Package 'finnishgrid'

July 22, 2025

Type Package

Title 'Fingrid Open Data API' R Client

Version 0.2.0

Description R API client package for 'Fingrid Open Data'
<https://data.fingrid.fi/> on the electricity market and the power system.
get_data() function holds the main application logic to retrieve
time-series data. API calls require free user account registration.
Data is made available by Fingrid Oyj and distributed under
Creative Commons 4.0 <https://creativecommons.org/licenses/by/4.0/>.

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URL https://github.com/virmar/finnishgrid

BugReports https://github.com/virmar/finnishgrid/issues

Encoding UTF-8

Imports httr, jsonlite

Suggests rmarkdown, knitr, testthat (>= 3.0.0)

Config/testthat/edition 3

RoxygenNote 7.3.1

VignetteBuilder knitr

NeedsCompilation no

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Repository CRAN

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`afrr_activated_down` *Automatic Frequency Restoration Reserve, activated, down*

Description

The values in the data have been erroneously instantaneous values. From February 21, 2024, the data are correct 15-minute averages.Hourly values can be found correctly on the European transparency platform: https://transparency.entsoe.eu/balancing/r2/activationAndActivatedBalancingReserves/showActivated automatic Frequency Restoration Reserve (aFRR) energy, down (MW). Value is activated average power. The amount of activated Automatic Frequency. The Data before 13.06.2023 is in hourly resolution.

Usage

```
afrr_activated_down(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/53

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- afrr_activated_down(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`afrr_activated_up` *Automatic Frequency Restoration Reserve, activated, up*

Description

The values in the data have been erroneously instantaneous values. From February 21, 2024, the data are correct 15-minute averages.Hourly values can be found correctly on the European transparency platform: https://transparency.entsoe.eu/balancing/r2/activationAndActivatedBalancingReserves/showActivated automatic Frequency Restoration Reserve (aFRR) energy, down (MW). Value is activated average power. The amount of activated Automatic Frequency Restoration Reserve (aFRR) is calculated based on the activation signal and reserve capacity maintained in Finland. The average shown every quarter is the average of the past quarter, i.e. the value coming with a time stamp of 14:15 is the average from 14:00-14:15. The Data before 13.06.2023 is in hourly resolution.

Usage

```
afrr_activated_up(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/54

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- afrr_activated_up(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

afrr_capacity_down *Automatic Frequency Restoration Reserve, capacity, down*

Description

Procured automatic Frequency Restoration Reserve (aFRR) capacity, down (MW)

Usage

```
afrr_capacity_down(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/2

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- afrr_capacity_down(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
```

```
summary(df)

## End(Not run)
```

`afrr_capacity_up` *Automatic Frequency Restoration Reserve, capacity, up*

Description

Procured automatic Frequency Restoration Reserve (aFRR) capacity, up (MW)

Usage

```
afrr_capacity_up(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/1

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- afrr_capacity_up(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

afrr_price_down *Automatic Frequency Restoration Reserve, price, down*

Description

Marginal price for procured automatic Frequency Restoration Reserve (aFRR) capacity for down-regulation (/MW)

Usage

```
afrr_price_down(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type EUR/MW.

See Also

https://data.fingrid.fi/en/datasets/51

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- afrr_price_down(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

afrr_price_up *Automatic Frequency Restoration Reserve, price, up*

Description

Marginal price for procured upward automatic Frequency Restoration Reserve (aFRR) capacity (/MW)

Usage

```
afrr_price_up(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type EUR/MW.

See Also

https://data.fingrid.fi/en/datasets/52

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- afrr_price_up(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_commercial_electricity_flow_FI_EE` *Commercial transmission of electricity between FI-EE*

Description

Commercial electricity flow (dayahead market and intraday market) between Finland (FI) and Estonia (EE) including system supportive trade between TSOs. Positive sign is export from Finland to Estonia.

Usage

```
border_commercial_electricity_flow_FI_EE(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/140

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_commercial_electricity_flow_FI_EE(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_commercial_electricity_flow_FI_SE1` *Commercial transmission of electricity between FI-SE1*

Description

Commercial transmission of electricity (dayahead market and intraday market) between Finland (FI) and Northern Sweden (SE1). Positive sign is export from Finland to Sweden.

Usage

```
border_commercial_electricity_flow_FI_SE1(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/31

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_commercial_electricity_flow_FI_SE1(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_commercial_electricity_flow_FI_SE3` *Commercial transmission of electricity between FI-SE3*

Description

Commercial electricity flow (dayahead market and intraday market) between Finland (FI) and Central Sweden (SE3). Positive sign is export from Finland to Sweden.

Usage

```
border_commercial_electricity_flow_FI_SE3(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/32

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_commercial_electricity_flow_FI_SE3(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_da_trans_cap_EE_FI_official` *Day-ahead transmission capacity EE-FI - official*

Description

Day-ahead transmission capacity from Estonia (EE) to Finland (FI). Transmission capacity is given hourly for every hour of the next day. Each hour is given one value. Day-ahead transmission capacity Fingrid will publish every day in the afternoon. This capacity will not changed after publication. Transmission capacity mean the capability of the electricity system to supply electricity to the market without compromising the system security.

Usage

```
border_da_trans_cap_EE_FI_official(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/112

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_da_trans_cap_EE_FI_official(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_da_trans_cap_FI_EE_official` *Day-ahead transmission capacity FI-EE - official*

Description

Day-ahead transmission capacity from Finland (FI) to Estonia (EE). Transmission capacity is given hourly for every hour of the next day. Each hour is given one value. Day-ahead transmission capacity Fingrid will publish every day in the afternoon. This capacity will not changed after publication. Transmission capacity mean the capability of the electricity system to supply electricity to the market without compromising the system security.

Usage

```
border_da_trans_cap_FI_EE_official(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/115

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_da_trans_cap_FI_EE_official(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_da_trans_cap_FI_SE1_official` *Day-ahead transmission capacity FI-SE1 - official*

Description

Day-ahead transmission capacity from Finland (FI) to North-Sweden (SE1). Transmission capacity is given hourly for every hour of the next day. Each hour is given one value. Day-ahead transmission capacity Fingrid will publish every day in the afternoon. This capacity will not changed after publication. Transmission capacity mean the capability of the electricity system to supply electricity to the market without compromising the system security.

Usage

```
border_da_trans_cap_FI_SE1_official(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/26

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_da_trans_cap_FI_SE1_official(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_da_trans_cap_FI_SE1_planned` *Day-ahead transmission capacity FI-SE1 - planned*

Description

Planned day-ahead transmission capacity from Finland (FI) to North-Sweden (SE1). Transmission capacity is given hourly for every next week hour. Each week's hour is given one value. Planned weekly transmission capacity Fingrid will publish every Tuesday. Information will be updated if there are changes to the previous plan timetable or capacity. Transmission capacity mean the capability of the electricity system to supply electricity to the market without compromising the system security.

Usage

```
border_da_trans_cap_FI_SE1_planned(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/143

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_da_trans_cap_FI_SE1_planned(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_da_trans_cap_FI_SE3_official` *Day-ahead transmission capacity FI-SE3 - official*

Description

Day-ahead transmission capacity from Finland (FI) to Central-Sweden (SE3). Transmission capacity is given hourly for every hour of the next day. Each hour is given one value. Day-ahead transmission capacity Fingrid will publish every day in the afternoon. This capacity will not changed after publication. Transmission capacity mean the capability of the electricity system to supply electricity to the market without compromising the system security.

Usage

```
border_da_trans_cap_FI_SE3_official(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/27

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_da_trans_cap_FI_SE3_official(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_da_trans_cap_FI_SE3_planned` *Day-ahead transmission capacity FI-SE3 - planned*

Description

Planned day-ahead transmission capacity from Finland (FI) to Central-Sweden (SE3). Transmission capacity is given hourly for every next week hour. Each week's hour is given one value. Planned weekly transmission capacity Fingrid will publish every Tuesday. Information will be updated if there are changes to the previous plan timetable or capacity. Transmission capacity mean the capability of the electricity system to supply electricity to the market without compromising the system security.

Usage

```
border_da_trans_cap_FI_SE3_planned(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/145

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_da_trans_cap_FI_SE3_planned(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_da_trans_cap_SE1_FI_official` *Day-ahead transmission capacity SE1-FI - official*

Description

Day-ahead transmission capacity from North-Sweden (SE1) to Finland (FI). Transmission capacity is given hourly for every hour of the next day. Each hour is given one value. Day-ahead transmission capacity Fingrid will publish every day in the afternoon. This capacity will not changed after publication. Transmission capacity mean the capability of the electricity system to supply electricity to the market without compromising the system security.

Usage

```
border_da_trans_cap_SE1_FI_official(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/24

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_da_trans_cap_SE1_FI_official(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_da_trans_cap_SE1_FI_planned` *Day-ahead transmission capacity SE1-FI - planned*

Description

Planned day-ahead transmission capacity from North-Sweden (SE1) to Finland (FI). Transmission capacity is given hourly for every next week hour. Each week's hour is given one value. Planned weekly transmission capacity Fingrid will publish every Tuesday. Information will be updated if there are changes to the previous plan timetable or capacity. Transmission capacity mean the capability of the electricity system to supply electricity to the market without compromising the system security.

Usage

```
border_da_trans_cap_SE1_FI_planned(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/142

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_da_trans_cap_SE1_FI_planned(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_da_trans_cap_SE3_FI_official` *Day-ahead transmission capacity SE3-FI - official*

Description

Day-ahead transmission capacity from Central-Sweden (SE3) to Finland (FI). Transmission capacity is given hourly for every hour of the next day. Each hour is given one value. Day-ahead transmission capacity Fingrid will publish every day in the afternoon. This capacity will not changed after publication. Transmission capacity mean the capability of the electricity system to supply electricity to the market without compromising the system security.

Usage

```
border_da_trans_cap_SE3_FI_official(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/25

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_da_trans_cap_SE3_FI_official(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_da_trans_cap_SE3_FI_planned` *Day-ahead transmission capacity SE3-FI - planned*

Description

Planned day-ahead transmission capacity from Central-Sweden (SE3) to Finland (FI). Transmission capacity is given hourly for every next week hour. Each week's hour is given one value. Planned weekly transmission capacity Fingrid will publish every Tuesday. Information will be updated if there are changes to the previous plan timetable or capacity. Transmission capacity mean the capability of the electricity system to supply electricity to the market without compromising the system security.

Usage

```
border_da_trans_cap_SE3_FI_planned(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/144

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_da_trans_cap_SE3_FI_planned(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_id_trans_cap_EE_FI` *Intraday transmission capacity EE-FI*

Description

Transmission capacity to be given to intraday market EE - FI

Usage

```
border_id_trans_cap_EE_FI(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/110

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_id_trans_cap_EE_FI(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_id_trans_cap_EE_FI_RTD` *Intraday transmission capacity EE-FI - real time data*

Description

Transmission capacity to be given to intraday market EE-FI.After Elspot trades have been closed, real time intraday capacity is equivalent to the allocated intraday capacity. The real time capacity is updated after each intraday trade so that it corresponds to real time situation.

Usage

```
border_id_trans_cap_EE_FI_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/111

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_id_trans_cap_EE_FI_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_id_trans_cap_FI_EE` *Intraday transmission capacity FI-EE*

Description

Transmission capacity to be given to intraday market FI-EE

Usage

```
border_id_trans_cap_FI_EE(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/113

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_id_trans_cap_FI_EE(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_id_trans_cap_FI_EE_RTD` *Intraday transmission capacity FI-EE - real time data*

Description

Transmission capacity to be given to intraday market FI-EE.After Elspot trades have been closed, real time intraday capacity is equivalent to the allocated intraday capacity. The real time capacity is updated after each intraday trade so that it corresponds to real time situation.

Usage

```
border_id_trans_cap_FI_EE_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/114

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_id_trans_cap_FI_EE_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_id_trans_cap_FI_SE1` *Intraday transmission capacity FI - SE1*

Description

Transmission capacity for intraday market from Finland to Northern Sweden (FI - SE1). For intraday market capacity is given as free capacity after dayahead market. Capacity is published once a day and not updated.

Usage

```
border_id_trans_cap_FI_SE1(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/44

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_id_trans_cap_FI_SE1(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_id_trans_cap_FI_SE3` *Intraday transmission capacity FI-SE3*

Description

Transmission capacity for intraday market from Finland to Mid Sweden (FI - SE3). For intraday market capacity is given as free capacity after dayahead market. Capacity is published once a day and not updated.

Usage

```
border_id_trans_cap_FI_SE3(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/45

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_id_trans_cap_FI_SE3(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_id_trans_cap_SE1_FI` *Intraday transmission capacity SE1-FI*

Description

Transmission capacity for intraday market from Northern Sweden to Finland (SE1-FI). For intraday market capacity is given as free capacity after dayahead market. Capacity is published once a day and not updated.

Usage

```
border_id_trans_cap_SE1_FI(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/38

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_id_trans_cap_SE1_FI(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_id_trans_cap_SE3_FI` *Intraday transmission capacity SE3-FI*

Description

Transmission capacity for intraday market from Mid Sweden to Finland (SE3-FI). Capacity for intraday market is given as free capacity after dayahead market. Capacity is published once a day and not updated.

Usage

```
border_id_trans_cap_SE3_FI(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/39

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_id_trans_cap_SE3_FI(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_measured_electricity_flow_FI_EE` *Transmission of electricity between Finland and Estonia*

Description

The values in the data have been erroneously instantaneous values. From February 21, 2024, the data are correct 15-minute averages.Average data can be found correctly on the European transparency platform: https://transparency.entsoe.eu/transmission-domain/physicalFlow/show Measured electrical transmission between Finland and Estonia HVDC tile lines (Estlink 1 and Estlink 2). Positive sign means transmission from Finland to Estonia. Negative sign means transmission from Estonia to Finland. The value is updated once every 15 minutes after the hour shift. Each day before noon the values of the previous day are updated with more accurate measurement values. The average shown every quarter is the average of the past quarter, i.e. the value coming with a time stamp of 14:15 is the average from 14:00-14:15. The Data before 13.06.2023 is in hourly resolution.

Usage

```
border_measured_electricity_flow_FI_EE(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/55

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_measured_electricity_flow_FI_EE(start_time_utc = start,
         end_time_utc = end,
```

```
        user_key = key)
summary(df)

## End(Not run)
```

`border_measured_electricity_flow_FI_NO` *Transmission of electricity between Finland and Norway*

Description

The values in the data have been erroneously instantaneous values. The data will be corrected to a 15-minute average. We'll let you know when the fix is done.Average data can be found correctly on the European transparency platform: https://transparency.entsoe.eu/transmission-domain/physicalFlow/showMeasured electrical transmission between Finland and Norway 220kV tie line. Positive sign means transmission from Finland to Norway. Negative sign means transmission from Norway to Finland. The value is updated once every 15 minutes after the hour shift. Each day before noon the values of the previous day are updated with more accurate measurement values. The Data before 13.06.2023 is in hourly resolution.

Usage

```
border_measured_electricity_flow_FI_NO(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/57

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_measured_electricity_flow_FI_NO(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`border_measured_electricity_flow_FI_SE1`

Transmission of electricity between Finland and Northern Sweden - measured every 15 minutes

---

Description

The values in the data have been erroneously instantaneous values. From February 21, 2024, the data are correct 15-minute averages.Average data can be found correctly on the European transparency platform: https://transparency.entsoe.eu/transmission-domain/physicalFlow/showMeasured transmission of electricity between Finland and Northern Sweden (SE1). Positive sign means transmission from Finland to Northern Sweden (SE1). Negative sign means transmission from Northern Sweden (SE1) to Finland. The average shown every quarter is the average of the past quarter, i.e. the value coming with a time stamp of 14:15 is the average from 14:00-14:15. he Data before 13.06.2023 is in hourly resolution.

Usage

```
border_measured_electricity_flow_FI_SE1(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/60

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_measured_electricity_flow_FI_SE1(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

border_measured_electricity_flow_FI_SE3

Transmission of electricity between Finland and Central Sweden - measured every 15 minutes

---

Description

The values in the data have been erroneously instantaneous values. From February 21, 2024, the data are correct 15-minute averages.Average data can be found correctly on the European transparency platform: https://transparency.entsoe.eu/transmission-domain/physicalFlow/showMeasured transmission of electricity between Finland and Central Sweden (SE3). Positive sign means transmission from Finland to Central Sweden (SE3). Negative sign means transmission from Northern Sweden (SE1) to Finland. The average shown every quarter is the average of the past quarter, i.e. the value coming with a time stamp of 14:15 is the average from 14:00-14:15. The Data before 13.06.2023 is in hourly resolution.

Usage

```
border_measured_electricity_flow_FI_SE3(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/61

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- border_measured_electricity_flow_FI_SE3(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

congestion_income_FI_EE

Congestion income between FI-EE

Description

Congestion income between Finland (FI) and Estonia (EE). __Congestion income is published on ENTSO-E's Transparency Platform, which can be founded here: https://transparency.entsoe.eu/transmission/r2/dailyImplicit/ .There are historical values to be found from Open Data until the beginning of February 2017. After February 2017 updated data as well as historical data can be founded from ENTSO-E's Transparency Platform.__Congestion income is calculated as follows:congestion income (/h) = commercial flow on day ahead market (MW) * area price difference (/MWh)Congestion originates in the situation where transmission capacity between bidding zones is not sufficient to fulfill the market demand and the congestion splits the bidding zones into separate price areas. Congestion income arises from the different prices that the sellers receive and the buyers pay when electricity flows from the higher price area to the lower price area. The power exchange receives the difference, which it then pays to the Transmission System Operators (TSOs). The TSOs spend the received congestion income on increasing the transmission capacity on its cross-border interconnectors according to the EU regulation.

Usage

```
congestion_income_FI_EE(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type EUR.

See Also

https://data.fingrid.fi/en/datasets/48

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- congestion_income_FI_EE(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

congestion_income_FI_SE1

Congestion income between FI-SE1

Description

Congestion income between Finland (FI) and Northern Sweden (SE1). __Congestion income is published on ENTSO-E's Transparency Platform, which can be founded here: https://transparency.entsoe.eu/transmission/r2/
.There are historical values to be found from Open Data until the beginning of February 2017. After February 2017 updated data as well as historical data can be founded from ENTSO-E's Transparency Platform.__Congestion income is calculated as follows:congestion income (/h) = commercial flow on day ahead market (MW) * area price difference (/MWh)Congestion originates in the situation where transmission capacity between bidding zones is not sufficient to fulfill the market demand and the congestion splits the bidding zones into separate price areas. Congestion income arises from the different prices that the sellers receive and the buyers pay when electricity flows from the higher price area to the lower price area. The seller acting in a lower price area receives lower price for electricity compared to the price the other party pays for electricity in the higher price area, and the power exchange receives surplus income, which it then pays to the Transmission System Operators (TSOs). The TSOs spend the received congestion income on increasing the transmission capacity on its cross-border interconnectors according to the EU regulation.

Usage

```
congestion_income_FI_SE1(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type EUR.

See Also

https://data.fingrid.fi/en/datasets/70

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- congestion_income_FI_SE1(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

congestion_income_FI_SE3

Congestion income between FI-SE3

Description

Congestion income between Finland (FI) and Central Sweden (SE3). __Congestion income is published on ENTSO-E's Transparency Platform, which can be founded here: https://transparency.entsoe.eu/transmission/r2/daily
.There are historical values to be found from Open Data until the beginning of February 2017. After February 2017 updated data as well as historical data can be founded from ENTSO-E's Transparency Platform.__Congestion income = commercial flow between FI and SE3 on the day ahead market (MWh/h) * absolute value of price difference between FI and SE3 (/MWh).Congestion originates in the situation where transmission capacity between bidding zones is not sufficient to fulfill the market demand and the congestion splits the bidding zones into separate price areas. Congestion income arises from the different prices that the sellers receive and the buyers pay when electricity flows from the higher price area to the lower price area. The seller acting in a lower price area

receives lower price for electricity compared to the price the other party pays for electricity in the higher price area, and the power exchange receives surplus income, which it then pays to the Transmission System Operators (TSOs). The TSOs spend the received congestion income on increasing the transmission capacity on its cross-border interconnectors according to the EU regulation.

Usage

```
congestion_income_FI_SE3(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type EUR.

See Also

https://data.fingrid.fi/en/datasets/71

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- congestion_income_FI_SE3(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

electricity_consumption_FI

Electricity consumption in Finland

Description

The values in the data have been erroneously instantaneous values. From February 21, 2024, the data are correct 15-minute averages.Average data can be found correctly on the European transparency platform: https://transparency.entsoe.eu/load-domain/r2/totalLoadR2/showElectricity consumption in Finland is based on Fingrid's production measurements. Minor part of production

which is not measured is estimated. The consumption is calculated as follows:Consumption = Production + Import - Export. The average shown every quarter is the average of the past quarter, i.e. the value coming with a time stamp of 14:15 is the average from 14:00-14:15. The Data before 13.06.2023 is in hourly resolution.

Usage

```
electricity_consumption_FI(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/124

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- electricity_consumption_FI(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

electricity_consumption_forecast_FI

Electricity consumption forecast

Description

Electricity consumption forecast of Finland. The forecast is made by Fingrid. The Data before 21.04.2024 is in 5 minute resolution.

Usage

```
electricity_consumption_forecast_FI(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/166

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- electricity_consumption_forecast_FI(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

electricity_consumption_forecast_FI_DA

Electricity consumption forecast - next 24 hours

Description

A consumption forecast for the next 24 hours made by Fingrid. Forecast is published on previous day at 12:00 EET. The Data before 21.04.2024 is in 5 minute resolution.

Usage

```
electricity_consumption_forecast_FI_DA(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/165

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- electricity_consumption_forecast_FI_DA(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

electricity_production_FI

Electricity production in Finland

Description

The values in the data have been erroneously instantaneous values. From February 21, 2024, the data are correct 15-minute averages.Average data can be found correctly on the European transparency platform: https://transparency.entsoe.eu/generation/r2/actualGenerationPerProductionType/show Electricity production in Finland are based on Fingrid's measurements. Minor part of production which is not measured is estimated.The average shown every quarter is the average of the past quarter, i.e. the value coming with a time stamp of 14:15 is the average from 14:00-14:15. The Data before 13.06.2023 is in hourly resolution.

Usage

```
electricity_production_FI(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/74

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- electricity_production_FI(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

electricity_production_forecast15_FI_DA

Electricity production prediction - updated every 15 minutes

Description

The calculation of production forecast in Finland is based on the production plans that balance responsible parties has reported to Fingrid. Production forecast is updated every 15 minutes. The Data before 03.06.2023 is in hourly resolution.

Usage

```
electricity_production_forecast15_FI_DA(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/241

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- electricity_production_forecast15_FI_DA(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

electricity_production_forecast_FI_DA

Electricity production prediction - premilinary

Description

15 minutes electricity generation forecast is based on the production plans that balance responsible parties have reported to Fingrid. The forecast is published daily by 6.00 pm for the next day, and it is not updated to match the updated production plans that balance responsible parties send to Fingrid. The Data before 10.06.2023 is in hourly resolution.

Usage

```
electricity_production_forecast_FI_DA(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/242

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- electricity_production_forecast_FI_DA(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

electricity_solar_pwr_production_forecast_daily_upd

Solar power generation forecast - updated once a day

Description

Solar power generation forecasts for the next day. Forecast is updated every day at 12 p.m. EET. Length of the forecast is 36 hours. Overlapping hours are overwrited.Solar forecasts are based on weather forecasts and estimates of installed PV capacity and location in Finland. Total PV capacity is based on yearly capacity statistics from the Finnish energy authority and estimates on installation rate of new capacity. Location information is a very rough estimate based on Finnish distribution grid operators information. The Data before 28.03.2024 is in hourly resolution.

Usage

```
electricity_solar_pwr_production_forecast_daily_upd(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/247

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- electricity_solar_pwr_production_forecast_daily_upd(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

electricity_solar_pwr_production_forecast_quart_upd

Solar power generation forecast - updated every 15 minutes

Description

Solar power generation forecast for the next 36 hours. Updated every 15 minutes. Solar forecasts are based on weather forecasts and estimates of installed PV capacity and location in Finland. Total PV capacity is based on yearly capacity statistics from the Finnish energy authority and estimates on installation rate of new capacity. Location information is a very rough estimate based on Finnish distribution grid operators information. The Data before 31.05.2023 is in hourly resolution.

Usage

```
electricity_solar_pwr_production_forecast_quart_upd(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/248

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- electricity_solar_pwr_production_forecast_quart_upd(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

electricity_solar_pwr_total_cap

Total production capacity used in the solar power forecast

Description

This is the total solar power production capacity used in Fingrid's solar power forecast. It is based on the small scale production statistics gathered by the Energy authority. It is also updated with estimates based on information that's provided to Fingrid.This total capacity information can be used, for example, to calculate the rate of production of solar power, by comparing it to the forecasted solar production series by Fingrid. This capacity information cannot however be considered as the official amount of solar production capacity in Finland, as it is updated manually and by using estimates.

Usage

```
electricity_solar_pwr_total_cap(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 MW.

See Also

https://data.fingrid.fi/en/datasets/267

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- electricity_solar_pwr_total_cap(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

electricity_wind_pwr_production

Wind power generation - 15 min data

Description

The values in the data have been erroneously instantaneous values. From February 21, 2024, the data are correct 15-minute averages.The older average data can be found correctly on the European transparency platform: https://transparency.entsoe.eu/generation/r2/actualGenerationPerProductionType/showFinnish 15 min wind power generation is a sum of measurements from wind parks supplied to Fingrid and of the estimate Fingrid makes from non-measured wind parks. Non-measured wind parks are about two percent of the production capacity. The average shown every quarter is the average of the past quarter, i.e. the value coming with a time stamp of 14:15 is the average from 14:00-14:15. The Data before 13.06.2023 is in hourly resolution.

Usage

```
electricity_wind_pwr_production(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/75

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- electricity_wind_pwr_production(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

electricity_wind_pwr_production_forecast_daily_upd

Wind power generation forecast - updated once a day

Description

Finnish wind power generation forecasts for the next day. Forecast is updated every day at 12 p.m. EET. Length of the forecast is 36 hours. Overlapping hours are overwritten.The forecast is based on weather forecasts and data about the location, size and capacity of wind turbines. The weather data sourced from multiple providers. The Data before 28.03.2024 is in hourly resolution.

Usage

```
electricity_wind_pwr_production_forecast_daily_upd(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/246

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- electricity_wind_pwr_production_forecast_daily_upd(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

electricity_wind_pwr_production_forecast_quart_upd

Wind power generation forecast - updated every 15 minutes

Description

Finnish wind power generation forecast for the next 36 hours. Updated every 15 minutes. The forecast is based on weather forecasts and data about the location, size and capacity of wind turbines. The weather data sourced from multiple providers. The Data before 31.05.2023 is in hourly resolution.

Usage

```
electricity_wind_pwr_production_forecast_quart_upd(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/245

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- electricity_wind_pwr_production_forecast_quart_upd(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

electricity_wind_pwr_total_cap

Total production capacity used in the wind power forecast

Description

This is the total wind production capacity used in Fingrid's wind power forecast. It is based capacity information gathered by Fingrid.This total capacity information can be used, for example, to calculate the rate of production of wind power, by comparing it to the actual wind production series by Fingrid. This capacity information cannot however be considered as the official amount of wind production capacity in Finland, as it is updated manually.

Usage

```
electricity_wind_pwr_total_cap(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 MW.

See Also

https://data.fingrid.fi/en/datasets/268

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- electricity_wind_pwr_total_cap(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

esg_emission_factor_elec_consumption_FI_RTD

Emission factor for electricity consumed in Finland - real time data

---

Description

Estimate of carbon dioxide of produced electricity, which is consumed in Finland. The emissions are estimated by taking FInland's electricity production, electricity import as well as electricity export into account. The data is updated every 3 minutes.

Usage

```
esg_emission_factor_elec_consumption_FI_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type gCO2/kWh.

See Also

https://data.fingrid.fi/en/datasets/265

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- esg_emission_factor_elec_consumption_FI_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

esg_emission_factor_elec_production_FI_RTD

Emission factor of electricity production in Finland - real time data

---

Description

Near in real time calculated carbon dioxide emission estimate of electricity production in Finland. The emissions are estimated by summing each product of different electricity production type and their emission factor together, and by dividing the sum by Finland's total electricity production. The data is updated every 3 minutes.

Usage

```
esg_emission_factor_elec_production_FI_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type gCO2/kWh.

See Also

https://data.fingrid.fi/en/datasets/266

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- esg_emission_factor_elec_production_FI_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

fcr_d_hourlymarket_bidsum_down

Frequency containment reserve for disturbances downwards regulation, received bids in hourly market

---

Description

The volume of received frequency containment reserve for disturbances downwards regulation (FCR-D down) bids. The volume of bids will be published 22:00 (EET) on previous evening.FCR-D downwards regulation is the frequency containment reserve used in the Nordic synchronous system that aims to keep the frequency below 50,5 Hz during disturbances.

Usage

```
fcr_d_hourlymarket_bidsum_down(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/282

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- fcr_d_hourlymarket_bidsum_down(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

fcr_d_hourlymarket_bidsum_up

Frequency containment reserve for disturbances upwards regulation, received bids in hourly market

---

Description

The volume of received frequency containment reserve for disturbances upwards regulation (FCR-D up) bids. The volume of bids will be published 22:45 (EET) on previous evening.FCR-D (up) is the frequency containment reserve used in the Nordic synchronous system that aims to keep the frequency above 49,5 Hz during disturbances.Hourly market is a reserve market operated by Fingrid. Procured volumes vary for each hour and price is the price of the most expensive procured bid.

Usage

```
fcr_d_hourlymarket_bidsum_up(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/286

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- fcr_d_hourlymarket_bidsum_up(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

fcr_d_hourlymarket_prices_down

Frequency containment reserves for disturbances downwards regulation, hourly market prices

---

Description

Hourly prices (/MW,h) of procured frequency containment reserve for disturbances downwards regulation (FCR-D down) in Finnish hourly market for each CET-timezone day is published previous evening at 22:45 (EET).FCR-D down is the frequency containment reserve used in the Nordic synchronous system that aims to keep the frequency below 50,5 Hz during disturbances.Hourly market is a reserve market operated by Fingrid. Procured volumes vary for each hour and price is the price of the most expensive procured bid.

Usage

```
fcr_d_hourlymarket_prices_down(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type €/MW.

See Also

https://data.fingrid.fi/en/datasets/283

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- fcr_d_hourlymarket_prices_down(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

fcr_d_hourlymarket_prices_up

Frequency containment reserves for disturbances upwards regulation, hourly market prices

---

Description

Hourly prices (/MW,h) of procured frequency containment reserve for disturbances upwards regulation (FCR-D up) in Finnish hourly market for each CET-timezone day is published previous evening at 22:45 (EET).FCR-D (up) is the frequency containment reserve used in the Nordic synchronous system that aims to keep the frequency above 49,5 Hz during disturbances.Hourly market is a reserve market operated by Fingrid. Procured volumes vary for each hour and price is the price of the most expensive procured bid.

Usage

```
fcr_d_hourlymarket_prices_up(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type EUR/MW.

See Also

https://data.fingrid.fi/en/datasets/318

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- fcr_d_hourlymarket_prices_up(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

fcr_d_hourlymarket_procured_down

Frequency containment reserve for disturbances downwards regulation, procured volumes in hourly market

---

Description

Hourly volume of procured frequency containment reserve for disturbances downwards regulation (FCR-D down) in Finnish hourly market for each CET-timezone day is published previous evening at 22:45 (EET).FCR-D downwards regulation is the frequency containment reserve used in the Nordic synchronous system that aims to keep the frequency below 50,5 Hz during disturbances.Hourly market is a reserve market operated by Fingrid. Procured volumes vary for each hour and price is the price of the most expensive procured bid.

Usage

```
fcr_d_hourlymarket_procured_down(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/281

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- fcr_d_hourlymarket_procured_down(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

fcr_d_hourlymarket_procured_up

Frequency containment reserve for disturbances upwards regulation, procured volumes in hourly market

---

Description

Hourly volume of procured frequency containment reserve for disturbances upwards regulation (FCR-D up) in Finnish hourly market for each CET-timezone day is published previous evening at 22:45 (EET).FCR-D (up) is the frequency containment reserve used in the Nordic synchronous system that aims to keep the frequency above 49,5 Hz during disturbances.Hourly market is a reserve market operated by Fingrid. Procured volumes vary for each hour and price is the price of the most expensive procured bid.

Usage

```
fcr_d_hourlymarket_procured_up(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/315

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- fcr_d_hourlymarket_procured_up(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

fcr_d_nordictrade_down

Frequency containment reserves for disturbances downward regulation, nordic trade

---

Description

The volume of the nordic trade of frequency containment reserve for disturbances downward regulation (FCR-D down) capacity. Positive numbers indicate import of capacity to Finland and negative numbers indicate export of capacity from Finland. The data contains the traded capacity for Sweden and Norway. The data will be published 22:45 (EET) on previous evening.FCR-D down is the frequency containment reserve used in the Nordic synchronous system that aims to keep the frequency below 50,5 Hz during disturbances.Hourly market is a reserve market operated by Fingrid. Procured volumes vary for each hour and price is the price of the most expensive procured bid.

Usage

```
fcr_d_nordictrade_down(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/320

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- fcr_d_nordictrade_down(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

fcr_d_nordictrade_up *Frequency containment reserves for disturbances upwards regulation, nordic trade*

Description

The volume of the nordic trade of frequency containment reserve for disturbances upwards regulation (FCR-D up) capacity. Positive numbers indicate import of capacity to Finland and negative numbers indicate export of capacity from Finland. The data contains the traded capacity for Sweden and Norway. The data will be published 22:45 (EET) on previous evening.FCR-D (up) is the frequency containment reserve used in the Nordic synchronous system that aims to keep the frequency above 49,5 Hz during disturbances.Hourly market is a reserve market operated by Fingrid. Procured volumes vary for each hour and price is the price of the most expensive procured bid.

Usage

```
fcr_d_nordictrade_up(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/289

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- fcr_d_nordictrade_up(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

fcr_d_yearlymarket_plans_down

Frequency containment reserves for disturbances downward regulation, reserve plans in the yearly market

---

Description

The hourly sum of reserve plans for frequency containment reserve for disturbances downwards regulation (FCR-D down) in the yearly market. The data will be published 22:45 (EET) on previous evening.FCR-D downwards regulation is the frequency containment reserve used in the Nordic synchronous system that aims to keep the frequency below 50,5 Hz during disturbances.Yearly market is a reserve market operated by Fingrid. Hourly procured volumes vary according to the reserve plans submitted by the balancing service providers and the price is constant over the whole year.

Usage

```
fcr_d_yearlymarket_plans_down(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/321

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- fcr_d_yearlymarket_plans_down(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

fcr_d_yearlymarket_plans_up

Frequency containment reserves for disturbances upwards regulation, reserve plans in the yearly market

---

Description

The hourly sum of reserve plans for frequency containment reserve for disturbances upwards regulation (FCR-D up) in the yearly market. The data will be published 22:45 (EET) on previous evening.FCR-D (up) is the frequency containment reserve used in the Nordic synchronous system that aims to keep the frequency above 49,5 Hz during disturbances.Yearly market is a reserve market operated by Fingrid. Hourly procured volumes vary according to the reserve plans submitted by the balancing service providers and the price is constant over the whole year.

Usage

```
fcr_d_yearlymarket_plans_up(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/290

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- fcr_d_yearlymarket_plans_up(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

fcr_n_activated *Frequency Containment Reserve for Normal operation, activated*

Description

The values in the data have been erroneously instantaneous values. From February 21, 2024, the data are correct 15-minute averages.Hourly values can be found correctly on the European transparency platform: https://transparency.entsoe.eu/balancing/r2/activationAndActivatedBalancingReserves/show Activated Frequency Containment Reserve for Normal operation (FCR-N) is published one hour after the hour in question, for example the value for hour 07-08 is published at 9 o'clock. FCR-N is the frequency containment reserve used in the Nordic synchronous system that aims to keep the frequency in normal frequency range between 49,9 - 50,1 Hz. Activated FCR-N volume (MWh) is calculated on the basis of the frequency in the Nordic synchronous system and maintained Finnish FCR-N capacity. Value is activated net average power. Positive value means that the frequency has been in average below 50,0 Hz during the hour, and reserve has been activated as up-regulation. Respectively, negative value means that the frequency has been in average above 50,0 Hz, and reserve has been activated as down-regulation. The Data before 13.06.2023 is in hourly resolution.

Usage

```
fcr_n_activated(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/123

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- fcr_n_activated(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

fcr_n_activated_down *Frequency Containment Reserve for Normal operation, activated down-regulation*

Description

FCR-N is the frequency containment reserve used in the Nordic synchronous system that aims to keep the frequency in normal frequency range between 49,9 - 50,1 Hz. Activated FCR-N volume down (MW) is calculated on the basis of the frequency in the Nordic synchronous system and maintained Finnish FCR-N capacity. Value is the average activated down-regulation power. Negative value means that the frequency has been above 50,0 Hz, and reserve has been activated as down-regulation.

Usage

```
fcr_n_activated_down(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/343

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- fcr_n_activated_down(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`fcr_n_activated_up` *Frequency Containment Reserve for Normal operation, activated up-regulation*

Description

FCR-N is the frequency containment reserve used in the Nordic synchronous system that aims to keep the frequency in normal frequency range between 49,9 - 50,1 Hz. Activated FCR-N volume up (MW) is calculated on the basis of the frequency in the Nordic synchronous system and maintained Finnish FCR-N capacity. Value is the average activated up-regulation power. Positive value means that the frequency has been below 50,0 Hz during the quarter, and reserve has been activated as up-regulation.

Usage

```
fcr_n_activated_up(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 15 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/344

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- fcr_n_activated_up(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

fcr_n_foreign_trade *Frequency Containment Reserve for Normal operation, foreign trade*

Description

The volume of the foreign trade of frequency containment reserve for normal operation (FCR-N) capacity. Positive numbers indicate import of capacity to Finland and negative numbers indicate export of capacity from Finland. The data contains the traded capacity for Sweden, Norway, Estonia and Russia*. The data will be published 22:45 (EET) on previous evening.FCR-N is the frequency containment reserve used in the Nordic synchronous system that aims to keep the frequency in normal frequency range between 49,9 - 50,1 Hz.Hourly market is a reserve market operated by Fingrid. Procured volumes vary for each hour and price is the price of the most expensive procured bid.*Procuring reserves from Russia has ended 14.5.2022

Usage

```
fcr_n_foreign_trade(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/287

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- fcr_n_foreign_trade(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`fcr_n_hourlymarket_bidsum`

Frequency Containment Reserve for Normal operation, hourly market bids

---

Description

The volume of received Frequency Containment Reserves for Normal operation (FCR-N) bids. The volume of bids will be published 22:45 (EET) on previous evening.FCR-N is the frequency containment reserve used in the Nordic synchronous system that aims to keep the frequency in normal frequency range between 49,9 - 50,1 Hz.Hourly market is a reserve market operated by Fingrid. Procured volumes vary for each hour and price is the price of the most expensive procured bid.

Usage

```
fcr_n_hourlymarket_bidsum(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/285

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- fcr_n_hourlymarket_bidsum(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

fcr_n_hourlymarket_prices

Frequency Containment Reserve for Normal operation, hourly market prices

---

Description

Hourly prices (/MW,h) of procured frequency containment reserve for normal operation (FCR-N) in Finnish hourly market for each CET-timezone day is published previous evening at 22:45 (EET). FCR-N is the frequency containment reserve used in the Nordic synchronous system that aims to keep the frequency in normal frequency range between 49,9 - 50,1 Hz. Hourly market is a reserve market operated by Fingrid. Procured volumes vary for each hour and price is the price of the most expensive procured bid.

Usage

```
fcr_n_hourlymarket_prices(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type EUR/MW.

See Also

https://data.fingrid.fi/en/datasets/317

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- fcr_n_hourlymarket_prices(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`fcr_n_hourlymarket_volumes`

Frequency Containment Reserve for Normal operation, hourly market volumes

---

Description

Hourly volume of procured frequency containment reserve for normal operation (FCR-N) in Finnish hourly market for each CET-timezone day is published previous evening at 22:45 (EET).FCR-N is the frequency containment reserve used in the Nordic synchronous system that aims to keep the frequency in normal frequency range between 49,9 - 50,1 Hz. Hourly market is a reserve market operated by Fingrid. Procured volumes vary for each hour and price is the price of the most expensive procured bid.

Usage

```
fcr_n_hourlymarket_volumes(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/316

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- fcr_n_hourlymarket_volumes(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`fcr_n_yearlymarket_plans` *Frequency Containment Reserve for Normal operation, yearly market plans*

Description

The hourly sum of reserve plans for frequency containment reserve for normal operation (FCR-N) in the yearly market. The data will be published 22:45 (EET) on previous evening.FCR-N is the frequency containment reserve used in the Nordic synchronous system that aims to keep the frequency in normal frequency range between 49,9 - 50,1 Hz.Yearly market is a reserve market operated by Fingrid. Hourly procured volumes vary according to the reserve plans submitted by the balancing service providers and the price is constant over the whole year.

Usage

```
fcr_n_yearlymarket_plans(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/288

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- fcr_n_yearlymarket_plans(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`ffr_price` *Fast Frequency Reserve FFR, price*

Description

The price of procured Fast Frequency Reserve (FFR) (/MW). The price will be published 22:00 (EET) on previous evening. The price is determined by the price of the most expensive procured bid (marginal pricing).The Fast Frequency Reserve (FFR) is procured to handle low-inertia situations. The needed volume of Fast Frequency Reserve depends on the amount of inertia in the power system and the size of the reference incident.

Usage

```
ffr_price(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type €/MW.

See Also

https://data.fingrid.fi/en/datasets/277

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- ffr_price(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

ffr_procured *Fast Frequency Reserve FFR, procured volume*

Description

The volume of procured Fast Frequency Reserve (FFR). The procured volume will be published 22:00 (EET) on previous evening.The Fast Frequency Reserve (FFR) is procured to handle low-inertia situations. The needed volume of Fast Frequency Reserve depends on the amount of inertia in the power system and the size of the reference incident.

Usage

```
ffr_procured(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 MW.

See Also

https://data.fingrid.fi/en/datasets/276

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- ffr_procured(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`ffr_procurement_forecast`

Fast Frequency Reserve FFR, procurement forecast

Description

The procurement prognosis for Fast Frequency Reserve (FFR) (MW). Fingrid procures FFR based on the procurement prognosis. The prognosis is updated once a day, typically at 11:00 (EET).The Fast Frequency Reserve (FFR) is procured to handle low-inertia situations. The needed volume of Fast Frequency Reserve depends on the amount of inertia in the power system and the size of the reference incident.

Usage

```
ffr_procurement_forecast(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/278

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- ffr_procurement_forecast(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

---

ffr_received_bids *Fast Frequency Reserve FFR, received bids*

Description

The volume of received Fast Frequency Reserve (FFR) bids. The volume of bids will be published 22:00 (EET) on previous evening.The Fast Frequency Reserve (FFR) is procured to handle low-inertia situations. The needed volume of Fast Frequency Reserve depends on the amount of inertia in the power system and the size of the reference incident.

Usage

```
ffr_received_bids(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/275

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- ffr_received_bids(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`get_data` *Main logic forming the API call.*

Description

Main logic forming the API call. API key can be provided as function parameter or environment variable (in .Renviron as FINGRID_OPENDATA_API_KEY). Function parameter has precedence in case both are provided. For API spec see https://data.fingrid.fi/en/pages/api.

Usage

```
get_data(
  api_number = NA,
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA,
  page_size = 20000
)
```

Arguments

`api_number`	Integer related to the Fingrid Open Data API
`start_time_utc`	Start time in UTC with offset. Character array in ISO8601, YYYY-MM-ddTHH:mm:ssZ
`end_time_utc`	End time in UTC with offset. Character array in ISO8601, YYYY-MM-ddTHH:mm:ssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en.
`page_size`	Integer how many observations are in a single page. Defaults to API maximum 20000.

Value

A data frame object that contains wanted open data.

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"
end = "2024-06-03T00:00:00.000Z"
key = "MY_SUPER_SECRET"
df <- get_data(api_number = 124,  # electricity consumption for Finland
               start_time_utc = start,
               end_time_utc = end,
               user_key = key,
               page_size = 20000)
summary(df)

## End(Not run)
```

`get_page_data` *Returns one page of JSON data*

Description

This private function helps with JSON API pagination by returning a single page of observations at once.

Usage

```
get_page_data(
  page_num,
  page_size,
  api_number,
  start_time_utc,
  end_time_utc,
  api_key
)
```

Arguments

`page_num`	Integer which page to retrieve from API.
`page_size`	Integer how many observations per page are collected.
`api_number`	Integer related to the Fingrid Open Data API
`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`api_key`	Character array holding API-key. Free from https://data.fingrid.fi/en.

Value

A data frame object that contains a single page from API.

imbalance_consumption_price
The price of comsumption imbalance electricity

Description

The price of consumption imbalance power is the price for which Fingrid both purchases imbalance power from a balance responsible party and sells it to one. In the case of regulating hour, the regulation price is used. If no regulation has been made, the Elspot FIN price is used as the purchase and selling price of consumption imbalance power. Data gathering to Excel-sheet or XML format is possible in periods not longer that one year due to limitations in data transmission. Separate consumption imbalance ended when 1.11.2021 01.00 settlement model was changed to single imbalance.

Usage

```
imbalance_consumption_price(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type EUR/MWh.

See Also

https://data.fingrid.fi/en/datasets/92

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_consumption_price(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_incentcomp_DK1` *Incentivising Component (IC) DK1*

Description

Incentivising Component (IC) DK1More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_incentcomp_DK1(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/303

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_incentcomp_DK1(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_incentcomp_DK2` *Incentivising Component (IC) DK2*

Description

Incentivising Component (IC) DK2More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_incentcomp_DK2(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/304

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_incentcomp_DK2(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

imbalance_incentcomp_FI *Incentivising Component (IC) FI*

Description

Incentivising Component (IC) FIMore information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_incentcomp_FI(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/305

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_incentcomp_FI(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_incentcomp_NO1` *Incentivising Component (IC) NO1*

Description

Incentivising Component (IC) NO1More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). VoAA and IC are not implemented in Norway as in the other Nordic countries, but corresponding values are published for informational purposes.In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_incentcomp_NO1(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/306

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_incentcomp_NO1(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_incentcomp_NO2`

Incentivising Component (IC) NO2

Description

Incentivising Component (IC) NO2More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). VoAA and IC are not implemented in Norway as in the other Nordic countries, but corresponding values are published for informational purposes. In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_incentcomp_NO2(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/307

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_incentcomp_NO2(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_incentcomp_NO3`
Incentivising Component (IC) NO3

Description

Incentivising Component (IC) NO3More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). VoAA and IC are not implemented in Norway as in the other Nordic countries, but corresponding values are published for informational purposes. In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_incentcomp_NO3(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/308

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_incentcomp_NO3(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_incentcomp_NO4` *Incentivising Component (IC) NO4*

Description

Incentivising Component (IC) NO4More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). VoAA and IC are not implemented in Norway as in the other Nordic countries, but corresponding values are published for informational purposes. In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_incentcomp_NO4(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/309

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_incentcomp_NO4(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_incentcomp_NO5` *Incentivising Component (IC) NO5*

Description

Incentivising Component (IC) NO5More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). VoAA and IC are not implemented in Norway as in the other Nordic countries, but corresponding values are published for informational purposes. In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_incentcomp_NO5(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/310

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_incentcomp_NO5(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

imbalance_incentcomp_SE1 *Incentivising Component (IC) SE1*

Description

Incentivising Component (IC) SE1More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_incentcomp_SE1(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/311

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_incentcomp_SE1(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_incentcomp_SE2` *Incentivising Component (IC)SE2*

Description

Incentivising Component (IC)SE2More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_incentcomp_SE2(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/312

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_incentcomp_SE2(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

imbalance_incentcomp_SE3 *Incentivising Component (IC) SE3*

Description

Incentivising Component (IC) SE3More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_incentcomp_SE3(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/313

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_incentcomp_SE3(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_incentcomp_SE4` *Incentivising Component (IC) SE4*

Description

Incentivising Component (IC) SE4More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_incentcomp_SE4(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/314

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_incentcomp_SE4(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

imbalance_power_FI_SE *Imbalance power between Finland and Sweden*

Description

The volume of power equals to the difference between measured and commercial transmission between Finland and Sweden. The tradetypes of commercial flow include day ahead, intraday and trades between Fingrid and Svenska Kraftnät during the operational hour.When the value of imbalance power volume is positive Fingrid has sold imbalance power to Sweden. When the value of imbalance power volume is negative Fingrid has bought imbalance power from Sweden.

Usage

```
imbalance_power_FI_SE(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/176

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_power_FI_SE(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_price` *Imbalance price*

Description

Imbalance price for balance responsible party's imbalance in Single price-single position settlement from 1.11.2021 01.00. Prices are updated hourly.

Usage

```
imbalance_price(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/319

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_price(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_production_purchase_price` *The buying price of production imbalance electricity*

Description

The down-regulating price of the hour is the price of production imbalance power purchased by Fingrid from a balance responsible party. If no down-regulation has been made or if the hour has been defined as an up-regulation hour, the Elspot FIN price is used as the purchase price of production imbalance power. Separate production balance ended when 1.11.2021 01.00 setllement model was changed to single imbalance.

Usage

```
imbalance_production_purchase_price(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type EUR/MWh.

See Also

https://data.fingrid.fi/en/datasets/96

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_production_purchase_price(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_production_sales_price` *The sales price of production imbalance electricity*

Description

The up-regulating price of the hour is the price of production imbalance power sold by Fingrid to a balance responsible party. If no up regulation has been made or if the hour has been defined as a down-regulation hour, the day ahead spot price of Finland is used as the selling price of production imbalance power. Separate production balance ended when 1.11.2021 01.00 settlement model was changed to single imbalance.

Usage

```
imbalance_production_sales_price(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type EUR/MWh.

See Also

https://data.fingrid.fi/en/datasets/93

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_production_sales_price(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_voaa_dk1` *Value of Avoided Activation (VoAA) DK1*

Description

Value of Avoided Activation (VoAA) DK1More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_voaa_dk1(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/291

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_voaa_dk1(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_voaa_dk2` *Value of Avoided Activation (VoAA) DK2*

Description

Value of Avoided Activation (VoAA) DK2More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_voaa_dk2(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/292

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_voaa_dk2(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_voaa_fi` *Value of Avoided Activation (VoAA) FI*

Description

Value of Avoided Activation (VoAA) FIMore information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_voaa_fi(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/293

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_voaa_fi(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_voaa_no1` *Value of Avoided Activation (VoAA) NO1*

Description

Value of Avoided Activation (VoAA) NO1More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). VoAA and IC are not implemented in Norway as in the other Nordic countries, but corresponding values are published for informational purposes. In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_voaa_no1(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/294

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_voaa_no1(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_voaa_no2` *Value of Avoided Activation (VoAA) NO2*

Description

Value of Avoided Activation (VoAA) NO2More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). VoAA and IC are not implemented in Norway as in the other Nordic countries, but corresponding values are published for informational purposes. In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_voaa_no2(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/295

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_voaa_no2(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_voaa_no3` *Value of Avoided Activation (VoAA) NO3*

Description

Value of Avoided Activation (VoAA) NO3More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). VoAA and IC are not implemented in Norway as in the other Nordic countries, but corresponding values are published for informational purposes. In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_voaa_no3(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/296

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_voaa_no3(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_voaa_no4` *Value of Avoided Activation (VoAA) NO4*

Description

Value of Avoided Activation (VoAA) NO4More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). VoAA and IC are not implemented in Norway as in the other Nordic countries, but corresponding values are published for informational purposes. In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_voaa_no4(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/297

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_voaa_no4(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_voaa_no5` *Value of Avoided Activation (VoAA) NO5*

Description

Value of Avoided Activation (VoAA) NO5More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). VoAA and IC are not implemented in Norway as in the other Nordic countries, but corresponding values are published for informational purposes.In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_voaa_no5(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/298

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_voaa_no5(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_voaa_se1` *Value of Avoided Activation (VoAA) SE1*

Description

Value of Avoided Activation (VoAA) SE1More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_voaa_se1(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/299

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_voaa_se1(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_voaa_se2` *Vältetyn aktivoinnin arvo (VoAA) SE2*

Description

Value of Avoided Activation (VoAA) SE2More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_voaa_se2(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/300

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_voaa_se2(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_voaa_se3` *Value of Avoided Activation (VoAA) SE3*

Description

Value of Avoided Activation (VoAA) SE3More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_voaa_se3(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/301

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_voaa_se3(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`imbalance_voaa_se4` *Value of Avoided Activation (VoAA) SE4*

Description

Value of Avoided Activation (VoAA) SE4More information about VoAA and IC can be found in eSett Handbook (definitions and calculation rules). In case VoAA and IC cannot be calculated according to the set rules, the value 99 999 will be displayed for both.

Usage

```
imbalance_voaa_se4(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type 1 €/MWh.

See Also

https://data.fingrid.fi/en/datasets/302

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- imbalance_voaa_se4(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

mfrr_cm_hourly_bids_down *Balancing Capacity (mFRR), down, hourly market, bids*

Description

Data before 30.11.2022 is test-data.The amount of downwards balancing capacity bids in the balancing capacity market, MW/h. Fingrid procures mFRR capacity through the balancing capacity market, which is held when needed. Balance service provider pledges itself to leave regulating bids on the regulation market. For that the balance service provider is entitled to capacity payment.

Usage

```
mfrr_cm_hourly_bids_down(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/331

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_cm_hourly_bids_down(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_cm_hourly_bids_up` *Balancing Capacity (mFRR), up, hourly market, bids*

Description

Data before 30.11.2022 is test-data.The amount of upwards balancing capacity bids in the balancing capacity market, MW/h. Fingrid procures mFRR capacity through the balancing capacity market, which is held when needed. Balance service provider pledges itself to leave regulating bids on the regulation market. For that the balance service provider is entitled to capacity payment.

Usage

```
mfrr_cm_hourly_bids_up(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/332

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_cm_hourly_bids_up(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_cm_hourly_price_down` *Balancing Capacity (mFRR), down, hourly market, price*

Description

Data before 30.11.2022 is test-data.The marginal price of downwards balancing capacity procured from the balancing capacity market, /MW,h. Fingrid procures mFRR capacity through the balancing capacity market auction, which is held when needed. Balance service provider pledges itself to leave regulating bids on the regulation market. For that the balance service provider is entitled to capacity payment.

Usage

```
mfrr_cm_hourly_price_down(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type €/MW.

See Also

https://data.fingrid.fi/en/datasets/330

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_cm_hourly_price_down(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_cm_hourly_price_up` *Balancing Capacity Market (mFRR), up, hourly market, price*

Description

Data before 30.11.2022 is test-data.The marginal price of upwards balancing capacity procured from the balancing capacity market, /MW,h. Fingrid procures mFRR capacity through the balancing capacity market auction, which is held when needed. Balance service provider pledges itself to leave regulating bids on the regulation market. For that the balance service provider is entitled to capacity payment.

Usage

```
mfrr_cm_hourly_price_up(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type €/MW.

See Also

https://data.fingrid.fi/en/datasets/329

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_cm_hourly_price_up(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_cm_hourly_procuforecast_down` *Balancing Capacity (mFRR), down, hourly market, procurement forecast*

Description

Data before 30.11.2022 is test-data.The forecasted amount of downwards balancing capacity procurement (MW/h).Fingrid procures mFRR capacity through the balancing capacity market, which is held when needed. Balance service provider pledges itself to leave regulating bids on the regulation market. For that the balance service provider is entitled to capacity payment.

Usage

```
mfrr_cm_hourly_procuforecast_down(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/335

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_cm_hourly_procuforecast_down(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_cm_hourly_procuforecast_up` *Balancing Capacity (mFRR), up, hourly market, procurement forecast*

Description

Data before 30.11.2022 is test-data.The forecasted amount of upwards balancing capacity procurement (MW/h). Fingrid procures mFRR capacity through the balancing capacity market, which is held when needed. Balance service provider pledges itself to leave regulating bids on the regulation market. For that the balance service provider is entitled to capacity payment.

Usage

```
mfrr_cm_hourly_procuforecast_up(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/334

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_cm_hourly_procuforecast_up(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

mfrr_cm_hourly_procured_down
Balancing Capacity (mFRR), down, hourly market, procured volume

Description

Data before 30.11.2022 is test-data.The amount of downwards balancing capacity procured from the balancing capacity market, MW/h. Fingrid procures mFRR capacity through the balancing capacity market auction, which is held when needed. Balance service provider pledges itself to leave regulating bids on the regulation market. For that the balance service provider is entitled to capacity payment.

Usage

```
mfrr_cm_hourly_procured_down(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW/h.

See Also

https://data.fingrid.fi/en/datasets/328

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_cm_hourly_procured_down(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_cm_hourly_procured_EE` *Balancing Capacity (mFRR), hourly market, procurement from Estonia*

Description

Data before 30.11.2022 is test-data. In addition to the national weekly market, Fingrid also has the possibility to procure mFRR balancing capacity from Estonia. This dataset includes the procured balancing capacity amounts from Estonia, MW/week. The procured amount is published at latest on Friday of the week before the procurement week at 12:00 (EET).

Usage

```
mfrr_cm_hourly_procured_EE(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW/h.

See Also

https://data.fingrid.fi/en/datasets/333

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_cm_hourly_procured_EE(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_cm_hourly_procured_up` *Balancing Capacity (mFRR), up, hourly market, procured volume*

Description

Data before 30.11.2022 is test-data.The amount of upwards balancing capacity procured from the balancing capacity market, MW/h. Fingrid procures mFRR capacity through the balancing capacity market auction, which is held when needed. Balance service provider pledges itself to leave regulating bids on the regulation market. For that the balance service provider is entitled to capacity payment.

Usage

```
mfrr_cm_hourly_procured_up(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/327

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_cm_hourly_procured_up(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_cm_weekly_price` *Balancing Capacity Market price*

Description

The price of capacity procured from the balancing capacity market, /MW,h. Fingrid procures mFRR capacity throught the balancing capacity market on a weekly auction, which is held when needed. Balance service provider pledges itself to leave regulating bids on the regulation market. For that the balance service provider is entitled to capacity payment. The price is published at latest on Friday on the week before the procurement week at 12:00 (EET)

Usage

```
mfrr_cm_weekly_price(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 vk and unit type €.

See Also

https://data.fingrid.fi/en/datasets/262

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_cm_weekly_price(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_cm_weekly_procured` *Balancing Capacity Market results*

Description

The amount of capacity procured from the balancing capacity market, MW/week. Fingrid procures mFRR capacity throught the balancing capacity market on a weekly auction, which is held when needed. Balance service provider pledges itself to leave regulating bids on the regulation market. For that the balance service provider is entitled to capacity payment. The procured amount is published at latest on Friday on the week before the procurement week at 12:00 (EET)

Usage

```
mfrr_cm_weekly_procured(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 vk and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/261

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_cm_weekly_procured(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_em_bids_price_last_activated_down_RTD` *Down-regulation bids, price of the last activated - real time data*

Description

The price of the last activated down-regulation bid. The price is published real-time when Finland is a separate regulation area.

Usage

```
mfrr_em_bids_price_last_activated_down_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type €/MWh.

See Also

https://data.fingrid.fi/en/datasets/251

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_em_bids_price_last_activated_down_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_em_bids_sum_regulation_down`

The sum of the down-regualtion bids in the Balancing energy market

Description

The hourly sum of the down-regulation offers given by Finnish parties to the Balancing energy market is published hourly with one hour delay, eg. information from hour 07-08 is published at 9 o'clock.Balancing energy market is market place for manual freqeuncy restoration reserve (mFRR) which is used to balance the electricity generation and consumption in real time. The Balancing energy market organized by Fingrid is part of the Nordic Balancing energy market that is called also Regulating power market. Fingrid orders up- or down-regulation from the Balancing energy market. Down-regulation considers increasing of consumption or reducing of generation. Down-regulation bids have negative sign.

Usage

```
mfrr_em_bids_sum_regulation_down(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/105

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_em_bids_sum_regulation_down(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)
```

```
## End(Not run)
```

`mfrr_em_bids_sum_regulation_up` *The sum of the up-regulation bids in the balancing energy market*

Description

The hourly sum of the up-regulation offers given by Finnish parties to the Balancing energy market is published hourly with one hour delay, eg. information from hour 07-08 is published at 9 o'clock.Balancing energy market is market place for manual freqeuncy restoration reserve (mFRR) which is used to balance the electricity generation and consumption in real time. The Balancing energy market organized by Fingrid is part of the Nordic Balancing energy market that is called also Regulating power market. Fingrid orders up- or down-regulation from the Balancing energy market. Up-regulation considers increasing of production or reducing of consumption.

Usage

```
mfrr_em_bids_sum_regulation_up(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/243

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_em_bids_sum_regulation_up(start_time_utc = start,
         end_time_utc = end,
```

```
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_em_hour_change_regulation_down`
Hour change regulation, down-regulation

Description

In order to reduce problems encountered at the turn of the hour in the Nordic countries or in Finland, the planned production changes will be transfered to begin 15 minutes before or after the planned moment.

Usage

```
mfrr_em_hour_change_regulation_down(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/239

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_em_hour_change_regulation_down(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_em_hour_change_regulation_up` *Hour change regulation, up-regulation*

Description

In order to reduce problems encountered at the turn of the hour in the Nordic countries or in Finland, the planned production changes will be transfered to begin 15 minutes before or after the planned moment.

Usage

```
mfrr_em_hour_change_regulation_up(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/240

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_em_hour_change_regulation_up(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_em_ordered_regulations_down` *Ordered down-regulations from Balancing energy market in Finland*

Description

Ordered down-regulations from Balancing energy market in Finland. The volume of ordered down-regulations from Balancing energy market in Finland is published hourly with two hours delay, eg. information from hour 06-07 is published at 9 o'clock.Balancing energy market is market place for manual freqeuncy restoration reserve (mFRR) which is used to balance the electricity generation and consumption in real time. The Balancing energy market organized by Fingrid is part of the Nordic Balancing energy market that is called also Regulating power market. Fingrid orders up- or down-regulation from the Balancing energy market. Down-regulation considers increasing of consumption or reducing of generation. Down-regulation volume has negative sign.

Usage

```
mfrr_em_ordered_regulations_down(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/33

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_em_ordered_regulations_down(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)
```

```
## End(Not run)
```

`mfrr_em_ordered_regulations_up` *Ordered up-regulations from Balancing energy market in Finland*

Description

Ordered up-regulations from Balancing energy market in Finland. The volume of ordered up-regulations from Balancing energy market in Finland is published hourly with two hours delay, eg. information from hour 06-07 is published at 9 o'clock.Balancing energy market is market place for manual freqeuncy restoration reserve (mFRR) which is used to balance the electricity generation and consumption in real time. The Balancing energy market organized by Fingrid is part of the Nordic Balancing energy market that is called also Regulating power market. Fingrid orders up- or down-regulation from the Balancing energy market. Up-regulation considers increasing of generation or reducing of consumption.

Usage

```
mfrr_em_ordered_regulations_up(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/34

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_em_ordered_regulations_up(start_time_utc = start,
```

```
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_em_other_pwr_regulation_down` *Other power transactions, down-regulation*

Description

Other power transactions which are necessary in view of the power system.

Usage

```
mfrr_em_other_pwr_regulation_down(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/213

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_em_other_pwr_regulation_down(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_em_other_pwr_regulation_up` *Other power transactions, up-regulation*

Description

Other power transactions which are necessary in view of the power system.

Usage

```
mfrr_em_other_pwr_regulation_up(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/214

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_em_other_pwr_regulation_up(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_em_price_last_activated_bid_RTD` *Price of the last activated up-regulation bid - real time data*

Description

The price of the last activated up-regulation bid. The price is published real-time when Finland is a separate regulation area.

Usage

```
mfrr_em_price_last_activated_bid_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type €/MWh.

See Also

https://data.fingrid.fi/en/datasets/22

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_em_price_last_activated_bid_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_em_price_regulation_down` *Down-regulation price in the Balancing energy market*

Description

Down-regulation price in the Balancing energy market. The price of the cheapest regulating bid used in the balancing power market during the particular hour; however, at the most the price for price area Finland in Nord Pool Spot (Elspot FIN).Down-regulating price in Finland is the price of the most expensive down-regulating bid used in the Balancing energy market during the hour in question; however, it is at the most the day ahead market price for the price area Finland. Down-regulating price for each hour is published hourly with one hour delay, eg. information from hour 07-08 is published at 9 o'clock.Balancing energy market is market place for manual freqeuency restoration reserve (mFRR) which is used to balance the electricity generation and consumption in real time. The Balancing energy market organized by Fingrid is part of the Nordic Balancing energy market that is called also Regulating power market. Fingrid orders up- or down-regulation from the Balancing energy market. Down-regulation considers increasing of consumption or reducing of generation.

Usage

```
mfrr_em_price_regulation_down(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type EUR/MWh.

See Also

https://data.fingrid.fi/en/datasets/106

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
```

```
key = "MY_SUPER_SECRET"
df <- mfrr_em_price_regulation_down(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_em_price_regulation_up` *Up-regulating price in the Balancing energy market*

Description

Up-regulating price in Finland is the price of the most expensive up-regulating bid used in the Balancing energy market during the hour in question; however, it is at least the day ahead market price for the price area Finland. Up-regulating price for each hour is published hourly with one hour delay, eg. information from hour 07-08 is published at 9 o'clock.Balancing energy market is market place for manual freqeuncy restoration reserve (mFRR) which is used to balance the electricity generation and consumption in real time. The Balancing energy market organized by Fingrid is part of the Nordic Balancing energy market that is called also Regulating power market. Fingrid orders up- or down-regulation from the Balancing energy market. Up-regulation considers increasing of production or reducing of consumption.

Usage

```
mfrr_em_price_regulation_up(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type EUR/MWh.

See Also

https://data.fingrid.fi/en/datasets/244

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_em_price_regulation_up(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_em_special_regulation_down`

Special regulation, down-regulation

Description

Regulation which takes place in the regulating power market by Fingrid for reasons other than the needs of national balance management

Usage

```
mfrr_em_special_regulation_down(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/118

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_em_special_regulation_down(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`mfrr_em_special_regulation_up`

Special regulation, up-regulation

Description

Regulation which takes place in the regulating power market by Fingrid for reasons other than the needs of national balance management

Usage

```
mfrr_em_special_regulation_up(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/119

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- mfrr_em_special_regulation_up(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`nscut_measured_flow` *Measured transmission of electricity in Finland from north to south*

Description

Measured electricity flow in North-South cut in Finland (cut P1). In the graph flow from North to South is positive. The Data before 28.03.2024 is in hourly resolution.

Usage

```
nscut_measured_flow(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 min and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/30

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- nscut_measured_flow(start_time_utc = start,
         end_time_utc = end,
```

```
         user_key = key)
summary(df)

## End(Not run)
```

`nscut_weekly_plan_cap_NS` *Planned weekly capacity from north to south*

Description

Planned weekly capacity on North-South cut in Finland (cut P1) from North to South. Planned outages are included in the weekly capacity, information is not updated after disturbances.

Usage

```
nscut_weekly_plan_cap_NS(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/28

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- nscut_weekly_plan_cap_NS(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

nscut_weekly_plan_cap_SN *Planned weekly capacity from south to north*

Description

Planned weekly capacity on North-South cut in Finland (cut P1) from South to North. Planned outages are included in the weekly capacity, information is not updated after disturbances.

Usage

```
nscut_weekly_plan_cap_SN(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 h and unit type Mwh/h.

See Also

https://data.fingrid.fi/en/datasets/29

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- nscut_weekly_plan_cap_SN(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

powersys_cogeneration_district_heating_RTD

Cogeneration of district heating - real time data

Description

Cogeneration of district heating based on the real-time measurements in Fingrid's operation control system. The data is updated every 3 minutes.Cogeneration means power plants that produce both electricity and district heating or process steam (combined heat and power, CHP).

Usage

```
powersys_cogeneration_district_heating_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/201

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_cogeneration_district_heating_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`powersys_cumulative_surplus_RTD` *Surplus/deficit, cumulative - real time data*

Description

Information is based on the real time measurements in Fingrid's power control system.Power deficit/surplus represents the balance between production and consumption in Finland, taking into account imports and exports. It is calculated as the difference between the measured net import/export and the confirmed net exchange program between Finland and the other Nordic countries. The cumulative production deficit/surplus is the hourly energy generated from the difference.Sign convention: production deficit -, surplus +The data is updated every 3 minutes.

Usage

```
powersys_cumulative_surplus_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/186

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_cumulative_surplus_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

powersys_electricity_consumption_FI_RTD
Electricity consumption in Finland - real time data

Description

Electricity consumption in Finland is calculated based on production and import/export. The data is updated every 3 minutes. Production information and import/export are based on the real-time measurements in Fingrid's operation control system.

Usage

```
powersys_electricity_consumption_FI_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/193

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_electricity_consumption_FI_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`powersys_electricity_netimport` *Net import/export of electricity - real time data*

Description

Net import to Finland and net export from Finland. The data is updated every 3 minutes.Production information and import/export are based on the real-time measurements in Fingrid's operation control system.

Usage

```
powersys_electricity_netimport(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/194

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_electricity_netimport(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

powersys_electricity_production_FI_RTD
Electricity production in Finland - real time data

Description

Electricity production in Finland based on the real-time measurements in Fingrid's operation control system The data is updated every 3 minutes.

Usage

```
powersys_electricity_production_FI_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/192

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_electricity_production_FI_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`powersys_electricity_production_reservetotal_RTD` *Electricity production, reserve power plants and small-scale production - real time data*

Description

Reserve power plants electrical production is based on the real-time measurements in Fingrid's operation control system. Estimated small-scale production is added, of which there are no measurements available. The data is updated every 3 minutes.

Usage

```
powersys_electricity_production_reservetotal_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/205

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_electricity_production_reservetotal_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`powersys_electricity_shortage_status_RTD` *Electricity shortage status*

Description

Electricity shortage status. An electricity shortage occurs when electricity production and imports are not enough to cover electricity consumption. In such cases, it is necessary to restrict consumption to stop the power system from crashing altogether. Fingrid informs citizens on its (website)(https://www.fingrid.fi/en/grid/information-regarding-electricity-shortages/) and with a press release in accordance with the three-step procedure when the situation possibly escalates.* 0 = Normal* 1 = Electricity shortage possible* 2 = High risk of electricity shortage* 3 = Electricity shortage The data is updated every 3 minutes.

Usage

```
powersys_electricity_shortage_status_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type 0-3.

See Also

https://data.fingrid.fi/en/datasets/336

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_electricity_shortage_status_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`powersys_frequency_RTD` *Frequency - real time data*

Description

Frequency of the power system based on the real-time measurements in Fingrid's operation control system. The data is updated every 3 minutes.

Usage

```
powersys_frequency_RTD(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type Hz.

See Also

https://data.fingrid.fi/en/datasets/177

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_frequency_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`powersys_hydro_power_production_RTD` *Hydro power production - real time data*

Description

Hydro power production in Finland based on the real-time measurements in Fingrid's operation control system. The data is updated every 3 minutes.

Usage

```
powersys_hydro_power_production_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/191

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_hydro_power_production_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`powersys_industrial_cogeneration_RTD` *Industrial cogeneration - real time data*

Description

Cogeneration of industry based on the real-time measurements in Fingrid's operation control system. The data is updated every 3 minutes.Cogeneration means power plants that produce both electricity and district heating or process steam (combined heat and power, CHP).

Usage

```
powersys_industrial_cogeneration_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/202

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_industrial_cogeneration_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

powersys_kinetic_energy_nordic_pwr_sys_RTD
Kinetic energy of the Nordic power system - real time data

Description

Real-time estimate of the kinetic energy of the Nordic power system calculated by the Nordic transmission system operators. The data is updated every 1 minute. Historical data as of 27.3.2015 available.

Usage

```
powersys_kinetic_energy_nordic_pwr_sys_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 1 min and unit type 1 GWs.

See Also

https://data.fingrid.fi/en/datasets/260

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_kinetic_energy_nordic_pwr_sys_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`powersys_nuclear_power_production_RTD` *Nuclear power production - real time data*

Description

Nuclear power production in Finland based on the real-time measurements in Fingrid's operation control system. The data is updated every 3 minutes.Due to the fire on our Olkiluoto substation the total amount of nuclear power measurement has been incorrect between 18 July at 09:00 to 20 July at 13:00. Data corrected 25.1.2019.

Usage

```
powersys_nuclear_power_production_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/188

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_nuclear_power_production_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

powersys_peak_load_power_RTD
Peak load power - real time data

Description

Activated peak load power based on the real-time measurements in Fingrid's operation control system including peak load reserve activations and trial runs during winter period. The data is updated every 3 minutes.

Usage

```
powersys_peak_load_power_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/183

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_peak_load_power_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

powersys_production_surplus *Electricity production, surplus/deficit - real time data*

Description

Finland's energy production surplus/deficit. Information is based on the real time measurements in Fingrid's power control system.Power deficit/surplus represents the balance between power production and consumption in Finland, taking into account imports and exports. Power deficit/surplus is calculated as the difference between the measured net import/export and the confirmed net exchange program between Finland and the other Nordic countries.Sign convention: production deficit -, surplus +The data is updated every 3 minutes.

Usage

```
powersys_production_surplus(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/198

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_production_surplus(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

powersys_state_RTD *Power system state - real time data*

Description

Different states of the power system - traffic lights:1=green, 2=yellow, 3=red, 4=black, 5=blue* Green: Power system is in normal secure state.* Yellow: Power system is in endangered state. The adequacy of the electricity is endangered or the power system doesn't fulfill the security standards.* Red: Power system is in disturbed state. Load shedding has happened in order to keep the adequacy and security of the power system or there is a remarkable risk to a wide black out. * Black: An extremely serious disturbance or a wide black out in Finland.* Blue: The network is being restored after an extremely serious disturbance or a wide blackout.The data is updated every 3 minutes.

Usage

```
powersys_state_RTD(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type no.

See Also

https://data.fingrid.fi/en/datasets/209

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_state_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`powersys_temp_helsinki_RTD` *Temperature in Helsinki - real time data*

Description

Outside air temperature measurement at Tammisto substation. The data is updated every 3 minutes.

Usage

```
powersys_temp_helsinki_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type C.

See Also

https://data.fingrid.fi/en/datasets/178

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_temp_helsinki_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`powersys_temp_jyvaskyla_RTD` *Temperature in Jyväskylä - real time data*

Description

Outside air temperature measurement at Petäjävesi substation. The data is updated every 3 minutes.

Usage

```
powersys_temp_jyvaskyla_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type C.

See Also

https://data.fingrid.fi/en/datasets/182

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_temp_jyvaskyla_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

powersys_temp_oulu_RTD

Temperature in Oulu - real time data

Description

Outside air temperature measurement at Leväsuo substation. The data is updated every 3 minutes.

Usage

```
powersys_temp_oulu_RTD(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type C.

See Also

https://data.fingrid.fi/en/datasets/196

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_temp_oulu_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

powersys_temp_rovaniemi_RTD *Temperature in Rovaniemi - real time data*

Description

Outside air temperature measurement at Valajaskoski substation. The data is updated every 3 minutes.

Usage

```
powersys_temp_rovaniemi_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type C.

See Also

https://data.fingrid.fi/en/datasets/185

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_temp_rovaniemi_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`powersys_time_deviation_RTD` *Time deviation - real time data*

Description

Time deviation is the time difference in seconds between a clock running according to the frequency of the grid and a reference clock independent of the frequency of the grid. The data is updated every 3 minutes.

Usage

```
powersys_time_deviation_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type sec.

See Also

https://data.fingrid.fi/en/datasets/206

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_time_deviation_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

powersys_trans_FI_EE_RTD *Transmission between Finland and Estonia - real time data*

Description

Power transmission between Finland and Estonia HVDC tie lines (Estlink 1 and Estlink 2). Data is based on the real-time measurements in Fingrid's operation control system. Positive sign means transmission from Finland to Estonia. Negative sign means transmission from Estonia to Finland. The data is updated every 3 minutes.

Usage

```
powersys_trans_FI_EE_RTD(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/180

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_trans_FI_EE_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`powersys_trans_FI_NO_RTD` *Transmission between Finland and Norway - real time data*

Description

Power transmission between Finland and Norway 220kV AC tie line. Data is based on the real-time measurements in Fingrid's operation control system. Positive sign means transmission from Finland to Norway. Negative sign means transmission from Norway to Finland. The data is updated every 3 minutes.

Usage

```
powersys_trans_FI_NO_RTD(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/187

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_trans_FI_NO_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

powersys_trans_FI_OO_RTD *Transmission between Sweden and Åland - real time data*

Description

Power transmission between Åland and Sweden based on the real-time measurements in Fingrid's operation control system. Åland is a part of SE3 (Central-Sweden) bidding zone. Positive sign means transmission from Åland to Sweden. Negative sign means transmission from Sweden to Åland. The data is updated every 3 minutes.

Usage

```
powersys_trans_FI_OO_RTD(start_time_utc = NA, end_time_utc = NA, user_key = NA)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/90

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_trans_FI_OO_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

powersys_trans_FI_SE1_RTD *Transmission between Finland and Northern Sweden - real time data*

Description

Power transmission between Northern Sweden (SE1) and Finland (FI) 400kV AC tie line. Data is based on the real-time measurements in Fingrid's operation control system. Positive sign means transmission from Finland to Northern Sweden (SE1). Negative sign means transmission from Northern Sweden (SE1) to Finland. The data is updated every 3 minutes.

Usage

```
powersys_trans_FI_SE1_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/87

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_trans_FI_SE1_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

powersys_trans_FI_SE3_RTD *Transmission between Finland and Central Sweden - real time data*

Description

Power transmission between Central Sweden (SE3) and Finland (FI) HVDC tie lines. Data is based on the real-time measurements in Fingrid's operation control system. Positive sign means transmission from Finland to Central Sweden (SE3). Negative sign means transmission from Central Sweden (SE3) to Finland. The data is updated every 3 minutes.

Usage

```
powersys_trans_FI_SE3_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

start_time_utc	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
end_time_utc	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
user_key	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type MWh/h.

See Also

https://data.fingrid.fi/en/datasets/89

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_trans_FI_SE3_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

`powersys_wind_pwr_production_RTD` *Wind power production - real time data*

Description

Wind power production based on the real-time measurements in Fingrid's operation control system. About two percent of the production capacity is estimated as measurements aren't available. The data is updated every 3 minutes.

Usage

```
powersys_wind_pwr_production_RTD(
  start_time_utc = NA,
  end_time_utc = NA,
  user_key = NA
)
```

Arguments

`start_time_utc`	Start time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`end_time_utc`	End time in UTC. Character array YYYY-MM-ddTHH:mm:ss.sssZ
`user_key`	Character array holding API-key. Free from https://data.fingrid.fi/en/instructions

Value

A data frame object with time series data having period 3 min and unit type MW.

See Also

https://data.fingrid.fi/en/datasets/181

Examples

```
## Not run:
library(finnishgrid)
start = "2024-06-01T00:00:00.000Z"  # UTC
end = "2024-06-03T00:00:00.000Z"    # UTC
key = "MY_SUPER_SECRET"
df <- powersys_wind_pwr_production_RTD(start_time_utc = start,
         end_time_utc = end,
         user_key = key)
summary(df)

## End(Not run)
```

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