



Smoky Vehicle Reporting Program

2022-23 Annual report



CleanRun
Let's drive down emissions

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1 Smoky Vehicle Reporting Program

This report summarises the data and observations collected by the [Smoky Vehicle Reporting Program](#) between July 2022 and June 2023.

It is published to promote transparency in the program and provide feedback to people who submitted a smoky vehicle report during the year.

1.1 Program overview

The program is a joint initiative of the Department of Water and Environmental Regulation (DWER) and Department of Transport (DoT). It aims to:

- identify vehicles that are at risk of breaching vehicle emission legislation
- engage with vehicle owners to undertake any necessary vehicle maintenance.

The program is a key initiative of the National Environment Protection (Diesel Vehicle Emissions) Measure 2001 and the *Perth Air Quality Management Plan*.

When identifying whether a vehicle is breaching emission legislation and can be classified as 'smoky', the program follows regulation 354 of the Road Traffic (Vehicles) Regulations 2014, which relates to the visible emissions of certain motor vehicles:

- (1) This regulation applies to a motor vehicle that is propelled by an internal combustion engine and was built after 1930.
- (2) A motor vehicle mentioned in sub regulation (1) must not emit visible emissions for a continuous period of at least 10 seconds.
- (3) This regulation does not apply to emissions that are visible only because of heat or the condensation of water vapour.

In line with this, a smoky vehicle is one which emits visible emissions for at least 10 continuous seconds.

The program is a community engagement initiative to address public concerns about vehicle emissions and to encourage vehicle owners to take vehicle maintenance actions. It complements the regulatory effort of WA Police and authorised officers to identify excessively polluting vehicles and issue compliance notices.

1.2 How the program works

Members of the public who identify vehicles which smoke continuously for 10 seconds or more can submit reports to DWER. DWER and DoT then verify reported details and notify the vehicle owner, who is invited to respond. Those responses are collected and statistical data on reported vehicles is compiled for analysis.

Privacy

DWER does not have access to vehicle owner information and DoT does not have access to reporter information. This separation of data protects the privacy of reporters and vehicle owners, and the integrity of the program.

Making a report

DWER maintains an [online reporting portal](#) through which anyone can report a smoky vehicle's details. The data reported, which allows vehicle owners to be identified, includes:

- the vehicle body type, licence number, make, model and colour
- the location, date and time of sighting
- the reporter's name and contact details.

Photographic evidence can also be provided but is not essential. Reporters are sent a notification email to confirm their submission. If a report is incomplete or unclear, they may be contacted for further information.

Report verification

To mitigate against malicious and vexatious reporting, all reports are verified.

- Reports are checked for basic errors, such as mistyping of the vehicle licence number. Obvious mistakes are either queried or rejected.
- If the notification email sent to the reporter is rejected, a bounce-back email will be received and the report discarded.
- After the information identifying reporters is removed, batches of reports are sent to DoT every two months. DoT extracts vehicle owner, make, model and colour data from its database and sends DWER the vehicle make, model and colour for cross-checking against reports. Those with obvious mismatches are rejected.

Vehicle owner notification

After verification, reports are sent to a third party, which prints notification letters on behalf of DWER and DoT using the vehicle details from the reports. The letters are sent to vehicle owners, along with a reply-paid card to allow them to respond to the report.

Vehicle owners complete the reply-paid card with their licence number and fuel type, and provide a response to the report, which can include:

- vehicle repaired, or scheduled for service
- vehicle does not smoke for 10 continuous seconds
- cannot afford to repair vehicle
- vehicle has been sold or disposed
- vehicle details incorrect
- other – please give details.

These responses are recorded against each report. Response data is analysed annually for observations and trends.

Vehicle owners can contact DWER to discuss the letter and reporting program.

1.3 Significant program changes

No significant program changes were made during 2022–2023.

1.4 Acknowledgements

This program exists and continues to operate thanks to the efforts of members of the public who care about the air they and others breathe.

For those reading this summary who have submitted a smoky vehicle report, know that you are making a difference. We hope you continue to make reports and also encourage your acquaintances to report the smoky vehicles they see. Having a diverse range of people reporting to the program improves coverage and helps build a bigger picture of where vehicle emission issues are occurring.

If you have received a smoky vehicle letter and have taken action to repair, service or retire your vehicle, we hope you enjoy the reduced operating costs and the knowledge that you've reduced the impact of your vehicle on local air quality. Vehicle emissions are a significant source of air pollution in urban environments – any reduction makes a real difference to your community.

2 Program performance

2.1 Reporting data

Figure 1 shows the program's recent reporting history. In 2022–2023, the program:

- received 750 valid reports
- verified 640 reports as valid and sent letters to identified vehicle owners
- received 281 responses from letters sent.

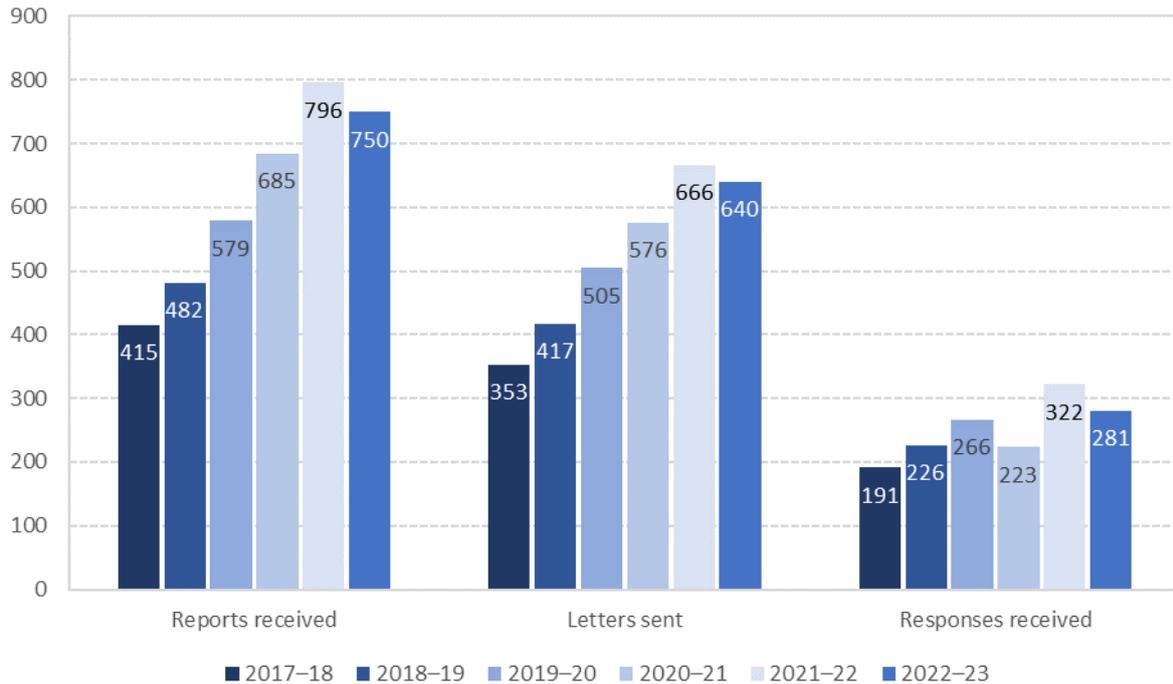


Figure 1: Annual reporting and response data

The number of reports received, and letters sent, in 2022–2023 is lower than the previous year for the first time in several years. It is unclear why the upward trend in reports received has not continued this year, though it would not be expected that the upward trend would continue indefinitely. The number of responses received for letters sent to vehicle owners during this period remains broadly consistent with recent years, though is trending down with respect to total letters sent.

2.2 Reporting frequency

The monthly reporting rate for the recent years is presented in Figure 2.

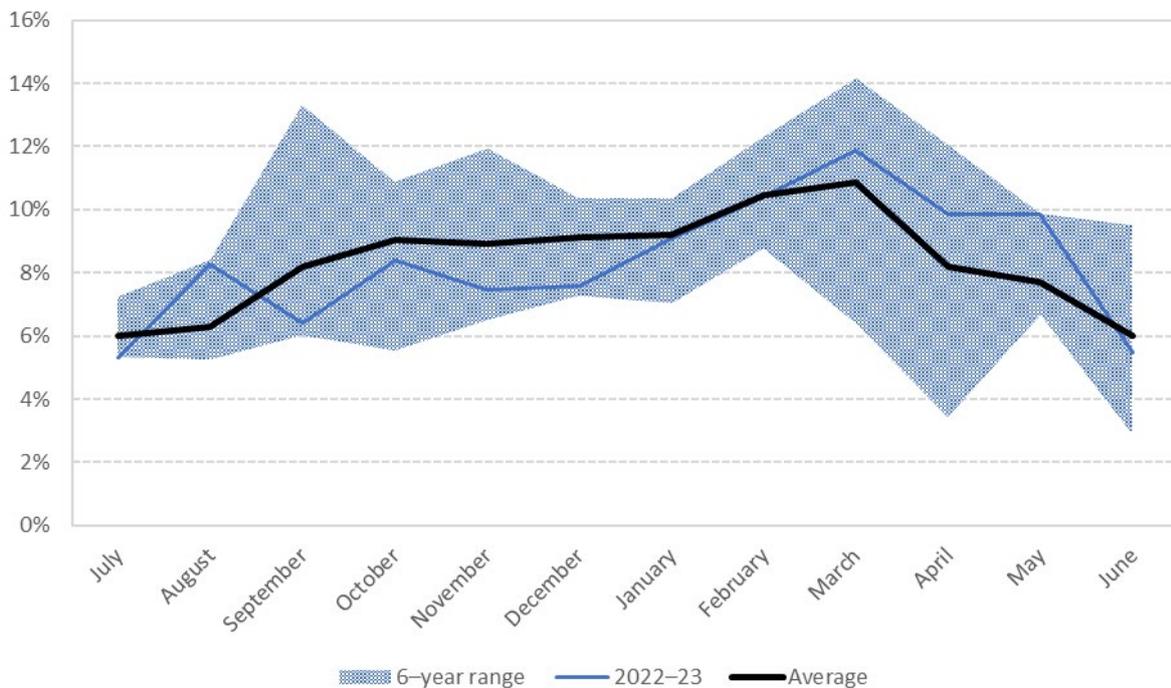


Figure 2: Reports received per month

The 2022–2023 period had a reporting frequency profile similar to the average of the last six years, with a slightly lower reporting rate over spring-summer, and elevated reporting rate during autumn-winter.

Historic data shows spike and dips occurring at various times of the year. It is unknown what, if any, specific factors influence why reporting frequency varies over the year. Considerations include:

- weather influencing visibility of exhaust fumes
- seasonal variance in driver activity or behaviours, such as air-conditioner use or scheduled servicing
- seasonal fuel quality variation, such as a change in Reid Vapour Pressure.

2.3 Repeat vehicle reports

In 2022–2023, 32 vehicles were reported more than once within a 12-month period. Of these, eight were reported three times, and three reported four times.

Of the vehicles reported more than once, seven vehicle owners responded to the advisory letters sent. All but one advised they had either divested themselves of their vehicle or had undertaken repairs/servicing.

2.4 Response data

Responses received in recent years are summarised in Figure 3.

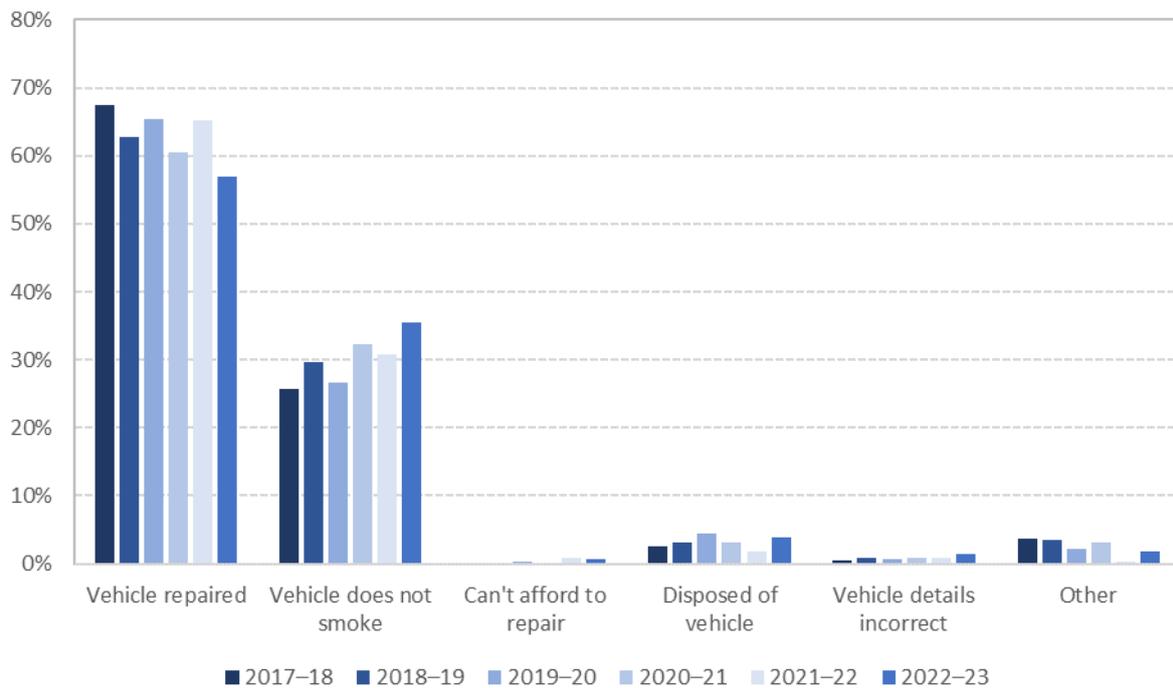


Figure 3: Distribution of responses received

Over half of responses received in 2022–2023 indicated the vehicle owner had repaired their vehicle or scheduled it for servicing after being notified. This is consistent with responses from recent years. The ‘vehicle does not smoke’ response was received in 35 per cent of cases, which was comparable to the responses in recent years.

The continuing downward trend of ‘vehicle repaired’ responses appear to be mirroring the upward trend of ‘vehicles does not smoke’ responses. This warrants further monitoring to identify potential causes for this shift over time.

Responses falling into other categories remain low with only 22 (8 per cent) of responses received in 2022–2023 falling outside the two main categories.

2.5 Reporter diversity

It is important to consider the diversity of the reporter base when assessing the significance of the dataset. A high percentage of unique reporters dilutes the risk of observational bias in the dataset. A very small number of heavy reporters can potentially impact the proportion of responses received if they do not properly observe the 10-second rule. An example of this is the reporting of vehicles that puff smoke on take-off but not for 10 continuous seconds.

An additional benefit of a wide reporter base is the likelihood of improved spatial coverage, though this is no guarantee and there is insufficient data collected for any meaningful spatial analysis of reports received. A wide reporter base can also be used

as a proxy to measure community awareness of the program, though it is noted that several factors can influence reporter participation levels.

Reporter diversity, depicted in Figure 4, shows that the number of unique reporters has been mostly stable from 2019–2020 while the number of reports received has been gradually increasing (excepting 2022–2023). This represents an average of 1.8 reports made per person for the 2022–2023 period.

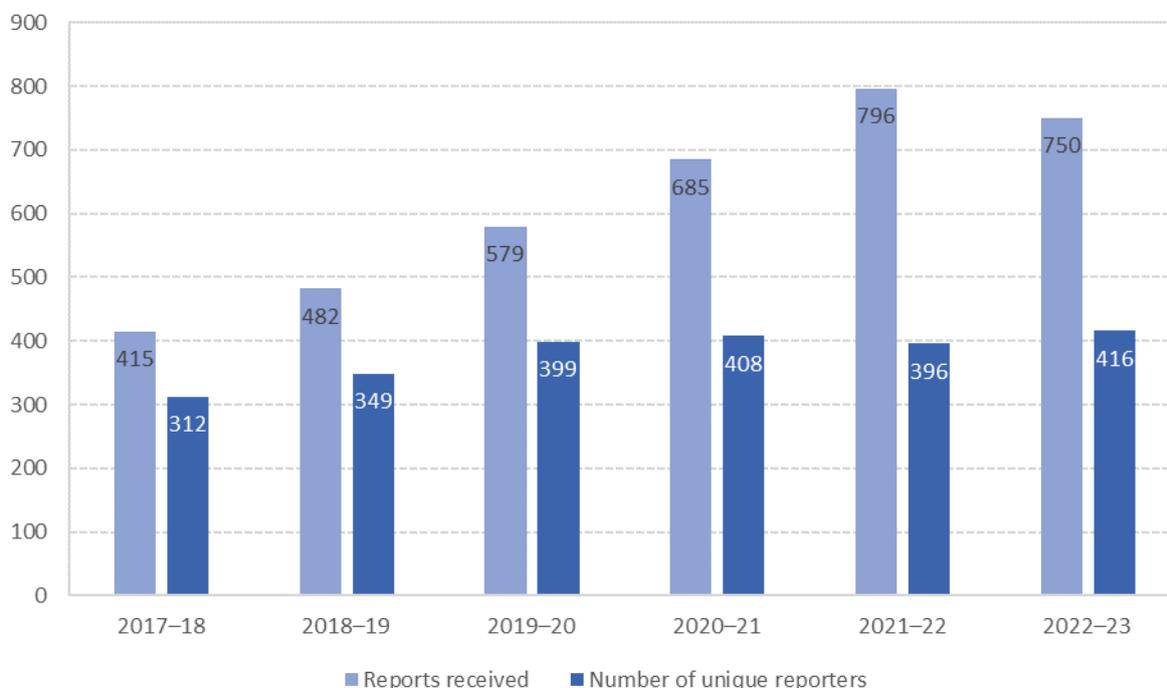


Figure 4: Number of unique reporters annually

A common feature of the reporter base is the dominance of a small number of ‘super-reporters’ submitting 10 or more reports in a year. Analysis of the responses received from vehicles identified by super reporters historically has found the ‘vehicle does not smoke’ response was about 10–20 per cent higher than the average from the entire reporter base.

For 2022–2023, five reporters were responsible for 211 of the reports received. 50 per cent of the responses received from super-reporters indicated that the ‘vehicle does not smoke’, compared with 35 per cent for the whole reporter base. When the dataset was assessed without the reports received from super-reporters, the ‘vehicle does not smoke’ response dropped from 35 to 30 per cent.

This disparity reinforces the importance of a diverse reporter base to offset the potential impact of high-frequency reporters on report validity, but also the need to better emphasise the requirement that reports should only be submitted if the vehicle smokes for 10 seconds continuously.

2.6 Observations

Collection of detailed vehicle data started in November 2017. The only metric of note for 2022–2023 was the fuel type of reported vehicles, which is discussed further below. No

noteworthy observations or trends were found for odometer data, vehicle weight or vehicle body type.

Fuel type

Eighty-eight per cent of vehicles reported were diesel powered. [Roadside measurements taken in recent years by DWER](#) have established that diesel vehicles produce higher emissions of particulates compared with other fuels like petrol. Particle emissions contribute to visible exhaust smoke.

Diesel engines can produce a short puff of smoke when accelerating until air intake is sufficient to combust more completely the volume of diesel being injected into the cylinders. This can be more noticeable when the vehicle is under heavy load. Given that the program uses the 10-second rule as defined by the Road Traffic (Vehicles) Regulations 2014, these smoke puffs do not necessarily make the vehicle 'smoky'.

Driver behaviour can also strongly influence smoke emissions. Vehicles that are accelerated heavily or towing overweight trailers are more likely to smoke. When driven smoothly with gentle acceleration, steady speed and the correct gear choice, emissions are significantly reduced, and vehicles are less likely to smoke.

Only five LPG vehicles were reported to the program in 2022–2023. This is more reflective of the low popularity of the fuel in the Western Australian fleet than the emissions performance of engines operating on LPG.

2.7 Further information

For further information about the program and the data collected, contact DWER via email: smokyvehicles@dwer.wa.gov.au.

