



# Weekly fuel monitoring

## Methodology document

This document provides an overview of the methodology used in MBIE's weekly fuel monitoring data.

## Purpose

The Ministry of Business, Innovation and Employment (MBIE) monitors importer margins to show how recent movements in key factors, such as international oil prices, affect retail pump prices that New Zealand consumers face. This fits in with MBIE's broader role in providing evidence and analysis on the energy sector, including monitoring prices for all energy types.

## Background

MBIE (and its precursor ministry, the Ministry of Economic Development) have maintained and published the weekly fuel margins series since at least 2006. Since the introduction of this series, we have regularly reviewed and updated our methodology for calculating prices and margins to reflect new data sources and the evolving environment of New Zealand's retail fuel market.

MBIE's weekly fuel margins data spans 2004 through to today. We use a combination of data sources to generate our series across this time span. This document outlines the various data sources and methods (both historical and contemporary).

## Methodology

The **retail importer margin** is the gross margin available to fuel retailers to cover domestic transportation, distribution and retailing costs in New Zealand, as well as profit margins. Monitoring this helps to promote transparency in retail petrol and diesel pricing. The retail importer margin for a given fuel is calculated as:

$$\text{Importer margin} = \text{Adjusted Retail Price} - \text{Taxes and Levies} - \text{Importer cost}$$

It is important to note that the importer margin:

- is expressed in units of cents per litre of fuel sold
- covers both fixed costs (that is, components which cost the same regardless of the amount of fuel sold) and variable costs (that is, components whose cost increases as the amount of fuel sold increases)
- is not adjusted for inflation.

We describe our methodology to calculate each of these measures below.

## Retail price

Our adjusted retail price is calculated by first deriving a national average **board price** (that is, the price as advertised at fuel stations), and then applying an adjustment factor to align with Stats NZ's Consumer Price Index (CPI) fuel price series.

Prior to 1 January 2022, our board price is calculated based on daily national average prices sourced from Envisory and provided to MBIE on a weekly basis. From 1 January 2022 onwards, our board price is calculated based on data sourced by Datamine and provided to MBIE on a weekly basis. This date was chosen as the point of transition between the two data sources as there were minimal differences in prices derived by the two data sources at that point.

### BOARD PRICE: DATAMINE

Datamine provides daily board price (ie advertised price) data per station and fuel type across the whole of New Zealand. We calculate regional prices, per fuel and day, by taking the median value of all reported prices within a given region. We calculate national prices by taking the mean of all regional prices, weighted by regional population, that is:

$$\text{Natl. price} = \frac{(\text{Auckland price} \times \text{Auckland population}) + (\text{Northland price} \times \text{Northland Population}) + \dots}{\text{Total population}}$$

Regional population estimates are taken from Stats NZ's estimated regional population for regional council areas as at 30 June. Note that even though this data is regularly updated and revised by Stats NZ, data for these weightings will be extracted as at a point in time and will not be revised, to give stability to the historical series.

### BOARD PRICE: ENVISORY

Envisory historically provided MBIE with average board price data, sourced from a sample of sites, for regular petrol, premium 95R petrol, and diesel.

We used this data on the assumption that retail prices were the same across the country. However, the introduction of the Auckland Regional Fuel Tax (ARFT) on 1 July 2018 led to pricing differences between Auckland and the rest of the country. To account for this, we introduced a multiplicative factor that we applied to prices from 1 July 2018 to the 31 December 2021, the last date for which we use Envisory as a source of fuel price data. This factor is calculated on a quarterly basis as follows:

$$F_{\text{ARFT}} = 1 - P + RP$$

Where:

- $P$  is the proportion of the population in the Auckland region in each quarter. This is calculated from Stats NZ regional population estimates (which are computed as at June 30 each year and assumed to apply to the subsequent year, starting from the quarter ending June);  $P$  for intervening quarters is calculated by linear interpolation.
- $R$  is the ratio of the Auckland region retail fuel price to the national fuel price, sourced on a quarterly basis from Stats NZ as part of their regional Consumer Price Index (CPI) fuel prices.

### ADJUSTMENT FACTOR AND ADJUSTED RETAIL PRICE

The above data reflects a board price - that is, it is the price advertised by fuel retailers on their price boards. However, the actual price paid by consumers may vary from this, due to several factors including:

- Participation in loyalty programmes and use of vouchers
- Regional variation which is not accounted for by our aggregation methods.

To account for this, we adjust our data based on Stats NZ's quarterly CPI fuel price. Stats NZ calculates the national average fuel price for different fuel types based on their own data collections, and is a measure of the price paid for fuel, not just the price advertised. Stats NZ's methodology for calculating their fuel price measure is contained within their wider CPI methodology documentation, available [here](#).

We align our retail price with Stats NZ's CPI fuel price by:

- Calculating a quarterly average fuel price from all daily national average fuel prices within the quarter.
- Subtracting Stats NZ's CPI fuel price for the quarter from this value.

This gives us an **adjustment factor** which we can apply to all prices for the quarter. The board price, modified by this adjustment factor, is our **adjusted retail price**.

This adjustment ensure that our data aligns with Stats NZ's CPI fuel price data which is used to construct our quarterly average fuel price statistics. This data can be accessed here: <https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-statistics-and-modelling/energy-statistics/energy-prices>.

#### **ESTIMATING THE ADJUSTMENT FACTOR WHEN WE DON'T HAVE CPI DATA**

Stats NZ releases their CPI fuel price data for the quarter around two weeks after the end of the quarter (for example, data for the quarter ending March 31 will be released in mid-April). Given this, CPI fuel price data will always lag our weekly fuel price data (for example, our data in April needs to be adjusted using fuel price data for the 30 June quarter but data for that period isn't released until July). For these measurements, we must estimate the adjustment factor until we have CPI data for that period.

We calculate the adjustment factor for this period by carrying forward the most recently calculated adjustment factor. For example, if the adjustment factor for Regular Petrol for the quarter ended December 2024 is -5.2 cents per litre (c/L), and we don't yet have Stats NZ CPI fuel price data for the quarter ended March 2025, then we would assume that the adjustment factor for the quarter ended March 2025 is -5.2 c/L as well.

Data calculated using an estimated adjustment factor in this manner is marked as **provisional**. Data is marked **final** when the CPI data for that quarter has been released and the adjustments have been recalculated.

### **Importer cost**

The **importer cost** for a fuel is calculated based on data supplied by Argus Media and supplemented by data provided by Envisory. It is calculated as:

$$\text{Importer cost} = \text{Cost to purchase fuel} + \text{Cost to ship fuel} + \text{Wharfage}$$

The cost to purchase is calculated by applying a series of modifiers to a base price, as provided weekly by Argus Media. All prices are calculated using Singapore product spot prices.

- Regular and premium petrol prices are based on quoted spot prices for Gasoline 95 RON unleaded.
- Diesel prices are based on quoted spot prices for Gasoil 50ppm (high pour).

These prices are modified using quarterly price adjustments provided by Envisory:

- A fuel-specific *quality premium* is applied to the spot prices for regular petrol, premium petrol, and diesel to reflect the requirements of New Zealand's fuel specification for regular petrol.

- A further adjustment is applied to the spot price for Gasoline 95 RON unleaded to reflect the product price of regular petrol. This done by applying an *octane adjustment*, a factor which reflects the difference in octane rating between the reference fuel and regular petrol

The cost to ship the fuel to New Zealand is calculated by multiplying the Worldscale flat shipping rate (provided by Envisory) by the Singapore-Asia-Pacific route rate (provided by Argus Media), further modified by a freight adjustment to reflect the additional cost of shipping to New Zealand (provided by Envisory). This cost is further modified by an insurance and loss factor, both calculated as a percentage of the total shipping cost, and both provided by Envisory. This value is then converted from USD/bbl to NZc/L using the exchange rate (sourced from Reserve Bank data).

Finally, a wharfage rate (provided by Envisory) is added to calculate the final importer cost.

## Taxes and levies

We consider the following taxes and levies:

- Direct taxes on fuel use:
  - ACC Levy
  - Petroleum and Engine Fuel Monitoring Levy
  - Local Authorities Petroleum Tax
  - National Land Transport Fund
  - Auckland Regional Fuel Tax (discontinued in July 2024)
- Costs associated with the New Zealand Emissions Trading Scheme (ETS)
- Goods and Services Tax (GST).

GST is calculated as a proportion of the adjusted retail price. ETS costs are provided weekly by Envisory. Other taxes are applied as on a cents per litre basis.

The Auckland Regional Fuel Tax (ARFT) was a tax of 10 c/L (before GST) applied to all petrol and diesel sales within the Auckland region. The national impact of the ARFT was estimated by multiplying the tax by the proportion of the population resident in New Zealand (calculated quarterly through the same method as outlined in our section on [Envisory board prices](#) above).

More information on current duties, taxes and direct levies on motor fuels can be viewed on the MBIE website at: <https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-generation-and-markets/liquid-fuel-market/duties-taxes-and-direct-levies-on-motor-fuels-in-new-zealand>.

# Annex: Supplementary information

## Summary of data sources

The data sources mentioned in this document are summarised below. “Frequency” refers to the frequency of the data itself, which is not necessarily the frequency of provision to MBIE.

Section	Data	Source	Frequency
Importer cost	Fuel cost	Argus Media	Weekly
	Octane adjustment	Envisory	Quarterly
	Quality premium	Envisory	Quarterly
	Worldscale rate	Envisory	Quarterly
	Route rate	Argus Media	Weekly
	Freight adjustment	Envisory	Quarterly
	Insurance rate	Envisory	Quarterly
	Loss rate	Envisory	Quarterly
	Exchange rate	RBNZ	Weekly
	Conversion bbU/t	Envisory	Quarterly
	Wharfage	Envisory	Quarterly
Taxes and levies	ETS levy	Envisory	Daily
	Direct taxes	MBIE	Annually
Retail price	Retail fuel prices (to 31 December 2021)	Envisory	Daily
	Retail fuel prices (from 1 January 2022)	Datamine	Daily
	Regional population estimates	Stats NZ	Annually
	CPI fuel price	Stats NZ	Quarterly

## Glossary of terms

**Importer margin:** The gross retail margin available to fuel retailers to cover domestic transportation, distribution and retailing costs in New Zealand, as well as profit margins. This is calculated as the adjusted retail price minus taxes, duties, levies, New Zealand Emissions Trading Scheme (ETS) costs, and importer cost. Note that this margin differs from the *wholesale margin* as estimated by the Commerce Commission, which focuses on wholesale (rather than retail) sales.

**Importer cost:** The cost to purchase a set quantity of fuel and import it to New Zealand. This cost covers the cost to purchase, the cost to ship, insurance, and wharfage.

**Board price:** The advertised price of a given fuel. This does not consider discounts due vouchers, loyalty schemes, and the like.

**Adjustment factor:** A factor applied to fuel prices to align with Stats NZ's CPI fuel price. The adjustment factor represents both the impact of discounts due to vouchers, loyalty schemes, etc, as well as differences in methodology between MBIE's and Stats NZ's fuel price series. The adjustment factor may be positive or negative.

**Adjusted retail price:** The price of fuel adjusted to align with Stats NZ's CPI fuel price. This is equal to the **board price** of a fuel plus a specified **adjustment factor**.