

# Development Prospects of the Hellenic NG Market

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# Structure

- EU framework
- International framework
- Size of Hellenic NG Market
- Share of DSO's
- Projection of NG Demand
- Existing and Development of NG Infrastructure
- Prospects Development of NG market in Mainland and Island Greece

# Framework of EU Targets

Natural Gas (NG) is characterized as bridge fuel towards a low carbon economy but accounts only 8% of the total energy consumption in the residential and commercial sectors in Greece

Natural gas, as sustainable energy can help Greece to achieve reduction of GHG emissions and the EU targets (4% reduction of GHG emissions compared to 2005 levels up to 2020 )

For Greece the final energy consumption discussed to be 19Mtoe of national final energy consumption, for year 2030.

# Framework of International Maritime Organization

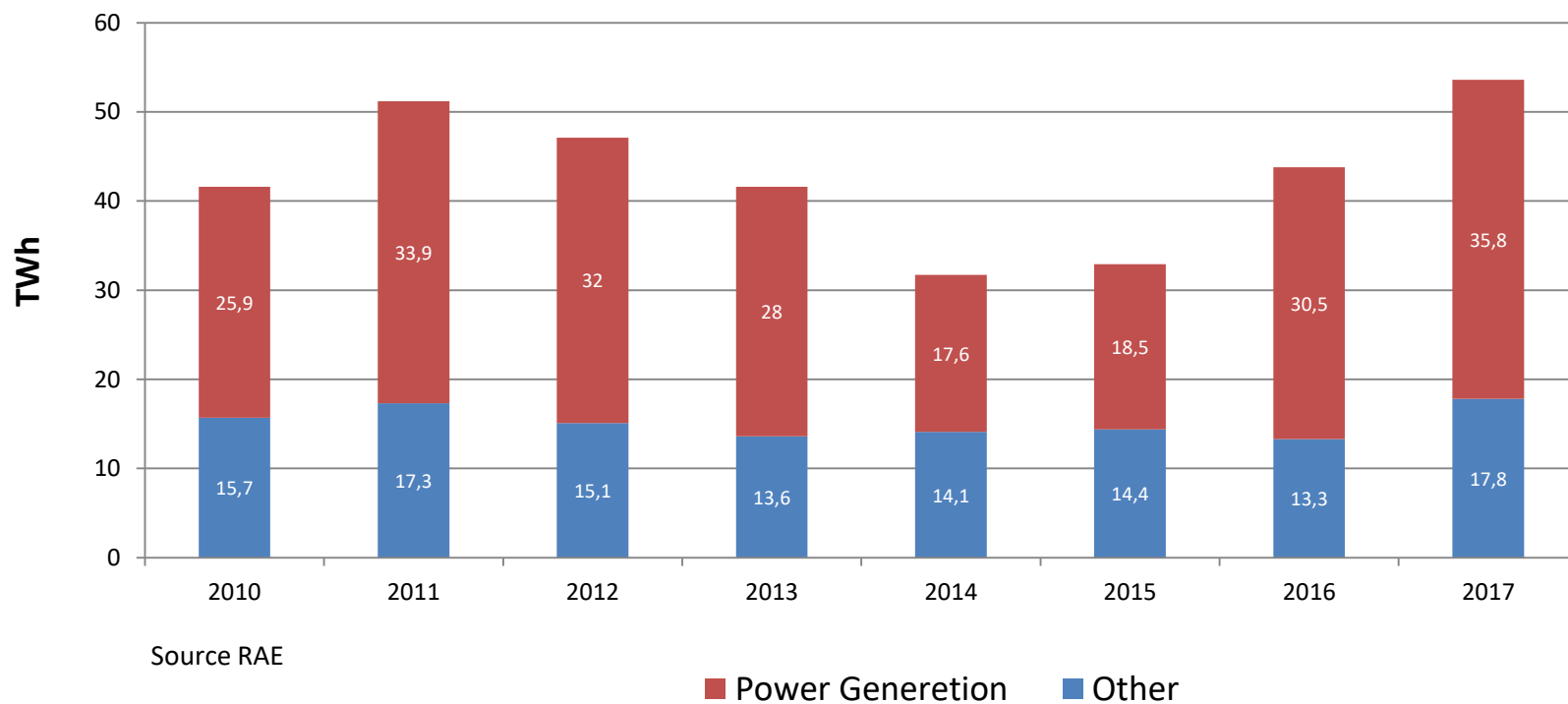
All vessels that operate outside Emission Control Areas (ECAs) will be required to use fuel oil with a maximum sulfur content of 0.5%. Beginning January 1, 2020

Up to 2050 shipping industry must to comply to net zero CO<sub>2</sub> emission targets

Ship-owners and operators have various options to meet the IMO sulfur cap requirements. These options include the use of compliant low sulfur fuels or alternative fuels such as liquified natural gas (LNG), liquefied petroleum gas (LPG), compressed natural gas (CNG), biofuel, solar power or fuel cells. SO<sub>x</sub> also can be controlled by using an alternative technology such as an exhaust gas cleaning system

# Size of Hellenic NG market

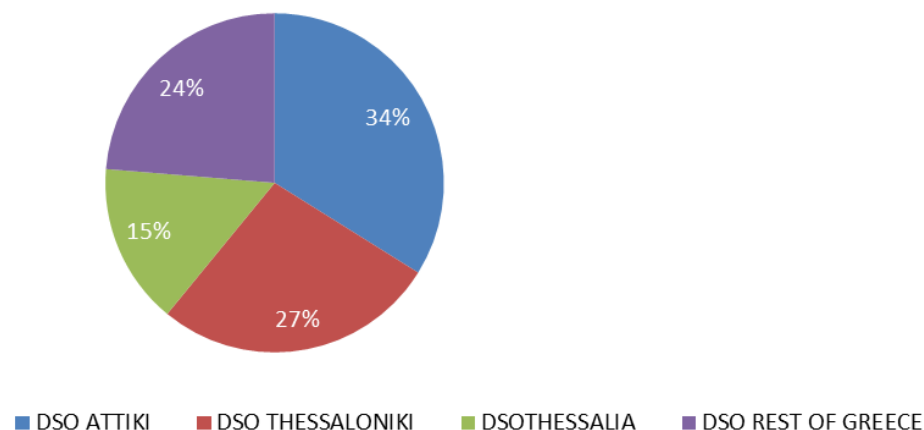
## Hellenic NG Demand 2010 -2017



# Share of Hellenic DSOs

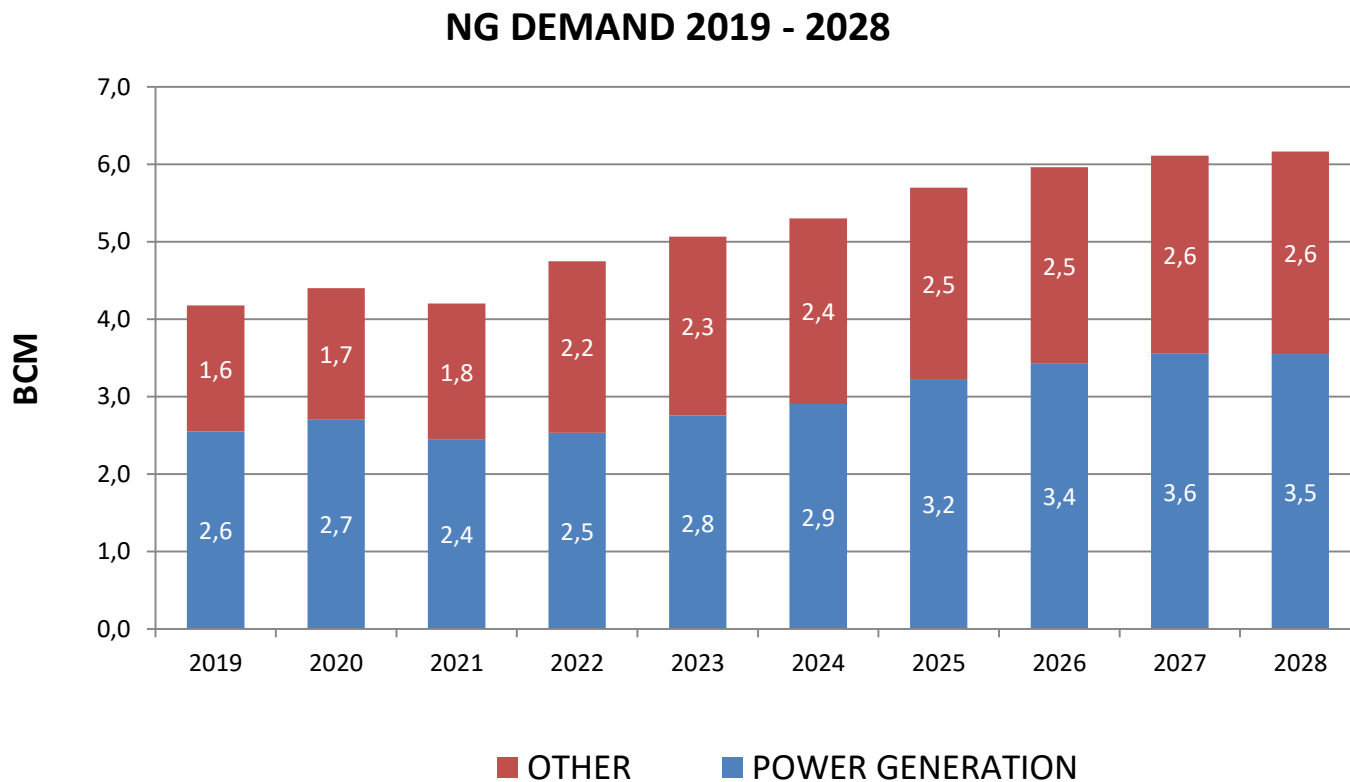
- In 2017 NG consumption in Households was increased (59%) (3.64 TWh to 5.34 TWh), and In Commercial sector was reduced by (57%) (from 2.12 TWh to 0.91 TWh).
- in Industrial sector was increased by 20% (3.48 TWh to 4.16 TWh)

NG DEMAND TWh per DSO



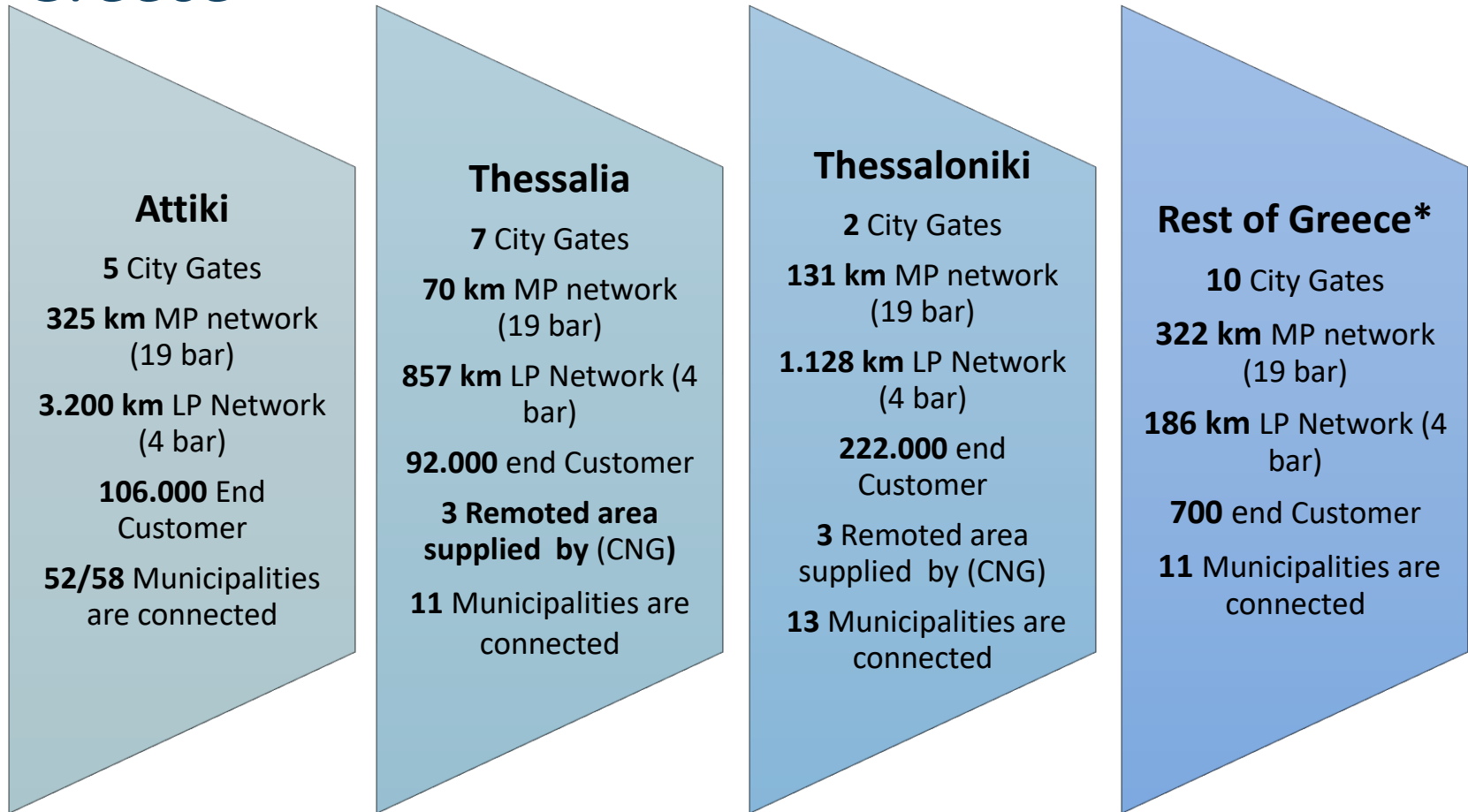
Source RAE

# Projection of Total Hellenic NG Demand



Source DESFA

# Existing NG Distribution Infrastructure Mainland Greece

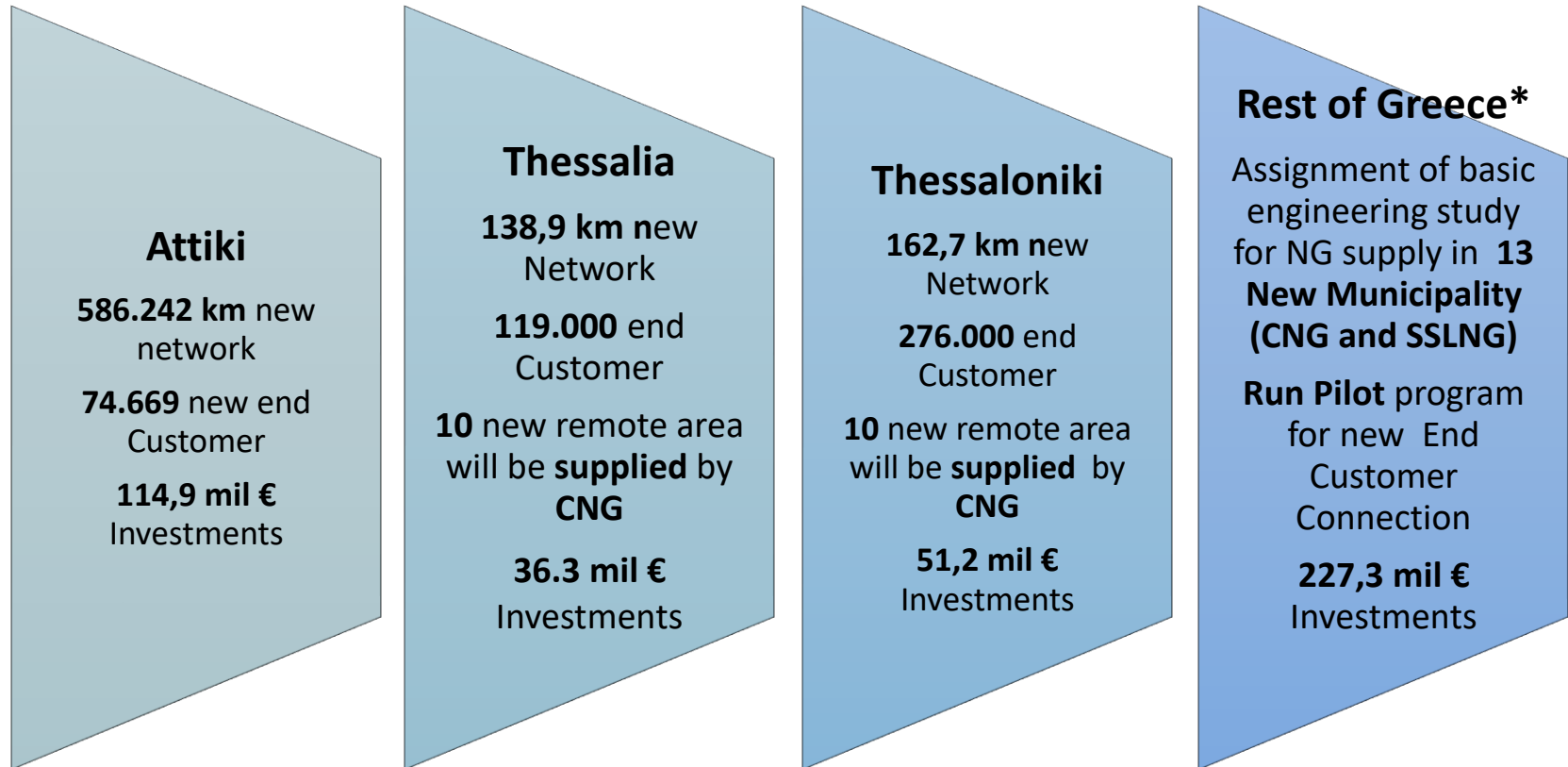


\* Sterea Ellada, Central Macedonia, East Macedonia and Korinthos

Source RAE



# Development NG Distribution Infrastructure Mainland Greece 2019-2023



\* Sterea Ellada, Central Macedonia, East Macedonia and Korinthos

Source RAE

# Development Prospects NG market in Mainland Greece

## Supply Remote Areas from the existing NG network through CNG (Mother - Daughter station)

In this case, the NG operator receives the service of compression of natural gas in an installation gas compressor and carries compressed natural gas by a third party in order to the intended Remote Network to be a virtual extension of the existing Network

Mother station



- |                      |                                  |                            |
|----------------------|----------------------------------|----------------------------|
| ① Compressor Package | ⑤ PLC Controller & Motor Starter | ③ Gas Regulating System    |
| ② Priority Panel     | ⑥ SCADA System (Optional)        | ④ Gas Dryer (if Necessary) |
| ③ Storage Cylinder   | ⑦ Card Key System (Optional)     |                            |
| ④ Dispenser          | ⑧ Gas Detectors                  |                            |

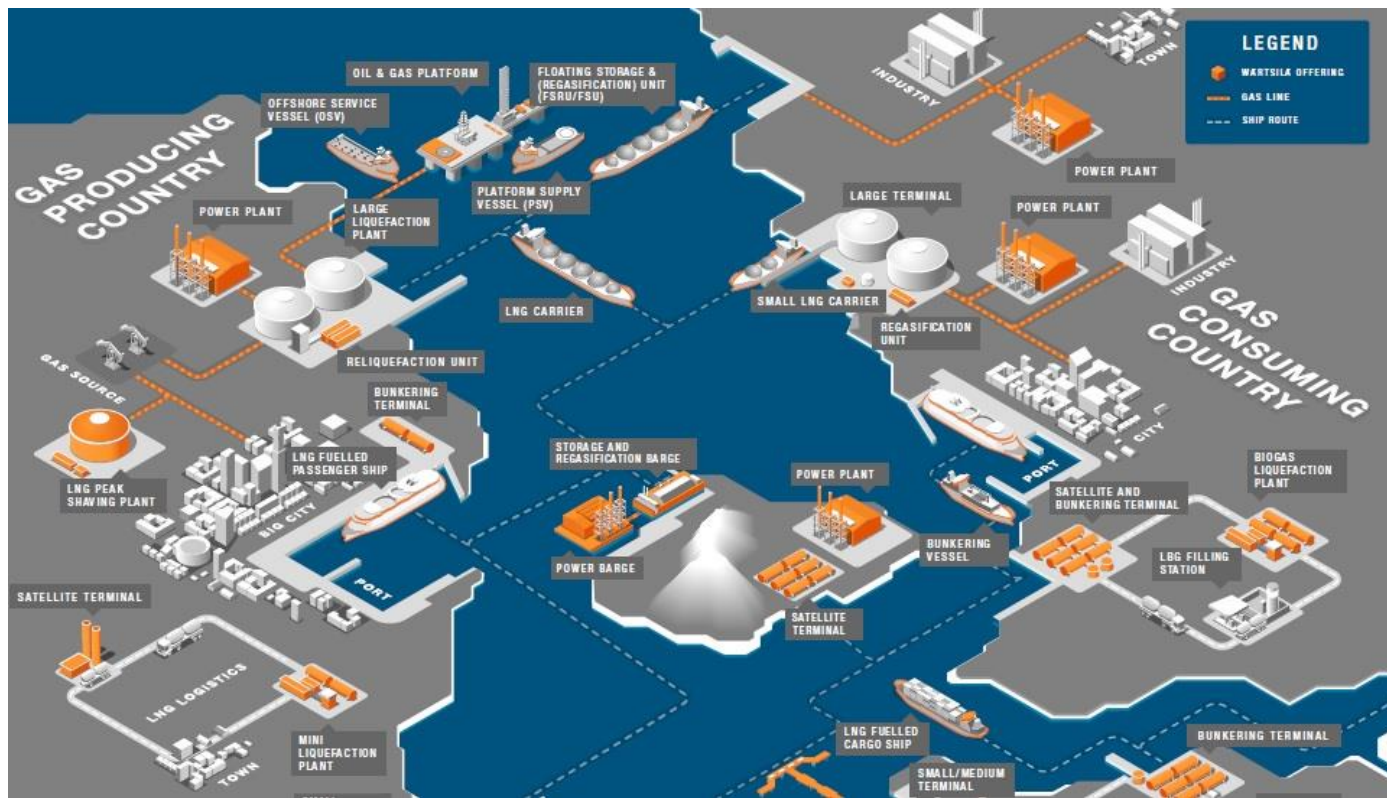
Daughter station



- |                      |                                  |
|----------------------|----------------------------------|
| ① Compressor Package | ⑤ PLC Controller & Motor Starter |
| ② Priority Panel     | ⑥ SCADA System (Optional)        |
| ③ Storage Cylinder   | ⑦ Card Key System (Optional)     |
| ④ Dispenser          | ⑧ Gas Detectors                  |

# Development Prospects NG market in Mainland and Island Greece

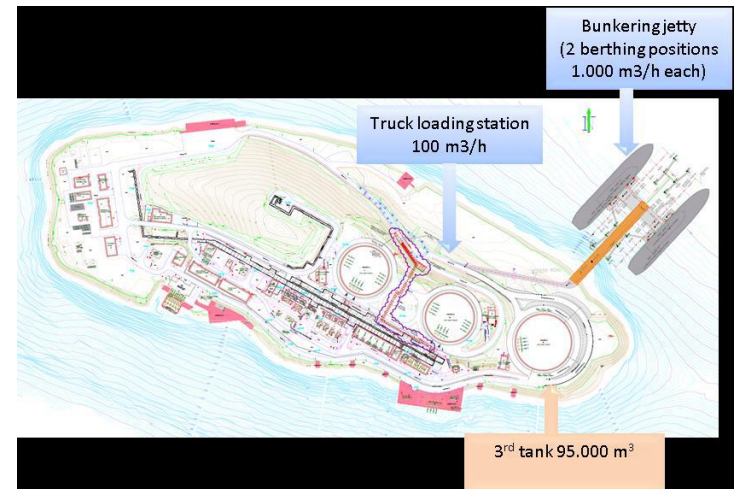
Supply Remote Areas from the existing NG network through Small Scale LNG



# Development Prospects NG market in Mainland and Island Greece

Up to Sept 2021 DESFA is going to Build Pilot Station Loading LNG, on Revithoussa Terminal LNG Station

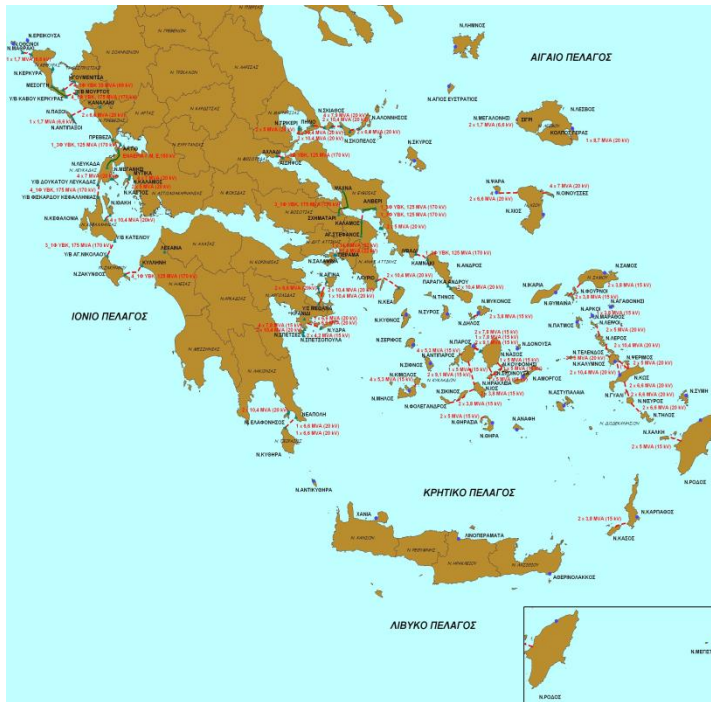
- Truck loading capacity up to 50 m3 with supply loading capacity 100 m3/h
- LNG metering system with bridge gauge



Source DESFA

# Development Prospects NG market in Island Greece

## Supply Remote Areas from the existing NG network through Small Scale LNG



Most of the islands in Greece today are powered by stand-alone electric power generation systems mainly by local thermal power stations, which operate on fuel oil, heavy fuel oil and light diesel, and the power plants RES .

- Nineteen (19) 'small' stand-alone systems have a peak demand of up to 10 MW.
- Eleven (11) medium-sized stand-alone systems have a peak demand of 10 MW to 100 MW.
- Two (2) "large" autonomous systems have a peak demand of over 100 MW, namely Crete and Rhodes

Source RAE

# Development Prospects NG market in Mainland and Island Greece

- Supply Remote Areas from the existing NG network through CNG in mainland Greece
- Supply Remote Areas from the existing NG network through SSLNG in mainland Greece and island Greece
- Installation of refueling LNG plant for vessel in island Greece under the request of IMO

Source RAE

# Thank you

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