

Wind Energy Autoproduction: financial case study using the RAPS software

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Exceedence Finance Workshop, 29th September 2016

Renewable energy autoproduction

- **The problem:**
- Industrial large electricity consumers pay **high network charges** and have limited ability to profit from **renewable energy supports**
- **The solution:**
- Become an **autoproducer**.
- Put the renewable energy generation “behind the meter” on-site
- Benefit from renewable energy subsidies
- Reduce network charges
- Reduce grid imports
- Manage loads -> increase benefits



Renewable energy autoproduction

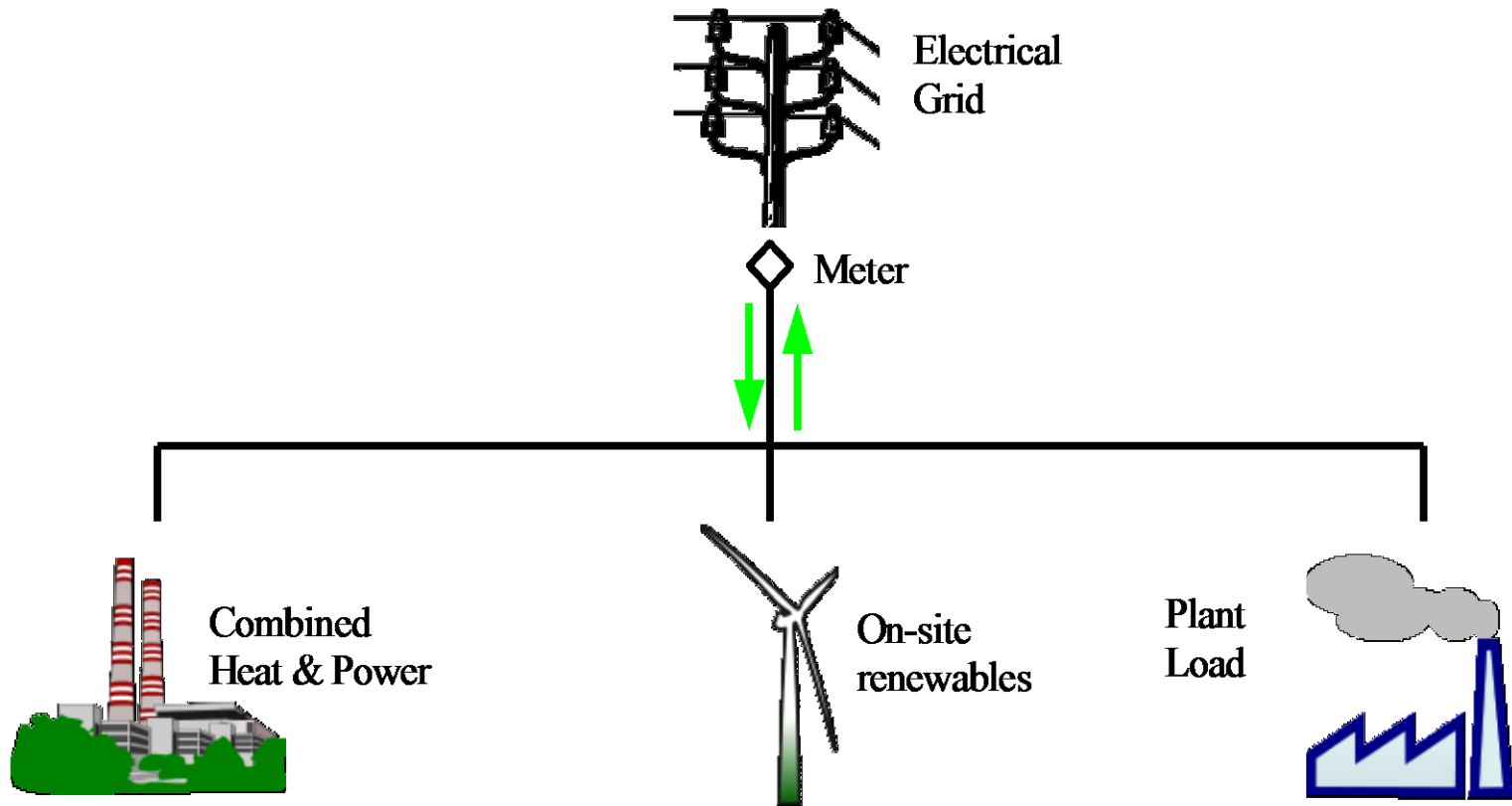
- Autoproducers “generate electricity and/or heat, wholly or partly for their own use as an activity which supports their primary activity”
- Most autoproducers use CHP systems to co-generate heat and power.
- However, suitable sites can become autoproducers of renewable energy.
- Ultimate goal: to maximise revenue from renewable energy autoproduction by adjusting site demand in response to wind generation and market prices.



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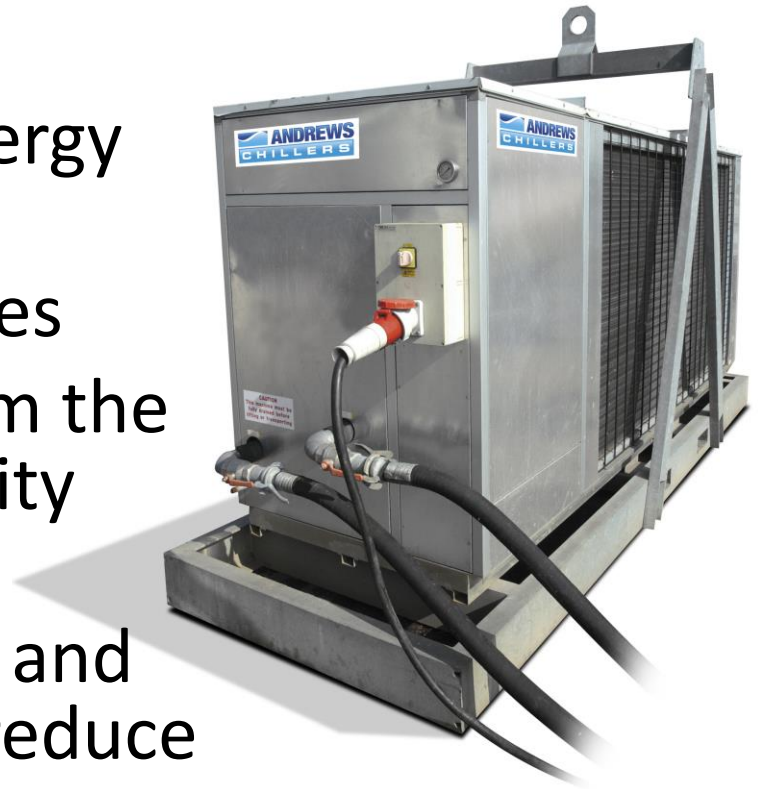

Wind Energy Direct

Principle of autoproduction



Benefits of autoproduction

- Displace grid imports
- Benefit from renewable energy subsidies
- Reduce MIC standing charges
- Autoproducers are free from the Standing Charge and Capacity Charge.
- Ability to use **flexible loads** and **energy storage** to further reduce imports and charges



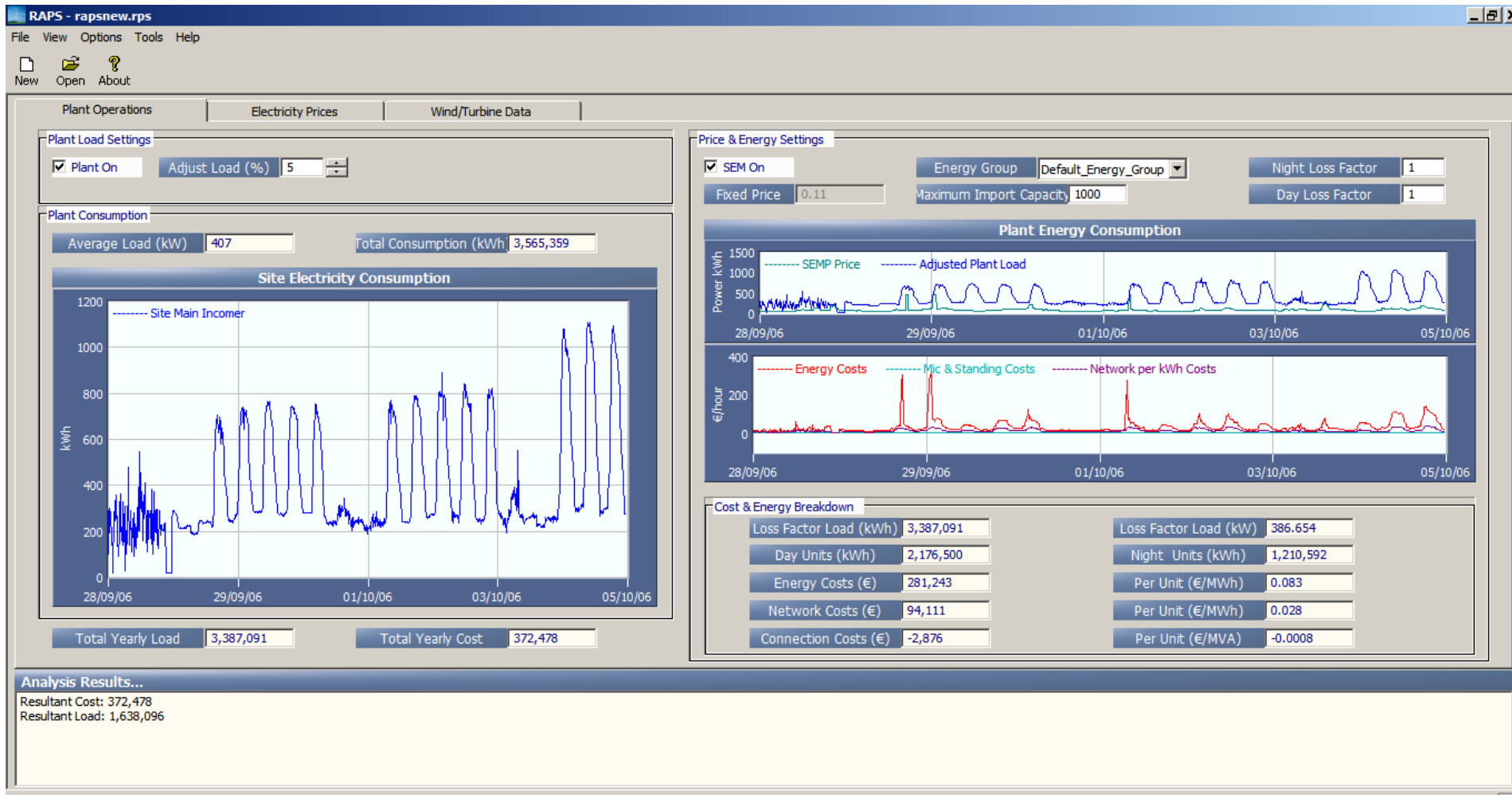
RAPS: an autoproduction due diligence tool

- RAPS simulation software developed in UCC
 - Enterprise Ireland Innovation Partnership with Wind Energy Direct Ltd
 - Implemented in MS Visual C++
 - Free from restrictive third-party licences
 - Runs as standalone EXE file on Windows
 - In Beta version, written by professional computer programmer

RAPS functionality

- RAPS can:
 - Analyse electricity flows and energy and network costs at an industrial consumer, based on real tariffs
 - Use meteorological data and turbine models to simulate wind generation on the site
 - Ascertain the financial costs and benefits from wind energy autoproduction at the site
 - Allow clients to identify the most cost-effective autoproduction solution for their requirements

Software demonstration



Conclusions

- Renewable Energy Autoproduction offers several financial benefits to suitable clients
- Due diligence has to be carried out on autoproduction projects to assess viability
- The RAPS package can produce a complete representation of costs & benefits of different autoproduction scenarios
- For technical or commercial queries please contact paul.leahy@ucc.ie