



**SYNTHETIC  
NATURAL GAS**  
┌ (SNG) └

Value Proposition



**WORLD LPG ASSOCIATION**  
[www.wlpga.org](http://www.wlpga.org)





# THE WORLD'S GROWING RELIANCE ON NATURAL GAS (NG) HAS CREATED BOTH ECONOMIC AND AVAILABILITY RISKS.



SNG IS MADE BY MIXING LIQUEFIED PETROLEUM GAS (LPG) WITH AIR TO SIMULATE AND REPLACE NG



USING SYNTHETIC NATURAL GAS (SNG) CAN HELP MITIGATE RISKS RELATED TO THE RELIANCE ON NATURAL GAS



SNG CAN BE USED IN THE SAME EQUIPMENT & CONSUMER APPLIANCES

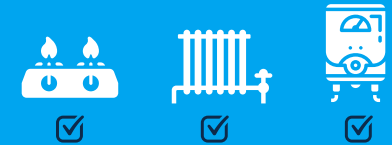


LPG + AIR IS SIMILAR TO NATURAL GAS



THE CALORIFIC VALUE OF LPG IS ALMOST DOUBLE THAT OF NG.

LPG is diluted with air to reduce its heat value and create a product with similar combustion characteristics to NG



WHEN LPG IS MIXED WITH AIR TO CREATE SNG, IT CAN BE USED IN THE SAME NG APPLIANCES (burners, heaters, cookstoves etc.). This is the principle behind synthetic natural gas (SNG), a concept that has been used to support NG penetration around the world since the 1950's



IS PART OF THE NG FAMILY



CAN BE USED IN REMOTE LOCATIONS with no access to piped NG networks

CAN ALSO PROVIDE SUPPORT TO NG MARKETS

## LPG IS USED IN A WIDE VARIETY OF APPLICATIONS



RESIDENTIAL



COMMERCIAL



INDUSTRIAL



AGRICULTURE



TRANSPORT



LEISURE

## TRANSPORTING NATURAL GAS



### PIPED NETWORK

NG can be transported using pipelines and distributed from production source to the market



### LNG

If a piped network is unavailable the compressed natural gas (CNG) can be chilled and pressurised and turned into liquefied natural gas (LNG)



### THE CHALLENGES OF LNG

As a liquid it can then be transported like LPG, but with more expensive equipment to cope with the higher pressures and lower temperatures. Transporting LNG also consumes energy to maintain that liquid state



## CREATING OPPORTUNITIES FOR NATURAL GAS

NG supplies are often long distances from the major world markets and sometimes located where country risks are challenging. Justification for bringing NG to those markets would be improved if the consumers there were already using gas. This is where SNG can be used to create the value proposition for gas, both NG (CNG & LNG) and SNG.



## NATURAL GAS AND SYNTHETIC NATURAL GAS CAN WORK TOGETHER



When SNG systems are installed - and NG is introduced later

THEY CAN BE RETAINED **IN STANDBY MODE** IN THE EVENT OF ANY NG SUPPLY INTERRUPTIONS



SNG CAN ALSO BE **USED FOR PEAK SHAVING** TO SUPPLY NG DURING HEAVY LOAD PERIODS



SNG CAN BE USED FOR **CO-MINGLING SUPPLIES** since the two products are identical from a consumers' perspective



## THERE ARE TYPICALLY FOUR MAIN AREAS OF USE FOR SNG SYSTEMS:



### SNG STAND-BY OR BACKUP SYSTEMS

Allowing NG customers to use SNG during curtailment periods and taking advantage of arbitrage opportunities



### SNG BASE LOAD SYSTEMS:

Providing a bridging fuel in regions where NG is planned to be available in the future but is not yet available. The SNG system may later revert to a peak shaving function



### SNG PEAK SHAVING SYSTEMS:

Allowing distribution companies and consumers to supplement their NG during peak demand periods without adding grid/pipeline capacity



### NG CO-MINGLING SYSTEMS:

SNG replaces NG as required. The quantity of NG being replaced by SNG can be reallocated elsewhere in the grid to alleviate supply challenges

## WHERE IS SNG CURRENTLY USED?

SNG SYSTEMS ARE BEING USED TO SUPPLY GAS TO **SOME OF THE WORLD'S BIGGEST ENERGY USERS**

including large steel mills, city utilities, hospitals, military bases, and residential neighbourhoods.



THERE ARE MANY SNG SYSTEMS **ALREADY INSTALLED**

in North and South America, Europe, the Middle East, Asia Pacific, and Australasia



THESE SNG SYSTEMS ARE VALUABLE IN HELPING NG UTILITY COMPANIES EFFICIENTLY **MANAGE LOAD SWINGS, GUARANTEE SECURITY OF SUPPLY DURING DISRUPTIONS, AND TO PROVIDE A BRIDGE TO NEW COMMUNITIES** WAITING THE DEVELOPMENT OF A NG GRID.

“The world’s growing reliance on Natural Gas (NG) has created both economic and availability risks. Using Synthetic Natural Gas (SNG) - made by mixing Liquefied Petroleum Gas (LPG) with air to simulate and replace NG - mitigates some of those risks by **creating an alternative product that can use the same equipment and consumer appliances.**”



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