

Tools for controlling the market and impacts of tendered bus services

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Introduction



- Gross cost bus contracts is a stable system
 - How to handle situations that could not have been fully anticipated in the terms of the contract ?
 - Contract “freezes”, for example, emissions over the whole contract period?
 - Technological development is hard to take into account in long contracts

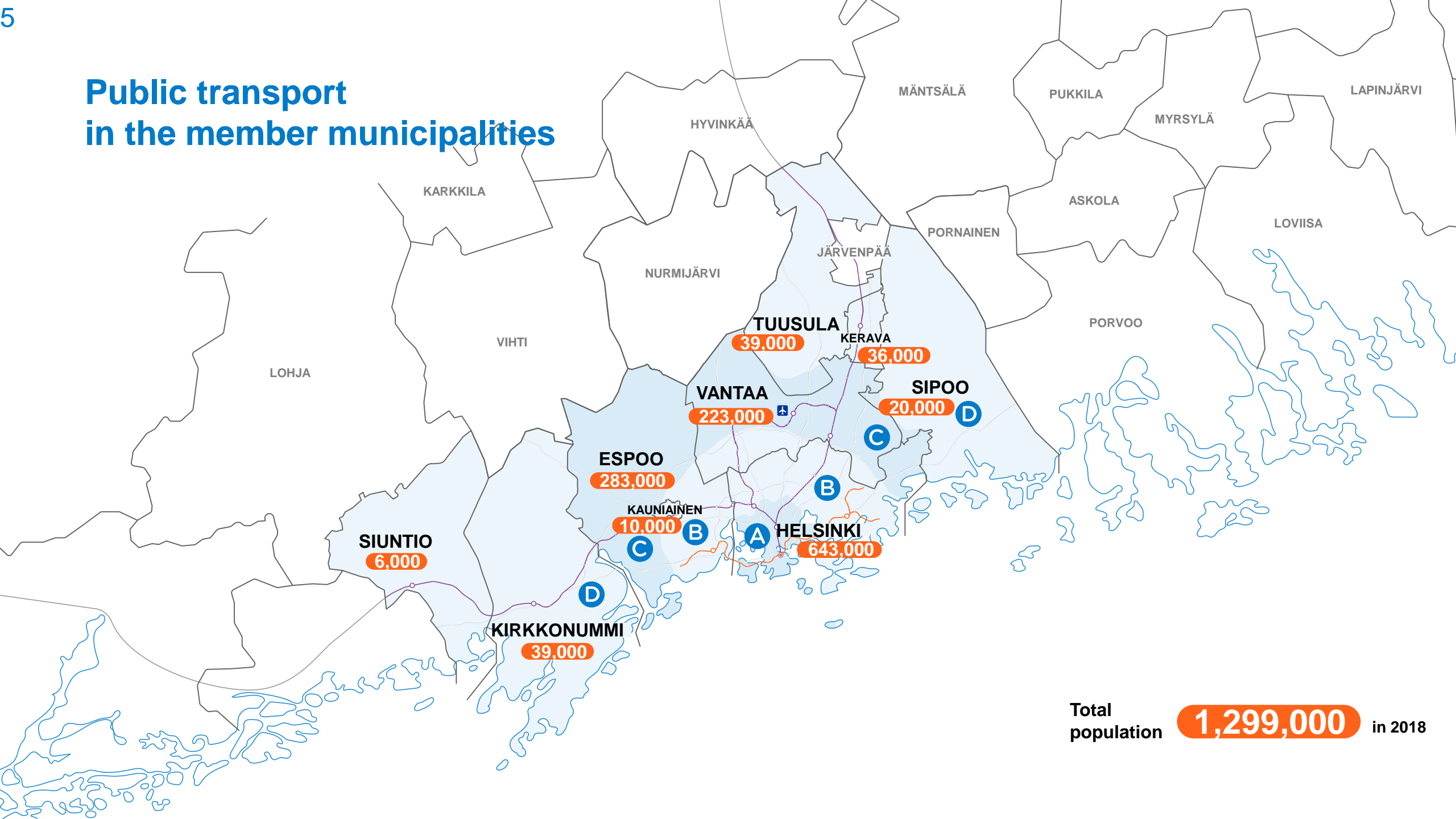
- The terms of a single contract subject to competitive tendering cannot regulate the entirety of an urban region’s bus market
 - Region-wide tools are needed to regulate the PTA’s local bus market and external (environmental) impacts

Background

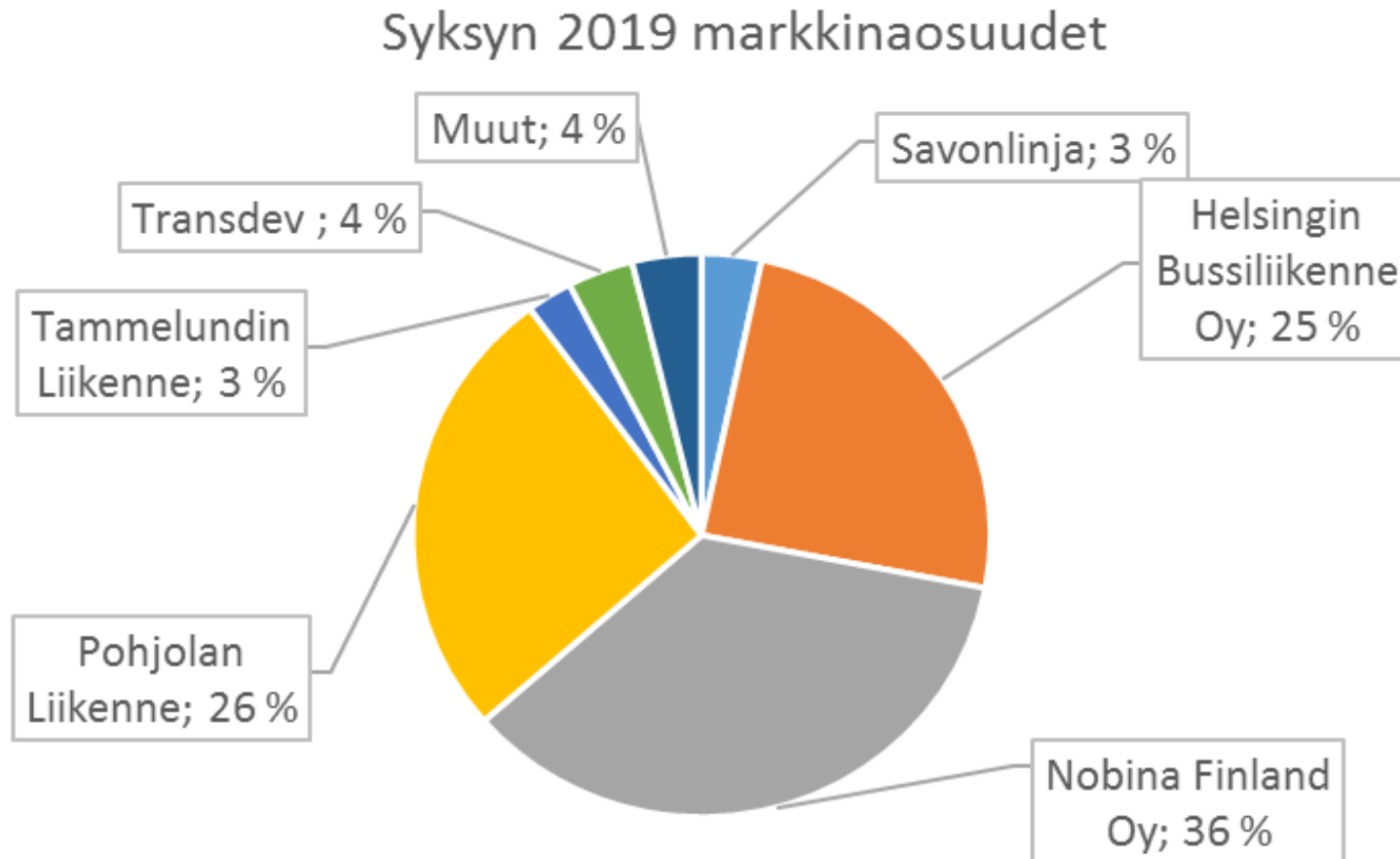


- HSL is a PTA for 9 cities and municipalities
- Bus services consist of 1,250 tendered buses
- Gross cost tendering for the first time 1995-2002
- Most contracts run for 7 years + max. 3 year's option
- 30-40% of the buses are new at the beginning of the contract, little renewal during the contract
- About 10 bus operators, 3 big ones

Public transport in the member municipalities



Bus operators' market shares in autumn 2019



Environmental bonus

HSL
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Background



- Bus models which are of a similar type and in the same Euro emission class showed significant differences in the practical emission levels
- Biodiesel was difficult to handle within the normal competitive tendering
 - Tying long-term contracts to a particular fuel price and availability poses a risk to the operators
 - Fuel taxation was seen as a potential problem

Description



- HSL credits operators for a reduction in carbon dioxide emissions and harmful local emissions achieved by use of biofuels in a separately agreed manner
- Annually determined bonus amount and a corresponding emission reduction quota
- Bonus is paid on the basis of separate tenders:
 - The ranking in the tender comparison is based on the relation between the value of the emissions reduced and the tender price.
 - The tenders are approved in accordance with the ranking until the appropriation set aside for the bonuses during each round of competitive tendering is used up
 - The cost/benefit ratio of the best of the approved tenders has been greater than one, meaning that the value of the emissions reduced is greater than the tender price (=> the cost/benefit ratio of the poorest of the approved tenders has, correspondingly, been less than one).

The equation



$$\frac{\text{Benefits}}{\text{Costs}} = \frac{\text{Value* of (CO}_2 + \text{NO}_x + \text{PM) emissions reduced (€)}}{\text{Price of a tender (€)}}$$

* = The emission values in Y1: NO_x = EUR 8,800 per ton; PM = EUR 174,000 per ton; CO₂ = EUR 30 per ton.

Implementation

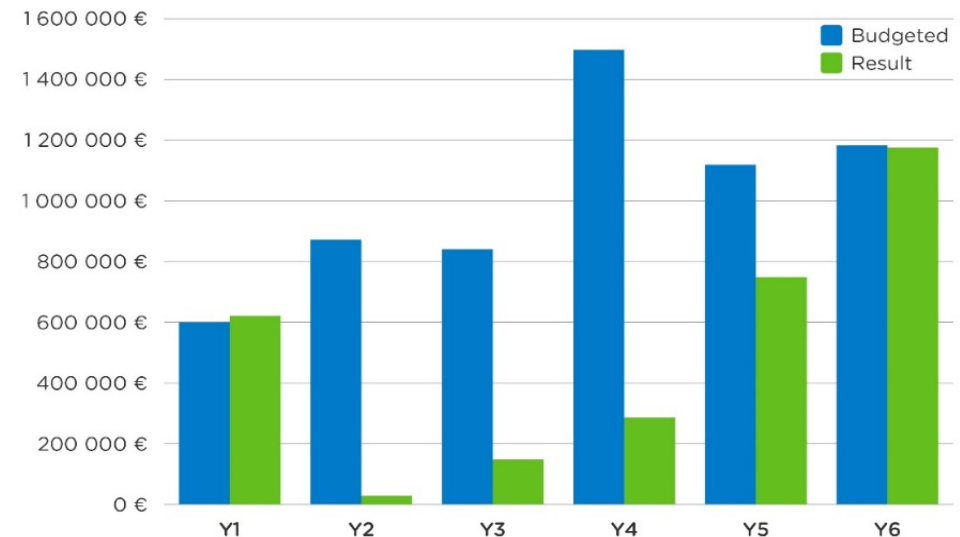


- HSL has arranged 9 environmental bonus competition rounds (Y1–Y9) in 2011–2019
- EUR 600,000 – 1,250,000 per tendering round in the beginning
- Development phase in rounds Y1-Y6
- Corrections and tightening of the too generous compensation rules after round Y1
- Increase of the emission value of CO2 emissions twice, during competition rounds Y3 and Y5
- The emission value of nitrogen oxides was increased by 50 per cent during round Y5

Results (1/3)

- 3-6 participants per round
- Accepted means of reducing emissions:
 - Biodiesel, biogas
 - Exhaust gas aftertreatment systems
 - Replacement of old buses, typically Euro II – Euro III emission class, with low-emission diesel buses
 - Replacement of old buses with low-emission hybrid buses

The budget of environmental bonus competitions Y1-Y6 and the optimisation of the tender price (Saari 2016, p. 57)

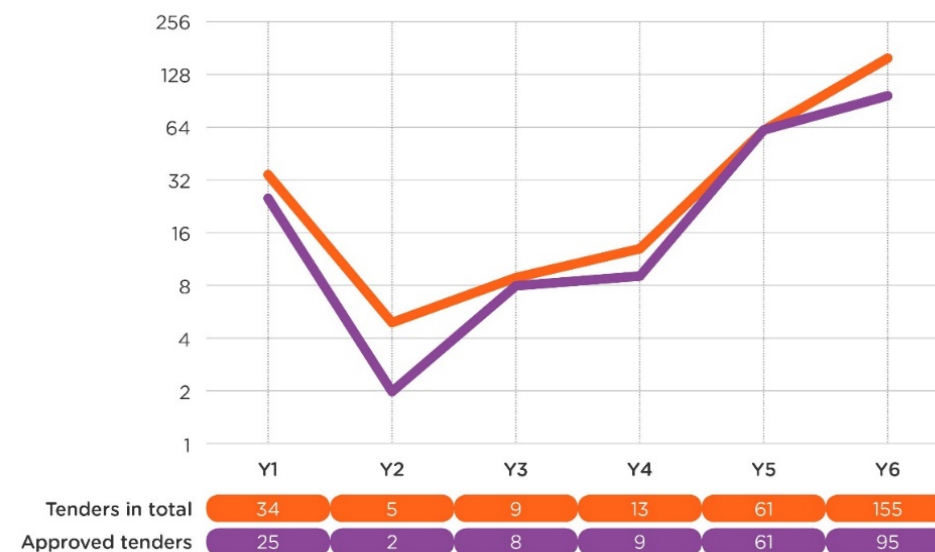


Results (2/3)

Changes to emission values (€/ton) in competition rounds Y1–Y6

Round	NOx	PM	CO ₂
Y1	€8,800	€174,000	€30
Y2	€8,800	€174,000	€30
Y3	€8,800	€174,000	€38
Y4	€8,800	€174,000	€38
Y5	€13,200	€174,000	€30

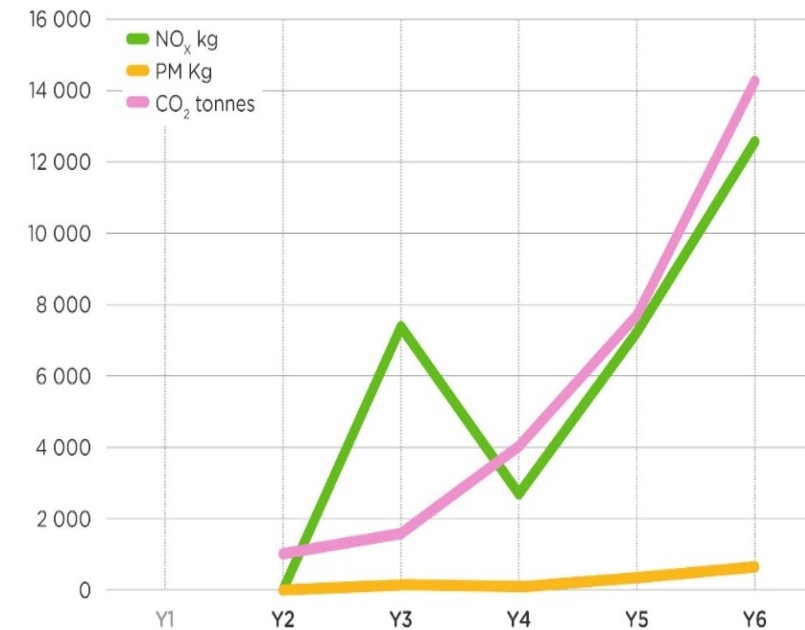
Number of tenders for environmental bonus



Results (3/3)

- HSL developed the system and effective incentives during rounds Y1-Y5
- Operators learned to "play the game" from round Y5 on
- Good results in reducing the Nox and CO2 emissions after increasing emission values
- Poor results in reducing particles
- Biodiesel as a dominating instrument to reduce emissions

Emission reductions achieved with environmental bonus competition Y2-Y6 (Saari 2016, p. 59)



Market share constraint/cutter

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Description (1/2)



- One operator was closing a 40% market share
- Market share could be limited with terms applicable to only one separately defined tendering round
- Market share could not be limited in such a way as to allow HSL's entire purchased services to become subject to a rule applicable to market shares
- HSL's choice: 50-55% “cutter” on the winner in a single tendering round

Description (2/2)



1. If a single tenderer would be awarded with contracts whose total number of buses indicated in the contract specification would be greater than the limit (amount of buses):
 - ✓ a difference value would be calculated for these contracts.
 - ✓ The difference value is the product of the score difference between the best and the second-best tender in the comparative scoring (the sum of price and fleet scores) and the contract's number of vehicles.
2. The contracts are ordered based on the difference value.
3. The contracts with the smallest difference value are awarded to the second-best tender in the order of the difference value until the combined number of vehicles awarded to a single tenderer is not greater than the limit

Use of the market share constraint



- Applied in 3 tendering rounds in 2015, 2017 and 2018
- Covering 485 buses = 39% of all HSL buses
 - Not applied in all tendering rounds
 - Not covering all bundles in a single round (i.e. minibuses and short contracts)
- Limit has been set to 52-55% of the total no. of buses

Impact assessment (1/2)



- In the first round in 2015, the cutter worked as planned
- In the second round in 2017, the cutter ended into an insolvable situation, a never ending loop between two bidders
- In the third round in 2018, the cutter caused a "too big 3rd cut" on the bidder that was about to win too much before the use of the cutter

Impact assessment (2/2)



- The winner has changed in all three tendering rounds
- The winner has changed in 5 separate route bundles
- The constraint increased operating costs by EUR 878,000 per year (= 2.7 per cent)
- The market share of the biggest operator has varied between 36 and 39 per cent, ending at 36 per cent in autumn 2019
- The biggest operator has lost the turnover of 106 buses (8.5 per cent)
- In 1/5 cases, the cutter affected the second biggest operator

Conclusions



- The market share constraint has met its objective as a complement to the traditional gross cost tendering
 - None of the operators has exceeded the 40% market share
- Nonetheless, it can still be considered to be in the development phase due to some unforeseeable results in the second and third rounds, where it was applied

Thank you !

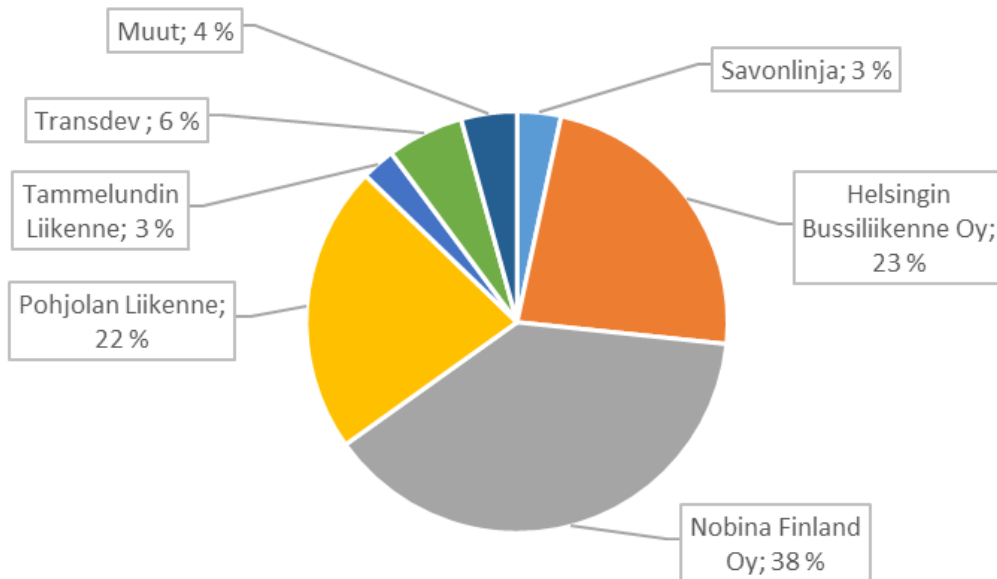
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Market shares in spring and autumn 2019



Kevään 2019 markkinaosuudet



Syksyn 2019 markkinaosuudet

