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STATE OF RHODE ISLAND
OFFICE OF ENERGY RESOURCES
Commissioner Marion S. Gold, Ph.D.

Estimated Job Impacts of the Distributed Generation Contracts Program

Background

Pursuant to Rhode Island state law, 39-26-2, the Office of Energy Resources (OER) oversees the implementation and results of the Distributed Generation (DG) Contracts Program. The DG Contracts Program has served as a national model to support the development of small scale renewable energy projects in the state to improve system reliability, reduce our dependence on fossil fuels and diversify our energy portfolio, and support in state economic development in the clean energy economy. Since the program's inception in December of 2011, the OER has submitted the annual DG program and megawatt allocation plan to the Public Utility Commission for review and approval. There have been 4 DG Contract enrollments, with the most recent occurring in March 2013. The OER believes it is important to evaluate the results of this pilot program, including the economic development impact in Rhode Island as we work to improve and expand it in upcoming years. After collecting the available data, the OER contracted with the Vermont Energy Investment Corporation (VEIC) to review and analyze the job impacts for Rhode Island's DG Standard Contracts initiative.

This program has supported nearly 18 MW of renewable energy development in Rhode Island since 2011. VEIC was provided by the OER a confidential data sheet summarizing DG program applications and was asked to review the data and ways in which job impacts could be presented to stakeholders. The total cost estimated for the 23 selected projects is $56.6 million, with $17.8 million in expenditures at local businesses. In addition to the clean energy and electric capacity contributions from these projects, this level of investment is expected to create local job and economic benefits to the community. To date, applicants have been asked to estimate the jobs impacts for each project. However, this information varies by a few orders of magnitude (in terms of job impact per MW of installed capacity). Rather than being a result of fundamental differences between the job impacts of various PV projects in the state – it is more likely that the observed variation is due to different methodologies and/or counting of jobs in their estimates.

National Renewable Energy Laboratory – JEDI Model

After conducting an initial review and commenting upon the application data submitted to date, VEIC recommended using the National Renewable Energy Lab's Jobs and Economic Development Impact (JEDI) Model to provide an additional means to estimate job impacts. This can be used to compare to data collected to date, and potentially to track future economic impacts. One benefit of the JEDI model is that it estimates direct and indirect as well as induced job impacts, giving a more comprehensive accounting of the economy wide job effects.

JEDI is a high level tool for quick estimation of the scale of job and economic impacts resulting from different policies or projects. The EPA provides a framework for JEDI and similar tools in the paper "Assessing the Economic Benefits of Clean Energy Initiatives," and gives a short case

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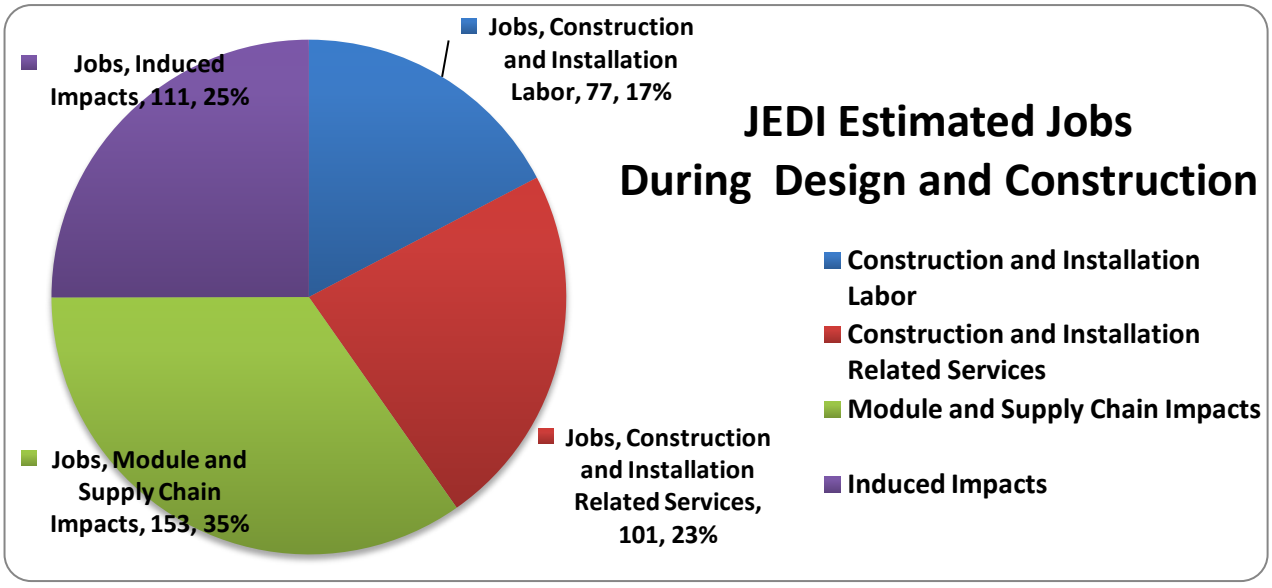
study of JEDI being used by Utah State University to evaluate five potential wind capacity scenarios. The model uses information specific to the renewable energy industry with IMPLAN accounting software and state economic models to estimate local job impacts. The underlying economic model is based on 2002 data from the Department of Commerce, Bureau of Economic Analysis. It is important to note that JEDI includes only gross impacts and therefore does not account for possible jobs related to other energy sources that may be lost or for the effect of rate changes relating to the new energy investments. Most of the equations and factors used in JEDI can be inspected, though some IMPLAN data is hidden.

To estimate the job impact of the DG program, projects were grouped according to type and scale as follows:

- Wind (n=1)
- Solar (<100kW) (n=1)
- Solar (100kW-1MW) [though the DG program has two categories in this range, the economic model is the same for both] (n=15)
- Large Solar (>1MW) (n=6)

Results

The results from the four models were aggregated and the design and construction phase impacts estimated are shown in the graph below. These are in-state full time equivalent jobs associated with the development of the renewable energy systems.



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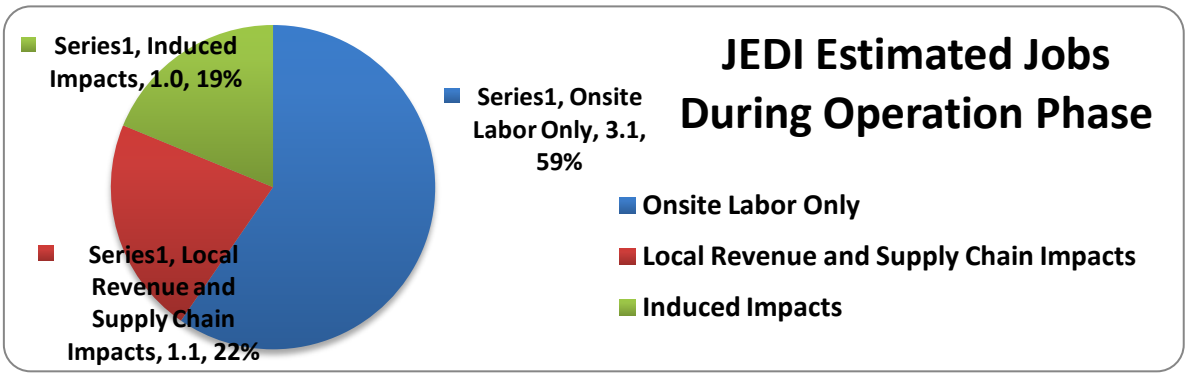
As illustrated above, the JEDI model estimate is that 178 direct jobs are created during the design and construction phase. These are comprised of "Construction and Installation Labor[1]" and "Construction and Installation Related Services.[2]" In addition, there are significant additional indirect impacts in the supply chain and other services used by the development team. All of these jobs are local, for example, the supply chain impacts include in-state distributors for solar equipment, but they do not include jobs at PV module manufacturers, which are mostly in China.

The JEDI model also estimates that the Design and Construction Phase also results in 111 full time job-equivalents due to induced impacts. These are created due to the "ripple" effect of direct economic impacts, for example, the money spent on food or other services by people who are directly employed in DG system design and construction.

Note that the job impacts reported by JEDI are estimated in full-time equivalent person years – and the Design and Construction Phase impacts would be expected to have a duration that would last as long as a similar level of new design and construction were occurring. The results estimated above, would therefore be maintained if new project development remained at a level of 18 MW per year.

In comparison, the job impact data collected from the applications results in an estimate of 117 direct jobs in Rhode Island. This result is not entirely inconsistent with the JEDI based results, but as noted before there was very wide variation in the directly reported jobs impact, with applicants' estimates ranging from 0.5 to more than 75 direct jobs per MW of installed capacity.

The design and construction phase accounts for the majority of the job impact of renewable energy projects. Once installed, renewable energy systems and solar projects in particular, need relatively little ongoing care in the Operations Phase. VEIC also used the JEDI model to estimate the ongoing jobs associated with the Operations Phase of the 18 MW DG projects. Results are shown below.



[1] Actual onsite construction labor (e.g. pouring concrete, wiring)
[2] Engineering, design, other professional and administrative services (e.g. sales, marketing, accounting)

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Note that while the Operations Phase impacts are much smaller on an annual basis – ~ 5 FTE/yr compared to 442 total FTE during the design and construction phase – that the operations phase impacts can be expected to continue for the 25+ year operating life of the plants whether or not the development of new facilities continues.

Investment to date in the DG program has generated significant economic and job impacts, in addition to clean energy and peak capacity. Fulfillment of the existing capacity target and the proposed expansion can be expected to have additional benefits and to allow a local renewable energy industry to take root in Rhode Island.

In addition to the current collection of job impacts directly from proposed DG projects, VEIC recommends that OER consider using NREL's JEDI model as a documented and defensible method to estimate and track job and economic impacts.

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