



List of Small Projects¹

Version number: 21/ 23.09.2021

This version is published due to the:

Addition of project(s)

Removal of project(s)

Other

¹ As per article 95 of NNGS Network Code.

Update due to the addition of new projects (Table A) according to the provisions of art. 94 par. 5 of Network Code.

For the Small Projects included in the approved Development Plan 2021-2030, which are included in the List of Small Projects according to the provisions of article 95 par. 1 (A) of the Network Code, reference is made to the relevant RAE Decision and namely to the projects of Chapter II:

1. A3.3-A3.5
2. B1.3
3. B2.1 –B2.9
4. B3.1, B3.4-B3.10
5. B5.2-B5.3, B5.5-B5.6, B5.8, B5.10-B5.15, B5.17-B5.18

In the edition no.19 / 18.5.2021 the following new small projects (1-6) of Table A were proposed by DESFA. In the edition no.20/09.09.2021 the following new projects (7-11) are added. In the present edition no.21 of the List of Small Projects, project 12 is added according to the provisions of no. 95 par. 1 (B) of the NNGS Network Code.

Table A						
No.	TITLE OF THE PROJECT	CLASSIFICATION OF PROJECT (Art. 92)		TECHNICAL DESCRIPTION	ESTIMATED COST (IN €)	TIME SCHEDULE
		Projects for the connection of Users	Projects for the Development of NNGS			

1.	LNG Maintenance Projects		√	<p>The project refers to a set of LNG Maintenance works or upgrades on the LNG Terminal of Revithoussa for maintaining or extending the useful life asset and its components, which is crucial for satisfying its obligations as the LNG Operator, in the most cost-effective, transparent and direct way.</p> <p>In particular, the project includes the following subprojects:</p> <ul style="list-style-type: none"> i. Fire-fighting vehicle ii. Control Room Interior Lighting Upgrade Study iii. Maintenance of Compressors BOG A.B.C iv. Maintenance of bridge cranes of Tanks A & B v. Upgrade existing ones & purchase of a new chromatograph at CHP Unit vi. Maintenance of GE 1&2 CHP (50,000h) vii. Replacing air conditioners with new type INVERTER-2nd Phase 	€ 822.000	<p>FID: Taken</p> <p>Start of operation/Entry into the system: 12/2021</p>

2.	Upgrade of Dispatching and Control Center in Patima		√	<p>The project refers to Full SCADA replacement at Patima Dispatching Center.</p> <p>Existing data, historical data, as well as reports will be transferred so that there is a modern equipment, higher speed and capacity, better security, virtualization of new application for Gas Metering and Data Management with additional possibilities for validation and processing of metering data as well as storage of all data in single data base.</p> <p>In particular, the project includes the following subprojects:</p> <ul style="list-style-type: none"> i. Architectural and Electromechanical upgrade of Dispatching and Control Center in Patima- Procurement of materials and Control Room Interior Lighting Upgrade Study ii. Architectural and Electromechanical upgrade of Dispatching and Control Center in Patima- Construction 	€ 715.950	<p>FID: Taken</p> <p>Start of operation: 9/2021</p> <p>Entry into the system: 2/2022</p>
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3.	Asset Management Division's Equipment		√	<p>The project refers to a basket of capital expenses related to acquisition of machinery (tools) and small equipment necessary for the operation and maintenance of DESFA's O&M centers across the NNGTS. In particular, the Project includes the following subprojects:</p> <ul style="list-style-type: none"> i. Pressure test pump for component isolation ii. Portable 3-Phase Generator 10 kVA, iii. Standard calibration instruments for Kipi Measuring Station iv. Electrician tools and measuring instruments, v. A / C replacement, vi. UTP cable 	€ 69.000	<p>FID: Taken</p> <p>Start of operation/Entry into the system: 12/2021</p>
4.	Replacement of UPS in 9 RCC and 2 M/R at EKO, PLATY plus UPS in O&Ms Patima, Ambelia and Vistonida		√	<p>The purpose of this project is the supply of Uninterruptible Power Supply Systems in respective facilities along the NNGTS.</p> <p>The project is important for maintaining or extending the useful life of the Pipeline equipment and its components, which is crucial for</p>	€ 150.000	<p>FID: Taken</p> <p>Start of operation/Entry into the system: 10/2021</p>

				satisfying its obligations as the Transmission Network Operator.		
5.	Upgrade of HMI system of Solar compressor		√	<p>The purpose of this project is the upgrade of Station Control System-Human Machine Interphase (HMI) at Nea Mesimvria Compression Station.</p> <p>Solar's TT4000 Human Machine Interface (HMI) is the operator's primary information source for the status of the turbine package. This system is based on Windows 7. Microsoft has announced that it will discontinue supporting security patches for Windows 7 in 2020. Windows 10 provides improved security features that provide first steps in meeting HMI security goals.</p>	€ 200.000	<p>FID: Taken</p> <p>Start of operation/Entry into the system: 12/2021</p>
6.	Energy upgrades in O&M centers		√	<p>The purpose of this project is procurement and installation of central air-cooled Chillers in Ampelia O&M and Patima O&M.</p> <p>These systems have become obsolete as they have lost their cooling capacity</p>	€ 200.000	<p>FID: Taken</p> <p>Start of operation/Entry into the system 12/2021</p>

				and no longer correspond to the required cooling load. In addition, the systems are energy consuming and their maintenance costs are high, since they often present malfunctions and loss of refrigerant liquid, which is environmentally unacceptable. Moreover, the spare parts of these systems have become difficult to find. Replacing the cooling systems with equivalent cooling performance and of up to date technology is considered indispensable.		
7.	Corrective Replacement in CHP Unit		√	<p>The Project refers to the corrective maintenance works on the two generators (GE1 and GE2) of the CHP Unit and comprises:</p> <ul style="list-style-type: none"> • GE1: in the context of corrective maintenance in the CATERPILLAR machines of the CHP unit, the supply of new inlet outlet valves, valve seat, valve liners and valve springs and related installation works. In particular, worn spare parts (inlet outlet valves, valve seats & valve 	€ 143.200	<p>FID: Taken</p> <p>Operation Date/Entry into the system:03/2022</p>

			<p>liners) will be replaced. The springs of all valves (64 valve springs in total) will also be replaced with new ones (new metal alloy ‘lifetime’).</p> <ul style="list-style-type: none"> • GE2: the supply of a piston - cylinder liner and a cylinder head and related installation works by a specialized CAT technician in collaboration with the maintenance workshop. An engine TURBO (ABB) of the engine will be inspected, repaired and maintained by its manufacturer by replacing any spare parts. The springs of all valves will be supplied and installed (64 valve springs in total) as in GE1. <p>These corrective works are in line with the preventive overhaul maintenance (45,000 h) of GE2 which is expected to follow in the next quarter (July - September) and of GE1 which will be expected to follow in the 1st quarter of 2022.</p> <p>Both interventions aim to extend the</p>		
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				uninterrupted operation of the CHP Unit and consequently of the LNG Station, which is crucial for satisfying its obligations as the LNG Operator, in the most cost-effective, transparent and direct way.		
8.	Nea Messimvria Compressor TUCO A Overhaul		√	The Project refers to the Major Overhaul repair process of the Turbo Compressor (TUCO) A, after completing 30.000 operating hours, with the aim of meeting the same quality and performance standards with a new engine and extending the next duty cycle to the maximum. A major engine repair restores the mechanical integrity and performance to the same levels as a newly purchased engine. It also resets the Time Between Overhaul (TBO) cycle. An engine overhaul is essential to maintain maximum engine performance, availability and reliability. The engine will be upgraded under Solar's Overhaul Exchange Program which is designed to minimize operational downtime. Under this	€ 2.300.000	FID: Taken Operation Date/Entry into the system: 11/2021

				<p>program, the major engine components are replaced rather than rebuilt and then reinstalled. When the reconstruction of the original components is eliminated from the overhaul process, the schedule is improved. Spare parts come from a set of new and remanufactured parts that are of the same form, fit and function. These parts are based on the latest design and technological enhancements of Solar.</p> <p>Under normal operating conditions, the engine is expected to operate for 30,000 hours before another repair is required.</p> <p>The Project is critical for the smooth operation of the NNGTS. The Project aims to improve the efficiency and effectiveness of the NNGS, and to ensure its smooth operation, with the objective of preventing congestion, emergencies, and denial of access.</p>		
9.	Required O&M Equipment		√	The project refers to a basket of capital expenses related to acquisition of	€ 200.000	FID: Taken

				<p>machinery (tools) and small equipment necessary for the operation and maintenance of DESFA's O&M centers across the NNGTS. The range of tools and equipment varies according to the needs of the O&M centers, including but not limited: Pressure test pumps, portable generators, calibration instruments, electrician tools and measuring instruments, replacements, etc</p>		<p>Operation Date/Entry into the system: 12/2021</p>
10.	H ₂ Readiness Study for DESFA Existing Gas Network		√	<p>The project refers to the provision of a detailed study aimed at analyzing the capability of the current gas network with all its components to handle a mixture of Hydrogen blended with Natural Gas (NG) in the level of 5% and 10%. In particular, the Scope of Services of the study shall include, but not limited to, the following:</p> <p>i. evaluation of compatibility of existing DESFA gas network with different concentrations of Natural Gas-Hydrogen mix;</p>	€ 650.000	<p>FID: Taken</p> <p>Operation Date/Entry into the system: 05/2022</p>

			<p>ii. detailed compatibility study with respect to each individual network element or group of elements with focus on functional impact and material compatibility and related impact;</p> <p>iii. applicability of current technical regulations and technical standards to different level of Hydrogen mix for the different components of the gas system.</p> <p>iv. gap analysis, for each level of Hydrogen mix considered in the study, related to the modifications to be implemented to the system to operate the gas network.</p> <p>The project is the first part of the upgrade project of the system to be H2 ready, according to the decarbonization policy of DESFA. The study will assess the integrity of the existing network considering all the design parameters of the pipe (welding specs, type of steel, Design Pressure, EFDs, etc) and evaluate the integrity of the network in case admixture of NG-H2</p>		
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				will flow.		
11.	Connection of the Power Production Unit to ELVAL/HALCOR in Thisvi	√		The purpose of the project is the interconnection of the ELVALHALCOR CCGT with the NNGS in the wider area of Thisvi Industrial Area for the supply with natural gas of a new 651 MWe new power plant. The project will start with the modification of an existing 14” valve station. The valve station is supplied directly from the Thisvi branch of the main gas pipeline with a cross section of 20” and is connected to the central venting device (vent stack line) of the Scraper Station Receiver. Subsequently, a 14” diameter pipeline will be constructed, with a design pressure of 80 barg, with a total estimated length of 400 m up to the new DESFA plot for the installation of the metering station. The new metering station will have a capacity of 100.000Nm ³ / h.	€ 2.010.000	FID: 11/2022 Operation Date: 05/2024 Entry into the system: 06/2024
12.	Vent Stack System implementation at Nea		√	The Project concerns the Procurement of all Vent Stack Materials and all	€ 1.000.000	FID: 10/2021

	Messimvria			<p>associated engineering and services costs and the installation of all the above on the east side of the M/R station at Nea Messimvria.</p> <p>The project includes the followings:</p> <ul style="list-style-type: none"> • Vent stack of 15m height and 20m radius will be located in the available area on the east side of the M/R station. • Actuators of inlet and outlet gas heaters' PSD valves will be changed so that their closing time can accommodate the new vent stack requirements. Modifications on the PSD system should also take place. • the procurements of 2 insulating joints and Lighting protection system for the Vent Stack. 		Operation Date/ Entry into the system: 03/2022
	Total estimated cost	€ 8.460.150				