上海市之電荒問題

上海電力公司述

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上海電荒之嚴重，凡屬市民無不深知，不論工商界及機關住戶等，皆知電力缺乏，遵守節約，但節約用電，今方開始小試，在此三年內或三年以上，尚將逐步推進，洩人不察，以為目前缺電恐荒，乃係暫時性質，本市情況如能安定後，供電問題自可迎刃而解，但事實上電荒問題，至為嚴重，倘不設法解決，則工商業斷難發展，而經濟基礎不能確立鞏固。

現在本市所缺電量約六萬瓩，倘能如數供應，即可救濟九萬失業工人，依照本年一月份指數計算，每月當付工資約三百九十億元，即此九萬工人每月在各廠能生產棉紗約值二千一百十億元之譜。

查戰前本市共有電量二十六萬三千瓩，戰時因華商，閘北，浦東，三公司之發電機完全被毀，及法商電氣公司之機件亦遭相當損壞，而上海電力公司之發電廠，因受戰事損失，減少供電百分之二十五，計四萬七千五百瓩，（經）在戰事後時期，全市僅能供電十四萬七千瓩，其中十三萬六千瓩均為上海電力公司所供給，因廠中機件失修，實際上祇可供給十二萬三千瓩。

上海電力公司在勝利後收回電廠，即行修理機件，添置料具，所受損失，已屬不貲，而電價低廉，尚不足補償燃料之所費，且上海電力公司在法律上固無供給上海全市用電之義務，但事實上則又補助閘北，華商，浦東，及法商四公司達二萬七千瓩之譜。去年六月因應全市用電之需要，上海市府當局特設供電審核委員會，專司研究供電問題，其結果即實施節電計劃，其辦法將用電最多之各紗廠，每週輪流停電，及停止新廠接電，以期不致超出最高負荷，查目下各廠商申請供電者，計達四萬八千瓩，又在恢復中之工廠即將申請用電者計達一萬二千瓩，共計缺電六萬瓩。

照目下情形，一面節制用電，一面盡量供電，但統計本市各廠每日當缺電力二萬至三萬瓩，如因修理鍋爐而電量減低，甚或機件發生意外不能照常發電，則所有工廠必致停工而影響所及，尤為可慮。

以戰後與戰前比，上海電力公司之供電雖減少四萬七千瓩，而電廠方面已萬分努力，盡量供電，以應各方迫切需要，現自機器修復後，上海電力公司可增二萬二千五百瓩，閘北八千瓩，其他公司五千瓩，共計三萬五千瓩，然雖能增加此數，而各廠商之申請供電六萬瓩，仍無法供應。

現在計劃，擬自本年七月起，全市增加電力二萬三千瓩，年底再增一萬六千瓩，明年再增四萬三千瓩，共擬增八萬二千瓩，其中四萬瓩為上海電力公司增加之設備，但因養護機器關係，至少又需減少二萬五千瓩，故其可靠之發電量，仍感不足應付目前所需要之六萬瓩。

本市缺電善後問題，現在暫置不論，至電荒問題，不獨本市為然，實則今日已成全世界之嚴重問題，因英美等國現尚不克趕造發電機器，各廠所接定單，須俟三四年後方能交貨，上海如即定貨，亦需至民國四十年始可到貨，而預計在民國四十年時，本市缺電約十九萬瓩，今日不可不預為之計也。

查民國卅四年十月間，上海電力公司曾與主管當局商討供電問題，一面並與閘北，南市，浦東，三公司共同研究。當經擬定善後補救辦法，籌設聯合發電總廠，組成全市整個電網計劃，劃一電力，加強管理，俾電荒問題得以統盤解決。

卅五年十二月份本市各公司所售電量如下

上海電力公司	五六，六三八，〇〇〇度
閘北電氣公司	六，七三一，〇〇〇度
法商電氣公司	六，〇四八，〇〇〇度
華商電氣公司	三，三〇六，〇〇〇度
浦東電氣公司	一，七四三，〇〇〇度
總計共售電量	七四，四六六，〇〇〇度

去年十二月份全市共售電量七四，四六九，一九九，〇〇〇度，其中百分之九十三為上海電力公司所供給，而上海電力公司須以下列外匯購辦燃料：

用於煤斤者計	美金一四三，五〇〇元
用於燃油者計	美金三五七，七〇〇元
共計	美金五〇一，二〇〇元

上海電力公司值此經濟狀態嚴重之際，又須給付外匯採購燃料，尤為電荒問題中之重要事件也。

SHANGHAI'S ELECTRIC POWER SHORTAGE

The public is generally aware that there is a power shortage in Shanghai because almost everyone has been affected by it. Homes, shops, offices and factories have felt the effect of restrictions on electric usage to one extent or another, and have accepted them in good spirit. But the public in general does not know that the restrictions are only a slight foretaste of the drastic restrictions which, step by step, must be imposed during the coming three years or longer. There seems to have developed a widespread impression that the present shortage of power is only a momentary condition that will soon end, and that, while it may be a nuisance for the time being, it will solve itself as and when the city gets back on its feet.

What are the facts of the matter?

The power shortage problem is not, in fact, on the way to solution. It is becoming worse. It ranks second to none amongst the major problems which must be overcome before enduring stability can be restored in the economy of the city. It must be solved before commerce and industry will be in position to develop and expand.

How may of us realize

that Shanghai's power shortage now amounts to 60,000 kilowatts; and

that these 60,000 kilowatts, if available, would give work to some 90,000 factory workers who are now unemployed; and

that these 90,000 workers would take home wages, based on January 1947 wage levels, of some C$39,000,000,000 per month; and

that these 90,000 workers would produce cotton yarn or other consumable products to a value of some C$211,000,000,000 each month, equivalent to US$17,600,000.

We need to distinguish clearly in our minds between the fundamental problem of finding an enduring solution of this grave situation and the more passing problem of restoring capacity lost by Shanghai's electric utilities during the war.

Much has been accomplished in restoring war losses and damage. Considerable publicity,—well deserved,—has been given these accomplishments. But perhaps it is this progress that has become confused with the more basic issue and has fostered the erroneous impression that the fundamental power shortage is on the road to correction and that we shall soon have all the electric power we want.

Let us look back for a moment over the progress that has been made in restoring plant and equipment lost or damaged during the war. It will be remembered that the pre-war combined installed capacity of the power plants serving Greater Shanghai was 263,000 kilowatts. When the plants were recovered after the war, it was found that the generating capacity of the Chapei, Nantao and Pootung companies had been completely wiped out, the capacity of the French company greatly impaired, and that Shanghai Power Company had lost 47,500 kilowatts, or about 25%, of its former capacity.

Thus the combined post-war capacity of these plants had shrunk to about 147,000 kilowatts, of which 136,000 kilowatts was represented by the surviving equipment of Shanghai Power Company. Of the latter, however, only 123,000 kilowatts was effective because of the badly deteriorated condition of the equipment.

Despite the grave financial situation in which the electric companies found themselves because of grossly inadequate rates, spiralling costs of operation and lack of cash, they unhesitatingly tackled the problem of rehabilitation. Thus Shanghai Power Company, immediately upon recovering its properties, initiated a program of repairs and of purchase of replacement equipment, notwithstanding the fact that the electricity rates then in effect were insufficient to cover the cost of fuel alone. What is more, Shanghai Power Company, although it had no legal obligation to supply power for use outside its own franchise area, undertook to supply the three Chinese companies and the French company to the total extent of 27,000 kilowatts of demand.

By June 1946 the demand for electric services throughout the city had overtaken the available supplies and the Municipal authorities appointed an Electricity Supply Regulating Committee to deal with the many questions which this situation

presented. Since June 1946 a number of measures have been adopted to minimize as far as possible the effect on all consumers of the shortage of capacity. Large users,—in particular the cotton mills,—have cooperated in wholehearted fashion by shifting their stopping hours so as to coincide with the time of peak load, and by closing down entirely on particular days on a rotating schedule. New power connections were,—and still are,—refused except in special circumstances involving national interests and essential services. Applications for power aggregating about 48,000 kilowatts have already had to be indefinitely deferred. Another 12,000 kilowatts of load from rehabilitated factories is awaiting supply. The capacity shortage thus amounts to 60,000 kilowatts today.

Furthermore, despite these restrictive measures and with all available generating equipment operating full out, it has been necessary to suppress 20,000 to 30,000 kilowatts of industrial load each week-day during recent months. Normal maintenance schedules for boilers have not been observed for if they had, even greater amounts of load would have had to be dropped. As it is, when breakdowns occur,—and breakdowns are inevitable when there is a slackening of maintenance,—as much as 46,000 kilowatts of mill load have had to be temporarily dropped at great expense to industry because labor becomes idle without power.

The foregoing may have given the impression that Shanghai's electricity supply is at a pretty low level. To correct such an impression and to put the situation into realistic perspective, let it be noted that in the month of December 1946 Shanghai Power Company supplied more electric energy than the average monthly amount of energy supplied during the Company's previous record year of 1939. This performance is rendered all the more notable by the fact that the Company had 47,500 kilowatts less of equipment with which to produce energy in 1946 than it had in 1939. It is a remarkable compliment to the staff responsible for the operation of the Riverside Generating Station,—and more especially so in the light of the labor problems which have hampered both maintenance work and operations. It is also a tribute to the effectiveness of the joint efforts of the Bureau of Public Utilities, the electric utility companies and large power consumers to spread industrial load so as to obtain

the maximum utilization of all available generating equipment.

The capacity losses of Shanghai's electric utilities have been restored to the extent of about 35,000 kilowatts, of which Shanghai Power Company has been responsible for 22,500 kilowatts as the result of recently placing a large war-damaged unit back in operation. The Chapei company is now carrying about 8,000 kilowatts of load. The other companies have restored approximately 5,000 kilowatts of capacity. In spite of these accomplishments, the shortage of capacity is still 60,000 kilowatts.

Other major restoration projects are still to be completed. These will provide Shanghai's electric utilities with about 23,000 kilowatts of additional capacity by July 1947; a further 16,000 kilowatts by the end of 1947; and, in completion of the rehabilitation program, about 43,000 kilowatts additional capacity during 1948. These prospective additions to capacity total about 82,000 kilowatts, for 40,000 kilowatts of which Shanghai Power Company will be responsible. Even if available today, these additions would be insufficient to overcome the present power shortage of 60,000 kilowatts because they cannot be construed as "net additions." Every generator and every boiler is normally shut down at regular intervals for overhaul. However, as already stated, all equipment is now running full out and maintenance schedules are not being observed. If this practice were continued too long, all equipment would eventually break down. It is imperative that adequate maintenance schedules be resumed, and it must, therefore, be assumed that at least 25,000 kilowatts of this additional capacity will be off load at all times for overhaul.

Let us now leave the subject of rehabilitation and turn our attention back to the basic problem of Shanghai's power shortage.

How many of us realize that the existing shortage, which is already retarding the economic revival of the city, will worsen before it can improve because:

Manufacturers of generating equipment in the United States, Canada and England are overwhelmed with orders as the result of power shortages throughout the world. In the United States, for example,

power consumption now exceeds prior records by 18%. Manufacturers are unable to quote deliveries under three to four years after orders are placed.

If ordered today, Shanghai's requirements of generating equipment could not be placed into operation before late 1951.

According to conservative forecasts, the city's power shortage will have increased to about 190,000 kilowatts by 1951. In other words, the power shortage in 1951 will be greater than the total installed capacity at the present time.

The foregoing reviews the power problem of Shanghai. It recounts all that has been done to meet the present needs. But what of the future? What steps can be taken to meet the tremendous shortage which during the next three years will throttle the economic development of Shanghai?

Since October 1945 Shanghai Power Company has constantly pressed this question of power supply with the authorities. It has consulted with the Chapei, Nantao and Pootung companies and has secured their endorsement and support to the directing of efforts toward the establishment of a jointly-owned generating station. Joint ownership in one large plant would eliminate the waste and costs inherent in the operation of a number of smaller, isolated plants and would accelerate relief of the present,—and the inevitably greater and impending,—power famine. Without some agreement between the electric utility companies, it is impossible to view the Shanghai problem as a whole. To view it in the perspective of several franchised areas necessitates taking for granted that each company must protect itself without regard to others inasmuch as one company cannot be expected to make heavy capital investment in the purchase of machines to generate power supply for another area.

KILOWATT-HOURS SOLD BY SHANGHAI'S ELECTRIC UTILITY COMPANIES WITHIN THEIR OWN FRANCHISE AREAS DURING THE MONTH OF DECEMBER 1946

	Kilowatt-hours sold
Shanghai Power Company (including Western District Power Company)	56,638,000
Chapei Company	6,731,000
French Company	6,048,000
Nantao Company	3,306,000
Pootung Company	1,743,000
	74,466,000

Of the total sales shown above, 69,199,000 kilowatt-hours, or 93%, were generated by Shanghai Power Company.

To supply this energy, Shanghai Power Company required the following amounts of foreign exchange with respect to fuel only:

For freight on coal	US$143,500
For fuel oil	357,700
Total	US$501,200

In addition to arousing greater public consciousness of the power shortage problem, it is important,—especially in these times of financial stringency,—that the dependency of Shanghai's power supply upon foreign exchange becomes a matter of widespread knowledge and concern.

Shanghai's Electric Power Shortage

SHANGHAI POWER COMPANY

March 1947