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The Potential Economic and Fiscal Impact of an Off-Shore Wind Farm to the State of South Carolina



**Project Objectives**

- Determine the Potential Economic and Fiscal Impacts of an Off-shore Wind Farm to the State of South Carolina
- What Impact Would the Manufacturing and Construction Phase of the Project Have?
- What Impact Would the Operational Phase of the Project Have?
- For Both Phases We Sought Answers to:
  - How Many Jobs Would Be Created?
  - How Much Would State Economic Output Increase?
  - How Much Disposable Income Would Be Generated?
  - How Much Tax Revenue Would Be Generated?
- Determine Which Phase Would Have the Largest Economic Impact
- Estimate a Revenue Neutral State Renewable Energy Production Tax Credit

**Model Development**

- Three Models Were Developed to Determine the Potential Impact
  - Model I – Assumes Most of Turbine is Manufactured Outside of US
  - Model II – Assumes Collaboration Between US and Overseas Firm
  - Model III – Assumes the Entire Turbine Will Be Built in the SC
- Each Model Examined 2 Phases of the Offshore Wind Farm
  - Manufacture and Installation Phase
    - Occurs Over 2 Year Time Period
    - Each Model Assumes Same Cost for Installation
  - Operational and Maintenance Phase
    - Begins After Installation Phase is Completed
    - Includes Estimated Impact From Tourism
    - Several Studies Have Shown That Land Based Wind Farms Draw Tourists
- After Models Were Designed, Cost Estimations Were Gathered
  - Costs Based on a 2004 Study of European Off-shore Wind Farms Completed by the Netherlands Ministry of Economic Affairs
  - While Researching, Found That Cost Estimates for Installation of an Off-shore Wind Farm Differs Substantial From That of Land Based Wind Farms
  - Although Both Are Labor Intensive, Land Based Wind Farm Include Land Preparation and Road Building Costs That Off-shore Wind Farms Do Not Require
- Each Model Was Inputted Into REDYN
  - REDYN = Regional Dynamics Economic Input-Output Model
  - REDYN is Able to Forecast Direct, Indirect and Induced Economic and Fiscal Impacts
  - REDYN is Able to Show the Economic and Fiscal Impacts for Each Year
  - Inputs Based on the North American Industrial Classification System (NAICS codes)

Inputed Data for All Three Models

Model	Category	Value	Category	Value
Model I - High Tourism	INPUT	\$500,000 for Years 3 - 30	SECTOR	Scenic and Sightseeing Transportation, Water
	CONSTRUCTION BASE	\$75M for Year 1 and 2	Cement and Concrete Product Manufacturing Power and Turbine Equipment Manufacturing Industrial Non-building Structure Construction Commercial and Industrial Machinery Equipment Repair and Maint. Power and Turbine Equipment Manufacturing	
	TURBINE	\$225M for Year 1 and 2		
	ASSEMBLY	75 Jobs for Year 1 and 2		
MAINTENANCE	80 Jobs for Year 2-30 \$3M for replacement parts for Year 3-30			
Model II - Intermediate Tourism	INPUT	\$500,000 for Years 3 - 30	SECTOR	Scenic and Sightseeing Transportation, Water
	CONSTRUCTION BASE	\$75M for Year 1 and 2	Cement and Concrete Product Manufacturing Power and Turbine Equipment Manufacturing Industrial Non-building Structure Construction Commercial and Industrial Machinery Equipment Repair and Maint. Power and Turbine Equipment Manufacturing	
	TURBINE	\$75M for Year 1 and 2		
	ASSEMBLY	75 Jobs for Years 1 and 2		
MAINTENANCE	65 Jobs for Year 2-30 \$900K for replacement parts for Year 3-30			
Model III - Low Tourism	INPUT	\$500,000 for Years 3 - 30	SECTOR	Scenic and Sightseeing Transportation, Water
	CONSTRUCTION BASE	\$75M for Year 1 and 2	Cement and Concrete Product Manufacturing Power and Turbine Equipment Manufacturing Industrial Non-building Structure Construction Commercial and Industrial Machinery Equipment Repair and Maint. Power and Turbine Equipment Manufacturing	
	TURBINE	\$25M for Year 2 and 2		
	ASSEMBLY	75 Jobs for Years 1 and 2		
MAINTENANCE	50 Jobs for Year 2-30 \$300K for replacement parts for Year 3-30			

Potential State Tax Credit for the Development of an Off-shore Wind Farm

	Yearly State Tax Revenue	State Production Tax Credit per MWh	State Production Tax Credit	Federal Production Tax Credit (\$19 MWh)	Total Potential Tax Credit
Model I	\$596 K	\$0.47	\$17.9 M	\$239 M	\$257 M
Model II	\$760 K	\$0.60	\$22.8 M	\$239 M	\$262 M
Model III	\$1.06 M	\$0.84	\$31.9 M	\$239 M	\$271 M

- A Revenue Neutral Production Tax Credit Could Range from Between \$.47 and \$.84 Per MWh Depending on the Expected Fiscal Impact of the Project to the State of South Carolina.
- State Production Tax Credit Would be Received Over a 28 Year Period
- Federal Production Tax Credit is the Total Amount the Project Developer Would Receive over a Ten Year Period
- Estimates Based on 30% Capacity or 1261 GW Per Year  
Federal Production Tax Credit is Set to Expire in December of 2008.

Impacts From Construction Phase

(Above projected baseline over 24 month period)

	Annual Change			Totals		
	Jobs	Payroll Value	Per Capita Disposable Income	Gross State Product	Individual Income Tax	Corporate Income Tax
Model I	939	\$43 M	\$10.02	\$236 M	\$2.7 M	\$181,000
Model II	1152	\$55 M	\$12.67	\$320 M	\$3.4 M	\$229,000
Model III	1789	\$89 M	\$20.40	\$567 M	\$5.4 M	\$369,000

As Expected, Model III Would Have the Largest Economic and Fiscal Impact

Impacts From Operational/Tourism Phase

(Above projected baseline over 28 year period)

	Annual Change			Totals		
	Jobs	Payroll Value	Gross State Product	Individual Income Tax	Corporate Income Tax	
Model I	99	\$4 M	\$302 M	\$4.2 M	\$288,000	
Model II	126	\$5 M	\$395 M	\$5.4 M	\$369,000	
Model III	159	\$7 M	\$520 M	\$6.9 M	\$468,000	

Over a 28 Year Period, the Operational Phase of Model III Would Generate \$107 Million More in Disposable Income than the Construction Phase Alone Would

Only in Model III Does the GSP for the Construction Phase Exceed that of the Operational Phase

**Project Conclusions**

- Project would generate direct, indirect and induced benefits to the state economy through job creation and increases in demand for goods and services.
  - Large short term impact during construction phase (2 years).
  - Permanent positive impact on economy during operational phase due to employment generated by wind farm operation, maintenance and tourism.
- Over a 28 Year Operational Phase, Increase in GSP Would be Larger for Model I and Model II.
- However, in Model III the Increase in GSP Would be Larger
- Since GE already has a presence within the state, there is the potential for local production of turbine components which could make Model III a reality.
- Positive impact on state tax revenue.
  - State would be justified in providing a production tax credit that is at least revenue neutral.
  - Revenue neutrality does not take into account the health and environmental benefits gained by the construction of an off-shore wind farm, therefore a larger production tax credit should be considered.