

Plans for introducing trolleybuses in the city of Helsinki

Ville Lehmuskoski
Director of public transport planning department
Helsinki Region Transport

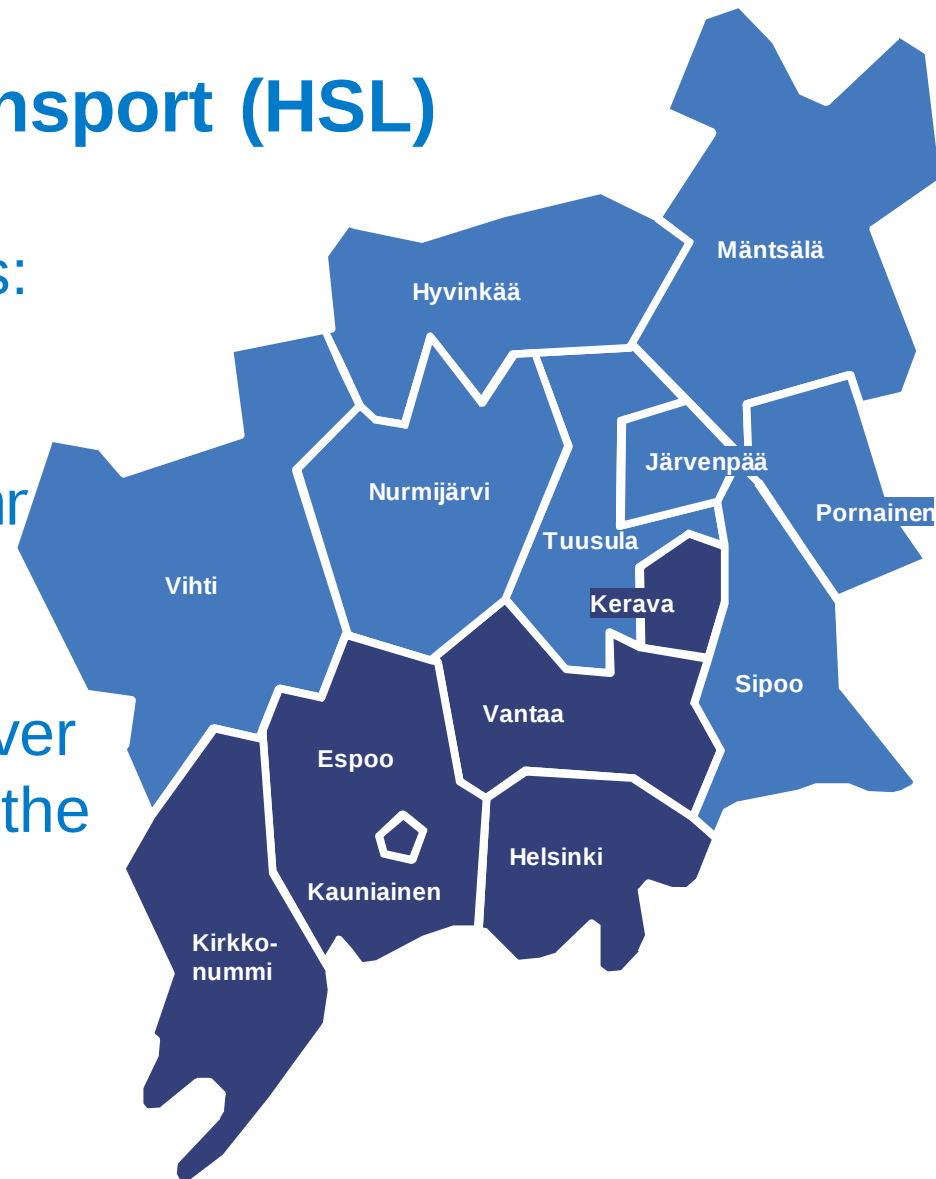


Helsinki Region Transport (HSL)

6 founding municipalities:

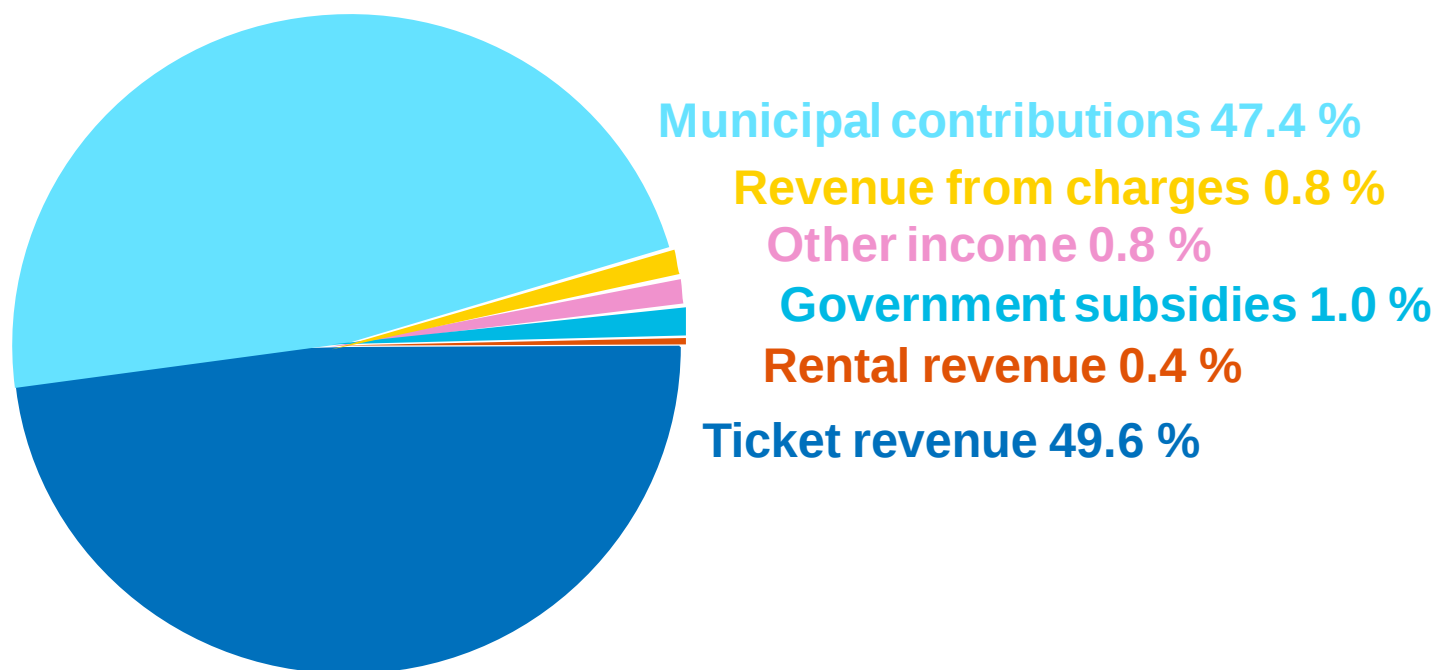
Helsinki, Espoo,
Kauniainen, Vantaa,
Kerava and Kirkkonummi

According to its charter,
HSL can expand to cover
all 14 municipalities in the
Helsinki region.



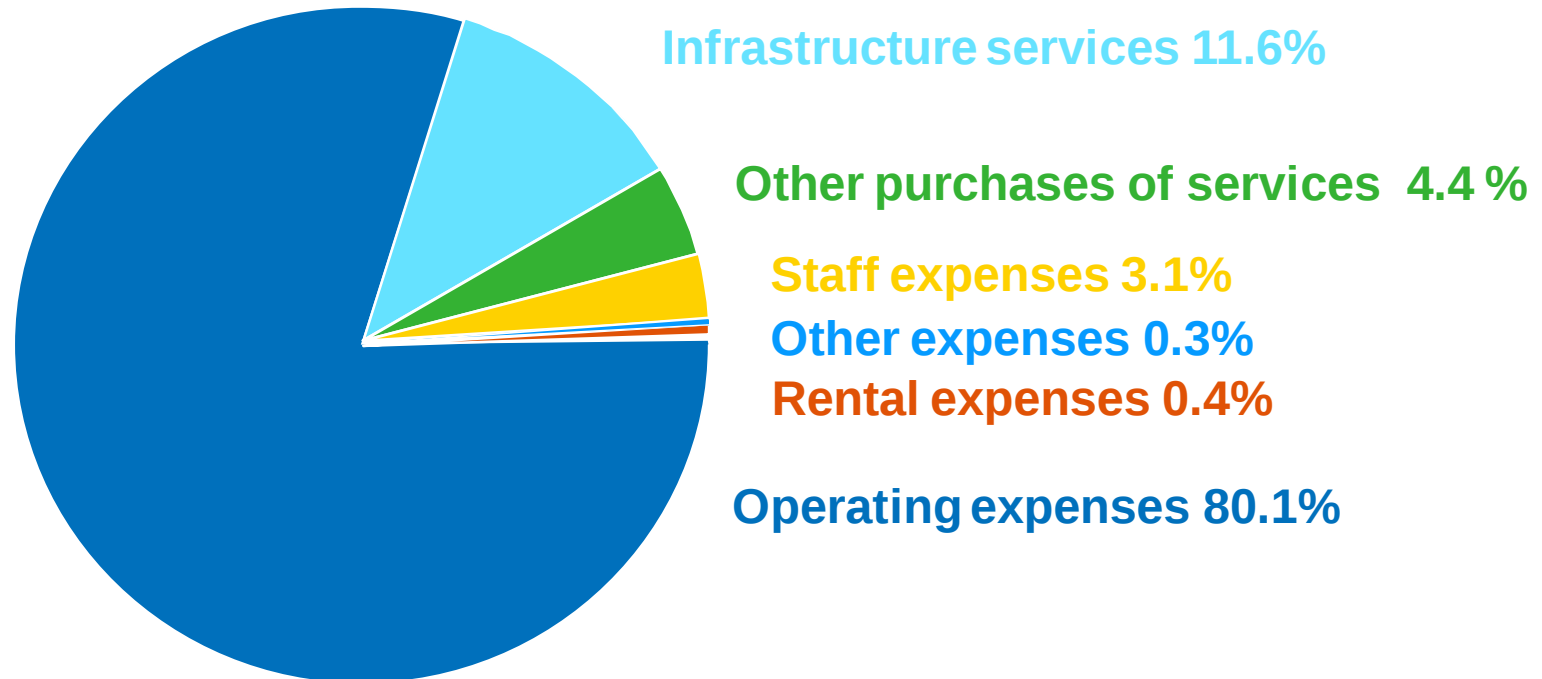
HSL's operating income by type of income in 2010

Total EUR 484.5 million



HSL's operating expenses by type of expenses in 2010

Total EUR 481.6 million



Passenger volumes in 2009

	Passengers/year (million)	Weekday departures/ day
Bus	158	20,641
Metro	57	494
Tram	55	2,550
Commuter train	42	884
Suomenlinna ferry	1.5	66
Total	313.5	24,635

Background of trolleybus plans

- Growing emphasis on environmental issues has increased the interest in trolleybuses
- Three studies has been done concerning trolleybuses:
 - Enhancing environmentally friendly transport in Helsinki (2007)
 - Feasibility study on trolleybus system in Helsinki (2008-2009)
 - Preliminary plan on setting up trolleybus system in Helsinki (2009-2011)

Helsinki (1960's)



Lyon (2006)



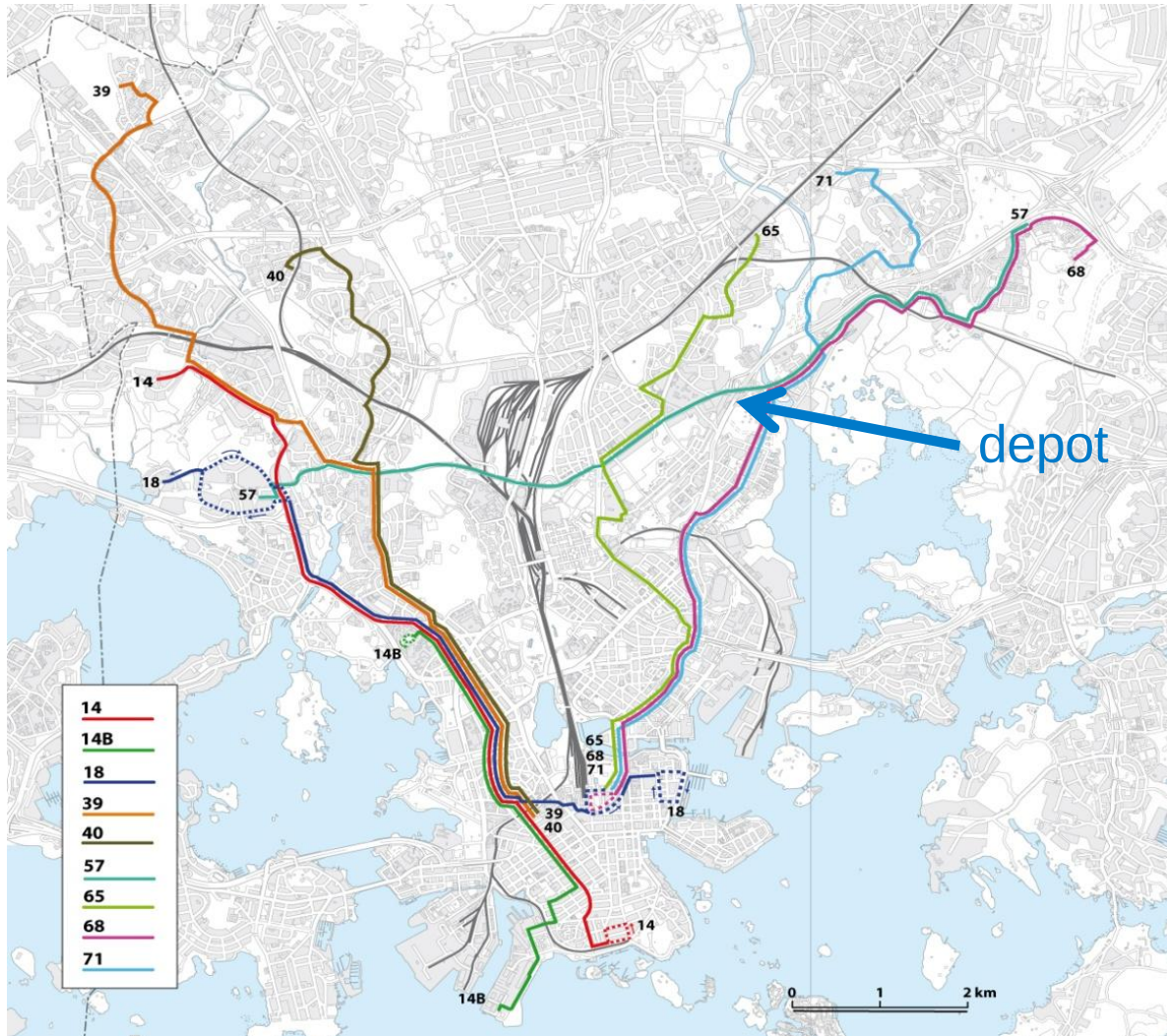
The role of trolleybus in public transport system

VEHICLE	LENGTH (m)	ROLE
Bus	12-15	feeder traffic & rural areas
Trolleybus	18-24	high demand
Tram	27-30	biggest demand in city center
Metro	90	heavy rail, very high demand
Commuter train	150-250	heavy rail, very high demand

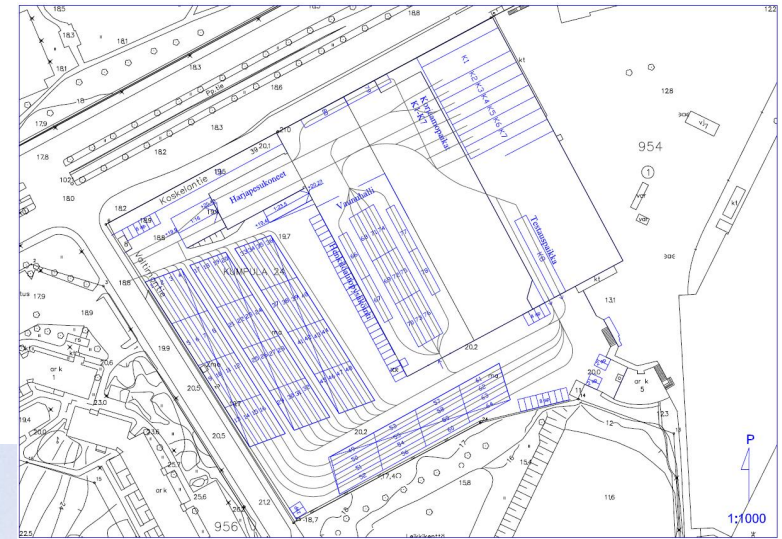
Planned trolleybus line network

- Mostly in the city centre
- 9 trolleybus lines
- Length of wire network: 57 kilometres
- Amount of vehicles: 75 articulated trolleybuses
- 4,4 million vehicle kilometres / year
- 77 200 ajokm/verkkokm/v
- 1 trolleybus depot

Planned trolleybus line network



Possible trolleybus depot



Economical assessment

- Trolleybus line network (A) has been compared to current diesel bus and tram network (0+)

The economical assessment includes

- infrastructure costs
- trolleybus operating costs
- environmental effects
 - noise
 - CO₂, PM, NO_x



Infrastructure costs

- Infrastructure of trolleybus network 32 Million €
- Changes needed in the current diesel bus depot 5,5 Million €
- Annual cost to maintain the infrastucture 2500 €/km/year



Operating costs

		2014-	2016-	2020-	2025-
				A	A
Description of network		0	A-	(ei Hernesaari)	
Operating cost (million € / year)	0+	35 106 714	35 106 714	35 106 714	35 556 743
	A	35 106 714	35 551 205	33 456 153	33 506 300
Vehicle kilometres (million km / year)	0+ tram	2 221 401	2 221 401	2 221 401	2 264 749
	0+ bus	6 523 214	6 523 214	6 523 214	6 523 214
	0+ trolleybus	0	0	0	0
	A, tram	2 221 401	2 221 401	2 147 245	2 147 245
	A, bus	6 523 214	4 981 405	1 542 183	1 284 803
	A, trolleybus	0	1 625 982	4 395 645	4 644 268

Socio economical assessment (2014-2054)

Million €	trolleybus versus bus & tram
Benefits for the transport authority	
Operating cost savings	21,1
Increase in ticket income	7,0
Maintenance cost	-1,9
Benefits for the passengers	
Travel time savings	10,2
Other benefits	
Accident costs	4,5
Environmental costs	8,1
BENEFITS (discounted to year 2010)	49,1
Investment costs	
Public transport investments	16,2
interest	1,0
INVESTMENTS	17,2
COST/BENEFIT RATIO	2,9

Preliminary
values that most
certainly will
change

Benefits

- Benefits for the transport authority 53%
- Benefits for passengers 26%
- Environmental benefits 16%
- Benefits in accident costs 9%

The most important reason for high cost benefit ratio is that the investment cost (32 Million euros) is relatively low compared to the investmnts of the base scenario (12,3 million euros)

Possible schedule



Trolleybus in Helsinki (Tehtaankatu)



Trolleybus in Helsinki (Arkadiankatu)

