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## The Economic and Fiscal Benefit of a Proposed Energy Generating Plant in Loudoun County, Virginia

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A new electrical energy park is proposed in Loudoun County, which is located in Northern Virginia. The station will feature a combined cycle generating unit consisting of two natural gas generators, two heat-recovery steam systems, and one steam-turbine generator.<sup>1</sup> In addition, two peak power gas generators and a solar array are included in the proposal.

The economic benefit of a power station on a local economy occurs in two phases. The first takes place during the construction of the facility, which is expected to occur over 30 months from January 2012 to June 2014. The second phase is the ongoing operation of the generating station, which is expected to commence in the summer of 2014. In both cases, the direct, indirect, and induced impacts<sup>2</sup> in spending and job creation are estimated. Chmura uses IMPLANPro<sup>®</sup> models to simulate the economic impact of this project. In addition, tax revenues are estimated for Loudoun County and the Commonwealth of Virginia for the next 20 years.

The preliminary estimate of the total cost of the proposed power station is \$829 million. Among those, 20% is expected to be spent on soft costs such as architecture and engineering services, as well as other professional services.<sup>3</sup> For the remaining \$663 million, 62% will be spent on equipment and materials while the remaining 38% is expected to be spent on the construction of the structure.<sup>4</sup>

Although regional firms will be used whenever possible, not every product and service needed for the construction and operation of the generating station is available in Loudoun County or in Virginia. Consequently, some of the services and products will be purchased from firms located outside the region. Chmura uses the IMPLANPro<sup>®</sup> model to estimate the percentage of demand that is expected to be met locally.

## Economic Benefit on Loudoun County

Table 1 details the estimated economic impact of the utility plant on Loudoun County. From January 2012 to June 2014, it is estimated that the construction of the proposed utility plant will generate an annual average of \$127.8 million in direct economic impact in Loudoun County. This will directly create an average of 844 jobs per year during the construction period, with the majority of them in construction trades. The indirect impacts in Loudoun County are expected to total \$23.1 million and create 132 jobs

<sup>1</sup> Green Energy Partners/Stonewall, LLC, c/o Andrews Community Investment Corporation contracted Chmura Economics & Analytics, LLC (Chmura) to conduct an analysis of the economic and fiscal impact of the construction and the operation of this generating station on Loudoun County and the Commonwealth of Virginia.

<sup>2</sup> Direct impact is defined as economic activity generated by the project under consideration. Indirect impact is the secondary economic activity that is generated by the project. The induced impact is economic activity (such as retail sales, spending at restaurants and professional offices) generated when the workers at the power station and their suppliers spend their income.

<sup>3</sup> Source: Chmura Impact Study of Bear Garden Plant in Buckingham County, Virginia. Since the two plants are the same size, the construction and operation assumptions for the Loudoun plant are the same as those in the Bear Garden study.

<sup>4</sup> Source: Chmura Impact Study of Bear Garden Plant in Buckingham County, Virginia.

per year during the construction phase in firms supporting the industry such as site preparation and transportation. The induced impacts are expected to produce \$32.2 million in sales that support 229 jobs per year in the county during the construction period. The induced jobs are concentrated in consumer service-related industries such as restaurants, professional offices, and retail stores. On average, the construction of the generating station is expected to inject an annual \$183.1 million into Loudoun economy and create 1205 jobs in the county.

**Table 1: Economic Benefit of Utility Plant on Loudoun County**

Year		Direct	Indirect	Induced	Total Benefit
<b>One-Time Construction</b>					
2012	Spending (\$Million)	\$153.3	\$27.8	\$38.7	\$219.8
	Employment	1,013	158	275	1,446
2013	Spending (\$Million)	\$153.3	\$27.8	\$38.7	\$219.8
	Employment	1,013	158	275	1,446
2014	Spending (\$Million)	\$76.7	\$13.9	\$19.3	\$109.9
	Employment	507	79	137	723
Annual Average	Spending (\$Million)	\$127.8	\$23.1	\$32.2	\$183.1
	Employment	844	132	229	1,205
<b>Ongoing Operation</b>					
2014 Onward	Spending	\$18.4	\$3.2	\$2.1	\$23.6
	Employment	25	14	14	54
Note: Numbers may not sum due to rounding					
Source: IMPLAN Pro 2007, Chmura Bear Garden Study					

From Summer 2014 onward, the economic impact of the proposed utility plant will come from its ongoing operation. The station is expected to hire 25 permanent employees.<sup>5</sup> For ongoing operations, IMPLAN sector 31 is used to simulate the economic effect—sector 31 corresponds to the North America Industry Classification System (NAICS) code 2211: electric power generation, transmission and distribution.

The total annual economic impact (direct, indirect, and induced) of the ongoing operation of the plant in Loudoun County is estimated to be \$23.6 million (measured in 2014 dollars) and can support 54 jobs. In terms of direct impact, the on-going operation of the generating station is estimated to have annual gross revenues of \$18.4 million<sup>6</sup> while employing 25 workers. An additional indirect impact of \$3.2 million and 14 jobs will benefit Loudoun County businesses that support the utility plant operation. The number of jobs created due to the induced impact amounts to 14 with associated annual spending of \$2.1 million.

<sup>5</sup> Source: Chmura Bear Garden Economic Impact Study.

<sup>6</sup> The direct spending figure is representative of gross sales of the generating station estimated by the IMPLAN model. The model treats the facility as a stand-alone business. As a result, the \$14.5 million includes spending on labor, equipment, fuel inputs, and profits.

This impact is mostly created when generation station workers spend their incomes at restaurants, doctor's offices, and retail establishments.

### Economic Benefit on State of Virginia

The economic impact of the proposed utility plant on Virginia is larger than that on Loudoun, because businesses outside of Loudoun County can also benefit from the construction and operation of the plant. During the construction phase of the generating station, the entire state of Virginia (Table 2) is expected to see a direct economic impact of \$127.8 million per year from 2012 to 2014. This will create 844 jobs per year during the construction phase, with the majority of them in construction trades. The indirect impact in Virginia is expected to total \$31.8 million per year and create 182 jobs during the construction phase in firms supporting construction such as site preparation and truck transportation. The induced impact is expected to total over \$45.6 million with 312 jobs per year in the state during the construction phase. Those jobs are concentrated in consumer service-related industries such as restaurants, professional offices, and retail stores. Overall, the construction of the generating station is expected to inject \$205.2 million into Virginia's economy and create 1,339 jobs per year during construction.

Table 2: Economic Benefit of Utility Plant on Virginia					
Year		Direct	Indirect	Induced	Total Benefit
<b>One-Time Construction</b>					
2012	Spending (\$Million)	\$153.3	\$38.1	\$54.8	\$246.2
	Employment	1,013	218	375	1,607
2013	Spending (\$Million)	\$153.3	\$38.1	\$54.8	\$246.2
	Employment	1,013	218	375	1,607
2014	Spending (\$Million)	\$76.7	\$19.1	\$27.4	\$123.1
	Employment	507	109	187	803
Annual Average	Spending (\$Million)	\$127.8	\$31.8	\$45.6	\$205.2
	Employment	844	182	312	1,339
<b>Ongoing Operation</b>					
2014 Onward	Spending	\$18.4	\$3.2	\$3.0	\$24.6
	Employment	25	23	31	78
Note: Numbers may not sum due to rounding					
Source: IMPLAN Pro 2007, and Chmura Bear Garden Study					

The statewide total economic impact (direct, indirect, and induced) of the ongoing operation of the generating station is estimated to be \$24.6 million and support 78 jobs per year in Virginia. In terms of direct impact, the on-going operation of the utility plant is estimated to have annual gross revenues of \$18.4 million and employ 25 workers. Indirect impacts of \$3.2 million and 23 jobs are expected to benefit Virginia businesses that support the plant operation. The number of jobs created due to the induced impact amounts to 31 with associated annual spending of \$3.0 million. The beneficiaries are mostly restaurants, professional offices, and retail establishments.

Table 3 summarizes the economic benefit of the project on Loudoun County and Virginia in the next 20 years.

Table 3: Economic Benefit by Year				
Year	Loudoun Economic Impact		Virginia Economic Impact	
	Spending (\$Million)	Jobs	Spending (\$Million)	Jobs
2012	\$219.8	1,446	\$246.2	1,607
2013	\$219.8	1,446	\$246.2	1,607
2014	\$121.7	750	\$225.7	842
2015	\$23.6	54	\$24.6	78
2016	\$23.6	54	\$24.6	78
2017	\$23.6	54	\$24.6	78
2018	\$23.6	54	\$24.6	78
2019	\$23.6	54	\$24.6	78
2020	\$23.6	54	\$24.6	78
2021	\$23.6	54	\$24.6	78
2022	\$23.6	54	\$24.6	78
2023	\$23.6	54	\$24.6	78
2024	\$23.6	54	\$24.6	78
2025	\$23.6	54	\$24.6	78
2026	\$23.6	54	\$24.6	78
2027	\$23.6	54	\$24.6	78
2028	\$23.6	54	\$24.6	78
2029	\$23.6	54	\$24.6	78
2030	\$23.6	54	\$24.6	78
2031	\$23.6	54	\$24.6	78
2032	\$23.6	54	\$24.6	78
2033	\$23.6	54	\$24.6	78
2034	\$23.6	54	\$24.6	78
2035	\$23.6	54	\$24.6	78

Source: Chmura Economics & Analytics

### Tax Revenues for Local and State Government

The presence of the proposed utility plant in Loudoun County will also bring in tax revenues for county and state governments. In order to be conservative, only tax revenue from the direct impact is estimated in this section.<sup>7</sup>

<sup>7</sup> This approach is recommended by Burchell and Listokin in *The Fiscal Impact Handbook*.

During the construction phase from 2012 to 2014, the business, professional, and occupational license (BPOL) tax is collected for Loudoun County, and individual and corporate income taxes are collected for state government.

After the power plant is in operation, Virginia government is expected to receive \$0.5 million per year in income tax from individuals employed by the plant as well as corporate income tax from its operation.

Loudoun County will receive real estate taxes based on a tax rate of \$1.245 per \$100 assessed value<sup>8</sup>. The assessed value of the property includes the land and the structure. The value of the structure is assumed to be the construction cost of the structure and is assumed to remain constant for the next 20 years.<sup>9</sup> The value of the land is currently \$36 million, and is assumed to appreciate 4% per year. As a result, the annual average real estate tax is estimated to be over \$5 million per year.

The equipment in the plant will be subject to the county manufacturing machinery and tool tax, at a rate of \$2.75 per \$100 assessed value. Loudoun County uses the following depreciation schedule to assess the taxable value of the equipment:

- 50% of the original cost for the first year in use,
- 40%, 30%, 20% of the original cost for years two through four of usage, and
- 10% of the original cost, thereafter.<sup>10</sup>

As a result, the machine tool tax is estimated to be \$5.6 million for the first year in use, \$4.5 million for the second year in use, \$3.4 million for the third year use, \$2.3 million for the fourth year in use, and \$1.1 million for the fifth year and after.

Loudoun County also charges electricity utility taxes for residential and commercial users.<sup>11</sup> Since the plant is to supply electricity for the Fairfax and Loudoun County area, Chmura assumes that 21.6%<sup>12</sup> of the electricity will serve Loudoun County customers, thus subject to county utility tax. As a result, Chmura estimates that annual county utility tax is \$1.2 million.<sup>13</sup>

Based on the Table 4, which lists local and state tax revenue by year, Loudoun County will receive the largest amount of tax revenue in 2015, estimated at \$12.0 million. Due to the depreciation of the equipment, county tax revenue will decrease afterwards and remain at over \$8 million per year after

<sup>8</sup> This is the rate for 2010. Chmura uses this rate for all future years, even though the real estate tax rate may change in the future.

<sup>9</sup> Chmura spoke with county assessor's office regarding the assessed value. The assessed value will vary depending on the location of the project, as well as market condition. So this estimate can only be interpreted as a baseline estimate.

<sup>10</sup> Source: Loudoun County website at <http://www.loudoun.gov>.

<sup>11</sup> Tax rate sources are from Loudoun County website at <http://www.loudoun.gov>.

<sup>12</sup> This number is calculated as the percentage of Loudoun population in the Northern Virginia Metropolitan Statistical Area.

<sup>13</sup> According to Dominion, the average household monthly electricity bill is \$108. According to Loudoun County, the average utility tax is \$2.7 per month. That translates into a 2.5% effective utility tax rate. Though the official county tax rate is based on the kilowatt hours of usage, the county also has a cap and most households will be subject to the cap.

2019. State tax revenue will be highest in 2012, as hundreds of jobs will be created during construction. After 2015, state tax revenue will stabilize at \$0.5 million per year.

**Table 4: Fiscal Benefit by Year**

Year	Loudoun Tax	Virginia Tax
2012	\$0.8	\$3.7
2013	\$0.8	\$3.7
2014	\$6.7	\$2.1
2015	\$12.0	\$0.5
2016	\$10.9	\$0.5
2017	\$9.8	\$0.5
2018	\$8.7	\$0.5
2019	\$8.1	\$0.5
2020	\$8.1	\$0.5
2021	\$8.2	\$0.5
2022	\$8.2	\$0.5
2023	\$8.2	\$0.5
2024	\$8.2	\$0.5
2025	\$8.3	\$0.5
2026	\$8.3	\$0.5
2027	\$8.3	\$0.5
2028	\$8.4	\$0.5
2029	\$8.4	\$0.5
2030	\$8.4	\$0.5
2031	\$8.5	\$0.5
2032	\$8.5	\$0.5
2033	\$8.5	\$0.5
2034	\$8.6	\$0.5
2035	\$8.6	\$0.5

Source: Chmura Economics & Analytics