



Castle Esterházy , Fertőd

Green City District Energy System

Prepared by Venterfor Plc.

Energy Park System

Technologies to work for the benefit of local community development

- ❑ Low cost electricity and heat source, keep energy euro in the local community
- ❑ More jobs
- ❑ Cleaner environment, emission reduction
- ❑ Providing important skills for the future generation,
- ❑ Give communities control over their energy future
- ❑ Encourage cooperation from other energy and related programs at the regional and local levels.

Energy Park is a conceptual framework and a practical implementation for the planning, development, operation and sustainment of a locally-based energy infrastructure to support sustainable and resilient community development.

How are Energy Park's technologies being used in the local development field today?

Energy Park is being used widely to identify and assess renewable energy resources all over the local fields. After the construction of substation the system providing heat and hot water for the end-users. Energy Park Energy System serves heating and hot water supply of larger buildings along the Fertőd castle, kindergarten, school, local government, elderly homes, residential houses. (Expand to add other nearby buildings)

Energy Park System

Background

Energy Park offers “Greenergy,” a service to residential and commercial customers who receive electric needs with purchases of renewable resources from the Energy Park power system.

The All Renewable Option is priced at a over the normal utility rate. The Community Solar program is also priced at 0.01 Euro above the normal utility rate and results in the installation of photovoltaic at local community facilities. Current resources for renewable options are being purchased from nowhere.

A goal of this green Energy Park Program is to encourage development of new green power generating capacity in Hungary by aggregating residential and small commercial renewable energy demand, nationwide, but specially there where old cultural heritage is in danger.

At present there no companies who are offering “generic green power” to their customers. A distinguishing feature of the Energy Park will be to allow consumers to exercise their individual preferences to buy the type of renewable power (e.g., biomass, solar, wind, etc.) they want from specific individual facilities.

From the outset, green Energy Park Program will contract with new renewable power projects. Initially, there may not be sufficient capacity available of every type of renewable power, or customers may request power from the project that are not yet operational.

The types of renewable energy projects are implementing in three phases and qualifying first stage for this fund with an innovative pilot project

I. stage: Wind (16MW+16MW) 52.000.000 Euro/32MW

II. stage: Biomass (1,5 MW) 1.800.000 Euro

III. stage: Photovoltaic (900 KW) 1.200.000 Euro

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Technology Matrix

Biomass Utilization

Biomass, such as woody wastes from forest residues, bio solids from wastewater treatment, and municipal solid waste (MSW) can be supplied to energy conversion systems and converted to useful steam, heat, or combustible gases. Facilitate the commercialization and widespread production of environmentally acceptable energy crops and dual-use crops, and the use of biomass wastes and residues as feed stocks for biomass power facilities. These investment is about EUR 1.8 Million, constructions work, permanent control and management + acquisition the prime material like wood chips, transport, storage, drying give **work for about 20 people**.

Solar PV

Potential Solar PV to make best use of limited areas available to reach the full potential of the site. The construction work, connection to the grid system EON, maintenance give permanent **working for 10 people**.

Wind Turbines

Wind Farm construction work is equal with total investment of EUR 50 Million. 25% of the investment is job possibility for local habitant (road constructions, cable lying, concrete foundations, etc.)

Fertőd/Hungary – Andau/Austria (map) **more then 50 people active** working staff. There is a brand new system available for wind harnessing: it is VATT from Hungary. More power, cheaper implementation, longer lifetime.

Waste management

Development is under construction.

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Small Biomass CHP Plant

Modular Heating Plants

- Small modular biomass heating plants can be installed to serve several nearby buildings
- Additional modules can be added at the same site, or new modular plants can be built in the same community to facilitate building out a thermal network
- Over time these small heating nodes can be interconnected into a larger network



Plant Ownership

- Biomass heating or CHP plants could be owned by the same entity owning the district heating network, or by a separate entity
- Modular heating plants can be leased

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Small Biomass CHP Plant 2

The location is quit close to the castle Esterházy.



Energy Park System

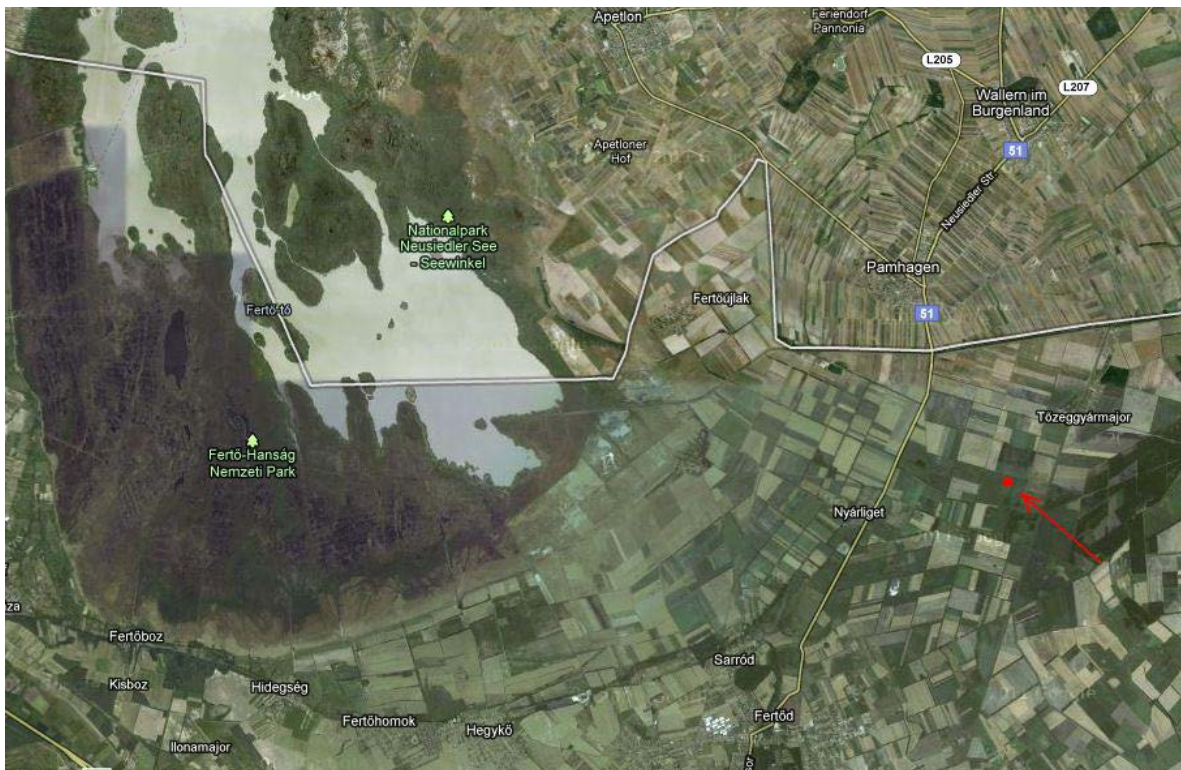
Solar Power Plant description

1. General

The Fertőd photovoltaic plant is a 900 kWp photovoltaic ground installation located just North of the town of Fertőd, Hungary. It has been developed, designed by Venterfor Plc.

2. Location

The location of the plant is shown below. The site is conveniently located just at the Northern edge of Fertőd City, 2 kilometres from the Hungarian-Austrian border.




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Solar Power Plant 2

3. Revenues

- The current guaranteed rate is 0.115 €/kWh.
- The energy meter to measure the energy sold to the grid is located on the Medium Voltage side.

ELECTRICITY GENERATED PER YEAR

 737,400 kWh


TOTAL HOURS OF LIGHT GENERATED PER YEAR

 36,870,000 hours *

AVOIDED CO₂ EMISSIONS PER YEAR

 494,058 Kg CO₂

ELECTRIC CAR MILEAGE THANKS TO THE ENERGY GENERATED

 5,462,222 km

Now for a PV project there are two sources of support: support for the initial investment by tendering schemes, and the feed-in-tariff for the generated green energy (and there is a possibility to sale the emission right of CO₂). The support for initial investment can reach 85% of the necessary capital (85% if the owner is the local government, and 60% if a non-profit organization), the current level of the FIT is 0,115 EUR/kWh (and we can calculate with 15 EUR/ton for the CO₂ emission right). We cannot define the time period for the FIT in advance, but with help of lobbying activities, maybe we can calculate with 25 years. And we have (not official) information about the increase of the FIT by the government in the near future (few months).

The permits for plant building and for grid connections are ready.

Energy Park System

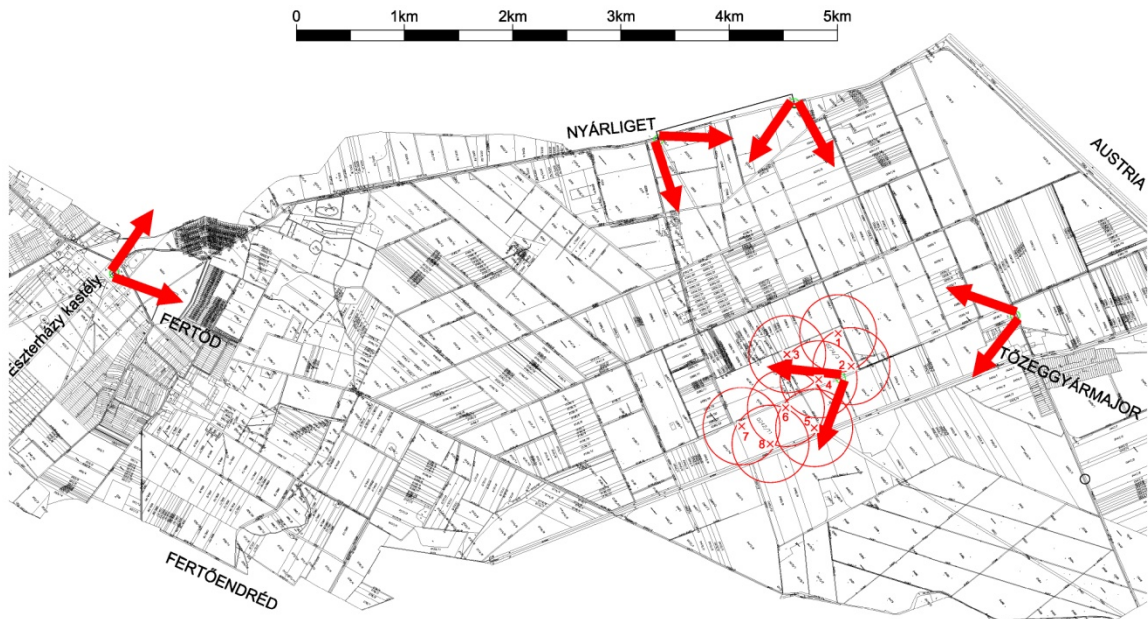
Wind Power Plant with extension to 32MW capacity

Environmental Goal:

Improve the capability of wind resources to provide goods and services, including electricity, by fostering the highest standards of environmental performance consistent with the social and economic goals of society.

In the development of the program Vestas Deutschland Ltd (German subsidiary of the leading wind turbine manufacturer Vestas Wind Systems A/S) gave a helping hand. Vestas helped with his experiences on maintenance and operation of wind turbines and Preciz Ltd. by his experiences of construction.

The location



Energy Park System

Wind Power Plant production prognosis

Near to the subjects properties, in the towns Gols and Weiden (district: Neusiedl am See, state: Burgenland): Austria BEWAG Ltd. operates with altogether 200 wind turbines, the largest wind energy plant of Austria. The bordering Hungarian area with Fertőd lies in the same flume (wind tunnel) as the Austrian plants of BEWAG exactly where our project intends to install its turbines.

That allow us to give positive future of the project. According to the wind production prognosis, which was made by the manufacturer Vestas for one turbine on the basis of the wind measurement carried out at the site by the project developer, the average annual net production is 6.681.000 kWh/year for 1 turbine (53 448 000 kWh/year for the whole wind farm consisting of 8 pc Vestas V90 2,0MW HH105 wind turbines). In the Economical feasibility study this value has been reduced by the grid loss (3 %), the technical availability loss (3 %) and the wind farm effect (4,5 %), these loss values are estimated values by us, not based on exact calculation.



Smart City District Energy Park in Fertőd, Hungary