



LOW SULPHUR FUELS procurement fact sheet

This fact sheet has been developed to provide materiel managers with information on opportunities for the procurement of low sulphur fuels (LSFs) for use in their organizations. It provides a checklist of suggested LSF procurement practices, a list of issues that may need to be addressed before implementing LSF purchasing initiatives, contracting recommendations, suggestions for estimating emissions reductions, and links to key sources of information.

For an overview of the environmental and health benefits of LSF procurement, current and future regulations and standards governing sulphur content in fuels, and brief descriptions of case studies, consult the Low Sulphur Fuels Procurement Guide, available at http://www.ec.gc.ca/energ/ecology/ecol_home_e.htm.

Checklist for maximizing your LSF procurement efforts

The following checklist summarizes best practices taken from case studies and discussions on LSF procurement with materiel managers.

- Conduct a review of current operations and the benefits of implementing an LSF purchasing initiative in conjunction with the use of cleaner exhaust emissions technology. This review should include estimates of the potential for reductions in sulphur dioxide emissions and any associated costs.
- Involve and foster cooperation between key groups within your organization, such as fleet and building operations, materiel management and contracting, mechanics, drivers, managers, and environmental and/or health affairs. Decision-makers are often more readily convinced of the soundness of a proposed initiative when they face a united front.
- Provide information to all key groups involved in procurement issues in your organization. This step is necessary in order to inform respective groups about the potential environmental and health benefits that may be achieved through LSF procurement and to respond to any questions or concerns.



- Receive approval from senior management for implementing a new approach to fuel procurement and for the potential incremental costs associated with purchasing LSFs. Be prepared to demonstrate that the health and environmental benefits of procuring LSFs in conjunction with using cleaner emissions exhaust technology are worth paying a financial premium for these fuels.
- Request information on the sulphur content of fuel as well as price in the request for proposal (RFP) process for fuel procurement.
- Evaluate potential fuel suppliers based on fuel sulphur content in addition to price.
- Switch to an LSF where feasible (e.g., use low sulphur diesel fuel for off-road applications).
- Retrofit vehicles, engines, and equipment with exhaust emission control after-treatment devices that maximize the potential of emission reductions through synergistic use with LSFs (e.g., catalytic exhaust mufflers or diesel particulate filters can reduce emissions, particularly when used with low sulphur diesel).

Other considerations

Some organizations have indicated that the following issues may need to be addressed before implementing your LSF procurement strategy:

- *LSFs and fuel tax* — Depending on the province, the fuel used for certain applications by some organizations may be exempt from fuel taxes. There is some concern that the use of low sulphur diesel for off-road applications will invalidate these tax exemptions. This is not always the case for every province, however, as some municipalities, such as Toronto, have discovered that provincial tax exemptions still apply when LSF is used for off-road applications. Under the *Ontario Fuel Tax Act*, when on-road fuels are dyed red to indicate that they will be used for off-road purposes, the fuels are exempt from the on-road fuel tax for eligible organizations.

For more information on fuel taxes in your province, please consult your provincial government {http://www.gc.ca/othergov/prov_e.html}.

Other resources you may also wish to consult include the following:

“Catalogue of Federal, Provincial and Territorial Taxes on Energy Consumption and Transportation in Canada (May 2001),” available from the Department of Finance website {http://www.fin.gc.ca/toce/2001/sdscat_e.html}

“Provincial Tax Comparison Guide,” Taxation Department, Provincial Government of Manitoba {Email: MBTax@gov.mb.ca}

- *Lubricity and lower sulphur content of fuels* — Several refining techniques are used to reduce the sulphur level in fuel. One of the common refining processes is hydro-treatment, which can reduce the natural lubricating qualities of the fuel and may result in increased wear on engines and parts. Lubricity enhancers can be added to LSFs to help protect against excessive injection system wear. You may wish to discuss the topic of LSF lubricity with your fuel supplier to ensure that your fuel lubricity requirements can be met by an LSF.
- *Vehicle/equipment impacts of LSFs* — Use of low sulphur diesel in off-road applications has not been reported to have an impact on vehicle/engine performance. Prior to using LSFs for off-road applications or switching from a heavy fuel oil to a light fuel oil for use in facilities, organizations are advised to work with suppliers to ensure that the fuel characteristics meet their equipment requirements. Organizations are also advised to monitor equipment maintenance and performance when switching to an LSF.

Procurement and contracting recommendations

Provided below is sample contract language that can be included for low sulphur diesel fuel procurement requirements (e.g. for use in off-road applications). The boldface wording can be adjusted to accommodate a bid for other fuel products with a lower sulphur content (e.g., light fuel oil with a specified maximum sulphur content).

“This specification describes **low sulphur diesel fuel** that shall have a maximum sulphur content of **500 mg/kg**. The product supplied by the bidder must meet this maximum sulphur content and include a specification sheet for each product being offered that lists the current sulphur content (in mg/kg) in the product as well as the projected sulphur content for the next **24 months**.”

Assessment of RFPs from fuel suppliers should consider the price per unit of fuel as well as the current and projected sulphur levels.

Quantifying emission reductions

As part of your organization’s sustainable development reporting requirements, you may be required to quantify emission reductions resulting from LSF procurement practices.

Many organizations generally track bulk fuel purchase information in their financial systems. In order to determine the amount of bulk fuel purchased and associated average sulphur content, consider the following steps:

1. Request financial system data on bulk fuel transactions. These data should include the following information:
 - fuel type and grade purchased
 - retailer name
 - retailer location (province, city, street address)
 - average sulphur content (mg/kg)
 - quantity of fuel purchased (litres)
 - quantity of low sulphur diesel used in off-road vehicles (litres)
 - cost of fuel purchased (\$)
 - cost per litre of fuel purchased (\$/litre)
2. Where average sulphur content is not available, request annual average sulphur content estimates from suppliers.
3. Estimate sulphur dioxide (SO₂) emissions from both the fuel previously used and the LSF purchased using the equation below. Compare the two results to determine your overall reductions in sulphur dioxide emissions from switching to a fuel with a lower sulphur content.

CALCULATION OF SULPHUR DIOXIDE EMISSIONS FROM FUEL:

$$\text{Total SO}_2 = [\text{mg sulphur/kg fuel}] \times [\text{L of fuel}] \times [\text{fuel density (kg/L)}] \times [\text{MW of SO}_2/\text{AW of sulphur}] \times 1 \text{ kg/1000 mg}$$

where:

- gasoline density = 0.734 kg/L (density can vary)
- diesel (on-road) density = 0.846 kg/L (density can vary)
- diesel (off-road) density = 0.850 kg/L (density can vary)
- molecular weight (MW) of SO₂ = 64
- atomic weight (AW) of sulphur = 32
- 1 tonne = 1000 kg

Case studies

Case studies of municipalities that have successfully implemented LSF procurement strategies include:

- London, Ontario
- Region of Waterloo, Ontario
- Toronto, Ontario
- Feasibility Study, Atlantic Region, Environment Canada

We are interested in learning about other examples of successful LSF purchasing initiatives. Case studies can be submitted to ogeb@ec.gc.ca.

Links and sources of information

Environment and Health

- Environment Canada {<http://www.ec.gc.ca>}
- Friends of the Earth {<http://www.foecanada.org>}
- Health Canada {<http://www.hc-sc.gc.ca/>}
- Ontario Public Health Association, "Fuelling Clean Air: Municipal Fuel Purchasing Policies that Reduce Emissions Contributing to Poor Air Quality & Climate Change" {<http://www.opha.on.ca/resources/fuel.pdf>}
- Transportation & the Environment {<http://www.ec.gc.ca/transport/home.htm>}

Regulations, Standards and Taxation

- Canadian General Standards Board {<http://www.pwgsc.gc.ca/cgsb/home/index-e.html>}
- Department of Finance Catalogue on Energy Taxation {http://www.fin.gc.ca/susdev/sdscat_1e.html#1_Fuel}
- Fuels Information Regulations and Sulphur in Liquid Fuels Reports {http://www.ec.gc.ca/energ/fuels/regulations/fuelsreg_e.htm}

Fuel Producers, Importers and Associations

- ARCO Products Canada Limited {<http://www.arcogas.com>}
- Bitumar Inc. {<http://www.bitumar.com>}
- BP {<http://www.bp.com>}
- Canadian Petroleum Products Institute (CPPI) {<http://www.cppei.ca/>}
- Canadian Tire Corporation, Limited {<http://www.canadiantire.com>}
- Chevron Canada Limited {<http://www.chevron.ca>}
- Consumers' Co-operative Refineries Limited (CCRL) – (306) 721-5279
- Husky Energy Inc. {<http://www.huskyenergy.ca>}
- Imperial Oil Limited {<http://www.imperialoil.ca>}
- Irving Oil Company {<http://www.irvingoilco.com/>}
- Neste {<http://www.neste.com>}
- Noco Energy {<http://www.nocoenergy.com>}
- North Atlantic Refining Limited {<http://www.na-refining.nf.ca>}
- NOVA Chemicals (Canada) Ltd. {<http://www.novachem.com>}
- Olco {<http://www.olco.ca>}
- ONYX Industries Inc. {<http://www.onyx-canada.com>}
- Parkland Industries Limited {<http://www.parklandindustries.com>}
- Petro-Canada {<http://www.petro-canada.ca>}
- Shell Canada Products {<http://www.shell.ca>}
- Suncor Energy Products Inc. {<http://www.sunoco.ca>}
- Ultramar Ltée {<http://www.ultramar.ca>}
- United Refining Company {<http://www.urc.com>}
- Williams {<http://www.williams.com>}

We are seeking additional links and resources on LSF procurement that can be featured on our Web site. Submissions can be forwarded to ogeb@ec.gc.ca.

For additional information

Oil, Gas and Energy Branch
Environment Canada
351 St. Joseph Blvd.
Gatineau, QC K1A 0H3

The internet Web site addresses in this fact sheet were current at the time of printing and are subject to change.

Additional information can be obtained at Environment Canada's Web site at www.ec.gc.ca or at the Inquiry Centre at 1-800-668-6767.

