

# Chapter 60

## Government Policies to Promote Production and Consumption of Renewable Electricity in the US

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### ABSTRACT

*Various types of renewable electricity policies exist both at the federal and state levels. They are designed to directly or indirectly incentivize producers and consumers of renewable electricity. The existence of renewable electricity policies can be explained by the market failure theory. Without proper government intervention, renewable electricity would be underprovided due to positive externalities associated with environmental pollution and energy independence. Also, in terms of pollution control, encouraging green renewable electricity is more politically palatable than discouraging brown electricity generated from fossil fuels, such as coal and oil. This chapter reviews the primary functions of various policy instruments at the federal and state levels and discusses their effectiveness to the extent possible.*

### INTRODUCTION

This chapter surveys US government policies designed to incentivize domestic producers and consumers of renewable electricity. Before detailing renewable policies, it begins with a brief discussion regarding why government policies exist to foster renewables.

Two contrasting theories of regulation prevail:

1. The market failure theory argues that market failure leads to government regulation, and
2. The capture theory holds that regulators are captured by industries and, accordingly, government regulation serves the interest of industries.

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Under the market failure theory, government intervenes in markets to fix improper market functioning, typically caused by market power, asymmetric information, and externality. Under the capture theory, industry demands bring about government regulation in favor of benefiting industry interests.

Renewable policies appear to be better understood using the market failure theory than the capture theory. There are two externality issues associated with renewables. First, renewables do not generate harmful pollution, resulting in positive externalities. Without proper government intervention, renewables would be underprovided compared to the socially optimum level. For this reason, discouraging brown electricity generated from traditional sources such as coal, for example, by placing a carbon tax on brown fuels, is another option. But, encouraging green electricity through renewable policies is certainly more politically palatable than discouraging brown electricity. Second, renewables lessen the need to import oil from other countries, thereby increasing energy independence. This again results in positive externalities. The market failure theory thus provides an explanation and rationale for government intervention in the renewable energy industry.

On the contrary, it is difficult to argue that renewable policies were introduced to meet the demands of renewable power producers. As will be discussed later, the beneficiaries of most renewable policies have been politically weak small power producers. The trade association representing politically powerful large incumbent utilities has strongly opposed renewable policies that support small power producers, especially at the initial development stage. Thus, in the case of renewable electricity generation, it seems fair to say that the market failure theory provides a rationale for government intervention.

A considerable number of renewable electricity policies currently exist in the US. There are several financial incentive programs, including tax credits; rebates and grants; and rules and regula-

tions, such as renewable portfolio standards and green power purchasing. Federal R&D programs have also played an important role in the development of renewables. What are the objectives of various renewable policies? Who do they target and how do they function? How effective are they as policy instruments? To what extent do renewable programs and policies address market failure problems? Drawing on previous literature and government information resources, this chapter attempts to answer these questions.

## **BACKGROUND**

### **Renewable Policies: Early Development**

This chapter begins with a discussion of the Public Utility Regulatory Policies Act (PURPA), which supported renewable electricity generation business in the US. PURPA was part of the National Energy Act of 1978 the purpose of which was to reduce dependence on foreign oil by developing renewable energy sources following the 1973 oil embargo. The act required electric utilities to buy electricity from any qualifying facilities at the utility's own avoided cost of production. Qualifying facilities were defined as non-utility facilities that produce electric power using co-generation technology or renewable resources with capacities of less than 80MW (EIA, 2005).<sup>1</sup> Congress further exempted most qualifying facilities from rate and other regulations, making it easier for them to enter the electricity generation market. Until 1995, the interpretation of avoided costs was determined by each state. For example, Maine employed competitive bidding among qualifying facilities (EIA, 2000), and California based its avoided cost calculations on forecasts of natural gas and oil prices (EIA, 2005). The latter approach was more favorable to qualifying facilities than the former approach. But in 1995, the Federal Energy Regulatory Commission (FERC) moved

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