DEVELOPING AN LNG HUB IN WEST AND EAST JAVA
OPPORTUNITIES AHEAD

By

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NUSANTARA ENERGY RESOURCES (PTE) LTD (called NER) is a company established and incorporated under the law of Singapore. NER is fully supported by VITOL who is the largest energy trading company in the world. The principal activities of NER is primarily engaged in the development of energy businesses, including investment, construction and operation of liquefied natural gas (“LNG”) floating storage and related infrastructure.

Through its subsidiary:

PT.Nusantara Energy Plant Indonesia (NEPI)
Currently engaged in a development of LNG Import Infrastructure project in Cilegon, Banten to supply gas to industrial customers at Krakatau Industrial Estate Cilegon and Situbondo SRI, East Java.
And also to build a Mini-Refinery located in Situbondo SRI, East Java to produce Mogas and Avtur pursuant to fulfillment of local demands.

PT.Nusantara Power Plant Indonesia (NPPI)
Interested in participation in the field of power generation through the IPP (Independent Power Producer) Business. Synergies through expansion to inter-related business are expected to provide products and services that support each other effectively and will put NPPI in a strategic position to take advantage and the opportunity to grow in the energy sector in Indonesia.
NEPI's scope of business consists of almost all area in the LNG value chain, including construction of Gas Off-Taker in the downstream (in collaboration with NPPI). This brings advantage to create economic scale and competitive price among the market, or even create the market itself through IPP project.
Gas Market Balance

Based on future projection of gas demand, it is expected that the utilization of gas will increase steadily and, most likely, there will be changes on gas provision of such demand from conventional pipe-gas to natural gas (ex-LNG). Such changes in gas provision is almost ascertain, considering the gas reserves which deliver conventional gas through pipeline to the destination of demand are depleting. Therefore, the provision of the gap from such depletion only can be fulfilled by natural gas (ex-LNG), which has the flexibility advantage on its transportation.

Java Island is one of the biggest gas domestic market (64% of national gas market total) in 2013. The significant increase of gas market mostly comes from manufacture industries and power plants. It is predicted that after 2020, gas domestic market will enter into LNG era. Currently, national growth assumption is 5%.
## Market Segmentation Analysis

<table>
<thead>
<tr>
<th>Market Segmentation</th>
<th>Description</th>
<th>Potential Gas Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUPTL (Electric Power Provision Plan) 2015 – 2024</td>
<td>From total of 35,000 MW, it has been identified that Power Plants with total of 13,500 MW use gas as their main fuels.</td>
<td>2,600 MMscfd</td>
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<tr>
<td>Priority Industrial Zones and Exclusive Economic Zones</td>
<td>In long-term and medium-term development plan year 2015 – 2019, the Government prioritizes Area Development through the development of new economic centers particularly outside Java Island.</td>
<td>2,350.38 MMscfd</td>
</tr>
<tr>
<td>Smelter</td>
<td>From the total of 66 smelter companies, which has applied to the Government for licenses, 25 companies are currently in the final stage of construction. 4 smelter companies are currently submitting their request for supply of gas to the Government.</td>
<td>2,525 MMscfd</td>
</tr>
<tr>
<td>Transportation Sector: Truck Hauling, Mining, Logistic &amp; Shipping</td>
<td>The potential market of LNG in transportation sector is currently prioritized to heavy goods vehicle, such as mining truck, hauling truck and logistic transportation. Moreover, in sea transportation sector, there are opportunity of potential conversion for ferries and cargo vessels.</td>
<td>55.2 MMscfd</td>
</tr>
<tr>
<td>City Distribution Line</td>
<td>Besides the provision of LNG for power plants, industrial zones, smelter and transportation, LNG supply is necessary for city distribution line, particularly in the reliability of gas supply.</td>
<td>N/A</td>
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</tbody>
</table>
LNG Liquefaction and Regasification Mapping in Indonesia

FSU NEPI – Hub I
- **Location**: Cilegon
- **Storage Capacity**: 160,000 M³
- **Regas Capacity**: 2x375 mmscfd
- **Source of Supply**: Domestic & International
- **Off-Taker**: Various consumers

FSU NEPI – Hub II
- **Location**: Situbondo
- **Storage Capacity**: TBA
- **Regas Capacity**: TBA
- **Source of Supply**: Domestic & International
- **Off-Taker**: Various consumers
Pilot project of NEPI, located in Cilegon will provide Gas ex-LNG for Krakatau Daya Listrik (power plant with 5 unit steam power @80 MW per unit) and 1 unit CCPP @60 MW. Supply of LNG derived from overseas (Import LNG). All necessary licenses have been obtained from the Ministry of Oil and Gas and the LNG Hub-1 project is expected to operate in 2018.

Commercial scheme of LNG is conducted through the Floating Storage Unit (FSU) as its storage while the regasification is processed offshore. Natural Gas (ex-LNG) will be directly delivered to KDL facilities as its fuel, while the excess capacity (if available) will be sold by land transportation (Pipeline or Trucking) with target market of Cilegon area or by small LNG ship with target market of all Indonesian area.
PT Nusantara Energy Plant Indonesia (NEPI) aims to develop a new LNG Import Terminal in Cilegon, Banten region. NEPI has secured a long term lease contract with Krakatau Daya Listrik (KDL) for the land utilization in KDL area in Cilegon, paving the way forward for the development of the LNG Import Terminal. The key components are currently foreseen:

- A Floating Storage Unit (FSU)
- A Jetty Structure, providing the berthing facility for the FSU and LNGC’s
- Regasification Plant
- A gas pipeline with tie-in to the existing gas networks operated by KDL
- Optional LNG Trucking loading
Floating LNG Regasification is used to meet rising Natural Gas Demand

Total global LNG regasification capacity billion cubic feet per day

Benefits of a Floating Storage Unit (FSU)
- Safe & efficient
- Flexible and Cost effective
- Can be implemented within a year
- Potential short term temporary solution while permanent on shore facilities are constructed
LNG from FSU is delivered to offshore reviving terminal. Afterwards, such LNG will be regasified and the natural gas (ex-LNG) will be delivered to the offtaker, in this matter Krakatau Daya Listrik (KDL). Company has executed the MOU with KDL to provide ex-LNG gas in certain areas and at a certain period of time.

Additional ex-LNG Gas is delivered by pipeline to industry customers in Cilegon area. Also NEPI may deliver such gas to other areas through tolling or swap arrangements with gas delivered through the pipeline network in West Java Region.

Since the regasification process is conducted onshore, LNG may also be transferred into ISO tank and, thereafter, transported to customers, which gas infrastructure is not available for.
NEPI LNG Hub I Terminal Cilegon – General Layout

NOT FOR CONSTRUCTION

Scale 1:5000

Scale in METRES
1:5000

GENERAL LAYOUT OPTION 1

PRE FEASIBILITY STUDY
CILEGON LNG IMPORT TERMINAL

GENERAL LAYOUT
OPTION 1

Scale 1:5000

NOT FOR CONSTRUCTION

PROJECT

NUSANTARA

Royal Haskoning DHV

Marine and Maritime

MAIN EPITA1445/DWG/101

Sheet No.
101

Date
1/3/16

Sheet

1/5000

DRAWN

DATE

DESCRIPT

15/01/13

MAN OF WORK

1/2000
NEPI Hub I – LNG Terminal Cilegon – Forward Plan

Pre Construction
1. AMDAL
2. Feasibility Study
3. Hydrooceanography & Metocean Survey

License & Permitting
1. LNG COMMERCIAL – FSU + REGAS
2. Special Purpose Port (TUKS)
3. LNG FSU + REGAS CONSTRUCTION

Commercial
1. OFFTAKE DISCUSSIONS
2. SIGN MOUs WITH OFFTAKERS & DEVELOP FINANCE STRUCTURE
3. BINDING TOLLING & FINANCE AGREEMENTS

Current

DESIGN & BUILD/ EPC CONTRACT

Ready for Construction 2017
The Second Project of NEPI is NEPI Hub-II which will provide Natural Gas to satisfy IPP or Industrial demand. Commercial scheme of NEPI LNG Hub-II is conducted through the Floating Storage Unit (FSU) as its storage while the regasification is processed offshore. Natural Gas (ex-LNG) will be directly delivered to industrial facilities as its fuel, while the excess capacity (if available) will be sold by land transportation (Pipeline or Trucking) with target market of East Java and other area in East Indonesia by small LNG ship with target market of East Indonesia.
NEPI Hub II – LNG Terminal Situbondo – Forward Plan

1. **Pre Construction**
   - AMDAL
   - Feasibility Study
   - Hydrooceanography & Metocean Survey

2. **License & Permitting**
   - LNG COMMERCIAL – FSU + REGAS
   - Special Purpose Port (TUKS)
   - LNG FSU + REGAS CONSTRUCTION

3. **Commercial**
   - OFFTAKE DISCUSSIONS
   - SIGN MOUs WITH OFFTAKERS & DEVELOP FINANCE STRUCTURE
   - BINDING TOLLING & FINANCE AGREEMENTS

**DESIGN & BUILD/EPC CONTRACT**

Ready for Construction 2019
Master Plan – NEPI Hub II Project Development Plan
SEIP Situbondo
Thank You