SPP REGIONS
REGIONAL NETWORKS FOR SUSTAINABLE PROCUREMENT

SPP TENDER MODEL

Sustainable transport

Zero emission social transportation services in Capelle aan den IJssel

Purchasing body:	Municipality of Capelle aan den IJssel – MRDH[1] region Netherlands
Contract:	2 year 7 month contract for social transportation services with optional prolongation of 1 year Awarded: October 2016
Savings:	• 44.18 tons of CO_2 emissions saved per year

SUMMARY

- Promotion of low emission vehicles for service delivery
- Deployment of electric passenger cars and CNG minivans and wheelchair buses
- Award criteria on optimising route efficiency through grouping and sequencing

[1] Metropolitan Region of Rotterdam and The Hague

Published: March 2018

Purchase strategy

The purchasing process was led by the purchasing department of the municipality of Capelle aan den IJssel, one of the 23 municipalities in the MRDH region. It concerned the transportation of 150 students per year and the taxi service Capelle Hopper for inhabitants who are not able or are barely able to travel by public transport. Annually, the Capelle Hopper provides for about 50,000 rides.

Capelle aan den IJssel published the European tender on 30 June 2016 via Tenderned. The contract was awarded on 27 October 2016 on the basis of the most economically advantageous tender (Economisch Meest Voordelige Inschrijving: EMVI).

Energy and Climate policy

The municipality of Capelle aan den IJssel is implementing an active Energy and Climate policy, see https://www.capelleaandenijssel.nl/wonen-verkeer-en-veiligheid/duurzaamheid_3533/. Among other things, in the coming years the municipality will proceed with making the municipal buildings energy efficient and sustainable, will keep deploying electric vehicles, will deal with sustainable purchasing and apply energy efficient LED lighting. In the field of transportation, the municipality wishes to stimulate the use of alternative fuel vehicles (natural gas and electricity), improve traffic flow, reduce total kilometres travelled, increase bicycle use, and install 60 new EV charging stations. In addition to environmental benefits, this policy should yield financial savings.

Needs analysis

For this framework agreement the municipality analysed how many rides were registered for the use of the CapelleHopper between May 2015 and April 2016. In that period 51,569 rides were carried out for inhabitants with a transport disability. There was additionally transport for 150 pupils who are not able to travel to school independently.

Evaluation approach

In line with the energy and climate policy aims of Capelle aan den Ijssel it was decided to promote the use of lower emission vehicles in the carrying out of the social transportation service. To achieve this, compliant bids were evaluated partly on the vehicle type (e.g. hydrogen, electric, gasoline, biofuel etc.) in carrying out the service over the duration of the contract – the greater the percentage of zero emission vehicles (fully electric and hydrogen) deployed for the service, the better the evaluation. Each bidder was asked to define the types of vehicles which they would deploy. In the evaluation different weighting was given to different types of vehicle – divided by emission class and vehicle category. As the taxi bus is the most used vehicle in the service, this was given the highest weighting.

Tender specifications and Verification

TECHNICAL SPECIFICATION

- Provision of transport services for school children and disabled people on a pay per use basis
- Operation of a dispatch centre
- Contribution to exploring the possibility for the future integration of the social transportation and public transport services
- Tenderer must provide monitoring information including the number of rides, and the origin/destination of each ride

AWARD CRITERIA

- Price (40%)
- Implementation plan for carrying out the service (including a description of responsibilities, and communication methods with both the municipality and the users of the service (10%)
- Sustainability of vehicles (15%)
- Action plan of for increasing the efficiency and load factor of transportation, through combining transportation for different client groups, and optimising routing (35%)

VERIFICATION

- Concerning the sustainability aspects, the tenderer should present a breakdown of which vehicles (type and emission class) will be used in delivering the service (see table below). Vehicle registration documents must be provided to prove emission class.

Tenderers could earn up to 1000 points. There are 2 weighting factors. The one for vehicle type is based on expected frequency of use:

vehicle type	weighting factor
passenger car	1
mini van (9 persons)	8
wheelchair bus	1
Total	10

Then, a weighting factor is given according to the desirability of the emission class:

Emission class	weighting factor
full electric	1
hydrogen	1
gasoline	0,8
bio-ethanol E85	0,8
compressed natural	0,8

gas	
liquid petroleum gas	0,6
diesel EURO 6	0,4
diesel EURO 5	0

Calculation procedure:

- The tenderer provides a percentage of vehicle use per year.
- These percentages are then multiplied with the weighting factors for vehicle type and emission class, resulting in a total score per year.
- The scores per year are summed and divided by the duration of the contract (in this case 3), leading to an average score for sustainability.

Results

Environment effects

The winning tender will use 100% electric passenger cars during the entire contract period. In addition the company will use natural gas (CNG) powered mini vans and Euro VI wheelchair buses. To calculate the savings we assume 25% of total kilometres are driven by passenger car.

This results in an estimated annual reduction of 44.18 tonnes CO_2 emissions. Primary energy consumption increases slightly however, likely due to a lower combustion engine efficiency when working with CNG and the greater weight of the vehicles due to the heavier tanks used for CNG storage.

The calculated effect is presented in Table 1.

Table 1: Environmental savings

Tender	Consumption (l/yr, kWh/yr, Nm^3/yr)	CO_2 emissions (tonnes/year)	Primary Energy consumption (GWh/year)
Benchmark		**726**	**2.63**
Diesel	*261.576*	*721*	*2.62*
Petroleum	*2.076*	*6*	*0.02*
Green tender		**682,12**	**2.74**
CNG	*270.295*	*679*	*2.61*
Electricity	*5.190*	*2,73*	*0.03*
Savings		**44.18 (6%)**	**-0.102 (-4%)**

CALCULATION BASIS

- Number of passenger rides: 50,000 (average in 2016)
- Estimated number of kilometres driven per passenger (community transport): 7 kilometers with an estimated utilization rate per vehicle of 1.2 [2]; total kilometres driven (community transport) = 7*50,000/1.2=292,000 kilometres
- Estimated number of kilometers driven per pupil (school transport): 9 kilometers (average)[3]

[2] Source: Zijlstra, T, en P. Bakker (2016). *Cijfers en prognoses voor het doelgroepenvervoer in Nederland*. Kennisinstituut voor Mobiliteitsbeleid

[3] idem

with an estimated utilization rate per vehicle of 5; 150 pupils; average school year 40 weeks; estimated number of kilometers driven to schools: total kilometres driven = 150 * 9/5 * 5 days * 40 weeks = 54,000 kilometres

- Vehicle allocation (kilometers driven): 10% passenger cars, 80% taxi minivans; 10% wheelchair bus;[4]
- The energy savings by deployment of electric passenger cars are calculated by comparing them with the situation that all kilometres driven are being executed with a EURO 5 diesel.
- Average fuel consumption of the existing diesel minivans - 9 l/100km
- Average fuel consumption of the existing diesel wheelchair bus - 12 l/100km
- Average fuel consumption of the existing petroleum cars - 6 l/100 km
- Average fuel consumption of the new CNG minivans - 9.3 Nm^3/yr (1 kg = 1,4 Nm^3)
- Average fuel consumption of the new CNG wheelchair bus - 12.1 Nm^3/yr (1 kg = 1,4 Nm^3)
- Average fuel consumption of the new electric car - 15 kWh/100 km
- Calculation made using the tool developed within the GPP 2020 project (*www.gpp2020.eu*), and refined within the SPP Regions project. Available on the SPP Regions website. (More detailed calculation tables are included in the Annex below)
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Financial impacts

No financial impacts. The winning bid had overall the best score.

Market response

There were 7 tenderers. De Vier Gewesten Personenvervoer (Four Regions Passenger Transport) with subcontractor the Haars Groep had overall the best price and quality. Relative to the former contracts it is new that the target groups are allowed to be combined. All passenger cars of the winning tender are going to drive electric at the commencement of the contract.

[4] This assumption is based on the fleet management report of the social transport contract in Rotterdam in 2016.

Contract management

In order to check the provided data the tenderer to whom the assignment is going to be awarded has to provide the following documents of all vehicles to be placed in that year, no later than 15 December before the commencement of the new contract year:

- Copy of vehicle registration 1A;

- Copy of vehicle registration 1B.

Evaluation and challenges for the future

The bid that offered the highest score on zero emission transportation did not win the tender. This company promised to use 100% electric passenger cars in 2017, 50% EV taxi minivans in 2018 and 100% in 2019. The remaining part was entirely done by CNG powered vehicles. Apparently there was a significant trade off with other quality aspects. The tender is reviewed according the extent and speed in which the fleet of the tenderer is developing to zero emission. With this approach the municipality of Capelle aan den IJssel is buying a 'promise' for the future. It is important that the contract manager is testing the actual deployment of these vehicles by means of updated ride data. However, the growth model for electric taxi transport also depends on the (expected) market supply. It is expected that the amount of available taxi buses from 2019 will be sufficient to carry out transport entirely zero emission. The supply of suitable vehicles for wheelchair transport is uncertain. Possibly the supply of electric or hydrogen operated wheelchair buses will improve when more municipalities apply the approach of Capelle aan den IJssel. Make sure that you are clear about the definition of vehicle type, in particular for the wheelchair bus. In addition, it is important to create sufficient fast charging facilities.

CONTACT

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Annex 1 - Calculation of environmental savings

Calculations made using the tool developed within the GPP 2020 project (www.gpp2020.eu), and refined within the SPP Regions project. Available on the SPP Regions website.

Location	Netherlands		CO_2-emissions per kWh (kg CO_2/kWh)	0,526								
Input	% Green electricity for Electro engine (if any)			0%			% Green electricity for Electro engine (if any)					0%
	Baseline						**Green tender**					
	Quantity of vehicles	Average distance per vehicle per year (km/yr)	Kind of fuel	Amount of fuel per 100 km			Quantity of vehicles	Average distance per vehicle per year (km/yr)	Kind of fuel	Amount of fuel per 100 km		
Standard Engine - fuel 1	9	276.800	Diesel	9,0	l/100 km		Diesel	.800	CNG	9,3	Nm³/100 km	
Standard Engine - fuel 2		34.600	Diesel	12,0	l/100 km		Diesel	600	CNG	12,1	Nm³/100 km	
Electro Engine			Electricity		kWh/100km		1	34.600	Electricity	15,0	kWh/100km	
Hybrid Engine												
Electricity (combined test cycle)	1	34.600	Electricity		kWh/100km				Electricity		kWh/100km	
Fuel (combined test cycle)			Petroleum	6,0	l/100 km		Diesel		Diesel		l/100 km	
TOTAL	**10**	**346.000**					**10**	**346.000**				
Total consumption and emissions	**Baseline**						**Green tender**					
	Annual fuel consumption		Energy consumption (GWh/yr)	CO_2-emissions per year (t)			Total amount of fuel during the life time of the vehicles		Energy consumption (GWh/yr)	CO2-emissions per year (t)		
Standard Engine - fuel 1	224.208	l	2,62	618			232.512	Nm³	2,72	584		
Standard Engine - fuel 2	37.368	l		103			37.783	Nm³		95		
Electro Engine	0	kWh	0,000	0,00			5.190	kWh	0,013	2,73		
Hybrid Engine												
Electricity (combined test cycle)	0	kWh	0,02	0			0	kWh	0,00	0		
Fuel (combined test cycle)	2.076	l		6			0	l		0		
TOTAL			**2,63**	**726**					**2,74**	**682,12**		
Savings	**Total savings (Baseline / Green tender)**											
	Energy savings (GWh/yr)	CO_2-savings (t/yr)	% of energy savings	% of CO_2-savings								
Standard Engine - fuel 1	-0,11	41	-4%	6%								
Standard Engine - fuel 2												
Electro Engine	-0,01	-3	#DIV/0!	#DIV/0!								
Hybrid Engine												
Electricity (combined test cycle)	0,02	6	100%	100%								
Fuel (combined test cycle)												
TOTAL FOR THE PROJECT	-0,102	44,178	-4%	6%								

About SPP Regions

SPP Regions is promoting the creation and expansion of 7 European regional networks of municipalities working together on sustainable public procurement (SPP) and public procurement of innovation (PPI).

The regional networks are collaborating directly on tendering for eco-innovative solutions, whilst building capacities and transferring skills and knowledge through their SPP and PPI activities. The 42 tenders within the project will achieve 54.3 GWH/year primary energy savings and trigger 45 GWh/year renewable energy.

SPP REGIONS PARTNERS

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