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

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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**
  - 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

Economic Costs + Economic Benefits = Net Economic effects
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

- Rebates to businesses, consumers or industry
- Consulting, Marketing, Auditing jobs
- Energy cost savings
- Steel
- Raw Materials (e.g. Iron)
- Labor (jobs)
- Mortgage or rent
- Entertainment
- Goods & Services
- Jobs
- Jobs (Mining)
- Capital Equipment
- Labor
- Energy
- Steel
- Fuel
- Mining/Drilling Jobs
- Capital Equipment
How Can States Estimate the Jobs Impacts of Clean Energy?

• States use a range of approaches to estimate how 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.

<table>
<thead>
<tr>
<th>Type of Method</th>
<th>Advantages</th>
<th>Disadvantages</th>
<th>When To Use</th>
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</thead>
<tbody>
<tr>
<td>Basic Approaches:</td>
<td>- (May be) Transparent</td>
<td>- Overly simplified assumptions</td>
<td>When:</td>
</tr>
<tr>
<td>- Rule-of-thumb estimates</td>
<td>- Requires minimal input data, time, technical expertise and labor.</td>
<td>- Approximate results</td>
<td>- time or resources are short</td>
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<tr>
<td>- Screening models</td>
<td>- Inexpensive, often free</td>
<td>- May be inflexible</td>
<td>- High-level, preliminary analyses are needed</td>
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<td></td>
<td></td>
<td></td>
<td>- A long list of options needs to be shortened</td>
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<tr>
<td>Sophisticated Approaches:</td>
<td>- More robust than basic</td>
<td>- May be less transparent</td>
<td>When:</td>
</tr>
<tr>
<td>- Input-Output</td>
<td>- May be perceived as more credible</td>
<td>- May require extensive input data, time, technical expertise and staff.</td>
<td>- Policy options are well-defined</td>
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<tr>
<td>- Econometric</td>
<td>- Detailed results</td>
<td>- May have high software licensing costs.</td>
<td>- high degree of precision and analytic rigor is desired</td>
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<tr>
<td>- Computable General Equilibrium (CGE)</td>
<td>- May model impacts over a long period of time</td>
<td>- Require detailed assumptions that can significantly influence results.</td>
<td>- sufficient time, data and financial resources are available.</td>
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<td>- Hybrid Economic Models</td>
<td>- May account for dynamic interactions within the state/regional economy</td>
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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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