



# JERA's Initiatives

November 2 , 2016

Hiroki Sato

Chief Fuel Transactions Officer

Senior Executive Vice President, JERA Co., Inc.

© 2016 JERA Co., Inc. All Rights Reserved.



## JERA's Initiatives

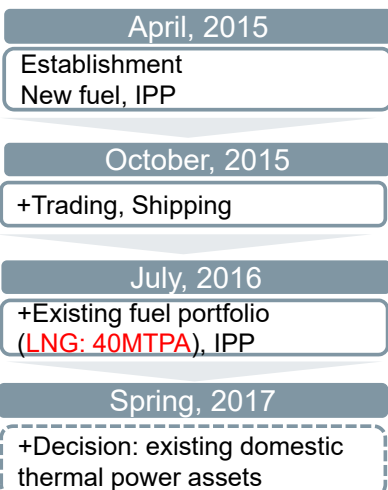
---

1. JERA- The New Joint Venture of TEPCO & Chubu
2. JERA's LNG Procurement Volume
3. Growth Strategy – Overseas Power Generation
4. Growth Strategy – Fuel Business  
(Procurement / Upstream / Trading / Transportation)
5. JERA in 2030
6. Change on the Demand Side
7. Change on the Supply Side: Impact of U.S. LNG
8. LNG Production Cost
9. JERA's Initiatives
10. Relationship between JERA and Russia
11. Gas Pipe lines and LNG Terminals in Russia

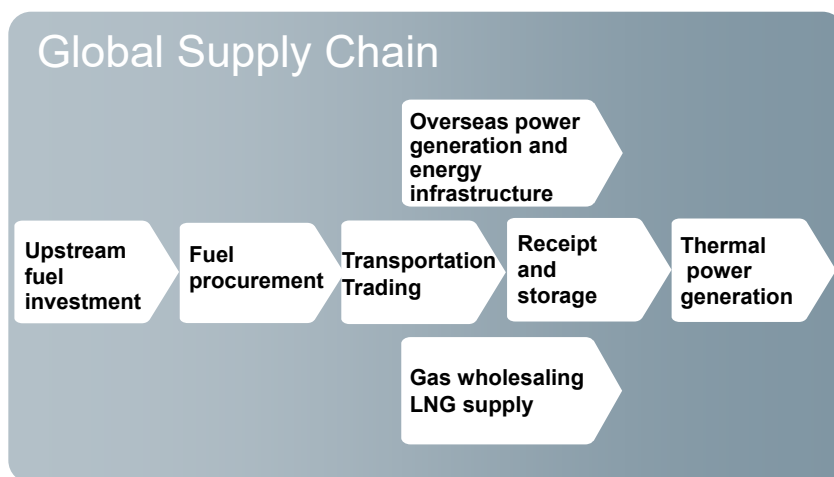
# 1. JERA – The New Joint Venture of TEPCO & Chubu

- JERA aspires to become a global leader in the fuel procurement and thermal power generation business **by integrating the fuel and power related assets of Chubu and TEPCO**
- JERA will expand its business step-by-step following the Road Map below:

## Roadmap

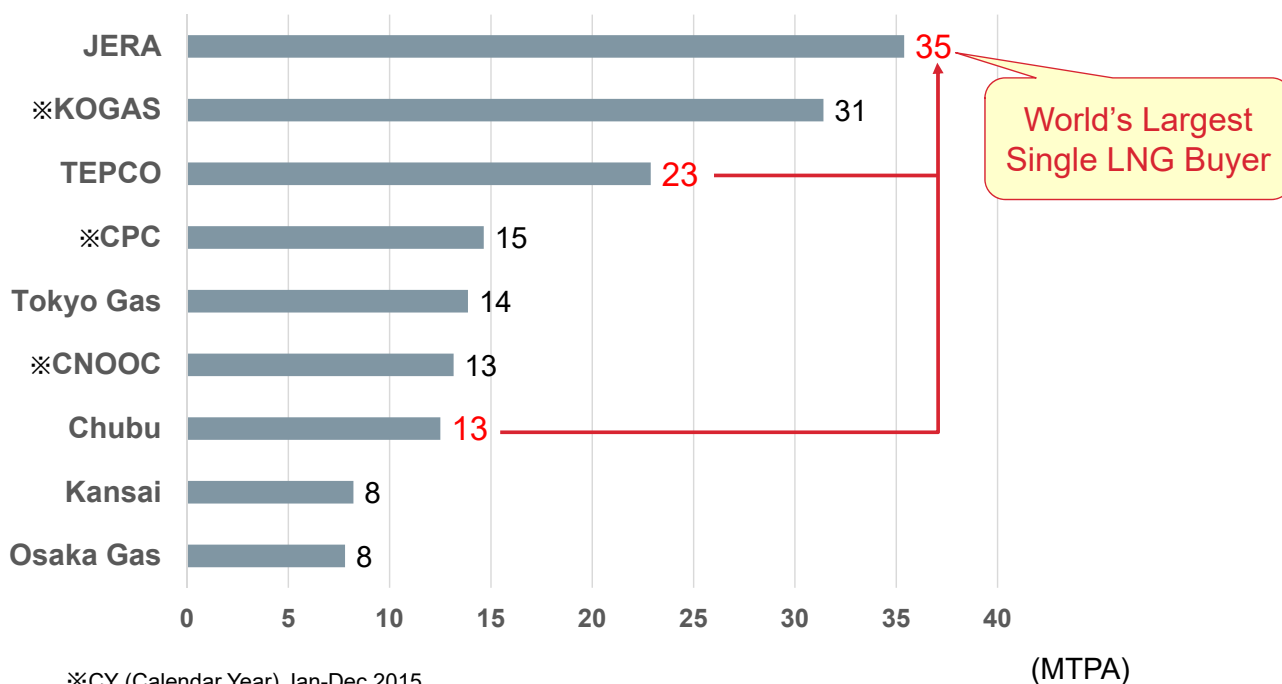


## Business Field



# 2. JERA's LNG Procurement Volume

## Scale of LNG Procurement in East Asia (FY 2015)



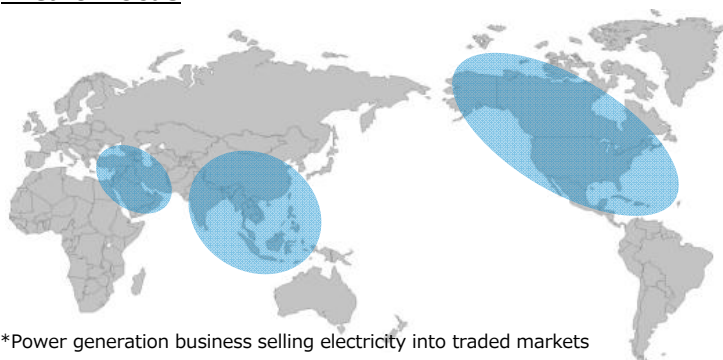
### 3. Growth Strategy – Overseas Power Generation Business

		As of July 2016	FY2030
<b>Overseas Power Generation Business</b>	<b>Power Generation Capacity (Equity Ownership)</b>	Approx. 6,000 MW	Approx. 20,000 MW

**Growth Strategy Utilizing Integrated Thermal Power Expertise**

- Primary focus on Asia, Middle East and North America regions
- Expand into North American merchant IPPs\*
- Actively develop renewable projects

**Area of focus**



### 4-1. Growth Strategy – Fuel Business: Procurement / Upstream

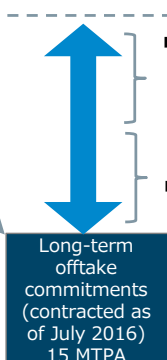
		As of July 2016	FY2030
<b>Fuel Business (1)</b> Procurement / Upstream	<b>Contracted LNG Volume</b>	Approx. 40 MTPA	30~40 MTPA
	<b>Contracted Coal Volume</b>	Approx. 20 MTPA	20~30 MTPA
	<b># Investment Projects</b>	6 Projects	Approx. 12 Projects

- Develop optimized fuel procurement and upstream equity portfolio underpinned by world top-class offtake volume
- Building procurement and business development platforms capable of adapting to future fluctuations in fuel markets

**Optimization of LNG Portfolio**



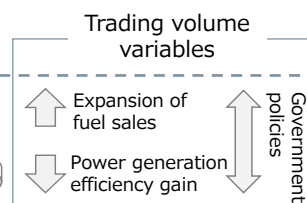
As of July 2016



FY2030



- **Short-term/Spot**
- **Long-term**  
Take strategic upstream equity position where appropriate



**Procurement through combination of highly flexible short-term /spot contracts and economically efficient / stable long-term contracts**

## 4-2. Growth Strategy – Fuel Business: Trading / Transportation

Fuel Business (2) Trading / Transportation	As of July 2016	FY2030
# LNG vessels in fleet	16 vessels	Approx. 30 vessels

- Pursue optimization through full utilization of own fleet and expansion of trading business
- Contribute to increase in market liquidity, and seek role as leading player in transformation of fuel market

**Trading flow example**

## 5. JERA in 2030

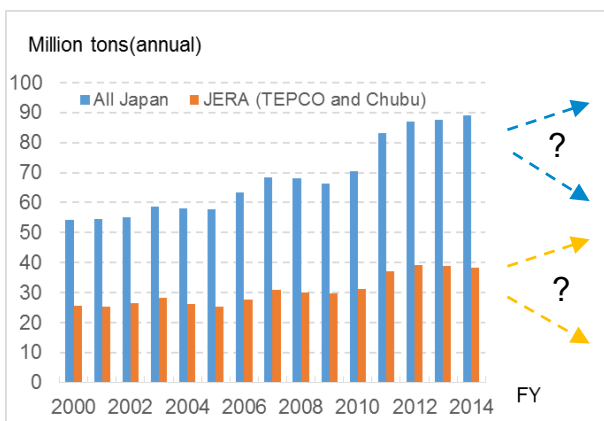
### Achieve growth by FY2030 as follows

		FY2030	Growth points
Domestic Power Generation Business (New Construction / Replacement)		Power generation capacity	Contribute to reduction in environmental burden through high efficiency power generation and establishment of new/ replacement facilities
Overseas Power Generation Business		Power generation capacity (equity)	
Fuel Business		LNG contracted volume	Proactively engage in trading and upstream investment underpinned by world top-class procurement volume
		Coal contracted volume	
		# of investment projects	
		# of LNG vessels	
		Approx. 12,000 MW	
		Approx. 20,000 MW	
		30~40 MTPA	
		20~30 MTPA	
		Approx. 12 projects	
		Approx. 30 vessels	

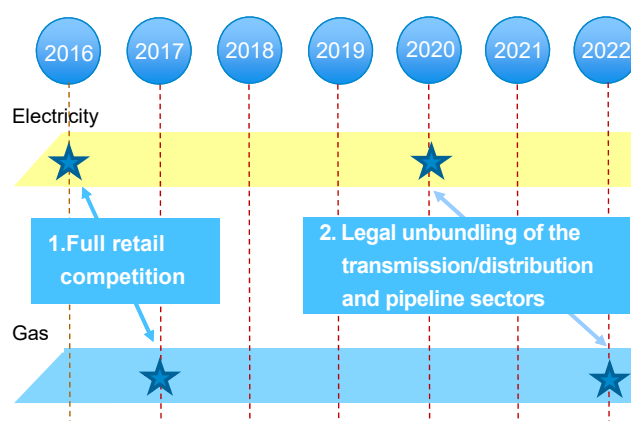
## 6. Change on the Demand Side

- Fundamental change under way in Japan, the world’s largest LNG importer
  - Quantitative demand for LNG less certain
  - Deregulation of Japan's gas and power sectors requires pricing of LNG to be more rational and transparent

### LNG Imports to Japan



### Schedule of Energy Market Deregulation



## 7. Change on the Supply Side: Impact of U.S. LNG

- From the late 2010s, large quantities of US LNG will flow to Asia
- The inflow of US LNG, not oil price-linked and highly flexible, will have a pivotal impact to the Asian LNG market:
  - Enhance the tradability of LNG in the Asian market
  - Introduce LNG with lower production cost

### Liquefaction Projects Under Construction

Project	Location	Design Capacity (MT)	Expected Start Date
Sabine Pass	LA	18	2016
Freeport	TX	13.9	2018
Cameron	LA	13.5	2018
Cove Point	MD	5.75	2017
Corpus Christi	TX	13.5	2018

### Freeport Project (Conceptual Drawing)

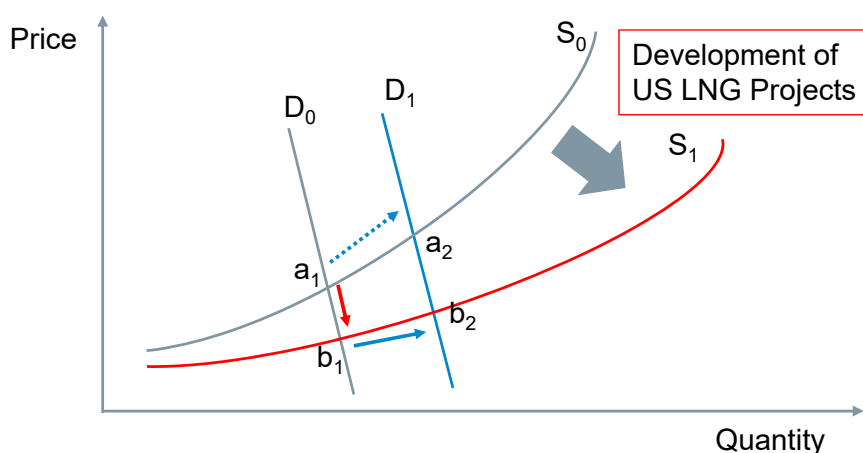


© Freeport LNG Development, L.P.

## 8. LNG Production Cost

- By unbundling gas field development and efficiently developing export facilities, the flow of US LNG exports will shift average LNG production costs down significantly
- Additional and expansion US LNG projects could shift the production curve downward more

Image of Long Term Marginal Cost Curve



## 9. JERA's Initiatives

- JERA will be proactive in facing the uncertainty of demand volume and the need for a more transparent pricing structure
- As one of the world's biggest buyers of LNG, JERA will catalyze changes and innovation in the Asian LNG Market

<b>Portfolio diversification</b>	Diversify the maturities of contracts in our LNG offtake portfolio to rebalance long-term, mid-term and short term/ spot transactions
<b>Diversification of price index</b>	Strongly support market index pricing in Asian LNG transactions, e.g. US Henry Hub, UK NBP, new index reflecting the Asian LNG market
<b>Enhancement of trading functions</b>	Enhance our trading function to enable flexible response to demand fluctuations and market conditions
<b>Contribution to project development</b>	Contribute to LNG project development through investments and/or train capacity sized procurement

## 10. Relationship between JERA and Russia

### LNG Long Term Contract

Contract	Contract Period	Volume	Term
Sakhalin II (Former Tokyo Electric Contract)	2007 - 2029	1.5 mtpa	FOB
Sakhalin II (Former Chubu Electric Contract)	2011 - 2026	0.5 mtpa	DES

### LNG Spot Purchase

1.1 million MT (2011 - 2016)

### Coal Purchase (2015)

0.2 million MT

## 11. Gas Pipelines and LNG Terminals in Russia

- Russia has a large potential for exporting LNG based on its world largest gas reserves.
- JERA expects Russian LNG price to reflect Russian pipeline gas price for Europe which has been getting competitive.

