

DEVELOPMENT OF LEGISLATION FOR RENEWABLE ENERGY UTILIZATION IN THE UNITED STATES

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Development of renewable energy in the United States was propelled by the Arab boycott of shipments of oil to the United States in 1973, demonstrating the vulnerability of U.S. and world dependence on oil as the principal energy supply source. In response, under President Jimmy Carter, significant funds were invested in research and development of renewable energy technologies in the 1970s. A National Renewable Energy Laboratory was established to conduct and coordinate renewable energy R&D.

The utilization of renewable energy was boosted principally by the passage of the Public Utility Regulatory Policies Act of 1978 which required U.S. electric utilities to purchase all renewable energy offered to them at their avoided cost of purchasing non-renewable energy. Also, President Carter's Executive Order of 1973 created the Federal Emergency Management Agency that has issued regulations requiring the use of energy efficiency and renewable energy technologies by U.S. Government agencies, helping to create a significant market for renewable energy.

In the 1970s and 1980s many state utility regulatory commissions in the U.S. followed the lead of PURPA, requiring that their electric utilities do "integrated resource planning," comparing the true costs of traditional energy sources with the costs of renewable energy and energy efficiency measures. The utilities were required to offer incentives to their customers to purchase renewable energy and efficiency measures.

With the advent of electric utility restructuring and decentralization of utility production in the past decade, many state commissions have placed taxes on the electric utility distribution companies called "system benefit charges" to establish system benefit funds for use in promoting energy efficiency and renewable energy measures. Under restructured systems, and Independent System Operator manages the purchase and flow of power.

Since the 1970s, the vulnerability of oil supplies has been compounded by the instability of the principal oil supplying countries of the Middle East, Africa and Venezuela. And the insecurity of oil supplies has been accentuated by the recent outbreak of terrorist attacks around the world by extremist groups that also jeopardize nuclear energy facilities. Also, the availability of cheap oil is rapidly diminishing as increases in worldwide demand led by the United States and China are exceeding available supplies. Environmental considerations also militate against increased dependence on all fossil fuels and nuclear energy. Thus the importance of developing and utilizing secure, diverse and environmentally benign renewable energy has come to the fore. Today, for example, wind energy is the fast growing energy resource in the world.

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With the increased urgency for adoption of renewable energy resources, many states have adopted renewable energy portfolio standards requiring that specified quantities or percentages of electricity be purchased from renewable resources.

There are several legislative measures that are vital to promotion of renewable energy. I will highlight a few of the most important ones.

Pricing

Subsidy Removal. If markets are to be the predominant determinants of prices, then it is vital to remove subsidies to energy resources that compete with renewable energy. Most countries, including the United States and China, have very large multi-million dollar subsidies for oil, natural gas, coal and/or nuclear energy. New renewable energy resources cannot be expected to compete against subsidized prices of competitor resources.

Life Cycle Costing. Most renewable energy resources have high initial equipment costs, but have no fuel costs and insignificant maintenance costs. Pricing that considers the costs over the expected lifetime of the resources is therefore the only rational basis for comparison – and the only way renewable energy will be price competitive.

Externality Cost Inclusion. Numerous recent studies have demonstrated that the externality costs to society from power plant pollutants (primarily the costs of early deaths and illnesses) is very significant. Indeed, the externality costs of coal-fired electric power plants using unfiltered soft coal have been shown to be greater than the operating costs of the plant. Failure to include externalities in cost comparisons thus greatly understates the costs of traditional fuels in comparison to renewable energy resources.

Pollution and Safety Standards and Taxes. One way to account for externality costs is to adopt strict pollution and safety standards for fossil and nuclear plants. These standards not only protect human life and health, but they take into account these significant externality costs, making traditional fuels bear the true costs of their use compared to renewable resources that have insignificant pollution and safety problems. The U.S. federal and state governments have adopted such standards. Taxes on pollutants perform the same function. They are infrequent in the U.S. but are now being adopted widely in Europe.

Integrated Resource Planning

A very important pricing measure required by many state regulatory commissions is a mandate to perform periodic integrated resource planning before procurement of any electricity resources. This planning measure requires a detailed comparison of all possible electricity resources on the basis of price, performance and environmental impacts.

Environmental Impact Assessments

The U.S. Government, through the National Environmental Policy Act of 1969 and most states require that an environmental impact assessment or statement be prepared for

every procurement having significant environmental impacts. These assessments help to assure that energy installations take into account the pollution and safety consequences of their installations, advantaging renewable energy resources whose impacts are minimal. The assessment process also requires public input into energy project decisions, giving some assurance that local needs and circumstances are considered; that alternatives to the proposed project be considered; and that measures to mitigate impacts are considered.

Government and Utility Procurement

Government Procurement. Federal, state and municipal governments are among the largest energy users, and the Defense Department is the biggest user of all. They own thousands of buildings, for example. The U.S. Federal Energy Management Agency requires the federal government to purchase renewable energy resources wherever they are within a given percentage of being cost competitive. Many states also have renewable energy incentives and renewable energy purchase requirements (renewable portfolio standards). These measures create large markets for renewable energy measures, thus driving down their costs. Such government procurements also demonstrate to the public the feasibility of renewable energy installations. The U.S. White House and Pentagon both have solar photovoltaic installations, for example.

Utility Procurement. Many U.S. electric utilities have programs for purchasing renewable energy for their own facilities. They also have programs giving incentives to customers for purchase of renewable energy and efficiency measures.

Grid Integration

An important disadvantage of many renewable energy resources is that they are intermittent. Thus, provision has to be made for back-up electricity from another source when the wind or solar power is inadequate to meet electricity demand. It is critical that the grid be required to accept renewable energy power when offered and provide back-up power when needed, both on a non-discriminatory basis. The grid also has to adjust the power it accepts from other providers when more renewable energy is offered than anticipated. State regulatory commissions or, in restructured markets an Independent System Operator, performs these functions pursuant to state laws.

Green Marketing

Some U.S. states, municipalities and utilities have green marketing programs, offering electricity at slightly increased prices to customers who prefer the purchase of electricity from renewable energy resources. These measures often are accompanied by independent rating systems that evaluate utility supplies based on their inclusion of renewable energy measures.

Education & Training

Education of the public on the advantages of using renewable energy resources and the training of experts on the availability and use of renewable energy resources both are important to promotion of renewable energy. Particularly important is the training of architects, planners, developers and building managers in utilization of renewable

energy measures. In the U.S. the federal Department of Energy conducts and finances considerable education and training, and some private expert associations like the Institute of Architecture do the same.

Maintenance

Vendors of renewable energy equipment are often required to provide for their maintenance over a period of time by the purchase contracts, whether by government or private purchasers. They also frequently are required to give performance guarantees. Legal requirements for such measures are required by some U.S. and state governmental agencies.

The above are some of the measures that the drafters of the China renewable energy drafters may want to take into consideration.