

Building the Clean Energy Economy:

A Study on Jobs and Economic Development of Clean Energy in Utah

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Analyzing the Economic Impacts of Accelerated Energy Efficiency and Renewables in Utah

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Clean Energy in Utah

With both the baseline projection and the efficiency/renewable scenario established, the question now posed by this analysis is:

"What are the employment and other macroeconomic benefits for Utah if baseline energy use is reduced by 20 percent by 2015 and renewable energy generates 20 percent of the states electricity by 2020?"

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- *Energy and economic development are very much connected.*

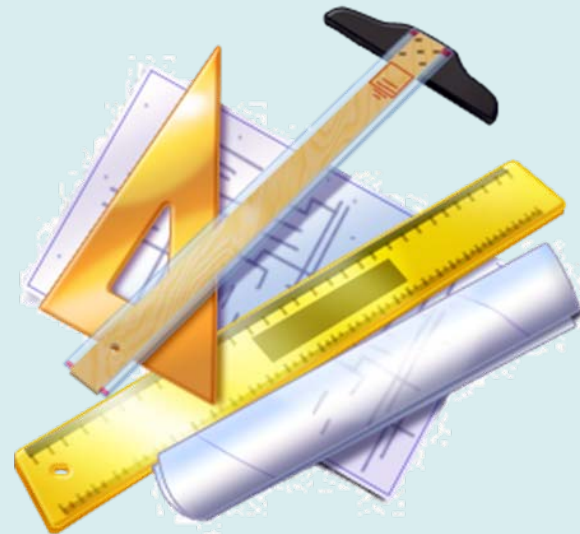
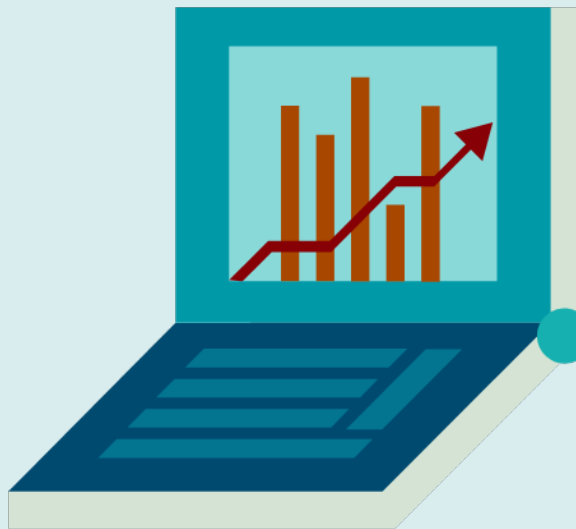


Methodology

- *"As energy efficiency measures and renewable technologies are installed in Utah, economic efficiency is promoted. This has the positive tendency to create new and more employment opportunities and economic benefits throughout the economy."*

Methodology

WHAT TOOLS ARE USED TO MEASURE THESE EFFECTS?



Methodology

Input-Output or Multiplier Analysis

“Input-output analysis can be thought of as a method of evaluating and summing the impacts of a series of effects generated by an expenditure.”

Methodology

Analysts employ Input-Output (I-O) models to evaluate the total changes in economic activity.

I-O models were initially developed to trace supply linkages in the economy.

I-O models can show how states that produce fabricated metal products, for instance, will likely benefit from expanded sales of locally manufactured, high-efficiency lamp ballasts or wind towers; states without such production will not benefit in the same way.

Methodology

To capture the full economic impacts of the investments in energy efficiency and renewable power plants, three separate effects must be examined for each change in expenditure.

These include:

- Direct
- Indirect
- Induced

Methodology

Direct Effects

These are the on-site or immediate effects created by an expenditure.

In constructing a wind farm, it refers to the on-site jobs of the contractors and crews hired to construct the turbines. In the case of installing energy efficiency upgrades in a home or manufacturing plant, it refers to the on-site expenditures and jobs of the construction or trade contractors hired to carry out the work.

Methodology

Indirect Effects

This refers to the increase in economic activity that occurs when a contractor, vendor or manufacturer receives payment for goods or services and in-turn is able to pay others who support their business.

For instance, this includes the banker who finances the contractor, the accountant who keeps the contractor's books, and the steel mills and electrical manufacturers and other suppliers that provide the necessary materials, among others.

Methodology

Induced Effects

This refers to the change in earnings the energy efficiency and renewable investments create. Businesses and households are able to meet their energy, heating, cooling, and lighting needs at a lower cost, due to efficiency investments. This lower cost of doing business and operating households makes greater wealth available for businesses and families to spend or invest in the state economy.

Methodology

As the level of expenditures increase or decrease, the level of employment supported by a given industry sector will rise or fall.

*Employment is only one measure of economic activity. Two other frequently used measures include changes in **Gross State Product (GSP)** and changes in labor income in the form of wage and salary compensation.*

Methodology

“The benefits that are ultimately generated by expenditures for efficiency measures or power plants depend upon the extent to which those expenditures are spent locally and the structure of the local economy.”

Methodology

Utah specific data was used to analyze the impacts.

Including: Multipliers for

- Employment
- Income (Wage and Salary Compensation)
- Total Value Added (Gross State Product)

and

- Personal Consumption Expenditure (PCE) Patterns
- Industry Regional Purchase Coefficients (RPC)

Multipliers, PCE and RPC derived from the IMPLAN Professional model.*

***IMPLAN (Impact Analysis for PLANning) Professional is a social accounting and impact analysis tool. Minnesota IMPLAN Group (MIG, Inc), Stillwater, Minnesota.**

Methodology

And then.....

Changes in expenditures are matched with their appropriate multipliers for each sector affected by the change in expenditure.

Methodology

The analysis includes several modifications to this technique of matching expenditures with their appropriate multipliers:

- it was assumed that only 90 percent of the efficiency investments are spent within the state of Utah.
- it was assumed that approximately 80 percent of the investment in efficiency will be financed by bank loans carrying an average interest rate of 10 percent over five years; renewables are financed over 20 years.
- an adjustment was made in the employment impacts to account for sector specific changes in labor productivity that are projected to occur.

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Some Important Points to Keep in Mind.....

The assumptions used in the analysis play an important role in influencing the results.

The availability of local resources, including labor and materials and locally manufactured power plant components, can have a significant effect on the costs and the economic benefits that accrue to the state or local region.

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If economic development and new job creation are equally appropriate objectives of Utah's state energy policy, then it is appropriate to consider energy efficiency and renewables.