

Electric vehicles

Electric vehicle for Gabrovo, Bulgaria



Purchasing body: Gabrovo Municipality

Contract: Delivery of a new electric vehicle and charging station

Awarded: March 2017

Savings:

- 1.376 tons of CO₂ emissions saved per year
- Primary Energy saving of 0.006 GWh/yr
- Financial saving of 894 EUR/yr

SUMMARY

- Electric car (type M1), pure electric drive including charging station
- 7 years of full service (including battery)
- Total price of the new vehicle Awarded to VEKO OIL Ltd. for 31,596 EUR
- Procurement pilot rolled out to a further 4 municipalities in the Bulgarian SPPI network – 10 electric cars purchased in total

Procurement Approach

This tender derives from a programme launched by the National Trust Eco-Fund (NTEF) to encourage the introduction of electric vehicles by the public bodies in Bulgaria. The NTEF contributes 10,000 EUR towards the cost of each electric vehicle purchased.

The electric car market is relatively under-developed in Bulgaria and the procurement approach was based on the following steps:

- The Municipality of Gabrovo carried out a financial analysis of the possibilities for purchasing electric cars and investigated public opinion for such an investment (vote by the Municipal council). Based on the results of both financial analysis and the Municipal council vote, the scope of the tender changed and only one car was purchased instead of two (May 2016)
- A general market survey about possible suppliers, quality and prices was undertaken. External experts participated in a seminar about innovations and energy efficient goods and services focused on building, street lightening and urban mobility (June 2016)
- Publishing the tender on the official website of Gabrovo municipality and in the Public Procurement Register (July 2016)
- Awarding the tender based on the most economically advantageous offer (March 2017 - Due to appeal against the decision to select a contractor).

Needs Analysis

The municipality draws up annual air quality analyses, which show that the main pollutants are nitrogen oxides, dust and fine dust particles emitted by transport and the use of solid fuels for heating (during the winter season).

Electric transport as a relatively new technology should be promoted and demonstrated by Bulgarian public authorities to society as an alternative to conventional cars in order to raise interest and reduce air pollution in future.

INNOVATION IN PROCUREMENT

Tenders for electric vehicles are so far very rare in Bulgaria, given the relatively under-developed market. Hopefully this tender can act as a pilot for others to follow.

Market Engagement

In July 2016 Gabrovo Municipality signed a Memorandum for Cooperation with the Bulgarian Electric Vehicles Industrial Cluster. The cooperation between the organisations led to knowledge sharing about the new trends in the electric vehicles market and exchange of contacts with potential suppliers.

Three bidders submitted their proposals. Two of them were disqualified due to non-observance of the minimum requirements.

Tender specifications and Verification

TECHNICAL SPECIFICATIONS

- Range without recharging - min. 100 km;
- Charging station and charging cables (slow charging);
- Maximum speed - min. 80 km/h;
- Warranty - min. 5 years;

AWARD CRITERIA

- Lowest price;

VERIFICATION

Verification was based on the presented technical specification of the vehicle.

A regional approach to SPP

The tender approach was discussed with the network partners and similar tenders were published by a further four of the municipalities within the network (Burgas, Varna, Gorna Oryahovitza and Stolichna). In total 10 electric cars were purchased. A joint procurement approach was not encouraged by the NTEF, as this remains relatively unused in Bulgaria.

Results

Environmental impacts

The new electric vehicle leads to 50% reduction of CO₂ emissions in comparison to the old diesel vehicle, when taking into account emissions relating to the generation of electricity with the average Bulgarian mix.

Other benefits are the avoidance of any local harmful pollutants (NO_x and PM) and noise emissions, as the new electrical vehicle has zero tailpipe emissions.

Table 1: Environmental savings – green tender compared to current solution

Tender	Consumption (l/100km kWh/100km)	CO ₂ emissions (tonnes/year)	Primary Energy consumption (GWh/year)
Benchmark (Current diesel vehicle)	9.0 l/100km	2.727	0.010
Green tender (purchased electric vehicle)	15 kWh/100km	1.351	0.004
Savings		1.376 (50.4%)	0.006 (58.3%)

CALCULATION BASIS

- Current vehicle benchmark: diesel engine vehicle consuming 9.0 l/100km
- Purchased electric vehicle: expected consumption of 15 kWh/100km
- The CO₂ emission factor for Bulgaria is 0.819 kgCO₂/kWh
- The emission factor for diesel is 2.755 kgCO₂/l, and includes direct and indirect emissions
- 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)

Financial impacts

The total price of the new vehicle and the charging stations is 31,596 EUR (including 1,278 EUR for the charging station). The NTEF provides the municipalities with a grant of 10,000 EUR for each vehicle purchased. The calculated fuel savings equate to financial savings of €894 per year.

Market response

Three bidders submitted proposals. Two of them were disqualified due to non-observance of the minimum requirements (missing technical certificates and insufficient warranty period for the battery).

Lessons learned and future challenges

- The impact of the current tender is negligible as only one vehicle was purchased. However, through engaging the network effectively in purchasing electrical vehicles for their needs, it is hoped that others will follow suit helping to achieve potentially significant improvements in air quality – a key issue in the biggest towns and cities in Bulgaria
- As mentioned above 4 similar tenders were published by the network members (10 vehicles purchased). Unfortunately NTEF did not respond to their willingness to publish only one tender (Joint Procurement approach) that could have led to price discounts.
- It is recommended to use additional criteria for recycling of vehicle parts or/and battery that will contribute to the sustainability of the procedure.
- Criteria for average distance, warranty periods, maintenance, charging time etc. providing additional points during tender evaluation, may also be used in future tenders. Such criteria will guarantee that the suppliers propose better solutions to the public authorities.
- Purchasing electric vehicles is already a common procedure in many western European countries. Numerous case studies and guidelines (i.e http://ec.europa.eu/environment/gpp/pdf/tbr/transport_tbr.pdf) are available and can be used by the network members.

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Annex 1 - Calculation of environmental savings (if relevant)

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.

Input data

Location	Bulgaria	CO ₂ -emissions per kWh (kg CO ₂ /kWh)	0,819						
Input	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	1	11 000	Diesel	9,0	l/100 km	Petroleum	l/100 km	
	Standard Engine - fuel 2			Diesel		l/100 km	Petroleum	l/100 km	
	Electro Engine			Electricity		kWh/100km	Electricity	15,0 kWh/100km	
	Hybrid Engine								
	Electricity (combined test cycle)			Electricity		kWh/100km	Electricity	kWh/100km	
	Fuel (combined test cycle)			Diesel		l/100 km	Diesel	l/100 km	
	TOTAL	1	11 000				1	11 000	
	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)	CO ₂ -emissions per year (t)		
Standard Engine - fuel 1		990	l	0,01	3	0	l	0,00	
Standard Engine - fuel 2		0	l	0,00	0	0	l	0,00	
Electro Engine		0	kWh	0,00	0	1 650	kWh	0,004	
Hybrid Engine									
Electricity (combined test cycle)		0	kWh	0,00	0	0	kWh	0,00	
Fuel (combined test cycle)		0	l	0,00	0	0	l	0,00	
TOTAL				0,010	2,727			0,004	1,351

Results

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	0,010	2,727	100%	100%
Standard Engine - fuel 2				
Electro Engine	-0,004	-1,351	#DIV/0!	#DIV/0!
Hybrid Engine				
Electricity (combined test cycle)	0,00	0	#DIV/0!	#DIV/0!
Fuel (combined test cycle)				
TOTAL FOR THE PROJECT	0,006	1,376	58,3%	50,4%

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



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 649718. The sole responsibility for any error or omissions lies with the editor. The content does not necessarily reflect the opinion of the European Commission. The European Commission is also not responsible for any use that may be made of the information contained herein.