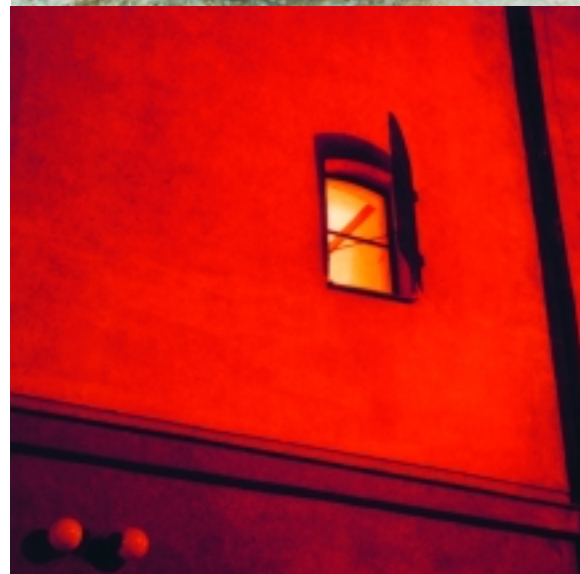




Road traffic accounts for some of Stockholm's most serious environmental problems. But cars don't have to pollute. Vehicles powered by renewable fuels mean cleaner air, lower greenhouse gas emissions and less noise. That's why the City of Stockholm is doing so much to promote clean vehicles. Our goal is a living city, with a healthier environment and a vibrant urban scene.



Stockholm Chooses Clean Vehicles





Did you know...

... that there are alternatives to ordinary cars — alternatives that work just as well but cause less environmental impact?

... that these clean vehicles can help reduce traffic-related pollution problems in Stockholm?

... that favorable tax rules and other rebates can make it less expensive to drive a clean vehicle than an ordinary car?

... that almost half of all municipal cars in Stockholm are clean vehicles?

... that clean cars represented more than 1 percent of new-car sales in Stockholm in 2003?

Clean Vehicles in Stockholm

“Set a good example.” Under that motto, Stockholm established a world record in 1998 with 300 clean vehicles on the city’s roads. Just a year later, the number had almost doubled, with low-emission vehicles hard at work in landscaping, rubbish collection and transportation of people and freight.

But progress doesn’t just happen by itself. That’s why the city in 1994 created Clean Vehicles in Stockholm: To provide fresh thinking while acting as an umbrella for diverse projects promoting low-emission vehicles and renewable fuels.

That fresh thinking means going beyond simply equating auto traffic with noxious emissions, and avoiding the conclusion that restricting traffic is the only way to cut pollution. Of course it’s best for the environment if we walk, bike or ride public transport, but with the steady growth of a vibrant big city will always come greater demand for transportation of all kinds. So part of the answer is clean vehicles, generating lower emissions and running on renewable fuels.



Road traffic is among the biggest polluters in Stockholm. Promoting clean vehicles is one way the City of Stockholm works to reduce impacts.

Investments in better logistics, traffic coordination, bike paths and reliable public transport, car pools, congestion charges, and emission restrictions on heavy vehicles are other ways the city addresses traffic and pollution problems.

Our goals

In 2003, almost half of the City of Stockholm's cars and trucks were clean vehicles. One goal is to bring that figure up to 60 percent. For vehicles which can operate on petrol, biogas or ethanol, the goal is that petrol will account for 20 percent or less of total fuel consumption.

But greening the fuel of the city's own fleet won't be enough. The city has set a target of 4 percent of new car sales being clean vehicles by 2006. The trend is already clear: From sales of zero in the early 1990s, low-emission vehicles in 2003 accounted for more than 1 percent of new sales.

Interest will grow as drivers are offered more choice in models, so one of our aims is to improve selection. In the last ten years or so, Clean Vehicles in Stockholm has purchased, driven and evaluated various models, and our work to generate demand gives the manufacturers valuable feedback. The number of available models is growing steadily.

Clean vehicles make it easier to meet Stockholm's pollution goals, such as a long-term commitment to reduce traffic-related NO_x emissions by at least 25 percent, and carbon dioxide by 60 percent or more.



Alternative routes

To achieve those dramatic pollution cuts, we have to make gains on many fronts. We can't put all our efforts into one idea if we're going to inspire a completely new trend, so Clean Vehicles in Stockholm works on a variety of projects and in creative forms of partnership.

Awaken interest

A substantial part of the effort goes into providing information about clean vehicles, and we publish newsletters,

organize seminars and act as a resource center. Or do you want to have the driving experience? Companies and organizations can borrow clean vehicles for a week, at least through September 2004. When you bring the car back, we ask you to answer some questions about the model you drove.

Promoting ease-of-use

It has to be easy to re-fill the tank, charge the batteries and get service. Clean Vehicles in Stockholm has work-



ed together with petroleum companies to establish an infrastructure of fuel pumps and charging stations. And now you can get all makes and models of clean vehicles serviced in Stockholm.

Keeping costs down

Most clean vehicles are still more expensive to own and drive than equivalent gasoline-powered cars. And even when clean cars might have the edge in operating expense, the high purchase price can be daunting. That's why the EU is offering, at least through September 2004, subsidies for companies in Stockholm which buy clean vehicles.

Should clean cars be allowed to park free and be exempted from the new congestion charges? Clean Vehicles in Stockholm works in favor of 'carrots' such as these. Together with local politicians, we argue for tax rules and other economic incentives by the

government and parliament which benefit clean cars.

Consolidate demand

Instead of just one municipality or company buying clean cars, groups can be formed to increase purchasing power. This makes it easier for carmakers to meet demand, and it helps keep prices down. Clean Vehicles in Stockholm has facilitated programs like this several times. In the late 1990s, for example, demand began to swell for cars that could run on gasoline or ethanol. That led to the launch in 2001 of Ford's Focus Flexifuel, which got a Swedish pre-order of 4000 cars, and which cost some 500 euro less at launch than the gasoline-only model.

Similarly, Stockholm and four other European cities were able to press prices significantly with an order for 200 electric cars.

Cooperation in Sweden and Europe

Clean Vehicles in Stockholm is based on a network of contacts with others — both in Sweden and internationally. Here at home we typically work with local councils and commercial companies such as fuel retailers and vehicle dealers. The majority of our activities are financed by the EU, primarily through the Civitas program.

Stockholm works in various projects with these cities:

Amsterdam	Madrid
Barcelona	Palermo
Bremen	Pécs
Bucharest	Perth
Genoa	Porto
Graz	Prague
Hamburg	Reykjavik
Lille	Stuttgart
London	Turin
Luxemburg	Walloon region

Special projects

- Trendsetter is a European project to take on traffic problems in five cities. Our Stockholm staff coordinates activities for the project, and the city is also moving to eliminate certain market obstacles to clean cars

- Moses is another European project in which Stockholm and six other cities develop ideas for how passenger cars can more often carry two or more people. Stockholm will test a 'transportation card' that can be used to book from a car sharing pool, or for taxis and public transport (see page 14).

- CUTE stands for Clean Urban Transport in Europe, an EU project to test fuel cell busses in nine cities, including Stockholm. In addition to testing the emission-free busses in real traffic conditions, production and distribution facilities for hydrogen gas fuel are being built.

www.trendsetter-europe.org
www.moses-europe.org
www.branslecellsbuss.se
www.fuel-cell-bus-club.com





The challengers are already here

Passenger cars, vans, trucks and buses — there are clean vehicles for almost any need these days. To be called a clean vehicle, it must run on an environmental fuel, which may be biogas, ethanol or electricity. The common factor for these fuels is that they are renewable, part of a cycle that produces less of the carbon dioxide that causes global warming. And of course these vehicles produce lower emissions than their gasoline or diesel counterparts.

There are now several cars available which run on renewable fuels and gasoline alike. These are also referred to as clean vehicles.

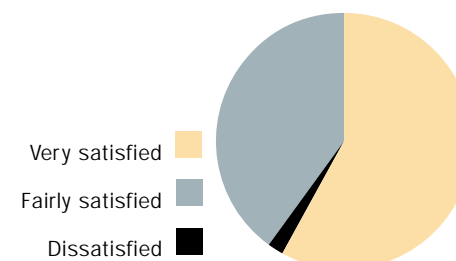
cisely which vehicles are to be classified as clean vehicles according to the above. That makes it possible for various city agencies to offer incentives such as free parking or an exemption to the congestion charges which will soon be placed on traffic entering or leaving the city during rush hours.

For now, some clean vehicles cost more to buy and maintain than ordinary cars. Fuel costs, on the other hand, are equal to or lower than petrol, thanks to tax reductions. Electric and hybrid vehicles are also relieved of license fees for five years. Companies choosing clean cars for their employees receive further economic incentives.

Stockholm has defined fairly pre-

Satisfied drivers

A 2003 study showed that people who have borrowed clean cars from the city of Stockholm almost always say they were 'fairly satisfied' or 'very satisfied' with performance and features. The cars included the Volvo V70, Ford Focus, Toyota Prius and Opel Zafira. They run on biogas or ethanol and gasoline, or they are manufactured as hybrids powered by electricity and petrol.



"It's worked great and I'm happy with it. But we need a lot more stations with biogas, because there just aren't enough yet."

Karin Strömqvist Bååthe,
Environmental Manager,
DHL



"It's just as comfortable and quiet as an ordinary car, and just as fun to drive."

Jonas Snäll,
Salesman, Coca-Cola



"I save at least 500 kronor [55 euro] every month by driving a clean car. And it feels good to know that I'm polluting less."

Peter Holmner,
Salesman,
Svenska PA System AB





Getting away from gasoline

Do auto emissions contribute to the greenhouse effect? Is your car bad for your health and the environment around you? How much noise does it make? The answers can depend very much on what kind of fuel your car uses. The alternatives to gasoline and diesel are becoming more widespread.

Biogas

Biogas, which contains methane and carbon dioxide, is created when sewage is treated or when organic waste breaks down. This gas used to go to waste, but today we use it to heat

buildings and generate electricity, and as a vehicle fuel. Biogas is purified before it goes in the tank, and it's considered to be among the cleanest auto fuels. There is no net contribution to atmospheric carbon dioxide. And biogas cars are actually quieter.

The engine in a biogas vehicle must be adapted for methane gas. The early models had inadequate gas tanks and couldn't be driven very far without switching to petrol, but these days the tanks are under the floor and they carry much more.

Passenger cars can usually be run on biogas or gasoline — the driver switches from one to the other with a switch. Heavier vehicles usually operate on biogas alone. Trash collection and busses are often well-suited to biogas operation because the vehicles are traveling fixed routes, making it easier to localize filling stations.

Natural gas and purified biogas are chemical equivalents, and biogas vehicles can run on natural gas. While natural gas emits less toxins than gasoline, it still contributes to the greenhouse effect, so the environmental gains are smaller than with biogas.



Ethanol

Alcohol is produced as a vehicle fuel in Sweden from grains and cellulose by-products. Ethanol can also be made from any number of organic materials and burned in engines adapted for the fuel. In Sweden, 15 percent gasoline is added to the fuel to make cold starts possible. With an 85 percent ethanol level, the fuel is known as E85. Ethanol produces less unhealthy emissions, and it also contributes far less carbon dioxide.

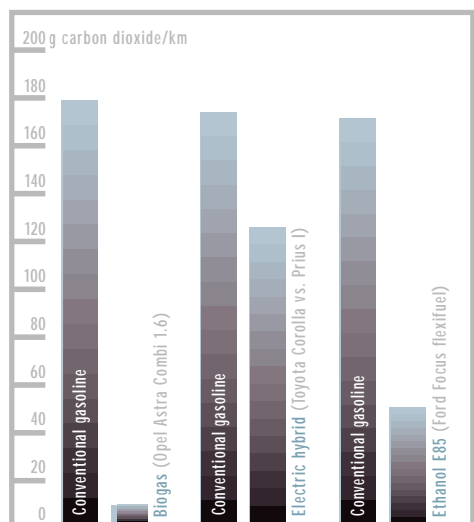
Ethanol cars can be operated on either gasoline or E85. A computer senses the fuel in the tank and adapts the engine as it runs. The clear advantage here is that these cars can be

used without restriction until the network of ethanol filling stations is built out.

Electricity

Electric cars run on batteries, generating no emissions at all and operating very quietly. If it's charged from an environmentally adapted electric generating source, an electric car probably causes the least environmental impact of all the options. The problem is that the batteries have to be charged often, after every 50 to 90 kilometers.

Today's battery-driven cars are best suited to transportation and service in densely urbanized areas, for instance in mail delivery.



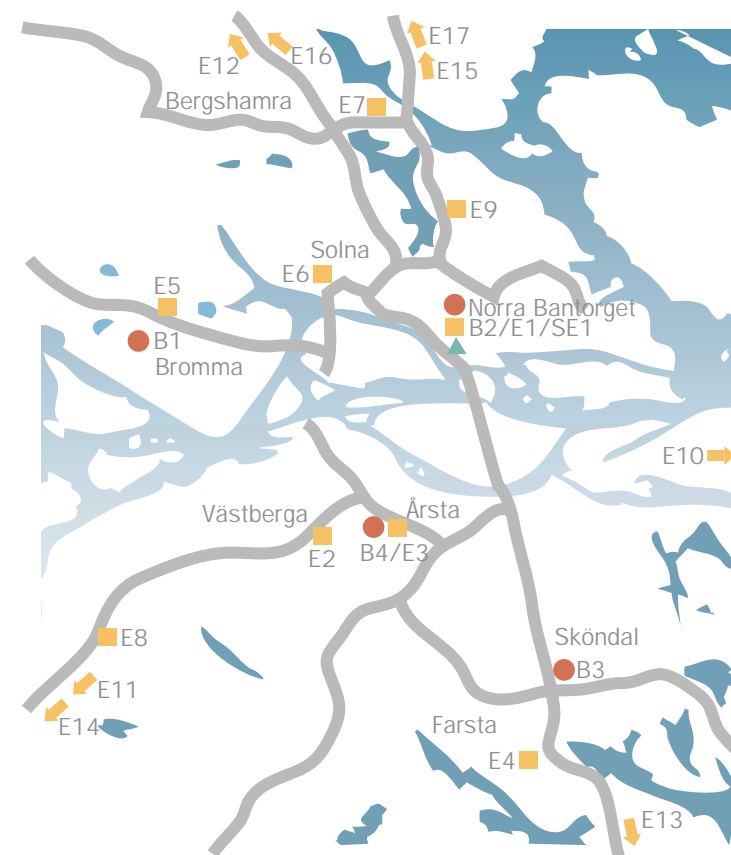
EMISSIONS OF CLIMATE CHANGE GASES DROP SUBSTANTIALLY WITH CLEAN VEHICLES.

To create a car that could run on batteries but not need to stop and charge so often, carmakers have introduced hybrids, driven by both batteries and a gasoline or alternative-fuel engine.

With electric hybrids, the batteries can be charged by the gasoline engine, at the same time it kicks in to help the car accelerate and drive at slow speeds. The engine in a hybrid is allowed to run more evenly, which can reduce fuel consumption by as much as 40 percent.

Hydrogen gas

Hydrogen is seen as the fuel of the future. A vehicle could be equipped with fuel cells that produce electricity through the chemical reaction between hydrogen and oxygen in the air. Fuel cells function much like a battery that doesn't need charging as long as it can get hydrogen. Hydrogen is created by sending an electric charge through water.



- ETHANOL**
 - SHELL NORRA BANTORGET **E1** TORSGATAN
 - OKQ8 VÄSTBERGA **E2** KONTROLLVÄGEN 2
 - OKQ8 ÅRSTA **E3** PARTIHANDLARV 20
 - OKQ8 FARSTA **E4** FORSHAGAGATAN 1-3
 - OKQ8 BROMMAPLAN **E5**
 - PREEM SOLNA **E6** VÄSTRA SKOGEN JOHAN ENBERGSVÄGEN 2
 - OKQ8 BERGSHAMRA **E7** KUNGSHAMRAVÄGEN 1
 - STATOIL KUNGENS KURVA **E8** EKGÄRDVÄGEN 4
 - STATOIL FRESCATI **E9** ROSLAGSVÄGEN
 - OKQ8 GUSTAFSBERG **E10** BLEKÅNGSVÄGEN 1
 - Q STAR FÖRSÄLJNING **E11** AVFART E4 PERSHAGEN
 - OKQ8 GLADJENS TRAFIKPLATS, UPPLANDS VÄSBY **E12**
 - ICA MAXI HANINGE **E13** SÖRBYLEDEN
 - OKQ8 SÖDERTÄLJE **E14** JÄRNAG 19/BANG 8
 - OKQ8 NORRTÄLJE **E15** STOCKHOLMSV 51
 - OKQ8 ÄRLANDA STAD **E16** SERVOGATAN 12, MÄRSTA
 - OKQ8 RIMBO **E17** ROSLAGSVÄGEN 6
- BIOGAS**
 - STHLM VATTEN **B1** DROTTHNINGHOLMSV 490
 - SHELL NORRA BANTORGET **B2** TORSGATAN
 - STATOIL SKÖNDAL **B3** NYNÄSVÄGEN
 - OKQ8 ÅRSTA **B4** PARTIHANDLAR 20
- ELECTRICITY**
 - SHELL / BIRKA ENEGRI **SE1** NORRA BANTORGET

Fueling stations

The map shows alternative-fuel filling stations in the Stockholm areas as of February 2004. For the latest info, go to www.miljobilar.stockholm.se. At www.miljofordon.se you'll also find a listing of stations in the rest of Sweden.



"If we had our own car, we'd probably drive more than we need to. With car-sharing I have more control over when I need a car, and I can see clearly what it costs. Sometimes it makes more sense to get there another way."

Lisa Enarsson with her sons Erik and Enar. The car-sharing pool has a special space right across the street from their house in the Hammarby Sjöstad area of Stockholm.

A car when you need one

For many of us who live and work in Stockholm, a car is something we need occasionally, but not every day. An alternative to owning a car may be sharing one or more cars with other families in a car pool. The same idea could apply for work-related travel.

The city of Stockholm works to encourage private car pools to expand. In addition to acting as a clearing-house for contacts between people

looking for carpool partners, the city and Clean Vehicles in Stockholm have teamed up to develop a booking system. The idea is to allow companies and local agencies to easily book transportation via the Internet, whether it is to be by car, bus, underground, train or taxi. Each booking would be registered on a 'Transportation Card' and billed later. Administration of the booking and payment system is made simpler at the



same time clean vehicles would be used more effectively. Stockholm has agreed to commit 20 vehicles to this pool.

www.bilpool.nu
www.moses-europe.org

About Clean Vehicles in Stockholm

Clean Vehicles in Stockholm is run as a project group in the city's Environment and Health Administration. We cooperate with other municipal agencies and private companies in the city, and externally with governments, cities and businesses through various EU projects. The steering committee overseeing the work of the project is selected from representatives of all parties holding seats on the City Council.

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