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ENERGY EFFICIENCY INDICATORS FOR SOUTH AFRICA

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EXECUTIVE SUMMARY

This report discusses what energy indicators are required for an adequate analysis of energy trends for policy purposes. Whilst it is shown that the forecasting of energy demand is not possible *ab initio*, it is demonstrated that there is a relationship between economic activity and energy demand, which allows the construction of scenarios of energy demand for various economic growth rates.

It is shown that the concept of energy intensity, which is the ratio of energy demand to economic activity (GDP), is a good parameter for studying energy demand, but it must be applied at the disaggregated level in order for it to be meaningful. The overall energy intensity of total energy demand in the final sector is of interest, but is of limited application to scenario construction.

It is shown that the concept of energy elasticity is of limited application, especially in the case of a developing country and under adverse economic conditions, since the elasticity is unstable under conditions of low economic growth rate.

It is proposed that the energy intensities at the disaggregated levels be constructed in order to be able to monitor and forecast energy trends. Besides the traditional disaggregation into industrial, transport, agriculture and commercial sectors, it is proposed that further disaggregation of the industrial sector be carried out into:

Iron and steel
Chemical
Mining - gold
Mining - other
Construction
Manufacturing
Pulp and paper
Wood and wood products
Other

In addition, transport should be sub-divided into:

road,
rail, and
air.

Whilst the energy intensity values for the various economic sectors are the basis of energy analysis, the energy intensity, even within one sector, will change with time due to technological advances and due to more efficient methods of energy utilisation being adopted. It is therefore necessary to have a number of secondary indicators to note trends in energy efficiencies. Thus, in road transport it is necessary to follow trends in vehicle ownership and distance travelled. In addition, it is necessary to know what the average fuel efficiency of the present car pool is and what the average fuel efficiency is of vehicles entering the vehicle pool.

In view of South Africa's relatively large component of traditional fuel in the final demand sector, it is necessary to be able to monitor trends in the changes which are taking place in the move from traditional and commercial energy. Thus the rate of electrification of households, and the level of access of people in the developing sector to coal and gas, should be followed.

With the possibility of importing energy to South Africa from the surrounding countries, it is also necessary to derive an index showing the level of energy import reliance in the country.

In order for adequate indicators to be constructed and maintained, additional energy statistics will need to be collected and the secrecy surrounding oil utilization will need to be relaxed. At present it is possible to construct indices using the IEA statistics for oil use and for SASOL production, but in the future reliable data will need to be produced.

1. INTRODUCTION

The energy disruptions of the 1970's highlighted the need for a better method of forecasting energy needs and the effect of any energy disruptions, in either price or supply, on the ability of a nation to meet its energy requirements. Forecasting, with its implications of an exact target, and hence on the penalties of not meeting the "target", caused a swing over to "scenario modelling" which was seen originally as simply forecasting with a range of possible results. It is now accepted that the correct use of the scenario process looks at a consistent set of assumptions to arrive at an estimate of the final product under a matrix of assumptions.

The need to be able to predict the path of any change resulted in a number of indicators being set up which could be used to predict future movements. However, for the predicative indicators to be meaningful in the context of what they will be used for, their formation must be well thought out, and it must be understood that indicators may be useful but they do not explain why something happened or what the energy path will be in the future. This is the role of the analyst who can use indicators as an assistance, but there are so many factors underlying changes in energy use that an indicator cannot be used on its own.

The role of an indicator is to assist in the understanding of the role of individual factors in energy usage patterns in the past, and to assist in the compilation of an energy balance for the future. The accent is therefore on energy balances, either at the primary or net level.

Scenario-building can be achieved in either the "bottom-up" or "top-down" mode. By top-down is meant the assessment of energy needs based on some global figure, such as the national economy, and then the disaggregation of it into the various components of interest. The "bottom-up" approach consists of an analysis of the various energy uses at the final demand level, and specifically in the separated sectors of the final demand, and to aggregate the individual components to arrive at an overall energy figure, usually divided into the various energy carriers.

Whilst the top-down approach is often used as a simple means of reaching a forecast, usually where the disaggregated data are not available, it is the bottom-up approach which mimics the real world. In the industrial or manufacturing sectors of the economy economic forces cause an expansion of output which requires an increase in consumption of factors of production which include labour, capital, and resources, including energy. Thus an increase in economy causes an increase in production in the various parts of the production process, increasing the need for tin cans, cars, etc., which in turn requires increases in steel plate, plastics, etc.

If the economic mix remained constant and the technology of the manufacturing process also remained constant, then an increase in the economy of the country would produce an identical increase in energy demand. However, both the economic mix and technology are forever changing, and it is the role of the indicators used by the analyst to assist in unravelling the underlying movements in energy usage and to predict the future movement.

It is therefore obvious that the underlying force causing a change in the energy usage, both as to quantity and in the mix of the various energy forms, is a change in the economy. Again the change in the economy has to be specified in terms of the absolute quantity and in the mix, i.e. the proportions of the economy in agriculture, manufacturing, services, etc., or better still in the changes of mix at a lower level of disaggregation, i.e. the change in the proportion of economic activity in the food-processing, leather goods manufacture, clothing industries, etc. It is in this latter level of detail that most of the statistics break down due to inadequate reporting from the various economic sectors.

The ideal bottom-up approach in the understanding of the energy utilization process therefore involves a knowledge of the amount of energy in the various forms such as oil, coal, electricity and gas, required to produce a given amount of output, e.g. number of shoes, tons of acetylene, litres of beer. If the technology does not change, then a given change in the economy, and in each of the lowest divisions of each economic sector, will produce a calculable change in energy demand. Forecasting for future energy needs is however complicated, since even if the change in each smallest component of the economy could be forecast, the energy quantity and energy mix change due to modifications in technology and due to the effect of fuel substitution under the influence of price, shortage, or even a perception of a future shortage.

Once the quantities of the various energy forms are derived they can be translated from the final demand sector to the primary energy sector by making estimates of the energy conversion efficiencies and transmission losses.

Since the individual production levels cannot usually be determined at the disaggregated level, the **value** of production at some aggregated economic level is used as a proxy for production volumes.

The role of energy indicators in this process is in determining relationships between the various factors underlying energy utilization and the net energy usage. In setting up an energy indicator the following criteria have to be considered:[1]

Is it to be used solely in tracking energy demand?

Is it to be used to determine changes in the efficiency of energy usage?

Is fuel substitution an important factor?

What level of disaggregation is required?

In addition, there are various factors such as energy security, environmental degradation, import reliance, etc., all of which dictate the choice of appropriate energy indices.

In many cases where energy indicators are used the absolute value of the indicator is unimportant since it is the trends that are of importance. Thus ease of obtaining the data is often more important than the absolute value. Also, the consistency of data gathering and use is important in trend analysis.

In South Africa adequate energy planning has not been possible in the public sector because of the lack of adequate reliable information on the usage of energy in the various sectors. This has been due to the inadequate collection and dissemination of data by Central Statistics and has been compounded seriously by the Petroleum Act which has made it illegal to publish any data relating to the import and supply of petroleum products. This Act has stifled any analysis of the development of the energy industry in South Africa and comparison with other countries. Some work was carried out by the Department of Planning before the Act came into force, but it was not at an adequate level of disaggregation. Statistics published recently by the National Energy Council were also at an inadequate dissagregation level and also did not include any information on petroleum products.

Since little work has been carried out in this area in South Africa there was little pressure on the production of adequate energy indices which could be used for analysis and planning. The project described in this report was started therefore to determine what energy indicators would be required for the country once the secrecy surrounding the use of petroleum was relaxed. It was also required that it be determined how the collection of data should be arranged.

It was recognised that there is a need for efficient energy management and for energy conservation in the various sectors of the economy and especially in the industrial sector. In order to be able to judge the efficacy of any conservation measure, it is important to follow trends which are best carried out by monitoring the particular energy index of interest

2. ENERGY INDICATORS

2.1 Literature survey

A literature survey was undertaken on the topic "energy indicators" using the international Dialog search facility, a search of the holdings of the National Energy Council, and a database search of the information section of the Energy Research Institute. Information was also sought from individuals and organizations such as the oil industry. The Dialog search was the most comprehensive, though not all the information was available in a reasonable time in South Africa. For information the Dialog search print-out is included in the Appendix to this report.

Most of the references obtained from these searches deal with the general concept of model building and forecasting since it is in this area that energy economics are generally used. Most of the references deal with the problems of using energy indicators. It is apparent that one of the main problems has been the use of energy indicators for econometric purposes at a level of aggregation that could be handled with the type of model available to economists. It is also apparent that much of the work has been carried out by economists with only a peripheral understanding of the complexities of energy supply and demand, and usually with little understanding of the effect on energy demand of technical changes in the various industries. For instance, Hankinson and Rhys[10] have shown that simple econometric models that describe industrial electricity sales as a function of total industrial output are unsatisfactory and that there is a need for disaggregation.

The main body of research has been with the difficulty of applying energy elasticities and energy coefficients to modelling work. Proops[11] has determined elasticities by a number of methods and found that contradictory results are obtained by the various methods. Nguyen[12] has found that elasticities can be consistent and that long-term elasticities are asymptotic to 1. However, most authors[13-24] caution on the use of elasticity for medium and long-term analysis. Kouris, in an article titled "Elasticities - science or fiction?"[21], summarizes the debate on energy elasticities by saying that the problem lies in the specification of the model to be used for forecasting and that there is a misconception that elasticities can be determined scientifically and uniquely by economic modelling. Schipper and Ketoff[25] point out that there is a need for a rigorous bottom-up approach to energy modelling, though in their case they were referring to the residential sector only.

The use of elasticities is mainly in the province of the energy analyst, and elasticities are often used by academic analysts, whilst the energy indicators published by countries and organizations tend to be more practical. The USA CIA organization, for instance, publishes statistics which include oil volumes and prices. The USA Energy Information Administration publishes regular statistics[29,30] which give total energy amounts and amounts of individual components, e.g. gasoline, Avgas, residual fuel oil, etc., but which also give energy intensities subdivided into disaggregated sectors. Thus the percent change in the energy intensity is given for food products, textile products, paper, chemicals, rubber products, etc. They also quote energy consumption per household divided by type of house, geographic location, etc. Included in the statistics are indicators such as national energy consumption per unit of GDP, industrial intensity, transportation consumption per capita, vehicles per person, gasoline prices, new car fuel efficiencies, energy self-sufficiency, etc.

One of the more thorough publications of energy indicators is that of the Taiwanese Ministry of Economic Affairs[4] which gives energy intensity and energy elasticity, as well as an energy security index, per capita consumption, domestic energy price index, etc. They analyze energy security in terms of the reliance on imports of any one energy form, of reliance on concentration of electricity generation, on reliance of oil imports from a specific geographical region, etc.

The UK publishes a comprehensive digest of energy statistics on an annual basis[42]. Besides giving, in very great detail, the energy statistics in terms of original units of measurement and in thermal units, the publication also has a section giving long-term trends in energy usage and in allied statistics. Thus it compares expenditure on energy, in an average household, with expenditure on food, housing, gasoline, etc. It also quotes energy prices for the various fuels and the energy intensity for primary energy utilization.

The Organization of Petroleum Exporting Countries (OPEC) produces a regular series of energy statistics and trends[27,31]. The trend indicators for various OECD countries include: energy and oil intensities, energy intensity by sector, elasticities of energy demand, income and price effects on oil consumption, etc.

2.2 Types of indicator

Most of the indices currently in use describe energy usage in terms of "intensity" rather than "efficiency" because efficiency is very hard to describe.[1] These intensity indices are used as a proxy to efficiency, but they are applicable, in this context, over small differences only. Thus a change in an index may point to a change in the underlying sectorial mix rather than a change in efficiency of energy utilization.

The main subdivision of energy indicators is into "primary" and "net energy" indices. Primary indicators are a measure of the amount of primary energy used in a country or an industry and include all the conversion and transmission losses, or inefficiencies, within the indicator. Net energy indices are concerned with energy usage at the level of final demand. The two types are related by the efficiency of energy conversion, especially in power stations and refineries, and by the efficiency of transmission. Both of these efficiencies are important in their own right since changes in generation efficiency, for instance, will change the amount of primary energy used, even if final demand does not change. The concept of transmission efficiency is of particular importance in developing countries where efficiencies can be low because of poor management of transmission systems or due to unauthorized abstraction of energy.

Most of the indices have been developed for industrialized countries, where traditional energy forms, such as wood and charcoal, play a negligible role in the energy scene. However, for developing countries the role of traditional energy must somehow be included in the total energy picture and an index will need to be developed to express this. Traditional energy is used at a very low efficiency and, if the quantities of traditional fuel were added directly to commercial energy at the final demand level, then the energy usage would be very much inflated. Ang[2] allows for this by expressing the value of traditional energy by an equivalent "Petroleum Replacement Value" (PRV) which is a measure of the amount of petroleum-based fuel which would be used if the traditional energy, and the relevant appliances, were replaced by the use of petroleum fuel in commercial appliances.

With the growing concern with the environment there is a need for indices expressing trends in environmental degradation relative to energy production, and also possibly expressing the effect of environmental impact of energy production compared with the effect of other industrial processes.

2.3 Indices available

The analysis of fluctuations in the energy market following the upsets of the 1970's has spawned a large number of indices which attempt to provide logically consistent methodologies for energy forecasting. A number of countries and organizations have adopted their own indicators, often for very specific reasons. For instance, Taiwan uses an indicator which expresses energy security of supply and which is a function of imported energy, oil consumption, and oil import dependence on the Middle East.

2.3.1 Total energy:

The figure for total energy consumption on a year-by-year basis is, by itself, not very useful since the value is made up of a number of components such as efficiency, energy mix and end-use, and is affected by fuel substitution and fuel price. It can, however, be expressed on a per capita basis in order to allow comparison with different countries. The per capita value is a function of the wealth of a country, and this index is often used in graphs showing the relative position of various countries. In these graphs the energy per capita is plotted against the GDP (or GNP) per capita. Because of the large differences in the per capita wealth and energy use, the graphs are plotted on a log-log basis.

Traditional energy in the developing countries is a necessary component that has to be taken into account in determining future energy demands. It is therefore necessary to produce an index which can be used in trend analysis of the role of traditional energy. Care must be taken, as described above, that traditional energy is not compared with commercial energy forms. Thus a move from traditional energy to commercial energy would be associated with an increased efficiency in the use of fuel. It is possibly more useful to express the amount of traditional energy on a comparable efficiency basis[(2)] so that substitution of traditional energy by commercial energy can be kept in context and not be inflated by the very large inefficiencies in the use of traditional energy.

2.3.2 Energy intensity:

The most common energy consumption index is the relationship between total energy consumption and real gross domestic product. This index is more meaningful if it is expressed on a sectorial basis rather than on a country basis. If used on a sectorial basis, it is more realistic to base the energy consumption on a final demand basis rather than on a primary energy basis since a sector of the economy cannot be involved in the inefficiencies involved in generation or delivery to the sector. Such an indicator is therefore a measure of the efficiency of energy use in the sector, subject to the comments made above concerning the reliability of these indices as measures of efficiency.

The question arises as to which measure of the wealth of the country is applicable. The Gross Domestic Product (GDP) of a country can be defined as the market value of all final goods and services which are produced within the boundaries of a country. The Gross National Product (GNP), on the other hand, represents the value of production which accrues to permanent residents of the country and thus does not include payments accruing to other countries, or to salaries earned by permanent residents outside the country. Since the energy consumed goes into the making of any goods or services, no matter what the final destination of the profits, then the GDP is the more appropriate. In South Africa the ratio of GDP to GNP is approximately 1,06 and has risen from 1,04 in 1969. Thus for South Africa the difference in using GNP instead of GDP is small. However, for other countries the difference could be much greater. For instance, the ratio of GDP to GNP for Lesotho is 0,6.

Indices comparing the energy value of primary, or net, energy with the monetary value of the goods and services produced are termed energy intensities. Since the denominator and numerator each have their own units of measure, the indicator is unit-specific and the units used have to be indicated. Any energy units can be used, though the international preference is for units of "tons of oil equivalent" (TOE). Two forms of energy intensity figures are available depending on whether the current monetary value is used or whether the deflated value is used. There may be some discussion on which monetary deflator is to be used. In South Africa, over the longer term, there is little difference between the GDP deflator, the Production Price Index or the Consumer Price Index.

Comparison of energy intensity figures between countries is difficult because of the difficulty of determining the correct foreign exchange value. Between countries where there are no trade or financial barriers, or between countries where there is a large two-way trade, the official exchange rate is adequate. However for countries where this is not so, and especially in the developing countries, the official exchange rate often bears little relationship to the true exchange rate, as the large black markets in hard currency will testify. A better financial exchange rate would be derived on the basis of the price of an equivalent basketfull of goods. This has the disadvantage that the significance of the goods selected may bear little relationship to the spending pattern of the country because of climatic or other factors.

In countries with very low temperatures in winter, and hence a heavy heat load, the energy intensity can vary significantly from year to year because of the differences in the severity of the winter. It is possible, as is done in the U.K., to adjust the energy intensity figure for winter degree-days to allow for this variation.

When dealing with the energy intensities in individual economic sectors, the use of the total GDP in that sector could be queried as a basis for energy comparisons since the energy used in each sector is used to enhance the value of the economy in that sector and not to produce the total economy of the sector. Therefore the better value to use in the ratio is that of "value-added" in each sector.

2.3.3 Energy elasticities:

In place of the energy intensity ratio some analysts use the energy elasticity ratio which is defined as the ratio of the average annual percentage growth rate of energy consumption to the average annual percentage growth rate of the national economy. This ratio, which is also known as the energy coefficient, has traditionally been calculated on a year-by-year basis. However, Ang[3] has pointed out that this is a satisfactory index only if the changes in GDP are smooth and if they are significantly greater than zero. With GDP growth rate tending to zero, the index can vary dramatically from year to year and can go from plus infinity in one year to minus infinity the next year. He therefore advocates methods, described in his paper, which in fact allow for the smoothing of the data and the production of an index which is based on a time period rather than on a yearly basis. He advocates two methods of calculating the ratio. However, one of the methods has the disadvantage of changing the historic values of the coefficient when new data are added to it. The other method in fact is a moving trend line using a suggested seven-point moving average. This ratio is therefore possibly of lesser value than the energy intensity index, but since it can readily be calculated from the data required to produce the energy intensity, it can then be developed as part of a package of indices.

The energy coefficient may be calculated as defined above or it can be based on the growth in the energy per capita and GDP per capita.

2.3.4 Energy security:

Following the energy crises of the 1970's, the security of energy supply is an important factor in policy-making in many countries. This is especially true of those countries which are heavily dependent on imported energy such as Japan and Taiwan. However, it is also an important factor in the energy policy of many developing countries, especially in Africa, where oil is usually the largest energy component, even though they may have significant resources of energy of their own.

The usual measures of energy security are the ratio of imported to total energy and the reliance on imported oil. The Taiwanese indices[4] include an oil import index, as well as an index which is a measure of amount of oil imported from a single source - the Middle East. Their security index is expressed in the form of a pentagon with each node representing a different component of the security situation.

Also useful, in economic terms, is the ratio of the value of energy imports as a fraction of the revenue earned from exports.

2.3.5 Sectorial energy use:

Changes in energy intensity at the primary or net energy levels can be caused by energy efficiency changes, by economic sectorial changes, and by fuel substitution. These changes cannot be investigated by considering the overall energy demand but must disaggregate energy use to the individual sector levels.

Energy intensity and energy coefficients can be prepared on a sectorial basis as described above. However there are a number of other indices which can be used to assist in the understanding of developments in the energy industry. Some of these indices will be discussed in the following sector.

3. SECTORIAL ANALYSIS

3.1 Introduction

Making up the overall energy demand is the energy demand of individual economic sectors. Ideally an analysis of energy demand should start with a detailed examination of the energy demand at the lowest level. However, because of the shortage of adequate data at the lowest level of disaggregation and because of the complexity of a completely bottom-up approach, some aggregation is necessary. Traditionally the level of disaggregation below that of the total energy demand is the division into:

Industrial sector
Transport
Agriculture
Domestic
Commercial

The industrial sector is further subdivided into manufacturing, mining and quarrying, and construction. Normally non-energy use and feedstocks are excluded.

The transport sector is also traditionally divided into road, rail, and air transport.

Whilst these subdivisions are more useful than the total energy intensity, or energy coefficients, for many countries, the disaggregation is not enough. For instance, the chemical industry, since it is such a large energy user, is given a separate grouping.

Similarly, it may be useful to express the mining industry in certain subdivisions. In South Africa the gold mining industry is such a large user of energy that it should be placed in a category of its own so as to highlight any efficiency changes in this industry and also so as not to mask changes in the rest of the industry.

There are also a number of energy indices which are often used as trend indicators in each of the sectorial groupings.

3.2 Households

Of interest to planners is the potential for growth in energy use in the household sector and, in developing countries, the shift from the use of traditional fuels to transitional fuels such as paraffin, and then to commercial energy such as coal and electricity. In this context the energy use per household, the market penetration for electrical appliances, and the electrical appliance production and import amounts are of interest.

3.3 Transport

Since the transport sector is such a large user of energy, and in particular of oil which is often imported, the trends in energy use in this sector are of vital interest. The use of energy in road transport is one of the largest components of energy use in transport and yet it is often overlooked because of the difficulty of obtaining adequate information. In South Africa the analysis of road transport is complicated, if not made impossible by the secrecy of oil utilization.

An important index for the determination of the future energy requirements of the road transport sector is the efficiency of motor vehicles being sold on to the market. The only country that has an index which it uses for legislative purposes is the USA which uses the CAFE standard to monitor and to legislate for a given level of fuel utilization. The CAFE standard specifies the average fuel consumption of all the vehicles sold by each manufacturer. Thus large vehicles with poor average fuel consumption may be sold if their effect on the overall CAFE standard is offset by smaller more efficient vehicles.

Of interest is the total number of vehicles sold in each of a number of categories, and the number per capita of population.

3.4 Industry

Because of the large differences between the various sub-sectors within the industrial category it is important to estimate the energy use of at least the energy intensive components. Thus the chemical industry, the iron and steel industry, the mining and quarrying industry, and other sub-sectors such as food processing, cement production, aluminium, etc., could also be considered of importance as individual components.

Changes in the energy indicators such as intensity or elasticity can be affected by changes in the method of production, by fuel substitution, by energy conservation methods, and by changes in management. Thus the cement industry uses an energy-inefficient wet-grinding process, but this is being replaced by dry-grinding. However, because of the capital-intensive nature of the grinding equipment, no changes will be made until expansion is required or plant is decommissioned because of age. Thus there is a lag in the energy efficiency figure for the cement industry, which may be tracked by the setting up of a specific indicator for this industry.

An analysis of five industries in Japan over the period 1980 to 1985(1) showed that the energy intensity of four of them fell by between 20% and 40%, whilst the energy intensity of the fifth one - aluminium - remained constant. However, Janssen and Milkop warn that normally the data required for the detailed examination of each industry are difficult to obtain and can often have a very poor reliability.

4. ENERGY CARRIERS

Besides the indicators which are principally concerned with final demand, there is a need to determine trends in the use of primary energy. Thus for the main energy carriers, such as coal, electricity, oil and gas, it is important to determine the market share of each in the final demand sector, and the saturation level of the energy market for each carrier needs to be determined(5).

There is also a need to follow the trend of the efficiency of energy conversion in the primary-to-secondary processes such as power generation and oil product refining. This has to deal with the engineering efficiencies making up the conversion process but also includes the efficiency of transmission.

5. REQUIREMENTS FOR SOUTH AFRICAN ENERGY INDICES

In order to carry out adequate planning for the energy industry, trends in energy production and consumption are required. In the first place the energy demand must be linked to economic growth and a knowledge of the changes taking place in the sectorial make-up of the economy. These factors are exogenous to the energy industry. Indicators are therefore required in order to estimate future growth in the country and also as a comparison with similar indicators in other countries, suitably adapted for local conditions.

In order to link the economy and energy demand, an energy intensity figure is required at three levels: the primary energy level, net energy demand level, and the sectorial net energy demand level. From this can be derived the energy elasticity values, though it is considered that the energy intensity is a better measure of short and medium-term changes. The sectors for disaggregation are:

Industry - subdivided into chemical, iron and steel, non-ferrous metals, gold mining, mining and quarrying (excluding gold), paper-pulp-printing, wood and wood products, construction, and others.
Transport - subdivided into road, air, rail, and sea.
Agriculture
Domestic
Commercial

The total net energy consumption is required in terms of the energy mix in order to determine the rate of rise towards saturation. In addition, primary energy per capita and total net energy per capita are required, especially for comparison with other countries.

With possible increases in imports of energy from other countries, such as electricity from Central Africa and gas from Namibia and Mozambique, and the existing imports of oil, it is important to have a measure of the changes in the import situation as it affects energy security. An index of security is required, though it may be a multi-dimensional index similar to that of the Taiwan statistics.

In order to determine the changes in the road transport sector, and by implication the importation of oil, it is necessary to know what changes are occurring in the motor vehicle pool and what the expected efficiency new vehicles entering the market will have in terms of fuel consumption per kilometre. In addition, the average age of vehicles is required.

The household sector is of growing importance, especially with the move from traditional energy to commercial energy. A number of indices are required to describe the domestic sector. In the first place, a measure is required of the use of traditional energy in absolute terms and in terms of the effect a move from traditional energy to commercial energy would have on total energy demand. It is recommended that an index similar to that proposed by Ang be adopted, where the traditional energy is expressed as an equivalent commercial energy based on the ratio of the efficiency of the use of traditional energy to the efficiency of commercial fuels when used for the same purpose as the traditional energy.

In addition, there is a need to know what the penetration is of electrical appliances in the domestic sector and the number of homes that are electrified.

There is also a need to determine price ratios between the various fuel types in order to determine the possible fuel substitution rate. Such price comparisons would also be of benefit to industry.

6. DATA AVAILABILITY

Whilst the calculation of the various indices is a fairly simple matter, the collection of data can be a major undertaking. Some of the data are already available, but the detailed data for the sectorial analysis of energy consumption are not available on a regular basis.

6.1 Present data collected

The breakdown of the economic information required for the formulation of energy intensities and energy elasticities is available from the Central Statistical Service (CSS) of the Government[6]. The GDP is given in current and real terms using a GDP deflator. These values are quoted at factor price, i.e. excluding indirect taxes and subsidies. The CSS values are broken down by economic sector. Thus the data for the denominator of energy intensity, or elasticity, are readily available.

Energy data are summarized in a statistics publication produced by the National Energy Council[7]. This publication also lists various energy indicators, but these exclude oil for national security purposes, and the use of the indicators is therefore limited. Data on oil imports and use in South Africa are available in the IEA balances for developing countries[8,9]. These oil values are obtained from unknown sources but at present are the only consistent data available.

Other information is available from the CSS or from industry sources. Thus the statistics on the supply of gas and electricity are published in a CSS publication[34], vehicle statistics of registered vehicles are also published by the CSS[35], whilst the number of vehicles sold is published on a monthly basis by the National Association of Automobile Manufacturers of South Africa (NAAMSA)[36].

The CSS statistics on electricity and gas are published every three years, but a long time period is required for completion - the last one was in 1986. However, monthly values of electricity available for distribution were published as part of the monthly statistical indicators[37]. A reorganization of the monthly statistics is taking place, and the CSS has informed users that, amongst others, the monthly electricity statistics will no longer be available. It is not clear what statistics will be available on energy use.

Coal and uranium production, sales and export quantities are available from the Minerals Bureau[38] on a monthly basis. These figures are also summarized on an annual basis by the Chamber of Mines[39].

The various statistics are also summarized on an annual basis by the National Energy Council. With the absorption of the NEC into the Department of Mineral and Energy Affairs, it is not clear what will happen to these statistics which so far have been issued only once, but it is to be hoped that the statistics could be continued and even expanded. However, annual statistics which come out sometime after the end of the year are not sufficient for planning purposes and quarterly statistics would be more satisfactory.

In addition to these statistics, the Energy Research Institute publishes quarterly statistics[40] which summarize energy statistics obtained from various sources, including those mentioned above, but also compiles original statistics of energy prices obtained from raw data from a number of sources such as individual municipalities.

No information is however readily available for energy consumption in the different forms of energy and in the various economic sectors. For instance, Kotze and Cooper[41], in the preparation of energy balances for South Africa, quote energy consumption by the broad categories of households, industry, mining, and transport. As has been pointed out by a number of energy analysts, forecasts based on aggregate energy and GDP figures are inadequate for planning purposes.

6.2 Required statistics

In view of the move in the CSS to decrease the amount of energy statistics available, and in view of the need to disaggregate the energy intensity and elasticity figures, a reappraisal needs to be made of the required energy statistics necessary for planning purposes.

The economic data required for the disaggregation purpose are readily available. It is however more difficult to obtain data for energy usage in the various categories of economic sectors and by the type of fuel used. Apart from some of the larger industrial sectors, it would not be possible to obtain accurate data on a regular basis from small industrial units. It could be possible however to obtain some energy breakdown by energy type and industrial application by obtaining statistics from the main energy distributors. The mechanism is already in place in terms of the energy of the electricity, gas, and steam statistics obtained by the CSS. However, this needs to be expanded since the statistics are not detailed enough to satisfy the needs discussed above.

7. CONCLUSION

Forecasting energy demand requires an understanding of the underlying factors which affect net energy consumption. The main parameter is the economic level of activity, though this is not in itself sufficient since the activity in each sector of the economy affects the energy consumption differently. Thus a knowledge of the energy utilization per unit of level of activity - Gross Domestic Product- in each of the sectors is necessary.

Whilst in the short term the ratio of energy demand in each economic sector per unit of GDP can be assumed constant, in the longer term the components of each of the economic sectors change and therefore the energy demand per unit of GDP (energy intensity) will also change. Even if the sector constituents remained constant, the energy intensity would change due to technological changes in energy utilization in each of the economic sectors.

Price is an important factor in determining energy usage. However, the effect of price is diminished by the restricted ability of consumers to substitute energy forms. Thus electricity for the provision of mechanical effort cannot be replaced by oil or coal. The effect of price is more important, in the medium to long term, on the possible transition to more efficient production methods and equipment. Due to the long lead time in introducing more efficient equipment, there is of necessity a long lag in the relationship between price and energy demand.

For the above reasons the use of energy elasticity in the economic form is of limited use and the disaggregated energy intensity is considered a more stable form of index to estimate future consumption.

Other factors which have a significant effect on the future demand for energy in South Africa are the following:

** Population growth rate.

** Moves from the use of traditional energy to commercial energy forms.

** Car ownership levels.

** Car fuel efficiency.

** The effect of environmental legislation on fuel consumption rates.

** Efficiency of conversion of primary energy to net energy.

** Household appliance usage.

** Sectorial mix in the economy

In addition, there are other factors which are important in energy policy formulation. These include security aspects of energy imports, resource depletion, environmental effects of energy generation and use, etc. Relevant indicators can be constructed to measure trends in these factors.

In order for adequate trend measurements to be undertaken, a comprehensive system of energy statistic collection is required. Energy usage in the various energy forms is required at the disaggregated level. At present such disaggregation is not available, and the secrecy of the oil situation makes the adequate construction of meaningful indicators impossible.

Appendices A and B give the values of total net energy consumption and primary energy in the form of energy indicators such as energy intensity and energy elasticity. It is obvious from Figs 3 and 4 that there are large variations in the value of elasticity in terms of year-to-year changes, and even when a 7-point moving average is used. Figure 3 shows that an apparently insignificant change in the GDP from one year to the next (from 1954 to 1955) changes elasticity by almost an order of magnitude. In order to show all the values in Fig. 3 the scale chosen does not adequately indicate the large scatter in the results. Figure 4 has therefore been drawn excluding the 1955 elasticity to show an expanded ordinate. The large swings from year to year are evident in this graph.

Energy intensities are shown in Figs 1 and 2, with Fig. 1 showing the overall energy intensity for both net consumption and for primary energy. Figure 2 shows the changes in the intensity of the various energy forms at the final demand level. This shows the moves in the levels of demand for each of the energy forms and shows the asymptotic nature of the energy contribution of these forms of energy.

Figure 5 shows the relationship between energy intensity and energy elasticity. It is seen that there is only limited correlation between these two indices, with intensity showing a gradual declining value with time, whilst elasticity has been constant for many years and now shows an upward tendency.

8. RECOMMENDATIONS

In view of the paucity of information suitable for adequate energy planning in the country, it is recommended that an approach be made to the collection and dissemination of energy information in the form of energy indicators. Two types of energy indicator can be considered - that which is necessary to a determination of the energy movements in the economy, and a group of indicators of interest mainly as a comparison with other countries.

Energy intensities of each industry using a significant proportion of total net energy demand should be obtained, broken down into the various energy carriers such as coal, electricity, petroleum products, and gas. The number of industries which should be monitored depends on a detailed analysis of the energy use of the various industrial sectors. The analysis should be carried out on a regular basis, yearly values being preferred, but the collection period has to depend on the finances available.

The transport sector requires a knowledge of the energy intensity of the commercial sector in terms of the mode of transport (rail, air or road), a breakdown into petrol and diesel, and an estimate of the average petrol consumption of personnel vehicles in the vehicle pool.

The energy intensity of agriculture is required in terms of the main subdivisions such as wheat, maize, sugar, vegetables, fruit, and wine.

Energy intensities of the food industry are also required.

There are two ways of obtaining energy indices: one is to obtain the information through the Central Statistical Services, and the other is to carry out ad hoc surveys using teams to go to a representative sample of each of the industries of interest. In view of the present decrease in services offered by the CSS, it is recommended that an ad hoc approach be adopted until the CSS is able to take it up on a regular basis. This approach is also recommended since an expert group can visit each of the industries of interest and determine the best method of obtaining the data in a reliable manner.

As part of the introductory work for the collection of data, it is recommended that an analysis be made of the records of suppliers of energy to determine whether regular data abstraction is possible from the data bank of the suppliers. Thus municipalities which supply electricity may be able to code their consumers in terms of the industrial classification in order to obtain aggregated electricity consumption by industry. Similarly, coal suppliers could also be used to obtain data.

It is recommended therefore that the following steps be undertaken to bring into being a data collection system for the energy industry.

(1) Determine which industries and commercial sectors should be targeted for data collection in terms of obtaining a sample which covers the maximum national net energy consumption and yet remains within realistic levels of data collection.

(2) Determine from the main suppliers what information can be collected at a central source which would allow disaggregation in the selected industrial classifications.

(3) Commence with the data collection of a selected sample of industries.

(4) Expand the data collection to all the sectors selected for data collection and analysis.

(5) Publish the information in an acceptable format and on a regular basis.

The above should include all the sectors which need data analysis on a regular basis, which includes the various chosen industrial sectors and the transport sector. Additional analysis of energy consumption should be carried out on an ad hoc basis on such statistics of appliance penetration in the household sector, traditional energy usage, etc.

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APPENDIX A

TABLES

TABLE 1 ENERGY INTENSITY OF COMMERCIAL ENERGY. kgOE PER RAND (REAL 1985 BASIS)

	TFC	PRIMARY
1950	0.41	NA
1951	0.43	NA
1952	0.43	NA
1953	0.41	NA
1954	0.38	NA
1955	0.42	NA
1956	0.41	NA
1957	0.41	NA
1958	0.43	NA
1959	0.40	NA
1960	0.40	NA
1961	0.40	NA
1962	0.39	NA
1963	0.38	NA
1964	0.39	NA
1965	0.39	NA
1966	0.38	NA
1967	0.36	NA
1968	0.35	NA
1969	0.34	NA
1970	0.34	NA
1971	0.38	0.59
1972	0.36	0.55
1973	0.37	0.57
1974	0.35	0.55
1975	0.36	0.57
1976	0.36	0.59
1977	0.34	0.57
1978	0.34	0.56
1979	0.32	0.55
1980	0.32	0.57
1981	0.33	0.61
1982	0.33	0.66
1983	0.33	0.71
1984	0.35	0.74
1985	0.34	0.74
1986	0.35	0.75
1987	0.35	0.77
1988	0.35	0.77
1989	NA	NA
1990	NA	NA

TABLE 2 ENERGY PER CAPITA AND ENERGY PER RAND OF GDP (REAL 1985 BASIS)

YEAR	ENERGY PER CAPITA TOE/CAPITA			ENERGY PER CAPITA TOE/CAPITA			ENERGY/GDP TOE/RAND (REAL 1985)			
	COMMERC	TRAD	TOTAL	ELECTRIC.	COAL	OIL	ELECTRIC.	COAL	OIL	TRAD.
1950	0.90	0.15	1.05	0.067	0.696	0.142	3.04E-05	3.18E-04	6.50E-05	6.62E-05
1951	0.96	0.15	1.10	0.069	0.729	0.158	3.08E-05	3.24E-04	7.02E-05	6.60E-05
1952	0.99	0.15	1.14	0.071	0.753	0.162	3.13E-05	3.32E-04	7.11E-05	6.65E-05
1953	0.96	0.15	1.11	0.076	0.723	0.159	3.28E-05	3.12E-04	6.85E-05	6.61E-05
1954	0.95	0.16	1.11	0.082	0.704	0.164	3.24E-05	2.79E-04	6.51E-05	6.15E-05
1955	1.02	0.16	1.18	0.090	0.753	0.176	3.68E-05	3.08E-04	7.18E-05	6.42E-05
1956	1.04	0.16	1.20	0.095	0.759	0.187	3.77E-05	3.02E-04	7.44E-05	6.32E-05
1957	1.05	0.16	1.21	0.100	0.757	0.193	3.93E-05	2.98E-04	7.59E-05	6.30E-05
1958	1.08	0.16	1.24	0.103	0.776	0.201	4.07E-05	3.07E-04	7.94E-05	6.38E-05
1959	1.04	0.16	1.20	0.107	0.728	0.203	4.16E-05	2.84E-04	7.91E-05	6.33E-05
1960	1.04	0.16	1.20	0.112	0.720	0.205	4.28E-05	2.75E-04	7.83E-05	6.23E-05
1961	1.05	0.16	1.21	0.114	0.722	0.212	4.29E-05	2.72E-04	8.01E-05	6.21E-05
1962	1.05	0.17	1.21	0.119	0.706	0.222	4.38E-05	2.61E-04	8.18E-05	6.11E-05
1963	1.06	0.17	1.23	0.123	0.714	0.226	4.35E-05	2.53E-04	8.00E-05	5.89E-05
1964	1.13	0.17	1.30	0.129	0.733	0.272	4.39E-05	2.50E-04	9.29E-05	5.70E-05
1965	1.18	0.17	1.35	0.135	0.774	0.273	4.40E-05	2.53E-04	8.93E-05	5.47E-05
1966	1.17	0.17	1.34	0.139	0.730	0.301	4.49E-05	2.36E-04	9.72E-05	5.42E-05
1967	1.16	0.17	1.32	0.146	0.701	0.309	4.56E-05	2.19E-04	9.67E-05	5.24E-05
1968	1.14	0.17	1.31	0.153	0.698	0.290	4.71E-05	2.16E-04	8.96E-05	5.18E-05
1969	1.13	0.17	1.29	0.159	0.658	0.309	4.79E-05	1.98E-04	9.30E-05	5.03E-05
1970	1.14	0.17	1.31	0.171	0.646	0.329	5.04E-05	1.91E-04	9.71E-05	4.92E-05
1971	1.31	0.17	1.48	0.177	0.728	0.399	5.11E-05	2.10E-04	1.15E-04	4.93E-05
1972	1.24	0.17	1.42	0.189	0.664	0.384	5.49E-05	1.93E-04	1.12E-04	5.08E-05
1973	1.27	0.18	1.45	0.198	0.651	0.416	5.72E-05	1.88E-04	1.20E-04	5.16E-05
1974	1.25	0.18	1.43	0.208	0.640	0.393	5.77E-05	1.78E-04	1.09E-04	5.06E-05
1975	1.28	0.19	1.46	0.217	0.647	0.406	6.04E-05	1.81E-04	1.13E-04	5.17E-05
1976	1.28	0.19	1.47	0.227	0.640	0.402	6.42E-05	1.81E-04	1.14E-04	5.31E-05
1977	1.26	0.19	1.46	0.239	0.619	0.396	6.48E-05	1.68E-04	1.07E-04	5.29E-05
1978	1.22	0.19	1.41	0.245	0.581	0.385	6.78E-05	1.60E-04	1.07E-04	5.15E-05
1979	1.15	0.19	1.34	0.260	0.520	0.359	7.18E-05	1.44E-04	9.91E-05	5.18E-05
1980	1.15	0.19	1.35	0.269	0.525	0.349	7.35E-05	1.44E-04	9.55E-05	5.28E-05
1981	1.22	0.19	1.41	0.278	0.559	0.374	7.45E-05	1.50E-04	1.00E-04	5.17E-05
1982	1.16	0.19	1.35	0.272	0.512	0.367	7.66E-05	1.45E-04	1.03E-04	5.33E-05
1983	1.10	0.19	1.28	0.271	0.454	0.362	8.04E-05	1.35E-04	1.08E-04	5.58E-05
1984	1.18	0.19	1.37	0.292	0.497	0.385	8.57E-05	1.46E-04	1.13E-04	5.56E-05
1985	1.15	0.19	1.34	0.300	0.460	0.376	9.00E-05	1.38E-04	1.13E-04	5.71E-05
1986	1.13	0.19	1.32	0.309	0.441	0.372	9.45E-05	1.35E-04	1.14E-04	5.83E-05
1987	1.13	0.19	1.32	0.310	0.435	0.373	9.54E-05	1.34E-04	1.15E-04	5.91E-05
1988	1.16	0.19	1.35	0.315	0.443	0.390	9.57E-05	1.35E-04	1.18E-04	5.77E-05
1989	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

APPENDIX B

FIGURES

FIGURE 1 ENERGY INTENSITY FOR PRIMARY ENERGY AND FOR TOTAL FINAL DEMAND. kgOE PER RAND (REAL 1985 BASIS). COMMERCIAL ENERGY.

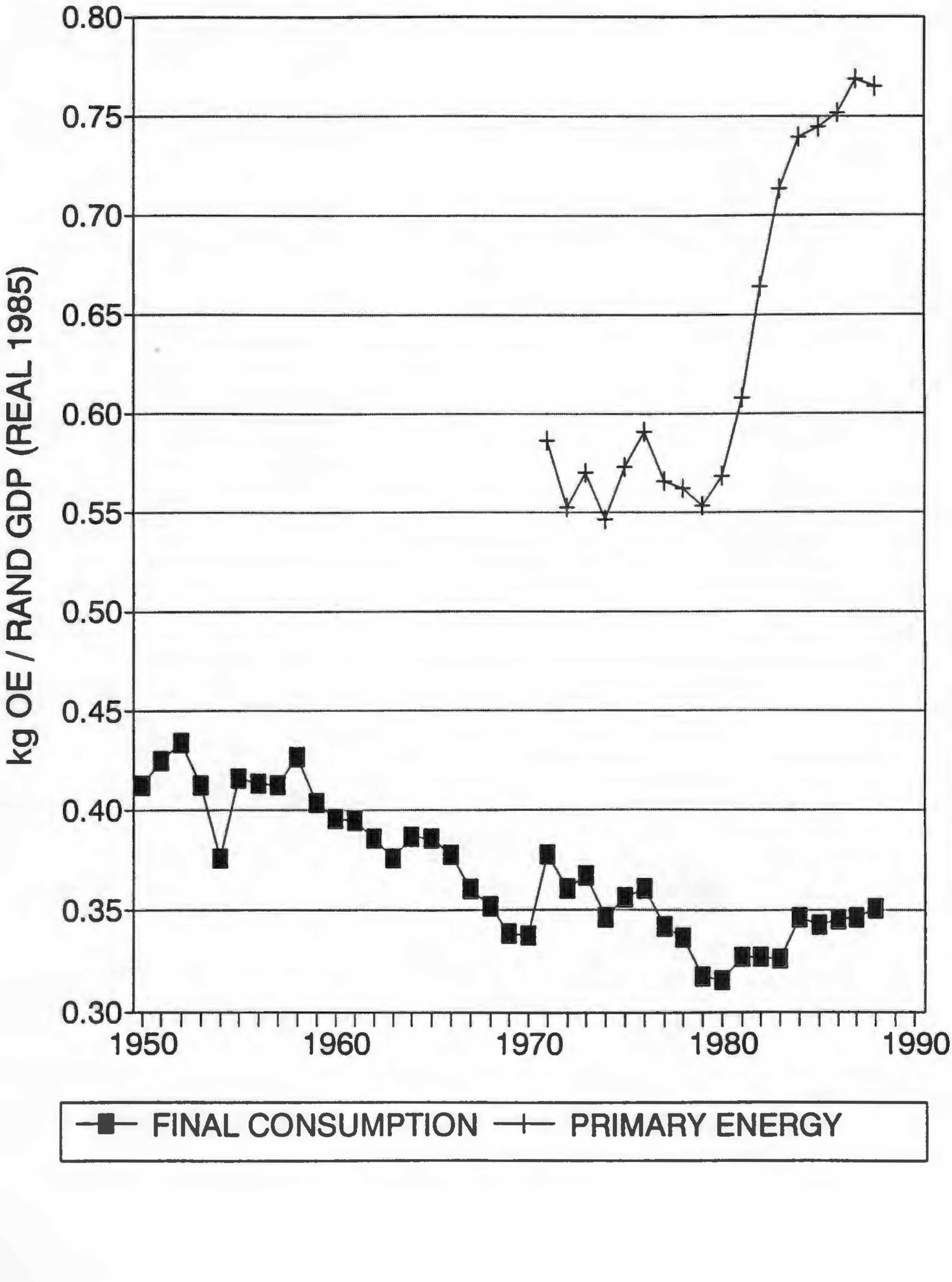


FIGURE 2 COMMERCIAL ENERGY INTENSITIES FOR ELECTRICITY, COAL AND OIL. kgOE PER RAND (REAL 1985 BASIS).

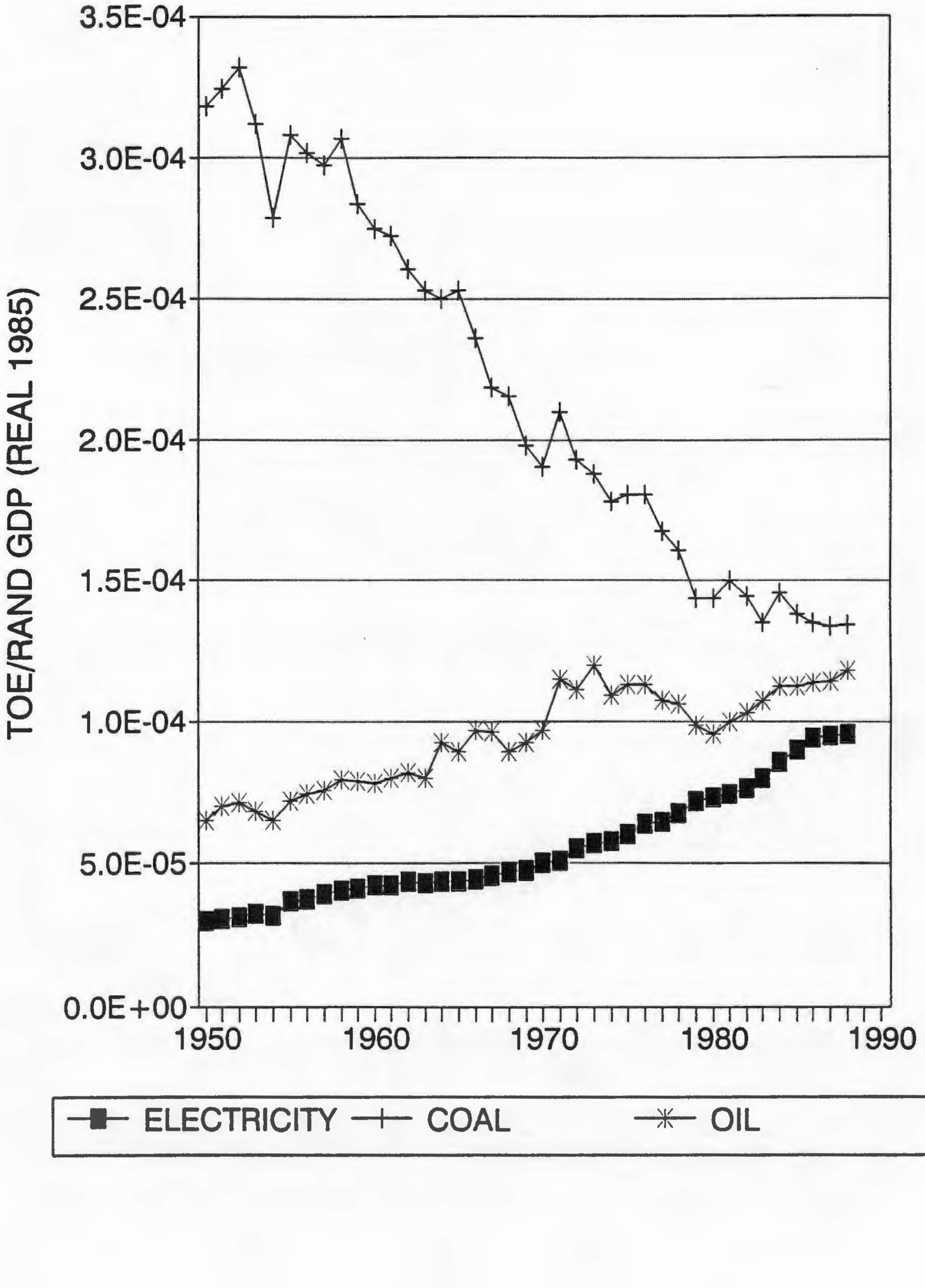


FIGURE 3 ENERGY ELASTICITY BASE ON REAL 1985 GDP.

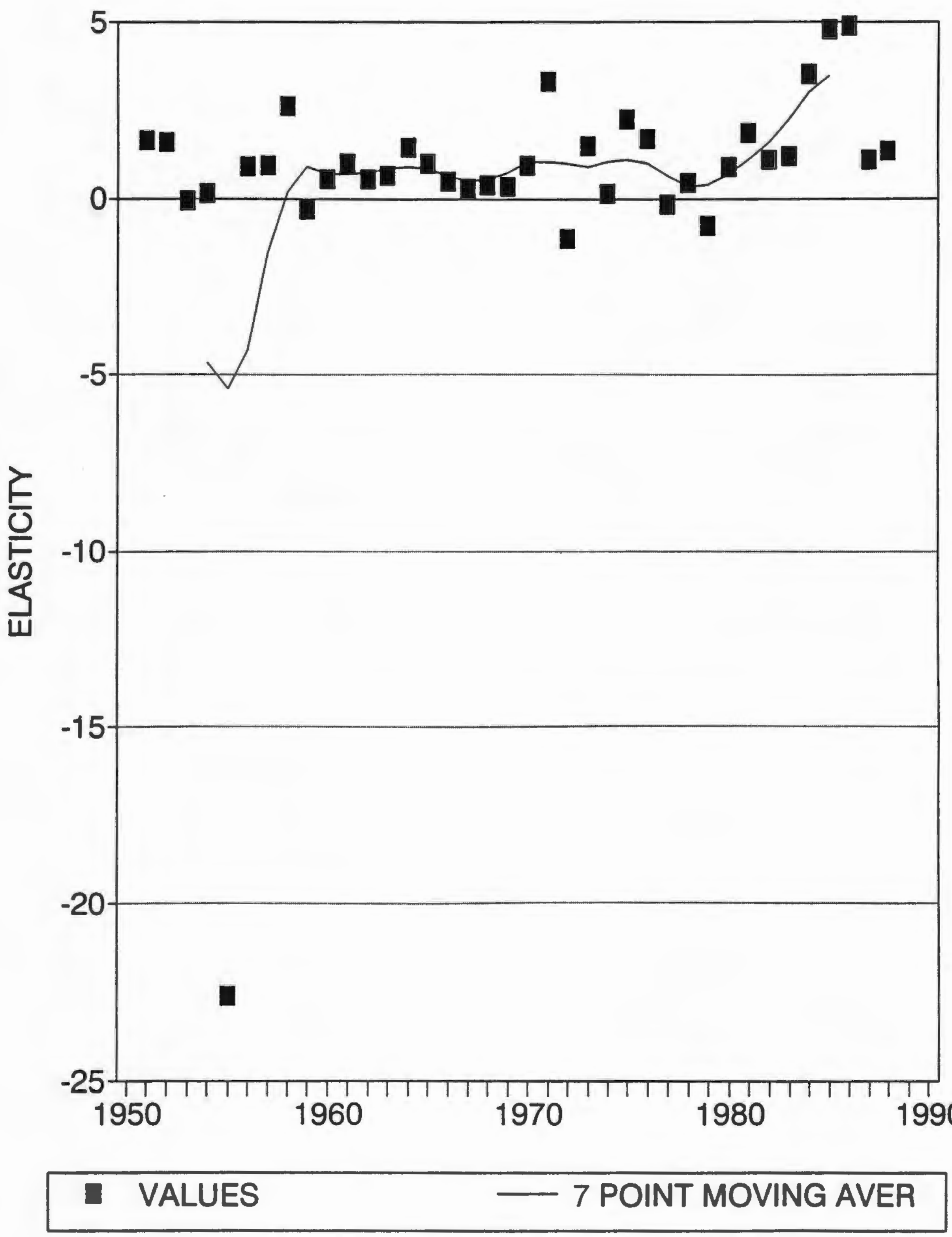


FIGURE 4 ENERGY ELASTICITY WITH THE 1955 VALUE REMOVED IN ORDER TO EXPAND SCALE. REAL 1985 RAND BASIS.

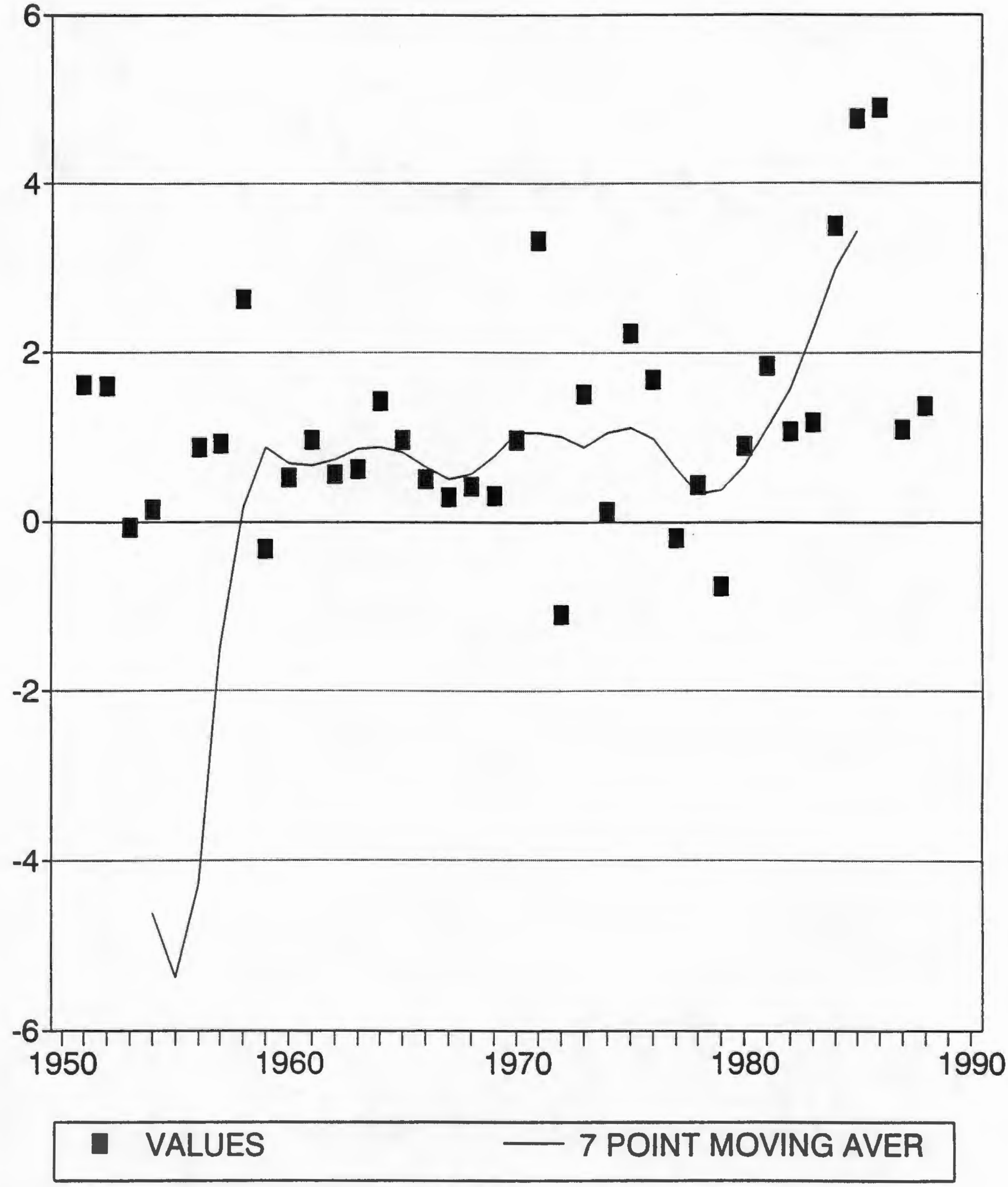
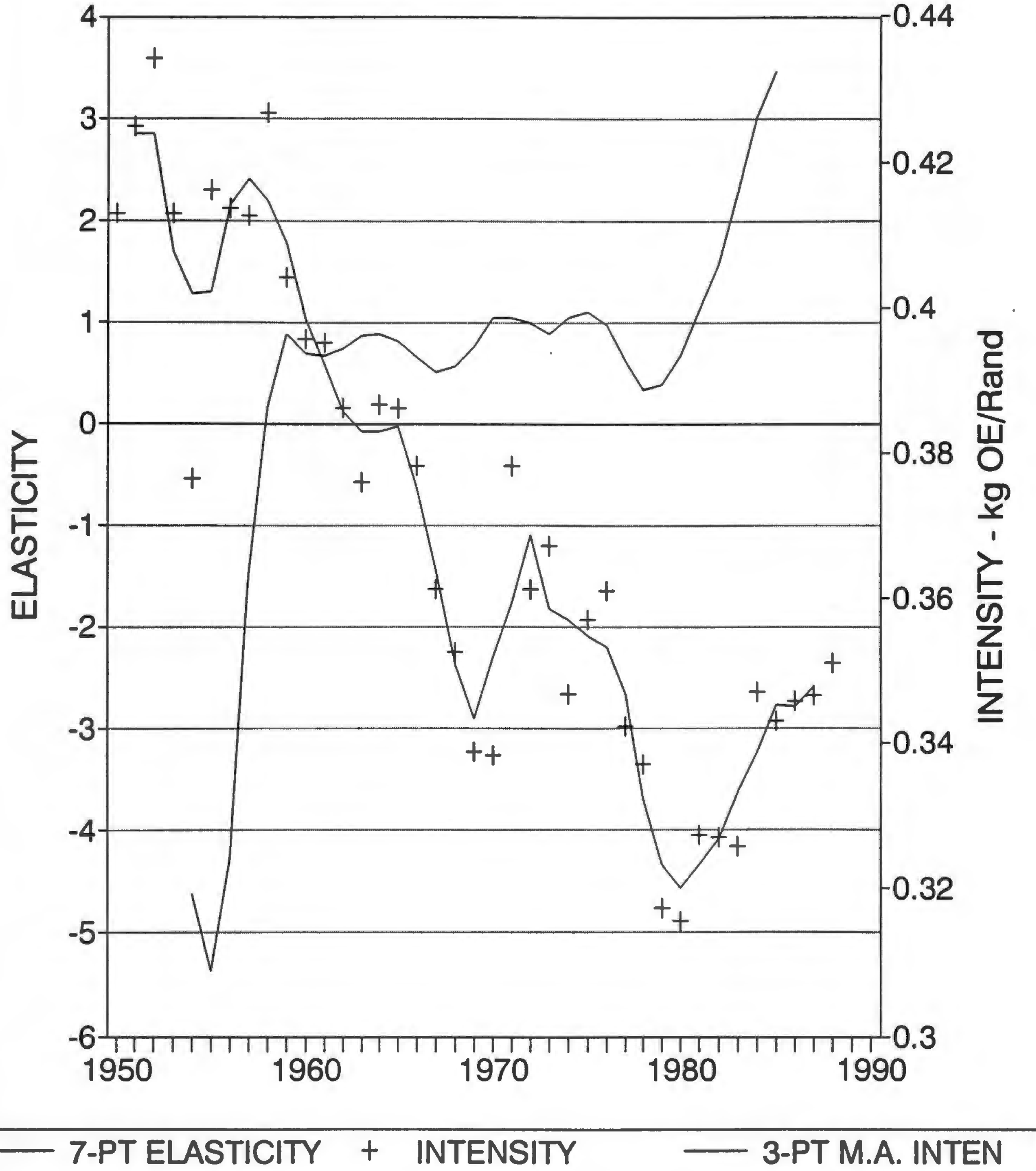


FIGURE 5 COMPARISON OF ENERGY INTENSITY AND ENERGY ELASTICITY.



APPENDIX C

Result of an international search of relevant literature using the key-words:-

(ENERGY()(INDICES + INDICATOR? ? + COEFFICIENT? ? + INTENSITY + INTENSITIES) + (ELECTRIC + ELECTRICAL + ELECTRICITY()(INDICES) NOT DT=(PATENT + PATENTS + PATENT APPLIC)

ELECTRIC POWER DATABASE - DIALOG FILE 241

SAMPLE RECORD

DIALOG Accession Number → 1706200

```
1706200
   New Oilborne Wood Preservative System  ← /TI
   CONTRACT/GRANT NO.: RP2797-01  ← CN=
   RECORD TYPE: Contract  ← DT=
   INVESTIGATING ORG.: Electric Power Research Institute  (EPRI)  ← CS=
      EPRI PROJECT MANAGER: Dunlap, John  ← PM=
      CONTACT: Technical Information Division  ← PM=
         (415) 855-2411
   PERFORMING ORG.: Forest Products Utilization Laboratory  ← CO=
SD= → PROJECT START DATE: 860101   PROJECT COMPLETION DATE: 920331  ← CD=
DA= → DATE ENTERED: 860210   NEW/CHANGED: New  ← ST=
   FISCAL YEAR FUNDING STATUS: No  ← FS=
FD= → FUNDING DISCLOSURE: Yes
FY= → CURRENT YEAR DATE: 1986   CURRENT YEAR FUNDS: $135,000  ← FU=
FF= → FUTURE YEAR FUNDS: $551,373
FT= → TOTAL PROJECT FUNDS: $686,373
```

Electric utilities use approximately one million poles a year for construction of new facilities and as replacements for damaged poles. Approximately 60% of all the poles used are treated with oilborne pentachlorophenol (Penta). The remaining poles are treated with either a waterborne copper salt or creosote. Recent environmental regulations place severe restrictions on the manufacture and use of all these wood preservatives but especially on Penta. Other wood preservatives are in use today should Penta become unavailable, but these preservatives are not widely used by utilities, nor are they free of environmental scrutiny. Creosote treated wood is messy to handle and is very dark in color. Waterborne copper salts leave the treated wood with a hard exterior, making pole climbing difficult. Copper-chromium-arsenate, the most popular copper salt preservative, leaves a toxic arsenate residue on the surface of the pole. This contract will develop new oilborne preservatives that are as attractive to utilities as Penta but without the problems of the present preservatives. ← /AB

```
   DESCRIPTORS: Environmental Effects; Physical Properties; *Wood Utility
Poles; Preservatives  ← /DE
   IDENTIFIERS: CROSSARMS; OILBORNE PRESERVATIVES; ADJUVANTS
BIODETERIORATION; DECAY  ← /ID
SH= → SUBJECT CATEGORY: 06.01A Overhead-Towers and Poles  ← /SH
FC= → FERC CATEGORY: A(3)a
```

SEARCH OPTIONS

BASIC INDEX

SUFFIX*	FIELD NAME	INDEXING	SELECT EXAMPLES
/AB	Abstract	Word	S CREOSOTE/AB
/DE	Descriptor[1]	Word & Phrase	S UTILITY(W)POLES/DE S WOOD UTILITY POLES/DE
/ID	Identifier[2]	Word & Phrase	S CROSSARMS/ID S OILBORNE PRESERVATIVES/ID
/NT	General Note	Word	S PRICING/NT
/PN	Publication	Word	S DUKE(W)POWER/PN
/SH	EPRI Subject Category	Word & Phrase	S RADIOACTIVE(W)EFFLUENTS/SH S 'OVERHEAD-TOWERS AND POLES'/SH
/TI	Title	Word	S WOOD(W)PRESERVATIVE/TI

*If no suffix is specified *all* Basic Index fields are searched.
[1]Also /DF.
[2]Also /IF.

APPENDIX C

Result of an international search of relevant literature using the key-words:-

(ENERGY()(INDICES + INDICATOR? ? + COEFFICIENT? ? + INTENSITY + INTENSITIES) + (ELECTRIC + ELECTRICAL + ELECTRICITY()(INDICES) NOT DT=(PATENT + PATENTS + PATENT APPLIC)

ELECTRIC POWER DATABASE - DIALOG FILE 241 SEARCH OPTIONS (CONTD)

ADDITIONAL INDEXES

PREFIX	FIELD NAME	INDEXING	SELECT EXAMPLES
AN=	Record Number	Phrase	S AN=1730702
AU=	Personal Author	Phrase	S AU=ADAMS, G.
CD=	Completion Date	Phrase	S CD=920331
CN=	Contract Number	Phrase	S CN=RP2797-01
CN=	EPRI Project Number	Phrase	S CN=AEP1007
CO=	Contractors	Word & Phrase	S CO=(FOREST(W)PRODUCTS) S CO=FOREST PRODUCTS UTIL?
CS=	Investigating Organization	Word & Phrase	S CS=(ELECTRIC(W)POWER) S CS=BANDON ELECTRIC DEPT.
DA=	Add Date	Phrase	S DA=860210
DD=	EPRI Department Name	Word & Phrase	S DD=(ENERGY(W)ANALYSIS) S DD=POWER SYSTEMS
DI=	EPRI Division Name	Word & Phrase	S DI=(ADVANCED(W)POWER) S DI=NUCLEAR SAFETY ANALYSIS?
DP=	EPRI Program Name	Word & Phrase	S DP=DISTRIBUTION S DP=AIR QUALITY CONTROL
DS=	EPRI Subprogram Name	Word & Phrase	S DS=(NEUTRALIZER(2W)ACIDS) S DS=WIND POWER
DT=	Document Type	Word & Phrase	S DT=CONTRACT S DT=FINAL REPORT
DU=	Change Date	Phrase	S DU=841004
FC=	Federal Energy Regulatory Commission (FERC) Category Code	Phrase	S FC=A(3)A
FD=	Funding Disclosure	Phrase	S FD=YES
FF=	Future Year Funds	Phrase	S FF=00551373
FP=	Prior Year Funds	Phrase	S FP=00008300
FS=	Funding Status	Phrase	S FS=NO
FT=	Total Funds	Phrase	S FT=00686373
FU=	Current Year Funds	Phrase	S FU=00135000
FY=	Current Fiscal Year	Phrase	S FY=1986
HR=	Host Required	Word	S HR=NO
HS=	Host Utility Site	Word & Phrase	S HS=(LOS(W)ANGELES) S HS=LINCOLN, NEBRASKA
HU=	Host Utility Name	Word & Phrase	S HU=(SANTA(W)CLARA(W)WATER?) S HU=BONNEVILLE POWER?
PM=	EPRI Project Manager Name	Word & Phrase	S PM=(ABRIL(W)J) S PM=DUNLAP, JOHN
PR=	Products Availability Code	Word	S PR=(RP1550(W)01)
PR=	Products Availability Description	Word	S PR=(ABAQUS(W)EPGEN)
PY=	Publication Year	Phrase	S PY=1985
RN=	Report Number	Phrase	S RN=EPRI NSAC-91
SD=	Starting Date	Phrase	S SD=860101
SE=	Seminar/Workshop Indicator	Word	S SE=YES
SF=	Subfile	Word	S SF=REPORT
SH=	EPRI Subject Category	Phrase	S SH=06.01A
SP=	Sponsoring Organization	Word & Phrase	S SP=(CONSUMERS(W)POWER) S SP=CONSUMERS POWER CO.
ST=	Completion Status	Phrase	S ST=NEW
UD=	Update	Phrase	S UD=8600

LIMITING

Sets and terms may be limited by Basic Index suffixes, i.e., /AB, /DE, /DF, /ID, /IF, /NT, /PN, /SH, /TI, (e.g., S S5/DE), as well as by the features listed below:

SUFFIX	FIELD NAME	EXAMPLES
None	Publication Year	S S5/1986
/PUB	Publications Subfile	S S3/PUB

SORTING

SORTABLE FIELDS	EXAMPLES
Online (SORT) and offline (PRINT): AN, AU, CD, CN, CO, CS, FC, FF, FP, FT, FU, PY, SD, SH, SP, TI.	SORT 3/ALL/FU PRINT 5/5/1-25/FU,D

ENERGYLINE - DIALOG FILE 69

SAMPLE RECORD

```
DIALOG Accession Number
 └─0159180   88-023350 ◄──────────────────────────────── RN=
/TI ──► OIL IN THE ARCTIC: THE ENVIRONMENTAL RECORD OF OIL DEVELOPMENT ON
        ALASKA'S NORTH SLOPE.
AU= ──► SPEER LISA ; LIBENSON SUE
/CS ──► (NRDS) AND ; (TRUSTEES FOR ALASKA),
/SB ──► NRDC REPORT, JAN 88 (13)
DT= ──► ASSN REPORT    THE ENVIRONMENTAL CONSEQUENCES OF OIL ACTIVITIES IN THE
       ARCTIC ARE EXAMINED TO ASSESS THE ENVIRONMENTAL RECORD OF OIL DEVELOPMENT
       ON ALASKA'S NORTH SLOPE. POLLUTION OF AIR AND WATER AND MAJOR LANDSCAPE
       IMPACTS HAVE RESULTED FROM OIL DEVELOPMENT, WHICH HAS TRANSFORMED THE
       PRUDHOE BAY REGION INTO ONE OF THE WORLD'S LARGEST INDUSTRIAL COMPLEXES.
       THE CONDUCT OF OIL AND GAS INDUSTRIES ON THE NORTH SLOPE RANGES FROM
       ENVIRONMENTALLY RESPONSIBLE TO IRRESPONSIBLE. HUNDREDS OF VIOLATIONS OF   ◄── /AB
       STATE AND FEDERAL REGULATORY CONTROLS TO PROTECT AIR, WATER, AND LAND HAVE
       BEEN DOCUMENTED. EXISTING ENVIRONMENTAL LAWS AND REGULATIONS AS CURRENTLY
       IMPLEMENTED AND ENFORCED FAIL TO PREVENT SIGNIFICANT ENVIRONMENTAL
       DETERIORATION ASSOCIATED WITH OIL AND GAS EXPLOITATION. OIL DEVELOPMENT IN
       CERTAIN HIGHLY SENSITIVE AREAS OF THE ARCTIC IS NOT APPROPRIATE, AND
       FURTHER DEVELOPMENT SHOULD NOT BE CONSIDERED UNTIL THE CONSEQUENCES OF SUCH
       ACTIVITY IN THE PRUDHOE BAY REGION ARE FULLY UNDERSTOOD. 3 <M>S,
         DESCRIPTORS: *ALASKA ; *OIL PRODUCTION ; *ENV CONSTRAINTS-OIL ;
       *WASTEWATER DISPOSAL ; *WATER POLLUTION EFFECTS ; *LAW ENFORCEMENT, ENV-FED   ◄── /DE
       ; *STACK EMISSIONS ; *HAZARDOUS WASTE DISPOSAL ; *LAND RECLAMATION ;
       INFORMATION, ENV ; EPA, FEDERAL ; WILDLIFE ; PRUDHOE BAY
RC= ──► REVIEW CLASSIFICATION: 21
```

SEARCH OPTIONS

BASIC INDEX

SEARCH SUFFIX+	DISPLAY CODE	FIELD NAME	INDEXING	SELECT EXAMPLES
/AB	AB	Abstract[1]	Word	S PRUDHOE(W)BAY/AB
/CS	CS	Corporate Source	Word	S TRUSTEES(1W)ALASKA/CS
/DE	DE	Descriptor[2]	Word & Phrase	S HAZARDOUS(W)WASTE/DE S OIL PRODUCTION/DE
/SB	SO	Source Publication	Word	S NRDC(W)REPORT(F)88/SB
/TI	TI	Title	Word	S OIL(2W)ARCTIC/TI

+If no suffix is specified *all* Basic Index fields are searched.
[1]Abstracts included for all records from 1975 to the present.
[2]Also /DE*, /DF, /DF*

ADDITIONAL INDEXES

SEARCH PREFIX	DISPLAY CODE	FIELD NAME	INDEXING	SELECT EXAMPLES
—	AN	DIALOG Accession Number		
AU=	AU	Author	Phrase	S AU=SPEER LISA
AV=	AV	Availability	Phrase	S AV=Y
DT=	DT	Document Type	Phrase	S DT=ASSN REPORT
—	FN	File Name		
RC=	RC	Review Classification	Phrase	S RC=21
RN=	RN	ENERGYLINE Report Number	Phrase	S RN=88-023350
UD=	—	Update	Phrase	S UD=9999

LIMITING

Sets and terms may be limited by Basic Index suffixes, i.e., /AB, /CS, /DE, /DE*, /DF, /DF*, /SB, and /TI (e.g., S S4/TI) as well as by the features listed below:

SUFFIX	FIELD NAME	EXAMPLES
None	DIALOG Accession Number	S S5/0154697-9999999
/MAJ	Major Descriptor	S S6/MAJ
/MIN	Minor Descriptor	S S11/MIN

OUTPUT OPTIONS†

USER-DEFINED FORMAT OPTIONS

User-defined formats may be specified using the display codes indicated in the Search Options tables, e.g., TYPE S5/AU,TI,SO/1-5.

PRE-DEFINED FORMAT OPTIONS

NUMBER	RECORD CONTENT	NUMBER	RECORD CONTENT
Format 1	DIALOG Accession Number	Format 5	Full Record[1]
Format 2	Full Record except Abstract	Format 6	Title
Format 3	Bibliographic Citation	Format 7	Bibliographic Citation and Abstract[1]
Format 4	Full Record with Tagged Fields	Format 8	Title and Indexing

DIRECT RECORD ACCESS

FIELD NAME	EXAMPLES		
DIALOG Accession Number	TYPE 0159180/3	DISPLAY 0159058/AU,TI	PRINT 0158999/7

†TAG may be used for tagged fields, e.g., TYPE S5/AU,TI,SO/ALL TAG.

DIALOG SEARCH FOR ENERGY INDICATORS

Record - 1

<DIALOG File 241:>
FN- DIALOG EPRI FILE 241 |
AN- 1006231 |
SF- EPRI TECHNICAL REPORT |
TI- **Commercial End-Use Data Development Handbook: COMMEND Market Profiles and Parameters, Volumes 1 and 2 |**
RN- EPRI EM-5703, Volumes 1 and 2 VOL. 01 0088P.; VOL. 02 0256P. |
CN- RP2863-01 |
DT- Interim Report |
PY- 1988 04 |
DI- Customer Systems |
PM- Braithwait, Steven D.
CO- Regional Economic Research |
DA- 880602 |
DU- 900119 |
AB- The COMMEND computer model provides a framework for organizing commercial-sector end-use market data and for forecasting energy demand at the end-use level. As an update to COMMEND documentation, these new volumes furnish a detailed guide for the development of end-use data in the commercial sector. |
AB- <Background> The COMMEND computer program (EPRI report EM-4487-CCMP) and supporting documentation (EPRI report EM-4486), as well as 10 regional databases, provide analysis tools, market information, and data gathering strategies for the commercial sector. About 100 utilities in the United States and abroad have requested the model. The 10 databases provide generic regional information for use as inputs to the COMMEND model. However, most utilities refine these generic data by adding commercial-sector information--such as market fuel shares and energy intensities and prices--from their service territory. Collecting this commercial-sector information can require a considerable market-research effort. |
AB- <Objective> To update COMMEND documentation; to describe commercial-sector analysis concepts, data sources, and alternative estimation approaches; and to demonstrate data development strategies. |
AB- <Approach> A review of commercial-sector research performed in the last five years revealed the wide range of data sources and analysis approaches used by utilities and others to estimate commercial-sector end-use parameters. The review included reports on utility surveys of the commercial sector, EPRI reports on survey design and analysis of commercial-sector data (EM-4328 and EM-4519), and results of government data collection efforts. The project team also analyzed DOE surveys to illustrate the type of information produced by alternative sources, estimation techniques, and formulas. |
AB- <Results> Volume 1 outlines key analysis concepts used in commercial-sector end-use market analyses, such as floor stock, energy intensity, fuel share, and energy-use indexes. Estimated results from the DOE data illustrate these concepts. Volume 2 describes each concept in detail,

discussing and evaluating alternative measurement approaches, information sources, and estimation methods. It presents and evaluates primary and secondary data sources and recommends strategies that estimate each type of end-use parameter. |

AB- <EPRI Perspective> The COMMEND system consists of the computer code, technical documentation, and supporting regional databases. It employs a powerful analytic framework for organizing commercial-sector data and depicts market profiles and energy-use patterns at the end-use level. The system also provides a highly structured forecasting tool for projecting long-term energy demand in end-use markets. The COMMEND personal computer (PC) version 3.0 for installation on IBM-PC compatible computers, available by mid-1988, will offer a more convenient data development procedure. Since 1984, utility and industry analysts have examined new data development approaches and refined analysis techniques. Furthermore, the amount of available information on the commercial sector has increased dramatically. By incorporating and documenting these new approaches, this report provides an update to COMMEND documentation that will help utility analysts develop commercial-sector end-use data and implement the COMMEND model. |

TE- Z2031 End-use assessment and forecasting |

DE- COMMERCIAL LOAD FORECASTING; COMMEND CODE; COMMERCIAL BUILDINGS; END USE; DEMAND-SIDE PLANNING |

Record - 2

<DIALOG File 241: >

FN- DIALOG EPRI FILE 241 |

AN- 1004582 |

SF- EPRI TECHNICAL REPORT |

TI- **A Historical Perspective on Changes in U.S. Energy-Output Ratios** |

RN- EPRI EA-3997 0320P. |

CN- RP1158-01 |

DT- Final Report |

PY- 1985 06 |

DI- Energy Analysis and Environment Division |

PM- Geraghty, Dominic M.

CO- Resources for the Future, Inc. |

DA- 850725 |

DU- 891212 |

AB- Measuring energy consumption in real dollars revealed that the U.S. energy-GDP ratio increased before 1973 but has since declined. Modified and extended in this study, the ratio and accompanying analysis provide useful insights for load forecasters and planners on the long-term relationship between energy and economic change. |

AB- <Background> Changes in the growth, structure, and aggregate demand of the economy affect energy markets. As major participants in these markets, utilities base their long-term energy production planning on assumptions about changes in economic trends and cycles and on the relationship of electricity demand to those changes. The ratio of energy consumption to the nation's gross domestic product (GDP) is a summary indicator of the role energy plays in the economy. In 1960, Resources for the Future published a time series based on this ratio. That time series is still frequently used as a reference by utility planners. |

AB- <Objective> o To modify an energy-GDP time series and extend it to 1981. o To analyze, particularly for the years since 1973, how factors affecting the energy-GDP ratio explain short- and long-term changes in the energy consumption-economic growth relationship. |

AB- <Approach> Referring to the historical record, the author modified an energy-GDP time series covering the period 1929-1955 and extended it to 1981. In addition, he analyzed long- and short-term changes in the energy-GDP ratio and developed a measure of energy intensity based on price weights (real dollars) rather than energy units (British thermal units). He then developed an energy price time series consistent with price-weighted energy intensity measures. |

AB- <Results> Before 1973, the long-term decline in the energy consumption-GDP ratio was largely due to (1) reductions in real energy prices and in domestic economic growth that were accompanied by increases in energy expenditures (expressed in constant dollars), (2) a declining share of total energy expenditures for the raw forms of energy, (3) increased thermal efficiency in energy production and utilization before 1966, and (4) reductions in energy intensity among producing sectors of the economy. After 1973, there was a sharp rise in real energy prices. That increase was accompanied by continued declines in the energy-GDP ratio. The apparent pre-1973 anomaly of the long-term decline in the ratio despite the decrease in real energy prices was the result of measuring energy consumption in energy units rather than by energy prices. When energy price (including the value added by secondary energy industries) was the unit of measure, the ratio increased over the long term up to 1973 and then declined when real energy prices rose. |

AB- <EPRI Perspective> Since 1973, the U.S. economy has experienced unprecedented increases in real energy prices. Relative to the GDP, energy consumption (measured in British thermal units) declined at a rate of 2.2% per year between 1973 and 1981. There is a general perception that this decline in the British thermal unit-GDP ratio marks a sharp break with the pre-1973 period when energy consumption closely paralleled economic growth. However, this report shows that the British thermal unit-GDP ratio has declined at a rate of 1% per year since the end of World War I and that the ratio is moving consistently. |

TE- P2101 Utility Planning |

DE- ECONOMIC GROWTH; ENERGY DEMAND; THERMAL EFFICIENCY; PRICING; INDUSTRY; |

ID- Input-Output Analysis |

Record - 3

<DIALOG File 241: >

FN- DIALOG EPRI FILE 241 |

AN- 1004473 |

SF- EPRI TECHNICAL REPORT |

TI- **Detection of Electric Meter Tampering** |

RN- EPRI EL-3951 0084P. |

CN- RP1779-01 |

DT- Final Report |

PY- 1985 03 |

DI- Electrical Systems |

PM- Songster, Herbert J.

CO- Honeywell, Inc. |

DA- 850512 |

DU- 891211 |

AB- Meter tampering cuts utility revenues. A new system developed in this study can detect such tampering by use of a visible indicator that is destroyed if the meter socket cover is removed. The device is inexpensive and can be retrofitted to existing installations. |

AB- <Background> The value of energy stolen by meter tampering is estimated to be at least 0.5% and as much as 2.5% of total electric energy revenue. The theft amounts to some $0.6 to $3 billion annually. Further, it is difficult for meter readers to detect tampering without time-consuming investigations, and computer scans of usage are inconclusive because of the legitimate steps that customers may take to save energy. |

AB- <Objective> To develop a device that will give a clear indication of tampering with a meter installation. |

AB- <Approach> A preliminary industry survey helped establish the design criteria. Because investigators estimated that only a few types of tampering acts were responsible for 75-85% of all energy theft, they focused on developing a device that would provide a visible indication of these acts. Mechanical rather than electrical actuation of the indicator seemed necessary to avoid the false electrical indications triggered by service interruptions unrelated to tampering. From a group of 20 candidate indicators, the project team selected 2 for field trials. Both types relied on the destruction of a visible indicator (a tape or bar) to show tampering. One utility received retrofit kits to make a preliminary evaluation and suggest improvements. Two utilities were then given 100 meters for field installation. |

AB- <Results> Experimental tests of the 2 devices conducted prior to the field tests indicated that both meet the functional objective. Both are also within hardware cost limits, with an estimated quantity cost of less than $1.50 per indicator. However, the four-month field tests were inconclusive because the tampering acts for which the equipment was designed did not occur. The devices in the field trials were not optimized but represented adequate prototypes of a final version. Although the field trials used only ringless meters, the basic concept is equally applicable to ring-type meter installations. |

AB- <EPRI Perspective> This tampering detection device successfully meets functional and hardware cost requirements. Its greatest disadvantage is its mechanical actuating system. The visible indicator must be carefully installed and then replaced if anyone, authorized or unauthorized, destroys it by entering the meter socket. A device that could be reset was considered but passed over for security reasons during the concept development phase. Consequently, labor costs remain a significant concern. Whether the costs of installing and sometimes reinstalling the present device are excessive and how much a utility can afford to spend to detect energy theft are questions that need to be resolved before further refinement of this detection system is undertaken. |

TE- D2201 Distribution Instrumentation and Control |

DE- METERS; METER PROTECTION; |

ID- Meter Tampering |

Record - 4

<DIALOG File 241: >

FN- DIALOG EPRI FILE 241 |

AN- 1004365 |

SF- EPRI TECHNICAL REPORT |

TI- **Proceedings: Forecasting the Impact of Industrial Structural Change on U.S. Electricity Demand |**

RN- EPRI EA-3816 0258P. |

CN- RP1955-04 |

DT- Proceedings |

PY- 1984 12 |

DI- Energy Analysis and Environment Division |

PM- Faruqui, Ahmad

CO- Battelle Columbus Laboratories |

DA- 850227 |

DU- 891212 |

AB- This EPRI-sponsored workshop explored current research activities in industrial energy demand forecasting. The participants established the importance of forecasting changes in industrial structure and identified three areas where further research is needed. |

AB- <Background> Because industry forms the largest single customer class for most utilities, changes in the structure of the industrial sector threaten to erode the base of many utility service areas. Utilities must be able to predict industrial electricity demand in order to plan for their future. |

AB- <Objective> To exchange information on the implications of industrial structural change and establish priorities for future research. |

AB- <Approach> EPRI organized a two-day workshop during October 1983 in Palo Alto, California, that focused on the following issues: o How international trade affects the level and mix of U.S. manufacturing activities o How new technologies impact U.S. competitiveness in the international markets o How international trade and new technologies affect electricity consumption or vice versa The 23 participants represented national laboratories, the federal government, and utility trade associations. Formal presentations were made on such topics as industrial electricity use and demand, the changing industrial market, energy consumption determinants, and statistical analysis and patterns of energy use. |

AB- <Results> Because issues discussed by the participants were purposely kept very broad to permit an active exchange of information, no definitive resolutions emerged at the workshop. However, the material contained in these proceedings illuminates the divergence of opinion among the workshop participants and provides a concise summary of the state of the art of industrial energy demand forecasting. Participants reached a consensus on three general points: o The connection between changing industrial structure (product mix, technology, and trade) and energy demand is not clearly resolved. o Emerging end-use technologies, which could enhance industrial productivity, are not considered explicitly in demand models. o Data availability may prove to be an even bigger problem than was anticipated. |

AB- <EPRI Perspective> Examining energy intensity changes is important in the forecasting of industrial electricity demand. As a result of this workshop, the scope of work for ongoing EPRI research project RP2217, industrial end-use planning methodology (INDEPTH), was expanded to include coverage of international competition and product mix effects. EPRI also plans to conduct a follow-on seminar in 1985, directed at researchers from a broader audience, including representatives from the utility industry, academia, government, and the manufacturing sector. |

TE- C2100 Market Planning and Development |

DE- INDUSTRY; ECONOMICS; LOAD FORECASTING; INDUSTRIAL PLANTS; ENERGY DEMAND; |

Record - 5

<DIALOG File 241: >
FN- DIALOG EPRI FILE 241 |
AN- 1004044 |
SF- EPRI TECHNICAL REPORT |
TI- **Augmented Heat Transfer Rates in Utility Condensers** |
RN- EPRI CS-3527 0068P. |
CN- RP1689-11 |
DT- Final Report |
PY- 1984 05 |
DI- Generation and Storage |
PM- Coit, Roland L.; Diaz-Tous, Isidro A.
CO- RIT Research Corporation |
DA- 840730 |
DU- 891211 |
AB- Condensers in electric generating plants can become more effective if their heat transfer coefficients can be increased. Comparative measurements of heat transfer rates showed tubes modified with durable fluorocarbon strips increased the overall heat transfer coefficient 40 to 50% above plain tubes. |
AB- <Background> Over the years many attempts have been made to improve the thermal performance of utility generating plants by increasing the condensation heat transfer coefficient. Methods to increase this coefficient include applying waxy and fluoroplastic coatings on condenser tubes and polishing tube surfaces. Earlier tests on fluoroplastic strips applied to condenser tubes indicated that this method was effective but impractical because the fluoroplastic coating was not durable. The tests suggested, though, that the heat transfer coefficients for single tubes could be expected to increase by 20%, indicating that as much as 10,000 to 20,000 feet could be eliminated from large utility condensers. |
AB- <Objective> To demonstrate increased heat transfer rates in condenser tubes using an enhancement technique compatible with condenser design, manufacture, and operation. |
AB- <Approach> Researchers performed tests to determine the effectiveness of a heat transfer enhancement method, using Emralon-330 fluoroplastic strips applied longitudinally along the bottom side of condenser tubes. They constructed a conventional steam condenser with 314 square feet of surface area, thus providing a more realistic simulation of the dynamics of condensate inundation than did single-tube tests. They also constructed two tube bundles for the condenser: one having plain tubes and the other modified with the fluorocarbon strips. Both bundles were tested under the same pressure, temperature, and flow rate conditions. |
AB- <Results> Comparative measurements of heat transfer rates showed that the modified tubes increased the overall heat transfer coefficient 40 to 50% above the plain tubes. This increase is significantly higher than previous single-tube experiments, indicating that there are complex interactions among arrays of tubes when tested in a tube bundle. |
AB- <EPRI Perspective> The utility industry shows a high level of interest in techniques or design innovations that can improve the thermal performance of utility generating stations. EPRI undertook this joint project with the Empire State Electric Energy Research Corp. to quantify the increase in

heat transfer rates in utility condensers when an enhancement technique compatible with condenser design, manufacture, and operation is used. The technique needs further evaluation before its commercial potential can be determined. |

TE- G2001 Fossil Steam Plant Life Extension |

DE- HEAT TRANSFER; STEAM CONDENSERS; TUBES |

Record - 6

<DIALOG File 241: >

FN- DIALOG EPRI FILE 241 |

AN- 0020305 |

TI- **Baghouse Performance Optimization for Monticello Station** |

CN- RP1129-23 |

DT- Contract |

CS- Electric Power Research Institute (EPRI) |

DI- Generation and Storage |

DD- Env Control Systems |

DP- Air Quality Control |

PM- Chang, Ramsay |

(415) 855-2535 |

PM- <Contact> Membership Division

PH- (415) 855-2411 |

CO- Southern Research Institute |

SD- 890215 |

CD- 910831 |

DA- 890307 |

DU- 910702 |

FS- NO |

FD- YES |

FY- 1991 |

FU- $63,113 |

FP- $188,193 |

FF- $0 |

FT- $251,306 |

AB- The Monticello station of TU Electric is a prime example of baghouse applications on difficult to collect fly ash. Historically, the Monticello baghouse has experienced excessive opacity and drag. Due to the high penetration of ash through the bag fabrics, the operators have reduced shaking energy intensity to minimize opacity. This minimal bag cleaning resulted in the buildup of thick dustcakes, which increased drag and reduced flowrate. The reduction in flowrate through the baghouse was compensated by an increase in flow through the parallel ESP, producing opacity violations. To avoid these violations, TU Electric has had to derate the unit. Flue gas conditioning and the use of 75% texturized fabrics have been demonstrated at the pilot-scale to significantly reduce fly ash penetration and dustcake buildup for such difficult ashes. TU Electric has decided to evaluate ammonia, with both their current bags and with a compartment outfitted with 75% texturized bags. Flue gas conditioning with ammonia will be used at the Monticello Unit 1A baghouse to reduce emissions and allow more energetic cleaning for pressure drop control. Shake-deflate cleaning parameters will be optimized to maximize flow rate and minimize pressure drop across the baghouse without excessive opacity at the stack. Tasks include: (1) continue to evaluate and optimize baghouse performance; (2) evaluate effect of SO3 injection; and (3) evaluate alternate fabrics. |

TE- E2001 Acidic Deposition |

DE- *Ammonia; *Baghouses; *Dust; *Fly Ash; Opacity; Monticello Nuclear Power Plant; *Emission |

SH- 04.06I Baghouses |

FC- A(1)b | |

Record - 7

<DIALOG File 241: >

FN- DIALOG EPRI FILE 241 |

AN- 0009128 |

TI- **Planning of Industrial Applications of Electricity** |

CN- RP2416-01 |

DT- Contract |

CS- Electric Power Research Institute (EPRI) |

DI- Customer Systems Division |

DD- Customer Systems Division |

DP- Industrial |

DS- Metals Production and Fabrication |

PM- Schneider, Thomas |

PM- <Contact> Membership Division

PH- (415) 855-2411 |

CO- Union Carbide Corporation |

SD- 830201 |

CD- 830715 |

DU- 910830 |

FS- NO |

FD- YES |

FY- 1991 |

FU- $0 |

FP- $23,806 |

FF- $0 |

FT- $23,806 |

AB- The objective is to provide technical assistance in the planning of EPRI's industrial applications studies by identifying promising new areas of electricity use. For each area identified, a brief technology description will be prepared including technical description, an appraisal of the stage of development, suggested applications, estimated energy intensity and references. Examples of areas that may be included are: reverse osmosis hyperfiltration, use of lasers in chemical and materials processing, industrial heat pumps, electrochemical processes, robotics, microwave heating, expanded uses for oxygen, magnetic separation, and centrifuge separation. |

TE- C2221 Industrial |

DE- *Electricity; *Industrial Plants; *Industry; *Technology Assessment |
SH- 09.01G Industrial Processes |
FC- A(6) | |

Record - 8

<DIALOG File 241: >
FN- DIALOG EPRI FILE 241 |
AN- 0003916 |
TI- Energy Economic Growth Relations - An Input/Output Approach |
CN- RP1366-01 |
DT- Contract |
CS- Electric Power Research Institute (EPRI) |
DI- Customer Systems Division |
DD- Customer Systems Division |
DP- Demand-Side Management |
DS- Planning and Information |
PM- Rabl, Veronika |
(415) 855-2401 |
PM- <Contact> Membership Division
PH- (415) 855-2411 |
CO- Resources for the Future, Inc. |
SD- 790101 |
CD- 820630 |
DU- 910711 |
FS- NO |
FD- YES |
FY- 1991 |
FU- $0 |
FP- $300,000 |
FF- $0 |
FT- $300,000 |
AB- The objective of this project is to apply the input-output technique to measure the sensitivity of future relationships between energy and GNP to alternative assumptions concerning (a) the composition of final demand for goods and services, and (b) changes in technical coefficients, including changes in energy coefficients. |
PN- "Energy and Household Expenditure Patterns--Volume 1: Residential Energy Demand." Final Report, EPRI EA-3442, RP1366-01, March 1984, 184 pp.; "An Energy-Oriented Input-Output Model." Topical Report, EPRI EA-3625, RP1366-01, August 1984, 314 pp. |
TE- C2106 Forecasting |
DE- *Economics; *Energy Demand; *Forecasting |
SH- 10.01E Integrated Energy-Economic Models |
FC- A(6) | |

Record - 9

<DIALOG File 241: >
FN- DIALOG EPRI FILE 241 |
AN- 0001970 |
TI- **Consumptive Coefficients Index for Florida Residential Sector State Land Use Code** |
CN- FPL734-707-28 |
DT- Contract |
CS- Florida Power & Light Co. (FPL) |
PM- <Contact> Fair, Thomas R. Project Coordinator, Environ. Affairs |
PH- (305) 863-3635 |
CO- University of Florida |
SP- Florida (State) |
SD- 760401 |
CD- 760930 |
DU- 840925 |
FS- NO |
FD- YES |
FP- $5,000 |
FT- $5,000 |
AB- Investigators will determine energy coefficients for various residential sector land uses. These coefficients will be assigned for use of electricity, fossil fuels, water and sewage. The results will be used for regional planning by the State of Florida and by FPL. |
TE- C2106 Forecasting |
DE- *Electricity; *Energy Consumption; *Forecasting; *Fossil Fuels; Land Use; Regional Analysis; Regulations; Residential Buildings; *Sewage; U niversities |
SH- 10.01D Energy Demand and Forecasting |
FC- A(2) | |

Record - 10

<DIALOG File 241: >
FN- DIALOG EPRI FILE 241 |
AN- 0000363 |
TI- **Analysis of Fuel & Energy Use in U. S. Economy** |
CN- RP0263-01 |
DT- Contract |
CS- Electric Power Research Institute (EPRI) |
DI- Integrated Energy Systems Division |
DD- Integrated Energy Systems Div |
DP- Utility Planning Methods Center |
DS- Integrated Utility Planning |
PM- N/A |
PM- <Contact> Membership Division
PH- (415) 855-2411 |
CO- Lawrence Berkeley Laboratory |

SD- 740701 |
CD- 750930 |
DU- 840929 |
FS- NO |
FD- YES |
FY- 1991 |
FU- $0 |
FP- $117,000 |
FF- $0 |
FT- $117,000 |
AB- The objective was to develop a model for examining patterns of energy use in the U.S. and the economic impacts of fuel and energy shortages. Final Report ES-115 describes a linear programming model of the U.S. economy with emphasis on energy and fuel use. The main components are the 1967 national input-output table updated to 1972, a matrix of occupation coefficients for each industry, and a set of energy coefficients for each industry. The input-output table contains 97 sectors. The electric utility and iron and steel sectors are detailed in production processes to permit inclusion of fuel substitution data. Balance constraints in the model equate the total of production plus imports to the total of consumption by industry and final demand. Other constraints include upper bounds on domestic output, imports, total employment, and peak electrical power and lower bounds on final demand. The energy sectors were parametrically constrained to simulate the impacts of energy shortage. Results are described in terms of, e.g., changes in gross national product, total employment, employment by industry and occupation, fuel substitution measures, and imports and output by sector. Final Report ES-116 describes an extension of the linear programming model. It is a simplified quadratic program that allows inclusion of data on the elasticity of demand for various commodities. The most significant difference between the behavior of the two models is the much greater price stability of the quadratic model. |
PN- "A Linear Economic Model of Fuel and Energy Use in the United States." Volume 1, 180 pp., Volume 2, 138 pp., Final Report, EPRI ES-115, RP0263-01, December 1975.; "A Quadratic Programming Analysis of Energy in the United States Economy." Final Report, EPRI ES-116, RP0263-01, December 1975, 83 pp. |
TE- C2106 Forecasting |
DE- *Econometrics; *Economics; *Energy Consumption; *Energy Demand; *Energ y Models; *Fuel Supply; Linear Programming; Universities |
ID- ENERGY SUPPLY; FUEL SUBSTITUTION; INPUT-OUTPUT ANALYSIS |
SH- 10.01E Integrated Energy-Economic Models |
FC- A(2) | |

Record - 11

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0173081 |
RN- <ENERGYLINE> *91-013494 |
TI- **MANUFACTURING ENERGY USE IN EIGHT OECD COUNTRIES: DECOMPOSING THE IMPACTS OF CHANGES IN OUTPUT, INDUSTRY STRUCTURE AND ENERGY INTENSITY,** |

AU- HOWARTH RICHARD B. LBNL, BERKELEY, CA, ; SCHIPPER LEE ; DUERR PETER A. STROM STEINAR |

SO- ENERGY ECONOMICS, APR 91, V13, N2, P135(8) |

AB- JOURNAL ARTICLE TRENDS IN MANUFACTURING ENERGY USE IN EIGHT OECD NATIONS ARE ANALYZED BY DECOMPOSING THE CHANGES THAT OCCURRED DURING 1973-87 INTO THE EFFECTS OF CHANGES IN AGGREGATE MANUFACTURING ACTIVITY, INDUSTRY STRUCTURE, AND ENERGY INTENSITIES MEASURED AT THE INDUSTRY GROUP LEVEL. MANUFACTURING PRODUCTION GREW IN EVERY NATION EXCEPT THE UK, BUT THE RATE OF GROWTH VARIED AMONG NATIONS. STRUCTURAL CHANGE LED TO MODEST REDUCTIONS IN ENERGY USE IN MOST NATIONS, AND THE REDUCTION IN ENERGY INTENSITIES WAS UNIFORM ACROSS ALL NATIONS, RANGING FROM 20% IN NORWAY TO 36% IN JAPAN. (2 GRAPHS, 10 REFERENCES, 12 TABLES) |

DE- *ENERGY DEMAND, INDUSTRIAL ; *ORG ECONOMIC COOP DEVEL ; *MATHEMATIC MODELS-ENERGY USAGE ; *ECONOMICS, ENERGY USAGE-IND ; *OIL USAGE, INDUSTRIAL ; *ELECTRICITY USAGE, INDUSTRIAL ; *ENERGY CONSERVATION, INDUSTL ; MATHEMATIC MODELS-INDUSTRIAL |

RC- 18|

Record - 12

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0173061|

RN- <ENERGYLINE> 91-013474|

TI- **ASSESSMENT OF ENERGY CONSUMPTION PATTERN THROUGH ENERGY ANALYSIS OF CEMENT INDUSTRY,** |

AU- BHATTACHARYA D. NATL INST FOR TRAINING IN INDUSTRIAL ENGINEERING, BOMBAY, INDIA, |

SO- ENERGY MANAGEMENT-INDIA, JAN-MAR 91, V15, N1, P5(5) |

AB- JOURNAL ARTICLE AN ENERGY ANALYSIS TECHNIQUE IS USED TO EVALUATE THE ENERGY INTENSITY OF THE CEMENT PRODUCTION INDUSTRY IN INDIA. THE RELATIONSHIP BETWEEN ENERGY INTENSITY OF THE CEMENT PRODUCED IN A PLANT AND ITS ANNUAL CAPACITY, AGE, CAPACITY UTILIZATION FACTOR, AND PROCESS OF MANUFACTURING IS QUANTITATIVELY ESTIMATED. EQUATIONS ARE DEVELOPED FOR ESTIMATING THE ENERGY INTENSITY AND COST OF PRODUCTION OF ANY CEMENT PRODUCING PLANT. VALUES OBTAINED FOR ENERGY USAGE PATTERNS, ENERGY INTENSITY, AND COST OF PRODUCTION ARE OF INTEREST TO POLICY MAKERS AND MANUFACTURERS. (3 DIAGRAMS, 6 REFERENCES, 5 TABLES) |

DE- *INDIA ; *ENERGY DEMAND, INDUSTRIAL ; *CEMENT ; *ECONOMICS, ENERGY USAGE-IND ; *FOSSIL FUEL DEMAND ; ELECTRICITY USAGE, INDUSTRIAL ; MATHEMATIC MODELS-ENERGY USAGE |

RC- 18|

Record - 13

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0173052|

RN- <ENERGYLINE> *91-013465|

TI- **A STATISTICAL ANALYSIS OF ENERGY COEFFICIENTS,** |

AU- ANG B. W. NATL UNIV OF SINGAPORE, |

SO- ENERGY ECONOMICS, APR 91, V13, N2, P93(18) |

AB- JOURNAL ARTICLE THE ENERGY COEFFICIENT FREQUENTLY SERVES AS AN INDICATOR IN INTERNATIONAL COMPARISONS OF HOW ENERGY CONSUMPTION INCREASES WITH ECONOMIC GROWTH. THE BASIC PROPERTIES OF THIS INDICATOR ARE EXAMINED FROM A STATISTICAL VIEWPOINT, USING TIME SERIES DATA COVERING 1960-86 FOR NINE ASIAN NATIONS. THE RELATIONSHIP BETWEEN ENERGY COEFFICIENTS AND THE ENERGY-OUTPUT RATIO IS EXPLORED, AND THE EFFECTS OF MEASURING THE INDICATOR ON A PER CAPITA BASIS ARE CONSIDERED. ON A YEARLY BASIS, THE COEFFICIENT PROVES TO BE UNSTABLE. VARIOUS METHODS OF DERIVING THIS TREND ARE APPLIED TO THE TIME-SERIES DATA, SUPPORTING THE FINDINGS ON THE UNDERLYING RELATIONSHIP BETWEEN ENERGY CONSUMPTION AND GROSS DOMESTIC PRODUCT REPORTED EARLIER. (38 GRAPHS, 28 REFERENCES, 4 TABLES) |

DE- *ENERGY USAGE-REGION ; *ECONOMIC GROWTH ; *SOUTHEAST ASIA ; *MATHEMATIC MODELS-ENERGY USAGE ; *ENERGY USAGE, PER CAPITA ; *GROSS NATL PRODUCT-NON U S ; MATHEMATIC MODELS-ECONOMICS |

RC- 17|

Record - 14

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0173049|

RN- <ENERGYLINE> 91-013462|

TI- **SUBSTITUTION BETWEEN ACTIVITIES WITH DIFFERENT ENERGY INTENSITIES,** |

AU- HUNTINGTON HILLARD G. STANFORD UNIV, PALO ALTO, CA, |

SO- RESOURCES & ENERGY, APR 91, V13, N1, P23(15) |

AB- JOURNAL ARTICLE BOTH DIRECT AND INDIRECT EFFECTS ON THE COMPOSITION OF ACTIVITIES WITH DIFFERENT ENERGY INTENSITIES CAN BE EXPECTED FROM AN INCREASE IN THE REAL PRICE OF ENERGY. THE DIRECT EFFECT IS USUALLY PRESUMED TO REDUCE PARTICIPATION IN ENERGY-INTENSIVE ACTIVITIES. THE DIRECTION OF THE INCOME-COMPENSATED SUBSTITUTION EFFECT IS ARGUED TO BE NOT KNOWN UNAMBIGUOUSLY BUT, INSTEAD, TO DEPEND ON THE ENERGY INTENSITIES AS WELL AS THE UTILITY FUNCTION. IN STUDYING THE TWO-ACTIVITY CASE, IT IS DEMONSTRATED THAT GREATER INPUT SUBSTITUTION WITHIN EACH ACTIVITY DECREASES THIS SHIFT BETWEEN ACTIVITIES AND THAT VALUE-ADDED MEASURES OF OUTPUT CAN BIAS THE TRUE SUBSTITUTION BETWEEN ACTIVITIES. (1 GRAPH, 28 REFERENCES, 1 TABLE) |

DE- *PRICE INCREASES, ENERGY ; *ENERGY CONSERVATION ; *MATHEMATIC MODELS-ENERGY USAGE ; *MATHEMATIC MODELS-ECONOMICS ; *ECONOMICS, ENERGY USAGE ; ENERGY SUBSTITUTION ; ENERGY CONSERVATION, INDUSTL |

RC- 17|

Record - 15

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0172791|
RN- <ENERGYLINE> 91-013204|
TI- EUROPE SEEKS SECURE ENERGY SOURCES, |
AU- RASHISH PETER |
SO- EUROPE, OCT 90, N300, P20(3) |
AB- JOURNAL ARTICLE IRAQ'S INVATION OF KUWAIT HAS ONCE AGAIN SPURRED THE EEC TO LOOK FOR MORE SECURE ENERGY SOURCES THAN THE MIDDLE EAST. THE MEMBERS OF THE IEA, PART OF THE OECD, HAVE PLEDGED TO SHARE OIL SUPPLIES IN AN EMERGENCY AND TO DRAW ON PRIVATE AND PUBLIC OIL STOCKS TO LESSEN THE AFFECTS OF SHORT-TERM MARKET DISRUPTONS. ENERGY CONSERVATION HAS BEEN A DRIVING FORCE IN THE EEC COUNTRIES; ENERGY INTENSITY WITHIN THE 12 MEMBER NATIONS DECREASED BY 11.4% DURING THE 1980S. AS EUROPE GEARS UP TO BECOME A SINGLE MARKET, AN EFFORT IS BEING MADE TO OVERCOME DIFFERENCES IN TECHNICAL SPECIFICATIONS THAT HINDER FREE ENERGY TRADE. (2 GRAPHS, 1 PHOTO) |
DE- *WESTERN EUROPE ; *ENERGY SELFSUFFICIENCY, NON U S ; *ENERGY SUPPLY-REGION ; *ENERGY DEVEL INVESTMENT ; *EUROPEAN ECONOMIC COMMUNIT *INTL ENERGY AGENCY ; *GOVT PROGRAMS, NON U S ; *ECONOMICS, DISTRIBUTION ; *POLICY-PLANNING, NON U S ; ENERGY RESEARCH & DEVEL, NON U S ; TARIFFS, NON U S |
RC- 03|

Record - 16

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0172065|
RN- <ENERGYLINE> *91-012478|
TI- ENERGY FOR THE SOVIET UNION, EASTERN EUROPE AND CHINA, |
AU- CHANDLER WILLIAM U. BATTELLE, PACIFIC NORTHWEST LABS, RICHLAND, WA, ; MAKAROV ALEXEI A. ; DADI ZHOU |
SO- SCIENTIFIC AMERICAN, SEP 90, V263, N3, P120(8) |
AB- JOURNAL ARTICLE THE HIGH ENERGY INTENSITY OF THE PLANNED ECONOMIES IN THE USSR, EASTERN EUROPE, AND CHINA RESULTS, IN PART, FROM OUTMODED TECHNOLOGY AND EXCESSIVE INVESTMENT IN HEAVY INDUSTRY. INTENSIVE USE OF COAL HAS CAUSED EXTENSIVE ENVIRONMENTAL AND HEALTH PROBLEMS IN THESE AREAS. PRICE REFORM, A SHIFT TO MARKET MECHANISMS, AND ENERGY EFFICIENCY LAWS AND STANDARDS WILL PLAY A CRUCIAL ROLE IN PROTECTING THE NATURAL ENVIRONMENTS OF PLANNED ECONOMIES WHILE MEETING GROWING ECONOMIC EXPECTATIONS. PLAUSIBLE SCENARIOS FOR ECONOMIC GROWTH AND ENERGY SUPPLY AND EFFICIENCY ARE CONSTRUCTED FOR EASTERN EUROPE, CHINA, AND THE USSR. (5 GRAPHS, 4 PHOTOS) |

DE- *ENERGY SUPPLY-REGION ; *EASTERN EUROPE ; *CHINA ; *USSR ; *ECONOMICS, ENERGY USAGE ; *ECONOMIC GROWTH ; *FOSSIL FUEL DEMAND ; *SUPPLY-DEMAND FORECASTING ; *PRICE STRUCTURING ; *FUEL SUBSTITUTION ; FOSSIL FUEL PROD ; CARBON DIOXIDE ; INDUSTRIAL DEVELOPMENT |

RC- 03 |

Record - 17

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0171716|

RN- <ENERGYLINE> *91-012129|

TI- **ENERGY INDICATORS,** |

AU- PAGA ENRIQUE AND ; BRENNAND GARRY OPEC SECRETARIAT, VIENNA, AUSTRIA, |

SO- OPEC REVIEW, WINTER 90, V14, N4, P423(35) |

AB- JOURNAL ARTICLE WORLD PRIMARY ENERGY CONSUMPTION AND OIL AND PETROLEUM PRODUCT PRICE DATA ARE TABULATED FOR THE 1950-89 PERIOD. THE STATISTICS TRACK THE DEVELOPMENT OF OIL DEMAND IN OECD STATES, AND HOW THIS HAS RELATED TO THE TWO OIL-PRICE RISES OF THE 1970S AND THE PRICE COLLAPSE OF 1986. AN 18-EQUATION MODEL IS USED TO QUANTIFY THE AMOUNT OF OECD OIL DEMAND LOST OR GAINED DUE TO THESE LARGE PRICE MOVEMENTS. THE EVOLUTION OF ENERGY INTENSITY INDICATORS IN OECD AND DEVELOPING NATIONS IS ALSO TRACED. (1 DIAGRAM, 11 GRAPHS, 18 TABLES) |

DE- *DATA, ENERGY USAGE ; *ENERGY USAGE-REGION ; *ENERGY DEMAND-REGION ; *PRICES, OIL ; *FOSSIL FUEL DEMAND ; *ORG ECONOMIC COOP DEVEL ; ELECTRICITY DEMAND ; DEVELOPING NATIONS ; GROSS NATL PRODUCT-NON U S |

RC- 03 |

Record - 18

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0171713|

RN- <ENERGYLINE> *91-012126|

TI- **THE NEW EUROPE AND THE MIDDLE EAST: SCENARIOS FOR ENERGY PLANNING,** |

AU- OPPENHEIMER PETER OXFORD UNIV, UK, |

SO- ENERGY POLICY, NOV 90, V18, N9, P798(8) |

AB- JOURNAL ARTICLE THE MAIN ITEMS THAT MUST BE INCORPORATED IN ANY CURRENT SCENARIO EXERCISE ADDRESSING THE GLOBAL ENVIRONMENT FOR OIL AND ENERGY ARE OUTLINED. EMPHASIS IS PLACED ON WORLD ECONOMIC GROWTH, ENERGY INTENSITY, INTERFUEL COMPETITION AND SECURITY OF SUPPLY, AND IMPLICATIONS FOR MIDDLE EASTERN NATIONS. DESPITE THE INCREASED DOMINANCE OF THE GULF STATES IN THE OWNERSHIP OF OIL RESERVES, THEIR SHARE OF WORLD ENERGY PRODUCTION WILL NOT NECESSARILY RISE IN THE NEXT FEW DECADES. THIS TREND IS LIKELY, GIVEN A GREATER EMPHASIS ON NATURAL GAS AND THE INTENSIFIED

EXPLORATION EFFORTS IN OTHER GEOGRAPHICAL AREAS. |

DE- *MIDDLE EAST ; *EUROPE ; *ENERGY SUPPLY-REGION ; *SUPPLY-DEMAND FORECASTING ; *OIL IMPORTATION ; *OIL SUPPLY-REGION ; *FUEL SUBSTITUTION ; *ECONOMIC GROWTH ; PRICES, OIL ; DIVERSIFICATION |

RC- 03 |

Record - 19

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0171398 |

RN- <ENERGYLINE> *91-011811 |

TI- COMPLEX FORCES AFFECT PETROCHEMS FORECASTS, |

AU- BERBOTTO PAOLO |

SO- EUROPEAN CHEMICAL NEWS, JUL 30, 90, V55, N1433, P14(2) |

AB- JOURNAL ARTICLE THE ABILITY TO FORECAST THE LIKELY CRUDE OIL AND NATURAL GAS OUTLOOK IS VITAL TO PREPARE THE BEST FEEDSTOCK STRATEGY. THE CONCENSUS AMONG PETROCHEMICAL OPERATORS APPEARS TO BE NOT ONLY THAT ENSURING A STEADY-STATE PETROLEUM AVAILABILITY IS UNREALISTIC, BUT THAT THE PETROLEUM PRICE IS AN EXOGENOUS FACTOR WHICH WITH THE INDUSTRY MUST LIVE. THE ECONOMIC GROWTH OF OIL CONSUMING ECONOMIES, AS A PRIME DETERMINANT OF THEIR OIL DEMAND GROWTH, WILL BE A KEY FACTOR IN THE DETERMINATION OF THE CRUDE PRICE. THE RELATION OF OIL SHOCKS TO PETROCHEMICAL DEMAND WILL DEPEND ON THE RELATIVE ENERGY-INTENSITY OF PETROCHEMICAL PRODUCTS COMPARED TO THEIR NON-PETROCHEMICAL SUBSTITUTES. THIS WILL DETERMINE HOW PETROCHEMICALS FARE IN AN ENERGY CRISIS. (2 GRAPHS) |

DE- *SUPPLY-DEMAND FORECASTING ; *PRICES, OIL ; *PETROLEUM, CRUDE ; *PRICE INCREASES, OIL ; *OIL DEMAND ; *OIL SHORTAGE ; *OIL PRODUCTION ; *LIQUEFIED PETROLEUM GAS ; *ORG PETROL EXPORT COUNTRIES ; *MAJOR OIL COMPANIES ; FUEL SUBSTITUTION ; ECONOMICS, OIL |

RC- 07 |

Record - 20

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0171273 |

RN- <ENERGYLINE> *91-011685 |

TI- ENERGY USE IN U.S. MANUFACTURING: THE IMPACTS OF THE ENERGY SHOCKS ON SECTORAL OUTPUT, INDUSTRY STRUCTURE, AND ENERGY INTENSITY, |

AU- HOWARTH RICHARD B. LBNL, BERKELEY, CA, |

SO- J ENERGY & DEVELOPMENT, SPRING 89, V14, N2, P175(17) |

AB- JOURNAL ARTICLE A DISAGGREGATED MODEL EVALUATES US MANUFACTURING SECTOR ENERGY USE AS A FUNCTION OF THE LEVEL OF OUTPUT, THE INDUSTRY MIX, AND THE ENERGY INTENSITIES OF THE VARIOUS SUBSECTORS. THE ANALYSIS SHOWS THAT

SIGNIFICANT REDUCTIONS IN SECTORAL ENERGY INTENSITY WERE ACHIEVED DURING 1973-85. HOWEVER, THESE REDUCTIONS APPEAR TO BE AN EXTENSION RATHER THAN A REVERSAL OF PRE-1973 TRENDS, AND IT IS UNCLEAR THAT THE ENERGY SHOCKS OF THE 1970S INDUCED A SIGNIFICANT ACCELERATION IN THE RATE OF INTENSITY DECLINE. THE IMPACT OF THE ENERGY SHOCKS ON LONG-TERM SECTORAL OUTPUT TRENDS WERE NOT SUBSTANTIAL, BUT THE ECONOMIC DISLOCATION THAT FOLLOWED LED TO SIGNIFICANT CHANGES IN THE COMPOSITION OF SECTORAL OUTPUT. (7 GRAPHS, 16 REFERENCES, 1 TABLE) |

DE- *ENERGY DEMAND, INDUSTRIAL ; *PRICE INCREASES, OIL ; *ECONOMIC GROWTH *MATHEMATIC MODELS-ENERGY USAGE ; *MATHEMATIC MODELS-INDUSTRIAL ; *PRIMARY FUEL COSTS ; ELECTRICITY USAGE, INDUSTRIAL ; WOOD ENERGY |

RC- 18|

Record - 21

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0171234|

RN- <ENERGYLINE> 91-011646|

TI- **ENERGY AND TECHNOLOGICAL CHANGE: LESSONS FROM THE LAST FIFTEEN YEARS,** |

AU- MARTIN J. M. UNIV OF SOCIAL SCIENCES, GRENOBLE, FRANCE, |

SO- STI REVIEW, JUL 90, N7, P9(26) |

AB- JOURNAL ARTICLE A BRIEF OVERVIEW OF THE TECHNICAL CHANGES ENTAILED IN EFFORTS TO MEET ENERGY REQUIREMENTS SINCE THE FIRST OIL SHOCK IS PRESENTED. THREE SHIFTING TRENDS EMERGE: THE ENERGY INTENSITY OF ECONOMIC ACTIVITY HAS BEEN DECLINING SINCE THE MID-1970S; THE SUPPLY OF PRIMARY ENERGY SOURCES HAS STARTED TO BECOME MORE DIVERSIFIED; AND THE ORGANIZATION OF ENERGY SYSTEMS, WHICH HAD TENDED TO BE BASED ON MAJOR INDUSTRIAL CONCEPTS AIMED SOLELY AT SCALE ECONOMICS, IS NOW MOVING TOWARDS COMPLEXITY AND FLEXIBILITY. TECHNICAL CHANGES IN MANUFACTURING, TRANSPORT, AND HOUSEHOLD-TERTIARY ENERGY USAGE ARE DISCUSSED. THE TREND TOWARD GREATER EFFICIENCY IN THE USE OF END-POINT ENERGY HAS ALREADY BEEN SLOWED DOWN BY THE FALL IN ENERGY COSTS, BUT THIS MAY GAIN MOMENTUM AS A RESULT OF THE DIFFUSION OF INSTITUTIONAL INNOVATIONS AND PRESSURE APPLIED BY PUBLIC AUTHORITIES IN RESPONSE TO FEARS OF DAMAGE TO THE ENVIRONMENT. (29 REFERENCES, 3 TABLES) |

DE- *ENERGY USAGE-SOURCE ; *ENERGY IMPACT ASSESSMENT ; *TECHNOLOGY IMPACT ASSESSMENT ; *ENERGY DEMAND, INDUSTRIAL ; *ENERGY DEMAND, TRANSPORT ; *ENERGY DEMAND, DOMESTIC ; *ECONOMICS, ENERGY USAGE ; *EFFICIENCY ; *ENERGY DEVEL ESTIMATE COMPARISONS ; *PRIMARY FUEL ; *SUPPLY-DEMAND FORECASTING ; TEMPORAL COMPARISONS ; RENEWABLE RESOURCES ; STATE LOCAL ENV PROGRAMS |

RC- 17|

Record - 22

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0170291|
RN- <ENERGYLINE> *91-010703|
TI- **DECARBONATING ENERGY SYSTEMS: THE POTENTIAL FOR REDUCING CO2 EMISSIONS THROUGH REDUCED ENERGY INTENSITY IN CANADA, |**
AU- ROBINSON JOHN B. UNIV OF WATERLOO, ON, CANADA, |
SO- ENERGY STUDIES REVIEW, 1990, V2, N1, P1(17) |
AB- JOURNAL ARTICLE THE REPORT OF THE 1988 TORONTO CHANGING ATMOSPHERE CONF CHALLENGED CANADA TO REDUCE CARBON DIOXIDE EMISSIONS BY ABOUT 20% OF 1988 LEVELS BY THE YEAR 2005 AS AN INITIAL GLOBAL GOAL. THE REPORT CALLED FOR REALIZING ABOUT ONE-HALF OF THIS REDUCTION THROUGH ENERGY EFFICIENCY AND OTHER CONSERVATION MEASURES. THE POTENTIAL FOR ACHIEVING THE ENERGY DEMAND-SIDE COMPONENT OF THAT TARGET IN CANADA IS EXAMINED. A ROUGH CALCULATION SUGGESTS THAT ATTAINING HALF OF THE 20% TARGET THROUGH INCREASED ENERGY EFFICIENCY IS TECHNICALLY AND ECONOMICALLY FEASIBLE. SIGNIFICANT TRANSFORMATIONS IN ENERGY USE PATTERNS ARE REQUIRED, AND SEVERAL PRIORITY AREAS FOR EFFICIENCY IMPROVEMENTS ARE RECOMMENDED. (1 DIAGRAM, 3 GRAPHS, 52 REFERENCES, 6 TABLES) |
DE- *CANADA ; *ENERGY CONSERVATION-REGION ; *CARBON DIOXIDE ; *GREENHOUSE EFFECT ; *STACK EMISSION CONTROL ; *ENERGY DEMAND-REGION ; *ENERGY CONSERVATION-SECTOR ; FOSSIL FUEL DEMAND ; EFFICIENCY |
RC- 21|

Record - 23

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0169053|
RN- <ENERGYLINE> 90-013651|
TI- **FINANCING ENERGY DEVELOPMENT IN MEXICO: THE EXTERNAL DEBT OF ENERGY SECTOR, |**
AU- DE LA VEGA NAVARRO ANGEL UNIV NACIONAL AUTONOMA DE MEXICO, |
SO- INTL ASSN FOR ENERGY ECONOMICS ENERGY SUPPLY IN THE 1990S AND BEYOND INTL CONF, CARACAS, VENEZUELA, JUN 26-28, 89, P244(10) |
AB- CONF PAPER IN DECEMBER 1988, THE NATIONAL OIL COMPANY OF MEXICO, PEMEX, HAD AN EXTERNAL DEBT OF $16 BILLION, ABOUT 20% OF THE TOTAL PUBLIC EXTERNAL DEBT OF THE ENTIRE COUNTRY. THE CENTRAL FACTORS OF PEMEX'S INDEBTEDNESS, ALONG WITH THAT OF CFE, THE NATIONAL ELECTRICITY COMPANY, AND THE RELATIONSHIPS WITH THE ECONOMY AS A WHOLE ARE EXPLORED. CENTRAL TO THIS DILEMMA ARE SEVERAL COMPLICATED ISSUES: GROWTH IMPLIES MORE INDEBTEDNESS, AN ACCELERATION OF IMPORTS, A REDUCTION OF EXPORT SURPLUS, A RISE IN ENERGY CONSUMPTION, AND THE NECESSITY OF NEW INVESTMENT IN THE ENERGY SECTOR. ENERGY POLICY, PARTICULARLY IN COUNTRIES WHERE HYDROCARBONS ARE PREDOMINANT AND WITH A HIGH ENERGY INTENSITY LIKE MEXICO, CANNOT BE SEPARATED FROM THE SOLVENCY OF THE COUNTRY AS A WHOLE. |

DE- *MEXICO ; *FOREIGN TAX CREDITS ; *ENERGY DEVEL FINANCING ; *POLICY-PLANNING, NON U S ; *ENERGY DEVEL INVESTMENT ; *FOREIGN AID, NON U S ; *ENERGY SELFSUFFICIENCY, NON U S ; *ECONOMIC GROWTH ; *ECONOMICS-INTL ; INTL PROGRAMS ; INVESTMENT |

RC- 03 |

Record - 24

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0168941 |

RN- <ENERGYLINE> *90-013536 |

TI- **STRUCTURAL CHANGE AND ENERGY USE: THE CASE OF THE MANUFACTURING SECTOR IN TAIWAN,** |

AU- LI JING-WEN ASIAN INST OF TECHNOLOGY, BANGKOK, THAILAND, ; SHRESTHA RAM M. ; FOELL WESLEY K. |

SO- ENERGY ECONOMICS, APR 90, V12, N2, P109(7) |

AB- JOURNAL ARTICLE DATA FOR THE 1971-85 PERIOD ARE USED TO EXAMINE THE ROLE OF SECTORAL SHIFTS AND IMPROVEMENTS IN ENERGY INTENSITY OF INDIVIDUAL INDUSTRIES IN AGGREGATE MANUFACTURING-SECTOR ENERGY INTENSITY CHANGES IN TAIWAN. IMPROVEMENTS IN ENERGY INTENSITY OF SELECTED MANUFACTURING SUBGROUPS WERE THE MAIN INFLUENCES ON THE DECLINE IN MANUFACTURING FUEL AND ELECTRICITY INTENSITIES. THE GROUP EFFECTS WERE FAVORABLE TO DECLINE IN AGGREGATE FUEL AND ELECTRICITY INTENSITIES IN MOST OF THE YEARS, BUT THE STRUCTURAL EFFECT WAS RELATIVELY INSIGNIFICANT, MOSTLY DUE TO AN UNFAVORABLE SUBGROUP EFFECT. (1 DIAGRAM, 10 GRAPHS, 20 REFERENCES) |

DE- *TAIWAN ; *ENERGY DEMAND, INDUSTRIAL ; *FUEL CONSERVATION, INDUSTRIAL *ELECTRICITY CONSERV, INDUSTRIAL ; ECONOMIC GROWTH |

RC- 18 |

Record - 25

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0168613 |

RN- <ENERGYLINE> *90-013205 |

TI- **THE GREENHOUSE EFFECT: THE FALLACIES IN THE ENERGY EFFICIENCY SOLUTION** |

AU- BROOKES LEN |

SO- ENERGY POLICY, MAR 90, V18, N2, P199(3) |

AB- JOURNAL ARTICLE THE BELIEF THAT WIDESPREAD IMPROVEMENTS IN ENERGY EFFICIENCY CAN BY THEMSELVES STOP GREENHOUSE GAS BUILDUP WORLDWIDE IS FUNDAMENTALLY UNSOUND. THIS VIEW IS BASED ON THE SAME FALLACIES THAT UNDERLIE THE CLAIM THAT ENERGY SAVINGS FROM EFFICIENCY IMPROVEMENTS CAN SUBSTITUTE FOR NEW ENERGY SUPPLY. REDUCTIONS IN ENERGY INTENSITY OF OUTPUT THAT ARE NOT DAMAGING TO THE ECONOMY ARE ASSOCIATED WITH INCREASES, RATHER THAN DECREASES, IN ENERGY

DEMAND AT THE MACROECONOMIC LEVEL. A MORE STRAIGHTFORWARD APPROACH ENTAILS REDUCTIONS IN WORLD ECONOMIC ACTIVITY, SPECIFIC LIMITATIONS ON CARBON DIOXIDE EMISSIONS, AND AN INTERNATIONAL AGREEMENT TO PLACE HEAVY TAXES ON POLLUTING FUELS. (9 REFERENCES) |

DE- *GREENHOUSE EFFECT ; *ENERGY CONSERVATION-REGION ; *FUEL SUBSTITUTION *ENV CONSTRAINTS-FOSSIL FUEL ; *ECONOMIC GROWTH ; CARBON DIOXIDE ; INTL COOPERATION ; REGULATIONS, ENV-INTL |

RC- 21 |

Record - 26

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0167830 |

RN- <ENERGYLINE> 90-012410 |

TI- **ENERGY INTENSITY ANALYSIS FOR THE PERIOD 1971-1984: A CASE STUDY OF TAIWAN,** |

AU- WU RONG-HWA AND ; CHEN CHIA-YON NATL CHENG-KUNG UNIV, TAINAN, TAIWAN, |

SO- ENERGY-PERGAMON, 1989, V14, N10, P635(7) |

AB- JOURNAL ARTICLE HYBRID-UNIT FORMULATIONS OF ENERGY INPUT-OUTPUT ANALYSIS ARE APPLIED TO THE ASSESSMENT OF ENERGY-INTENSITY VARIATIONS IN VARIOUS ECONOMIC SECTORS OF TAIWAN FOR THE 1971-84 PERIOD. ABOUT 85% OF THE SECTORS CONSIDERED SHOWED REMARKABLE DOWNWARD TRENDS IN TOTAL PRIMARY ENERGY INTENSITY DURING THE STUDY PERIOD, IMPLYING THE EFFECTIVENESS OF ENERGY CONSERVATION MEASURES. SIGNIFICANT IMPROVEMENTS IN ENERGY INTENSITY IN MAJOR ENERGY-INTENSIVE SECTORS, SUCH AS PULP AND PAPER, CEMENT, AND FERTILIZER INDUSTRIES, ARE NOTED AND DEEMED THE DOMINANT FACTOR IN INCREASING NATIONAL ENERGY PRODUCTIVITY. (1 GRAPH, 14 REFERENCES, 5 TABLES) |

DE- *TAIWAN ; *ENERGY CONSERVATION, INDUSTL ; *ENERGY CONSERVATION, TRANSP *MATHEMATIC MODELS-ENERGY USAGE ; *FOSSIL FUEL DEMAND ; *FUEL SUBSTITUTION ; OIL CONSERVATION ; ELECTRICITY DEMAND |

RC- 17 |

Record - 27

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0167115 |

RN- <ENERGYLINE> 90-011677 |

TI- **THE IMPACT OF SECTORAL SHIFTS IN INDUSTRY ON U.S. ENERGY DEMANDS,** |

AU- HUNTINGTON HILLARD G. STANFORD UNIV, CA, |

SO- ENERGY-PERGAMON, 1989, V14, N6, P363(10) |

AB- JOURNAL ARTICLE SHIFTS AMONG ECONOMIC SECTORS WITHIN MANUFACTURING SINCE 1973 HAVE HAD A SIGNIFICANT EFFECT ON US INDUSTRIAL ENERGY DEMAND. ABOUT ONE-THIRD OF THE REDUCTION IN US ENERGY INTENSITY FOR FOSSIL FUELS CAN BE ATTRIBUTED TO SECTORAL SHIFTS OVER THIS PERIOD. STANDARD ECONOMIC

PROJECTIONS ANTICIPATE A CONTINUATION OF THE SHIFT AWAY FROM LARGE INDUSTRIAL ENERGY-USING SECTORS, ALTHOUGH AT A SLOWER RATE. RECENT PROJECTIONS INDICATE A DECLINE RATE OF ABOUT HALF THAT EXPERIENCED DURING 1973-81. THIS EFFECT ALONE COULD CONTRIBUTE AS MUCH AS 0.5% PER YEAR TO THE RATE OF DECLINE IN AGGREGATE ENERGY INTENSITY WITHIN MANUFACTURING. (1 GRAPH, 14 REFERENCES, 4 TABLES) |

DE- *ENERGY DEMAND, INDUSTRIAL ; *ECONOMIC GROWTH ; *FOSSIL FUEL DEMAND ; *PRICES, FOSSIL FUEL ; *SUPPLY-DEMAND FORECASTING ; SECTOR COMPARISONS |

RC- 18|

Record - 28

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0164718|

RN- <ENERGYLINE> *89-013458|

TI- **EUROPEAN INDUSTRIAL ENERGY CONSUMPTION: HISTORICAL TRENDS AND PROSPECTS TO 1995,** |

AU- ELZIR ANTOINE AND ; PARIENTE-DAVID SILVIA DRI ENERGY, PARIS, FRANCE, |

SO- IAEE ENERGY & ECONOMIC GROWTH 10TH ANNUAL INTL CONF, LUXEMBOURG, JUL 4-7, 88, V1 (12) |

AB- CONF PAPER FORECASTS OF ENERGY CONSUMPTION IN A FUEL-BY-FUEL BASIS ARE PRESENTED FOR 10 INDUSTRIAL SECTORS IN FRANCE, WEST GERMANY, ITALY, AND THE UK. TOTAL INDUSTRIAL ENERGY CONSUMPTION FOR THESE NATIONS IS FORECAST TO INCREASE 10% DURING 1985-95. THIS INCREASE IN ENERGY CONSUMPTION IS ENTIRELY DUE TO AN INCREASE IN INDUSTRIAL PRODUCTION AND NOT TO AN OVERALL LOSS OF EFFICIENCY IN THE USE OF ENERGY IN INDUSTRY. INDUSTRIAL OUTPUT IS PROJECTED TO GAIN 25% DURING 1985-95; THE OVERALL ENERGY INTENSITY OF THE EUROPEAN INDUSTRIAL SECTOR SHOULD DECLINE BY 10%. OIL'S SHARE SHOULD FALL BACK TO ITS 1985 LEVEL TOWARDS THE EARLY TO MID-1990S. THE SHARE OF COAL WILL INCREASE RAPIDLY AFTER 1991 AS COAL AGAIN BECOMES ATTRACTIVE IN LARGE BOILER PLANTS. GAS SHARE REACHES A PEAK OF NEARLY 31% IN THE EARLY 1990S AND DECLINES THEREAFTER AS IT FACES COMPETITION FROM COAL IN THE BOILER FUEL MARKET. (9 GRAPHS, 5 TABLES) |

DE- *ENERGY DEMAND, INDUSTRIAL ; *WESTERN EUROPE ; *SUPPLY-DEMAND FORECASTING ; *FOSSIL FUEL DEMAND ; *ELECTRICITY DEMAND, INDUSTRIAL ; *ECONOMIC GROWTH ; PRICES, FOSSIL FUEL |

RC- 18|

Record - 29

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0164716|

RN- <ENERGYLINE> *89-013456|

TI- **ENERGY CONSUMPTION TRENDS IN THE FRENCH INDUSTRY: PAST CHANGES AND PROSPECTS,** |

AU- LAPILLONNE B. AGENCE FRANCAISE POUR MAITRISE DE L'ENERGIE, PARIS, FRANCE, ; GARCIA F. ; MEZIERE D. |

SO- IAEE ENERGY & ECONOMIC GROWTH 10TH ANNUAL INTL CONF, LUXEMBOURG, JUL 4-7, 88, V1 (17) |

AB- CONF PAPER RELATIONSHIPS ARE SOUGHT BETWEEN INDUSTRIAL GROWTH AND ENERGY CONSUMPTION TRENDS IN THE FRENCH INDUSTRIAL SECTOR. DURING 1974-85, THE AGGREGATE FUEL CONSUMPTION BY UNIT OF VALUE ADDED FELL BY 42%, OF WHICH ROUGHLY 80% WAS DUE TO A REDUCTION IN INDUSTRIAL SECTORAL INTENSITIES WITHIN 17 INDUSTRIAL SECTORS. ABOUT ONE-THIRD OF THE FALL IN SECTORAL INTENSITIES FOR FUEL CORRESPONDS TO A PRODUCT EFFECT, THE REMAINDER ATTRIBUTED TO REDUCTIONS IN CONSUMPTION PER PHYSICAL UNIT WITHIN THE 17 SECTORS. CHANGES IN ENERGY INTENSITIES IN THE CEMENT AND STEEL INDUSTRIES ARE DETAILED. (7 GRAPHS, 26 REFERENCES, 7 TABLES) |

DE- *FRANCE ; *ENERGY DEMAND, INDUSTRIAL ; *PETROLEUM PRODUCTS ; *ELECTRICITY DEMAND, INDUSTRIAL ; *ECONOMIC GROWTH ; FOSSIL FUEL DEMAN PRICES, ENERGY |

RC- 18|

Record - 30

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0164369|

RN- <ENERGYLINE> *89-013103|

TI- **ENERGY MANAGEMENT AT THE VANCOUVER ART GALLERY,** |

AU- SINCLAIR KEN (SINCLAIR ENERGY SERVICES, BC, CANADA) AND ; KROK KEVIN |

SO- ASHRAE J, MAY 89, V31, N5, P46(4) |

AB- JOURNAL ARTICLE IN 1984, THE VANCOUVER, BRITISH COLUMBIA, CANADA, ART GALLERY, A FOUR-STORY BUILDING, WAS OPERATING AT AN ENERGY INTENSITY OF 300-368 BTU/SQ FT/YEAR, REPRESENTING A COST OF ABOUT $300,000/YEAR. IMPLEMENTATION OF ENERGY CONSERVATION OPPORTUNITIES IDENTIFIED BY AN ENERGY AUDIT RESULTED IN AN ANNUAL SAVINGS OF $165,650 IN 1987 AND $203,000 IN 1988. THE TOTAL CAPITAL COST OF ALL PROJECTS WAS ESTIMATED AT $148,000, PROVIDING A SIMPLE PAYBACK OF JUST OVER 10 MONTHS. A SIGNIFICANT REDUCTION WAS ACHIEVED BY INSTALLATION OF A DEDICATED COMPUTERIZED ENERGY MANAGEMENT CONTROL SYSTEM. (3 DIAGRAMS, 1 GRAPH, 1 PHOTO) |

DE- *ENERGY CONSERVATION, GOVT ; *VANCOUVER ; *RETROFITTING ; *MUSEUMS ; *COMPUTER APPLICATIONS ; *HEAT VENT AIR-CON SYSTEMS ; *ECONOMICS, ENERGY USAGE-GOVT ; INVESTMENT ; WATER HEATING |

RC- 18|

Record - 31

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0164031 |

RN- <ENERGYLINE> *89-012772 |

TI- **ENERGY CONSERVATION THROUGH MATERIALS SELECTION IN BUILDING INDUSTRY,** |

AU- EKBOTE P. D. REGIONAL RESEARCH LAB, BHOPAL, INDIA, ; DAN T. K. ; KHAZANCHI A. C. ; KUMAR RAJENDRA |

SO- RESEARCH & INDUSTRY, MAR 89, V34, N1, P74(6) |

AB- JOURNAL ARTICLE TRADITIONAL BUILDING CONSTRUCTION MATERIALS, SUCH AS CEMENT, BRICKS, TIMBER, AND STEEL, ARE ENERGY INTENSIVE MATERIALS. GREAT SCOPE EXISTS FOR CONSERVING ENERGY IN THE MANUFACTURE OF THESE MATERIALS. ALTERNATE BUILDING MATERIALS CAN ALSO BE EXPLOITED WITH THE GOAL OF REDUCING ENERGY INTENSITY IN CONSTRUCTION. THE USE OF RECENTLY DEVELOPED WET PROCESSES TO DISPLACE CONVENTIONAL DRY PROCESSES IN THE CEMENT MANUFACTURING REPRESENTS ONE MEANS OF REDUCING INDUSTRIAL ENERGY CONSUMPTION. THE USE OF FLYASH, AGRICULTURAL WASTES, AND OTHER SUBSTANCES AS RAW MATERIALS FOR CEMENT PRODUCTION IS ALSO RECOMMENDED. (13 REFERENCES, 10 TABLES) |

DE- *ENERGY CONSERVATION, INDUSTL ; *CEMENT ; *FLYASH ; *ELECTRICITY CONSERV, INDUSTRIAL ; CONSTRUCTION COSTS ; TIMBER SUPPLY ; AGRICULTURAL WASTES |

RC- 18 |

Record - 32

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0163393 |

RN- <ENERGYLINE> *89-012131 |

TI- **NEW ZEALAND (ENERGY POLICIES AND PROGRAMMES OF IEA COUNTRIES: 1987 REVIEW),** |

SO- OECD/IEA REPORT, 1988, P327(18) |

AB- BOOK CHAPTER NEW ZEALAND, UNLIKE MANY OTHER IEA NATIONS, HAS HAD A FAIRLY CONTINUOUS INCREASE IN ITS OVERALL ENERGY INTENSITY SINCE 1973. DURING 1973-86, PRIMARY ENERGY REQUIREMENTS PER UNIT GROSS DOMESTIC PRODUCT INCREASED ABOUT 30%. THE PRIMARY ENERGY POLICY OBJECTIVE HAS BEEN TO INCREASE ENERGY SELF-SUFFICIENCY BY DEVELOPING ITS SUBSTANTIAL INDIGENOUS, MAINLY NON-OIL, ENERGY RESOURCES. CONSIDERABLE PROGRESS WAS REALIZED DURING 1973-86, WHEN THE SHARE OF NET OIL IMPORTS IN TOTAL PRIMARY ENERGY REQUIREMENTS DROPPED FROM 47 TO 16%. ENERGY POLICIES AFFECTING SUPPLY, PRICES, AND CONSERVATION OF FOSSIL FUELS AND ELECTRICITY ARE HIGHLIGHTED. THE GOVERNMENT IS ADVISED TO PROMOTE THE ONGOING DEREGULATION OF THE ENERGY SECTOR WITH REGARD TO FACILITATING PRIVATE SECTOR PARTICIPATION, TO ENCOURAGE GROWTH IN THE DOMESTIC OIL AND GAS INDUSTRY, AND TO IMPLEMENT A COMPREHENSIVE ENERGY MANAGEMENT STRATEGY. (1 TABLE) |

DE- *NEW ZEALAND ; *ENERGY SUPPLY-REGION ; *FOSSIL FUEL PROD ; *FOSSIL FUEL DEMAND ; *ENERGY CONSERVATION-REGION ; *SUPPLY-DEMAND FORECASTING ; *ENERGY SELFSUFFICIENCY, NON U S ; ELECTRICITY SUPPLY-REGION ; PRICES, ENERGY ; TAXATION,

NON U S ; ENERGY RESEARCH & DEVEL, NON U S ; OIL IMPORTATION |

RC- 03 |

Record - 33

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0163386 |

RN- <ENERGYLINE> *89-012124 |

TI- **GERMANY (ENERGY POLICIES AND PROGRAMMES OF IEA COUNTRIES: 1987 REVIEW)** |

SO- OECD/IEA REPORT, 1988, P197(22) |

AB- BOOK CHAPTER WEST GERMANY HAS THE HIGHEST TOTAL PRIMARY ENERGY REQUIREMENT IN WESTERN EUROPE AND THE THIRD HIGHEST IN THE IEA. THE GOVERNMENT RELIES MAINLY ON FREE MARKET MECHANISMS TO ACHIEVE ITS ENERGY POLICY OBJECTIVES. IN 1987, TOTAL PRIMARY ENERGY REQUIREMENTS DECLINED BY 0.2%, CONFIRMING THE TREND OF IMPROVED ENERGY INTENSITY. ENERGY POLICIES ARE DESIGNED TO REDUCE THE SHARE OF OIL IN THE ENERGY SUPPLY, TO DIVERSIFY IMPORT SOURCES, AND TO IMPROVE EMERGENCY RESPONSE MEASURES. CURRENT AND PROJECTED TRENDS IN FOSSIL FUEL AND ELECTRICITY SUPPLY, DEMAND, AND PRODUCTION ARE EXAMINED, AS ARE ENERGY POLICIES GOVERNING ENERGY TRADE, PRICES, CONSERVATION, BUDGETS, AND RD&D. FORECASTS SHOW THAT WHILE OIL AND GAS DEMANDS WILL INCREASE UNTIL 1990 AND DROP THEREAFTER, ELECTRICITY CONSUMPTION WILL INCREASE UNTIL 2000. THE GOVERNMENT IS URGED TO FURTHER PROMOTE THE USE OF INDIGENOUS COAL RESOURCES AND TO RE-EXAMINE THE PATTERN OF PROPOSED ENERGY CONSERVATION EXPENDITURES TO ENSURE THAT SECTORAL ALLOCATIONS REFLECT NEEDS AND PROSPECTS FOR EACH SECTOR. (1 GRAPH, 7 TABLES) |

DE- *GERMANY, WEST ; *ENERGY SUPPLY-REGION ; *ENERGY SELFSUFFICIENCY, NON U S ; *FOSSIL FUEL PROD ; *FOSSIL FUEL DEMAND ; *ELECTRICITY SUPPLY-REGION ; *ENERGY CONSERVATION-REGION ; *SUPPLY-DEMAND FORECASTING ; PRICES, ENERGY ; TAXATION, NON U S ; ENERGY RESEARCH & DEVEL, NON U S ; OIL IMPORTATION ; EMERGENCY PLANNING |

RC- 03 |

Record - 34

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0163385 |

RN- <ENERGYLINE> *89-012123 |

TI- **DENMARK (ENERGY POLICIES AND PROGRAMMES OF IEA COUNTRIES: 1987 REVIEW)** |

SO- OECD/IEA REPORT, 1988, P177(19) |

AB- BOOK CHAPTER DUE TO A RANGE OF SPECIFIC POLICIES AND PROGRAMS, DENMARK'S DEPENDENCE ON IMPORTED OIL HAS DROPPED SUBSTANTIALLY IN THE LAST 20 YEARS. POLICIES COVERING TAXATION, FINANCIAL INCENTIVES, AND R&D ACTIVITIES HAVE SERVED TO STIMULATE DEVELOPMENT OF OFFSHORE OIL AND GAS RESOURCES, PROMOTE

ELECTRIC POWER PLANT CONVERSION FROM OIL TO COAL, AND IMPROVE OVERALL ENERGY EFFICIENCY. DENMARK HAS ONE OF THE STRONGEST CONSERVATION PROGRAMS IN THE IEA, WHICH HAS CONTRIBUTED TO A 24% DROP IN ENERGY INTENSITY SINCE 1973. RECOMMENDATIONS FOR CONTINUING SUCH IMPROVEMENTS IN ENERGY EFFICIENCY AND THE NATIONAL ENERGY MIX CONCERN ENERGY PRICING AND TAXATION, SECTORAL CONSERVATION INCENTIVES, AND RD&D. (1 TABLE) |

DE- *DENMARK ; *ENERGY SUPPLY-REGION ; *OIL IMPORTATION ; *ENERGY CONSERVATION-REGION ; *FOSSIL FUEL PROD ; *FOSSIL FUEL DEMAND ; *SUPPLY-DEMAND FORECASTING ; *ENERGY SELFSUFFICIENCY, NON U S ; FUEL SUBSTITUTION ; TAXATION, NON U S ; PRICES, ENERGY ; ENERGY RESEARCH & DEVEL, NON U S |

RC- 03|

Record - 35

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0162717|

RN- <ENERGYLINE> *89-011451|

TI- **THE ROLE OF EUROPEAN GOVERNMENTS IN PROMOTING ENERGY EFFICIENCY IN THE 1990'S: A EUROPEAN COMMUNITY VIEWPOINT,** |

AU- WARREN ANDREW ASSN CONSERVATION OF ENERGY, |

SO- AMER COUNCIL ENERGY-EFFICIENT ECONOMY ENERGY EFFICIENCY IN BUILDINGS SYM, 1988, V5, P137(3) |

AB- CONF PAPER ENERGY INTENSITY WITHIN THE EEC IMPROVED BY ALMOST 2% PER YEAR DURING 1973-83, BUT HAS LARGELY STOPPED OR INCREASED IN SOME NATIONS. A CONTINUING AND ACCELERATED GOVERNMENT ROLE IS ADVOCATED IN THE COMING DECADE FOR PROMOTING ENERGY EFFICIENCY. POLICY OPTIONS AND INSTRUMENTS AVAILABLE TO GOVERNMENTS TO RENEW THE EARLIER RATE OF PROGRESS ARE DISCUSSED WITH REFERENCE TO INFORMATION CAMPAIGNS, REGULATIONS, AND INCENTIVES. THESE TOOLS CAN BE EXPLOITED TO ATTAIN THE ENERGY EFFICIENCY GOAL OF 20% ESTABLISHED FOR 1995. |

DE- *EUROPEAN ECONOMIC COMMUNITY ; *ENERGY CONSERVATION-REGION ; *INFORMATION ; *REGULATIONS, NON U S ; *ECONOMIC INCENTIVES ; FUEL SUBSTITUTION ; LABELING |

RC- 08|

Record - 36

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0162685|

RN- <ENERGYLINE> *89-011419|

TI- **UNDERSTANDING THE FUTURE: ONLY HISTORIANS CAN,** |

AU- SMART IAN |

SO- PETROMIN, DEC 88, P29(3) |

AB- JOURNAL ARTICLE A LONG-TERM PERSPECTIVE BASED IN THE PAST MUST BE ASSUMED TO PREDICT PATTERNS OF OIL SUPPLY AND PRICES WITH ANY DEGREE OF ACCURACY. THE RELATIONSHIP BETWEEN ECONOMIC OUTPUT AND PRIMARY ENERGY INPUT DOES NOT FOLLOW A STRAIGHT LINE AS DEVELOPMENT PROCEEDS. BEYOND A CERTAIN LEVEL OF ECONOMIC AND TECHNICAL DEVELOPMENT, ENERGY INTENSITY IN ALL ECONOMIES DECLINES. IN THE LONG-TERM, LOWER PRICES FOR OIL OR ENERGY IN GENERAL WILL NOT NECESSARILY REVERSE THE RECENT TREND TOWARDS CONSTRAINED ENERGY DEMAND. IMPLICATIONS OF THESE TRENDS, AND OF NEW ENVIRONMENTAL CONCERNS ENTERING THE ENERGY ARENA, ON THE LIKELY FUTURE FOR THE OIL INDUSTRY ARE CONSIDERED. |

DE- *OIL SUPPLY-REGION ; *PRICES, OIL ; *ORG ECONOMIC COOP DEVEL ; *ECONOMIC GROWTH ; *ENERGY SUBSTITUTION ; *OIL PROFITABILITY ; ENV CONSTRAINTS-ENERGY ; DEVELOPING NATIONS |

RC- 03 |

Record - 37

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0162684 |

RN- <ENERGYLINE> *89-011418 |

TI- **COUNTRY PROFILE: NEW ZEALAND,** |

AU- STEEG HELGA IEA, |

SO- PETROMIN, DEC 88, P24(4) |

AB- JOURNAL ARTICLE VULNERABILITY TO OIL SUPPLY DISRUPTIONS PROMPTED NEW ZEALAND TO BREAK DEPENDENCE ON IMPORTED OIL BY DEVELOPING ITS INDIGENOUS ABUNDANT ENERGY RESOURCES. NET OIL IMPORTS DECLINED BY 50% DURING 1973-87 WHILE DEMAND FOR ENERGY ACTUALLY GREW BY 50%. BY 1987, NEW ZEALAND WAS PROVIDING ABOUT 86% OF ITS ENERGY NEEDS FROM LOCAL SOURCES SUCH AS HYDROELECTRIC POWER, GEOTHERMAL ENERGY, AND DOMESTICALLY PRODUCED FOSSIL FUELS. GROWTH IN ENERGY INTENSITY HAS BEEN ACCOMPANIED BY DEREGULATION PROCESSES THAT WILL ENSURE GREATER COMPETITION IN ELECTRICITY, COAL, OIL, AND GAS SUPPLY AND DISTRIBUTION. (1 PHOTO) |

DE- *NEW ZEALAND ; *ENERGY SELFSUFFICIENCY, NON U S ; *OIL IMPORTATION ; *ECONOMIC GROWTH ; *FOSSIL FUEL DEMAND ; COMPETITION ; PRICES, ELECTRICITY ; GOLD RESOURCES ; FOSSIL FUEL PROD |

RC- 03 |

Record - 38

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0159491 |

RN- <ENERGYLINE> *88-033311 |

TI- **COMMERCIAL AND INDUSTRIAL ELECTRIFICATION OPPORTUNITIES (DEMAND-SIDE MANAGEMENT: CONCEPTS & METHODS),** |

AU- GELLINGS CLARK W. ; CHAMBERLIN JOHN H. |

CS- (EPRI) AND ; (BARAKAT HOWARD & CHAMBERLIN), |

SO- FAIRMONT PRESS REPORT, 1988, P169(21) |

DT- BOOK |

AB- EFFICIENCY IMPROVEMENTS IMPLEMENTED IN THE COMMERCIAL AND INDUSTRIAL SECTORS IN THE 1970S REDUCED OVERALL ENERGY USE, BUT ELECTRICITY USE GREW SIGNIFICANTLY. EMERGING ELECTRIC TECHNOLOGIES SURROUNDING ELECTRIC VEHICLES, AUTOMATION, AND INDUSTRIAL PROCESS HEATING HAVE A POTENTIAL FOR INCREASING THE ELECTRIC ENERGY INTENSITY OF THE INDUSTRIAL SECTOR. GENERAL BENEFITS ARE PROVIDED BY MOST ELECTRIFICATION PROCESSES AS COMPARED WITH OTHER LIQUID FUEL PROCESSES, SUCH AS GENERALLY REDUCED FIXED COST AND INCREASED PRODUCTIVITY. ELECTRIC PROCESS HEATING TECHNOLOGIES SURVEYED INCLUDE ELECTROTHERMAL HEATING AND PLASMA SYSTEMS. UTILITY ACTIONS AND MARKET PLANNING PROGRAMS THAT CAN BE LAUNCHED TO IMPROVE SALES AND BOOST THE ELECTRIFICATION OF THE INDUSTRIAL AND COMMERCIAL SECTORS ARE ADDRESSED. (4 DIAGRAMS, 4 GRAPHS, 10 REFERENCES, 5 TABLES) |

DE- *ELECTRICITY USAGE, INDUSTRIAL ; *ELECTRICITY USAGE, COMMERCIAL ; *ELECTRICAL HEATING ; *HEATING SYSTEMS, INDUSTRIAL ; *ENERGY SUBSTITUTION ; *ECONOMICS, ENERGY USAGE-IND ; COMPUTER APPLICATIONS ; ECONOMICS, ELECTRICITY |

RC- 18|

Record - 39

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0159067|

RN- <ENERGYLINE> 88-023237|

TI- **ENERGY CONSERVATION POLICIES IN THE OECD: DID THEY MAKE A DIFFERENCE?,** |

AU- SCHIPPER LEE |

CS- LBNL, |

SO- ENERGY POLICY, DEC 87, V15, N6, P538(11) |

DT- JOURNAL ARTICLE |

AB- IN 1985, ALL MAJOR ENERGY CONSUMING SECTORS WITHIN THE OECD REACHED 47 MILLION BPD OF OIL EQUIVALENT. HOWEVER, DURING 1972-85, ENERGY USE PER UNIT OF ACTIVITY IN EACH OF THESE SECTORS FELL SIGNIFICANTLY. IF THESE ENERGY INTENSITIES, BY SECTOR, HAD BEEN FROZEN AT THEIR 1972 VALUES, 1985 END-USE WOULD HAVE BEEN CLOSE TO 64 MILLION BPD OF OIL EQUIVALENT; THE DIFFERENCE YIELDS A SAVINGS OF 17 MILLION BPD OF OIL EQUIVALENT. THE CORRESPONDING OIL SAVINGS IN THIS PERIOD AMOUNT TO CLOSE TO 12 MILLION BPD OF OIL EQUIVALENT, INCLUDING SUBSTITUTION BY OTHER FUELS. MOST OF THESE SAVINGS WILL NOT BE REVERSED IN THE NEAR FUTURE WITH LOWER OIL PRICES. ONLY A SMALL PART WAS ATTRIBUTED TO ENERGY CONSERVATION POLICIES. THE IMPACT OF POLICIES NOW IN PLACE WILL PROBABLY INCREASE AS MORE NEW CAPITAL IS AFFECTED. (7 GRAPHS) |

DE- *ENERGY CONSERVATION-REGION ; *ORG ECONOMIC COOP DEVEL ; *ENERGY

CONSERVATION-SECTOR ; *FUEL SUBSTITUTION ; *FUEL CONSERVATION, TRANSPORT ; *ELECTRICITY CONSERV, DOMESTIC ; ECONOMIC INCENTIVES ; ELECTRICAL APPLIANCES ; ENERGY CONSERVATION, INDUSTL |

RC- 17 |

Record - 40

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0158753 |

RN- <ENERGYLINE> 88-013270 |

TI- **ENERGY INDICATORS,** |

AU- TABTI MOHAMED-TAHAR ; BRENNAND GARRY |

CS- OPEC SECRETARIAT, AUSTRIA, |

SO- OPEC REVIEW, WINTER 87, V11, N4, P357(42) |

DT- JOURNAL ARTICLE |

AB- INDICATORS OF ENERGY CONSUMPTION, ACTIVITY, AND INTENSITY ARE EXAMINED FOR OECD MEMBER NATIONS AND DEVELOPING NATIONS. ENERGY INTENSITY IS ANALYZED BY MAJOR OECD CONSUMING SECTOR, AND ELASTICITIES OF ENERGY DEMAND ARE CONSIDERED. THE TENDENCY FOR ENERGY INTENSITY TO RISE AT LOWER LEVELS OF DEVELOPMENT AS THE ECONOMY UNDERGOES INTENSIVE INDUSTRIALIZATION IS CONFIRMED. THE RESTRUCTURING OF INDUSTRY HAS BEEN TOWARDS LESS ENERGY-INTENSIVE ACTIVITIES, AND HAS THEREBY CONTRIBUTED TO THE OVERALL DECLINE IN INTENSITY. ENERGY AND ECONOMIC INDICATORS FOR THE OECD ARE TABULATED BY YEAR FOR 1950-86. (11 GRAPHS, 21 TABLES) |

DE- *ENERGY USAGE-REGION ; *ORG ECONOMIC COOP DEVEL ; *DEVELOPING NATIONS *ECONOMIC GROWTH ; *ENERGY USAGE-SECTOR ; *GROSS NATL PRODUCT-NON U S PRICES, ENERGY ; OIL DEMAND ; ECONOMICS, ENERGY USAGE |

RC- 17 |

Record - 41

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0158101 |

RN- <ENERGYLINE> *87-039818 |

TI- **ENERGY USE IN THE U.S. SERVICE SECTOR: AN INPUT-OUTPUT ANALYSIS,** |

AU- GOWDY JOHN M. ; MILLER JACK L. |

CS- (RENSSELAER POLYTECHNIC INST) AND ; (SUNY, OSWEGO), |

SO- ENERGY-PERGAMON, 1987, V12, N7, P555(8) |

DT- JOURNAL ARTICLE |

AB- INPUT-OUTPUT TABLES COVERING 1972-77 ARE USED TO ANALYZE THE EARLY ADJUSTMENT OF THE U.S. SERVICE SECTOR TO THE ENERGY PRICE SHOCK OF 1973-74. INDIRECT AS WELL AS DIRECT CHANGES IN ENERGY USE INTENSITY ARE EXAMINED. A SUBSTANTIAL DECLINE IS FOUND IN BOTH PRIMARY AND SECONDARY ENERGY INTENSITY

DURING 1972-77 IN THIS SECTOR. IF 1977 ENERGY TECHNOLOGY, REPRESENTED BY THE ENERGY INPUT-OUTPUT COEFFICIENTS FOR THAT YEAR, HAD BEEN USED IN 1972, THE 19 SERVICE INDUSTRY SECTORS WOULD HAVE REQUIRED 23% LESS PRIMARY ENERGY AND 12% LESS SECONDARY ENERGY. HOWEVER, ELECTRICITY USE WOULD HAVE INCREASED BY ABOUT 9%. (9 REFERENCES, 7 TABLES) |

DE- *ELECTRICITY USAGE, INDUSTRIAL ; *FUEL USAGE, INDUSTRIAL ; *PRICE INCREASES, OIL ; *MATHEMATIC MODELS-ENERGY USAGE ; TECHNOLOGY IMPACT ASSESSMENT ; PETROLEUM PRODUCTS |

RC- 18|

Record - 42

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0158082|

RN- <ENERGYLINE> *87-039799|

TI- **ESTIMATION OF ENERGY INTENSITY BY END USE FOR COMMERCIAL BUILDINGS,** |

AU- TURIEL ISAAC ; LEVINE MARK ; CRAIG PAUL ; MCMAHON JIM ; MCCOLLISTER GEORGE ; HESTERBERG BEVERLY ; ROBINSON MICHAEL |

CS- LBNL, |

SO- PACIFIC GAS & ELECTRIC CO REPORT, AUG 27, 86 (27) |

DT- ASSN REPORT |

AB- THE ENERGY INTENSITIES OF MAJOR END-USES IN COMMERCIAL BUILDINGS IN THE PACIFIC GAS & ELECTRIC CO., CA, SERVICE AREA ARE ANALYSED. THE CONDITIONAL DEMAND TECHNIQUE WAS APPLIED TO MONTHLY ENERGY USAGE, BUILDING CHARACTERISTICS, AND WEATHER DATA TO PRODUCE ANNUAL ESTIMATES OF NATURAL GAS AND ELECTRICITY USE PER SQ FT OF FLOOR SPACE. END-USES ANALYZED ARE SPACE HEATING, COOLING, LIGHTING, WATER HEATING, COOKING, REFRIGERATION, AND MISCELLANEOUS USE. RESULTS ARE COMPARED WITH THOSE OF TWO OTHER CONDITIONAL DEMAND STUDIES. FOR MOST BUSINESS TYPES AND END-USES, THE ENERGY INTENSITY ESTIMATES APPEAR REASONABLE. THE BEST AGREEMENT AMONG STUDIES OCCURS FOR LIGHTING AND REFRIGERATION. (7 GRAPHS, 12 REFERENCES, 4 TABLES) |

DE- *ELECTRICITY USAGE, COMMERCIAL ; *NATURAL GAS USAGE, COMMERCIAL ; *PACIFIC GAS & ELECTRIC CO ; *SPACE HEATING, COMMERCIAL ; *COOLING SYSTEMS, COMMERCIAL ; *ELECTRICITY BILLS ; *REFRIGERATION ; *WATER HEATING, COMMERCIAL ; GAS APPLIANCES ; ELECTRICAL APPLIANCES |

RC- 18|

Record - 43

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0157107|

RN- <ENERGYLINE> *87-031013|

TI- **THE LINK BETWEEN ENERGY AND GDP IN DEVELOPING COUNTRIES,** |

AU- REISTER DAVID B. |

CS- ORNL, |

SO- ENERGY-PERGAMON, 1987, V12, N6, P427(7) |

DT- JOURNAL ARTICLE |

AB- AN ANALYSIS OF THE RELATION BETWEEN ENERGY DEMAND AND GROSS DOMESTIC PRODUCT (GDP) IN DEVELOPING NATIONS IS PRESENTED. RESULTS ARE REPORTED FOR A SINGLE CROSS SECTION ANALYSIS USING 47 NATIONS IN 1970 AND FOR A POOLED CROSS SECTION ANALYSIS USING 47 NATIONS IN 1970, 1974, AND 1976. IF GDP IS MEASURED USING THE PURCHASING POWER PARITY METHOD, EVALUATION OF THE PER CAPITA ENERGY DEMAND DATABASE DEMONSTRATES AN INCREASE IN ENERGY INTENSITY AS NATIONS DEVELOP. NO SIGNIFICANT DIFFERENCES IN ENERGY INTENSITY AMONG THREE CLASSES OF DEVELOPING NATIONS, CATEGORIZED ACCORDING TO PER CAPITA GDP, ARE OBSERVED. (9 REFERENCES, 6 TABLES) |

DE- *GROSS NATL PRODUCT-NON U S ; *DEVELOPING NATIONS ; *ENERGY USAGE-REGION ; *INCOME COMPARISONS ; *ECONOMIC GROWTH ; ENERGY USAGE, PER CAPITA |

RC- 03|

Record - 44

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0157050|

RN- <ENERGYLINE> *87-028239|

TI- **ENERGY INDICATORS (ANNUAL ENERGY REVIEW 1986),** |

SO- DOE REPORT EIA-0384(86), MAY 8, 87, P37(27) |

DT- ABSTRACT ONLY |

AB- HIGHER ENERGY PRICES IN THE EARLY 1970S LED TO INCREASES IN ENERGY EFFICIENCY. AS A RESULT, THE ENERGY INTENSITY OF THE ECONOMY AS A WHOLE FELL TO 15 THOUSAND BTU/1982 DOLLAR IN 1986, A DECLINE OF ONE-THIRD SINCE 1970. PER CAPITA USE PEAKED IN 1973 AT 285 MILLION BTU, AND IT DECLINED TO REACH 229 MILLION BTU IN 1986. ENERGY CONSUMPTION PER HOUSEHOLD, ANOTHER INDICATOR OF ENERGY INTENSITY, DECLINED FROM 138 MILLION BTU IN 1978 TO 103 MILLION BTU IN 1982, THEN ROSE AGAIN TO 105 Q IN 1984. DATA ON ENERGY INDICATORS AND SECTORAL ENERGY CONSUMPTION ARE TABULATED FOR 1949-1986, WHERE AVAILABLE. (18 GRAPHS, 18 TABLES) |

DE- *DATA, ENERGY USAGE ; *ENERGY USAGE-SECTOR ; *ENERGY USAGE, INDUSTRIAL ; *GROSS NATL PRODUCT ; *FOSSIL FUEL DEMAND ; *ELECTRICITY USAGE ; PETROLEUM PRODUCTS |

RC- 17|

Record - 45

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0156715|

RN- <ENERGYLINE> *87-025243|

TI- **U.S. ENERGY OUTLOOK THROUGH 2000,** |

AU- CONOCO INC, |

CS- CONOCO INC, |

SO- STRATEGIC PLANNING & ENERGY MANAGEMENT, WINTER 86-87, V6, N3, P4(13) |

DT- JOURNAL ARTICLE |

AB- U.S. ENERGY DEMAND IS EXPECTED TO GROW BY 1% ANNUALLY THROUGH THE YEAR 2000. OIL WILL SUPPLY MORE THAN HALF OF THE RESULTING INCREASE IN ENERGY REQUIREMENTS, WHILE COAL AND NUCLEAR POWER TOGETHER WILL SUPPLY THE REMAINDER. AVERAGE ENERGY EFFICIENCY WILL INCREASE DESPITE LOWER OIL PRICES, AND ENERGY INTENSITY WILL DECLINE 2% PER YEAR DURING 1985-2000. SECTORAL AND NATIONAL DEMANDS FOR AND SUPPLIES OF COAL, NATURAL GAS, OIL, AND NUCLEAR-GENERATED ELECTRICITY ARE PROJECTED. ALMOST $200 BILLION WOULD HAVE TO BE INVESTED IN U.S. OIL AND GAS EXPLORATION AND PRODUCTION THROUGH 1990 TO KEEP OUTPUT AT 1985 LEVELS. |

DE- *SUPPLY-DEMAND FORECASTING ; *ENERGY SUPPLY-REGION ; *OIL SUPPLY ; *ELECTRICITY DEMAND ; *FOSSIL FUEL DEMAND ; *ENERGY DEVEL INVESTMENT ; *ORG PETROL EXPORT COUNTRIES ; OIL PRODUCTION ; NUCLEAR POWER PLANTS ; NATURAL GAS PROD ; PRICE DECREASES, OIL |

RC- 17|

Record - 46

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0156440|

RN- <ENERGYLINE> *87-018317|

TI- **ENERGY CONSERVATION SAVINGS BY U.S. INDUSTRY,** |

AU- WILFERT G. L. ; ROOP J. M. |

CS- BATTELLE PACIFIC NORTHWEST LABS, WA, |

SO- STRATEGIC PLANNING & ENERGY MANAGEMENT, FALL 86, V6, N2, P35(16) |

DT- JOURNAL ARTICLE |

AB- U.S. INDUSTRIAL SECTOR ENERGY INTENSITY, WHICH HELD RELATIVELY STABLE DURING THE 1950S AND 1960S, HAS DECREASED MARKEDLY SINCE 1974. THE DRAMATIC SHIFT IN ENERGY INTENSITY RESULTS FROM TWO PRIMARY FORCES: A CHANGE IN THE MIX OF INDUSTRIAL PRODUCTS PRODUCED, AND IMPROVEMENTS IN INDUSTRIAL END-USE EFFICIENCY. ANALYSIS AT THE TWO-DIGIT SIC LEVEL SUGGESTS THAT ABOUT 35% OF THE REDUCTION IN INDUSTRIAL ENERGY INTENSITY RESULTS FROM IMPROVEMENTS IN ENERGY EFFICIENCY. EVEN WITH DECLINING ENERGY PRICES, SUBSTANTIAL ENERGY SAVINGS WILL BE REALIZED IN THE FUTURE. |

DE- *ENERGY CONSERVATION, INDUSTL ; *GROSS NATL PRODUCT ; *PRICES, ENERGY *PROCESS HEATING, INDUSTRIAL ; *HEAT PUMPS ; *COGENERATION ; TECHNOLOGY IMPACT ASSESSMENT ; FURNACES ; COAL USAGE |

RC- 18|

Record - 47

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0155727|
RN- <ENERGYLINE> *87-009823|
TI- **CHANGE IN STRUCTURE AND CHOICE OF TECHNOLOGY: FACTORS BEHIND THE INCREASED USE OF ENERGY IN MEXICAN MANUFACTURING INDUSTRY,** |
AU- STERNER THOMAS |
CS- UNIV OF GOTHERNBURG, SWEDEN, |
SO- INTL ASSN ENERGY ECONOMISTS (W GERMANY) 7TH CONF, BONN, JUN 3-5, 85, P57(21) |
DT- CONF PAPER |
AB- AN INCREASE IN INDUSTRIAL SECTOR ENERGY CONSUMPTION IN MEXICO IS EVIDENT, AND A TRANSLOG MODEL IS USED TO STUDY THE ELASTICITY OF ENERGY CONSUMPTION AND PINPOINT THE PRINCIPAL FACTORS BEHIND THIS INCREASE. INCREASED ENERGY INTENSITY OF MANUFACTURING DID NOT DEPEND ON CHANGES IN OUTPUT COMPOSITION BUT RATHER ON CHANGES IN FACTOR PROPORTIONS. IN THE CASE OF INCREASED ELECTRICITY USE, THE FACTOR-SAVING EFFECT OF SCALE HAS BEEN COUNTERACTED BY THE EFFECTS OF TECHNICAL CHANGE LEAVING THE INCREASED USE OF ELECTRICITY TO BE EXPLAINED AS A RESULT OF FALLING RELATIVE PRICES. THE EVIDENCE SERVES TO REJECT THE HYPOTHESIS THAT MEXICO WOULD HAVE LOW PRICE ELASTICITIES AND BE UNABLE TO ADJUST TECHNOLOGY TO ITS OWN RELATIVE FACTOR PRICES. |
DE- *MEXICO ; *ENERGY DEMAND, INDUSTRIAL ; *ELECTRICITY USAGE, INDUSTRIAL *MATHEMATIC MODELS-ENERGY USAGE ; *ECONOMICS, ENERGY USAGE-IND ; *MATHEMATIC MODELS-ECONOMICS ; *PRICES, ENERGY ; LABOR COSTS ; TECHNOLOGY IMPACT ASSESSMENT |
RC- 18|

Record - 48

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0155647|
RN- <ENERGYLINE> *87-009743|
TI- **ELECTRIFICATION AND ECONOMIC GROWTH IN JAPAN (AND IN KOREA),** |
AU- MATSUI KENICHI ; ITOH KOKICHI |
CS- INST OF ENERGY ECONOMICS, JAPAN, |
SO- INTL ASSN ENERGY ECONOMISTS (W GERMANY) 7TH CONF, BONN, JUN 3-5, 85, V6, P131(21) |
DT- CONF PAPER |
AB- SPECIFIC TOTAL ENERGY CONSUMPTION IN JAPAN DECREASED BY 28% AND THAT OF ELECTRICITY BY ONLY 7% DURING 1973-81. THIS INDICATES A RELATIVE SHIFT TO ELECTRICITY IN LIGHT OF A GENERAL TREND OF DECREASING ENERGY INTENSITY. INDUSTRIAL SECTOR DATA SHOW THAT THE HIGHER THE MANUFACTURING GRADE, THE HIGHER THE SHARE OF ELECTRICITY FOR HEATING PURPOSES. INCOME ELASTICITY

OF ELECTRICITY WAS LARGER THAN THAT OF NON-ELECTRIC ENERGY FORMS AND HAS RISEN WITH THE GROWTH OF GNP AND INCREASED SOPHISTICATION OF THE INDUSTRIAL STRUCTURE. |

DE- *ECONOMIC GROWTH ; *JAPAN ; *ELECTRICITY USAGE-REGION ; *ELECTRICITY USAGE-SECTOR ; *ECONOMETRICS ; *PRICES, ELECTRICITY ; ELECTRICAL HEATING |

RC- 17|

Record - 49

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0155362|

RN- <ENERGYLINE> 87-005319|

TI- ENERGY USE IN THE SERVICE SECTOR: AN INTERNATIONAL PERSPECTIVE, |

AU- SCHIPPER LEE ; MEYERS STEVE ; KETOFF ANDREA N. |

CS- LBNL, |

SO- ENERGY POLICY, JUN 86, V14, N3, P201(18) |

DT- JOURNAL ARTICLE |

AB- ENERGY USE AND STRUCTURE IN THE SERVICE SECTOR OF MAJOR OECD NATIONS ARE COMPARED. DIFFERENCES IN FUEL MIX, ENERGY INTENSITY, ELECTRICITY USE, AND CONSERVATION EXPERIENCE ARE NOTED, AS ARE FUNDAMENTAL DIFFERENCES IN THE EXTENT AND COMPOSITION OF THE BUILDING STOCK AND CLIMATE. MOST NATIONS ARE SEEN TO HAVE REDUCED ENERGY INTENSITY SINCE 1973. ALL HAVE REDUCED THE SHARE OF HEATING OIL AND INCREASED THE USE OF ELECTRICITY, BOTH FOR SPACE CONDITIONING AS WELL AS FOR OTHER BUILDING SERVICES. ENERGY INTENSITY IN U.S. COMMERCIAL AND INSTITUTIONAL BUILDINGS IS AMONG THE HIGHEST IN THE OECD. |

DE- *ORG ECONOMIC COOP DEVEL ; *ENERGY DEMAND, INDUSTRIAL ; *ENERGY DEMAND, COMMERCIAL ; *FOSSIL FUEL DEMAND ; *ELECTRICITY DEMAND ; *DISTRICT HEATING ; SPACE HEATING ; AREA COMPARISONS ; ELECTRICAL HEATING |

RC- 18|

Record - 50

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0154726|

RN- <ENERGYLINE> *87-001432|

TI- DIRECT AND INDIRECT ENERGY REQUIREMENTS OF OUTPUT OF THE NEW ZEALAND ECONOMY: AN ENERGY ANALYSIS OF THE 1976-77 INTER-INDUSTRY SURVEY, |

AU- PEET N. J. |

CS- UNIV OF CANTERBURY, NEW ZEALAND, |

SO- NEW ZEALAND ENERGY R&D COMMITTEE REPORT P96, OCT 85 (38) |

DT- NON US GOVT REPORT |

AB- AN INPUT-OUTPUT ANALYSIS OF THE 1976-77 INTER-INDUSTRY STUDY OF THE NEW ZEALAND

DEPT. OF STATISTICS IS DESCRIBED. DIRECT AND INDIRECT ENERGY INTENSITIES OF OUTPUT ARE TABULATED FOR THE ENERGY SUPPLY INDUSTRIES, INCLUDING COAL MINING, NATURAL GAS PRODUCTION, PETROLEUM REFINING, ELECTRICITY, AND GAS MANUFACTURE. PRIMARY ENERGY OUTPUTS TO FINAL SECTORAL DEMAND ARE COMPUTED. ENERGY EMBODIED IN OUTPUT TO THE RESIDENTIAL SECTOR AMOUNTS TO MORE THAN HALF OF ALL THE PRIMARY ENERGY USED IN THE ECONOMY, WITH EXPORTS THE NEXT LARGEST DEMAND. |

DE- *NEW ZEALAND ; *ENERGY SUPPLY-SECTOR ; *ENERGY SUPPLY-REGION ; *FOSSIL FUEL PROD ; *FOSSIL FUEL DEMAND ; *PETROLEUM PRODUCTS ; *ELECTRICITY SUPPLY-SECTOR ; *ENERGETICS ; COAL MINING ; OIL REFINING ; NATURAL GAS PROD ; PRIMARY FUEL ; ELECTRICITY SALES |

RC- 17|

Record - 51

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0154587|

RN- <ENERGYLINE> *86-071164|

TI- **TOTAL ENERGY CONSUMPTION BY BRAZILIAN HOUSEHOLDS,** |

AU- BEHRENS ALFREDO |

CS- IPEA/INPES, BRAZIL, |

SO- ENERGY-PERGAMON, 1986, V11, N6, P607(5) |

DT- JOURNAL ARTICLE |

AB- THE DISTRIBUTION OF TOTAL ENERGY CONSUMPTION AMONGST URBAN AND RURAL HOUSEHOLDS IN BRAZIL IS ILLUSTRATED ACCORDING TO THEIR LEVELS OF EXPENDITURE. DIRECT AND INDIRECT ENERGY REQUIREMENTS FOR PERSONAL TRANSPORTATION, FOOD PREPARATION, CLOTHING, AND HYGIENE ARE COMPARED. HIGHER INCOME HOUSEHOLDS TEND TO REQUIRE MORE ELECTRICITY AND GASOLINE AND LESS FUELWOOD AND DIESEL OIL THAN LOW INCOME HOUSEHOLDS. WITH REGARD TO FOOD, THE POOREST URBAN POPULATION SHOWS THE HIGHEST ENERGY INTENSITY. URBAN HOUSEHOLDS ARE SHOWN TO REQUIRE UP TO 6.8 TIMES THE AMOUNT OF ENERGY CONSUMED BY THEIR RURAL COUNTERPARTS. |

DE- *BRAZIL ; *ENERGY DEMAND, DOMESTIC ; *URBAN-RURAL COMPARISONS ; *PETROLEUM PRODUCTS ; *ELECTRICITY USAGE, DOMESTIC ; *INCOME COMPARISONS ; LIQUEFIED PETROLEUM GAS ; FIREWOOD ; COAL USAGE, DOMESTI|

RC- 20|

Record - 52

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0153321|

RN- <ENERGYLINE> *86-056537|

TI- **FORECASTING BY MICROCOMPUTER (STRATEGIC PLANNING FOR COGENERATION AND**

ENERGY MANAGEMENT), |

AU- FETTERS J. L. |

CS- AT&T NETWORK SYSTEMS, |

SO- ASSN ENERGY ENGINEERS 8TH WORLD ENERGY ENGINEERING CONGRESS, ATLANTA, OCT 22-25, 85, P195(6) |

DT- CONF PAPER |

AB- COMPUTERIZED FORECASTING TECHNIQUES ARE USED TO ASSESS ENERGY CONSUMPTION AND COSTS AT AT&T NETWORK SYSTEMS. VARIOUS ENERGY INDICES AND COMPUTER SPREADSHEETS HAVE BEEN DEVELOPED TO PREDICT NATURAL GAS, OIL, AND ELECTRICITY CONSUMPTION AND ASSOCIATED COSTS. COMPARISONS WITH ACTUAL CONSUMPTION AND COST DATA SHOW AN ACCURACY IN THE 1-5% RANGE. |

DE- *COMPUTER APPLICATIONS ; *SUPPLY-DEMAND FORECASTING ; *OIL DEMAND, COMMERCIAL ; *NATURAL GAS DEMAND, COMMERCIAL ; *ELECTRICITY DEMAND, COMMERCIAL ; *ECONOMICS, ENERGY USAGE-COMM ; HEAT VENT AIR-CON SYSTEMS ; PROCESS HEATING, COMMERCIAL |

RC- 18|

Record - 53

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0152721|

RN- <ENERGYLINE> *86-048036|

TI- **MEASURED PERFORMANCE, |**

AU- PIETTE MARY ANN ; WALL LEONARD W. ; GARDINER BETSY L. |

CS- LBNL, |

SO- ASHRAE J, JAN 86, V28, N1, P72(7) |

DT- JOURNAL ARTICLE |

AB- THE BECA-CN DATABASE AT LBNL COMPILES AND ANALYZES INFORMATION ON COMMERCIAL BUILDING ENERGY CONSUMPTION. A RECENT STUDY OF CONSUMPTION BASED ON MEASURED PERFORMANCE IN 133 NEW COMMERCIAL BUILDINGS IS EXPLAINED. THE DISTRIBUTION OF ENERGY INTENSITIES OF THE 35 ALL-ELECTRIC BUILDINGS IS VERY SIMILAR TO THAT OF THE 53 BUILDINGS THAT USE SOME FUEL. THE MAJORITY OF THE BUILDINGS USE 40-70 KBTU/SQ FT/YEAR. THE AVERAGE ENERGY INTENSITIES FOR BOTH LARGE AND SMALL OFFICES ARE SLIGHTLY ABOVE THE RANGE OF ASHRAE STANDARDS AND WELL BELOW THE EXISTING INTENSITIES OF THE EXISTING U.S. OFFICE STOCK. |

DE- *ENERGY CONSERVATION, COMMERCIAL ; *BUILDING DESIGN ; *ELECTRICAL HEATING ; *ECONOMICS, ENERGY USAGE-COMM ; OFFICE BUILDINGS ; FUEL USAGE, COMMERCIAL |

RC- 18|

Record - 54

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0152666|
RN- <ENERGYLINE> *86-047978|
TI- **RESIDENTIAL ENERGY USE IN THE OECD, |**
AU- SCHIPPER LEE ; KETOFF ANDREA N. |
CS- LBNL, |
SO- ENERGY J-IAEE, OCT 85, V6, N4, P65(21) |
DT- JOURNAL ARTICLE |
AB- THE EVOLUTION OF RESIDENTIAL ENERGY USE IN OECD NATIONS OVER THE 1970-82 PERIOD IS TRACED. THE GREAT VARIATION IN ENERGY USE INDICATES THAT THERE IS NO FIXED LINK BETWEEN HOUSEHOLD ENERGY USE AND SERVICE PROVIDED. ENERGY INTENSITY VARIES IN THE OECD SAMPLE BY AS A MUCH AS A FACTOR OF FIVE, COUNTING BOTH TECHNICAL AND LIFESTYLE DIFFERENCES. INCREASED ENERGY PRICES SINCE 1972 HAVE INDUCED REDUCTIONS IN ENERGY INTENSITIES AND MORE RECENTLY HAVE CAUSED SHIFTS AWAY FROM OIL HEATING SYSTEMS WHERE ALTERNATIVES EXISTED. BECAUSE ENERGY USES ARE NEARLY SATURATED IN THE NATIONS STUDIED, HIGHER INCOMES SHOULD LEAD TO REDUCTION OF ENERGY INTENSITY THROUGH MORE RAPID REPLACEMENT OF INEFFICIENT EQUIPMENT. |
DE- *ORG ECONOMIC COOP DEVEL ; *ENERGY USAGE, DOMESTIC ; *ENERGY CONSERVATION, DOMESTC ; *PRICE INCREASES, OIL ; *ELECTRICITY USAGE, DOMESTIC ; *SPACE HEATING, DOMESTIC ; INCOME COMPARISONS ; FUEL SUBSTITUTION ; WATER HEATING, DOMESTIC |
RC- 20|

Record - 55

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0151443|
RN- <ENERGYLINE> *86-034676|
TI- **EXPLAINING RESIDENTIAL ENERGY USE BY INTERNATIONAL BOTTOM-UP COMPARISONS |**
AU- SCHIPPER LEE ; KETOFF ANDREA; KAHANE ADAM|
CS- LBNL|
SO- ANNUAL REVIEW OF ENERGY, 1985, V10, P341(65) |
DT- BOOK|
AB- THE STRUCTURE OF ENERGY USE IN THE RESIDENTIAL SECTOR OF THE OECD IS ASSESSED, AND FACTORS THAT HAVE DRIVEN CHANGES OVER THE LAST 25 YEARS ARE IDENTIFIED. CHANGES IN ENERGY USE ARE EXPLAINED BY USING THE BOTTOM-UP APPROACH, WHICH ANALYZES CHANGES IN UNDERLYING ENERGY INTENSITIES OF INDIVIDUAL ENDS USES. DETERMINANTS OF SECTOR ENERGY USE FOR SPACE HEATING, WATER HEATING, AND COOKING ARE EXAMINED FOR 1981-83. PROSPECTS FOR FUTURE FUEL SHARES INDICATE THAT OIL USE WILL FALL FOR SOME TIME IN MAJOR NATIONS STUDIED. ELECTRICITY USE IN INCREASING BUT THE INCREASE IS SLOWING RELATIVE TO INCOME EXCEPT WHERE ELECTRIC HEATING IS INCREASING IN NEW OR EXISTING DWELLINGS. (20 GRAPHS, 99 REFERENCES, 7 TABLES,) |

DE- *FUEL USAGE, DOMESTIC ; *ELECTRICITY USAGE, DOMESTIC ; *NATURAL GAS USAGE, DOMESTIC ; *SPACE HEATING, DOMESTIC ; *AREA COMPARISONS ; *HEATING OIL USAGE ; *ELECTRICAL APPLIANCES ; DISTRICT HEATING ; GAS APPLIANCES ; FIREWOOD ; LIQUEFIED PETROLEUM GAS ; WATER HEATING, DOMESTIC |

RC- 20 |

Record - 56

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0149746 |

RN- <ENERGYLINE> 85-017342 |

TI- **STRUCTURAL CHANGE AND TECHNOLOGY CHOICE: ENERGY USE IN MEXICAN MANUFACTURING INDUSTRY, 1970-81,** |

AU- STERNER THOMAS |

CS- GOTHENBURG UNIV, SWEDEN, |

SO- ENERGY ECONOMICS, APR 85, V7, N2, P77(10) |

DT- JOURNAL ARTICLE |

AB- INDUSTRIAL ENERGY USE IN MEXICO IS ANALYZED. METHODS ARE DEVELOPED TO DISTINGUISH THE EFFECTS OF TECHNOLOGY CHOICE FROM THE EFFECTS OF CHANGING INDUSTRIAL STRUCTURE, AND ARE THEN USED TO ASSESS THE INCREASED ENERGY INTENSITY OF MEXICO'S MANUFACTURING INDUSTRY FROM 1970-81. INCREASE WAS FOUND TO DEPEND ENTIRELY ON THE USE OF MORE ENERGY-CONSUMING TECHNOLOGY, WHILE CHANGES IN OUTPUT STRUCTURE HAVE HAD LITTLE EFFECT. (2 GRAPHS, 10 REFERENCES, 11 TABLES,) |

DE- *MEXICO ; *ENERGY USAGE, INDUSTRIAL ; TECHNOLOGY IMPACT ASSESSMENT ; PRICES, ENERGY |

RC- 18 |

Record - 57

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0148736 |

RN- <ENERGYLINE> 85-006418 |

TI- **EMERGING TRENDS IN NUCLEAR ENERGY,** |

AU- WEINBERG ALVIN M. |

CS- OAK RIDGE ASSOCIATED UNIVS, TN, |

SO- ENERGY POLICY, SEP 84, V12, N3, P247(6) |

DT- JOURNAL ARTICLE |

AB- NUCLEAR ENERGY IS FALTERING IN MANY PLACES, ESPECIALLY IN THE U.S. SOME UNDERLYING TRENDS THAT JUSTIFY A MORE OPTIMISTIC VIEW OF NUCLEAR TECHNOLOGY'S FUTURE ARE EXAMINED. ONE SUCH TREND IS THE CONTINUING TENDENCY FOR THE ELECTRICITY INTENSITY OF ECONOMIC ACTIVITY TO INCREASE WHILE THE TOTAL ENERGY INTENSITY FALLS. THE SUBSTITUTION OF ELECTRICITY-BASED

PROCESSES IN INDUSTRY FOR OLDER PROCESSES IS ALSO A TREND IN NUCLEAR ENERGY'S FAVOR. THE DEVELOPMENT OF ULTRASAFE REACTORS WILL FOREVER REMOVE THE FEARS OF ACCIDENTS. (1 GRAPH, 5 REFERENCES, 1 TABLE,) |

DE- *ELECTRICITY DEMAND-REGION ; *NUCLEAR POWER PLANTS ; *ECONOMICS, NUCLEAR POWER ; *LIQUID MET FAST BR REACTORS ; *LIGHT WATER REACTORS ; *REACTOR SAFETY ; NUCLEAR POWER PLANT ORDERS ; URANIUM RESERVES |

RC- 15|

Record - 58

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0148101|

RN- <ENERGYLINE> 85-002256|

TI- **ENERGY AND ECONOMIC GROWTH IN INDUSTRIALIZING COUNTRIES: THE CASE OF GREECE,** |

AU- SAMOUILIDIS J.-E. ; MITROPOULOS C. S. |

CS- (UNIV OF ATHENS, GREECE) AND; (LONDON BUSINESS SCHOOL, UK),|

SO- ENERGY ECONOMICS, JUL 84, V6, N3, P191(11) RESEARCH ARTICLE |

AB- SOME ASPECTS OF THE INTERRELATIONSHIPS BETWEEN GROWTH AND ENERGY DEMAND, AS MANIFESTED IN THE GREEK ECONOMY, ARE EXAMINED. NUMEROUS ECONOMETRIC MODELS FACILITATE ANALYSIS OF THE ENERGY SECTOR'S STRUCTURE, AND INCOME AND PRICE EFFECTS ON ENERGY DEMAND. TRANSLOG FUNCTIONS REVEAL THAT INCOME AND PRICE ELASTICITIES OF ENERGY EXHIBIT FALLING TRENDS WITH TIME. THE VALUE SHARE OF THE INDUSTRIAL SECTOR IS STRONGLY ASSOCIATED WITH BOTH ENERGY DEMAND AND ENERGY INTENSITY. ANY INCREASE IN THE FORMER WILL LEAD TO AMPLIFIED INCREASES IN THE LATTER, RENDERING THE CONTINUATION OF PAST TRENDS IN INDUSTRIAL EXPANSION QUESTIONABLE UNDER CONDITIONS OF HIGH ENERGY COSTS. SUBSTITUTION AMONG CAPITAL, LABOR, AND ENERGY DOES OCCUR, THOUGH TO A LIMITED EXTENT AS REFLECTED BY THE AGGREGATE MEASURE OF ENERGY/NON-ENERGY SUBSTITUTION ELASTICITY. (1 DIAGRAM, 5 GRAPHS, 21 REFERENCES, 14 TABLES,) |

DE- *GREECE ; *ECONOMIC GROWTH ; *ENERGY DEMAND-REGION ; *ENERGY DEMAND, INDUSTRIAL ; *ECONOMETRICS ; *MATHEMATIC MODELS-ECONOMICS ; *MATHEMATIC MODELS-ENERGY ; *PRICES, ENERGY ; ENERGY DEMAND-SECTOR ; GROSS NATL PRODUCT-NON U S ; INDUSTRIAL DEVELOPMENT |

RC- 17|

Record - 59

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0147260|

RN- <ENERGYLINE> 84-024286|

TI- **REAL PROPERTIES OF NATURAL GAS PROVIDE BASE FOR THERMAL HYDRAULIC ANALYSIS OF GAS PIPELINES,** |

AU- GOLDZBERG, V. ; MCKEE F. |
CS- DELTA-X CORP, HOUSTON |
SO- OIL & GAS J, JUL 9, 84, V82, N28, P85 (4) |
DT- JOURNAL ARTICLE |
AB- A METHOD FOR DETERMINING THE DEPENDENT PARAMETERS OF THERMAL-HYDRAULIC ANALYSIS OF GAS PIPELINES, BASED ON THE REAL PROPERTIES OF THE GAS, IS DETAILED. RELIABLE FORECASTING OF THE THERMAL MODES OF THE PIPELINE WITH HIGH OPERATING PRESSURE AND COOLING OF THE GAS IS NECESSARY FOR ACCURATE ESTIMATION OF REQUIRED STRENGTH AND COLD-RESISTANT PIPE METAL PROPERTIES. IT IS ALSO NEEDED FOR CORRECT DETERMINATION OF PIPELINE OPERATIONAL CHARACTERISTICS DUE TO THE SUBSTANTIAL EFFECT OF THE TEMPERATURE ON COMPRESSOR STATION AND REFRIGERATION INSTALLATION ENERGY INDICES. THE BERTHELOT EQUATION OF STATE IS COMPARED WITH OTHER SIMILAR EXPRESSIONS. THE ADAPTABILITY OF THE FORMER IS SHOWN FOR PRACTICAL CALCULATION OF COMPRESSIBILITY FACTOR, HEAT CAPACITY, AND JOULE-THOMSON COEFFICIENT FOR DRY NATURAL GASES. (3 REFERENCES, 6 TABLES) |
DE- *NATURAL GAS ANALYSIS ; *NATURAL GAS PIPELINES ; *THERMAL ANALYSIS ; *PIPELINE OPERATION ; *MATHEMATIC MODELS-NATURAL GAS ; REFRIGERATION |
RC- 12 |

Record - 60

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0146918 |
RN- <ENERGYLINE> *84-023944 |
TI- THE MARGINAL ENERGY COST OF GOODS AND SERVICES, |
AU- HANNON, BRUCE ; BLAZECK THOMAS |
CS- UNIV OF ILLINOIS |
SO- ENERGY SYSTEMS & POLICY, 1984, V8, N2, P85 (28) |
DT- JOURNAL ARTICLE |
AB- AN ENERGY INPUT-OUTPUT MODELING TECHNIQUE WAS USED TO CALCULATE A SET OF ENERGY INTENSITIES REPRESENTING THE AVERAGE ENERGY USED DIRECTLY AND INDIRECTLY PER UNIT OF OUTPUT. THE INTENSITIES ARE BASED ON MARGINAL INPUT COEFFICIENTS, THE RATIOS OF CHANGES IN INPUTS TO ASSOCIATED CHANGES IN OUTPUTS TO YIELD MARGINAL ENERGY INTENSITIES. OF 88 COMMODITIES ANALYZED, 36 HAD MARGINAL ENERGY INTENSITIES THAT WERE LOWER THAN THEIR AVERAGE COUNTERPART. AVERAGE AND MARGINAL PRIMARY ENERGY INTENSITIES ARE COMPARED FOR DIVERSE INDUSTRIAL, COMMERCIAL, TRANSPORT, AND AGRICULTURAL SEGMENTS USING 1972 AND 1967-72 DATA. (1 DIAGRAM, 2 GRAPHS, 13 REFERENCES, 3 TABLES) |
DE- *MATHEMATIC MODELS-ENERGY USAGE ; *ECONOMICS, ENERGY USAGE ; *ENERGY DEMAND, INDUSTRIAL ; *ENERGY DEMAND, COMMERCIAL ; *ENERGY DEMAND, AGRICULTURAL ; *ENERGY DEMAND, TRANSPORT ; *FOSSIL FUEL DEMAND ; ELECTRICITY DEMAND ; ENERGY DEMAND, DOMESTIC |
RC- 17 |

Record - 61

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0146881 |
RN- <ENERGYLINE> *84-023907 |
TI- **LONG-TERM U.S. ENERGY OUTLOOK,** |
AU- FRIESEN GEORGE |
CS- CHASE ECONOMETRICS, |
SO- ENERGY ECONOMICS POLICY & MANAGEMENT, WINTER 83-84, V3, N3, P20 (7) |
DT- JOURNAL ARTICLE |
AB- U.S. ENERGY SUPPLY-DEMAND PROJECTIONS TO 1990 AND 2000 GENERATED BY CHASE ECONOMETRICS AND DOE ARE COMPARED. VARYING ASSUMPTIONS CONCERNING WORLD OIL PRICES, REAL GNP GROWTH, AND ENERGY INTENSITY OF THE ECONOMY CONSIDERED BY THE TWO FORECASTS ARE DISCUSSED. THE DOE REFERENCE CASE HAS WORLD OIL PRICES RISING RAPIDLY FROM $31.90/BBL IN 1990 TO $57.40/BBL IN 2000; THE CHASE FORECAST HAS REAL OIL PRICES RISING GRADUALLY FROM $29.55/BBL IN 1990 TO $36.74/BBL IN 2000. REAL GNP GROWTH RATES ARE SIMILAR FOR BOTH PROJECTIONS: 3.2-3.3% ANNUALLY IN THE 1980S AND 2.4-2.7% ANNUALLY IN THE 1990S. DOE INDICATES TOTAL ENERGY DEMAND TO GROW BY 2% ANNUALLY FROM 1982-90, FALLING TO 0.8% ANNUALLY FOR 1990-2000. CHASE EXPECTS SLOWER GROWTH OF 1.6% DURING THE 1980S AND MORE RAPID ANNUAL GROWTH OF 1.2% DURING THE 1990S. (4 TABLES) |
DE- *SUPPLY-DEMAND ESTIMATE COMPARISONS ; *ENERGY DEMAND-REGION ; *FOSSIL FUEL DEMAND ; *ENERGY DEMAND-SECTOR ; *PRICE INCREASES, OIL ; ELECTRICITY DEMAND |
RC- 17 |

Record - 62

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0146442 |
RN- <ENERGYLINE> *84-023467 |
TI- **INDUSTRIAL ENERGY USE,** |
SO- NTIS REPORT PB83-240606, JUN 83, (187) |
DT- FED GOVT REPORT |
AB- ENERGY CONSUMPTION IN THE FOUR MOST ENERGY-INTENSIVE U.S. INDUSTRIES IS DETAILED. FOSSIL FUEL AND ELECTRICITY DEMAND IN THE PAPER PULP, OIL REFINING, CHEMICALS, AND STEEL SECTORS ARE SURVEYED. INDUSTRIAL PRODUCTION AND INVESTMENT BEHAVIOR ARE RELATED TO ENERGY SUPPLY AND PRICING TRENDS. FACTORS GUIDING CORPORATE DECISIONS ABOUT ENERGY EFFICIENCY-IMPROVING INVESTMENTS ARE DISCUSSED, AND OPPORTUNITIES FOR INDUSTRIAL CONSERVATION ARE CONSIDERED. POLICY OPTIONS ASSESSED INCLUDE ACCELERATED COST RECOVERY SYSTEMS, INVESTMENT TAX CREDITS, AND TAXES ON OIL AND GAS. PRODUCT AND

PROCESS SHIFTS WILL BRING ABOUT GREATER EFFICIENCY IMPROVEMENTS COMPARED WITH RETROFIT AND HOUSEKEEPING MEASURES. ENERGY INTENSITY IN THESE INDUSTRIES IS PROJECTED TO DECLINE SIGNIFICANTLY BY 2000. (NUMEROUS GRAPHS, TABLES) |

DE- *ENERGY DEMAND, INDUSTRIAL ; *ENERGY CONSERVATION, INDUSTL ; *FOSSIL FUEL DEMAND ; *ELECTRICITY DEMAND, INDUSTRIAL ; *INVESTMENT ; *HEAT RECOVERY ; *FUEL SUBSTITUTION ; RETROFITTING ; LAW, FED ; INVESTMENT TAX CREDITS ; PAPER PULP MILLS ; OIL REFINING ; IRON STEEL MILLS ; PETROCHEMICAL PLANTS |

RC- 18|

Record - 63

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0146439|

RN- <ENERGYLINE> *84-023464|

TI- **ENERGY CONSERVATION IN THE ARAB WORLD: NECESSITY, POTENTIAL AND THE ROLE OF PRICING POLICIES,** |

AU- IBRAHIM, IBRAHIM B. ; IWEISS ABDEL RAHIM |

CS- OAPEC|

SO- OIL & ARAB COOPERATION, L984, V10, N1, P13 (34) |

DT- JOURNAL ARTICLE|

AB- A DRAMATIC INCREASE IN ENERGY INTENSITY IN ARAB NATIONS HAS BEEN OBSERVED OVER THE LAST DECADE. RAPID ECONOMIC GROWTH AND DECLINE IN REAL DOMESTIC PRICES OF ENERGY UNDERLIE THIS INCREASED ENERGY INTENSIVENESS. A DISTINCTION IS MADE BETWEEN THE IMPACT OF WORLD ENERGY PRICE INCREASES ON IMPORTING NATION ECONOMIC GROWTH AND THE IMPACT OF AN INCREASE IN THE NATION'S DOMESTIC ENERGY PRICES. WHILE AN INCREASE IN WORLD ENERGY PRICES COULD SLOW DOWN ECONOMIC GROWTH, THIS IMPACT CAN NOT BE CIRCUMVENTED BY SUPPRESSING DOMESTIC PRICES. FACTORS TO CONSIDER IN DEVISING ECONOMICALLY SOUND PRICE SUPPORTS TO ENCOURAGE CONSERVATION YET MAINTAIN A SLOW RATE OF ECONOMIC GROWTH ARE DISCUSSED. (IN ARABIC) (1 GRAPH, 10 REFERENCES, 12 TABLES) |

DE- *MIDDLE EAST ; *ENERGY CONSERVATION-REGION ; *ECONOMIC GROWTH ; *GROSS NATL PRODUCT-NON U S ; *PRICE INCREASES, ENERGY ; *PRICE STRUCTURING ; PRICE SUPPORTS |

RC- 17|

Record - 64

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0146399|

RN- <ENERGYLINE> *84-023424|

TI- **THE SECOND ENERGY R&D PROGRAMME: ENERGY CONSERVATION, 1979-1983 (ENERGY CONSERVATION IN INDUSTRY),** |

SO- CEC REPORT EUR 8661 EN, 1984, P147 (95) |

DT- NON US GOVT REPORT |

AB- SUMMARIES OF CEC-SPONSORED INDUSTRIAL ENERGY CONSERVATION R&D PROGRAMS COMPLETED DURING 1979-83 ARE COMPILED. THE MANY PROJECTS ARE CLASSIFIED ACCORDING TO 12 MAIN RESEARCH ORIENTATIONS: COMBUSTION, HEAT EXCHANGERS, FLUIDIZED BED HEAT EXCHANGERS, HEAT RECOVERY, ENERGY CASCADING, METALLURGY, CEMENT AND GLASS CERAMIC INDUSTRY, TEXTILE SECTOR, FOOD INDUSTRY, CHEMICAL PROCESSES, MICROWAVES, AND ENERGY MANAGEMENT. RESULTS ARE REPORTED FOR SPECIFIC EFFORTS, SUCH AS THOSE ADDRESSING THERMAL CYCLES, ORGANIC RANKINE SYSTEMS, WASTE HEAT BOILERS, LOW-ENERGY INTENSITY INDUSTRIAL PROCESSES, RESOURCE RECOVERY, AND ENERGY ECONOMICS. (NUMEROUS DIAGRAMS, GRAPHS, PHOTOS) |

DE- *ENERGY RESEARCH & DEVEL, NON U S ; *ENERGY CONSERVATION, INDUSTL ; *WESTERN EUROPE ; *HEAT RECOVERY ; *HEAT EXCHANGERS ; *FLUIDIZED BED COMBUSTION ; *PROCESS HEATING, INDUSTRIAL ; *BOILERS, INDUSTRIAL HEATING ; *THERMAL CYCLES ; THERMAL STORAGE ; ELECTRICITY CONSERV, INDUSTRIAL ; SOLID WASTE ENERGY ; MICROWAVE ENERGY ; ECONOMICS, ENERGY USAGE-IND |

RC- 17 |

Record - 65

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0145875 |

RN- <ENERGYLINE> *84-022901 |

TI- **1983 UPDATE: ANNUAL RESOURCES REPORT OF THE NEW MEXICO ENERGY AND MINERALS DEPARTMENT,** |

SO- NEW MEXICO ENERGY & MINERALS DEPT REPORT, 1983, (63) |

DT- STATE/LOCAL GOVT REPORT |

AB- STATISTICAL DATA CONCERNING ENERGY PRODUCTION IN NEW MEXICO ARE UPDATED FOR 1983 TO INCLUDE 1982 ENERGY INDICATORS. OVERALL ENERGY PRODUCTION IN THE STATE DECREASED DURING 1982, EXCEPT FOR A 3% INCREASE IN ELECTRICITY GENERATION. OIL PRODUCTION DECREASED BY ABOUT 1%; NATURAL GAS, BY 11.5%; AND URANIUM, BY 37%. A SERIES OF TABLES REPORTS DATA FOR FOSSIL FUEL PRODUCTION AND CONSUMPTION, U RESOURCES AND MINING, ELECTRICITY GENERATION AND END USES, AND GEOTHERMAL ENERGY EXPLORATION AND EXPLOITATION. DATA ARE TABULATED BY YEAR FOR 1972-82, AND INCLUDE TRENDS IN FUEL PRICES. (108 TABLES) |

DE- *NEW MEXICO ; *DATA, PRODUCTION ; *DATA, ENERGY USAGE ; *ENERGY USAGE-REGION ; *OIL PRODUCTION ; *COAL RESERVES ; *ELECTRICITY SALES ; *URANIUM MINING ; *GEOTHERMAL LEASING ; REVENUES ; PRICES, OIL ; PETROLEUM PRODUCTS ; NATURAL GAS PROD ; GENERATING CAPACITY |

RC- 17 |

Record - 66

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0145338|
RN- <ENERGYLINE> *84-022363|
TI- **ECONOMIC & ENERGY INDICATORS , |**
SO- NTIS REPORT PB83-928523, NOV 10, 83, (13) |
DT- FED GOVT REPORT|
AB- ECONOMIC AND ENERGY INDICATORS OF GLOBAL TRENDS IN TRADE, IMPORTS, AND OIL CONSUMPTION ARE TABULATED. THESE INDICATORS ARE REPORTED FOR THE PERIOD 1979-83 FOR THE U.S., JAPAN, W. GERMANY, FRANCE, THE U.K., ITALY, AND CANADA. ECONOMIC DATA COVER INDUSTRIAL PRODUCTION, GNP, CONSUMER PRICES, EXPORT AND IMPORT PRICES, EXCHANGE RATE TRENDS, AND OTHER CATEGORIES. ENERGY DATA INCLUDE WORLD CRUDE OIL PRODUCTION, NATIONAL OIL CONSUMPTION AND IMPORT TRENDS, OPEC CRUDE OIL SALES PRICES, AND OPEC AVERAGE CRUDE OIL OFFICIAL SALES PRICES. (2 GRAPHS, 17 TABLES) |
DE- *OIL IMPORTATION ; *OIL PRODUCTION ; *OIL USAGE-REGION ; *PRICES, OIL *PRICE INCREASES, FOOD ; *PRICE INCREASES, MINERAL ; UNEMPLOYMENT ; GROSS NATL PRODUCT ; ORG PETROL EXPORT COUNTRIES ; NATURAL GAS LIQUIDS |
RC- 17|

Record - 67

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0144443|
RN- <ENERGYLINE> *84-021468|
TI- **CORRECTING INPUT-OUTPUT COEFFICIENTS FOR CAPITAL DEPRECIATION , |**
AU- CASLER STEPHEN |
CS- ALLEGHENY COLLEGE, |
SO- ENERGY SYSTEMS & POLICY, 1983, V7, N3, P171 (23) |
AB- INDUSTRIAL ENERGY INTENSITIES REPRESENT ENERGY REQUIRED TO PRODUCE GOODS AND SERVICES. INDIRECT ENERGY SOURCES INCLUDE ENERGY EMBODIED IN CURRENT ACCOUNT INPUTS AND CAPITAL DEPRECIATED DURING THE PRODUCTION PROCESS. THIS FLOW OF EMBODIED ENERGY IN CAPITAL INPUTS WAS IGNORED IN THE ENERGY INTENSITIES DEVELOPED BY THE U.S. BUREAU OF ECONOMIC ANALYSIS (BEA), RESULTING IN SIGNIFICANT UNDERESTIMATES OF SUCH INTENSITIES. A PROCEDURE FOR CORRECTING THE CURRENT ACCOUNT FLOW DATA OF BEA INPUT-OUTPUT TABLES FOR CAPITAL DEPRECIATION IS DESCRIBED. (1 DIAGRAM, 11 REFERENCES, 3 TABLES) |
DE- *DEPRECIATION ; *ECONOMICS, ENERGY USAGE-IND ; *MATHEMATIC MODELS-ECONOMICS ; *MATHEMATIC MODELS-ENERGY USAGE ; *FOSSIL FUEL DEMAND ; *ELECTRICITY DEMAND, INDUSTRIAL ; FINANCING |
RC- 18|

Record - 68

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0142918|

RN- <ENERGYLINE> 83-024978|

TI- HOME ENERGY USE IN NINE OECD COUNTRIES, 1960-1980 , |

AU- SCHIPPER, LEE ; KETOFF ANDREA|

CS- LBNL,|

SO- ENERGY POLICY, JUN 83, V11, N2, P131 (16) |

AB- DATA ARE PRESENTED ON RESIDENTIAL SECTOR USE IN NINE OECD NATIONS OVER THE PERIOD 1960-80. THE DATA ARE ANALYZED USING BOTH INDICATORS OF ENERGY-USE INTENSITY AND ECONOMETRIC METHODS. THE NATIONS SURVEYED INCLUDE CANADA, DENMARK, W. GERMANY, ITALY, JAPAN, SWEDEN, THE U.K., FRANCE, AND THE U.S. NO LINK IS SHOWN BETWEEN ENERGY USED AND SERVICE PROVIDED; ENERGY INTENSITY VARIES FROM NATION TO NATION BY AS MUCH AS A FACTOR OF FIVE. (4 GRAPHS, 21 REFERENCES, 7 TABLES) |

DE- *ORG ECONOMIC COOP DEVEL ; *ENERGY USAGE, DOMESTIC ; *ECONOMETRICS ; *AREA COMPARISONS ; *CLIMATIC COMPARISONS |

RC- 20|

Record - 69

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0142888|

RN- <ENERGYLINE> 83-024948|

TI- A COMPARISON OF ENERGY INTENSITIES: 1963, 1967 AND 1972 , |

AU- HANNON, BRUCE ; BLAZECK THOMAS; KENNEDY DOUGLAS; ILLYES ROBERT|

CS- UNIV OF ILLINOIS,|

SO- RESOURCES & ENERGY, MAR 83, V5, N1, P83 (20) |

AB- A COMPATIBLE INDUSTRIAL SECTOR, CONSTANT DOLLAR, COMMODITY-BASED SET OF ECONOMIC FLOW MATRICES ARE DEVELOPED FOR THE YEARS OF 1963, 1967, AND 1972. THESE MATRICES ARE USED TO PRODUCE ENERGY INTENSITIES FOR THE THREE YEARS. ENERGY INTENSITIES ARE THE MEASURE OF THE DIRECT AND INDIRECT ENERGY REQUIRED TO MAKE A UNIT OF PRODUCED GOODS OR SERVICES. THE INTENSITIES ARE COMPARED, AND POSSIBLE REASONS FOR DIFFERENCES ARE DISCUSSED. (13 REFERENCES, 9 TABLES) |

DE- *ENERGY DEMAND, INDUSTRIAL ; *MATHEMATIC MODELS-ENERGY USAGE ; *MATHEMATIC MODELS-INDUSTRIAL ; *ECONOMICS, ENERGY USAGE-IND ; *FOSSIL FUEL DEMAND ; *ELECTRICITY DEMAND ; PETROLEUM PRODUCTS ; SECTOR COMPARISONS |

RC- 18|

Record - 70

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0141875|

RN- <ENERGYLINE> *83-023983|

TI- **ENERGY INTENSITY COMPARISON OF MULTI-SERVICE FREIGHT TRANSPORT MODES, |**

AU- RAO T. V. |

CS- INDIAN INST TECHNOLOGY, INDIA, *XL *XL|

SO- URJA, JAN 83, V13, N1, P41 (7) |

AB- VARIOUS MODES OF FREIGHT TRANSPORT ARE COMPARED FOR THE INTENSITY OF THEIR ENERGY USE AS IT RELATES TO THE QUANTUM OF SHIPMENT, THE LENGTH OF HAUL, AND TRANSIT TIME. IN PARTICULAR, THE EFFECT OF FUEL PRICE INCREASES ON THE OBSERVED ENERGY INTENSITY OF THE DIFFERENT TRANSPORT MODES IS DETERMINED, AND VARIATIONS IN ENERGY USE AS A RESULT OF CHANGES IN OPERATING POLICIES ARE IDENTIFIED. A MATHEMATIC MODEL IS CONSTRUCTED TO REFLECT THESE PARAMETERS, AND TRUCK, RAIL, AND WATER TRANSPORT MODES ARE COMPARED. (1 GRAPH, 32 REFERENCES) |

DE- *FREIGHT TRANSPORTATION ; *ENERGY USAGE, TRANSPORT ; *COST BENEF ANALYSIS-TRANSPRT ; *RAIL TRANSPORTATION ; *TRUCKS ; *WATER TRANSPORTATION |

RC- 19|

Record - 71

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0140822|

RN- <ENERGYLINE> *83-022978|

TI- **TRANSPORTATION OF COAL, GRAIN, AND PASSENGERS BY RAIL AND WATERWAYS (FUEL EFFICIENCY IN FREIGHT TRANSPORTATION), |**

AU- EASTMAN SAMUEL E. |

CS- ECONOMIC SCIENCES CORP, DC,|

SO- TRANSPORTATION RESEARCH BOARD REPORT 824, 1981 P7 (7) |

DT- SPECIAL REPORT|

AB- ENERGY INTENSITY STUDIES SHOW THAT BARGE TRANSPORTATION IS THE MOST ENERGY EFFICIENT METHOD OF TRANSPORTING RAW MATERIALS AND PRODUCTS OF INDUSTRY AND AGRICULTURE. COMPARISON OF THE CIRCUITY OF THE ROUTES REVEALED THAT ALTHOUGH THE DISTANCE TRAVELED MAY BE LONGER, THE ENERGY EFFICIENCY OF BARGE SYSTEMS IS SUPERIOR. SEVERAL EXAMPLES ARE OUTLINED TO DEMONSTRATE THE PRACTICAL APPLICATIONS OF THE CIRCUITY STUDIES, INCLUDING COMPARING RAIL AND WATER SHIPMENTS TO THE GULF OF MEXICO. (1 MAP, 22 REFERENCES, 5 TABLES) |

DE- *FREIGHT TRANSPORTATION ; *FUEL CONSERVATION, TRANSPORT ; *TRUCK FUEL ECONOMY ; *RAILROAD FUEL ECONOMY ; *SHIP FUEL ECONOMY ; COAL TRANSPORT ; WATERWAYS |

RC- 19|

Record - 72

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0139723|
RN- <ENERGYLINE> *83-021928|
TI- **INTERNATIONAL RESIDENTIAL ENERGY END USE DATA: ANALYSIS OF HISTORICAL AND PRESENT DAY STRUCTURE AND DYNAMICS,** |
AU- SCHIPPER, LEE ; KETOFF ANDREA; MEYERS STEPHEN|
CS- LBNL|
SO- PRESENTED AT ASES IMPROVING ENERGY EFFICIENCY IN BUILDINGS CONF, SANTA CRUZ, AUG 10-22, 80, P1-9 (18) |
DT- SURVEY REPORT|
AB- INTERNATIONAL COMPARISONS OF RESIDENTIAL ENERGY USE HAVE BEEN HINDERED IN THE PAST BY LACK OF DATA AND COMMON MEASURING SYSTEMS. ONGOING EFFORTS TO DISAGGREGATE DATA ON RESIDENTIAL SPACE COMFORT AND APPLIANCE ENERGY USE FOR OECD MEMBER NATIONS ARE REPORTED. INDICATORS OF STRUCTURE, SUCH AS DWELLING SIZE AND NUMBER OF APPLICANCES, AND INDICATORS OF ENERGY INTENSITY, INCLUDING ENERGY USE PER DEGREE DAY, ARE DEVELOPED FOR VARIOUS NATIONS AND COMPARED. THE ROLE OF ENERGY PRICES IN RESIDENTIAL ENERGY INTENSITY IS ALSO CONSIDERED. (1 GRAPH, 12 REFERENCES, 4 TABLES) |
DE- *ENERGY DEMAND, DOMESTIC ; *SPACE HEATING, DOMESTIC ; *HEATING SYSTEMS, DOMESTIC ; *ELECTRICAL APPLIANCES ; *PRICES, ELECTRICITY ; *AREA COMPARISONS ; WATER HEATING, DOMESTIC ; ELECTRICITY USAGE, DOMESTIC ; CONF PAPER |
RC- 20|

Record - 73

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0139679|
RN- <ENERGYLINE> *83-021884|
TI- **TOWARD ZERO ENERGY USE IN CANADIAN NON-RESIDENTIAL BUILDINGS,** |
AU- TAMBLYN R. T. |
CS- ENGINEERING INTERFACE LTD, CANADA,|
SO- PRESENTED AT ASES IMPROVING ENERGY EFFICIENCY IN BUILDINGS CONF, SANTA CRUZ, AUG 10-22, 80, P3-2 (14) |
DT- TECHNICAL FEATURE|
AB- CANADIANS HAVE RESPONDED TO THE URGENT NEED FOR ENERGY CONSERVATION BY REDUCING NEW COMMERCIAL BUILDING ENERGY REQUIREMENTS TO 600 MJ/SQ M/YR, COMPARED WITH TYPICAL ENERGY INTENSITIES IN THE 1975 BUILDING STOCK OF 1500 MJ/SQ M/YR. IMPORTANT BUILDING DESIGN AND OPERATIONAL MEASURES RESPONSIBLE FOR THIS REDUCTION ARE OUTLINED. IMPROVEMENTS IN ELECTRICAL LIGHTING SYSTEMS, HVAC UNITS, AND BUILDING ENVELOPE FEATURES ARE DISCUSSED. ADDITIONAL SAVINGS THROUGH BETTER THERMAL INSULATION AND THERMAL STORAGE ARE EXPECTED IN POST-1981 BUILDINGS TO MEET AN ENERGY INTENSITY TARGET OF 300 MJ/SQ M/YR. (3 DIAGRAMS) |
DE- *CANADA ; *ENERGY CONSERVATION, COMMERCIAL ; *BUILDING DESIGN ; *ELECTRICITY CONSERV, COMMERCIAL ; *ELECTRICAL LIGHTING ; *HEAT VENT AIR-CON SYSTEMS ;

INSULATION ; OCCUPIED HOURS ; ECONOMICS, ENERGY USAGE-COMM ; CONF PAPER |
RC- 18|

Record - 74

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0139175|
RN- <ENERGYLINE> 83-021404|
TI- ENERGY AND VALUE, |
AU- ROBERTS P. C. |
CS- UK DEPT OF ENV, LONDON, |
SO- ENERGY POLICY, SEP 82, V10, N3, P171 (10) |
DT- TECHNICAL REPORT|
AB- ENERGY THEORIES OF VALUE ARE REVIEWED AND A NEW VARIANT INTRODUCED, BASED ON THE EMPIRICAL RELATIONSHIP BETWEEN PRICE PER UNIT MASS AND ENERGY REQUIREMENT PER UNIT MASS FOR A WIDE RANGE OF COMMODITIES. THE DEMAND PATTERN OF HOUSEHOLDS IN THE U.S. AND U.K. FOR ENERGY WOULD TEND TO PRODUCE A DECLINING RATIO OF ENERGY TO GROSS DOMESTIC PRODUCT. HOWEVER, THE TENDENCY OF GOODS WITH LOW ENERGY INTENSITY TO BE ASSOCIATED WITH LOW PRODUCTIVITY GAINS INTRODUCES A COUNTERACTING EFFECT, AND ENERGY/DOMESTIC PRODUCT RATIOS ARE STABLE OVER TIME. A SIMPLE RELATIONSHIP BETWEEN ENERGY INTENSITY, FUEL PRICE, AND TIME OF ADJUSTMENT IS USED TO FORECAST THE ENERGY USE PER DOLLAR OF GROSS DOMESTIC PRODUCT IN EACH OF SEVEN NATIONS FOR THE YEAR 1976. (11 GRAPHS, 4 TABLES) |
DE- *ECONOMICS, ENERGY USAGE ; *THERMODYNAMICS ; *PRICE INCREASES ; *ECONOMIC GROWTH ; *ECONOMICS, ENERGY USAGE-DOM ; *ENERGY USAGE-REGION ; *MATHEMATIC MODELS-ENERGY USAGE ; AREA COMPARISONS ; GROSS NATL PRODUCT-NON U S ; LABOR COSTS |
RC- 17|

Record - 75

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0139148|
RN- <ENERGYLINE> *83-021377|
TI- NEW YORK STATE ANNUAL ENERGY REVIEW: ENERGY CONSUMPTION, SUPPLY AND PRICE STATISTICS 1960-1981, |
SO- NEW YORK STATE ENERGY OFFICE REPORT, 1982 (91) |
DT- STATISTICS|
AB- VARIOUS DATA ON NEW YORK ENERGY CONSUMPTION, SUPPLY, AND PRICE TRENDS FROM 1960-81 ARE DEPICTED. SUBJECTS COVERED INCLUDE ENERGY CONSUMPTION BY SECTOR, FUEL, AND END-USE; ENERGY PRICES BY FUEL AND SECTOR; ENERGY COSTS BY FUEL AND SECTOR; SOURCES OF ENERGY SUPPLIES; AND SELECTED NEW YORK-U.S. COMPARISONS.

PRIMARY CONSUMPTION REPRESENTS TOTAL FUEL CONSUMPTION BY RESIDENTIAL, COMMERCIAL, INDUSTRIAL, TRANSPORTATION, AND ELECTRIC UTILITIES; NET CONSUMPTION IS THE END-USE CONSUMPTION BY THE THESE SECTORS EXCEPT FOR ENERGY LOSSES INCURRED DURING THE PRODUCTION AND DISTRIBUTION OF ELECTRICITY. APPENDICES INCLUDE MACROECONOMIC ENERGY INDICATORS AND SELECTED OPEC OIL DATA. (NUMEROUS GRAPHS, TABLES|

DE- *DATA, ENERGY USAGE ; *NEW YORK ; *ENERGY USAGE-SECTOR ; *PRICES, FUEL ; *PRIMARY FUEL COSTS ; *FUEL USAGE-SECTOR ; *DATA, ENERGY USAGE-DOMESTIC ; *DATA, ENERGY USAGE-INDUSTRIAL ; *DATA, ENERGY USAGE-TRANSPORT ; *FUEL USAGE-SOURCE ; NATURAL GAS USAGE-SECTOR ; OIL USAGE-SECTOR ; ELECTRICITY SALES ; ORG PETROL EXPORT COUNTRIES |

RC- 17|

Record - 76

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0137234|

RN- <ENERGYLINE> *82-024532|

TI- **INTERNATIONAL ENERGY INDICATORS,** |

AU- BAUER E. K. |

CS- US DEPT OF STATE,|

SO- NTIS REPORT DOE/IA-0010/8, 1981 (29) |

DT- SPECIAL REPORT|

AB- STATISTICS ON WORLD ENERGY SUPPLY AND DEMAND AND OTHER FACTORS AFFECTING GLOBAL ENERGY ARE PRESENTED. WORLD CRUDE OIL PRODUCTION FROM 1975-81 IS DETERMINED AND CRUDE OIL CAPACITIES FOR IRAN, SAUDI ARABIA, OPEC NATIONS, THE USSR, THE FREE WORLD, AND THE U.S. ARE ESTIMATED. NUCLEAR GENERATION CAPACITY FOR THE FREE WORLD AND THE U.S. IS ASSESSED FROM 1973-81. |

DE- *SUPPLY-DEMAND FORECASTING ; *OIL SUPPLY-REGION ; *AREA COMPARISONS ; *ORG PETROL EXPORT COUNTRIES ; *OIL PRODUCTION |

RC- 03|

Record - 77

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0136008|

RN- <ENERGYLINE> *82-023379|

TI- **EXECUTIVE SUMMARY,** |

SO- MONTHLY ENERGY REVIEW, MAR 82, P1 (18) |

DT- STATISTICS|

AB- ENERGY PRODUCTION, CONSUMPTION, AND IMPORT STATISTICS FOR 1981 THROUGH MARCH 1982 ARE PROVIDED. ENERGY PRODUCTION DURING 1981 WAS 0.6% BELOW 1980 LEVELS. NATURAL GAS PRODUCTION INCREASED, WHILE PETROLEUM PRODUCTION DECREASED

0.4%. IMPORTS DURING 1981 REACHED 9.5 QUADRILLION BTU. HEATING DEGREE DAYS AND ENERGY INDICATORS STATISTICS ARE ALSO PRESENTED. (15 GRAPHS, 2 MAPS, NUMEROUS REFERENCES, 11 TABLES) |

DE- *DATA, PRODUCTION ; *PETROLEUM PRODUCTS ; *GASOLINE SUPPLY ; *JET ENGINE FUEL SUPPLY ; *DISTILLATE FUEL OIL ; *RESIDUAL FUEL OIL ; *DATA, OIL PRODUCTION ; *DATA, NATURAL GAS PROD ; *DATA, COAL PRODUCTION ; *NATURAL GAS LIQUIDS ; PRIMARY FUEL ; FOSSIL FUEL DEMAND ; FOSSIL FUEL STOCKS ; FOSSIL FUEL IMPORTATION |

RC- 17|

Record - 78

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0135947|
RN- <ENERGYLINE> *82-023318|
TI- **CONSERVATION TREND INDICATORS. INTERIM AND FINAL REPORT,** |
AU- PETERSON C. |
CS- HARVARD UNIV,|
SO- NTIS REPORT DOE/PE/70278-T2, AUG 21, 80 (80) |
DT- SPECIAL REPORT|

AB- MAJOR CONSERVATION TRENDS IN FOUR U.S. ENERGY CONSUMING SECTORS-RESIDENTIAL, COMMERCIAL, INDUSTRIAL, AND TRANSPORTATION-ARE REPORTED. USE OF GAS, ELECTRICITY, AND FUEL OIL IN THE RESIDENTIAL SECTOR IS INVESTIGATED, WHILE USE OF THESE RESOURCES IN THE COMMERCIAL SECTOR IS EXAMINED ON A SQ FT BASIS. INDUSTRIAL TRENDS FOR THE 10 MOST ENERGY INTENSIVE INDUSTRIES ARE DETERMINED. SELECTED ENERGY INTENSITIES FOR THE TRANSPORTATION SECTOR'S USE OF PETROLEUM PRODUCTS ARE IDENTIFIED. METHODS FOR UNCOVERING FINDINGS AND DATA SOURCES, AND INTERPRETING DATA ARE DIVULGED. |

DE- *ENERGY CONSERVATION-SECTOR ; *ENERGY USAGE, INDUSTRIAL ; *ENERGY USAGE, DOMESTIC ; *ENERGY USAGE, COMMERCIAL ; *ENERGY USAGE, TRANSPORT |

RC- 15|

Record - 79

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0135580|
RN- <ENERGYLINE> *82-022976|
TI- **LAND USE AND ENERGY INTENSITY,** |
AU- LEVINSON HERBERT S. ; STRATE HARRY E. |
CS- (UNIV OF CONNECTICUT) AND; (WILBUR SMITH & ASSOC, CT),|
SO- TRANSPORTATION RESEARCH RECORD, 1981, N812, P67 (8) |
DT- TECHNICAL FEATURE|

AB- URBAN LAND USE IMPLICATIONS IN THE METROPOLITAN TORONTO AREA ARE DISCUSSED. TRANSPORTATION AND NONTRANSPORTATION ENERGY INTENSITIES OF LAND USES AND

EFFECTS OF POPULATION DENSITY ON ENERGY CONSUMPTION ARE ASSESSED. WAYS TO IMPROVE ENERGY EFFICIENCY ARE SUGGESTED. (1 DIAGRAM, 3 GRAPHS, 12 REFERENCES, 9 TABLES) |

DE- *URBAN PLANNING ; *ENERGY DEMAND, TRANSPORT ; *URBAN SPRAWL ; *LAND USE CLASSIFICATION ; *BUILDINGS ; ENERGY CONSERVATION, TRANSPT ; POPULATION DENSITY |

RC- 19|

Record - 80

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0134012|

RN- <ENERGYLINE> *82-021482|

TI- **SIMULATION AND ANALYSIS OF ENERGY DEMAND FOR PASSENGER AUTOMOBILES IN AUSTRALIA,** |

AU- WADHWA L. C. |

CS- JAMES COOK UNIV OF NORTH QUEENSLAND, AUSTRALIA,|

SO- TRANSPORTATION RESEARCH PART A-GENERAL, 1980, V14, P235 (6) |

DT- TECHNICAL FEATURE|

AB- THE GASOLINE DEMAND FOR AUTO PASSENGER TRAVEL HAS BEEN IDENTIFIED AS THE MOST CRUCIAL ASPECT OF ENERGY POLICY IN AUSTRALIA. QUALITATIVE AND QUANTITATIVE ANALYSES WERE PERFORMED TO EXPLORE THE ENERGY SAVING POTENTIAL OF VARIOUS MEASURES IN REDUCING TRAVEL DEMAND AND IN MAKING TRAVEL MORE ENERGY EFFICIENT. A COMPUTER SIMULATION MODEL WAS DEVELOPED TO ASSESS FUTURE FUEL DEMAND IN RESPONSE TO A VARIETY OF ASSUMPTIONS ABOUT SOCIAL, ECONOMIC, AND TECHNOLOGICAL VARIABLES. PASSENGER TRAVEL DEMAND IS LESS LIKELY TO BE CONTAINED, BUT A COMBINATION OF CONSERVATION AND EFFICIENCY MEASURES CAN SIGNIFICANTLY REDUCE THE ENERGY INTENSITY OF THIS SECTOR. (1 DIAGRAM, 8 GRAPHS, 24 REFERENCES, 1 TABLE) |

DE- *AUSTRALIA ; *GASOLINE DEMAND ; *AUTOMOBILE ENERGY USAGE ; *MATHEMATIC MODELS-ENERGY USAGE ; *AUTOMOBILE FUEL ECONOMY ; AUTOMOBILE SPEED ; AUTOMOBILE WEIGHT |

RC- 19|

Record - 81

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0130328|

RN- <ENERGYLINE> *81-022971|

TI- **ENERGY POLICY IMPACT EVALUATION,** |

AU- MUFTI, RASIN K. ; MUNSON MICHAEL J.; CHOMITZ KENNETH; MARGIOTTA RICHARD A.; REILLY LAWRENCE J. |

CS- DOT TRANSPORTATION RESEARCH BOARD, WASH DC,|

SO- NTIS REPORT PB80-137953, 1979 (44) |

DT- SPECIAL REPORT |

AB- THE IMPACT OF ENERGY CONSERVATION POLICIES ON TRANSPORTATION DEMAND IS EXAMINED. ENERGY INTENSITY ESTIMATES FOR VARIOUS URBAN TRANSPORTATION MODES IN LIGHT OF CURRENT AND FUTURE LEVELS OF FOREIGN OIL DEPENDENCE ARE DERIVED. A MULTIVARIATE CLASSIFICATION OF AUTOMOBILES BY USE AND OPERATING CHARACTERISTICS IS CONSIDERED. |

DE- *TRANSPORTATION POLICY-PLANNING ; *AUTOMOBILES ; *FUEL USAGE, TRANSPOR |

RC- 19 |

Record - 82

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0128711 |

RN- <ENERGYLINE> *81-021428 |

TI- THE POTENTIAL FOR IMPROVED ENERGY PRODUCTIVITY IN THE UNITED STATES, |

AU- ROSS MARK |

CS- UNIV OF MICHIGAN, |

SO- PRESENTED AT INTL ASSN ENERGY ECONOMISTS/RESOURCES FOR FUTURE INTL ENERGY STRATEGIES SYM, WASH DC, JUN 4-6, 79, P129 (16) |

DT- SURVEY REPORT |

AB- THE POTENTIAL IMPACT OF TECHNICAL DEVELOPMENT ON ENERGY COSTS AND ENERGY DEMAND IN THE U.S. THROUGH 2000 IS ANALYZED. THE TECHNICAL VARIABLES INFLUENCING FUEL CONSUMPTION ARE IDENTIFIED. THE OPPORTUNITY FOR COST-EFFECTIVE REDUCTION OF ENERGY INTENSITY OF INDUSTRIAL PROCESSES OR SPACE-HEATING OF BUILDINGS DUE TO TECHNICAL CHANGE DEPENDS TO A LARGE DEGREE ON PUBLIC POLICIES. THE MOST EFFECTIVE LONG-TERM TECHNICAL CHANGES THAT WOULD FOSTER REVOLUTIONARY ACHIEVEMENTS IN ENERGY REDUCTION AND COST SAVINGS SEEM TO REQUIRE CREATION OF AN EFFECTIVE PRIVATE MARKET RATHER THAN AMBITIOUS PROGRAMS OF INCENTIVES AND REGULATIONS. (1 DIAGRAM, 1 GRAPH, 10 REFERENCES, 3 TABLES) |

DE- *ENERGY USAGE-SECTOR ; *PRICES, ENERGY ; *ENERGY USAGE, DOMESTIC ; *HEATING SYSTEMS, DOMESTIC ; *ECONOMICS, ENERGY ; RETROFITTING ; POLICY-PLANNING, FED ; COGENERATION ; SPACE HEATING, DOMESTIC ; INFILTRATION ; CONF PAPER |

RC- 17 |

Record - 83

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0128383 |

RN- <ENERGYLINE> *81-021100 |

TI- THE SEVEN PRINCIPLES OF ENERGY EFFICIENT ARCHITECTURE, |

AU- KELBAUGH DOUG |

CS- KELBAUGH & LEE ARCHITECTS, NJ, |

SO- PRESENTED AT ISES-AS/ET AL PASSIVE SOLAR 5TH NATL CONF, AMHERST, OCT 19-26, 80, V1, P12 (5) |

DT- FEATURE ARTICLE |

AB- ARCHITECTURE, DESPITE THE CURRENT ENERGY CRISIS, CONTINUES TO BE DETERMINED COMMERCIALLY AND CULTURALLY BUT NOT CLIMATICALLY. THIS TREND CANNOT CONTINUE; REGIONAL CLIMATE MUST PLAY AN IMPORTANT ROLE IN THE DESIGN AND ENERGY NEEDS OF BUILDINGS. THE SEVEN DESIGN PRINCIPLES OF ARCHITECTURE ARE EXPLAINED. BUILDINGS SHOULD BE BUILT WITH MATERIALS AND METHODS OF LOW ENERGY INTENSITY; AN INSOLATION ENVELOPE MUST ALSO BE INCORPORATED. STRUCTURES SHOULD OPEN TO THE SOUTH AND SHOULD HAVE SUFFICIENT THERMAL CAPACITY TO STORE EXCESS HEAT. (13 DIAGRAMS) |

DE- *BUILDING DESIGN ; *SOLAR HEATING COOLING ; *FENESTRATION ; SOLAR ENERGY STORAGE ; ISES CONF PAPER |

RC- 10 |

Record - 84

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0123395 |

RN- <ENERGYLINE> 80-021382 |

TI- **EMBODIES ENERGY IN BUILDING EQUIPMENT AND CONSTRUCTION MATERIALS: ANOTHER ENERGY CONSERVATION OPTION FOR THE DESIGNER AND CODEWRITER,** |

AU- LEONOV, ABRAM L. ; STENHOUSE DOUGLAS S. |

CS- ENERGY MANAGEMENT CONSULTANTS, LOS ANGELES, |

SO- PRESENTED AT INFORMATION TRANSFER INC/ET AL TECHNOLOGY FOR ENERGY CONSERVATION CONF, TUCSON, JAN 23-25, 79, P264 (5) |

DT- TECHNICAL REPORT |

AB- THE ENERGY USED IN THE CONSTRUCTION OF A BUILDING IS DISCUSSED IN TERMS OF ENERGY EMBODIED IN THE CONSTRUCTION MATERIALS. EMBODIED ENERGY MAY BE EXPRESSED IN DIFFERENT UNITS OF EMBODIED ENERGY PER UNIT OF PRODUCTIVITY FOR SPECIFIC TYPES OF EQUIPMENT OR GOODS. THE LABELING OF PRODUCTS WITH EMBODIED ENERGY INDICES AND THE ESTABLISHMENT OF INDUSTRY-ACCEPTED NORMS WILL LEAD TO LESS ENERGY USE, REDUCED DEPENDENCE ON FOREIGN OIL, A MORE FAVORABLE BALANCE OF TRADE, AND REDUCED INFLATION. (4 DIAGRAMS, 12 REFERENCES, 3 TABLES) |

DE- *ENERGY CONSERVATION, INDUSTL ; *CONSTRUCTION ; *ELECTRICITY USAGE, INDUSTRIAL ; DOE CONF PAPER |

RC- 18 |

Record - 85

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0122372|

RN- <ENERGYLINE> 80-020406|

TI- **IS THE CONCEPT OF ENERGY INTENSITY MEANINGFUL?,** |

AU- PERCEBOIS JACQUES |

CS- INSTITUT ECONOMIQUE ET JURIDIQUE DE L ENERGIE, FRANCE, |

SO- ENERGY ECONOMICS, JUL 79, V1, N3, P148 (7) |

DT- SURVEY REPORT|

AB- ENERGY INTENSITY-THE QUANTITY OF ENERGY CONTAINED IN A UNIT OF GOODS-CAN BE DEFINED IN TERMS OF PRIMARY ENERGY OR IN TERMS OF USEFUL ENERGY. THE DISTINCTION BETWEEN PRIMARY ENERGY INTENSITY AND USEFUL ENERGY INTENSITY IS CONSIDERED. PROBLEMS RELATED TO CHANGES IN THE STRUCTURE OF PRODUCTION AND PROBLEMS ARISING FROM THE SUBSTITUTION OF ENERGY FORMS HAVING DIFFERENT EFFICIENCIES ARE ADDRESSED. THE CONCEPT OF USEFUL ENERGY INTENSITY ALLOWS THE ANALYSIS OF STRUCTURAL CHANGE IN ENERGY SUPPLY AND SITUATES THE ANALYSIS AT THE LEVEL OF SATISFIED NEEDS. (20 REFERENCES, 1 TABLE) |

DE- *EFFICIENCY ; *MATHEMATIC MODELS-ENERGY ; *PRICES, ENERGY ; *ENERGY USAGE-SECTOR ; *FOSSIL FUELS ; MATHEMATIC MODELS-FOSSIL FUEL |

RC- 17|

Record - 86

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0122334|

RN- <ENERGYLINE> *80-020368|

TI- **ANNUAL REPORT TO CONGRESS: 1978,** |

SO- DOE REPORT DOE/EIA-0173/2, JUL 9, 79, V2 (205) |

DT- STATISTICS|

AB- PRESENTED ARE THE STATISTICAL RESULTS OF WORK UNDERTAKEN BY THE DOE ENERGY INFORMATION ADMIN. DURING 1978. REPORTED ARE PHYSICAL AND FINANCIAL DATA ON: PETROLEUM AND NATURAL GAS RESOURCES; PETROLEUM AND NATURAL GAS EXPLORATION AND DEVELOPMENT; PETROLEUM AND NATURAL GAS RESERVES; PETROLEUM AND NATURAL GAS SUPPLY AND DISPOSITION; COAL; ELECTRICITY; NUCLEAR POWER; SOLAR AND GEOTHERMAL ENERGY; AND MISCELLANEOUS ENERGY INDICATORS. THE EFFECT OF THE INCREASING AVAILABILITY OF ALASKAN CRUDE OIL ON PETROLEUM IMPORTS IS CONSIDERED. (NUMEROUS GRAPHS, TABLES) |

DE- *DATA, FOSSIL FUEL ; *DATA, ELECTRICITY ; *ENERGY SUPPLY ; *DATA, OIL RESOURCE ; *DATA, OIL USAGE ; *DATA, COAL PRODUCTION ; *DATA, NATURAL GAS USAGE ; *DATA, EXPORT-IMPORT ; *DATA, NATURAL GAS RESOURCE ; *DATA, NUCLEAR POWER ; DATA, SOLAR ENERGY ; FUEL USAGE-SECTOR ; GEOTHERMAL RESOURCES ; DATA, PRODUCTION |

RC- 17|

Record - 87

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0118864|

RN- <ENERGYLINE> 79-022035|

TI- **JAMAICA-A CASE STUDY OF ENERGY PLANNING,** |

AU- BYER TREVOR A. |

CS- WORLD BANK,|

SO- NATURAL RESOURCES FORUM, JAN 79, V3, N2, P117 (16) |

DT- TECHNICAL REPORT|

AB- THE NEW INTERNATIONAL ENERGY ORDER'S IMPACT ON JAMAICA, A DEVELOPING COUNTRY ALMOST TOTALLY DEPENDENT ON IMPORTED OIL FOR THE NATIONAL ENERGY DEMAND, IS ANALYZED. JAMAICAN ENERGY SUPPLY AND DEMAND FROM 1961-76 AND THE STRUCTURE OF ENERGY CONSUMPTION BY MAJOR SECTORS OF THE ECONOMY ARE DISCUSSED. THE HIGH INCOME ELASTICITY OF COMMERCIAL ENERGY DEMAND AND THE INCREASE IN THE ENERGY INTENSITY OF THE ECONOMY ARE DIRECTLY RELATED TO ALUMINA INDUSTRY EXPANSION. THE STRUCTURAL PROBLEMS OF DECOUPLING THE GROSS DOMESTIC PRODUCT AND ENERGY GROWTH ARE INDICATED. THE IMPACT OF THE NEW ENERGY ORDER ON DEVELOPMENT PROSPECTS OF MAJOR BAUXITE/ALUMINA PRODUCING COUNTRIES THAT ARE DEFICIENT IN INDIGENOUS PRIMARY RESOURCES IS ASSESSED. JAMAICA'S INDIGENOUS RESOURCE BASE IS OUTLINED, AND MAJOR ELEMENTS OF THE COUNTRY'S FIVE YEAR (1978-82) NATIONAL ENERGY PLAN ARE SUMMARIZED. (2 GRAPHS, 3 TABLES) |

DE- *JAMAICA ; *ENERGY USAGE-SECTOR ; *POLICY-PLANNING, NON U S ; *OIL IMPORTATION ; *OIL DEMAND-SECTOR ; *HYDROELECTRIC POWER ; DIVERSIFICATION ; PEAT ; SOLAR ENERGY ; ENERGY SELFSUFFICIENCY, NON U PETROLEUM PRODUCTS ; MINERAL RESOURCES |

RC- 03|

Record - 88

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0118216|

RN- <ENERGYLINE> 79-021435|

TI- **THE AIMS, METHODS AND USES OF ENERGY ACCOUNTING,** |

AU- ROBERT F. |

CS- UK DEPT OF ENERGY,|

SO- APPLIED ENERGY, JUL 78, V4, N3, P199 (19) |

DT- RESEARCH REPORT|

AB- THE BASIC METHODS OF DETERMINING ENERGY FLOWS INCLUDE INPUT/OUTPUT TABLE ANALYSIS, STATISTICAL ANALYSIS, AND PROCESS ANALYSIS. EXAMPLES OF THE APPLICATION OF THESE METHODS ARE GIVEN. THE EFFECT OF RISING ENERGY COSTS ON INDUSTRIAL PRICES IS DESCRIBED BY USE OF THE INPUT/OUTPUT ANALYSIS. THE QUESTION OF HOW AND WHEN A KNOWLEDGE OF THE ENERGY INTENSITY OF CAPITAL GOODS CAN BE USED TO EVALUATE ENERGY PAY-BACK TIMES AND ENERGY GAIN RATIOS IN CONSIDERING POTENTIAL NEW ENERGY SOURCES IS EXAMINED. STATISTICAL

ANALYSIS IS USED TO ESTIMATE ENERGY OVERHEAD FOR VARIOUS FUEL INDUSTRIES. THE APPLICATION OF PROCESS ENERGY ANALYSIS IS APPLIED TO A STUDY OF THE IRON CASTING INDUSTRY. (4 DIAGRAMS, 18 REFERENCES, 2 TABLES) |

DE- *EFFICIENCY ; *ENERGY CONSERVATION, INDUSTL ; *ECONOMICS, ENERGY USAGE-IND ; *MATHEMATIC MODELS-ENERGY USAGE ; UNITED KINGDOM |

RC- 18|

Record - 89

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0118138|
RN- <ENERGYLINE> 79-021357|
TI- **WORLDWIDE ENERGY DEMAND,** |
AU- ELBEK BENT |
CS- NIELS BOHR INST, DENMARK, |
SO- PRESENTED AT UNIV OF MIAMI NUCLEAR ENERGY & ALTERNATIVES CONF, MIAMI (BALLINGER), NOV 7-11, 77, P25 (12) |
DT- TECHNICAL FEATURE|
AB- EVEN LOW OR MODERATE WORLD ENERGY DEMAND PROJECTIONS PREDICT A DOUBLING OR EVEN TRIPLING OF PRESENT DEMAND BY THE YEAR 2000. ECONOMIC GROWTH AND MATERIAL IMPLICATIONS SHOULD BE CONSIDERED IN MAKING LONG-TERM ENERGY PREDICTIONS. A STUDY BY THE WORKSHOP ON ALTERNATIVE ENERGY STRATEGIES AND OECD AND IAEA STUDIES ON PROJECTED ENERGY DEMAND ARE DISCUSSED IN AN EXAMINATION OF PROJECTIVE TECHNIQUES. ESTIMATING DEMAND IS DIFFICULT BECAUSE DEMAND DEPENDS ON MANY VARIABLES NOT DIRECTLY RELATED TO ENERGY-POPULATION AND ECONOMIC GROWTH, SOCIAL CHANGE, TECHNICAL DEVELOPMENT, ETC. MOST STUDIES AGREE THAT THE ENERGY COEFFICIENT (THE ENERGY GROWTH RATE OVER THE ECONOMIC GROWTH RATE) WILL BE LOWER IN THE FUTURE AS A RESULT OF STRUCTURAL ECONOMIC CHANGES, MARKET MATURATION AND SATURATION IN DEVELOPING COUNTRIES, THE IMPACT OF HIGHER ENERGY PRICES, CONSERVATION EFFORTS, AND TECHNICAL DEVELOPMENTS. WAYS OF IMPROVING PREDICTIONS ARE ADDRESSED. (3 GRAPHS, 6 REFERENCES, 6 TABLES) |
DE- *ENERGY DEMAND ; *SUPPLY-DEMAND ESTIMATE COMPARISONS ; *ENERGY USAGE-SECTOR ; AREA COMPARISONS ; CONF PAPER |
RC- 17|

Record - 90

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0117711|
RN- <ENERGYLINE> *79-020959|
TI- **ENERGY AND FREIGHT MOVEMENT,** |
AU- FRENCH ALEXANDER |

CS- DOT, |

SO- PRESENTED AT ERDA EFFECTS OF ENERGY CONSTRAINTS ON TRANSPORTATION SYSTEMS CONF, SCHENECTADY, AUG 76, P305 (17) |

DT- SURVEY REPORT |

AB- THE ENERGY ASPECTS OF INTERCITY TRUCK FREIGHT MOVEMENTS ARE DISCUSSED. MUCH DETAILED ANALYSIS IS NEEDED BEFORE CONCLUSIONS ABOUT ENERGY CONSUMPTION FOR SPECIFIC SITUATIONS CAN BE REACHED. STATISTICS INVOLVING "PERCENT EMPTY BACKHAUL" AND "TON MPG" CAN BE MISLEADING. BUT SHIPPING DENSITY AND CUBAGE ARE IMPORTANT DETERMINANTS FOR COMPARING ENERGY EFFICIENCY OF DIFFERENT MODES. SUCH COMMODITY CHARACTERISTICS AS VALUE, PERISHABILITY, FRAGILITY, FREQUENCY OF SHIPMENT, VOLUME SHIPPED AT ONE TIME, AND VOLUME SHIPPED OVER A LONG TIME COMPLICATE COMPARISON AMONG TRANSPORT MODES. ENERGY INTENSITY IS COMPARED FOR TRAILER ON FLAT CAR, CONTAINER ON FLAT CAR, AND RAIL CAR MODES. (4 DIAGRAMS, 5 GRAPHS, 3 REFERENCES, 4 TABLES) |

DE- *FREIGHT TRANSPORTATION ; *TRUCK FUEL ECONOMY ; *TRUCK WEIGHT ; *RAILROAD FUEL ECONOMY ; CITIES ; TRUCK SPEED ; ERDA CONF PAPER |

RC- 19 |

Record - 91

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0117706 |

RN- <ENERGYLINE> *79-020954 |

TI- **TOTAL DIRECT AND INDIRECT COSTS OF BART,** |

AU- HEALY TIMOTHY J. |

CS- UNIV OF SANTA CLARA, |

SO- PRESENTED AT ERDA EFFECTS OF ENERGY CONSTRAINTS ON TRANSPORTATION SYSTEMS CONF, SCHENECTADY, AUG 76, P207 (15) |

DT- TECHNICAL FEATURE |

AB- THE DIRECT AND INDIRECT COSTS OF THE BART SYSTEM IN SAN FRANCISCO ARE DISCUSSED. THE COSTS ARE CLASSIFIED AS TRACTION, STATION, MAINTENANCE, CONSTRUCTION, OR IMPACT ENERGY COSTS. ENERGY INTENSITY IS COMPARED FOR ELECTRIC TRANSIT SYSTEMS IN PHILADELPHIA, CHICAGO, NEW YORK, CLEVELAND, AND TORONTO. THE INDIRECT ENERGY COST FOR CONSTRUCTION ACCOUNTS FOR 44% OF ALL ENERGY USED FOR THE BART SYSTEM.TRACTION USES 40%, AND OPERATION AND MAINTENANCE ENERGY ACCOUNTS FOR 16% OF ENERGY USED. (2 GRAPHS, 6 REFERENCES, 4 TABLES) |

DE- *BAY AREA RAPID TRANSIT ; *ELECTRICITY DEMAND, TRANSPORT ; *PROPULSION SYSTEMS ; *VEHICLE WEIGHT ; *MATHEMATIC MODELS-ENERGY USAGE ; CAPITAL COSTS ; OPERATING-MAINTENANCE COSTS ; ERDA CONF PAPER |

RC- 19 |

Record - 92

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0116548|

RN- <ENERGYLINE> *78-024853|

TI- **ENERGY REQUIREMENTS FOR FLUIDIZED-BED COAL COMBUSTION IN 800-1000 MW STEAM ELECTRIC POWER PLANTS,** |

AU- WHITTLE, C. E. ; CAMERON A. E. |

CS- INST FOR ENERGY ANALYSIS, TENN,|

SO- NTIS REPORT ORAU/IEA(M)-77-4, FEB 77 (44) |

DT- SPECIAL REPORT|

AB- THE ENERGY SUBSIDIES REQUIRED TO DELIVER A UNIT OF ELECTRICITY TO A UTILITY GRID ARE CALCULATED FOR THREE ALTERNATIVE 800-1000 MW COAL-FIRED STEAM-ELECTRIC POWER PLANTS. TWO OF THE SYSTEMS INVOLVE FLUIDIZED-BED COMBUSTION BOILERS, AND THE THIRD SYSTEM IS A CONVENTIONAL COAL-FIRED SYSTEM WITH STACK GAS SCRUBBERS FOR THE REQUIRED SULFUR DIOXIDE REMOVAL. ENERGY INPUTS ARE CALCULATED BY STARTING WITH DETAILED COST ANALYSES AND DESIGN PARAMETERS OF THE SYSTEMS. THEN THE COST ESTIMATES OF THE MAJOR COMPONENTS AND BALANCE OF PLANT MATERIALS ARE MAPPED INTO APPROPRIATE ECONOMIC SECTORS FOR WHICH ENERGY COEFFICIENTS ARE AVAILABLE. OPERATING ENERGY EXPENDITURES FOR COAL AND LIMESTONE EXTRACTION, PREPARATION, TRANSPORTATION, AND TRADE AND FOR PLANT OPERATING MATERIALS ARE CALCULATED BY MULTIPLYING THE ENERGY COEFFICIENTS BY THE COST ESTIMATES FOR EACH SECTOR. THE ELECTRIC AND NONELECTRIC ENERGY INPUTS (NOT INCLUDING TRANSMISSION AND DISTRIBUTION INPUTS) OF THE PRODUCED ELECTRICITY SHOW THAT THE DIFFERENCES IN ENERGY INTENSIVENESS OF THE THREE SYSTEMS ARE VERY MINOR AND THAT THEY ARE WELL WITHIN THE INTRINSIC UNCERTAINTIES OF SUCH COMPUTATIONS. |

DE- *PRIMARY FUEL ; *FLUIDIZED BED COMBUSTION ; *STEAM-ELECTRIC POWER PLANTS ; *ENERGY DEMAND-SOURCE ; *POWER PLANTS-COAL FIRED ; *ECONOMICS, ENERGY USAGE-IND ; SCRUBBERS, WET |

RC- 17|

Record - 93

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0114494|

RN- <ENERGYLINE> 78-022899|

TI- **THE USE AND ABUSE OF ENERGY INTENSITIES,** |

AU- PROOPS JOHN L. R. |

CS- UNIV OF KEELE, UK,|

SO- PRESENTED AT ENERGY USE MANAGEMENT INTL CONF, TUCSON, OCT 24-28, 77, V2, P637 (5) |

DT- TECHNICAL REPORT|

AB- ENERGY INTENSITIES REFER TO THE ENERGY USED BY AN ECONOMY IN THE

PRODUCTION OF GOODS AND SERVICES. INPUT-OUTPUT ANALYSIS IS USED TO DERIVE TWO RELATED TYPES OF ENERGY INTENSITY. EQUATIONS THAT CAN FACILITATE CALCULATIONS OF ENERGY INTENSIVENESS OF THE VARIOUS MANUFACTURING PROCESSES IN AN ECONOMY ARE DEFINED. PROCESS ANALYSIS AND THE CONCEPT OF EMBODIED ENERGY ARE DESCRIBED. (9 REFERENCES) |

DE- *MATHEMATIC MODELS-ENERGY ; *EFFICIENCY ; ECONOMICS, ENERGY USAGE-IND CONF PAPER |

RC- 18 |

Record - 94

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0114486 |

RN- <ENERGYLINE> 78-022891 |

TI- **DETERMINING THE ENERGY COST OF CONSTRUCTION ACTIVITIES** |

AU- SEGAL BARR Z. |

CS- UNIV OF ILLINOIS, |

SO- PRESENTED AT ENERGY USE MANAGEMENT INTL CONF, TUCSON, OCT 24-28, 77, V2, P307 (9) |

DT- TECHNICAL REPORT |

AB- A STUDY WAS INITIATED TO DETERMINE HOW MUCH ENERGY CONSTRUCTION ACTIVITIES CONSUME AND HOW MUCH CAN BE SAVED. TOTAL ENERGY REQUIREMENTS OF THE CONSTRUCTION INDUSTRY FOR 1967 WERE DETERMINED TO EXAMINE THE POTENTIAL FOR ENERGY CONSERVATION. AN ENERGY INPUT/OUTPUT MODEL, EXPANDED TO INCLUDE A DETAILED BREAKDOWN OF THE CONSTRUCTION INDUSTRY, IS DESCRIBED. TOTAL PRIMARY ENERGY INTENSITIES WERE CALCULATED FOR NEARLY 50 CONSTRUCTION SECTORS, INCLUDING BOTH NEW AND MAINTENANCE CATEGORIES. ENERGY COSTS OF MANY BUILDING MATERIALS WERE CALCULATED. ENERGY TRADEOFFS BETWEEN DIFFERENT BUILDING ASSEMBLIES WITH THE SAME PERFORMANCE CRITERIA ARE ANALYZED. (4 REFERENCES, 6 TABLES) |

DE- *CONSTRUCTION ; *MATHEMATIC MODELS-ENERGY USAGE ; *ENERGY CONSERVATION, INDUSTL ; *TOTAL ENERGY ; *ECONOMICS, ENERGY USAGE-IND ; CONF PAPER ; *16 HEAVY CONSTRUCTION |

RC- 18 |

Record - 95

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0114383 |

RN- <ENERGYLINE> 78-022788 |

TI- **INTERCOUNTRY DIFFERENCES IN ENERGY USE: LESSONS FOR THE UNITED STATES?** |

AU- DARMSTADTER JOEL ; SCHIPPER LEE |

CS- (RESOURCES FOR THE FUTURE, WASH DC), AND; (UNIV OF CALIFORNIA, BERKELEY), |

SO- PRESENTED AT ENERGY USE MANAGEMENT INTL CONF, TUCSON, OCT 24-28, 77, V2, P543 (6) |

DT- SURVEY REPORT |

AB- THE FINDINGS OF SEVERAL STUDIES THAT ANALYZED INTERCOUNTRY DIFFERENCES IN ENERGY CONSUMPTION PATTERNS ARE EXAMINED. THE BASIC ANALYTICAL EFFORT OF THE STUDIES, CONDUCTED IN 1972, TO EXPLORE THE EXTENT TO WHICH INTERCOUNTRY ENERGY CONSUMPTION VARIATIONS WERE DUE TO DIFFERENCES IN THE COMPOSITION OF NATIONAL OUTPUT, OR IN THE ENERGY INTENSITY ASSOCIATED WITH GIVEN ECONOMIC PROCESSES. THE GREATEST DIFFERENCES IN ENERGY USE PATTERNS ARE ASSOCIATED WITH INDUSTRIAL PROCESS HEAT, ELECTRICITY USE, SPACE HEATING, AND SURFACE PASSENGER TRANSPORTATION. EXPERIMENTAL RESULTS FOR SWEDEN ARE COMPARED WITH RESULTS FROM THE U.S. (1 TABLE) |

DE- *ENERGY USAGE, PER CAPITA ; *GROSS NATL PRODUCT-NON U S ; *GROSS NATL PRODUCT ; *SWEDEN ; CONF PAPER |

RC- 17 |

Record - 96

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0113419 |

RN- <ENERGYLINE> 78-021866 |

TI- **CONSUMPTION,** |

SO- MONTHLY ENERGY REVIEW-FEA, OCT 77, P45 (10) |

DT- STATISTICS |

AB- DOMESTIC ENERGY CONSUMPTION IN JULY 1977 WAS 2.1% MORE THAN IT WAS DURING JULY 1976. IN JUNE 1977, THE COMBINED RESIDENTIAL-COMMERCIAL, INDUSTRIAL, AND TRANSPORTATION SECTORS CONSUMED 6.7%, 3.1%, AND 3.1% MORE RESPECTIVELY THAN THEY DID IN JUNE 1976. CONSUMPTION OF COAL, NATURAL GAS, PETROLEUM, AND ELECTRICAL ENERGY BY RESIDENTIAL, TRANSPORTATION, COMMERCIAL, AND INDUSTRIAL SECTORS FROM 1972 TO THE PRESENT IS TABULATED. CONSUMPTION AND FORECAST DATA FOR PETROLEUM ARE INCLUDED, AND ENERGY INDICATORS ARE CHARTED. (7 GRAPHS, 7 TABLES) |

DE- *DATA, ENERGY USAGE ; *ENERGY USAGE-SECTOR ; *ENERGY USAGE-SOURCE ; *PRIMARY FUEL ; *SUPPLY-DEMAND FORECASTING ; GASOLINE ; DISTILLATE FUEL OIL ; RESIDUAL FUEL OIL |

RC- 17 |

Record - 97

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0113049 |

RN- <ENERGYLINE> 78-K20862 |

TI- **ENERGY INTENSITY: A SELECTED ANNOTATED BIBLIOGRAPHY,** |

AU- FRANKENA FREDERICK |

SO- MONTICELLO, ILL: COUNCIL OF PLANNING LIBRARIANS, 1977, 12 PP, $1.50 PA |

DT- COMMENTARY |

DE- *ENERGY USAGE |

RC- 17 |

Record - 98

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0112483 |

RN- <ENERGYLINE> 78-020983 |

TI- **TRANSPORTATION ENERGY CONSERVATION DATA BOOK: EDITION 2,** |

AU- SHONKA, D. B. ; LOEBL A. S.; PATTERSON P. D. |

CS- ERDA, |

SO- ERDA REPORT ORNL-5320, OCT 77 (532) |

DT- STATISTICS |

AB- A STATISTICAL COMPENDIUM IS COMPILED BY ORNL UNDER CONTRACT WITH ERDA. SECONDARY DATA ON TRANSPORTATION CHARACTERISTICS BY MODE, ON TRANSPORTATION ENERGY USE, AND ON OTHER RELATED VARIABLES ARE PRESENTED IN GRAPHIC OR TABULAR FORM. ALL MAJOR MODES OF TRANSPORTATION ARE REPRESENTED: HIGHWAY, RAIL, AIR, MARINE, AND PIPELINE. VARIOUS ASPECTS OF THE TRANSPORTATION SECTOR ARE DISCUSSED, INCLUDING: MODAL CHARACTERISTICS, CURRENT ENERGY USE, EFFICIENCY, AND CONSERVATION; PROJECTIONS OF MODAL ENERGY USE; IMPACT OF GOVERNMENTAL ACTIVITIES; SUPPLY AND COST OF ENERGY; AND GENERAL DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS. TRANSPORTATION STOCK AND USE STATISTICS EXAMINED INCLUDE: NUMBER OF VEHICLES; VEHICLE-MILES TRAVELED; PASSENGER-MILES AND FREIGHT TON-MILES; FLEET CHARACTERISTICS; SIZE MIX OF AUTOMOBILES; AND COMMUTING PATTERNS. ENERGY CHARACTERISTICS PRESENTED INCLUDE ENERGY USE BY FUEL SOURCE AND TRANSPORTATION MODE, ENERGY INTENSITY FIGURES BY MODE, ALTERNATIVE FUELS, AND INDIRECT ENERGY USE. INFORMATION ON THE NAT'L ENERGY PLAN, THE DEPT. OF ENERGY, ERDA'S ELECTRIC AND HYBRID VEHICLE PROJECT, AND THE TRANSPORTATION ENERGY CONSERVATION DIV.'S ENERGY DEMAND PROJECTIONS ARE PRESENTED. (NUMEROUS DIAGRAMS, GRAPHS, MAPS, REFERENCES, TABLES) |

DE- *ENERGY CONSERVATION, TRANSPT ; *DATA, ENERGY USAGE-TRANSPORT ; *DATA, TRANSPORT ; *MOTOR VEHICLES ; *ENERGY SUPPLY, TRANSPORT ; *DATA, FUEL USAGE-TRANSPORT ; FREIGHT TRANSPORTATION ; AIR TRANSPORTATION ; RAIL TRANSPORTATION ; ELECTRIC VEHICLES ; AUTOMOBILES ; FUEL SUPPLY, TRANSPORT ; TRUCKS ; PRICES, OIL |

RC- 19 |

Record - 99

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0112434|
RN- <ENERGYLINE> 78-020934|
TI- **THE COMING AGE OF CONSERVATION,** |
AU- SOCOLOW ROBERT H. |
CS- PRINCETON UNIV, |
SO- ANNUAL REVIEW OF ENERGY, 1977, V2, P239 (51) |
DT- SURVEY REPORT |
AB- UPSTREAM, AT THE WELLS, FIELDS, AND PLANTS, CONSERVATION LOOKS LIKE DEPRIVATION. FROM DOWNSTREAM, AMID THE AMENITIES PROVIDED, CONSERVATION IS A SET OF OPPORTUNITIES TO BE CLEVER WITH END-USE TECHNOLOGY. ENERGY DEMAND ANALYSIS IS DISCUSSED. DIFFERENCES AMONG INDUSTRIAL COUNTRIES ARE FASCINATING, BUT THEY ARE SECONDARY. SOME DETERMINANTS OF THE PACE OF CHANGE IN ENERGY INTENSITY ARE SUGGESTED. PRESSURES LIKELY TO DRIVE INDUSTRIAL SOCIETIES TOWARD HIGHER ENERGY INTENSITIES ARE IDENTIFIED, AND THE LARGER SET OF OPPORTUNITIES TO ACHIEVE LOWER INTENSITIES ARE ALSO DESCRIBED. FLOW FACTORIZATION SETS A FRAMEWORK FOR ESTABLISHING FUTURE LEVELS OF ACTIVITY IN VARIOUS SECTORS. A SOCIETY PREOCCUPIED WITH CONSERVATION IS NOT A BORING ONE. (6 GRAPHS, 78 REFERENCES, 5 TABLES) |
DE- *ENERGY CONSERVATION-SECTOR ; *ENERGY DEMAND-SECTOR ; *INDUSTRIAL NATIONS ; *ENERGY USAGE-SECTOR ; *RESOURCE DEPLETION ; *PRICE INCREASES, ENERGY ; *AUTOMOBILE WEIGHT ; *RETROFITTING ; *MOBILE HOMES ; *ECONOMICS, ENERGY ; *ENERGY USAGE, PER CAPITA ; *INCOME COMPARISONS ; *RECYCLING ; *COGENERATION |
RC- 17|

Record - 100

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0110620|
RN- <ENERGYLINE> 77-023649|
TI- **SIZING UP THE ENERGY REQUIREMENTS FOR PRODUCING PRIMARY MATERIALS,** |
AU- KELLOGG HERBERT H. |
CS- COLUMBIA UNIV, |
SO- ENGINEERING & MINING J, APR 77, V178, N4, P61 (5) |
DT- SURVEY REPORT |
AB- THE 12 LARGEST ENERGY CONSUMERS AMONG PRIMARY MATERIALS INDUSTRIES ARE LED BY STEEL SLABS, GREY IRON, AND STEEL CASINGS. HIGH ENERGY USE CAN RESULT FROM LOW UNIT VALUES BUT LARGE CONSUMPTION, OR FROM LIMITED CONSUMPTION BUT HIGH UNIT VALUES. OF 12 MAJOR HIGH ENERGY INTENSITY MATERIALS, ALL BUT TWO ARE METALS: THERE IS A CORRELATION BETWEEN THE METALLIC STATE AND THE NEED TO USE LARGE AMOUNTS OF ENERGY FOR PRODUCTION. ENERGY INTENSITY VS. ORE GRADE IS EXAMINED. BY-PRODUCT RECOVERY FROM PRIMARY ORES IS ONE WAY TO BEAT THE PROBLEM OF DECLINING ORE GRADES. RECOVERY OF COPPER FROM DEEP-SEA NODULES OFFERS A WAY TO AVOID DECLINING GRADES OF LAND-BASED ORES. IN SITU

LEACHING OF ORE BODIES IS ANOTHER PROMISING METHOD THAT AVOIDS LARGE ENERGY EXPENDITURES. INSIGHTS INTO THE ENERGY INTENSIVITY OF METALS ARE DISCUSSED. IN THE FUTURE, A LARGE FRACTION OF U.S. MATERIAL NEEDS WILL COME FROM RECYCLING. (1 GRAPH, 5 TABLES) |

DE- *METAL MINING ; *ENERGY USAGE, INDUSTRIAL ; *ELECTRICITY USAGE, INDUSTRIAL ; *RECYCLED METAL ; *OCEAN MINING ; COPPER RESOURCES |

RC- 18|

Record - 101

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0110536|

RN- <ENERGYLINE> 77-023565|

TI- **INPUT-OUTPUT ANALYSIS AND ENERGY INTENSITIES: A COMPARISON OF SOME METHODOLOGIES,** |

AU- PROOPS J. L. R. |

CS- UNIV OF KEELE, UK,|

SO- APPLIED MATHEMATICAL MODELLING, MAR 77, V1, N4, P181 (6) |

DT- TECHNICAL REPORT|

AB- A FACET OF ENERGY ANALYSIS IS DEVISING A MEANS FOR CHARGING GOODS PRODUCED BY AN ECONOMY WITH ENERGY USED. VARIOUS MEASURES FOR ENERGY INTENSITIES OF PRODUCED GOODS HAVE BEEN SUGGESTED, ALL OF WHICH REQUIRE THAT THE ECONOMY BE REPRESENTED AS COMPOSED OF INTERRELATED PRODUCING SECTORS AND ONE OR MORE CONSUMING SECTORS. THE INTERRELATIONSHIPS ARE MOST EASILY REPRESENTED BY INPUT-OUTPUT TABLES. INPUT-OUTPUT ANALYSIS AND METHODS OF ARRIVING AT ENERGY INTENSITIES ARE EXAMINED AND COMPARED. (7 TABLES) |

DE- *MATHEMATIC MODELS-ENERGY USAGE ; *ENERGY USAGE-SECTOR ; *PRICES, ENERGY ; *ECONOMICS, ENERGY USAGE |

RC- 17|

Record - 102

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0110289|

RN- <ENERGYLINE> 77-023318|

TI- **SOLAR PONDS: LOW COST SOLAR ENERGY MANAGEMENT SYSTEMS,** |

AU- SHAFFER LLOYD H.|

SO- ENERGY-BCC, SUMMER 77, V2, N3, P18 (3) |

DT- TECHNICAL FEATURE|

AB- BECAUSE OF THE DISTANCE BETWEEN THE EARTH AND THE SUN, THE SUN'S RADIANT ENERGY INTENSITY AT THE EARTH'S SURFACE IS VERY LOW. THUS, LARGE AREAS ARE NEEDED IF SIGNIFICANT AMOUNTS OF HEAT OR WORK ARE TO BE OBTAINED FROM THE SUN. THE POSSIBILITY OF REDUCING MANUFACTURING COSTS OF PHOTOVOLTAIC SILICON

DEVICES BY A FACTOR OF 10 SHOULD ALLOW THE PRODUCTION OF DC ENERGY AT LOW, EFFICIENT COSTS. SOLAR PONDS, COSTING FROM $4-10/SQ FT AND CAPABLE OF STORING ENERGY OVER THE LONG TERM, MAY FULFILL THIS GOAL. A SOLAR POND WITH AN ASSOCIATED AC POWER PLANT MAY COST AS LITTLE AS $35/SQ FT. (3 DIAGRAMS, 1 TABLE) |

DE- *SOLAR COLLECTOR PONDS ; *ECONOMICS, SOLAR ENERGY ; PHOTOVOLTAICS ; VISCOSITY ; SALT ; EFFICIENCY ; SOLAR RADIATION |

RC- 10 |

Record - 103

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0103612 |

RN- <ENERGYLINE> 76-021448 |

TI- **ENERGY, EMPLOYMENT, AND DOLLAR IMPACTS OF CERTAIN CONSUMER OPTIONS,** |

AU- HERENDEEN, ROBERT ; SEBALD ANTHONY |

CS- UNIV OF ILLINOIS, |

SO- FORD FOUNDATION ENERGY POLICY PROJECT REPORT: THE ENERGY CONSERVATION PAPERS, 1975, P131 (40) |

DT- SURVEY REPORT |

AB- NINE GROUPS OF CONSUMER PRODUCTS WERE ANALYZED FOR THEIR DOLLAR, ENERGY, AND LABOR COSTS. THE METHODOLOGY FOR THE ANALYSES IS DOCUMENTED, AND SEVERAL CONCLUSIONS ARE REACHED: WATER HEATING WAS BY FAR THE PREDOMINANT FACTOR AND IS AN ESPECIALLY IMPORTANT AREA IN WHICH TO CONCENTRATE ENERGY CONSERVATION EFFORTS; AND MINIMUM ENERGY DOES NOT ALWAYS IMPLY MINIMAL ENVIRONMENTAL IMPACT. FOR INSTANCE, IN SOME CASES OF HOME WASHING, PAPER TOWELS ARE FOUND TO BE LESS ENERGY-INTENSIVE THAN CLOTH IS. DOLLAR, ENERGY, AND LABOR COSTS ARE GIVEN FOR VARIOUS HOUSEHOLD ENERGY CONSUMPTION ACTIVITIES. THE EFFECT OF INTEREST RATES ON DOLLAR COST, AND ENERGY INTENSITIES OF PERSONAL CONSUMPTION ACTIVITIES ARE PRESENTED. (NUMEROUS GRAPHS, REFERENCES, TABLES) |

DE- *ELECTRICAL APPLIANCES ; *ECONOMICS, ENERGY USAGE-DOM |

RC- 20 |

Record - 104

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0103588 |

RN- <ENERGYLINE> 76-021424 |

TI- **ENERGY, EMPLOYMENT, AND DOLLAR IMPACTS OF ALTERNATIVE TRANSPORTATION OPTIONS,** |

AU- HANNON, BRUCE ; HERENDEEN ROBERT; PUELO F.; SEBALD ANTHONY |

CS- UNIV OF ILLINOIS, |

SO- FORD FOUNDATION ENERGY POLICY PROJECT REPORT: THE ENERGY CONSERVATION

PAPERS, 1975, P105 (26) |
DT- SURVEY REPORT |
AB- TRANSPORTATION AND ITS SUPPORTING SERVICES AND MANUFACTURE ACCOUNT FOR ABOUT 41.8 OF THE TOTAL ENERGY CONSUMED IN THE U.S., THUS OFFERING A SUBSTANTIAL POTENTIAL FOR ENERGY CONSERVATION. THE ENERGY CONSERVATION OPPORTUNITIES OF SWITCHING FROM ONE TRANSPORT MODE TO ANOTHER IN THE CONTEXT OF TODAY'S TRANSPORTATION SYSTEMS ARE EXAMINED. A COMPARISON BETWEEN BUS TRAVEL AND URBAN CARS SHOWS THAT URBAN BUS TRAVEL COSTS 52% MORE MONEY, USES 42% LESS ENERGY, AND IS TWICE AS LABOR-INTENSIVE AS URBAN CAR TRAVEL ON A PER-PASSENGER-MILE BASIS. THE CONSEQUENCES AND OBSTACLES OF A NATIONWIDE CHANGE FROM CAR TO BUS TRAVEL ARE DISCUSSED. INCLUDED IS A LIST OF 83 PERSONAL CONSUMPTION ACTIVITIES AND THEIR ENERGY INTENSITIES. (NUMEROUS REFERENCES) (17 TABLES) |
DE- *EMPLOYMENT ; *ECONOMICS, ENERGY USAGE-TRANS ; *AUTOMOBILES ; *BUS TRANSPORTATION ; *PRICES, GASOLINE |
RC- 19 |

Record - 105

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0102052 |
RN- <ENERGYLINE> *75-007667 |
TI- **TRANSPORTATION VEHICLE ENERGY INTENSITIES: A JOINT DOT/NASA REFERENCE PAPER, |**
AU- MASCY, A. C. ; PAULLIN R. L. |
CS- NASA, |
SO- NTIS REPORT N75-13690, JUN 74 (29) |
DT- SPECIAL REPORT |
AB- DATA ON THE ENERGY CONSUMPTION OF AIR AND GROUND VEHICLES ARE COMPILED. THE RATIO BTU/AVAILABLE SEAT MILE IS USED TO EXPRESS VEHICLE ENERGY INTENSIVENESS, AND IS RELATED TO THE ENERGY CONSUMED DIRECTLY IN SEAT-MILE OR TON-MILE PRODUCTIVITY. KEY CONSIDERATIONS IN INTERPRETING ENERGY INTENSIVENESS FOR A GIVEN MODE INCLUDE LOAD FACTORS, OPERATION, OVERHEAD ENERGY CONSUMPTION, AND ENERGY INVESTMENTS IN NEW STRUCTURE AND EQUIPMENT. |
DE- *ENERGY USAGE, TRANSPORT ; *U S NATL AERO SPACE ADMIN ; *U S DEPT TRANSPORTATION ; *AIRPLANE ENERGY USAGE ; *ENERGY DEVEL INVESTMENT |
RC- 03 |

Record - 106

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>
FN- DIALOG ENERGYLINE File 69
AN- <DIALOG> 0101419 |
RN- <ENERGYLINE> *75-005939 |

TI- **RATING AIRCRAFT ON ENERGY,** |

AU- MADDALON DAL V. |

CS- NASA LANGLEY RESEARCH CENTER, |

SO- ASTRONAUTICS & AERONAUTICS, DEC 74, V12, N12, P26 (18) |

DT- SURVEY REPORT |

AB- ARGUMENTS AGAINST AIRCRAFT ON ENERGY USAGE GROUNDS ARE GAINING IN STRENGTH. HOWEVER, AIRCRAFT ARE BEING COMPARED WITH OTHER TRANSPORTATION MODES ON AN IMPROPER BASIS. AN ENERGY INTENSITY EXPRESSED IN BTU PER PASSENGER-MILE IS DEVELOPED AND APPLIED TO TRANSPORTATION MODES INCLUDE AIRCRAFT. AIRCRAFT MEASURE UP ON ENERGY MUCH BETTER THAN POPULARLY SUPPOSED AND AIRCRAFT HAVE THE POTENTIAL FOR A 75% REDUCTION IN BTU PER PASSENGER-MILE, A PROSPECT NOT SHARED BY OTHER FORMS OF TRANSPORTATION. POTENTIALS FOR ENERGY CONSERVATION IN AIRCRAFT ARE DESCRIBED. (1 DRAWING, 17 GRAPHS, 2 PHOTOS, 18 REFERENCES, 6 TABLES) |

DE- *AIRPLANE ENERGY USAGE ; *ENERGY CONSERVATION, TRANSPT ; *JET ENGINE ENERGY USAGE |

RC- 03 |

Record - 107

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0101264 |

RN- <ENERGYLINE> 75-005285 |

TI- **ENERGY BUDGETS, 3. GOODS AND SERVICES: AN INPUT-OUTPUT ANALYSIS,** |

AU- WRIGHT DAVID J. |

CS- DEPT OF THE ENV, UK, |

SO- ENERGY POLICY, DEC 74, V2, N4, P307 (9) |

DT- SURVEY REPORT |

AB- THE U.S. ENERGY INPUT-OUTPUT TABLE IS USED TO TRACE ALL THE INPUTS TO EACH INDUSTRIAL PROCESS BACK TO REQUIREMENTS FOR PRIMARY ENERGY. THE RELATIVE ADVANTAGES OF THE INPUT-OUTPUT APPROACH AND THE PROCESS ANALYSIS APPROACH TO APPRAISE HOW MUCH ENERGY IS USED IN THE PRODUCTION OF VARIOUS GOODS AND SERVICES IN THE ECONOMIC SYSTEM ARE DISCUSSED. ENERGY INTENSITIES OF U.S. PRODUCTS IN KWH FOR 1963 DOLLARS ARE TABULATED. (2 GRAPHS, 3 TABLES) |

DE- *ECONOMIC DATA-ENERGY ; *ENERGY USAGE, INDUSTRIAL ; *UNITED STATES ; *ECONOMICS, ENV-ENERGY |

RC- 03 |

Record - 108

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0100045 |

RN- <ENERGYLINE> 75-000354 |

TI- **ENERGETICS OF THE BUILT ENVIRONMENT** |

AU- YEANG KEN |

CS- UNIV OF CAMBRIDGE, UK, |

SO- ARCHITECTURAL DESIGN, JUL 74, V44, P446 (6) |

DT- TECHNICAL REPORT |

AB- ENERGETICS, THE STUDY OF ENERGY TRANSFORMATIONS WITHIN ECOSYSTEMS, PROVIDE A USEFUL FRAMEWORK FOR EXAMINING THE RELATIONSHIPS BETWEEN THE BUILT ENVIRONMENT (A MANMADE ECOSYSTEM) AND THE NATURAL ENVIRONMENT. VALUES ARE PROVIDED FOR USING ENERGY INDICES IN MODELING, COMPARING DESIGN ALTERNATIVES, IMPROVING DESIGNED SYSTEMS, CONSERVING NONRENEWABLE RESOURCES, COMPARING IMPACTS, AND STUDYING ENERGY UTILIZATION PATTERNS AS A WHOLE. THE ACCOUNTING OF THE ENERGY COST OF A PROPOSED PROJECT WOULD PROVIDE ADDITIONAL CRITERIA FOR EVALUATING THE IMPACT OF HUMAN DEVELOPMENTS ON THE NATURAL ENVIRONMENT. (3 DIAGRAMS, 12 TABLES) |

DE- *ENERGY USAGE ; *ECOSYSTEMS ; *ENERGY CONSERVATION ; *ENERGY RESOURCES ; *RECYCLING ; *ENV IMPACT STATEMENT |

RC- 03 |

Record - 109

<DIALOG File 69: (COPR. R. R. BOWKER COMPANY 1991)>

FN- DIALOG ENERGYLINE File 69

AN- <DIALOG> 0054129 |

RN- <ENERGYLINE> *74-005233 |

TI- **MONTHLY ENERGY INDICATORS,** |

SO- FEDERAL ENERGY OFFICE REPORT APR 74 (30) |

DE- *DATA, ENV-FUEL; *COAL, BITUMINOUS; *LIGNITE; ECONOMICS, ENV-FUEL; *FUEL IMPORTATION; *GASOLINE SUPPLY; *99 PETROLEUM INDUSTRY; *NATURAL GAS LIQUIDS; NATURAL GAS IMPORTATION |

RC- 03 |

ELECTRIC POWER DATABASE
DIALOG FILE 241

SEARCH OPTIONS (Continued)

ADDITIONAL INDEXES

PREFIX	FIELD NAME	INDEXING	SELECT EXAMPLES
AN=	Record Number	Phrase	S AN=1730702
AU=	Personal Author	Phrase	S AU=ADAMS, G.
CD=	Completion Date	Phrase	S CD=920331
CN=	Contract Number	Phrase	S CN=RP2797-01
CN=	EPRI Project Number	Phrase	S CN=AEP1007
CO=	Contractors	Word & Phrase	S CO=(FOREST(W)PRODUCTS) S CO=FOREST PRODUCTS UTIL?
CS=	Investigating Organization	Word & Phrase	S CS=(ELECTRIC(W)POWER) S CS=BANDON ELECTRIC DEPT.
DA=	Add Date	Phrase	S DA=860210
DD=	EPRI Department Name	Word & Phrase	S DD=(ENERGY(W)ANALYSIS) S DD=POWER SYSTEMS
DI=	EPRI Division Name	Word & Phrase	S DI=(ADVANCED(W)POWER) S DI=NUCLEAR SAFETY ANALYSIS?
DP=	EPRI Program Name	Word & Phrase	S DP=DISTRIBUTION S DP=AIR QUALITY CONTROL
DS=	EPRI Subprogram Name	Word & Phrase	S DS=(NEUTRALIZER(2W)ACIDS) S DS=WIND POWER
DT=	Document Type	Word & Phrase	S DT=CONTRACT S DT=FINAL REPORT
DU=	Change Date	Phrase	S DU=841004
FC=	Federal Energy Regulatory Commission (FERC) Category Code	Phrase	S FC=A(3)A
FD=	Funding Disclosure	Phrase	S FD=YES
FF=	Future Year Funds	Phrase	S FF=00551373
FP=	Prior Year Funds	Phrase	S FP=00008300
FS=	Funding Status	Phrase	S FS=NO
FT=	Total Funds	Phrase	S FT=00686373
FU=	Current Year Funds	Phrase	S FU=00135000
FY=	Current Fiscal Year	Phrase	S FY=1986
HR=	Host Required	Word	S HR=NO
HS=	Host Utility Site	Word & Phrase	S HS=(LOS(W)ANGELES) S HS=LINCOLN, NEBRASKA
HU=	Host Utility Name	Word & Phrase	S HU=(SANTA(W)CLARA(W)WATER?) S HU=BONNEVILLE POWER?
PM=	EPRI Project Manager Name	Word & Phrase	S PM=(ABRIL(W)J) S PM=DUNLAP, JOHN
PR=	Products Availability Code	Word	S PR=(RP1550(W)01)
PR=	Products Availability Description	Word	S PR=(ABAQUS(W)EPGEN)
PY=	Publication Year	Phrase	S PY=1985
RN=	Report Number	Phrase	S RN=EPRI NSAC-91
SD=	Starting Date	Phrase	S SD=860101
SE=	Seminar/Workshop Indicator	Word	S SE=YES
SF=	Subfile	Word	S SF=REPORT
SH=	EPRI Subject Category	Phrase	S SH=06.01A
SP=	Sponsoring Organization	Word & Phrase	S SP=(CONSUMERS(W)POWER) S SP=CONSUMERS POWER CO.
ST=	Completion Status	Phrase	S ST=NEW
UD=	Update	Phrase	S UD=8600

LIMITING

Sets and terms may be limited by Basic Index suffixes, i.e., /AB, /DE, /DF, /ID, /IF, /NT, /PN, /SH, /TI, (e.g., S S5/DE), as well as by the features listed below:

SUFFIX	FIELD NAME	EXAMPLES
None	Publication Year	S S5/1986
/PUB	Publications Subfile	S S3/PUB

SORTING

SORTABLE FIELDS	EXAMPLES
Online (SORT) and offline (PRINT): AN, AU, CD, CN, CO, CS, FC, FF, FP, FT, FU, PY, SD, SH, SP, TI.	SORT 3/ALL/FU PRINT 5/5/1-25/FU,D

ENERGYLINE®
DIALOG FILE 69

SAMPLE RECORD

```
DIALOG Accession Number
   └──►0159180    88-023350◄──────────────────────────── RN=
/TI ──►OIL IN THE ARCTIC: THE ENVIRONMENTAL RECORD OF OIL DEVELOPMENT ON
       ALASKA'S NORTH SLOPE,
AU= ──►SPEER LISA ; LIBENSON SUE
/CS ──►(NRDS) AND ; (TRUSTEES FOR ALASKA),
/SB ──►NRDC REPORT, JAN 88 (13)
DT= ──►ASSN REPORT    THE ENVIRONMENTAL CONSEQUENCES OF OIL ACTIVITIES IN THE ┐
      ARCTIC ARE EXAMINED TO ASSESS THE ENVIRONMENTAL RECORD OF OIL DEVELOPMENT
      ON ALASKA'S NORTH SLOPE. POLLUTION OF AIR AND WATER AND MAJOR LANDSCAPE
      IMPACTS HAVE RESULTED FROM OIL DEVELOPMENT, WHICH HAS TRANSFORMED THE
      PRUDHOE BAY REGION INTO ONE OF THE WORLD'S LARGEST INDUSTRIAL COMPLEXES.
      THE CONDUCT OF OIL AND GAS INDUSTRIES ON THE NORTH SLOPE RANGES FROM
      ENVIRONMENTALLY RESPONSIBLE TO IRRESPONSIBLE. HUNDREDS OF VIOLATIONS OF   ◄── /AB
      STATE AND FEDERAL REGULATORY CONTROLS TO PROTECT AIR, WATER, AND LAND HAVE
      BEEN DOCUMENTED. EXISTING ENVIRONMENTAL LAWS AND REGULATIONS AS CURRENTLY
      IMPLEMENTED AND ENFORCED FAIL TO PREVENT SIGNIFICANT ENVIRONMENTAL
      DETERIORATION ASSOCIATED WITH OIL AND GAS EXPLOITATION. OIL DEVELOPMENT IN
      CERTAIN HIGHLY SENSITIVE AREAS OF THE ARCTIC IS NOT APPROPRIATE, AND
      FURTHER DEVELOPMENT SHOULD NOT BE CONSIDERED UNTIL THE CONSEQUENCES OF SUCH
      ACTIVITY IN THE PRUDHOE BAY REGION ARE FULLY UNDERSTOOD. 3 <M>S,          ┘
        DESCRIPTORS: *ALASKA ; *OIL PRODUCTION ; *ENV CONSTRAINTS-OIL ;        ┐
      *WASTEWATER DISPOSAL ; *WATER POLLUTION EFFECTS ; *LAW ENFORCEMENT, ENV-FED
      ; *STACK EMISSIONS ; *HAZARDOUS WASTE DISPOSAL ; *LAND RECLAMATION ;      ◄── /DE
      INFORMATION, ENV ; EPA, FEDERAL ; WILDLIFE ; PRUDHOE BAY                  ┘
RC= ──►REVIEW CLASSIFICATION: 21
```

SEARCH OPTIONS

BASIC INDEX

SEARCH SUFFIX+	DISPLAY CODE	FIELD NAME	INDEXING	SELECT EXAMPLES
/AB	AB	Abstract[1]	Word	S PRUDHOE(W)BAY/AB
/CS	CS	Corporate Source	Word	S TRUSTEES(1W)ALASKA/CS
/DE	DE	Descriptor[2]	Word & Phrase	S HAZARDOUS(W)WASTE/DE S OIL PRODUCTION/DE
/SB	SO	Source Publication	Word	S NRDC(W)REPORT(F)88/SB
/TI	TI	Title	Word	S OIL(2W)ARCTIC/TI

+If no suffix is specified *all* Basic Index fields are searched.
[1]Abstracts included for all records from 1975 to the present.
[2]Also /DE*, /DF, /DF*

ADDITIONAL INDEXES

SEARCH PREFIX	DISPLAY CODE	FIELD NAME	INDEXING	SELECT EXAMPLES
—	AN	DIALOG Accession Number		
AU=	AU	Author	Phrase	S AU=SPEER LISA
AV=	AV	Availability	Phrase	S AV=Y
DT=	DT	Document Type	Phrase	S DT=ASSN REPORT
—	FN	File Name		
RC=	RC	Review Classification	Phrase	S RC=21
RN=	RN	ENERGYLINE Report Number	Phrase	S RN=88-023350
UD=	—	Update	Phrase	S UD=9999

LIMITING

Sets and terms may be limited by Basic Index suffixes, i.e., /AB, /CS, /DE, /DE*, /DF, /DF*, /SB, and /TI (e.g., S S4/TI) as well as by the features listed below:

SUFFIX	FIELD NAME	EXAMPLES
None	DIALOG Accession Number	S S5/0154697-9999999
/MAJ	Major Descriptor	S S6/MAJ
/MIN	Minor Descriptor	S S11/MIN

OUTPUT OPTIONS†

USER-DEFINED FORMAT OPTIONS

User-defined formats may be specified using the display codes indicated in the Search Options tables, e.g., TYPE S5/AU,TI,SO/1-5.

PRE-DEFINED FORMAT OPTIONS

NUMBER	RECORD CONTENT	NUMBER	RECORD CONTENT
Format 1	DIALOG Accession Number	Format 5	Full Record[1]
Format 2	Full Record except Abstract	Format 6	Title
Format 3	Bibliographic Citation	Format 7	Bibliographic Citation and Abstract[1]
Format 4	Full Record with Tagged Fields	Format 8	Title and Indexing

DIRECT RECORD ACCESS

FIELD NAME	EXAMPLES		
DIALOG Accession Number	TYPE 0159180/3	DISPLAY 0159058/AU,TI	PRINT 0158999/7

†TAG may be used for tagged fields, e.g., TYPE S5/AU,TI,SO/ALL TAG.

DIALOG FILE 241

SAMPLE RECORD

```
DIALOG Accession Number
   |
   └──► 1706200
         New Oilborne Wood Preservative System ◄──────────────────── /TI
         CONTRACT/GRANT NO.: RP2797-01 ◄──────────────────────────── CN=
         RECORD TYPE: Contract ◄──────────────────────────────────── DT=
         INVESTIGATING ORG.: Electric Power Research Institute  (EPRI) ◄── CS=
            EPRI PROJECT MANAGER: Dunlap, John ◄───────────────────── PM=
            CONTACT: Technical Information Division ◄──────────────── PM=
                  (415) 855-2411
         PERFORMING ORG.: Forest Products Utilization Laboratory ◄─── CO=
SD= ───► PROJECT START DATE: 860101   PROJECT COMPLETION DATE: 920331 ◄── CD=
DA= ───► DATE ENTERED: 860210   NEW/CHANGED: New ◄──────────────────── ST=
         FISCAL YEAR FUNDING STATUS: No ◄──────────────────────────── FS=
FD= ───► FUNDING DISCLOSURE: Yes
FY= ───► CURRENT YEAR DATE: 1986   CURRENT YEAR FUNDS: $135,000 ◄────── FU=
FF= ───► FUTURE YEAR FUNDS: $551,373
FT= ───► TOTAL PROJECT FUNDS: $686,373
```

Electric utilities use approximately one million poles a year for construction of new facilities and as replacements for damaged poles. Approximately 60% of all the poles used are treated with oilborne pentachlorophenol (Penta). The remaining poles are treated with either a waterborne copper salt or creosote. Recent environmental regulations place severe restrictions on the manufacture and use of all these wood preservatives but especially on Penta. Other wood preservatives are in use today should Penta become unavailable, but these preservatives are not widely used by utilities, nor are they free of environmental scrutiny. Creosote treated wood is messy to handle and is very dark in color. Waterborne copper salts leave the treated wood with a hard exterior, making pole climbing difficult. Copper-chromium-arsenate, the most popular copper salt preservative, leaves a toxic arsenate residue on the surface of the pole. This contract will develop new oilborne preservatives that are as attractive to utilities as Penta but without the problems of the present preservatives. ◄── /AB

```
         DESCRIPTORS: Environmental Effects; Physical Properties; *Wood Utility
      Poles; Preservatives ◄── /DE
         IDENTIFIERS: CROSSARMS; OILBORNE PRESERVATIVES; ADJUVANTS
      BIODETERIORATION; DECAY ◄── /ID
SH= ───► SUBJECT CATEGORY: 06.01A Overhead-Towers and Poles ◄──────── /SH
FC= ───► FERC CATEGORY: A(3)a
```

SEARCH OPTIONS

BASIC INDEX

SUFFIX*	FIELD NAME	INDEXING	SELECT EXAMPLES
/AB	Abstract	Word	S CREOSOTE/AB
/DE	Descriptor[1]	Word & Phrase	S UTILITY(W)POLES/DE S WOOD UTILITY POLES/DE
/ID	Identifier[2]	Word & Phrase	S CROSSARMS/ID S OILBORNE PRESERVATIVES/ID
/NT	General Note	Word	S PRICING/NT
/PN	Publication	Word	S DUKE(W)POWER/PN
/SH	EPRI Subject Category	Word & Phrase	S RADIOACTIVE(W)EFFLUENTS/SH S 'OVERHEAD-TOWERS AND POLES'/SH
/TI	Title	Word	S WOOD(W)PRESERVATIVE/TI

*If no suffix is specified *all* Basic Index fields are searched.
1Also /DF.
2Also /IF.

REPORT NO. GEN 159

ENERGY EFFICIENCY INDICATORS FOR SOUTH AFRICA

FINAL REPORT

R K DUTKIEWICZ SEPTEMBER 1993