

1. POWER PLANTS AND POWER TRANSMISSION SYSTEM
2. PRODUCTION OF CITY GAS

1. Power Plants and Power Transmission System

The number of power plants in Japan as of March 31, 1988 was 2,859 with a maximum power generating capacity of 179,110,000 kW. There were 1,646 hydro-electric power stations with a maximum output of 36,390,000 kW. Only 6 of these stations, however, had a generating capacity exceeding 1,000,000 kW, including the 1,280,000 kW maximum output generated by the Sin Takase Gawa Hydro-electric Power Plant on the Sinano Gawa river system. Thermal power plants, including geothermal power plants, totaled 1,197 and generated 114,680,000 kW at maximum output. There were 16 plants which were able to generate more than 2,000,000 kW, including 4,400,000 kW generated by the Kasima Thermal Power Plant at maximum output. There were 8 geothermal power plants which generated 215,000 kW at maximum output, including the Hattyojbara Geothermal Power Plant with a generation capacity of 55,000 kW.

The total number of nuclear power plants was 16, generating a maximum output of 28,050,000 kW. The largest, which generates 4,700,000 kW at maximum output, is the Hukushima Daiiti Nuclear Power Plant.

Due to experience gained during the two oil crises in the 1970s, policies oriented away from dependence on oil and towards the diversification of energy resources have been promoted. As a result, the rate of nuclear power generation has increased, while thermal power generation using LNG and coal has also increased.

The total electric output for the year from April 1987 to March 1988 was 719,100

million kWh. The percentages of hydro-electric power generation, thermal power generation (including geothermal generation) and nuclear power generation were 11% (18.1% in 1975), 63% (76.7% in 1975) and 26% (5.3% in 1975), respectively.

The total length of power transmission lines (overhead electric transmission lines), owned by 9 electric power companies and linking power generation plants to consumption areas, was 74,000 km. Power transmission lines with 110-187 kV totaled 16,000 km and those with 187 kV or more totaled 15,000 km.

The total number of power generation plants owned by 9 electric power companies was 4,754. The total installed capacity of power generation plants was 490 million kVA, of which the greatest was the 600 kVA generated by the Sin Koga Transforming Substation.

[Salient Points of the Legend and Map Compilation]

Power generation in Japan is conducted by general electric enterprises (9 electric power companies and the Okinawa Electric Power Company), which supply electricity to households with in a fixed supply area, and wholesale of electric enterprises (56 enterprises such as Electricity Resources Development, Nihon Nuclear Power Generation, officially-managed enterprises, etc.), and those enterprises which produce power to be utilized by their own factories.

This map shows the following as of December 31, 1987 :

1. Power plants which have a power generating capacity of 5,000 kW or more.
2. Transforming substations which have an installed capacity of power generation 1,000,000 kVA or more.
3. Transmission lines with a voltage of 100 kV or more.

estimated output capacity per day was 1,322,300 million kcal/m³, with 63.3% of this being produced by installations in operation.

The total city gas output by general gas enterprises as of December 31, 1985 was 107,996,500 million kcal, with 16,518,600 million kcal being supplied by other enterprises. Classified by raw materials, petroleum-based gas accounted for 25.1% ; for example, liquefied petroleum gas (18.7%), naphtha gas (3.7%), etc. Nonpetroleum based gas accounted for 74.9% ; for example, liquefied natural gas (LNG 59.1%), natural gas (6.6%), coal gas (8.1%), etc. A change to liquefied natural gas has been occurring since the oil crises, centered around the large-scale gas enterprises.

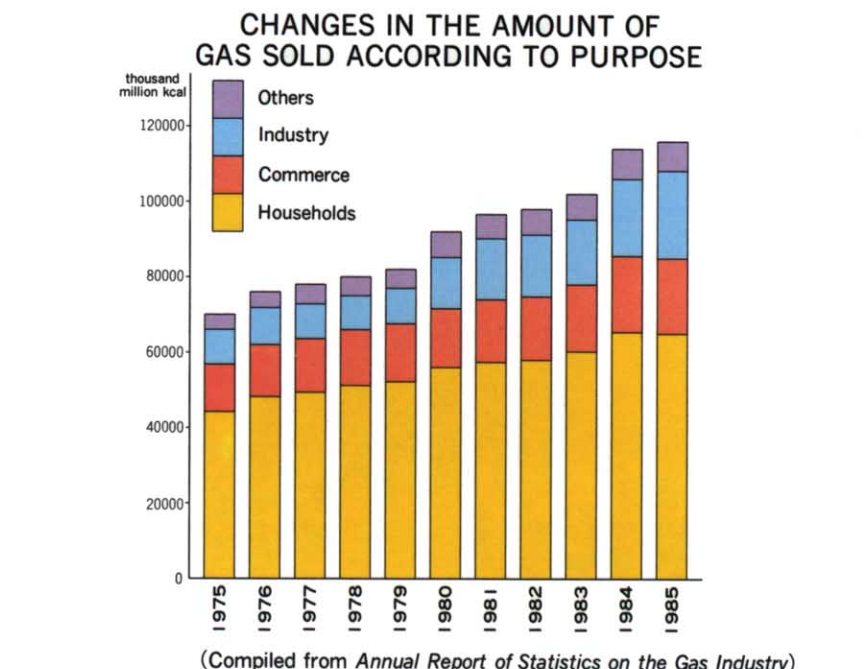
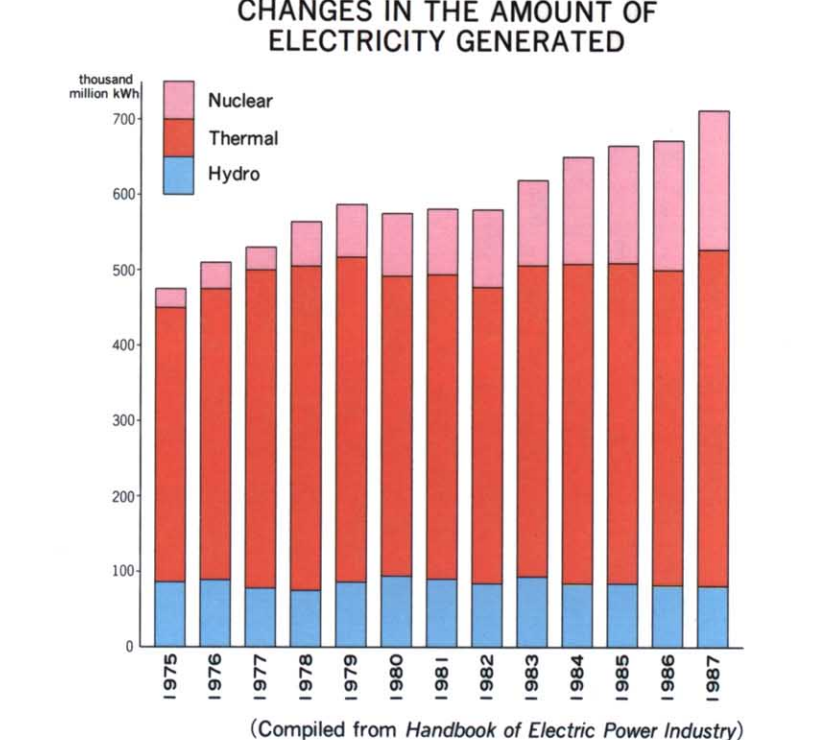
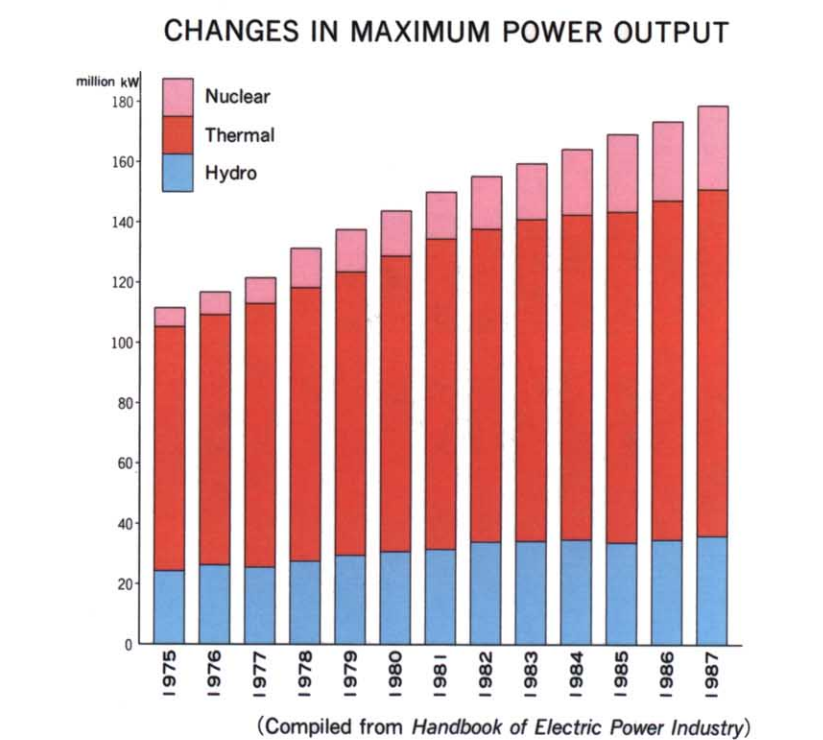
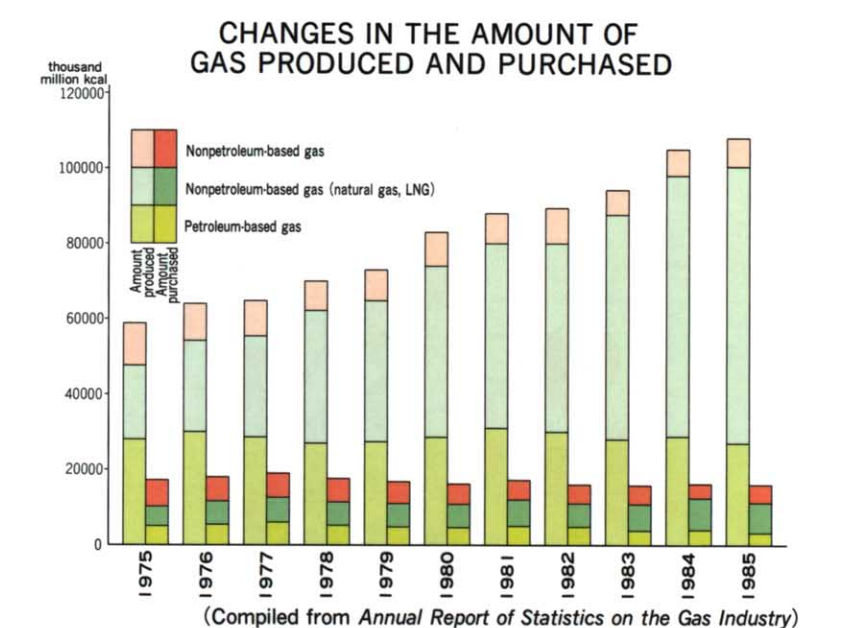
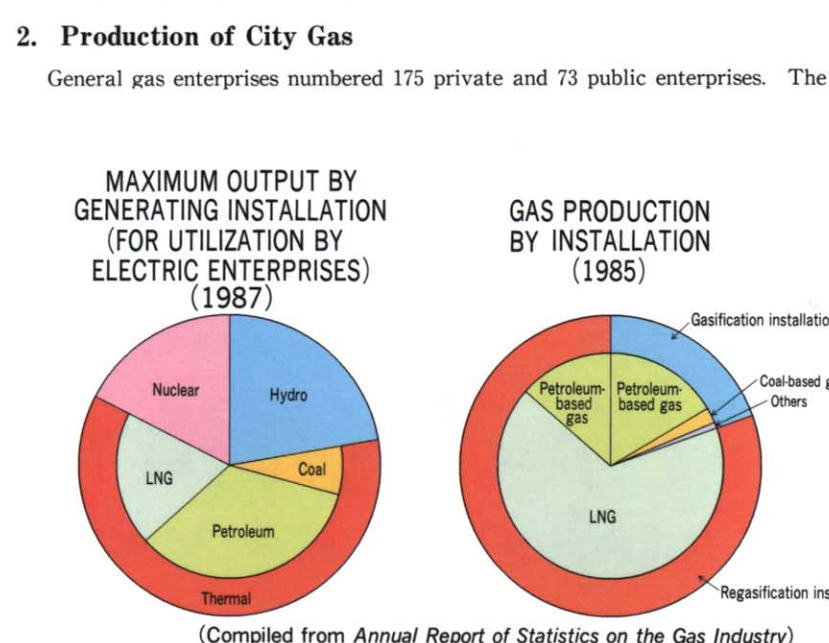
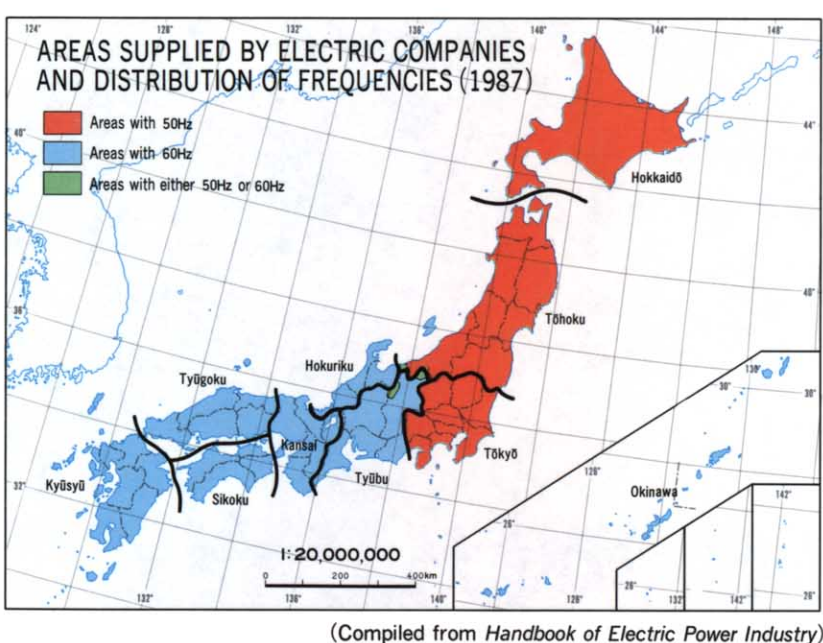
The storing capacity of gas was 7,310,000 m³ per 1,011 gas holders. The total length of gas pipes was 161,760 km.

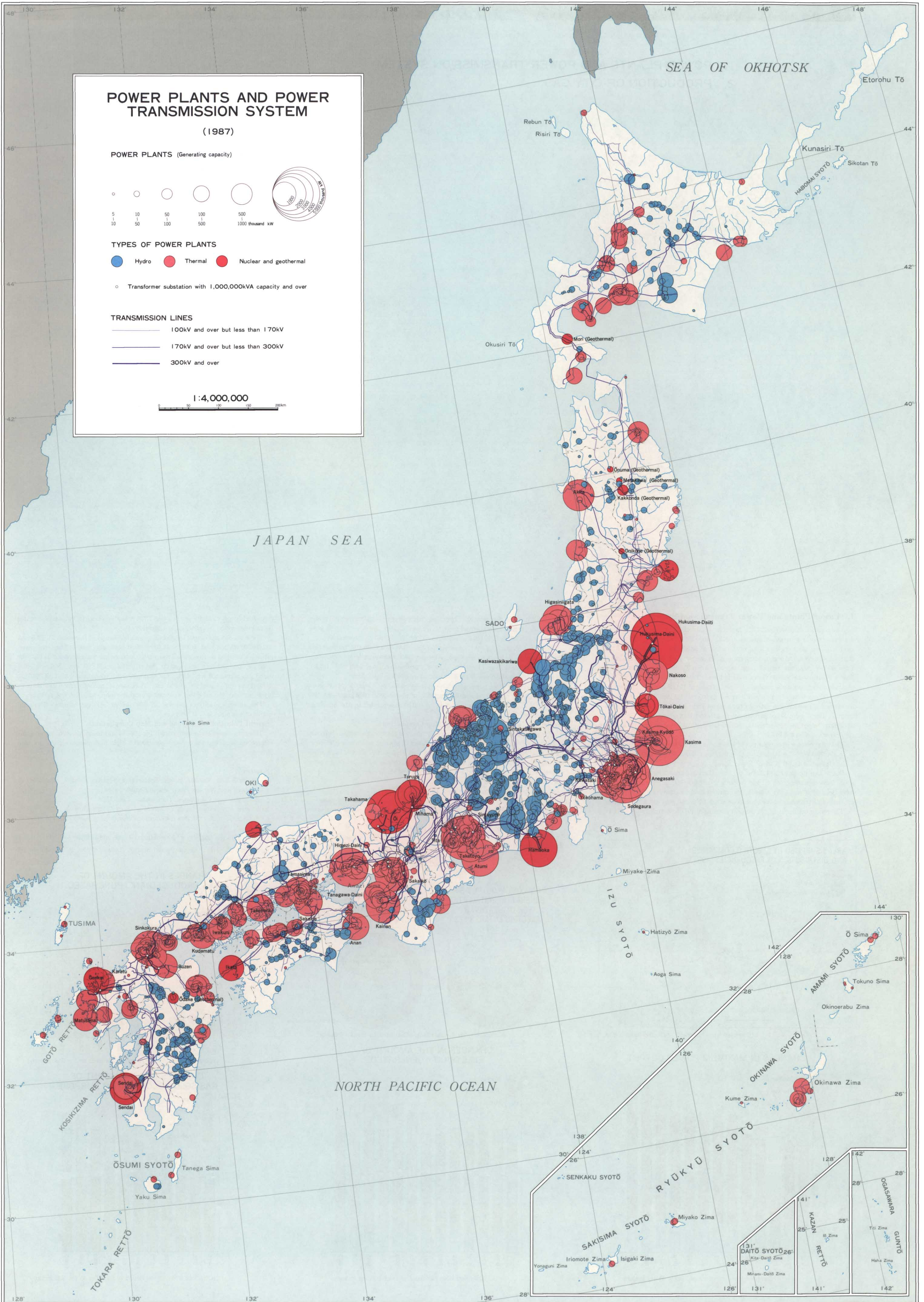
[Salient Points of the Legend and Map Compilation]

This map shows the annual output for 1985 by gas installations of general gas enterprises, including the amount purchased. Main high pressure pipes are also indicated.

[Sources]

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2. Electric Power Companies, *Transmission Line Maps*
3. Electric Power Companies, *Handbook of Power Plant Facilities*
4. Federation of Electric Power Companies, *Handbook of Electric Power Industry*, 1988
5. Data from the Ministry of International Trade and Industry
6. Agency of Natural Resources and Energy, *Annual Report of statistics on the Gas Industry*, 1985

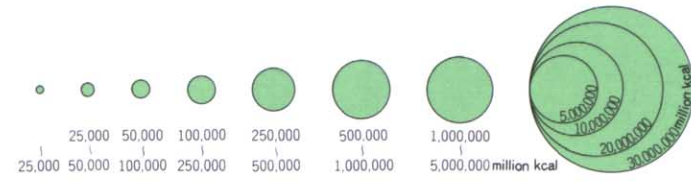




PRODUCTION OF CITY GAS

(1985)

PRODUCTION PER ANNUM (Includes purchases)



- Natural gas pipelines
- High pressure gas pipelines

Total production: 124,500,000 millions kcal

1 : 4,000,000

