

The Economic Impact of Longview Power Units 2 and 3 Projects on the West Virginia Economy

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Executive Summary

- Longview Power has proposed the development of a two-phase expansion to its modern advanced supercritical 710 megawatt (MW) coal-fired Unit 1 facility (Unit 1) located in Monongalia County, West Virginia. The Longview Unit 2 Project is a nominally rated 1,200 MW natural gas-fired combined-cycle gas turbine (CCGT) power plant located immediately adjacent to Unit 1. In addition to Unit 2, Longview will build a 70 MW utility scale solar power facility (Unit 3) on land in both West Virginia (20 MW) and Pennsylvania (50 MW). Power from both Units 2 and 3 will be sold into the PJM regional electric power grid.
- Total project construction costs (including financing charges and fees in 2018 dollars) over the construction phase (2020-2022) of Unit 2 is \$925 million. The Unit 3 construction cost is \$76 million, with nearly \$31 million allocated to the West Virginia portion.
- Construction labor will be managed under an approved agreement with local building trades (union).
- The economic impacts of the construction and first year operations of Units 2 and 3 were estimated using the IMPLAN[®] input-output modeling system, a nationally recognized system for estimating the direct, indirect, induced, and total economic impacts on a regional economy, such as West Virginia.
- The economic impacts on the West Virginia economy associated with construction of Unit 2 over the three years are estimated to result in 4,947 job-years, \$363 million in employee compensation, \$407 million in value added, and \$1,099 million in output. The economic impacts associated with the first year of full operation are estimated at 618 full-and part-time jobs, \$43 million in employee compensation, \$67 million in value added, and \$383 million in output.
- The economic impacts on the West Virginia economy associated with construction of Unit 3 over the three years are estimated to result in 75 job-years, \$4.5 million in employee compensation, \$7.8 million in value added, and \$34.7 million in output. The economic impacts associated with the first year of full operation are estimated at 10 full-and part-time jobs, \$640

thousand in employee compensation, \$974 thousand in value added, and \$2.598 million in output.

- The construction and operation of Units 2 and 3 will have a significant economic impact on the West Virginia economy. Unit 2 will generate additional value added from the natural gas being produced in West Virginia, while Unit 3 will demonstrate the economic viability of co-locating solar plants with existing and planned merchant power plants.
- Longview has entered into a non-binding term sheet with the County Commission of Monongalia County to provide a Payment in Lieu of Taxes and an associated lease payment (together, hereafter PILOT) related to the construction and operation of Units 2 and 3. Under the terms of this agreement Longview will make a payment of \$2.5 million to the Commission upon the financing close of the project and a base payment of \$1.58 million to the Commission in the year the project becomes commercially operational. After the first year of operation Longview will make additional payments to the Commission according to a mutually agreed upon schedule.

Introduction

Longview Power has proposed the development of a two-phase expansion to its modern advanced supercritical 710 megawatt (MW) coal-fired Unit 1 facility (Unit 1) located in Monongalia County, West Virginia. The Longview Unit 2 Project (Unit 2) is a nominally rated 1,200 MW natural gas-fired combined-cycle gas turbine (CCGT) power plant located immediately adjacent to Unit 1. In addition to the high efficiency gas-fired combined cycle, Longview will build a 70 MW utility scale solar power facility (Unit 3) on land in both West Virginia (20 MW) and Pennsylvania (50 MW). Power from Units 2 and 3 will be sold into the PJM regional electric power grid through an existing interconnection used by Unit 1. Figure 1 provides a visualization of the proposed plant, with Units 2 and 3 in the foreground.

Figure 1 Proposed Longview Units 2 and 3

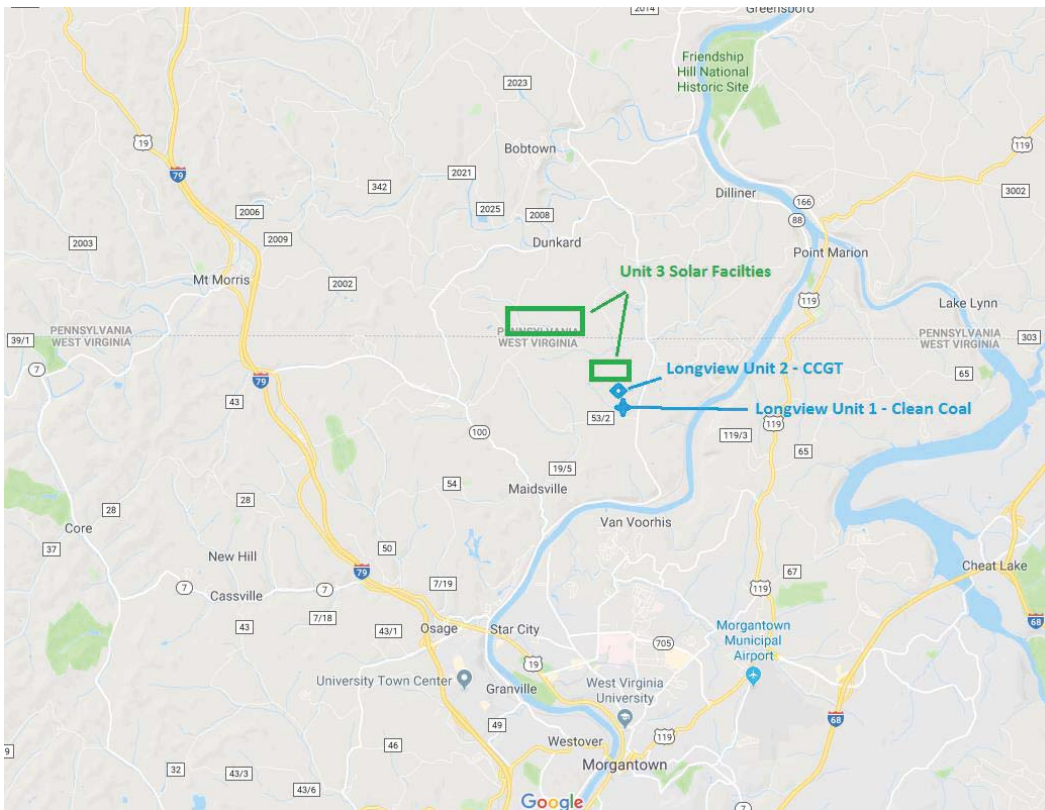


In conjunction with this project, Longview Power has commissioned Witt Economics LLC to estimate the economic impacts of the construction and subsequent placement in service of Units 2 and 3 on the West Virginia economy. Among the impacts examined in this report are employment, employee compensation, value added, and output associated with the construction and first year of full operation. This report presents the results of this study.

Project Description

Unit 2 will consist of two large, state-of-the-art natural gas fueled advanced class combustion turbines (CTs) along with state-of-the-art steam generation and air quality control equipment. The plant will be water cooled using mechanical cooling towers. Unit 2 will be built directly to the north of Unit 1. The interconnecting transmission line will span from the plant in the northern part of Monongalia County, West Virginia into the southern part of Greene County, Pennsylvania. Figure 2 shows the location of Unit 2 relative to Unit 1. The total Unit 2 construction cost estimate in 2018 dollars is \$925 million, which would make it the largest capital investment made in Monongalia County since the construction and redesign of Unit 1.¹ The plant is projected “in-service” operational date in late 2022.

Figure 2 Longview Units 2 and 3 Plant Locations



The fuel supply for the Unit 2 plant will be provided via a 6.2 mile 20” pipeline interconnecting with both the Columbia 1804 and 10240 interstate pipelines

¹ Throughout this report all costs are presented in terms of inflation-adjusted dollars with 2018 as the reference period.

located near Greensboro, PA. At this interconnection there will be metering stations allowing connection with the Columbia pipelines. The Longview pipeline is routed in a manner to minimize environmental and community impacts. Compression equipment will be added to this line at the Unit 2 site.

West Virginia workers and firms will provide over thirty percent of all construction costs on this project. Vendors and manufacturers outside of West Virginia will provide a substantial amount of the plant's equipment. Construction labor will be managed under an agreement with local building trades.

The bulk of annual operating costs will be for fuel expense, currently estimated at \$170 million in 2018 dollars. In full operation, the plant will employ up to 35 full- and part-time employees on a full-time equivalent basis at an annual payroll of nearly \$2 million. The existing Unit 1 employees will provide support to Unit 2.

In addition to the combined cycle gas fired facility, Longview will utilize land available in both West Virginia and Pennsylvania to build a 70 MW utility scale solar facility that referred to as Longview Unit 3. This facility will be the first large-scale solar facility built in West Virginia. The West Virginia portion of this installation will have a 20 MW capacity and will interconnect with the Pennsylvania arrays in the North Longview switchyard located in Pennsylvania.

The West Virginia component of Unit 3 solar facility will be comprised of approximately 75,000 solar modules connected through 8 DC/AC inverters covering roughly 127 acres. The total build cost for the complete facility (both states) is estimated to be \$76 million with nearly \$31 million allocated to the West Virginia portion. Once built, the entire facility is be operated remotely and will have approximately two full-time equivalent employees to maintain the facility.

Longview has entered into a non-binding term sheet with the County Commission of Monongalia County to provide a Payment in Lieu of Taxes and an associated lease payment (together, hereafter PILOT) related to the construction and operation of Units 2 and 3. Under the terms of this agreement Longview will make a payment of \$2.5 million to the Commission upon the financing close of the project and a base payment of \$1.58 million to the Commission in the year the project becomes commercially operational. After the first year of operation Longview will make additional payments to the Commission according to a mutually agreed upon schedule. The economic impacts associated with the proposed PILOT are included in the subsequent economic impacts.

Economic Impact Methodology

The economic impact methodology used in this report is provided by the IMPLAN[®] input-output modeling system.² This is an internationally recognized modeling software and data system that has been used in numerous economic impact studies. Witt Economics LLC used the 2017 IMPLAN[®] data for West Virginia, along with the IMPLAN[®] online software, to estimate the indirect, induced and total economic impacts reported below. This data was adjusted to reflect all impacts in 2018 dollars.

The economic impacts reported below are based upon the estimated construction and operational expenses associated with Units 2 and 3, which include proposed PILOT payments to the County Commission of Monongalia County. These estimated expenses, along with the proportion of expenditures made in West Virginia, were provided by Longview Power and are viewed as conservative estimates of the projected costs.

The *direct* impacts result from Longview expenditures within the West Virginia economy. These expenditures support various suppliers who in turn employ individuals and purchase goods and services from their suppliers. For example, Longview purchases natural gas from the interstate pipeline. Some of the natural gas is provided by West Virginia producers.

The *indirect* impact traces and quantifies the backward economic links from the West Virginia natural gas producers to their suppliers, and to their suppliers, etc. Expenditures outside West Virginia are not included in the indirect economic impacts.

The *induced* impact result from the West Virginia expenditures by Longview's employees or contractor employees along with those of the employees at businesses supplying the project and, in turn, their suppliers' employees, etc. Examples of these purchases include groceries, utilities, housing, gasoline, etc. The total economic impact is the sum of the direct, indirect and induced economic impacts estimated using the IMPLAN[®] input-output modeling system.

² For more information, see www.implan.com.

Economic Impacts: Construction and Operation

Table 1 presents the economic impacts associated with the Unit 2 construction phase of the project (years 2020, 2021 and 2022). During this phase, 4,947 job-years are associated with the project in Monongalia County and the balance of West Virginia. In Table 1, the “Employee Compensation” row represents the direct impact of compensation that Longview will pay to employees involved in the construction activity, along with the indirect and induced impacts associated with that compensation. The “Value Added” row represents the measure of the value created by a business or industry or attributable to an impact. The “Output” row measures sales plus net inventories and the value of intra-corporate shipments.³

Table 1 Longview Power Unit 2 Construction Phase Economic Impacts on the West Virginia Economy (millions of 2018\$)

| | Direct | Indirect | Induced | Total |
|--|---------------|-----------------|----------------|--------------|
| Employee Compensation (Millions 2018\$) | \$280 | \$49 | \$34 | \$363 |
| Value Added (Millions 2018\$) | \$280 | \$67 | \$60 | \$407 |
| Output (Millions 2018\$) | \$925 | \$68 | \$105 | \$1,099 |
| Employment (job years) | 3,418 | 687 | 843 | 4,947 |
| Notes: Rows may not sum due to rounding. | | | | |

During the Unit 2 construction phase, there will be substantial number of jobs created in commercial and tourism-related industries located in West Virginia. Commercial businesses are considered to include non-manufacturing business establishments including hotels, restaurants, wholesale businesses, retail stores, warehouses, storage facilities, and health, social and educational institutions. This definition also includes tourism-related industries. Table 2 provides an estimate of the job-years created industries classified as commercial and tourism sectors during the construction period. (This presentation shows only those industries in which 18 or more indirect and induced job-years are estimated.) These industries represent at least 687 job-years during the construction period of the 4,947 total estimated job-years associated with Unit 2 construction.

³ Detailed definitions of these and other economic impact terms are found in Appendix A.

Table 2 Longview Power Unit 2 Construction Phase Indirect and Induced Employment Impacts by Major Commercial and Tourism Related Sectors (job-years)

| Industry Sector | Job-Years |
|---|-----------|
| Office administrative services | 202 |
| Architectural, engineering, and technical services | 70 |
| Hospitals | 66 |
| Limited-service restaurants | 56 |
| Full-service restaurants | 50 |
| Real estate | 44 |
| Offices of physicians | 34 |
| Retail-general merchandise stores | 31 |
| Individual and family services | 26 |
| Retail-Food and beverage stores | 24 |
| Wholesale trade | 24 |
| All other food and drinking places | 21 |
| Home health care services | 19 |
| Retail-Nonstore retailers | 18 |
| Note: Industries limited to those with 18 or more indirect and induced job-years. | |

Table 3 presents the economic impacts associated with the Unit 3 construction phase of the project (years 2020, 2021 and 2022). It should be noted that 63 percent of the total project cost is associated with solar modules and inverters. West Virginia lacks any solar manufacturing industry and thus does not benefit from economic activity and jobs in that manufacturing sector. The bulk of the West Virginia impacts are associated with the actual engineering and construction of Unit 3. During this phase 75 job-years are associated with the construction project both in Monongalia County and the rest of West Virginia.

Table 3 Longview Power Unit 3 Construction Phase Economic Impacts on the West Virginia Economy (millions of 2018\$)

| | Direct | Indirect | Induced | Total |
|--|--------|----------|---------|--------|
| Employee Compensation (Millions 2018\$) | \$3.1 | \$0.5 | \$.8 | \$4.5 |
| Value Added (Millions 2018\$) | \$5.6 | \$.8 | \$1.4 | \$7.8 |
| Output (Millions 2018\$) | \$30.8 | \$1.4 | \$2.5 | \$34.7 |
| Employment (job years) | 44 | 11 | 20 | 75 |
| Notes: Rows may not sum due to rounding. | | | | |

Relatively few jobs will be created in the commercial and tourism-related industries, so they are not reported.

Table 4 presents the economic impacts associated with the first full year of commercial operation of Unit 2. The operation is associated with 35 full- and part-

time jobs each year with annual employee compensation of nearly \$2 million. The sizable indirect economic impact representing 416 full- and part-time jobs is largely associated with regional employment in the natural gas industry (exploration, development, processing and transport), the main feedstock for the plant’s operation.

Table 4 Longview Power Unit 2 Full-Year Operating Economic Impacts on the West Virginia Economy (millions of 2018\$)

| | Direct | Indirect | Induced | Total |
|--|---------------|-----------------|----------------|--------------|
| Employee Compensation (2018\$) | \$1.9 | \$34.3 | \$6.8 | \$43.0 |
| Value Added (2018\$) | \$33.1 | \$22.0 | \$11.9 | \$67.0 |
| Output (2018\$) | \$326.5 | \$33.9 | \$22.9 | \$383.3 |
| Employment (jobs) | 35 | 416 | 167 | 618 |
| Notes: Rows may not sum due to rounding. | | | | |

The significant direct and indirect jobs created result in considerable spending by associated households in the West Virginia economy, resulting in the creation of 167 induced jobs. The total economic impact of the plant’s annual operation represents 618 full- and part-time jobs, \$43 million in employee compensation, \$67 million in value added, and \$383 million in output.

During Unit 2’s first full-year operating phase, there will be a considerable number of jobs created in commercial and tourism-related industries that are primarily located in West Virginia. Again, commercial businesses are considered to include non-manufacturing business establishments including hotels, restaurants, wholesale businesses, retail stores, warehouses, storage facilities, and health, social and educational institutions. This definition also includes tourism-related industries. Table 5 provides an estimate of the indirect and induced jobs created by commercial and tourism-related sectors during the plant’s first full year of operation. (This presentation shows only those industries in which 10 or more full- and part-time are estimated.) The industries identified represent those classified as commercial and tourism-related. The latter industries represent at least 118 full- and part-time jobs during the year.

Table 5 Longview Power Unit 2 First Full-Year Operation Phase Indirect and Induced Employment Impacts by Major Commercial and Tourism Related Sectors (full- and part-time jobs)

| Description | Full- and Part-time Jobs |
|--|--------------------------|
| Monetary authorities and depository credit intermediation | 18 |
| Full-service restaurants | 16 |
| Limited-service restaurants | 15 |
| Hospitals | 14 |
| Real estate | 13 |
| Accounting, tax preparation, bookkeeping, and payroll services | 12 |
| Employment services | 10 |
| Wholesale trade | 10 |
| Services to buildings | 10 |
| Note: Industries limited to those with 10 or more indirect and induced full- and part-time jobs. | |

Table 6 presents the economic impacts associated with the first full-year of commercial operation of Unit 3. The operation is associated with 2 full-time jobs each year with annual employee compensation of nearly \$283,000.

Table 6 Longview Power Unit 3 Full-Year Operating Economic Impacts on the West Virginia Economy (thousands of 2018\$)

| | Direct | Indirect | Induced | Total |
|--|---------|----------|---------|---------|
| Employee Compensation (2018\$) | \$283 | \$290 | \$67 | \$640 |
| Value Added (2018\$) | \$382 | \$474 | \$117 | \$974 |
| Output (2018\$) | \$1,537 | \$856 | \$205 | \$2,598 |
| Employment (jobs) | 2 | 6 | 2 | 10 |
| Notes: Rows may not sum due to rounding. | | | | |

Given Unit 3’s low annual operating costs, the resulting West Virginia economic impacts are very modest. For this reason, no estimates are provided of the commercial and tourism-related economic impacts.

The estimated economic impacts from the construction and operation of Units 2 and 3 can be aggregated as all estimates are in 2018 dollars. Table 7 provides the aggregate construction economic impacts while Table 8 has the aggregate first full-year annual operating economic impacts.

Table 7 Longview Power Units 2 and 3 Aggregate Construction Phase Economic Impacts on the West Virginia Economy (millions of 2018\$)

| | Direct | Indirect | Induced | Total |
|--|--------|----------|---------|---------|
| Employee Compensation (Millions 2018\$) | \$283 | \$49 | \$35 | \$367 |
| Value Added (Millions 2018\$) | \$286 | \$68 | \$62 | \$415 |
| Output (Millions 2018\$) | \$956 | \$70 | \$108 | \$1,134 |
| Employment (job years) | 3,462 | 698 | 863 | 5,002 |
| Notes: Rows may not sum due to rounding. | | | | |

Table 8 Longview Power Units 2 and 3 Aggregate Full-Year Operating Economic Impacts on the West Virginia Economy (millions of 2018\$)

| | Direct | Indirect | Induced | Total |
|--|--------|----------|---------|-------|
| Employee Compensation (2018\$) | \$2 | \$35 | \$7 | \$44 |
| Value Added (2018\$) | \$33 | \$22 | \$12 | \$68 |
| Output (2018\$) | \$328 | \$35 | \$23 | \$386 |
| Employment (jobs) | 37 | 422 | 169 | 628 |
| Notes: Rows may not sum due to rounding. | | | | |

As evidenced from these tables the construction and operation of Units 2 and 3 will have a significant economic impact on the West Virginia economy, with their operation providing a long-term addition to the Monongalia County and West Virginia economies.

Other Economic Impacts

The IMPLAN[®] methodology does not include any estimates of either the construction or operation impacts on per capita personal income in Monongalia County or the state. The Bureau of Economic Analysis, U.S. Department of Commerce defines personal income as the income received by, or on behalf of, all persons from all sources including:

- From participation as laborers in production,
- From owning a home or unincorporated business,
- From the ownership of financial assets, and
- From government and business in the form of transfer receipts. It includes income from domestic sources as well as from the rest of the world.

Personal income is the income that is available to persons for consumption expenditures, taxes, interest payments, transfer payments to governments and the rest of the world, or for saving.

Per capita income for a region is the personal income within the area divided by the resident population. The IMPLAN[®] model used in this analysis estimates the employment and employee compensation by place of work associated with the construction and operation of the proposed facility. It does not estimate the other components of personal income nor the resident population and/or households associated with the facility.

Monongalia County per capita income was \$42,734 in 2017, which was above the West Virginia per capita income of \$38,479.⁴ Average annual wages per job in Monongalia County was \$51,872 in the third quarter of 2018, compared to \$46,475 for West Virginia.⁵ Although the economic impact analysis is unable to produce the other components of per capita income related to the facility’s impact on the regional economy, this study does provide sufficient data to deduce that the impact is positive. Tables 9 and 10 provide documentation as to the estimated employee compensation per job-year or job for Units 2 and 3.

Table 9 Average Compensation Per Job-Year During Construction Phase of Units 2 and 3 (2018\$)

| | Direct | Indirect | Induced | Total |
|---|---------------|-----------------|----------------|--------------|
| Employee Compensation (Millions 2018\$) | \$ 283 | \$ 49 | \$ 35 | \$ 367 |
| Employment (job-years) | 3,462 | 698 | 863 | 5,002 |
| Average Compensation Per Job (2018\$) | \$ 81,700 | \$ 70,200 | \$ 40,600 | \$ 73,400 |
| Note: Data provided from Table 7. Employee compensation includes wages and salaries, fringe benefits, and employers’ contributions for social insurance and other labor income. Job-year includes full- and part-time employment. | | | | |

Table 10 Average Compensation Per Job During First Full-Year Operation of Units 2 and 3 (2018\$)

| | Direct | Indirect | Induced | Total |
|---|---------------|-----------------|----------------|--------------|
| Employee Compensation (Millions 2018\$) | \$ 2 | \$ 35 | \$ 7 | \$ 44 |
| Employment (job years) | 37 | 422 | 169 | 628 |
| Average Compensation Per Job (2018\$) | \$ 59,000 | \$ 83,000 | \$ 41,400 | \$ 70,000 |

⁴ Source: Bureau of Economic Analysis, U.S. Department of Commerce, www.bea.gov.

⁵ These estimates are based on average weekly wages per job during the third quarter 2018 multiplied by 52 weeks. Source: Workforce West Virginia <http://lmi.workforcewv.org>.

Note: Data provided from Table 8. Employee compensation includes wages and salaries, fringe benefits, and employers' contributions for social insurance and other labor income.

Summary

The construction and operation of Longview Power Unit 2 is projected to have a significant economic impact on the Monongalia County and West Virginia economies. In 2018 dollars, the total construction impacts over the three-year construction cycle (2020, 2021 and 2022) include nearly 5,000 job years of employment, \$363 million in employee compensation, \$407 million in value added, and output of nearly \$1.1 billion.

Once Unit 2 is operational it is projected to have a significant long-term annual economic impact on the Monongalia County and West Virginia economies. In 2018 dollars the total full-year operation impact is projected to generate 618 full- and part-time jobs, \$43 million in employee compensation, \$67 million in value added, and \$383 million in output.

Likewise, the construction and operation of Longview Power Unit 3 is also projected to have a significant economic impact on the Monongalia County and West Virginia economies. In 2018 dollars, the total construction impacts over the three-year construction cycle (2020, 2021 and 2022) include 75 job years of employment, \$4.5 million in employee compensation, \$7.8 million in value added, and output of over \$34.7 million.

Once Unit 3 is operational it is projected to have a modest long-term annual economic impact on the Monongalia County and West Virginia economies. In 2018 dollars the total full-year operation impact is projected to generate 10 full- and part-time jobs, \$640,000 in employee compensation, \$974,000 in value added, and \$2,598,000 in output.

These conclusions are based on conservative construction and operation costs provided to Witt Economics LLC, by Longview Power. The total economic impact is the sum of the direct, indirect and induced economic impacts estimated using the IMPLAN[®] input-output modeling system. Changes in the actual project costs and vendor locations may change the estimated economic impacts from those reported herein. While the economic impacts are reported for the entire state of West Virginia, a significant amount will accrue to Monongalia County where Units 2 and 3 will be built. The results include the economic impacts associated with the PILOT and lease agreements with the County Commission of Monongalia County.

These economic impacts are also conservative as they exclude other economic developments that may benefit from Units 2 and 3. For example, enhanced natural gas interconnections to the plant may lead other firms to locate in the region to take advantage of the enhanced availability of natural gas. Enhanced rail and river access to delivered plant equipment may also benefit other firms who need access to these facilities. The construction and operation of a solar power plant may serve as a catalyst for other plants siting and construction in the state.

Finally, Unit 2's generation of electric power from Appalachian natural gas pipelines builds value added accruing to the region's citizens. This is particularly critical now that some existing coal fired generation within West Virginia is being considered for retirement. The addition of Unit 2 and 3 capacity will also enhance the reliability and performance of the transmission grid, not only in West Virginia but throughout the entire PJM system.

Appendix A: Economic Impact Definitions

| | |
|------------------------|--|
| Employment: | The number of jobs in a business, industry, or region. Also, the number of jobs attributable to an impact (see below). This is a measure of the number of full-time and part-time positions, not necessarily the number of employed persons. Jobs are annual average by place of work. A job year is equivalent to one job for one year. |
| Employee Compensation: | Wages and salaries plus employers' contribution for social insurance (social security, unemployment insurance, worker's compensation, etc.) and other labor income (pension contributions, health benefits, etc.). By place of work unless otherwise stated. |
| Impacts: | The results of the recirculation of funds throughout a regional economy due to the activity of a business, industry, or institution. Estimated by tracing back the flow of money through the initial businesses' employees and suppliers, the businesses selling to the employees and suppliers, and so on. Thus, they are a way to examine the distribution of industries and resources covered in the costs of the initial activity. |
| Output: | For most sectors, measured as sales plus net inventories and the value of intra-corporate shipments. For retail and wholesale trade, measured as gross margins (i.e. sales minus cost of goods sold, also equal to the mark-up on goods sold). |
| Value Added: | A measure of the value created by a business or industry or attributable to an impact (see above). Equal to the value of production minus the cost of purchased goods and services. Also equal to employee compensation plus capital income (profits, interest paid, depreciation charges), and indirect business taxes (e.g. severance, excise). Corresponds to the aggregate concepts of gross domestic product (GDP). |