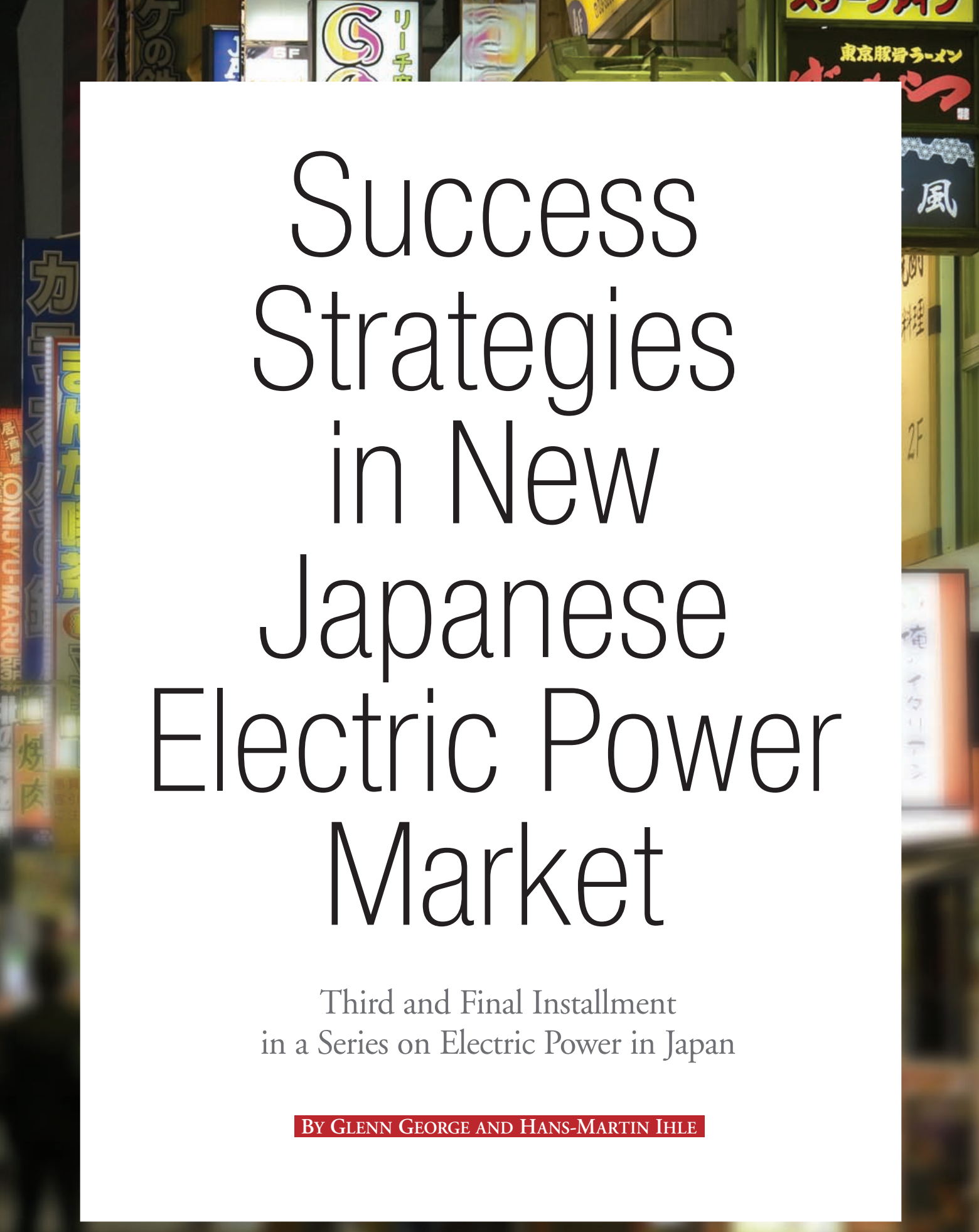

Success Strategies in New Japanese Electric Power Market

Third and Final Installment
in a Series on Electric Power in Japan

By Glenn George and Hans-Martin Ihle

Japan has embarked on a remarkable transformation of its energy markets, as described in the first two articles in this series, which appeared in the August and October issues of *Public Utilities Fortnightly*.

Some of the greatest changes to date have been those to the regulatory regime surrounding its electric power sector. Competition is being introduced at both wholesale and retail levels through functional unbundling of generation from transmission, distribution, and retail elements in the electric power value chain.

These market changes will create a cascade of effects throughout the electric power sector. Functional unbundling will expose the standalone profitability of the generation and retail arms of incumbent vertically-integrated electric power companies.

Such unbundling should prevent cross-subsidization from the regulated transmission business. This will help local electric power companies steer new investments into the most productive and profitable areas, and will quite naturally help them position themselves in the liberalized market.

Market changes and the post-Fukushima retirement of nuclear plants will create market entry opportunities in the wholesale power generation sector, particularly for fossil and renewable generation. In the retail sector, a wide variety of new business models and non-traditional service providers will begin to compete with the incumbent power companies.

For retail entrants, the key will be to innovate and compete effectively with the incumbent electric power companies. They will need to diversify, in both the retail and wholesale portions of their business.

Retail Market Strategies

The retail power market in Japan has already seen a lot of action. A number of new entrants have emerged to partner or compete with incumbent providers, often adopting one (or both) of two popular strategies: bundling electric service with other services and offering loyalty program points for buying a particular company's power.

Natural gas utilities, oil wholesalers, telecommunication companies, cable TV providers, and nonlife insurance providers are among the entrants pursuing the bundling strategy. Firms like Rakuten, which runs a large online market platform, have started offering loyalty and points programs. The loyalty programs are popular with many Japanese customers.

Over the longer term, significant new opportunities may arise from a better-interconnected Japanese electricity market.

Local electric power companies, as well as Japanese trading companies known as "sogo shosha," have already forged strategic retail partnerships and diversified their offerings. Tokyo Electric Power Company has established partnerships with at least twelve companies.

They include SoftBank and So-net (telecoms/internet), Culture Convenience Club, Recruit, and Royalty Marketing (points system), TOKAI Group (liquefied petroleum gas, water delivery, internet, and cable television), Lemon Gas and Kawashima Propane (liquefied petroleum gas, water delivery), Kawahara Jitsugyou and Kanaju (liquefied petroleum gas), USEN (music distribution), and Bic Camera (electronics retailer).

Only time will tell how durable such partnerships are likely to be. If the experience of other jurisdictions is indicative, many of these relationships will prove to be short-lived, while a handful of others will blossom into durable – and profitable – joint ventures.

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FIG. 1 OVERVIEW OF RETAIL MARKET ENTRY APPROACHES

	Examples	Notes on apparent or publicly stated strategy
Mobile operator	SoftBank	Partnering with TEPCO to offer bundled discounts on electricity and other Softbank services Bundling electricity with mobile and broadband services Offers include other value-added services like home repair
Gas companies	KITAGAS, OSAKA GAS, TOKYO GAS, TOHO GAS	Plan to bundle power and gas Several also plan to bundle internet with power and gas and offer customers loyalty points Tokyo Gas aiming for 10% share of power market in Tokyo by 2020
Refiners / other energy companies	JX Holdings, Inc., ITOCHU ENEX CO.,LTD, Iwatani, TonenGeneral	Many plan to offer bundled power and gas / LPG Plan to sell power in variety of channels (online, in stores, and petrol stations) JX Holdings plans to leverage partnerships with credit card companies and partner with Nojima (electronic retailer) JX Holdings offering savings up to 8% vs. TEPCO
Others (retailers, internet companies)	J:COM, KDDI, LAWSON, H.I.S, Canon, MISAWA, Daiwa House Group, RICOH	Variety of other competitors bundling electricity and their core offers or using access to customers to sell electricity Wide range of industries (retailers, telcos, homebuilders, travel agencies, consumer / industrial products) J:COM (telco) plans to bundle power and telecom services Lawson (convenience store) using 4,000 store footprint to sell retail electricity; partnered with Mitsubishi to procure power Daiwa House (property manager) plans to sell power to 400,000 condos it rents / manages

Local electric power companies still dominate the retail market and will likely continue to do so. Going forward, however, their retail arms must stand alone in terms of creating sufficient profits to justify ongoing commitment of capital. Generating profit on an ongoing basis from a retail power business – where margins are typically quite slim – is notoriously difficult.

To compete successfully with new entrants, such as those listed in Figure 1, local electric power companies will need to forge strategic partnerships with other sectors, tailor their tariffs to different types of users, and develop new pricing strategies. The process will start with designing cost-reflective, multi-part rate structures in both bundled, full-service tariffs as well as unbundled delivery charges.

Examples of delivery charge mechanisms include time-of-use rates and smart-meter-enabled pricing. These new tariffs should be based on a thorough analysis of marginal costs, bill impacts, and likely customer response.

The electric power companies have the opportunity to align these new tariffs for both residential and commercial users more closely to the structure of their marginal costs. This will enable them to incorporate advanced metering and two-way communications features, while discouraging uneconomic bypasses of the utility system and reducing cross-subsidy concerns.

It is unclear whether the electric power companies' retail arms will continue focusing on their respective local markets or whether they will begin to offer services to customers nationwide, potentially under new brand names. Creating new brands or expanding geographically may make sense to market highly differentiated service offerings.

There might be sufficient demand for a green provider nationwide, perhaps under a new brand, but not for a standard, undifferentiated plain-vanilla power offering. Market research of Japanese consumers' preferences for electricity-based products and services may prove valuable in this context.

Local electric power companies may have the ability to launch creative, differentiated nationwide offerings with sufficient marketing oomph to cement their position in that new segment and potentially dominate it from the outset. This would only be feasible, however, if they are creative in designing those services, competent in delivering them profitably, and effective in building a new brand identity.

In many instances, this kind of experience can most effectively be developed through trial-and-error in more mature competitive electric power markets around the world, especially in the Anglosphere and in portions of Continental Europe, as described in the second article in this series.

Wholesale Market Strategies

The wholesale power market in Japan is less diversified than most such markets in Organization for Economic Co-operation and Development countries, and is still dominated by bilateral supply agreements. Only two percent of the entire electricity supply is traded on the Japan Electric Power Exchange. The exchange is a spot trading market with a total of forty-eight products that are traded in thirty-minute intervals, twenty-four hours a day.

The exchange could turn into a valuable alternative for electric power companies to sell short-term excess capacity and reduce risks. Local electric power companies could make more use of the forward market. We note, however, that any significant capacity bid into the exchange at this point may move the market significantly.

By bidding into the exchange, local electric power companies would be extending the market power they already wield in the spot market rather than conceding that market power. Nonetheless, it appears prudent for the companies gradually to move away from bilateral contracts.

We may also see energy retailers begin to resell unused capacity. In this intriguing business model, energy retailers would release and resell to third parties a portion of their capacity in time periods in which their load is less than projected. This may be done on a contingent basis.

Those third parties can use that capacity for their own benefit or sell it to their customers.

Electric power companies will undoubtedly struggle with whether or not to support transmission improvements and regulatory changes that would make access to interconnection capacity more competitive.

Such issues are especially important in Japan because of the weak interconnection between the islands in the archipelago, and the divide between 50 hertz and 60 hertz portions of the system.

Transmission improvements and regulatory reforms would allow the electric power companies' generation arm to sell electricity in other local markets and its transmission affiliate to make significant interconnection returns. This would, however, expose the company to greater competition in its home market.

Opposing these structural reforms may be short-sighted. Over the longer term, significant new opportunities may arise from a better-interconnected Japanese electricity market. An example would be the ability of the electric power companies' generation arm to strike long-term supply deals with retails in other regional markets. Kansai Electric Power Company, for example, could be selling to Tokyo Gas for the Tokyo market – something not feasible today.

Renewables

Many consumers and policy-makers would like to see renewable energy become a more significant part of the energy mix in Japan. But for this to happen, transmission capacity across markets must increase significantly and access to interconnection needs to be on competitive terms. Renewable generation would be most efficient in more remote areas such as Hokkaido, which is well situated for wind power, and Shikoku, well situated for solar.

But it is now impossible to transmit electricity from the more remote areas to the load pockets of Tokyo and Osaka, due to insufficient transmission capacity and lack of non-discriminatory transmission access.

Transmission capacity in Japan is also not allocated efficiently under current arrangements. Significant capacity amounts are tied to long-term plans (scheduled interchange), which are allocated on a first-come, first-served basis to long-term power sources such as nuclear, coal, or hydro. Unused scheduled interchange

capacity must be released at least seven days in advance, which provides too little notice for alternate users of the capacity.

Absent intervention by Japan's grid coordinator, large-scale entry into renewable generation will remain challenging. But the Cross-regional Coordination of Transmission Operators, Japan (OCCTO) is not currently planning such intervention.

According to the government's own projections, renewables will make up twenty-two to twenty-four percent of Japan's energy mix by 2030, most of which will be produced by hydro (8.8 to 9.2 percent, most of which is existing capacity) and solar (seven percent). Wind is projected to make up only 1.76 percent.

In 2012, Japan adopted a feed-in-tariff system that required local electric power companies to buy electricity from renewables at a fixed price. This led to an increase in total renewable capacity from twenty to thirty-two gigawatts, ninety percent of which was generated by solar.

The government has since reduced the feed-in-tariff for solar. It has also changed the electricity supply rules to no longer require local electric power companies over and above a fixed upper limit on grid connections.

Curtailment without compensation is permitted if that limit is exceeded. This has severely reduced the attractiveness of renewable investments in Japan.

An attractive alternative to this policy would be to hold competitive auctions for long-term contracts for a certain target capacity that can be accommodated without putting grid stability at risk. Many governments worldwide are rolling out auctions as their preferred method for allocating subsidies to renewable energy projects.

Well-designed auctions can harness the power of competition to deliver renewables more cost-effectively than when government officials set support levels. But auctions introduce allocation risk, such as the risk that a project will not be allocated support.

Investors need to understand auction dynamics and must be able to identify which bidding strategy is most likely to result in a favorable outcome. The Japanese Ministry of Economy, Trade and Industry (METI), as well as local players, can learn a great deal from the experience with auctions and other competitive procurement mechanisms in liberalized electricity markets abroad. For example, offshore wind auctions have recently been run in Denmark, the United Kingdom, France, and the Netherlands, and are planned for Germany in 2017.

In sum, there will be some opportunities for those companies experienced in deploying renewables globally to do so in Japan over the next decade. We believe there could be a significant role for partnerships. These partnerships would be between local Japanese players who understand the political, legal, and regulatory landscape, and international companies with broad experience in developing wind and solar projects around the world.

Fossil and Nuclear

Before the Fukushima Daiichi accident, nuclear power accounted for thirty percent of the total energy mix in Japan. In the aftermath of Fukushima, the entire nuclear fleet was shut down and was mainly replaced by fossil generation, which now provides some ninety percent of the entire power supply.

Most liquified natural gas supply contracts in Japan are linked to the oil price, which at the time was still extremely high. The change in the energy mix increased costs to local electric power companies, which in turn then had to raise rates for consumers. Since then, the oil price has declined, which has eased the pressure on Japan to reduce its dependence on liquified natural gas imports.

Opportunities will continue to exist for additional investment in thermal capacity, especially where it can substitute for nuclear capacity. The government of Japan expects demand to increase by about twenty-one percent by 2030. Most of this load growth must be met by new baseload capacity, especially high-efficiency gas turbines. There should be significant opportunities for investment in baseload capacity, especially where broad global experience can be married with deep local insight.

The pace of learning must accelerate so that players in the new Japanese electric power market are prepared to succeed.

The government of Japan wants to increase the proportion of nuclear in the overall energy mix back up to twenty percent by 2030. This cannot readily be achieved by extending the lifetime of the existing fleet. New investment in nuclear will be needed, even though creating incentives for such investment is still politically fraught.

The nuclear sector is moving ahead with new reactor designs, including small modular reactors, which have the potential to be economically attractive, and new business models. This is another area where global experience, whether gleaned directly by Japanese companies or sourced externally through advisors, can play a key role.

Preparing for Success

One of the critical success factors needed for the design, launch, and ongoing operation of profitable retail and wholesale lines of business in the new Japanese electric power sector is experience in more-mature competitive power markets around the world. How is such experience best gained and transmitted back to the home market?

We believe the answer lies in transacting overseas; operating a power business not as an experiment but as a profit-generating enterprise; seconding staff; and internalizing the myriad policies, procedures, information systems, regulatory mechanisms,

and business habits needed to build a successful retail power business or wholesale generation company.

There is no substitute for experience. We are heartened by ongoing efforts by some Japanese companies to gain such experience in overseas power markets. But the pace of learning must accelerate in the coming years so that players in the new Japanese electric power market are prepared to succeed. PUF

Vision of Liquefied Natural Gas Hub

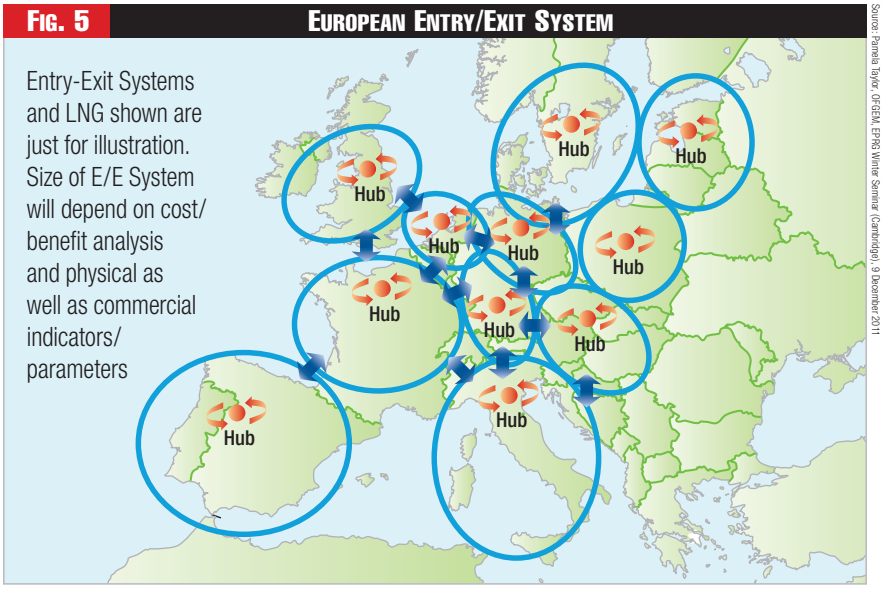
(Cont. from p. 29)

exit tariffs and a notional trading point, and specific procedures for dealing with cross-border congestion and markets for balancing gas).

This all takes place with imperatives for the individual member state regulators to do their best to coordinate, but with no particular sanction if they do not. There is no body like FERC in the EU to compel a single EU standard.

This makes connecting member-state gas markets difficult, because each country is understandably protective of its own interests. As would be the case in the U.S. if the Constitution's commerce clause did not prevent the individual states from looking out for their own interests versus those of the continental market as a whole.

FIG. 5 EUROPEAN ENTRY/EXIT SYSTEM



Source: Pamela Taylor, OFGEM, EPRG Winter Seminar (Cambridge), 9 December 2011

See Figure 5.

It shows the complexity of the EU gas regime, where the shipping of LNG inland would require the confrontation of these regulatory works in progress at the border of every member state. Rather than point-to-point contracting that facilitates LNG producers reaching the U.S. coasts, each member state creates a notional hub where gas is injected at various entry points, and taken off the system at exit points.

This model separates buyers and sellers and abstracts from physical gas flows. It requires oversight by transmission service operators in each country to ensure balance in the system.

The uncertainty and evolving nature of regulation in the EU means that U.S. LNG exporters will have difficulty reaching inland gas consumers. Regulations that would promote a competitive market for inland gas transport are essential to creating a global gas market. Current EU policies do not result in such a market.

Robust Contracting Remains Important

European regulatory policy is a work in progress. And the costs of LNG are ill-suited to spot market transactions. These two factors mean that LNG will likely remain dominated by long-term contracts for the foreseeable future. PUF

Television Drives NYC Demand in 1951

The two "big city" companies – Con Edison and Commonwealth Edison – rank No. 1 and 2 from the viewpoint of total plant investment.

In the case of Con Edison, more than half of the utility's current and expected future growth takes place in New York City, where giant new skyscrapers, increased display and entertainment lighting, as well as air conditioning and television, play a major role. Each TV set (and there are over 1,000,000 in the New York City area alone) uses an average of 225 kilowatt hours annually, or one-fifth the average annual use by residential customers in New York.

PUF, May 10, 1951