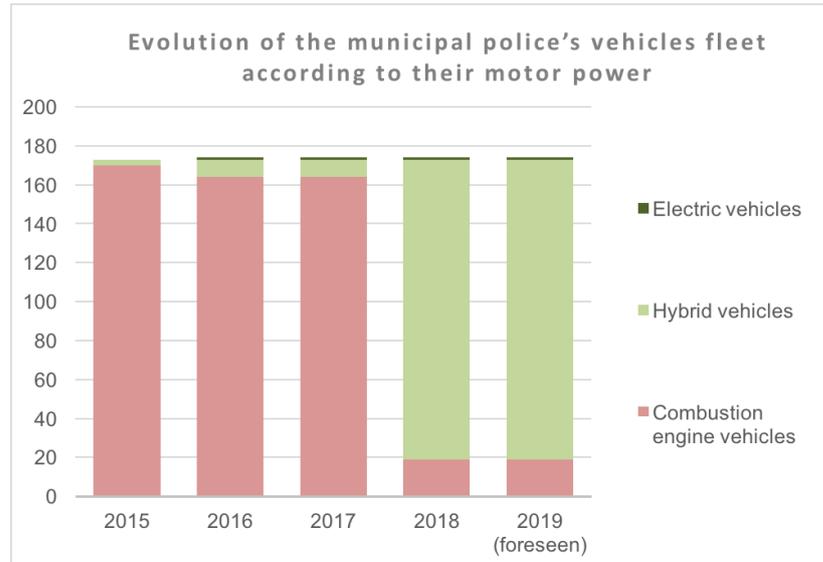


Low emissions vehicles

Renting 145 hybrid vehicles for Barcelona's municipal police



Contracting authority: Barcelona City Council

Contract: Acquisition of 145 hybrid passenger vehicles for Barcelona's municipal police with sustainable procurement criteria

Awarding date: January 2018

Savings:

- 51.9 tonnes CO₂ emissions saved each year
- 0.39 GWh primary energy saved annually

SUMMARY

- Renting of 145 hybrid vehicles for Barcelona's municipal police (Security and Prevention Directorate).
- Division in lots based on different vehicle characteristics and transformation needs as police service vehicles.
- Tender budget of €12,678,000 excluding VAT, published on 21st September 2017 for a period of 5 years.
- Open procedure.

Procurement context

A gradual greening of the vehicles fleet in line with the criteria set out in the [Technical instructions for the application of sustainability criteria to vehicles](#) of Barcelona City Council is one of the priorities of the Security and Prevention Directorate (GSP from its Catalan acronym), and is included in one of the strategic lines of the [Internal Strategic Sustainability Plan of GSP](#) (in Catalan). Replacing the current fleet of combustion engine vehicles with electric or hybrid vehicles offering the same performance to the municipal police has been a sustainable development priority action of GSP.

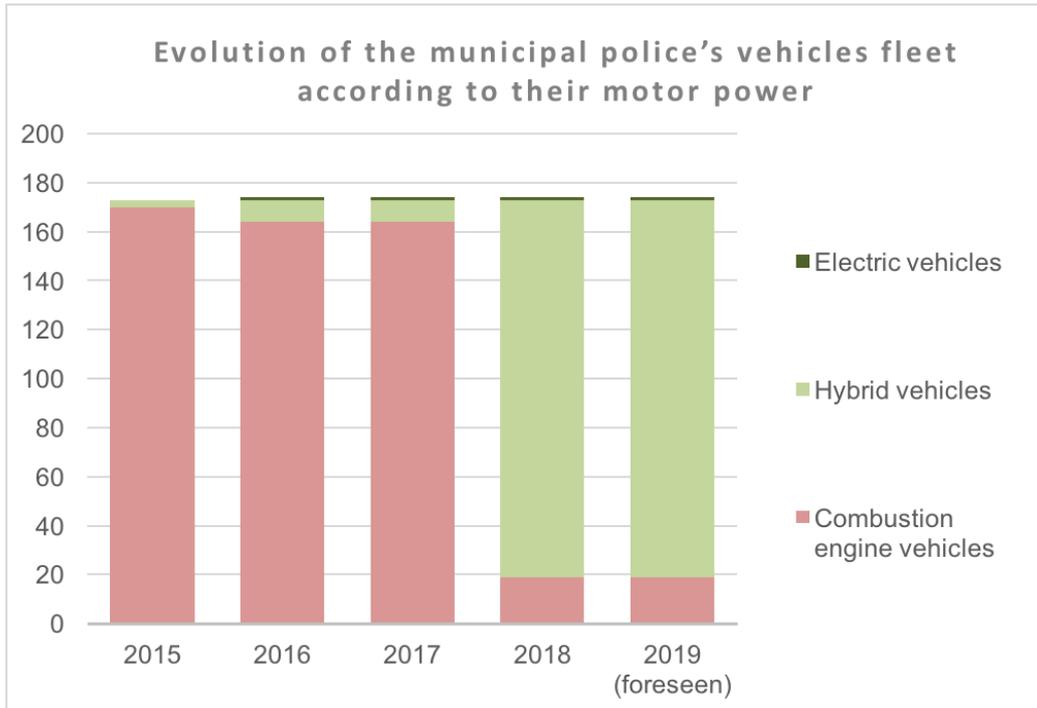
Since 2013, GSP has conducted several pilots within the municipal police and the prevention, fire fighting and rescue service, to promote the acquisition of vehicles (passenger, scooters, motorcycles and light duty vans) with less polluting technologies appropriate for security and mobility activities. Special mention has to be made to the 2015 rental of 30 electric scooters for the municipal police for 48 months (with a value of €555,825.60, including VAT). This was the first tendering process in the GSP's gradual replacement of combustion engines.

The publication of the tender for the renting of 145 hybrid vehicles took place on 21st September 2017 (in the EU Tenders Electronic Daily platform and in the BOE, the Official State Gazette) and the award was made on 17th January 2018.

Criteria development

In 2015, the Logistics and Infrastructure Department piloted the acquisition of two hybrid passenger cars to test their performance in the police service. By means of a survey assessing the technical performance of the vehicles (braking power, instant throttle response, direction changes, stability at low and high speed, vehicle's suspension system, ergonomics and comfort, range and noise). The success of the pilot test has been a decisive factor to start greening the municipal police fleet and boost the use of hybrid vehicles in the police service.

The following graphic shows the planned evolution for the 2015-2019 period for passenger vehicles of Barcelona's municipal police. The most relevant increase is for hybrid vehicles, which will rise from 5% (9 vehicles) in 2017 to 89% (154 vehicles) in 2018, demonstrating a strong commitment for these vehicles.



Graphic 1: Evolution of the municipal police's passenger vehicles fleet according to their motor power

Tender conditions and verification

To cover the operational needs of the police fleet for the 2018-2023 period, the renting of 145 passenger cars for 60 months is needed. The tender is divided in 2 lots: 126 marked vehicles and 19 unmarked vehicles, based on the technical characteristics presented in the following tables.

Table 1: Lot 1. Passenger vehicles type 1 (marked without detainee's kit) and 1b (marked with detainee's kit)

Technical specifications

- Number and kilometres for type 1: 63 vehicles, 137,500 km.
- Number and kilometres for type 1b: 63 vehicles, 125,000 km.
- Motor:
 - - Engine size: 1750-1800 cm³
 - - Thermal motor power: 95-100 CV/4,400 rpm. approx.
 - - Electric motor power: 55-65 kW
 - - Maximal power for the hybrid system: 130-140 CV DIN
 - - Fuel type: hybrid/gasoline 95 octane s/p
- Consumption:
 - - Urban: 4 l.
 - - Extra-urban: 4.5 l.
 - - Mix: 4.5 l.
- CO₂ emissions in mix: 101 gr/km max.

Table 2: Lot 2. Passenger vehicles type 2 (unmarked with kit)

Technical specifications

- Number and kilometres (type 2): 13 vehicles, 125.000 km.
- Motor:
 - Engine size: 1550-1600 cm³
 - Thermal motor power: 100-105 CV/5,700 rpm. approx.
 - Electric motor power: 30-32 kW
 - Maximal power for the hybrid system: 135-140 CV DIN
 - Fuel type: hybrid/gasoline 95 octane s/p
 - Classification: Euro 6W
- Consumption:
 - Urban: 3.5 l.
 - Extra-urban: 3.8 l.
 - Mix: 3.5 l.
- CO₂ emissions in mix: 80 gr/km max.

Table 3: Lot 2. Passenger vehicles type 2b (not branded without kit)

Technical specifications

- Number and kilometres (type 2b): 6 vehicles, 100.000 km.
- Motor:
 - Engine size: 1750-1800 cm³
 - Thermal motor power: 95-105 CV/4,400 rpm. approx.
 - Electric motor power: 55-65 kW
 - Maximal power for the hybrid system: 130-140 CV DIN
 - Fuel type: hybrid/gasoline 95 octane s/p
 - Classification: Euro 6W
- Consumption:
 - Urban: 3.6 l.
 - Extra-urban: 3.6 l.
 - Mix: 3.8 l.
- CO₂ emissions in mix: 80 gr/km max.

Table 4: Award criteria for lot 1 and lot 2

Award criteria

For lot 1:

- Economic offer (80 points)
- Economic discount for the kilometres not driven during the contract period (5 points)
- Economic price for additional kilometres driven during the contract period (5 points)
- Technical improvement consisting of a rear vision camera in the vehicles whose image is shown in the computer screen when engaging the reverse gear (10 points)

For lot 2:

- Economic offer (70 points)
- Economic discount for the kilometres not driven during the contract period (5 points)
- Economic price for additional kilometres driven during the contract period (5 points)
- Technical improvement consisting of a rear vision camera in the vehicles whose image is shown in the computer screen when engaging the reverse gear (10 points)
- For better performance of the “courtesy” car (10 points)

Verification

These award criteria are evaluated with formula based on the offer.

The renting contract comprises the installation of the on-board radio and fleet management equipment via GPS, comprehensive internal and external maintenance of vehicles, fault repairs, 24 hour assistance, tyre replacement, regular check-ups and the replacement of any part due to wear, break and/or malfunction. It also includes fully comprehensive insurance with no excess to cover the economic consequences from the use of vehicles.

Regional approach to SPP

The Catalan Association of Towns and Counties (ACM from its Catalan acronym) promotes electric vehicles through its Central Purchasing Body, obtaining scale economies, savings in the administrative procedures, legal assurance and transparency, among other advantages. Specifically, it has set up a framework agreement for sustainable mobility for police services with hybrid vehicles highlighting their operational and environmental advantages.

Meetings have been conducted for information exchange between GSP and ACM during the definition of the technical and administrative clauses for the corresponding contracts. In the end, GSP did not join the framework agreement for hybrid passenger vehicles due to the different technical requirements of Barcelona’s police vehicles, which were not included in the current framework agreement.

Results

Environmental impacts

In 2018 it is estimated that an annual reduction of **51.9 tonnes CO₂** and **0.39 GWh** will be obtained in comparison to 2017 (assuming the same number of kilometres as those foreseen for the 2018-2023 contract). By lot, these are the results (totals might not match due to decimal rounding).

Table 5: Annual environmental savings from lot 1 (63 vehicles with 27,500 km annually)

Tender	CO ₂ emissions (tonnes/year)	Primary energy consumption (GWh/year)
Baseline (Tender for 2014-2017)	233.8	0.85
Low carbon solution (Tender of 2018)	212.3	0.68
Savings	21.5 (9.2%)	0.17 (20.2%)

Table 6: Annual environmental savings from lot 1b (63 vehicles with 25,000 km annually)

Tender	CO ₂ emissions (tonnes/year)	Primary energy consumption (GWh/year)
Baseline (Tender for 2014-2017)	212.6	0.77
Low carbon solution (Tender of 2018)	193.0	0.62
Savings	19.5 (9.2%)	0.16 (20.2%)

Table 7: Annual environmental savings from lot 2 (13 vehicles with 25.000 km annually)

Tender	CO ₂ emissions (tonnes/year)	Primary energy consumption (GWh/year)
Baseline (Tender for 2014-2017)	38.5	0.14
Low carbon solution (Tender of 2018)	30.8	0.10
Savings	7.7 (20.2%)	0.04 (29.7%)

Table 8: Annual environmental savings from lot 2b (6 vehicles with 20,000 km annually)

Tender	CO ₂ emissions (tonnes/year)	Primary energy consumption (GWh/year)
Baseline (Tender for 2014-2017)	14.9	0.054
Low carbon solution (Tender of 2018)	11.7	0.037
Savings	3.2 (30.9%)	0.017 (21.3%)

If we extrapolate the savings of each lot for the contract duration (5 years), a total of **259.6 tonnes CO₂** and **1.93 GWh** primary energy could be saved, which represents annual savings of **51.9 tonnes CO₂** and **0.39 GWh** primary energy.

Table 9: Environmental savings during the whole contract duration 2018-2023

Tender	CO ₂ emissions (tonne)	Primary energy consumption (GWh)
Low carbon tender savings for lot 1 (2018-2013)	107.5	0.86
Low carbon tender savings for lot 1b (2018-2013)	97.7	0.78
Low carbon tender savings for lot 2 (2018-2013)	38.6	0.21
Low carbon tender savings for lot 12b (2018-2013)	15.9	0.08
Low carbon tender savings (2018-2023)	259.6	1.93

Calculation basis

- The awarded vehicle for lot 1 and 1b is the Toyota Prius + (with a consumption of 4.4 l/100 km and emissions of 101 gr. CO₂/km).
- The municipal police, for security and confidentiality reasons required by its functions as a public security body, does not publish specific data of the vehicles in the award announcement of the unmarked vehicles. For the calculation of environmental savings for lot 2 and 2b confidential information was provided (vehicles' brands and models) which cannot be published here either.
- To determine the theoretical consumption (l/100 km) of replaced vehicles, a guide with details on consumptions and CO₂ emissions of vehicles on sale in Spain in 2013, published by the Spanish Institute for the Diversification and Saving of Energy (IDAE),

was used, given that the present tender replaces vehicles from that year. The following models have been selected:

- Seat ALTEA XL 2.0 TDI MAN. 6V 140CV CFHC: 4,9 l/100km (63 vehicles replaced in lot 1 and 63 in lot 1b)
 - Seat ALTEA XL 1.6 TDI MAN. 5V ECOMOTIVE 105CV CAYC: 4,3 l/100km (13 vehicles replaced in lot 2)
 - Seat ALTEA XL 1.6 TDI MAN. 5V CON START-STOP 105CV CAYC: 4,5 l/100km (6 vehicles replaced in lot 2b)
- The tool developed in the EU project GPP 2020 (www.gpp2020.eu), and modified in the EU project SPP Regions was used. It is available on the SPP Regions website.

Lessons learned and future challenges

- The strong commitment to a gradual renovation of the vehicles fleet of the municipal police was an important driver when designing this tender.
- This purchase supposes a continuation in the objective of the GPS to fulfil the Strategic Plan of Internal Sustainability, and renew the fleet with hybrid vehicles.
- Hybrid vehicles will lead to an important reduction in pollutant emissions and consumption during the police service, contribution to reducing air pollution and improving the air quality of the city.
- The reduction of environmental impacts is a key if we consider that the police drive many kilometres in the city. The electric motor, with zero emissions, works at low speed range (below 50 km/hour) ideal for urban conditions, while the combustion engine provides additional power for other specific situations.
- Hybrid vehicles will be equipped and adapted as previous vehicles, with all required adaptations and equipment required by the police service.
- A future challenge is to keep moving forward with networking and information and knowledge exchange at the local level (between experts, private actors, etc.).
- Another challenge will be to monitor the results achieved year after year (environmental and economic savings from the lower consumption of fossil fuels).

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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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