Short term load and generation forecasting

Link to explanations, examples and the selection list for indicated fields, please refer to document "Use Case Description draft ver0.55"

<http://www.cen.eu/cen/Sectors/Sectors/UtilitiesAndEnergy/SmartGrids/Pages/default.aspx>

Version of Template: 0.55, Sept 2011

# Description of the Use Case

* + *General*
  + *Name of Use Case*

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| --- | --- | --- | --- |
| ***ID*** | ***Domain*** | ***Name of Use Case*** | ***Level of Depth***  *Cluster, High Level Use Case, Detailed Use Case* |
| WGSP-0301 | Distribution Grid Management/Microgrid | Short term load and generation forecasting | High-level Use Case |

* + *Version Management*

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| --- | --- | --- | --- | --- | --- | --- |
| ***Changes / Version*** | ***Date*** | ***Name  Author(s) or Committee*** | ***Domain Expert*** | ***Area of Expertise / Domain / Role*** | ***Title*** | ***Approval Status***  *draft, for comments, for voting, final* |
| First edition/ 1.0 | 22-12-2011 | Kjell Sand , SINTEF Energy Research | Primary | Power system planning | Researcher | - |

* + *Basic Information to Use Case*

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| --- | --- | --- |
| ***Source(s) / Literature*** | ***Link*** | ***Conditions (limitations) of Use*** |
| Forecasting energy production and consumption on different time-scales | FINS-0038 | - |
| New SourceDocument | EDF-0005 | - |
| Energy consumption forecast | EDF-0004 | - |

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| ***Relation to Higher Level Use Case*** | |
| ***Cluster*** | ***Higher Level Use Case*** |
|  | Fault location, isolation and system restoration (FLIR) |

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| ***Maturity of Use Case*** *- in business operation, realized in demonstration project, realised in R&D, in preparation, visionary* |
| - |
| ***Prioritisation*** |
| - |
| ***Generic, Regional or National Relation*** |
| Generic |
| ***View*** *- Technical / Business* |
| - |
| ***Further Keywords for Classification*** |
| - |

* + *Scope and Objectives of Use Case*

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| ***Scope and Objectives of Function*** |
| To determine short term (e.g. next 24 h) load and generation profiles |

* + *Narrative of Use Case*

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| ***Narrative of Use Case*** |
| ***Short description*** *- max 3 sentences* |
| The load and generation profiles are forecasted for the e.g. next day according to weather forecasts, historic load and generation profiles, load and generation statistics, events (social, generation maintenance events,…). |
| ***Complete description*** |
| The distribution system operator has to forecast generation and consumption to monitor and plan operation of the distribution system in the short term situations.  Generation and consumption can be forecasted within various time horizons with different precision. Needed data are gathered from e.g. past statistics, planned up-times, prosumer vacation/travel times and maintenance schedules etc.  Non-variable generation from e.g. fuel generators, biogas, geothermal, or water turbines is more predictable than the variable-output generation.  Forecasting of variable-output generation - from e.g. wind power or PVs - is tedious and has to be based on DERs availability and numerical weather prediction data, which are then fed into statistical data modelling tools.  Consumption (Load) forecasts will be based on available past consumer data statistics, expected/planned needs (daily, weekly and monthly periods, etc.), expected weather forecasts, vacation/travel times, and storage level |

* + *Actors: People, Systems, Applications, Databases, the Power System, and Other Stakeholders*

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| --- | --- | --- |
| ***Actor Name*** | ***Actor Type*** | ***Actor Description*** |
| Consumer | Role | A party that consumes electricity.Additional information:This is a Type of Party Connected to the Grid |
| Weather Forecast | - | - |
| Storage | System |  |
| El. Vehicle (EV) | Role |  |
| DSO System | Role |  |
| Generator | Role | Generating electricity, contributing actively to voltage and reactive power control, required to provide the relevant data (information on outages, forecast, actual production) to the energy marketplace (see also the Articles 2.1 and 2.2 of the Directive). |

* + *Issues: Legal Contracts, Legal Regulations, Constraints and others*

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| --- | --- | --- |
| ***Issue -*** ***here specific ones*** | ***Impact of Issue on Use Case*** | ***Reference -*** *law, standard, others* |
| New Issue | Load and generation deterine several power quality phenomena eg supply voltage variations | Norm EN 50160 |

* + *Preconditions, Assumptions, Post condition, Events*

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| --- | --- | --- | --- |
| ***Actor/System/Information/Contract*** | ***Triggering Event*** | ***Pre-conditions*** | ***Assumption*** |
| ***-*** | - | - | - |

* + *Referenced Standards and / or Standardization Committees (if available)*

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| ***Relevant Standardization Committees*** | ***Standards supporting the Use Case*** | ***Standard Status*** |
| - | - | - |

* + *General Remarks*

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| ***General Remarks*** |
| Collected use Case which is the basis for the generic use case , are not giving sufficient information to describe further details in this generic use case. The use case needs to be developed further before it is ready for any further analysis with respect to standardization |

# Drawing or Diagram of Use Case

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| ***Drawing or Diagram of Use Case*** ***- recommended "context diagram" and "sequence diagram" in UML*** |
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# Step by Step Analysis of Use Case

| **S.No** | **Primary Actor** | **Triggering Event** | **Pre-Condition** | **Post-Condition** |
| --- | --- | --- | --- | --- |
| - | - | - | - | - |