

APPENDIX A: ROAD FUEL OPEN DATA INTERIM SOLUTION SPECIFICATION

- 1 This appendix outlines the technical specifications for the interim solution to the open data road fuel remedy.

High level design

- 2 The solution consists of: retailers each share data openly, on their website or equivalent, without unreasonable restrictions to access; consumer facing app developers, and others, accessing the data directly from where it is shared and using it; and a centralised list of URLs hosting the data being maintained by the CMA.

Frequency

- 3 Retailers share price data daily, by 12:00 noon, which reflects the most recent prices at the stations at that time of day, unless there are exceptional circumstances.
- 4 Note: These should always, within reasonable confidence, be live prices rather than future prices.
- 5 Note: If a retailer does not update prices over the weekend or holidays, they should simply update the *last_updated* field and post the new file. If this is not possible, the risk is that the data may no longer be displayed in apps if it is (mistakenly) deemed to be out-of-date.
- 6 Examples:
 - (a) Retailer 1 sets prices on day 1 by 11:00 and stations update by midnight, the prices shared on day 2 are those set day before (i.e. the most likely pump price on day 2 at 12:00);
 - (b) Retailer 2 sets prices at 09:00 and stations implement within hour, prices shared on day 1 are those set at 09:00 on the same day.

Availability and use

- 7 Retailers host price data openly and at no cost, in a file called `fuel_prices_data.json`, online at a fixed URL, i.e. `<fixed-url>/fuel_prices_data.json`, where `<fixed-url>` is the retailer's domain, an association website, or equivalent.

- 8 Note: The data should be made available without restrictions on use, such that anyone can use the data freely, including third party consumer facing apps. Care should be taken to ensure there are no Terms and Conditions on the chosen website stating the contrary, or that conditions are added specifying the terms for the fuel data.

Format

- 9 Retailers will all make the data available in a single file in JSON format, following the schema set out in the next section. This will ensure the data can be combined efficiently.

Completeness

- 10 Retailers will share prices for the four main fuel types at all stations where these are sold. They may choose to also include price data for other fuel types that they sell, including EV.

Coordination/promotion

- 11 A centralised list of participating retailers and links to data maintained by the CMA.
- 12 Retailers who wish to participate in the scheme should provide the relevant link to the CMA via an email to roadfuel.remedies@cma.gov.uk.

Data schema

JSON Schema

- 13 Given the data is to be made available in JSON a JSON Schema defining the data format exactly from a technical perspective is provided below. This covers all the necessary fields (known as “properties”), gives their definition (“description”) and the constraints they must meet. Some considerations on the fields are given below, starting in paragraph 15, but the Schema should be taken as the actual definition of the data format.

```
{
  "$schema": "https://json-schema.org/draft/2020-12/schema",
  "$id": "UKFuelPriceData",
  "title": "UK Fuel Price Data",
  "description": "Version 1.0.0, last updated 2023-08-04",
  "type": "object",
  "properties": {
    "last_updated": {
```

```

    "description": "Date-time on which data produced, in DD/MM/YYYY
hh:mm:ss format",
    "type": "string",
    "format": "date-time"
  },
  "stations": {
    "type": "array",
    "items": {
      "properties": {
        "site_id": {
          "description": "12-character geohash of site lat-lon",
          "type": "string",
          "minLength": 12,
          "maxLength": 12
        },
        "brand": {
          "description": "Name of the retailer/brand",
          "type": "string"
        },
        "address": {
          "type": "string"
        },
        "postcode": {
          "description": "UK postcode",
          "type": "string",
          "pattern": "^[([A-Z]{1,2}[0-9][A-Z0-9]?|ASCN|STHL|TDCU|BBND|[BFS]IQQ|PCRN|TKCA) ?[0-9][A-Z]{2}|BFPO ?[0-9]{1,4}|(KY[0-9]|MSR|VG|AI)[ -]?[0-9]{4}[A-Z]{2} ?[0-9]{2}|GE ?CX|GIR ?0A{2}|SAN ?TA1)$"
        },
        "location": {
          "type": "object",
          "description": "Site geographical information",
          "properties": {
            "latitude": {
              "type": "number",
              "description": "Latitude to 6 decimal places",
              "multipleOf": 1e-06
            },
            "longitude": {
              "type": "number",
              "description": "Longitude to 6 decimal places",
              "multipleOf": 1e-06
            }
          }
        }
      }
    }
  }
}

```

```

    },
    "required": [
        "latitude",
        "longitude"
    ]
},
"prices": {
    "description": "List of petrol prices by station. Only defined petrol
types allowed",
    "type": "object",
    "properties": {
        "E10": {
            "description": "Price for standard grade petrol (95 or 96
octane)",
            "type": "number"
        },
        "E5": {
            "description": " Price for super grade petrol(97 or higher
octane)",
            "type": "number"
        },
        "B7": {
            "description": " Price for standard grade diesel",
            "type": "number"
        },
        "SDV": {
            "description": " Price for super grade diesel",
            "type": "number"
        }
    }
}
},
"required": [
    "site_id",
    "brand",
    "address",
    "postcode",
    "location",
    "prices"
]
}
},
"required": [

```

```
    "last_updated",
    "stations"
  ]
}
```

Example

14 The contents of an example data file is shown below:

```
{
  "last_updated": "03/08/2023 23:30:49",
  "stations": [
    {
      "site_id": "r65306h25mj5",
      "brand": "CMA",
      "address": "25 Cabot Square, London",
      "postcode": "E14 4QZ",
      "location": {
        "latitude": -33.563204,
        "longitude": 150.837281
      },
      "prices": {
        "E5": 142.96,
        "E10": 142.96,
        "B7": 142.96,
        "SDV": 142.96
      }
    },
    {
      "site_id": "r65306h25mj4",
      "brand": "CMA",
      "address": "24 Cabot Square, London",
      "postcode": "E14 4QZ",
      "location": {
        "latitude": -33.563204,
        "longitude": 150.837281
      },
      "prices": {
        "E5": 142.96,
        "E10": 142.96,
        "B7": 142.96
      }
    }
  ]
}
```

```
]
}
```

Fields

- 15 Last_updated: Date time when file created. To be used by data users to ensure they have downloaded recent data.
- 16 Site_id: This is a unique ID for the station based on latitude and longitude and should be generated using [geohashing](#) (with a precision of 12 characters). Note: there are implementations of the algorithm in JS, Python, and other programming languages as well as sites like <http://geohash.org/> or <http://geohash.co/>.
- 17 Brand: This should be the site brand.
- 18 Address: This should be the site address.
- 19 Postcode: This should be a UK postcode.
- 20 Latitude and longitude: These must have 5 or more decimal places, ensuring that they are accurate to a metre (+/- 5m).
- 21 Prices: Prices in pence for each petrol type, including the four main ones (E5, E10, B7, SDV)¹ if sold. Note: JSON allows for extra fields to be added, so e.g. a retailer may unilaterally decide to provide prices for further fuel types such as LPG, EV or other. Without standardisation, third parties may struggle to use this information.

¹ **E10** – 'Standard' grade petrol (95 or 96 octane) must contain a minimum of 5.5% bioethanol and may have up to a maximum of 10% bioethanol;

E5 – 'Super' grade petrol (97 or higher octane) which may contain up to 5% bioethanol;

B7 – The 'standard' grade of automotive diesel sold in the UK which allows a maximum of 7% biodiesel; and

SDV – 'Super' diesel contains additives to improve performance