

GridTariffAPI

for smart house purposes

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Changelog:

2021-02-12: Changed from “Prerequisites” to “TERMS & CONDITIONS” and splitted details for private/business users. Added api function call `meteringpointsgridtariffs`”

2022-03-10: Updated to support DiginGridTariffAPI v1.0

Important notifications

2022-03-10: Header parameter *Ocp-Apim-Subscription-Key* was renamed to *X-API-Key*. This is to be compliant with the DIGIN standard described in detail at DIGIN github: <https://github.com/digin-energi/API-nettleie-for-styring>. The existing api function calls are not yet deprecated and the old header name will also work, so this change does not break existing connections to the API.

Definitions

DIGIN = Initiative for digitization of the energy industry:

<https://diginenergi.no/om-digin/>

GridTariff = the product with prices in the grid company's systems
(Norwegian: Nettleie)

Meteringpoint = the connection point where a physical meter is installed at a customer location. If a physical meter is replaced, the meteringpointId will remain unchanged, but the meterId will be replaced.

MeteringpointId/MPID = the identification number for the meteringpoint

TariffType = the grid tariff or the product connected to a meteringpoint
(ex. Nettleie Bolig or Standard)

Purpose

The GridTariffAPI offers most grid tariffs and prices per hour, covering the vast majority of the customers' meteringpoints.

The connection between a meteringpoint and the gridtariff connected to that meteringpoint is only instant, meaning that the prices are historically correct for the gridtariff, but the meteringpoint may have changed gridtariff at any point in time, and this is not reflected in the API.

Meteringpoints for customers with reduced elavgift need to take this into account on the client side, as reduced elavgift for single customers is not reflected in this API.

The purpose of the API is to enable use of grid tariff prices as an input in smart home solutions for controlling your power/energy consuming devices based on the grid tariff price. As an example the grid tariff prices given in the API can also be directly added to the Nordpool spot prices(if available for the customer) to give a total price curve which might be interesting for customers.

TERMS & CONDITIONS

- Elvias responsibility:
 - Elvia takes no responsibility of any financial or physical damage to you or your company based on the use of this API
 - Elvia strives to keep the API up and running at all times, but Elvia gives no guarantees for uptime
 - The API is versioned and Elvia will strive to keep versions available for as long as possible, and to alert the registered user(s) in case of changes or deprecation of the existing version(s)
 - The prices in the API is for smart house controlling purposes, not for rating purposes, so there might be differences between the prices in this API and on the customers' invoice. This is i.e. due to rounding issues (example: 2 vs 3 decimals)
 - Most grid tariffs and meteringpoints are covered by this API, but some tariff types are not and will not be included.
 - Customers with reduced elavgift need to take this into account, as the API does not reflect this

- You need basic knowledge about coding and use of API's to use this service.
- Customer services/Elvia kundesenter can not help you with guidance about using the API.
- In case of problems with registration or using the API, see GridTariffAPI documentation and examples further down.
- The API uses API Key for authentication/authorization. Remember that your primary and secondary keys are personal(or your company's) and must not be shared with others.
- Your user may be inactivated/deleted if we suspect that the key is being misused. See conditions below.

For private users:

- You may use the API for your:
 - private meteringpointId(s)
 - private smart house solution(s)
- You MAY NOT use this API or the prices published by this API for:
 - competitive or proxy services
 - requesting prices for other MPIDs than your private MPIDs

For business users:

- You must use a company email when registering
- You may use the API for your:
 - company's and your customers' smart house solutions or solutions directly related to smart use of energy and power consumptions
- You MAY NOT use this API or the prices published by this API for:
 - competitive or proxy services
 - requesting prices for other MPIDs than the MPIDs provided to your company under a legal basis compliant with §1 in

“Personopplysningsloven” (also referred to as GDPR/Personvernforordningen)

User registration and authentication

- Go to [Elvia developer portal](#) and Sign up. (Register a private or a company email)
- When successfully registered, sign in and go to Products - GridTariffAPI and request for subscription
 - Only request for subscription to the GridTariffAPI (other visible APIs may be for internal use or is not relevant to this documentation)
- The request for subscription will normally be approved within 8 working hours
- When subscription is approved you will get an email notification and you will find generated API keys in your Profile
- If you have trouble registering a user, you can send an email to pilot@elvia.no

GridTariffAPI documentation and examples

Use of the API

The prices in the API (nettleiepriser) are subject to future changes, but price changes are typically done once or a few times per year, beginning at the start of the year or month. Based on this, there is no need for extensive calls to the API, and you should base your solution on storing

the prices locally and call the API every now and then instead of all the time. See “API limitations” further down.

The API will of course publish the correct prices per hour, including any future price changes.

In case you find any bugs/issues, please report them to us using the “Report issue” button on the [Issues page](#).

Trying to find which Grid company your MeteringpointId belongs to?

If you are not an Elvia customer and you are trying to find the API endpoint for the GridTariffAPI at another grid company, you can check the mapping json file at the DIGIN github repository:

<https://github.com/digin-energi/API-nettleie-for-styring/blob/main/doc/DiginGridTariffAPI.gridcompany-mapping.json>

API limitations

The API is limited to a number of 200 calls per hour per user.

In the function call input for meteringpointsgridtariffs, the maximum limit of MPIDs is 10.000.

API documentation

The GridTariffAPI follow the DIGIN standard v1.0 (including bugfix v1.0.2) given by the standard schemas in DIGIN’s github repository. This

repository contains a standardization of the GridTariffApi to be used by all implementations of this API.

All necessary definitions and descriptions can be found here.

Elvia strives to follow the standard fully.

DIGIN repository links and documentation:

- Repository: <https://github.com/digin-energi/API-nettleie-for-styring>
- Definitions and descriptions of the schema and parameters: https://github.com/digin-energi/API-nettleie-for-styring/blob/main/DiginGridTariffAPI.v1_0.json

which uses this common schema:

https://github.com/digin-energi/API-nettleie-for-styring/blob/main/gridtariffapi.v1_0.common.schema.json

- Mapping of MeteringpointId ranges and Grid Companies: <https://github.com/digin-energi/API-nettleie-for-styring/blob/main/doc/DiginGridTariffAPI.gridcompany-mapping.json>
- Examples of query and response for different tariff types: <https://github.com/digin-energi/API-nettleie-for-styring/tree/main/doc>

API definition

For a complete definition of the implementation, go to [APIs](#) page, click “GridTariffAPI”, choose “API definition” (upper right corner) and choose your preferred schema type.

Test the function calls

Go to [APIs](#) page, click “GridTariffAPI” and you will see the available calls and code examples for different programming languages.

Function call /digin/api/{v}/tarifftype - GET

Some relevant properties are commented in red, otherwise see the above links to the standard with explanations on github.

- Get all available tariff types
 - Query parameters:
 - v: 1.0 (this is the version no)
 - Headers:
 - X-API-Key: <primary key>
 - Authorization: (only for testing in the portal. This is your primary key and is pre-filled after login)

- Request url example:

`https://elvia.azure-api.net/grid-tariff/digin/api/1.0/tarifftype`

- Response example: (only first response element included)

```
{
  "tariffTypes": [
    {
      "tariffKey": "private_flatrate_house", //keyword to use in tariffquery to get prices for a specific tarifftype
      "product": "HN ELHA avr", //product name used internally by grid companies, not relevant for end users
      "companyName": "Elvia AS",
      "companyOrgNo": "980489698",
      "title": "Nettleie - bolig (Oslo og Viken)", //name of the tarifftype
      "consumptionFlag": true,
      "lastUpdated": "2022-01-06T08:00:00+00:00", //last time the prices were updated for this tarifftype
      "usePublicHolidayPrices": false, //indicates if this tarifftype uses public holiday prices
      "useWeekendPrices": false, //indicates if this tarifftype uses weekend prices
    }
  ]
}
```



```

"fixedPriceConfiguration": { //to determine the rules for setting the fixed price level
  "basis": "fixed",
  "maxhoursPerDay": 0,
  "daysPerMonth": 0,
  "allDaysPerMonth": false,
  "maxhoursPerMonth": 0,
  "months": 0,
  "additionalProperties": {}
},
"powerPriceConfiguration": null,
"resolution": 60, //the price resolution period in minutes (as of March 2022 this is 60 minutes = 1 hour)
"description": "Nettleie - bolig (Oslo og Viken)"
}

```

Function call /digin/api/{v}/tariffquery - GET

Some relevant properties are commented in red, otherwise see the above links to the standard with explanations on github.

- Get tariff data/prices for a given tariff for a given timeperiod
 - Query parameters (use either <Range> or <StartTime and EndTime>):
 - TariffKey: <tariffkey from the tarifftype get call> (example: “private_tou_rush1” for “Nettleie Rush&Ro (Oslo og Viken)”)
 - v: 1.0 (this is the version no)
 - Range: yesterday/today/tomorrow (Exclusive OR with StartTime/EndTime)
 - StartTime: <from timestamp> (Inclusive AND with EndTime, Exclusive OR with Range)
 - EndTime: <to timestamp> (Inclusive AND with StartTime, Exclusive OR with Range)
 - Headers:
 - X-API-Key: <primary key>
 - Authorization:

- Subscription key: (only for testing in the portal. This is your primary key and is pre-filled after login)
- Request url example:

https://elvia.azure-api.net/grid-tariff/digin/api/1.0/tariffquery?TariffKey=private_flatrate_house&Range=today

- Response example: (only first response elements included in this document)

```
{  
  
  "gridTariff": {  
  
    "tariffType": {  
  
      "tariffKey": "private_flatrate_house", //keyword to use in tariffquery to get prices for a specific tarifftype  
  
      "product": "HN ELHA avr", //product name used internally by grid companies, not relevant for end users  
  
      "companyName": "Elvia AS",  
  
      "companyOrgNo": "980489698",  
  
      "title": "Nettleie - bolig (Oslo og Viken)", //name of the tarifftype  
  
      "consumptionFlag": true,  
  
      "lastUpdated": "2022-01-06T08:00:00+00:00", //last time the prices were updated for this tarifftype  
  
      "usePublicHolidayPrices": false, //indicates if this tarifftype uses public holiday prices  
  
      "useWeekendPrices": false,  
  
      "fixedPriceConfiguration": { //to determine the rules for setting the fixed price level  
  
        "basis": "fixed",  
  
        "maxhoursPerDay": 0,  
  
        "daysPerMonth": 0,  
  
        "allDaysPerMonth": false,  
  
        "maxhoursPerMonth": 0,  
  

```

```
"months": 0,

"additionalProperties": {}

},

"powerPriceConfiguration": null,

"resolution": 60, //the price resolution period in minutes (as of March 2022 this is 60 minutes = 1 hour)

"description": "Nettleie - bolig (Oslo og Viken)" //name of the tarifftype

},

"tariffPrice": {

"hours": [

{

"startTime": "2022-03-09T00:00:00+01:00",

"expiredAt": "2022-03-09T01:00:00+01:00",

"shortName": "0000-0100",

"isPublicHoliday": false,

"fixedPrice": {

"id": "c4ce9982-ce44-4410-8b12-9c345b352e88",

"hourId": "e275630a-a0dd-48c2-913c-137df935f371"

},

"powerPrice": null,

"energyPrice": {

"id": "c5071735-9d82-4f13-9445-fb633ae13ffb",

"total": 0.3508,

"totalExVat": 0.2806

}

}

}
```

Function call /digin/api/{v}/tariffquery/meteringpointsgridtariffs - POST

Some relevant properties are commented in red, otherwise see the above links to the standard with explanations on github.

- Returns tariff(s) and the MPID(s) within the current fixed price level for the MPIDs(MeteringpointId/Målepunkt-Id) at the time of the request:
 - Query parameters (use either <Range> or <StartTime and EndTime>):
 - meteringPointIds: <one MPID(or a comma-separated list of maximum 10.000 MPIDs) from your invoice or Elvia Min side/app> (example: "7070575000XXXXXXXX")
 - v: 1.0 (this is the version no)
 - Range: yesterday/today/tomorrow (Exclusive OR with StartTime/EndTime)
 - StartTime: <from timestamp> (Inclusive AND with EndTime, Exclusive OR with Range)
 - EndTime: <to timestamp> (Inclusive AND with StartTime, Exclusive OR with Range)
 - Headers:
 - X-API-Key: <primary key>
 - Authorization:
 - Subscription key: (only for testing in the portal. This is your primary key and is pre-filled after login)
- Request url example:

https://elvia.azure-api.net/grid-tariff/digin/api/1.0/tariffquery/meteringpointsgridtariffs

Request body example:

```
{  
  "range": "today", //range is exclusive or with startTime/endTime. (yesterday|today|tomorrow)  
  "meteringPointIds": [ //a list of your private mpid(s) or your company's customers' mpid(s)  
    "7070575000XXXXXXXX" //comma separated list of up to 10.000 MPIDs  
  ]  
}
```

```
}
```

- Response example: (only first response elements included in this document)

```
{
```

```
"gridTariffCollections": [  
  {  
    "gridTariff": {  
      "tariffType": {  
        "tariffKey": "private_flatrate_house", //keyword to use in tariffquery to get prices for a specific tarifftype  
        "product": "HN ELHA avr", //product name used internally by grid companies, not relevant for end users  
        "companyName": "Elvia AS",  
        "companyOrgNo": "980489698",  
        "title": "Nettleie - bolig (Oslo og Viken)", //name of the tarifftype  
        "consumptionFlag": true,  
        "lastUpdated": "2022-01-06T08:00:00+00:00", //last time the prices were updated for this tarifftype  
        "usePublicHolidayPrices": false, //indicates if this tarifftype uses public holiday prices  
        "useWeekendPrices": false, //indicates if this tarifftype uses weekend prices  
        "fixedPriceConfiguration": { //to determine the rules for setting the fixed price level  
          "basis": "fixed",  
          "maxhoursPerDay": 0,  
          "daysPerMonth": 0,  
          "allDaysPerMonth": false,  
          "maxhoursPerMonth": 0,  
          "months": 0,  
          "additionalProperties": {}  
        },  
        "powerPriceConfiguration": null,  
        "resolution": 60, //Number of minutes //the price resolution period in minutes (as of March 2022 this is 60  
        minutes = 1 hour)  
        "description": "Nettleie - bolig (Oslo og Viken)"  
      },  
      "tariffPrice": {  
        "hours": [ //the price array pr resolution period (as of March 2022 this is 60 minutes = 1 hour)  
          {  
            "startTime": "2022-03-09T00:00:00+01:00", //price is valid from and including this timestamp
```

```

    "expiredAt": "2022-03-09T01:00:00+01:00", //price has expired at this timestamp
    "shortName": "0000-0100", //short name for the resolution period
    "isPublicHoliday": false,
    "fixedPrice": {
      "id": "8d5eebad-63aa-4a86-8d73-54fa0deab099", //pointing to priceInfo.fixedPrices.id
      "hourId": "3f759750-3fa9-463e-9fca-fb3a79012b30" //pointing to
      priceInfo.fixedPrices.priceLevels.hourPrices.id
    },
    "powerPrice": null,
    "energyPrice": {
      "id": "9affe90f-21b6-421b-8324-8a6a92769fb9", //pointing to priceInfo.energyPrices.id
      "total": 0.3508, //total price including taxes (from priceInfo.energyPrices.total)
      "totalExVat": 0.2806 //total price excluded vat (from priceInfo.energyPrices.totalExVat)
    }
  }
}
...
}},
"priceInfo": {
  "fixedPrices": [{
    "id": "8d5eebad-63aa-4a86-8d73-54fa0deab099",
    "startDate": "2022-03-09T00:00:00+01:00", //timestamp for when these prices are valid from and including,
    limited to the highest of the price validity from date set by the grid company or the startTime query parameter given by the api
    function call
    "endDate": "2022-03-10T00:00:00+01:00", //timestamp for when these prices are valid to(expired at this
    timestamp), limited to the lowest of the price validity to date set by the grid company or the endTime query parameter given by
    the api function call
    "priceLevels": [{ //array giving different levels of fixed prices if this tariff type has differentiated fixed prices based on
    l.e. max hour consumption (daily max/monthly max) or fuse size
      "id": "4feb3004-ae39-4247-859b-1a24b1ce310b", //unique id for this fixed price level for this grid
      company
      "valueMin": null, //minimum value(included for this level) determining the fixed price level, ex. 2 kW for a
      monthly max tariff type or 17 A fuse size for a fuse size tariff type. Null if the tariff type has a fixed monthly price
      "valueMax": null, //maximum value(excluded for this level) determining the fixed price level, ex. 5 kW for a
      monthly max tariff type or 25 A fuse size for a fuse size tariff type. Null if the tariff type has a fixed monthly price
      "nextIdDown": null, //id pointing to the priceInfo.fixedPrices.id of the level below this level
      "nextIdUp": null, //id pointing to the priceInfo.fixedPrices.id of the level above this level.
      "valueUnitOfMeasure": null, //unit of measure for valueMin and valueMax. Ex kW or A
      "monthlyTotal": 115, //total monthly price including taxes for the fixed prices
      "monthlyTotalExVat": 92, //monthly price excluding vat for the fixed prices
      "monthlyExTaxes": 92, //monthly price excluding all taxes for the fixed prices
      "monthlyTaxes": 23, //monthly total taxes for the fixed prices
    }
  ]
}

```

```
"monthlyUnitOfMeasure": "kr/month", //unit of measure for monthly prices
"hourPrices": [{ //array giving prices for the resolution period for this month
  "id": "3f759750-3fa9-463e-9fca-fb3a79012b30",
  "numberOfDaysInMonth": 31,
  "total": 0.1546, //total price per resolution period including taxes = monthlyTotal/no of days this month/24 hours
  "totalExVat": 0.1237
}],
"levelInfo": "Fixed price per month",
"currency": "NOK",
"monetaryUnitOfMeasure": "kr/hour"
}
},
"powerPrices": [],
"energyPrices": [{ //array giving the prices for this period
  "id": "9affe90f-21b6-421b-8324-8a6a92769fb9",
  "startDate": "2022-03-09T00:00:00+01:00", //timestamp for when these prices are valid from and including,
  limited to the highest of the price validity from date set by the grid company or the startTime query parameter given by the api
  function call
  "endDate": "2022-03-10T00:00:00+01:00", //timestamp for when these prices are valid to(expired at this
  timestamp), limited to the lowest of the price validity end date set by the grid company or the endTime query parameter given by
  the api function call
  "season": "winter", //name of the season
  "level": "NORMAL", //name of the price level. VERY_CHEAP|CHEAP|NORMAL|EXPENSIVE| VERY_EXPENSIVE
  "total": 0.3508, //total price including taxes for this resolution period for this price level
  "totalExVat": 0.2806, //price excluding vat for this resolution period for this price level
  "energyExTaxes": 0.1815, //energy price excluding taxes for this resolution period for this price level
  "taxes": 0.0702, //total taxes for this resolution period for this price level
  "currency": "NOK",
  "monetaryUnitOfMeasure": "kr/kWh"
}
}
},
"meteringPointsAndPriceLevels": [{ //property giving the instant connection between an mpid and a tariff type. This is
  only instant at the time of the query. No support for historical contract changes for an mpid.
  "currentFixedPriceLevel": { //giving the fixed price level for the mpid so far this month
    "id": "8d5eebad-63aa-4a86-8d73-54fa0deab099", //pointing to priceInfo.fixedPrices.id
    "levelId": "4feb3004-ae39-4247-859b-1a24b1ce310b" //pointing to priceInfo.fixedPrices.priceLevels.id so far
    this month. Null if no meter readings has arrived from the meter so far this month, thus no consumption or estimation has been
    calculated.
  }
}
```

```
},  
  "meteringPoints": [{ //the mpid(s) that is connected to this tariff type at the time of the query. This connection is only  
instant and can change at any point in time  
    "meteringPointId": "7070575000XXXXXXXX",  
    "levelValue": null, //this property is to hold the exact value(one distinct or an average) of the consumption for the  
maxhour(s) for this mpid so far in the fixed price level evaluation period(ex. The maximum hour of this month). But this requires a  
higher level of authentication/authorization and is null due to privacy reasons.  
    "lastUpdated": "2022-03-09T10:00:00+01:00" //timestamp of when the last calculation was done for this mpid  
using a meter reading or an estimate this month  
  }]  
}
```

Property definitions:

Please see the documentation given in the schema descriptions in the DIGIN standard: <https://github.com/digin-energi/API-nettleie-for-styring>

Privacy

Elvia uses the registered user email for:

- authentication and authorization purposes
- discovery of misuse of the service
- notifying about important changes to the API

The usage statistics(number of calls and response times) in the API portal is used for operations and improvement purposes.

User email and usage statistics is not shared with anyone.

See also Elvia's privacy statement: <https://www.elvia.no/mitt-elvia/personvernerklaering/>