# CHAPTER 14. EMPLOYMENT IMPACT ANALYSIS

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## 14.1 INTRODUCTION

The employment impact analysis is intended to estimate national job creation or job elimination resulting from new standards, due to reallocation of the associated commercial expenditures for purchasing and operating equipment. The U.S. Department of Energy (DOE) will conduct this analysis as part of the Notice of Public Rulemaking (NOPR). DOE will estimate national impacts on major sectors of the U.S. economy, using publicly available data and incorporating different energy price scenarios to be conducted as part of the analysis for the NOPR. DOE will make all methods and documentation available for review.

## 14.2 ASSUMPTIONS

DOE expects new refrigerated beverage vending machine energy conservation standards to decrease energy consumption, and thereby reduce commercial expenditures for energy. The savings in energy expenditures may then be spent, for example, on new commercial investment. On the other hand, energy efficiency standards may increase the purchase price of beverage vending machines, including the retail price plus sales tax, and increase installation costs.

Using an input-output model of the U.S. economy, this analysis seeks to estimate the year-to-year effect of these expenditure impacts on net economic output and employment. A simple model might involve reduced expenditures for energy and reallocation of that money toward other sectors in the economy. DOE intends this analysis to quantify the indirect employment impacts of these expenditure changes. It will evaluate direct employment impacts in the manufacturer impact analysis step of the process.

## 14.3 METHODOLOGY

DOE developed a spreadsheet model of the U.S. economy (ImSET) focusing on 188 sectors most relevant to industrial, commercial, and residential building energy use.[1] ImSET is a special-purpose version of the U.S. Benchmark National Input-Output (I-O) model, which has been designed specifically to estimate the national employment and income effects of the deployment of Office of Energy Efficiency and Renewable Energy (EERE) – developed energy-saving technologies. In comparison with the previous versions of the model used in earlier rulemakings, this version allows for more complete and automated analysis of the essential features of energy efficiency investments in buildings, industry, transportation, and the electric power sectors.

The ImSET software includes a PC-based I-O model with structural coefficients to characterize economic flows among the 188 sectors. ImSET lends itself to assessing the impacts of evaluating buildings, power, industrial, and transportation technologies. ImSET's national economic I-O structure is based on the 1997 Benchmark U.S. table,[2] specially aggregated to 188 sectors. The central processing code is written in FORTRAN code.

The time scale of the model is 50 years. The model is a static I-O model, which allows a great deal of flexibility concerning the types of energy efficiency effects that can be accommodated. For example, certain economic effects of energy efficiency improvements

require an assessment of inter-industry purchases. Some energy efficiency investments will not only reduce the costs of energy but the costs of labor and other goods and services as well. In the language of economics, this represents an investment-specific increase in productivity and value added[a] and a change to the I-O structure, differing from a case in which a constant I-O structure is applied to a change in investment. DOE may use the ImSET model to estimate changes in employment, industry output, and wage income in the overall U.S. economy resulting from changes in expenditures in the various sectors of the economy.

For example, refrigerated beverage vending machine energy conservation standards may reduce energy expenditures and increase equipment prices in the commercial sector. These expenditure changes are likely to reduce commercial and energy sector employment. At the same time, these equipment standards may increase commercial sector investment, and increase employment in other sectors of the economy. DOE designed the employment impact analysis to estimate the year-to-year net employment effect of these different expenditure flows.

[a] Value-added is the difference between the value of the output of a sector and the costs of the purchased goods and services that go into the sector. It is mainly composed of labor and proprietor income, retained earnings of corporations, rents and taxes.

## REFERENCES


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