Lease of low-emission vehicles

Roads Directorate General, Government of Catalonia

- 10.3% savings in energy and CO2e emissions
- Savings of 14,720 litres of diesel fuel a year, with the resulting economic savings

Replaced vehicles
- 611.8 toe of energy
- 1959.7 t CO2e in total (1730.6 t direct CO2e emissions)

New low emission vehicles
- 548.6 toe of energy
- 1757.0 t CO2e in total (1551.6 t direct CO2e emissions)

Results during the contract period (4+1 years)
- 633 toe of energy savings
- 202.7 t less CO2e emissions (direct and indirect emissions)
Contract tendered

The Roads Directorate General (Direcció General de Carreteres, or DGC) regularly renews its fleet of vehicles, aimed at renovating and maintaining the highways and roads network. This renovation is progressive, and is carried out through a number of different contracts.

In July of 2013, the DGC published 4 calls for tender for the contracts of different types of vehicles: large vans, small vans and off-road vehicles. Only one of these tenders was awarded, while the other 3 remained vacant. In 2014, calls for tenders were made once again for 2 of these 3 vacant contracts, and they were awarded at the end of that same year.

Each of these contracts followed its own, independent procedure. This case study includes the results of 3 of the 4 initial calls for tender in a single tender model.

The general characteristics of the 3 tenders/contracts are:
- The tender process was an open procedure.
- Supply of vehicles through lease.
- Duration: 48 months, extendable 12 more months.
- Number of vehicles and budget (not including VAT):
  - C1: 16 vans (small); 454,201 €
  - C2: 15 vans (large); 810,780 €
    - 13 long, tall vans
    - 2 short, low vans
  - C3: 43 vans (small); 1,246,681 €.

Procurement approach

The procurement process included the following criteria for the different types of vehicles:

<table>
<thead>
<tr>
<th>Technical specifications</th>
<th>C1 ; C3</th>
<th>C2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine</td>
<td>Type</td>
<td>Diesel</td>
</tr>
<tr>
<td>Euro motor standard</td>
<td>Min.</td>
<td>Euro V</td>
</tr>
<tr>
<td>CO₂ emissions (g/km)</td>
<td>Max.</td>
<td>150</td>
</tr>
<tr>
<td>Fuel consumption (l/100 km)</td>
<td>Max.</td>
<td>6</td>
</tr>
<tr>
<td>EU tyre class (rolling resistance)</td>
<td>Min.</td>
<td>C</td>
</tr>
</tbody>
</table>

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### Criteria development

In the preliminary phase, several adjustments were made to the technical specifications of each type of vehicle, in order to avoid oversized performance. A maximum power and cylinder capacity were defined.

Then, the environmental requirements were defined using the criteria established in the *Guia per la compra verda de vehicles de la Generalitat de Catalunya* (The Government of Catalonia’s Guide for the Green Procurement of Vehicles, 2011).

The promotion of the use of Government of Catalonia’s GPP guides created by the Ministry of Territory and Sustainability is another of the objectives of this project. This allows for them to be periodically improved using the experience from different purchasers.

### Results

The new vehicles were received during the third trimester of 2014. The results shown below were obtained using the GPP2020 calculator for vehicles. They were estimated using data from the new vehicles’ data sheets, and by comparing them with those of the vehicles taken out of service.

<table>
<thead>
<tr>
<th></th>
<th>Direct CO₂e emissions</th>
<th>Direct and indirect CO₂e emissions</th>
<th>Energy consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low-carbon solution</strong></td>
<td>310.3 t CO₂e/year</td>
<td>351.4 t CO₂e/year</td>
<td>109.7 toe/year</td>
</tr>
<tr>
<td><strong>Benchmark (replaced vehicles)</strong></td>
<td>346.1 t CO₂e/year</td>
<td>391.9 t CO₂e/year</td>
<td>122.4 toe/year</td>
</tr>
<tr>
<td><strong>Annual savings</strong></td>
<td>35.8 t CO₂e/year</td>
<td>40.5 t CO₂e/year</td>
<td>12.7 toe/year</td>
</tr>
<tr>
<td><strong>Total savings</strong></td>
<td>179.0 t CO₂e</td>
<td>202.7 t CO₂e</td>
<td>63.3 Toe</td>
</tr>
</tbody>
</table>

1. Direct CO₂e emissions = Emissions while driving
2. Total CO₂e emissions = Direct CO₂e emissions + Indirect CO₂e emissions (Emissions in the production of fuel)
Calculation basis


The calculations were made using the following data and assumptions:

- For new vehicles: the (direct) CO₂ emissions provided in the data sheets that came with the delivered vehicles (C1: 133 g/km; C2 long: 218 g/km; C2 short: 186 g/km; C3: 133 g/km).

- For the replaced vehicles: figures from the Instituto para la Diversificación y Ahorro de la Energía’s vehicle database, based on the year the vehicle was licenced (C1: 150 g/km; C2 long: 258 g/km; C2 short: 217 g/km; C3: 143 g/km).

- For the lifespan of the vehicle, we used the maximum duration of the contract, including the extension: 5 years.

- The annual number of kilometres depends on the tender: 20,000 km/year for tender C1 and 30,000 km/year for tenders C2 and C3.

- Fuel consumption figures were established by multiplying the (direct) CO₂ emissions of the vehicles by the project calculator’s conversion factor between CO₂e and fuel: 2.432 kg CO₂e / litre diesel fuel.

- Total emissions (direct and indirect emissions) were estimated by adding to the direct CO₂ emissions the indirect emissions (of fuel production). Indirect emissions were calculating using the calculator’s factor for diesel fuel production: 0.322 kg CO₂e / diesel fuel litre (indirect emissions).

In comparison with the previous tender, we obtained the following results:

- A 10.3% reduction in CO₂e emissions and in energy use.

- Savings of approximately 14,720 litres of fuel per year, with the resulting economic savings.

Lessons learned

These were the first tenders in which the DGC included environmental, energy-saving and low-carbon emission criteria in acquiring service vehicles.

From here on, all other tenders have followed the same procedure, adapting the values for maximum consumption and CO₂ emissions and the evaluation criteria to the figures in the Government of Catalonia’s Guide for the Green Procurement of Vehicles, for each of the different types of vehicles.

This project has resulted in an improvement of the environmental quality of our fleet. This goes beyond the vehicles included in our case study, and will be maintained with time.

Contact

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On the GPP 2020 Project

The aim of the GPP 2020 Project is to promote low carbon emission public procurement throughout Europe to help obtain EU targets, with an eye on 2020, of reducing greenhouse gas emissions by 20%, increasing the use of renewable energies by 20% and increasing energy efficiency by 20%.

With this target, the GPP 2020 Project will implement more than 100 low carbon call for tenders to obtain a significant reduction in direct CO₂ emissions. The GPP 2020 Project is also driving forward a training programme that will include both courses and exchanges. – www.gpp2020.eu

On the PRIMES Project

The purpose of the PRIMES Project is to help local companies in six European countries –Denmark, Sweden, Latvia, Croatia, France and Italy– overcome difficulties with green public procurement processes, as many of these organisations do not have great enough skill or knowledge to apply them.

The PRIMES Project plans to develop basic skills and offer practical advice so that public procurement organisations can overcome obstacles when applying green public procurement. Consequently, this will foster energy saving and the reduction of CO₂ emissions. – www.primes-eu.net

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