

# Freeway-bus



*efficient and sustainable solution for mobility*

[www.snelwegbus.com](http://www.snelwegbus.com)



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*effective and sustainable solution for mobility*



In the Netherlands, as in many countries, increasing mobility is causing serious congestion problems with attendant damage to the economy and the environment. A structural, sustainable solution will be the Freeway-bus (in Dutch: snelwegbus), a new type of bus rapid transit. The plan offers a structural solution to congestion problems, thus stimulating economic development and at the same time reducing the emission of pollutants.

The costs of the plan will be relatively limited and the plan can be realised within 4 years.

## *Integral transportation planning of Sustainable Mobility*

### *high frequency fast public transport*

To ensure the mobility need in a sustainable way, a more integral approach is required. In this approach, there is an important role for public transport, especially the freeway-bus.

### *Freeway-bus: A high speed BRT system*

The freeway-bus is a new bus rapid transit system on freeways, that will provide direct public transport connections with working areas and residential areas located near freeways.

The bus rapid transit system provides comfortable, fast (75 -90 km/h ) and frequent, every 3 minutes, direct public transport connections with working areas and residential areas located near freeways.



Public transport to these areas, which have grown in importance over the last decades, is currently poor. According to a recent study, in the Randstad Holland, 40% of residential areas and 60% of the employment in urban areas are situated near (less than 1,800m.) to freeway junctions.

### *Bus bypass shoulder or highway tolls*

Bus lanes or bus bypass shoulders (bus use of emergency-lanes) will be realised for the freeway-bus to bypass traffic congestion.



In combination with ramp meters (with bus bypass) or toll on highways, the freeway bus plans will lead to free flow traffic, even at peak hours.



### *frequent rail transport*

The improvement of rail transport will be realised by the planned improvement of the NS railway network and replacement of current train-services by a 10-minute light train and intercity services enabling people to travel "without timetable". (program PHS)

### *Comprehensive PT network*

The networks of freeway-bus network and the railway are linked to one another. Stations will be realised where freeway and railroad meet.

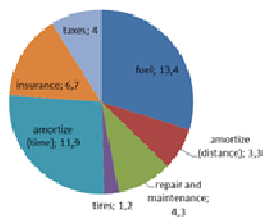
### *Mobility-marketing, PT-shuttles and biking*

Thanks to the extension of public transport facilities, especially the addition of the freeway-bus network, business- and residential areas will be located a short distance from rapid public transport. Mobility management on the destination side (companies, events and other activities) will ensure the provision of feeder service facilities by means of company shuttle bus services and bike facilities. Biking enlarges the direct catchment area of station to 1500 m ( 5 minutes biking) or more.

Important as well, is the "non-hardware" approach, supplying direct marketing of (potential) travellers, comparing public transport with car-use and supplying dynamic passenger information on the trip (e.g. on smartphone).







Savings compared to car use of freeway-bus are about 50%, compared to (second) car ownership savings are over 75% .

### public transport fares equal costs of gas

The cost of using public transport (without reductions about 15 eurocent /km) exceed the costs of gas in car use. For car users this is a considerable barrier for using public transport.

For the freeway-bus fare will be of 10 eurocent/km, so the cost of travelling by public transport will be lower than that of car-use ( gas: approx. 13 cents, total variable costs 22 cents/km).

Note that in case of highway tolls, the difference in costs of public transport to car-use of course will be even larger.

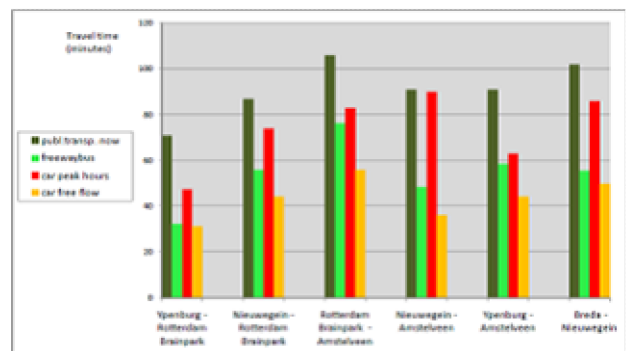
## Freeway bus: huge decline in travel time, realistic alternative for car use

### huge decline in travel time

Currently with most trips travel time by public transport take twice as much as by car , not giving a fair alternative to travellers. (exception: city centre orientated travelling).

The ratio of travel time by PT and car determines the modal split. A ratio between 1,5 and 1 will lead to strong increase of PT use. When travel time by PT and car the same PT use is about 50% (even up to 80% with commuters). A competing travel time will be about 30% - 40% , or 10 to 15 minutes more than travel time by car. For most trips, being the freeway oriented trips the freeway-bus will ensure public transport services which are much faster than current services. Travel time will be reduced by a third to a half, leading to a competing travel time, even outside peak hours, with free flow traffic.

During peak hours, with road congestion, travelling by freeway-bus, often will be faster than by car.



Examples travel time by PT and car  
Freeway bus leading to strong decline in travel time

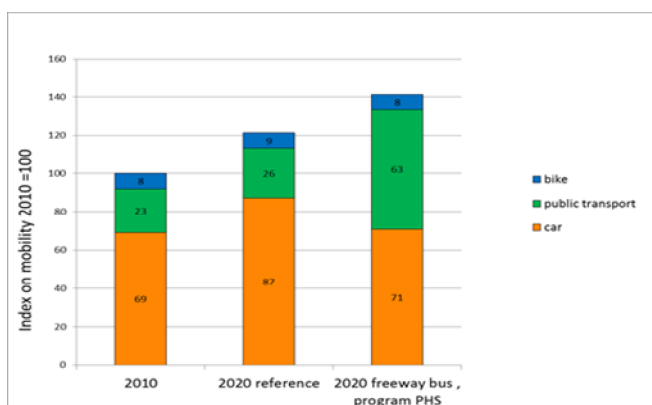
## 2.5 x PT , diminishing congestion, economic grow, environmental benefits, quick fix

### Public transit grows 2 and a half times

The decline in travel time by PT, because of freeway-bus, has an enormous impact on mobility.

The impact of freeway bus and complementary measures have been calculated for the Randstad (Amsterdam and Rotterdam region 7 million inhabitants). Without policy change, car use will increase by approximately 25% from 2010 to 2020. Public transport will remain nearly unchanged.

The freeway bus-alternative offers an entirely different picture: compared to 2010 car use will not increase, but travelling by public transport will grow 2.5 times. Rail network and freeway bus network strengthen each other. Rail travel will double and the freeway bus network will transport as many travellers as the national rail network does now.



### Impact on economy

By greatly solving the congestion problem a huge annual economic damage will be avoided.

The business sector - the transport sector, the services industry as well as other sectors - will enjoy maximum benefits. As most of the infrastructure all-ready exists relatively limited investments for the bus rapid transit network will be needed: 2 billion euro for –eventually- approx. 300 bus stations. The operation of the Freeway-bus will be highly profitable, approx. 200 million euro annually.

Thanks to the stabilisation in traffic, extension of the traffic infrastructure can be limited, resulting in meaningful savings.

### Sustainable mobility

Despite the increase in total mobility the emission of pollutants such as CO<sub>2</sub>, NO<sub>x</sub> and fine particles will decrease, as a result of the much lower emissions caused by public transport and the diminishing congestion.

### Quick fix: short time realisation

The freeway-bus network can be realised in a short period, especially compared with normal traffic infrastructure projects. Complete implementation within 4 years is an ambitious but realistic planning.

Effects on mobility and modal-shift based on modal forecasting RVMK Rotterdam 12 hours period (07.00 hrs – 19.00 hrs )

# Freeway-bus: Bus Rapid Transit system on freeways



Scheme of a busstation next to a freeway ramp to a local road (at the frontpage: a busstation near to a railroad)

## A major move forward in mobility

The freeway-bus is a new bus rapid transit system on freeways: comfortable buses running at a high average speed and a high frequency on motorways. The bus rapid transport system on motorways will provide fast direct high quality public transport to residential areas and working areas located near freeways.

## The transport system

The rapid transport system is a new transport system, which has elements of the standard BRT. Differently, there is no separate lane for these buses, except for road sections with congestion.

The freeway-bus is not a urban BRT. The speed of the buses will be 100 kph, with the busstops, average speed will be 75 -90 kph. In full operation, the buses will be running at high frequency every 3 minutes or shorter intervals, using little capacity of the freeway and providing a lot of transit. As soon as 2-3% of the car-use is replaced by use of freeway-bus, a frequency every 10 minutes will be realised. Eventually freeway bus lines will run every 1-3 minutes.

and re-join the freeway via the entry ramp.

At the stations travellers can transfer to other transport services and feeder service facilities are available: large bicycle parking facilities with combined public transport/bicycle facilities and park-and-ride (transferia) and kiss-and-ride facilities as well as facilities for shuttle services and taxis. Furthermore retail and other facilities can be realised at the stations.

## Rapid transit bus technology

The freeway-bus is made of proven technology. The freeway-bus will be fit for high speed (100 kph) and have a low entree. At the bus stops platforms enable a level transfer for greater comfort and access as well as rapid transfer and shorter stop times. In addition much attention is paid to design, user-friendliness (e.g. dynamic passenger information, wifi), comfort (placing and number of seats) and the image of the buses in line with design trends in the car industry, fast trains and aeroplanes.

The engine will be of state of the art sustainable techniques, preferably electric within a few years. Aerodynamics, playing an important role with speed up to 100 kph, will be optimised.

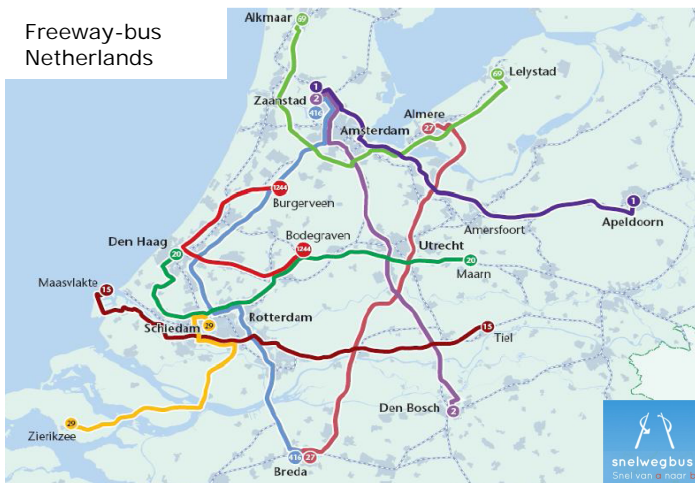
On the longer term further development, with higher speed 120 kph is planned, still later tracks with superbus (150-250 kph) on dedicated lanes are planned.

## Many travellers, highly profitable

The bus rapid transit network provides a sound alternative for the car. The rapid transit bus system will therefore attract many travellers, about the same number as the current dutch railway network.

An annual profit over 200 million euro is estimated, with the proposed travel fare of 10 eurocent / km. thanks to the large trafficflow and the high average speed.

Freeway-bus  
Netherlands



## bus-stations

The stations are located next to highway ramps to local roads and near crossing railways and major regional public transport (light rail, metro, tram, urban BRT). The bus stops are located directly along the freeways: they are located between the exit and entry ramps. The buses run the same exit ramp as the other traffic, following next the bus lane to the bus stop.

**Boersma**

adviseurs in duurzame mobiliteit en transport



The Freeway-bus is developed by Boersma, consultants in sustainable mobility and transport.

Contributions by Goudappel Coffeng and Movares AGV.

For further information: [www.snelwegbus.com](http://www.snelwegbus.com)

**Goudappel Coffeng**  
Adviseurs verkeer en vervoer

**Movares**