

# Assessing the Jobs Impacts of Clean Energy: A Webinar for States

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**State and Local  
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# Clean Energy & Benefits

- Clean energy initiatives encourage energy efficiency, renewable energy or clean distributed generation.
- People typically quantify the costs of clean energy programs and investments ... Just don't forget the **benefits!**
  - Environmental and human health benefits
  - Electricity system & reliability benefits
  - **Economic benefits, including job creation**
- Quantifying these benefits can help policymakers:
  - Assess the *full* value of clean energy investments
  - Strengthen how benefits are incorporated in cost-benefit analyses
  - Show how clean energy programs can help achieve multiple goals
  - Build support for their clean energy initiatives
- This webinar focuses on how states are estimating the economic benefits of clean energy

# How Does Clean Energy Affect the Economy?

Investments in clean energy result in costs and benefits that change the flow of goods, services and income throughout the economy

## Examples of **Economic COSTS**:

- *Program Administrative costs*
  - E.g. paid for by surcharge on electricity bill or diverted from other program funds
- *Equipment Purchase, Operation & Maintenance Costs*
  - Consumers, companies, utilities
- *Decreased demand, revenue and jobs:*
  - Companies that provide fossil-based electricity, non-clean energy technologies and services
    - & their suppliers
      - Local establishments where workers spend their paychecks (groceries, eating out, entertainment)

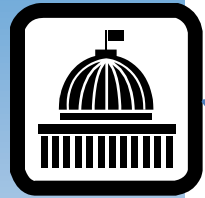
## Examples of **Economic BENEFITS**:

- *Increased demand, revenue and jobs for:*
  - Companies that provide the clean energy equipment, technologies and services
    - & their suppliers
      - Local establishments where workers spend their paychecks (groceries, eating out, entertainment)
- *Lower energy/fuel costs for*
  - Consumers, companies, utilities
- *Deferred costs for new power plants*
- *Reduced health care costs and increased labor productivity from better air quality and public health.*
- *Enhanced property values from improved environmental quality, water, etc*



# How do clean energy investments flow through the economy & support jobs? A (simplified?) illustration.

- Imagine a government launches a rebate program
  - A variety of jobs are supported along the way – see yellow



Consulting, Marketing, Auditing jobs

Rebates to businesses, consumers or industry



Labor (jobs)

Energy cost savings

Steel

Mortgage or rent

Entertainment

Goods & Services

Jobs

Jobs (Mining)

Raw Materials (e.g. Iron)

Capital Equipment

Steel

Labor

Energy

Labor

Energy

Fuels

Mining/Drilling Jobs

Capital Equipment

# How Can States Estimate the Jobs Impacts of Clean Energy?

- States use a range approaches to estimate how the changes in the flow of money, goods and services are likely to affect jobs
  - **Basic Methods:**
    - Screening approaches to get a ballpark estimate
      - Apply others' simple estimates to one's own expectations regarding spending or energy savings
        - » Rules of thumb: For every dollar spent on X, Y jobs are created or for every kWh saved/generated, Z jobs are created
      - Simple calculators that build off of more sophisticated methods
  - **Sophisticated Methods:**
    - Can include static and dynamic modeling tools
      - Input-Output
      - Econometric
      - Computable General Equilibrium (CGE) Models
      - Hybrid Economic Models

# How Do States Choose A Method?

States consider many factors, including:

- time constraints, cost, data requirements, internal staff expertise and overall flexibility and applicability.

Type of Method	Advantages	Disadvantages	When To Use
<p>Basic Approaches:</p> <ul style="list-style-type: none"> <li>- Rule-of-thumb estimates</li> <li>- Screening models</li> </ul>	<ul style="list-style-type: none"> <li>- (May be) Transparent</li> <li>- Requires minimal input data, time, technical expertise and labor.</li> <li>- Inexpensive, often free</li> </ul>	<ul style="list-style-type: none"> <li>- Overly simplified assumptions</li> <li>- Approximate results</li> <li>- May be inflexible</li> </ul>	<p>When:</p> <ul style="list-style-type: none"> <li>- time or resources are short</li> <li>- High-level, preliminary analyses are needed</li> <li>- A long list of options needs to be shortened</li> </ul>
<p>Sophisticated Approaches:</p> <ul style="list-style-type: none"> <li>- Input-Output</li> <li>- Econometric</li> <li>- Computable General Equilibrium (CGE)</li> <li>- Hybrid Economic Models</li> </ul>	<ul style="list-style-type: none"> <li>- More robust than basic</li> <li>- May be perceived as more credible</li> <li>- Detailed results</li> <li>- May model impacts over a long period of time</li> <li>- May account for dynamic interactions within the state/regional economy</li> </ul>	<ul style="list-style-type: none"> <li>- May be less transparent</li> <li>- May require extensive input data, time, technical expertise and staff.</li> <li>- May have high software licensing costs.</li> <li>- Require detailed assumptions that can significantly influence results.</li> </ul>	<p>When:</p> <ul style="list-style-type: none"> <li>- Policy options are well-defined</li> <li>- high degree of precision and analytic rigor is desired</li> <li>- sufficient time, data and financial resources are available.</li> </ul>

# Things to Consider When Estimating Jobs Impacts

- **All** methods involve predictions, inherent uncertainties and numerous assumptions
  - Need to understand the specific strengths, limitations of the model or method you choose; make sure it's appropriate to your question.
- When planning an analysis, consider how and for how long the money flows through the economy as a result of the program
  - The government pays for a program with money from where? Where does the money come from and go? Households? Businesses?
  - How many people are you likely to reach through your program? 20%? 50%? And how long are the energy savings likely to last? 10 years?
  - Households, businesses and/or utilities are spending money on clean energy equipment that they are no longer spending on something else. What expenses are they cutting back? Where is it now going instead?
- Be very clear in assumptions (and sources) regarding costs **and** benefits, what results do and do not include.
  - Is your jobs estimate net or gross? Job Years or Jobs? Is it a rough estimate or a reasonably sophisticated one?
- Invite experts to provide input to the analysis & assumptions, review the final results.

# For More On How States Can Assess the Jobs Impacts of Clean Energy

- EPA's *Assessing the Multiple Benefits of Clean Energy: A Resource for States*  
<http://www.epa.gov/statelocalclimate/resources/benefits.html>
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