



ELENA Project Factsheet

PROTHEUS Smart Grid Project for Paks

Location	The implementation of the “PROTHEUS Smart Grid Project for Paks” is planned for the administrative region of Paks City and the surrounding area in a semi-circle area around Paks in Tolna County, west of the river Danube.
Beneficiary	The ELENA Beneficiary is the Municipality of Paks City, which is a local public authority.
CoM signatory	Yes. The City of Paks joined the Covenant of Mayors on 14 February 2013.
Sector	Smart grid - Energy storage - Sustainable transport - Renewable energy - Energy efficiency.
Total PDS cost	EUR 2 244 719
ELENA contribution	EUR 2 020 247
Project Development Services (PDS) financed by ELENA	<p>The roles and supervised areas of the 5 full-time staff to be funded by ELENA are the following:</p> <ul style="list-style-type: none"> • Project Leader – leader of the project management team, supervision of quality assurance and validation tasks • Project Manager – general project management tasks, supervision of tender and legal services areas • Technical Manager – supervision of energy experts area, lead of the technical referent • Technical Referent – supervision of transport experts area • Project Assistant – support & administrative services for the project management team <p>Other external experts will also be employed as required during the ELENA supported timeframe for the following areas:</p> <ul style="list-style-type: none"> • Energy Experts (e.g. for smart grid, central storage unit, PV) • Transport Experts (e.g. for e-buses + charging devices) • Legal and Financial Services • Tender Services • Validation, Monitoring and Quality Assurance <p>The following work packages (WP) will be carried out within the framework of the ELENA technical assistance in order to prepare the investment programme:</p> <p>WP1</p> <ul style="list-style-type: none"> • Tendering procedures of ELENA expertise • WP1 is for carrying out the tendering required for hiring the required experts

	<p>WP2</p> <ul style="list-style-type: none"> • Feasibility studies and other preparation documents • WP2 includes studies to collect all of the information necessary for the business plan, the operational working structure of the project and the public procurement documentation. • WP2 also incorporates the validation activities by independent experts which is required by the potential financing bank. <p>WP3</p> <ul style="list-style-type: none"> • Detailed business plan • WP3 will develop a detailed business plan providing essential business information <p>WP4</p> <ul style="list-style-type: none"> • Elaboration of the business structure of the Protheus project • WP4 will organise how to set up a sound business structure for the operational phase of the project including the decision-making and responsibility roles. This WP also provides the data requested from the likely financing bank. <p>WP5</p> <ul style="list-style-type: none"> • Public procurement documentation • WP5 will create a set of documentation that will enable the realisation of successful public procurement processes. This documentation is also required by the likely financing bank for project financing. <p>WP6</p> <ul style="list-style-type: none"> • Project initiation activities • WP6 covers the work needed to agree the financing contract with the likely financing bank and to organise the smooth transition from preparation into the implementation phase.
<p>PDS Timeframe</p>	<p>PDS will commence in May 2017 and shall remain in full force and effect until April 2020</p>
<p>Investment programme description</p>	<p>The Protheus project is a smart grid model to serve a “Balance Group” in the most energy-efficient and economical way. The innovative aspect of the Protheus Smart Grid system lies in the simultaneous management of generation with a focus on renewables and energy-efficient demand response.</p> <p>The initial project focuses primarily on a smart grid incorporating storage, building integrated PV as well as a balancing PV unit, and the plan is to incorporate more small scale renewable energy and customers as soon as the first phase is operational. The initial stages of an e-transportation system are also planned whereby mobile storage units for electrical buses will be charged from the smart grid. From the transport system point of view, the initial scope of the Protheus project is the replacement of old buses to e-buses and the creation of new bus lines based on the analysis to be prepared during the ELENA phase.</p> <p>The smart grid plans to incorporate end-point entities (i.e. metering devices at generation and demand points) that are metered, monitored and controlled remotely by a Smart Grid Centre, in order to provide for the most effective and economical operation. The system will be capable of aggregating and managing its own supply and</p>

	demand side resources. The financial and energy-efficient daily operation of the smart grid will be through the technical and commercial optimisation of the behaviour and actions of all connected generation and demand users. This optimisation will determine the exact use of the connected generation and also of the storage on the basis of pre-determined business cases (a task of the detailed feasibility study planned under ELENA).
Investment to be mobilized	The total amount of eligible investment is estimated at nearly EUR 51m.
Description of the approach to implement the Investment Programme	The Protheus project is a regional smart grid model and there are plans for it to be further developed in the future. The main aim of the smart grid is the energy-efficient and commercial optimisation of managing the generation and demand of the Balance Group. The innovative aspect of the Protheus Smart Grid system lies in the simultaneous management of generation with a focus on renewables and energy efficient demand response. There are already existing energy control centres in Hungary but these serve mostly fossil based generation or deal only with demand response.
Expected results	The main contributed impact is reduced emissions from the reduction of fossil fuel based generation due to the battery being charged from cleaner sources of energy by being managed through the Smart Grid Centre. Over 39 GWh of energy can be stored in the battery and will be used for ancillary services and Balance Group settlement. The total estimated contributions to EU 2020 objectives are: <ul style="list-style-type: none"> • Renewable Energy – Annual expected total 9 130 MWh. • Savings from e-transport instead of diesel buses – Annual expected savings 1 640 MWh. • CO₂ reductions – Annual expected total reductions of 18 064 CO₂ eq t.
Leverage factor (Minimum 20)	25
Market replication potential	<p>The project is initially focused on the City of Paks and surrounding settlements. But there is already interest from other City Mayors and a willingness to expand the concept to other areas. All in all, the Protheus project's area served can extend to approximately 1,190 km², from the end of the Danube Bend situated 95 km from Budapest to the south at Dunaföldvár.</p> <p>The project is considered as a model project by the Hungarian government and the professional and academic spheres in the fields of energy and sustainable transportation. Its innovating and sustainable aspects are seen to make it a potential model for other regions and settlements.</p>
Status	Contract signed on 08/05/2017
Contact person at Beneficiary	Attila KUDOR