

The Outlook for Present Business Challenges Facing the Japanese Gas Distribution Industry

and

The Scheme for Provision of Technical Solutions through Japanese Gas Industry Organizations

*~Future Prospect of R&D Activities and Funding for
the Japanese Gas Distribution Industry~*

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Agenda

- 1. Company profile of Tokyo Gas**
- 2. Overview Japanese energy market**
- 3. Current issues of Japanese gas utilities**
- 4. Scheme for provision of technical solution**
- 5. Conclusion**

1. Company profile of Tokyo Gas

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Where is Japan?



Where is Tokyo Gas?



Distribution area of Tokyo Gas

1. Company profile of Tokyo Gas

Established in 1885

Distribution Area

Tokyo and its
surroundings

Customers

More than 9.8 millions

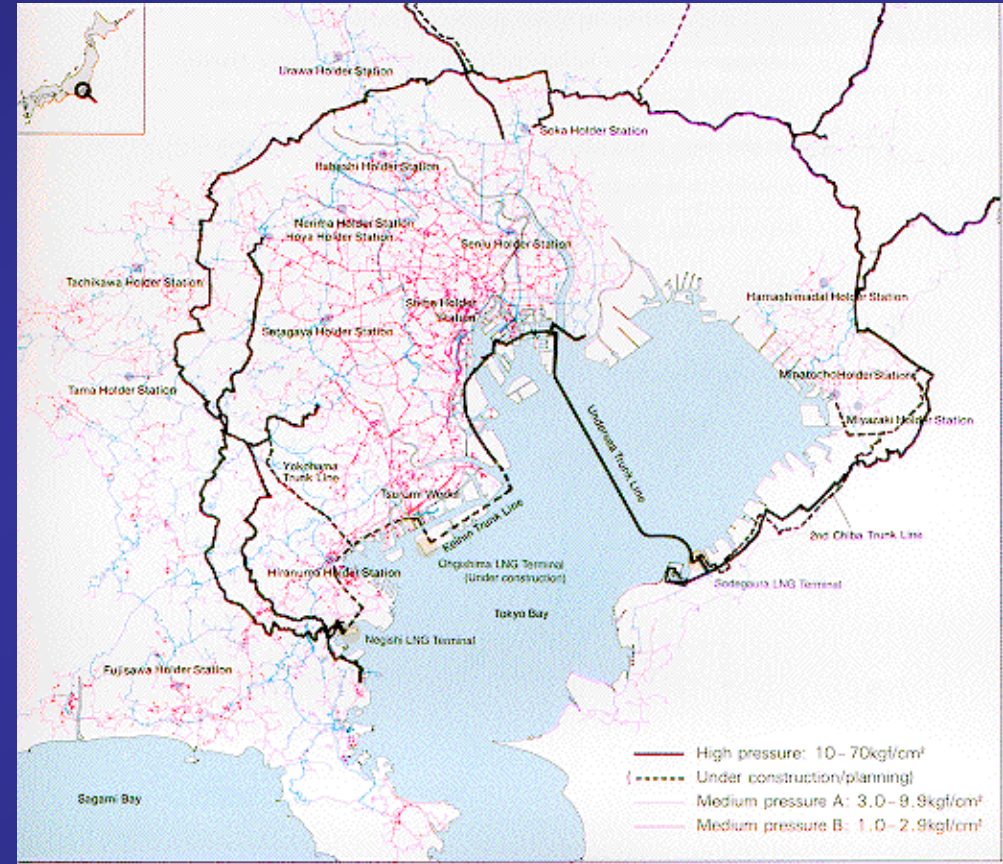
Pipeline

More than 51,000km

Business enterprise

Import LNG, Vaporization, Transmission,

Distribution, Sales and **R&D**



1. Company profile of Tokyo Gas

We have R&D function



Pressure regulator



PEFC

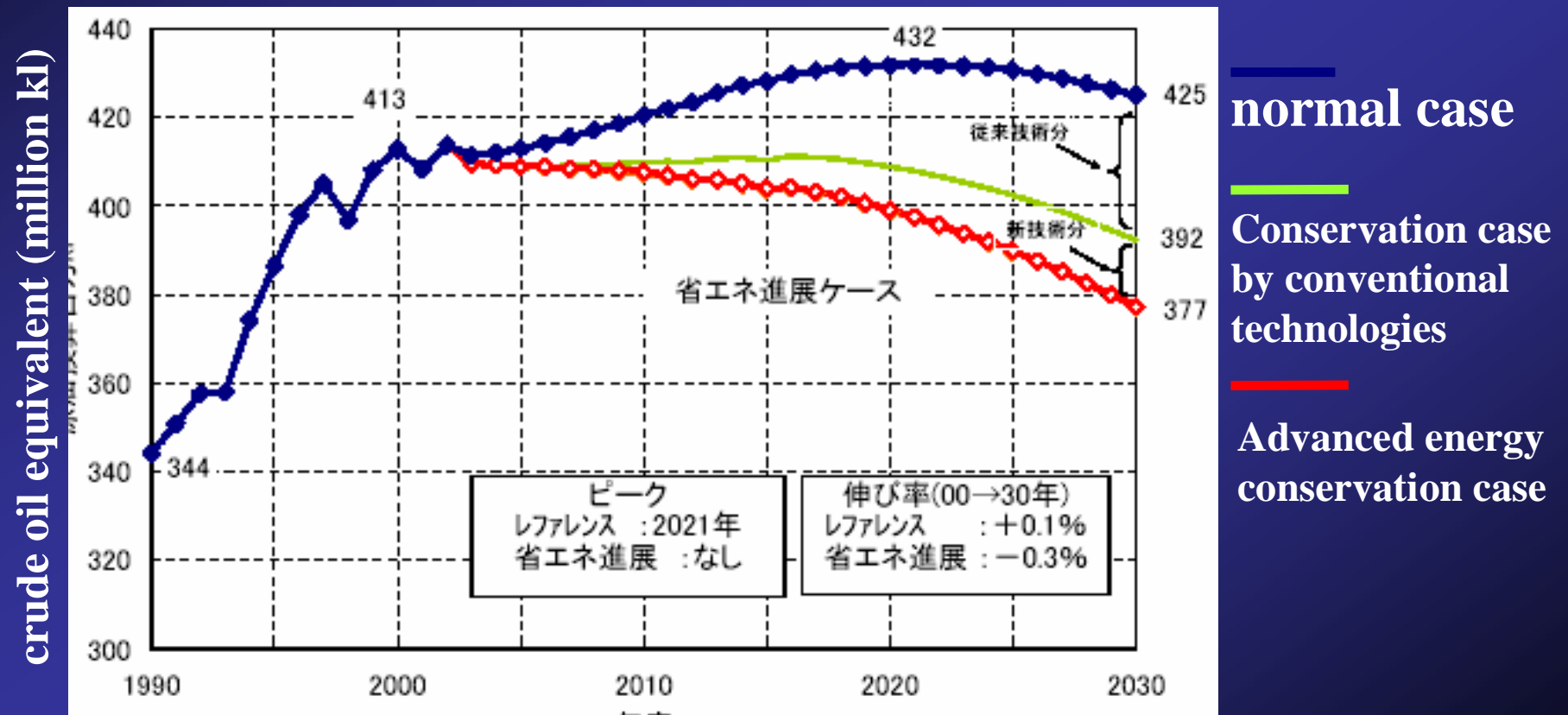


Fuel cell vehicle

2. Overview of Japanese energy market

2. Overview of Japanese energy market

Market will tend to be mature or shrink



~ Outlook of total energy demand supply in 2030 ~

2. Overview of Japanese energy market

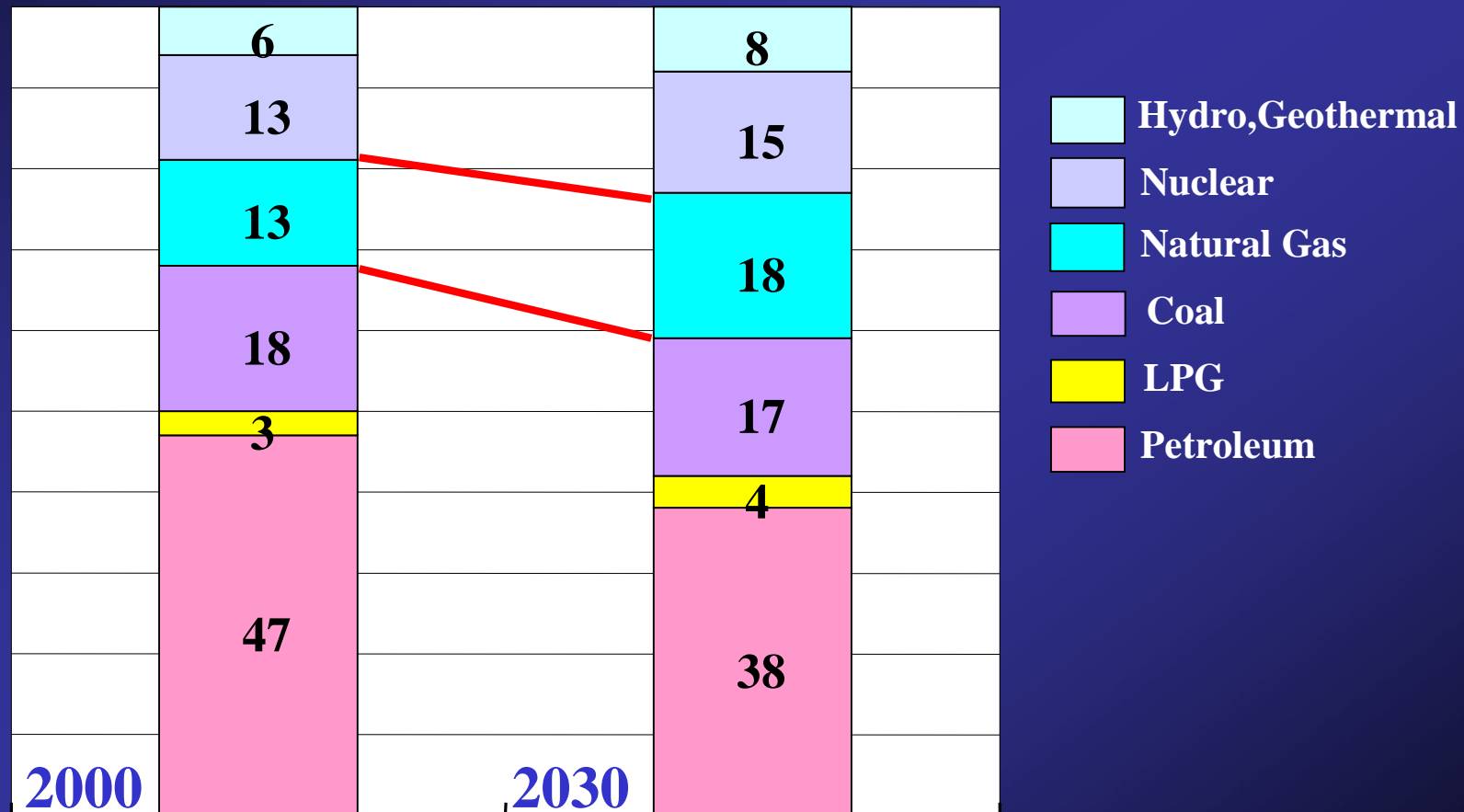
Market will tend to be mature or shrink

Reasons

- 1. Energy conservation will be promoted**
- 2. The birth rate is falling and the society is aging, resulting a trend for energy consumers to fall in numbers**

2. Overview of Japanese energy market

Ratio of natural gas will increase



~ Primary Energy Supply Outlook for Japan (%) ~

2. Overview of Japanese energy market

Ratio of natural gas will increase

Reasons

- 1. We must reduce CO2 emission**
- 2. Natural gas has lower geopolitical risk than petroleum**

(We depend on imports to satisfy all of its energy demand.
80% of LNG we use is imported from Pacific area.)

2. Overview of Japanese energy market

Summary

Market will tend to be mature or shrink

But...

Ratio of natural gas will increase

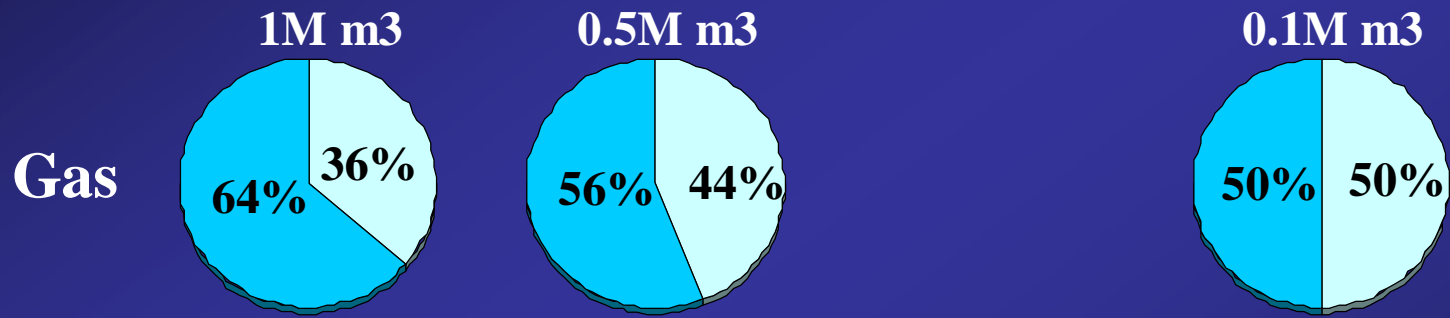
Therefore...

**It will be more important for
Japanese gas industry to supply
natural gas safety and stably**

3. Current issues of Japanese gas utilities

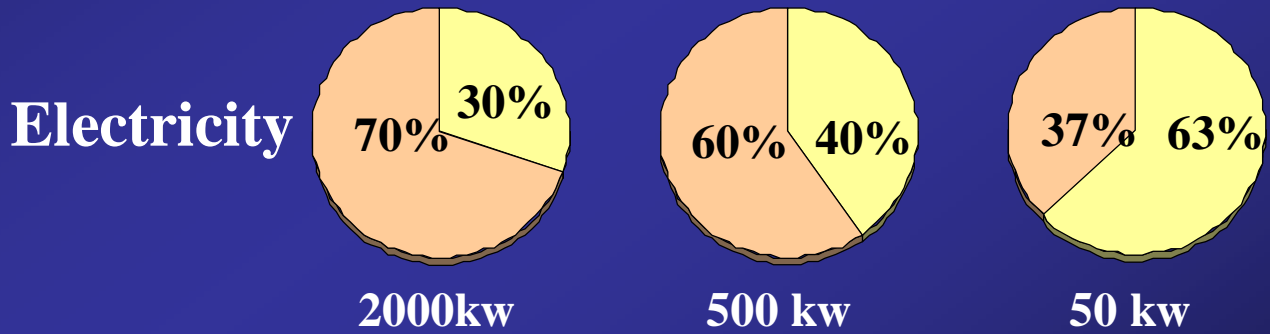
3. Current issues of Japanese gas utilities

Advancing market liberalization



Major users

Large-scale factories And commercial complexes	Medium-sized factories and hotels	Small-scale factories and hospitals
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~ Market liberalization Schedule ~



3. Current issues of Japanese gas utilities

Heavy competitions of energy utilities

~ liberalized marketplace ~

Gas companies have begun to sell electricity, Other companies sell gas.

Japanese gas utilities used to supply only gas exclusively.

3. Current issues of Japanese gas utilities

Heavy competitions of energy utilities

~ Unliberalized marketplace (residential use) ~

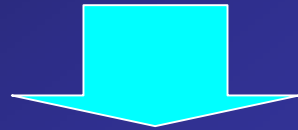
All-electric new housing ratio is
increasing to 16%

(All-electric housing, in which the kitchen, heating and hot water supply are all electrically powered system)

3. Current issues of Japanese gas utilities

In order to win the competitions...

The key task is lowering gas rate

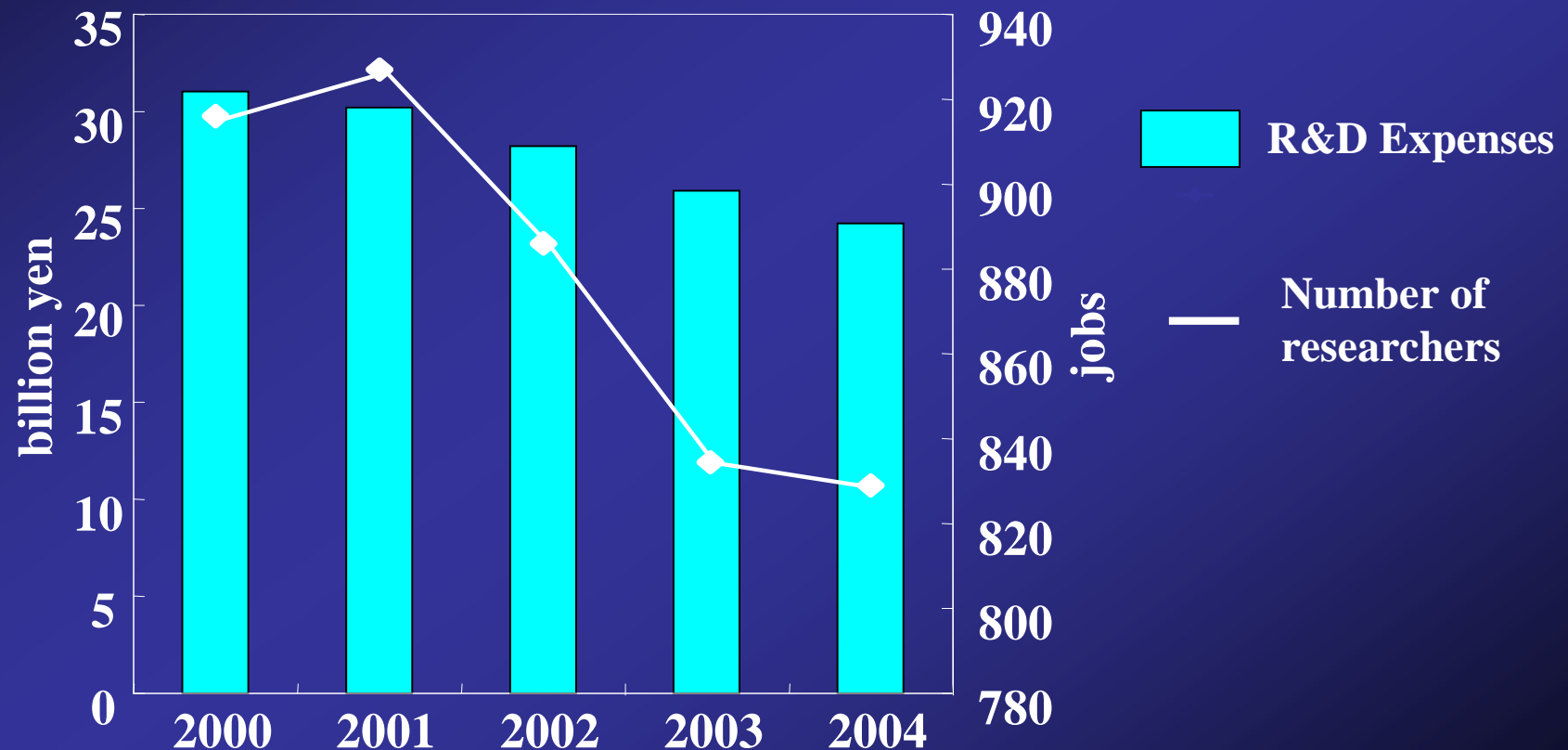


Changes of gas utilities

- **Industrial reorganization**
(Transfers of public utilities by local private utilities : 20 cases past 10 years)
- **Operational efficiency improvement**
(Gas sales per employee : 1.7 times as high as 10 year ago)
- **Shrinkage R&D expenses**

3. Current issues of Japanese gas utilities

Shrinkage of R&D expenses (-25%)



~ R&D investment by top three gas utilities ~

3. Current issues of Japanese gas utilities

Trend of R&D investment

- Product R&D is bigger than Infrastructure R&D



e.g. PEFC

3. Current issues of Japanese gas utilities

Trend of R&D investment

- Product R&D is bigger than Infrastructure R&D**

But...

It is also important for gas utilities to improve integrity of pipeline



We have many earthquakes and aging pipes

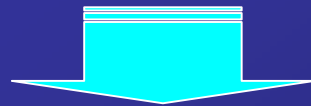
3. Current issues of Japanese gas utilities

Summary

- Market liberalization
- Heavy competitions of energy utilities



- Falling R&D investment
- Trend to product R&D



Stable supply of natural gas and growth of gas industries might be disturbed ???

3. Current issues of Japanese gas utilities

Summary

Therefore...

**We need efficient R&D activities,
schemes for provision of technical
solution and sharing R&D
investment through all Japanese
gas industries.**

4. Scheme for provision of technical solution

4. Scheme for provision of technical solution

~ Schemes ~

Schemes of R&D

- 1. Original R&D effort**
- 2. Joint R&D effort**
- 3. National project**

Schemes of diffusing technologies

- 1. Support from utilities with R&D functions**
- 2. Support from JGA**

4. Scheme for provision of technical solution

~ Schemes ~

Schemes of R&D

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Schemes of diffusing technologies

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4. Scheme for provision of technical solution

Schemes of R&D

1. Original R&D effort

Promoted : By a certain gas utility

Cost Burden : Private expenses

Case : “Marketability is very high”
“Improving the company’s presence”

e.g.) PEFC, remote operating
system for gas appliances and equipment

4. Scheme for provision of technical solution

~ Schemes ~

Schemes of R&D

1. Original R&D effort
- 2. Joint R&D effort**
3. National project

Schemes of diffusing technologies

1. Support from utilities with R&D functions
2. Support from JGA

4. Scheme for provision of technical solution

Schemes of R&D

2. Joint R&D effort

Promoted : By a few gas utilities

Cost Burden : Private expenses

Case : “Improving gas sales and operation”
“Unification of specifications draw out bargaining power”

e.g.) gas meter, pipeline materials

4. Scheme for provision of technical solution

~ Schemes ~

Schemes of R&D

1. Original R&D effort
2. Joint R&D effort
- 3. National project**

Schemes of diffusing technologies

1. Support from utilities with R&D functions
2. Support from JGA

4. Scheme for provision of technical solution

Schemes of R&D

3. National project

Promoted : By JGA and METI

Cost Burden : National expenditure

Case : “Budget is very large” “Greatly
Contributing to the expansion of the
use of natural gas”

4. Scheme for provision of technical solution

~ Schemes ~

Schemes of R&D

1. Original R&D effort
2. Joint R&D effort
3. National project

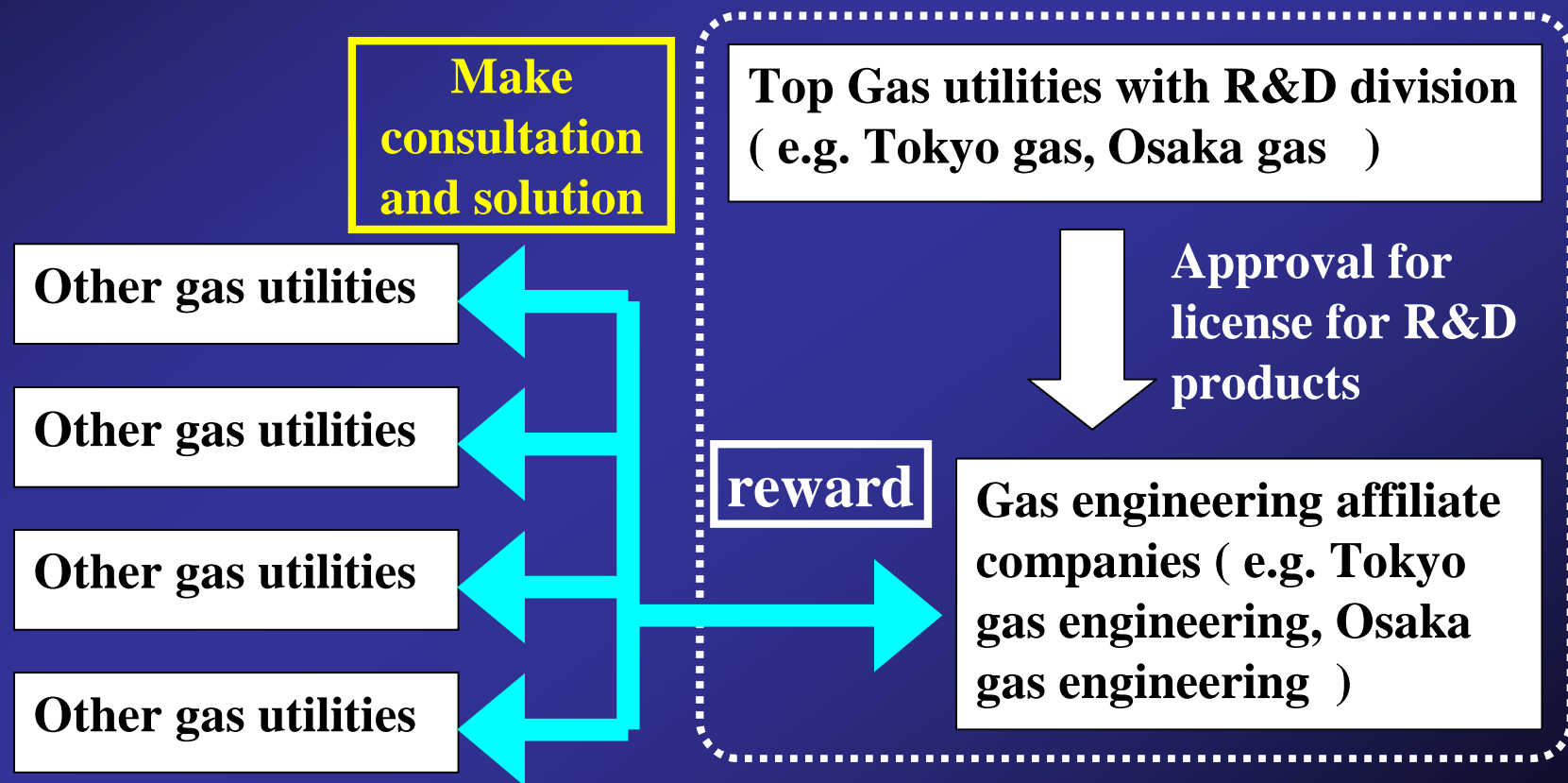
Schemes of diffusing technologies

- 1. Support from utilities with R&D functions**
2. Support from JGA

4. Scheme for provision of technical solution

Schemes of diffusing technologies

1. Support from utilities with R&D functions



4. Scheme for provision of technical solution

~ Schemes ~

Schemes of R&D

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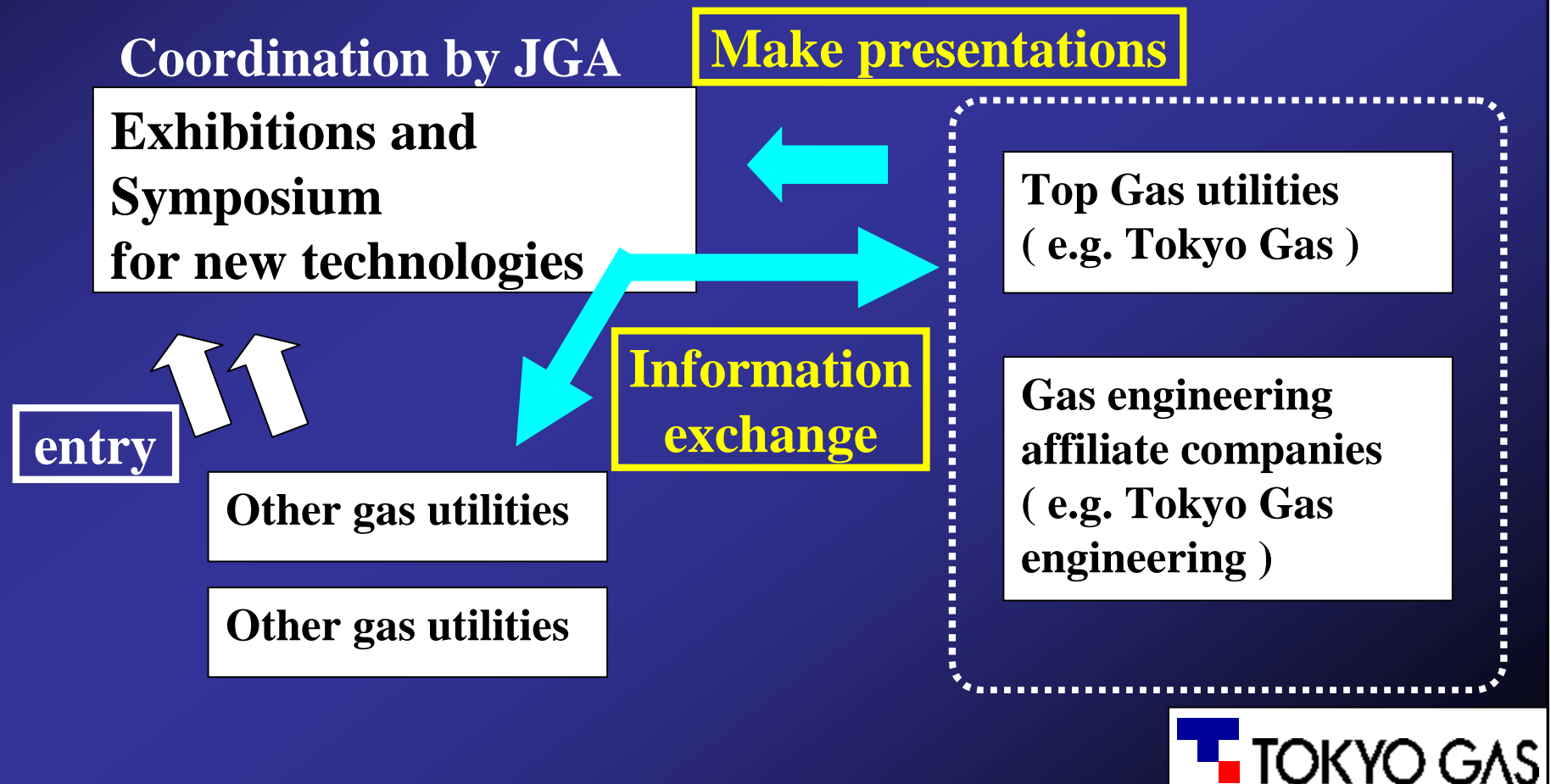
Schemes of diffusing technologies

1. Support from utilities with R&D functions
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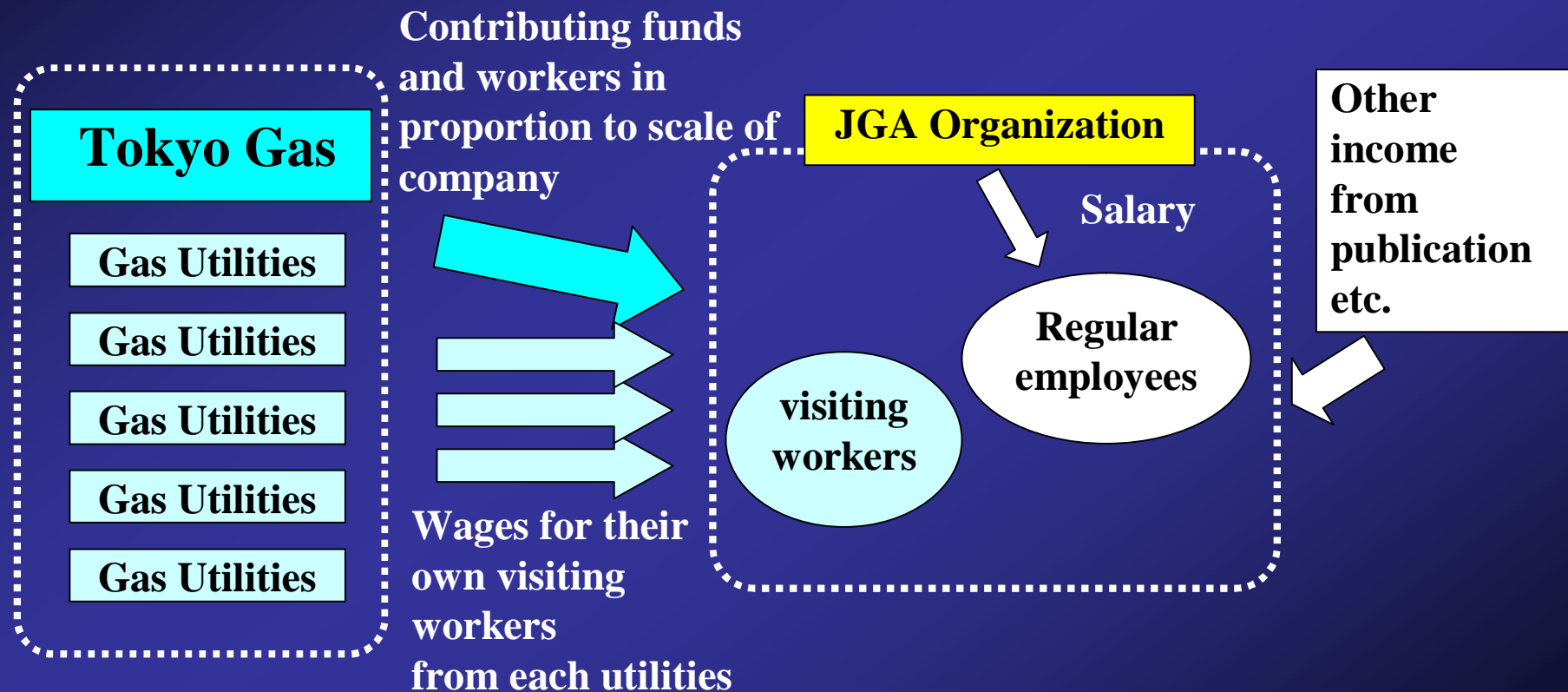
Schemes of diffusing technologies

2. Support from JGA



4. Scheme for provision of technical solution

Tokyo Gas contributes to JGA notably



~ The system to keep JGA organization ~

5. Conclusion

5. Conclusion

Recent market liberalization tends to shrink R&D investment and make R&D activities pursue short-time profits.



R&D investment is limited

- We need have efficient R&D activities and schemes for provision of technical solution through all Japanese gas industries.
- We must have ability to assess the needs of our customers and the market more accurately than in the past.

That's all.

*Thank you for
your kind attention.*