized by tendering the infrastructure

Goals of the procurement process

- Getting high-quality charging infrastructure with acceptable investment costs
  - User-friendliness, i.e. easy to use and safety
  - Nice visible outlook
  - Easy connectivity to back end systems
- If possible, supporting local manufacturing

5 types of charging stations were tendered:

- Quick chargers, 1 and 3-phase wall-mounted chargers, 1 and 3-phase charging poles
- All necessary parts needed in installation included

PROCUREMENT OF THE CHARGING INFRASTRUCTURE

Key requirements for the charging infrastructure in the request for quotation:

- Each charger must consist of two plugs or two separate devices
  - mode3 type2/mode4 CCS and Chademo
- Chargers must operate in Finnish climate and weather conditions
  - Reference installations needed during the past 3 years (or if totally new devices offered, justification was required in addition to reference installations of similar chargers)
- Chargers must support European (EN/IEC) and national standards
- Requirements for outlook
- Minimum period of guarantee and spare part support
- OCPP version 1.5 and commitment to future updates
- Telecommunication module to be included
- RFID and mobile identification
- Energy consumption metering integrated in devices

PROCUREMENT OF THE CHARGING INFRASTRUCTURE

How were the quotations evaluated?

- **Price max 50 points**
- Quality points
  - Automatic residual-current device (RCD) ➔ 5 points
  - Extra period of guarantee ➔ 5 points per extra year
  - Faster delivery of spare parts ➔ 1 point per day
  - Four optional functions (e.g. remote diagnostics of device failures) ➔ 2 extra points each
  - IP code as in standard IEC 60529 (=protection against liquids and particles) ➔ 0,5 points per class
  - IK code as in standard IEC 62262 (=protection against mechanical impacts) ➔ 0,5 points per class

  ➔ **Max 41,5 quality points**

PROCUREMENT OF CHARGING INFRASTRUCTURE
KEY RESULTS

- 6 manufacturers participated in the procurement process
- Winners:

Schneider EVlink EVF1S7P22	Schneider EVlink EVF1S22P22	CirControl CCL-WB2M-SMART-3G	CirControl CCL-WB2M-SMART TRI-3G	CirControl CCL-QPC-CH CCS AC63
7 kW	22 kW	7,2 kW	21 kW	43/50 kW
				

- …via Finnish importers/partners

PROCUREMENT OF CHARGING INFRASTRUCTURE
KEY RESULTS

- Total value of the infrastructure:
  - 1-phase poles (30 units) = 83 100 €
  - 1-phase wall-mounted (60 units) = 47 940 €
  - 3-phase poles (13 units) = 38 350 €
  - 3-phase wall-mounted (26 units) = 22 900 €
  - Quick charger (1 unit) = 28 900 €

→ Investments with wall-mounted chargers = 99 740 €, with poles = 150 350 €

- Combination of poles and wall-mounted chargers highly likely → e.g. 50/50 = ~125 000 €
  - Initial estimations for the costs (including construction) where 265 000 €

→ Likely that some budget will be saved as a result of the procurement process

PROCUREMENT OF CHARGING INFRASTRUCTURE
LESSONS LEARNED

- Dialogue with the potential technology providers before the process proved to be beneficial for both sides
- It is possible to take the quality aspect of the products into account in tendering
  - Although it turned out that there was quite little difference between the quality of the products
- In addition to the equipment itself, the operational side must be taken into account
  - E.g. warranty and repair responsibilities
- Aesthetic aspects should be taken into account when procuring charging infrastructure for public areas

PROCUREMENT OF CHARGING INFRASTRUCTURE
LESSONS LEARNED

- Low quality of quotations
  - Product catalogues as quotations!! ☹
    - Charger manufacturers/importers clearly have limited experience in public procurement
- Public procurement process can take time, especially if initial quotations are of low quality
- 3-phase chargers are just a little more expensive than 1-phase devices
- Wall-mounted chargers are around 40 % cheaper than pole versions
  - Plus they are usually cheaper to install

GUIDELINES FOR MUNICIPALITIES

1. Make sure you know how the process works
2. Involve relevant people in the process right from the beginning
3. Clearly define what you want to have at the end of the process
4. Create a comprehensive list of minimum requirements for the chargers to be met
5. Emphasize quality of the chargers in addition to price
6. Demand high-quality quotations!
   Clearly indicate the form of quotation to avoid “product catalogue” quotations
7. Be prepared for the need to ask extra details regarding the quotations once they are in
8. Be prepared for surprises… ☺

THANK YOU FOR YOUR ATTENTION!

For more information, please contact:

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