

How to Repair the Air in our Cities

by Ross McKittrick

The freedom to drive is incredibly valuable. Obtaining a driver's license and a car opens up a world of opportunity. No longer is one restricted to job opportunities within walking distance or on a transit route: a car gives you a feasible job search radius of about 100 km in any direction. Such mobility facilitates better matching of workers and jobs, as well as faster re-employment in case of job loss. This is beneficial to the individual and to society as a whole.

Owning a car is also a complement to many forms of consumption. It is very difficult to shop around for, say, furniture, clothing, or appliances, when you are on foot or dependent on public bus routes. Being able to hop in the car and visit four or five stores in a two-hour outing (with kids in tow) can mean a lower overall cost of living and a wider range of consumer choice.

And face it: cars are fun. The Beach Boys could sing about their "Little Deuce Coupe," but no one is going to write a tune about their "Little Bus Pass." When Steppenwolf sang "Born to

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Be Wild" they didn't have in mind taking public transit somewhere. They were talking about roaring down a highway. Which is fun.

But cars generate exhaust, and this leads to smog, and so there is a public policy problem needing attention. Policies to date have included fuel efficiency and emissions standards on new cars, rules for gasoline formulas, and more recently programs like AirCare (BC) and Drive Clean (Ontario) that mandate regular inspections and tune-ups. The policies have yielded mixed results.

Smog is formed by a combination of nitrogen oxides (NOx), volatile organic compounds (VOCs), particulates, and UV light, which produce, among other things, ground-level ozone, the contaminant that makes breathing difficult on bad air days.

You can get detailed information on urban air quality from about 1974 to the present in The Fraser Institute's biannual *Index of Environmental Indicators*, available on-line at www.fraserinstitute.ca. While sulphates and particulate levels have dropped in most cities across the country, NOx and VOC emissions have held steady or increased since the 1970s. Neither has grown as fast as the total amount of motor vehicle use, which is a kind of progress, but absolute reductions in emissions have been elusive. As a result, urban ozone levels are not going down, and in most Canadian cit-

ies the average concentration is above recommended levels, especially during the hot summer months.

NOx emissions are tied to the efficiency of the engine, and cars have become more efficient over time. But it gets increasingly costly to find further efficiency improvements, so we should be cautious about mandating more increases in motor vehicle fuel efficiency. Every rule that raises the price of new cars relative to used cars encourages people to keep old cars longer, thus slowing down the process of updating the vehicle fleet. If new cars become relatively expensive, the slowdown in vehicle upgrading can nullify any benefits of tightened standards on new cars.

Nor are vehicle inspection programs necessarily much help, despite their cost and inconvenience. Drivers make a lot of decisions that affect air quality: vehicle size at the time of purchase, when and how much to drive, the type of gasoline to use, etc. Drive Clean and AirCare have no impact at these margins. Such programs impose costs and inconvenience on all drivers, yet affect the maintenance schedule of only a few cars by a small amount. The cars that receive the most tune-ups tend not to be driven much anyway. And most commercial vehicles are exempt.

Is there an alternative? Some of our smog comes from the US, and despite the falling dollar these imports just keep rolling in. But we do have control over our own emissions, especially vehicles and power plants.

The first habit for the feds and the provinces to break is the tendency to write new regulations. Ministers love announcing "tough" new rules, as if "tough" and "effective" are the same thing. Regulations do not create outcomes. Regulations create *incentives*,



and how people respond to those incentives determines the outcome. Often the incentives give rise to behaviour that runs counter to the goal of the regulation.

For instance, a recent set of emission-control requirements on US power plants exempted existing facilities but raised the cost of building new ones. In response, power producers have hung onto their old plants much longer than they initially planned to, generating more emissions than if they'd built new ones on schedule.

To reduce motor vehicle-based emissions, rather than writing down more command-and-control regulations, we should consider basing vehicle license fees on a car's impact on local air quality. This idea has been kicking around for a long time, and has been proposed as a solution in some US cities with persistent air quality problems such as Houston (Green and Skumatz, 2000).

Such a program could work as follows:

At license renewal time, a car would be assigned an emissions rating based on what comes out of its tailpipe. The government could use existing databases of emission characteristics for each model and age (these are already used for vehicle inspection programs), but the owner would have the option of paying for an emissions test to see if the car deserves a better rating. Call the emissions rating R , and suppose it ranges from 1 (cleanest) to 10 (dirtiest). In addition, there would be a local impact factor (call it L) which accounts for the fact that emissions in some areas matter less than in other areas, in the opinion of the people who live there. Each community would choose its own value of L , on a scale from 1 to 10, in which 1 means mini-

mum aversion to vehicle exhaust and 10 means maximum aversion.

The vehicle owner would then license a car, not for a calendar year, but for a desired distance. The cost would be (R times L) dollars per thousand km. There would need to be an upper limit to the distance one could pre-purchase, say, 20,000 kilometres.

For instance, if you have a vehicle with an emissions rating of 3, and your town's impact factor is 5, and you buy a

An emission pricing system will improve air quality cost effectively.

license for 10,000 kilometers, your fee is 3 times 5 times 10, which equals \$150. If your vehicle is a heavier emitter rated at $R = 6$, your renewal fee would be \$300. And if your town raises its impact factor to 7, the fee becomes \$420. Thus, vehicle license fees would be based on total damages to local air, not an arbitrary price per calendar year, as is currently the case.

Note that an emissions pricing scheme would be used *instead* of, not in addition to, vehicle testing programs like AirCare or Drive Clean. In addition, it would not be necessary to use CAFE-style (Corporate Average Fuel Economy) standards or other technical regulations on motor vehicles. CAFE measures are blunt national instruments for dealing with specific local air quality problems. Once people have to pay the cost for their impact on local air quality, they will have a strong incentive to look

for cleaner cars and/or use their existing vehicles more sparingly. The key is to create the right incentives, and that requires getting the price right.

Also, this emissions pricing scheme would be used instead of all current licensing fees. Taxing vehicle use can be regressive—putting proportionately higher costs on low-income households—but this is largely offset by eliminating ordinary license fees (Walls and Hanson, 1996).

How would the local impact factors be set? Town councils could pick them, or better yet, let the people decide directly through a referendum. Give people information on the range of typical license fees, then let them indicate their preferred number from 1 to 10. Rank the votes from smallest to largest, find the one in the middle of the pile, and that's your town's impact factor, at least until the next vote. People could weigh the benefits and costs of a local vehicle emissions price as they see fit.

For instance, a city might have a lot of people who do not drive and who resent the effect on air quality from those who do. So they finally get their say! They mark their ballots at L equals 10. But in other towns, people may feel that air quality is not a problem, and they prefer to keep driving costs down, so the rating ends up much lower. There is nothing intrinsically wrong with a community having a very low rate, setting L to 1 for instance, as long as the public choice mechanism is fair. If an impact factor is set at 1 (or 10) by a town council against the wishes of the population, it may be necessary to have provincial intervention, but chances are the ordinary mechanisms of local politics will constrain the town's choice.

People who face very high license fees will have various options to save money.

Perhaps their mechanic can improve their engine's performance and put the car into a better rating category. Or perhaps the owner can drive less; or maybe it is time for them to get a cleaner car, given the amount of driving they have to do.

This kind of distance-based system could potentially be undermined by odometer tampering. Automakers don't have to develop perfectly tamper-proof models, only ones sufficiently secure that it will not be worth most people's effort to tamper with them. People already report their distances for existing licenses, though there isn't a financial incentive to understate the amount. It would likely be necessary to have odometer readings certified by a mechanic, in which case it would be simplest just to contract out vehicle licensing to auto repair shops, just as Ontario has contracted out emission inspections.

People who live in one place but do a lot of driving in another (for instance out-of-town commuters) will not face the correct price unless their communities each charge the same local impact rate. However, they will at least be paying something per kilometre, unlike the current flat-rate licensing system in which they pay nothing per km. If some people move to get out of a high-rate community, this would not necessarily be a problem, since a lot of driving is in the vicinity of one's house, and therefore the high-rate community should expect some drivers to leave the area. If an area with a low impact fee found itself receiving an influx of motorists, it may be necessary for it to adjust the rate: alternatively, the community may be happy to have the growth.

An emission pricing system will improve air quality in a cost-effective manner. Those who drive a lot will

switch to cleaner vehicles. High-emission cars would be allocated through the used car market to people who either live in low-damage areas (i.e. rural and remote areas that don't have air quality problems) or who drive very little. This is fine: it is not necessarily a problem that dirty cars remain on the road if they are owned by people who rarely use them. All vehicle owners would have an incentive to economize on vehicle emissions. This may translate into carpooling, increased ridership on public transit, etc. Or it may not. Vehicle owners may just choose to drive less. The key is that the solution will be whatever minimizes household costs, and central planners typically cannot determine this ahead of time.

One additional advantage of this kind of pricing scheme is that it generates the information needed to assess its own usefulness. Data from the vehicle licensing process would generate city-specific emission levels, and citizens could use this information when deciding on future local impact rates (see Victoria

Transport Policy Institute, 2000; and USEPA, 1998).

References

- Green, Kenneth and Lisa Skumatz (2000). "Clearing the Air in Houston." Policy Study No. 273 (November). Reason Public Policy Institute. Available digitally at <http://www.rppi.org/environment/ps273.html>.
- United States Environmental Protection Agency (USEPA) (1998). "Technical Methods for Analyzing Pricing Measures to Reduce Transportation Emissions." Report EPA 231-R-98-006 (August). Available digitally at <http://www.epa.gov/otaq/transp>.
- Victoria Transport Policy Institute (updated December 2002). "Distance-Based Pricing, Mileage-Based Insurance, Registration and Taxes." *Online Transportation Demand Management Encyclopedia*. Document available digitally at <http://www.vtpi.org/tdm/tdm10.htm>.
- Walls, Margaret and Jean Hanson (1996). *Distributional Impacts of an Environmental Tax Shift: The Case of Motor Vehicle Emission Taxes*. Report 96-11 (February). Washington, DC: Resources for the Future. 

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