Hourly Planning Software for Electricity Market Participants (HPEMP)

as a tool for supporting Market Participants in the competitive electricity markets

Goals and covered tasks

Reforming the emerging markets (e.g. most post-Soviet countries) is based on the transition to at least the hourly market from the existing monthly one.

The new market rules being developed for these countries presupposes hourly planning (both long-term and short-term), submission of hourly offers/bids by market participants.

In the absence of their experience in operating on hourly markets, it is necessary to support market participants, in particular, by providing tools that make it easier for them to solve the problem.

This justifies the relevance of the implementation of the appropriate software for hourly planning for a year, month, week and a day ahead for them.

Improving planning accuracy will increase the efficiency of a participant's functioning on new electricity markets (primarily financial).

IED Consulting LLC has developed such software and is offering it to the Electricity Market Participants.

The developed software is:
- fully compliant with National Market Rules
- developed with Cyber Security Protection
- operated from any smart devices
- competitively priced
- eliminates calculation errors by staff
- easy to use – comes with a detailed User Manual
- operates in the selected language
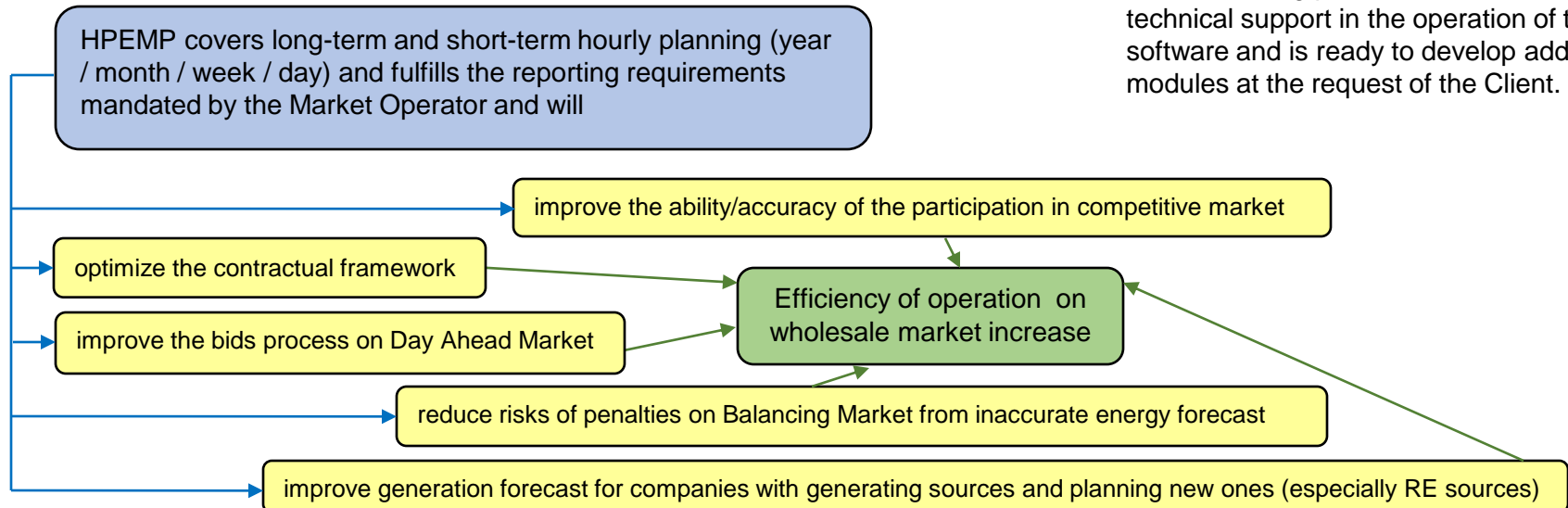
Technical Requirements
- Ubuntu 18.04 or higher
- PHP 7.4
- MySQL 8.0be
- Apache/Nginx web server
- SSL Certificate
- Domain name

Installation options
HPEMP can be installed for each Market Participant separately or centrally with appropriate access to Participants
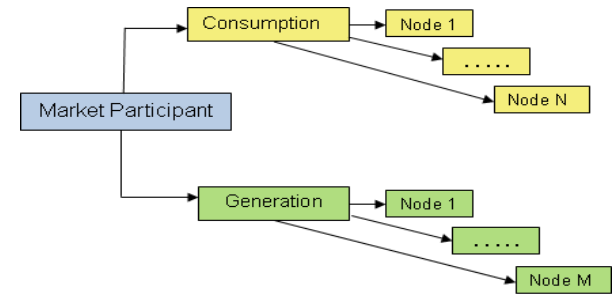
Support and Development
IED Consulting provides all necessary technical support in the operation of the software and is ready to develop additional modules at the request of the Client.

HPEMP covers long-term and short-term hourly planning (year / month / week / day) and fulfills the reporting requirements mandated by the Market Operator and will

improve the ability/accuracy of the participation in competitive market

optimize the contractual framework

improve the bids process on Day Ahead Market

Efficiency of operation on wholesale market increase

reduce risks of penalties on Balancing Market from inaccurate energy forecast

improve generation forecast for companies with generating sources and planning new ones (especially RE sources)

Main modules of software

Participant Structure - Three-level structure of Market Participant makes it possible to use HPEMP software for participants with any structure, including also the presence of its own generation.
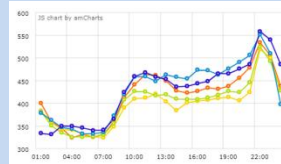
Calendar - Any types of days (working, holidays, etc.) and synchronization by years with any depth taken into account

Metering – Module includes docking with Data Acquisition System to upload historical and current metering data by nodes
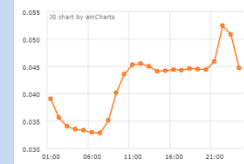
Month Ahead Planning (MAP) → *Planning month, object (by nodes or consumption/ generation as whole) and mechanism selection* → *Historical metering data analysis and filtering incorrect data* → *Load shapes forms by typical days* → *Electricity volumes difference by typical days* → *Trend by weeks*
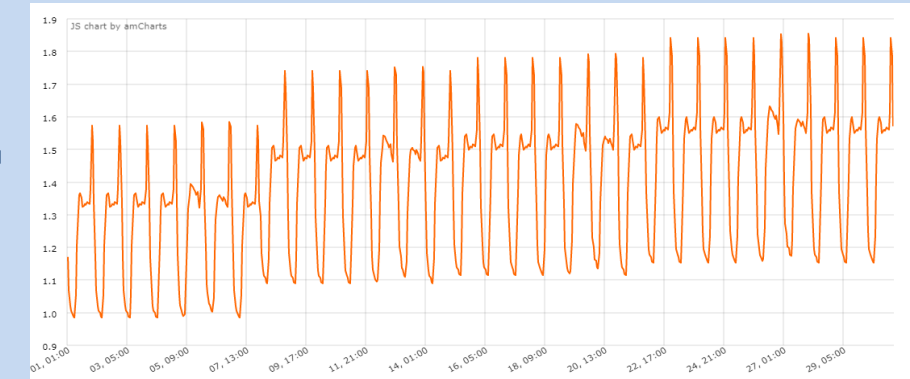
Final results for Month Ahead Planning ← *Checking for technological limitations and adjustments:*
- ✓ *by changing the planned monthly volume of electricity while keeping the form of the load shape.*
- ✓ *through daily and weekly coefficients*
- ✓ *by fixing maximum and minimum loads with monthly volume recalculation*
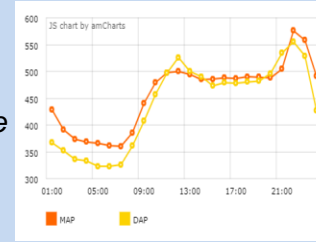
← *Basic option for Month Ahead Planning*

Note. *Weekly planning is included in MAP, and sum by months is the yearly planning*

Main modules of software

Day Ahead Planning (DAP)

As a starting option, the software allows to use one of the following daily load shapes:

- ✓ *obtained on the basis of monthly planning*
- ✓ *planned for the closest previous day of the same type*
- ✓ *actual for the closest previous day of the same type*
- ✓ *averaged over the actual data for the selected preceding period by days of the same type*

Any selected daily load shape can be adjusted by:

- ✓ *daily electricity volume while keeping the form of the curve*
- ✓ *each hour.*

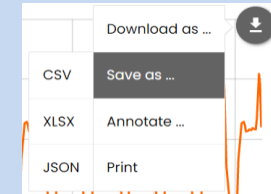Technological limitations are taken into account as well

Monitoring

To improve planning accuracy, a monitoring module provides the software user a monthly comparative analysis of load curves, obtained on the basis of monthly and daily ahead planning forecasts compared to actual metered consumption and/or production levels, in absolute values and as deviations.

Reporting and docking tools with other software

Calculation results can be converted to different type of files for docking with various software, as well as prepare formats that will simplify the development of possible various reports.

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