

BEFORE THE  
PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Ohio )  
Edison Company, The Cleveland Electric )  
Illuminating Company and The Toledo )  
Edison Company for Authority to Provide ) Case No. 14-1297-EL-SSO  
for a Standard Service Offer Pursuant to R.C. )  
4928.143 in the Form of an Electric Security )  
Plan )

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**DIRECT TESTIMONY OF**

**SARAH MURLEY**

**ON BEHALF OF**

**OHIO EDISON COMPANY  
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY  
THE TOLEDO EDISON COMPANY**

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**AUGUST 4, 2014**

1 **INTRODUCTION, PURPOSE, AND SUMMARY OF CONCLUSIONS**

2 **Q. PLEASE STATE YOUR NAME, TITLE, AND BUSINESS ADDRESS.**

3 A. My name is Sarah Murley. I am a Principal at Applied Economics LLC, an economic  
4 consulting firm based in Phoenix, Arizona that specializes in socioeconomic modeling,  
5 economic development, and economic and fiscal impact assessment. My business  
6 address is 11209 N. Tatum Blvd, Suite 225, Phoenix, Arizona.

7 **Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND,**  
8 **PROFESSIONAL QUALIFICATIONS, AND EMPLOYMENT EXPERIENCE.**

9 A. I earned a Master of Science degree in economics from Arizona State University and a  
10 Bachelor of Arts degree in economics and mathematics from Pomona College in  
11 Claremont, California. In 1989, I began my career in economic consulting with  
12 Mountain West Research. I joined Coopers & Lybrand Consulting as an associate in  
13 1990 before joining the Economic Strategies Group in 1991 as a senior associate. In  
14 1995, I established Applied Economics with another partner. Over the past 20 years, I  
15 have constructed a large number of economic and fiscal impact models for  
16 municipalities, economic development organizations and utilities in Ohio and throughout  
17 the country and performed many custom studies to quantify economic and fiscal impacts  
18 of new and expanding companies, large scale development projects, utility generation  
19 facilities (traditional and solar), mines, major tourism events and attractions and other  
20 large scale projects. I also teach continuing education courses for economic development  
21 professionals on economic impact analysis.

1 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

2 A. My testimony addresses the economic and revenue impacts of the Davis-Besse Nuclear  
3 Power Station (“Davis-Besse”) and the W.H. Sammis Plant (“Sammis”) (collectively, the  
4 “Plants”) throughout the regions surrounding the Plants and Ohio as a whole. In this  
5 testimony, I will discuss: (1) how the economic impact of the continued operations of the  
6 Plants was calculated; and (2) the economic and revenue impacts provided by the Plants.

7 **Q. WHAT IS AN ECONOMIC IMPACT ANALYSIS?**

8 A. An economic impact analysis determines the impact that a specific project or program  
9 may have on a region’s economy by identifying the impact on business activity, personal  
10 income, and the nature of changes in jobs. Economic impacts include direct and indirect  
11 jobs, personal income, and economic activity that are generated as the result of a project’s  
12 operations. The direct economic impact, indirect economic impact, and induced  
13 economic impact of a project’s activities are included in the economic impact analysis.

14 **Q. ARE ECONOMIC IMPACT ANALYSIS WIDELY USED AND ACCEPTED?**

15 A. Yes. Economic impact analysis can be applied to a wide range of economic events.  
16 Within the realm of economic development, they can be used to evaluate both increases  
17 in economic activity due to business expansion, as well as decreases due to business  
18 closures. Impact analysis is also widely used to evaluate other types of impacts such as  
19 transportation improvements, tourism, agricultural development, natural disasters,  
20 military base operations and closures, water resource management and other policy or  
21 regulatory changes. The purpose is to quantify not only the direct impacts of an event or  
22 economic activity such as the operations of a power plant, but the larger multiplier effects  
23 on other businesses whose sales depend in part on the demand created by the power plant

1 and its employees. Economic impact analysis is widely used by local, state and federal  
2 governments as a tool for evaluating the impacts of policy changes.

3 **Q. PLEASE EXPLAIN THE DIFFERENCE BETWEEN DIRECT, INDIRECT, AND**  
4 **INDUCED ECONOMIC IMPACTS.**

5 A. Direct economic impacts represent the direct production value generated by the project to  
6 the regional economy. These direct economic impacts include payroll and jobs required  
7 to create that level of production. Indirect economic impacts represent the supplier  
8 businesses and their employees that are supported by the project and are calculated using  
9 economic multipliers. These economic multipliers are a way of representing the larger  
10 economic impacts effects on the regional economy. Induced economic impacts represent  
11 the effect of the payroll from the subject business and how that payroll results in  
12 additional spending by employees, and the effect of that spending.

13 In other words, the indirect and induced multiplier effects represent the recycling of  
14 intraregional spending that creates new business opportunities. For the Plants' economic  
15 impact analysis studies, I used industry- and region-specific multipliers from the **IM** pact  
16 for **PLAN**ning ("IMPLAN") model.

17 **Q. WHAT IS IMPLAN AND HOW DOES IT WORK?**

18 A. IMPLAN is one of the most well-known and widely used input-output models for  
19 economic impact analyses. It is used by numerous government agencies at both the  
20 federal and state levels, including the former Ohio Department of Development. Input-  
21 output analysis is a means of examining relationships within an economy, both between  
22 businesses and between businesses and final consumers. It captures all monetary market  
23 transactions for consumption in a given time period. The resulting mathematical

1 formulas allow for examination of the effects of a change in one or several economic  
2 activities on an entire economy (impact analysis).

3 The IMPLAN model begins with the most current national transactions matrix developed  
4 by the National Bureau of Economic Analysis Benchmark Input-Output Model. The  
5 model breaks down the U.S. economy into over 500 separate economic sectors in  
6 agriculture, manufacturing, commercial services, and government. Next, IMPLAN  
7 creates state and county-level values by adjusting the national level data, such as  
8 removing industries that are not present in a particular state or region.

9 Economic impacts are typically estimated using multipliers. IMPLAN proprietary  
10 software combined with data files purchased from IMPLAN for a particular geographic  
11 region can be used to create multipliers. These multipliers quantify the total production  
12 requirements for each industry within the selected study area for every unit of production  
13 sold to final demand. Multipliers may be constructed for output (the value of sales (i.e.  
14 revenue) plus or minus changes in inventory),<sup>1</sup> employment (number of jobs), and  
15 personal income.<sup>2</sup> Multipliers can be used to measure the impact of industries in the  
16 region buying goods and services from other regional industries. The cycle of spending  
17 works its way backward through the supply chain until all money leaks from the regional  
18 economy, either through imports or by payments to value added.

19 Multipliers are also used to measure how payroll from the subject business results in  
20 additional consumer purchases by employees. This money is recirculated through their  
21 household spending patterns causing further economic activity in the region and

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<sup>1</sup> Output can also be described as wages plus supply costs plus profits.

<sup>2</sup> Personal income is defined as the wages and salaries plus bonuses paid to employees plus proprietor income for self-employed individuals.

1 supporting additional jobs and personal income. These are the induced impacts discussed  
2 above. Direct, indirect and induced impacts are summed to generate total impacts.

3 **Q. WHAT DATA INPUTS DID YOU USE TO CALCULATE THE ECONOMIC AND**  
4 **REVENUE IMPACT OF SAMMIS?**

5 A. Several data inputs were provided by FirstEnergy and used to calculate Sammis'  
6 economic and revenue impact on its surrounding region. These inputs include total  
7 payroll, number of employees, payments to contractors, and property taxes.<sup>3</sup> The  
8 Sammis economic impact analysis quantifies the impacts on the regional economy that  
9 includes Jefferson County (where Sammis is located) and six surrounding counties. The  
10 majority of Sammis' workers live in these counties. Sammis employs approximately 400  
11 regular employees with an annual payroll of approximately \$34 million and supports an  
12 estimated 140 full-time equivalent contractors on a seasonal basis during major  
13 maintenance projects with an estimated annual payroll of \$11.9 million. In 2014,  
14 Sammis will pay approximately \$5.5 million in property taxes.

15 **Q. PLEASE DESCRIBE THE RESULTS OF YOUR ECONOMIC IMPACT**  
16 **ANALYSIS FOR SAMMIS.**

17 A. Sammis creates a total economic impact of \$585.6 million in the regional economy each  
18 year by directly and indirectly supporting approximately 1,100 jobs with an annual  
19 payroll of \$67.3 million. These figures include direct jobs and payroll at the Sammis  
20 plant, as well as additional jobs and payroll local supplier businesses, and at  
21 establishments where employees spend their pay.

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<sup>3</sup> See Attachment SM-1, Attachment 1.

**ANNUAL DIRECT AND TOTAL OPERATIONS IMPACT OF  
W.H. SAMMIS PLANT  
(millions of dollars)**

| Direct   |      |                 | Indirect (Supplier) Impacts |      |                 | Induced (Employee) Impacts |      |                 | Total    |       |                 |
|----------|------|-----------------|-----------------------------|------|-----------------|----------------------------|------|-----------------|----------|-------|-----------------|
| Output   | Jobs | Personal Income | Output                      | Jobs | Personal Income | Output                     | Jobs | Personal Income | Output   | Jobs  | Personal Income |
| \$502.32 | 535  | \$45.90         | \$50.85                     | 363  | \$15.82         | \$32.45                    | 160  | \$5.60          | \$585.62 | 1,059 | \$67.32         |

The total economic impacts shown here are based on the IMPLAN model and include the impacts of the employees, payroll and output at Sammis, as well as the estimated impacts of regional supplier purchases and employee spending of the seven county region referenced above and that are specific to the types of purchases made by the electric power generation industry. The multipliers estimate the amount of regional purchasing that could occur within this geographic area based on the types of industries that are present, the typical supplier needs of the electric power generation industry and typical household spending by employees. That purchasing is then translated into jobs and personal income at supplier businesses as well as businesses that capture employee spending.

After examining the direct, indirect, and induced impacts of the facility, the resulting output multiplier for the Sammis power plant is 1.17. This means that for every \$1 million of power produced by Sammis, an additional \$170,000 in economic activity is generated within the region's economy. Also, for every direct job retained at Sammis, one additional job is supported at other businesses in the region.<sup>4</sup>

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<sup>4</sup> The output multiplier and the jobs multipliers are not the same since jobs and output value are different units of measure.

1 **Q. WHAT ARE REVENUE IMPACTS AND HOW ARE THEY DIFFERENT FROM**  
2 **ECONOMIC IMPACTS?**

3 A. Economic impacts represent increase in jobs, payroll and economic activity or output  
4 within the private sector economy of the region. This is one way to measure the impact  
5 of Sammis on the region. Another measure of the impact is the amount of state and local  
6 tax revenues generated by Sammis and its employees. These tax revenue impacts are  
7 distinct from the economic impacts. I estimated tax revenue impacts by using total  
8 income and employment from the economic impact results combined with state and local  
9 tax rates for the affected areas.

10 **Q. WHAT ARE THE REVENUE IMPACTS CREATED BY SAMMIS?**

11 A. In addition to the economic impacts on private sector businesses in the regional economy,  
12 Sammis directly and indirectly supports a total state and local tax revenue impact of  
13 approximately \$11.1 million. In 2014, Sammis will directly pay approximately \$5.5  
14 million in property taxes. Sammis' employees and contractors could generate an  
15 additional \$5.6 million in revenues to state and local governments through employee  
16 income taxes, sales taxes, and property taxes.

17 **Q. WHAT DATA INPUTS DID YOU USE TO CALCULATE THE ECONOMIC AND**  
18 **REVENUE IMPACT OF DAVIS-BESSE?**

19 A. Several data inputs were provided by FirstEnergy and used to calculate Davis-Besse's  
20 economic and revenue impact on its surrounding economy.<sup>5</sup> These inputs included  
21 payroll data, the number of regular employees, the number of extra employees and  
22 payroll associated with Davis-Besse's steam generator replacement and re-fueling project

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<sup>5</sup> See Attachment SM-2, Attachment 1.



in the first half of 2014 (“Project”), the value of equipment and real property associated with the Project, and the amount of property taxes paid in 2014. Davis-Besse’s economic impact analysis includes the impacts on Ottawa County (where Davis-Besse is located) and Ohio as a whole. Davis-Besse has approximately 700 full-time employees with an annual payroll of approximately \$64.7 million. In 2014, Davis-Besse will pay approximately \$6.3 million in property taxes.

**Q. PLEASE DESCRIBE THE RESULTS OF THE ECONOMIC IMPACT ANALYSIS OF DAVIS-BESSE’S ON-GOING OPERATIONS.**

A. Davis-Besse’s impact was analyzed in Ottawa County and statewide. In Ottawa County, Davis-Besse generates a total economic impact of \$412.9 million each year which directly and indirectly supports approximately 1,600 jobs with an annual payroll of \$94.6 million. These figures include the jobs and payroll at the plant, plus estimated jobs, payroll and output associated with regional supplier purchases and employee spending. Statewide, the regular operations of Davis-Besse generate an annual economic impact of \$473.3 million. While the direct impacts on Ottawa County are the same as they are for Ohio as a whole, a wider range of supplier and employee purchases are captured in the statewide impacts than in the Ottawa County impacts.

**IMPACT OF ON-GOING OPERATIONS  
DAVIS-BESSE NUCLEAR POWER STATION  
(millions of dollars)**

|               | Direct   |      |                 | Indirect (Supplier) Impacts |      |                 | Induced (Employee) Impacts |      |                 | Total    |       |                 |
|---------------|----------|------|-----------------|-----------------------------|------|-----------------|----------------------------|------|-----------------|----------|-------|-----------------|
|               | Output   | Jobs | Personal Income | Output                      | Jobs | Personal Income | Output                     | Jobs | Personal Income | Output   | Jobs  | Personal Income |
| Ottawa County | \$315.88 | 689  | \$64.70         | \$25.17                     | 257  | \$8.22          | \$71.87                    | 684  | \$21.70         | \$412.92 | 1,629 | \$94.62         |
| State of Ohio | \$315.88 | 689  | \$64.70         | \$70.74                     | 461  | \$20.72         | \$86.70                    | 712  | \$27.62         | \$473.32 | 1,862 | \$113.04        |

1 The economic impacts were calculated using multipliers specific to the current economic  
2 base in Ottawa County and Ohio. Within these geographic areas, industry specific  
3 multipliers for electric power generation and household spending were applied.  
4 Household spending impacts were based on employee payroll. Multipliers for the  
5 electric power generation industry were used to estimate direct output based on actual  
6 employment and payroll, and to estimate the level of indirect impacts or on-going  
7 regional supplier purchases and associated jobs and payroll at those supplier businesses.  
8 The resulting output multiplier for the on-going operations of the nuclear power station is  
9 1.31 for Ottawa County and 1.50 for the State of Ohio. This means that for every \$1  
10 million of power production by Davis-Besse, an additional \$310,000 in economic activity  
11 is generated within the Ottawa County's economy and \$500,000 in economic activity  
12 statewide. Also, for every direct job retained at Davis-Besse, an additional 1.4 jobs are  
13 supported at other businesses in Ottawa County and 1.7 jobs at businesses throughout the  
14 state. The multiplier effects are specific to the economy of the geographic areas in this  
15 analysis and therefore are different than the multipliers for Sammis.

16 **Q. WHAT ARE REVENUE IMPACTS CREATED BY DAVIS-BESSE'S ON-GOING**  
17 **OPERATIONS?**

18 A. In addition to economic impacts on the private sector economy of the county and the  
19 state, Davis-Besse also directly and indirectly generates state and local taxes estimated at  
20 approximately \$11.6 million per year. This includes \$6.3 million in property taxes paid  
21 by Davis-Besse and approximately \$5.3 million paid by Davis-Besse's employees and  
22 supported employees at other regional businesses through personal income taxes, sales  
23 taxes, and property taxes.

1   **Q.     PLEASE DESCRIBE THE RESULTS OF YOUR ECONOMIC ANALYSIS OF**  
2       **THE PROJECT AT DAVIS-BESSE REFERRED TO ABOVE.**

3   A.    During the Project, an estimated 2,290 additional local and non-local contractors were  
4       employed with a payroll of approximately \$219.4 million. The Project generated a one-  
5       time economic impact of \$683.2 million in Ottawa County and \$745.4 million statewide.  
6       This temporary increase in economic activity supported close to 3,800 jobs in Ottawa  
7       County and about 4,000 total jobs statewide.

8   **Q.     PLEASE BRIEFLY SUMMARIZE YOUR CONCLUSIONS.**

9   A.    Overall, the Plants are significant contributors to their respective regions' economy, as  
10       well as the Ohio economy. The Plants provide high paying jobs with benefits to  
11       thousands of workers, support the regional and state economies with millions of dollars in  
12       vendor purchases each year, and benefit local governments and school systems through  
13       property tax payments. The total economic impact associated with the Plants is \$1.06  
14       billion each year, and the Plants directly and indirectly support approximately 2,921 jobs.  
15       The effects on local communities would be devastating if these Plants close. Local  
16       governments as well as school districts would lose revenues from the property taxes  
17       currently generated by these facilities. School systems may be forced to implement  
18       emergency measures, including cutting programs and seeking additional levies. These  
19       power plants are generally among the largest taxpayers in their individual counties.  
20       If additional levies were passed to make up for some of the lost property tax revenues,  
21       that would increase the amount of money that residents and businesses spend on taxes  
22       and correspondingly decrease the amount that was available for other types of purchases  
23       that generate local economic impacts. Additionally, to the extent that there are still

1 shortfalls in property tax revenues even with tax levies, the ability of communities and  
2 school districts to provide the current standard of services would be impacted.

3 Overall, local families and businesses would be subject to increased fiscal pressures  
4 through decreased payrolls/revenues and potentially higher property taxes. Local and  
5 state governments would be forced to operate with decreased tax revenues (income taxes,  
6 commercial activity taxes, sales taxes, etc.) and higher social program expenditures.

7 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

8 **A.** Yes. I reserve the right to supplement my testimony.



**ECONOMIC AND REVENUE IMPACTS OF  
FIRSTENERGY W.H. SAMMIS PLANT**

**PREPARED BY:**

**APPLIED ECONOMICS  
11209 N. TATUM BOULEVARD, SUITE 225  
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**JULY 2014**

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## 1.0 Introduction

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### **Purpose of the Study**

Applied Economics was retained by FirstEnergy to perform an economic analysis of the W.H. Sammis Plant in Stratton, Ohio. This analysis is intended to provide a framework for understanding the economic and revenue impacts that this generating facility creates throughout the region. W. H. Sammis is FirstEnergy's largest coal-fired power plant in Ohio. It has been in operation since 1959 and has the capacity to generate over 2,200 megawatts of electricity. This analysis documents economic and revenue impacts of W.H. Sammis on a tri-state region including the following counties: Jefferson, OH; Columbiana, OH; Mahoning, OH; Belmont, OH; Beaver, PA; Brooke, WV and Hancock, WV. These counties represent the region where the majority of the workers at the plant live.

W.H. Sammis is not only a major employer, but also makes a substantial amount of local supplier purchases that support the region's economy. W.H. Sammis directly employs close to 400 people with an annual payroll of \$34.0 million. The facility also supports an estimated 140 full-time equivalent contractors on a seasonal basis to assist with major maintenance.

The plant underwent a \$1.8 billion state-of-the-art upgrade of the air quality control systems several years ago. However, coal fired plants are facing strong competition from lower priced natural gas sources. Thus, the future of many coal powered plants is uncertain. The purpose of this study is to quantify not only the jobs and income that are supported by FirstEnergy directly at the W.H. Sammis plant, but also the effect that this plant has on the region in terms of supporting other local businesses.

### **Applied Economics Background**

Applied Economics LLC is an economic consulting firm, based in Phoenix, Arizona, specializing in economic development, economic and fiscal impact assessment, socioeconomic modeling, urban planning and custom software applications. Applied Economics conducts economic and fiscal impact studies and develops models to measure the effects of a wide variety of activities. These activities include development land use and policy changes, business-driven economic impacts, incentives, and program-driven economic and fiscal impacts. The principals at Applied Economics have worked together for more than twenty years, and are very experienced in working with local and regional planning and development issues.

The information and observations contained in this report are based on our present knowledge of the components of development, and of the current physical, socioeconomic and fiscal conditions of the affected areas. Estimates made in this analysis are based on hypothetical assumptions, current tax policies, and the current economic structure of the region.<sup>1</sup>

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<sup>1</sup> This analysis is based on the best available information and is intended to aid FirstEnergy in quantifying W.H. Sammis' impacts on the local economy. Even if the assumptions outlined in this report were to occur, there will usually be differences between the estimates and the actual results because events and circumstances frequently do not occur as expected. In no way will Applied Economics LLC be held responsible or have any liability or be subject to damages as a result of this analysis. This report may be used only for the purposes that it was intended.

## 2.0 Impact Summary

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The economic benefits shown here depict the on-going operations of the power plant. Economic impacts measure the effects of economic stimuli, or expenditures, in the local economy. These impacts include direct and indirect jobs, personal income, and economic activity or output that is generated by the nuclear power station. Indirect impacts are the result of the multiplier effect and capture supported supplier and consumer businesses and their employees in the larger region that benefit from the W.H. Sammis plant.

The operations of W.H. Sammis detailed in this analysis provide substantial economic benefits to the region. These positive impacts include the following:

### **Economic Impacts of On-Going Operations**

- **On-Going Operations Impacts.** W.H. Sammis creates an annual economic impact of \$585.6 million on the regional economy in Ohio, West Virginia and Pennsylvania each year (Figure 1). The operations of the power plant directly and indirectly support an estimated 1,100 jobs and \$67.3 million in annual payroll.
- **Jobs and Income.** The facility directly employs about 400 employees and 140 FTE contractors with combined annual payroll of \$45.9 million. Through the multiplier effect, an additional 520 jobs and \$21.4 million in payroll are supported annually at other businesses throughout the region. These additional jobs and payroll stem from supplier demand created by W.H. Sammis and consumer demand created by its employees and contractors.

### **Revenue Impacts**

- **Direct Revenue Impacts.** The W.H. Sammis plant is the largest taxpayer in Jefferson County and is expected to generate \$5.5 million in annual property tax revenues to local jurisdictions in 2014.
- **Indirect Revenue Impacts.** Employees and contractors also generate substantial indirect property, sales and income tax revenues in Ohio, Pennsylvania and West Virginia through household spending and property ownership. Indirect state and local revenues from workers are estimated at \$5.6 million per year.



**FIGURE 1**  
**SUMMARY OF RESULTS**  
(Millions of Dollars)

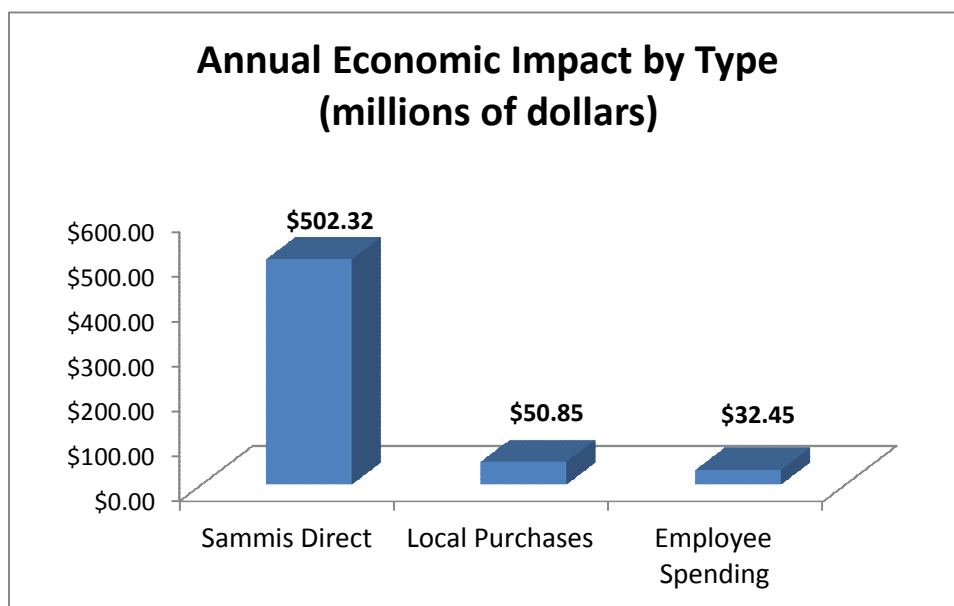
|   |          |
|---|----------|
| <b>W. H. Sammis Regular Operations</b>              |          |
| Direct Employees                                    | 396      |
| Annual Payroll                                      | \$33.98  |
| Estimated FTE Contract Employees                    | 139      |
| Annual Labor Income                                 | \$11.91  |
| <b>Annual Economic Impacts on Tri-State Region*</b> |          |
| <b>Regular Operations</b>                           |          |
| Total Output  | \$585.62 |
| Total Personal Income                               | \$67.32  |
| Total Jobs  | 1,059    |
| <b>Annual Direct and Indirect Revenue Impacts</b>   |          |
| <b>Direct</b>                                       |          |
| Property  | \$5.50   |
| <b>Indirect (Employee Driven)</b>                   |          |
| Property  | \$0.91   |
| Sales   | \$1.39   |
| Personal Income                                     | \$3.31   |

\*Regional impacts include the following counties: Jefferson OH; Columbiana OH; Belmont OH; Mahoning OH; Brooke WV; Hancock WV; Beaver PA.

### 3.0 Economic Impacts

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W.H. Sammis has an estimated annual economic impact of \$585.6 million on the regional economy from its regular operations. It directly and indirectly supports close to 1,100 jobs and \$67.3 million in annual payroll throughout the region. This includes the impacts of production activity at the plant, as well as the impacts of supplier purchases and employee spending at other local businesses.



Economic impact analysis is a means for identifying the nature of changes in jobs, personal income and business activity that can occur in a given area as a result of a project or program. Economic impacts include direct and indirect jobs, personal income, and economic activity or output that is generated by the facility through its operations. Indirect impacts are the result of the multiplier effect, and capture supported supplier and consumer businesses and employees in the seven-county region that benefit from W.H. Sammis. Multiplier effects are a way of representing the larger economic effects on the local economy. In essence, the multiplier effect represents the recycling of local spending that, in turn, creates new business opportunities.

#### 3.1 Direct Impacts

Direct impacts include the direct value of power generated by W.H. Sammis, as well as employees and payroll at the facility. The facility has about 400 regular employees and an estimated 140 FTE contractors. Their combined annual payroll is estimated at \$45.9 million. Direct output for the plant is estimated at \$502.3 million which represents the cost of the power that is produced including wages, supplies and profits.

### 3.2 Vendor Purchases

The largest component of W.H. Sammis' impact is through its local vendor purchases. Based on the types of supplies typically purchased by electric generating facilities and the suppliers available within the region, it is estimated that the company's vendor purchases create an impact of approximately \$50.9 million per year. This supports an estimated 360 jobs and \$15.8 million per year in personal income throughout the region. An example of typical purchases for electric generation facilities based on the types of suppliers available in the region is shown in Figure 2.

**FIGURE 2**  
**TYPICAL LOCAL SUPPLIER PURCHASES**

---

|  |
|--|
| Maintenance and repair of facilities and structures      |
| Barge transportation                                     |
| Rail transportation                                      |
| Coal   |
| Banking  |
| Legal services   |
| Petroleum refineries                                     |
| Extraction of oil and natural gas                        |
| Truck transportation                                     |
| Wholesale trade  |
| Accounting   |
| Telecommunications                                       |
| All other professional and technical services            |
| Architectural, engineering, and related services         |
| Business support services                                |
| Commercial and industrial machinery and equipment repair |

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### 3.3 Employee and Contractor Spending

In addition to impacts from vendor purchases, W.H. Sammis creates economic impacts by virtue of its employees and payroll. An estimated 94 percent of employees live in the seven-county region that forms the basis for the impacts shown in this analysis. A sizeable portion of employee payroll is spent at local establishments throughout this area, with additional spending in other parts of the tri-state area. The impacts of employee spending are based on typical spending patterns by income level. This household consumption impact accounts for a wide range of products and services that are purchased by a typical household measured against the availability of those products and services within the region.

Approximately 73 percent of the workforce lives in Jefferson and Columbiana Counties, with the remainder living in primarily in Mahoning and Belmont Counties in Ohio, Beaver County in Pennsylvania and Brooke and Hancock Counties in West Virginia (Figure 3). The combined impact of household spending by the 540 regular employees and contractors, plus all of the

local supplier employees, creates an annual employee spending or induced impact of \$32.5 million in the region. This employee spending supports an estimated 160 local jobs (Figure 4).

**FIGURE 3**  
**W.H. SAMMIS EMPLOYEES BY COUNTY OF RESIDENCE**

|                              |            |             |
|------------------------------|------------|-------------|
| <b>Ohio</b>                  |            |             |
| Jefferson Ohio               | 175        | 44%         |
| Belmont Ohio                 | 21         | 5%          |
| Columbiana Ohio              | 113        | 29%         |
| Mahoning Ohio                | 13         | 3%          |
| Other Ohio Counties          | 10         | 3%          |
| <b>West Virginia</b>         |            |             |
| Brooke WV                    | 12         | 3%          |
| Hancock WV                   | 18         | 5%          |
| Other West Virginia Counties | 8          | 2%          |
| <b>Pennsylvania</b>          |            |             |
| Beaver PA                    | 20         | 5%          |
| Other Pennsylvania Counties  | 6          | 2%          |
| <b>Total</b>                 | <b>396</b> | <b>100%</b> |

**FIGURE 4**  
**ECONOMIC IMPACTS OF EMPLOYEE SPENDING**  
**ON THE TRI-STATE REGION**

| Direct                         |      |                 | Total        |      |                 |
|--------------------------------|------|-----------------|--------------|------|-----------------|
| Employee & Contractor Spending | Jobs | Personal Income | Output       | Jobs | Personal Income |
| \$23,587,605                   | 118  | \$4,043,953     | \$32,453,660 | 160  | \$5,601,018     |

Note: Impacts are adjusted for share of employees living in the region.

\*Tri-State Region includes the following counties: Jefferson OH; Columbiana OH; Belmont OH; Mahoning OH; Brooke WV; Hancock WV; Beaver PA.

### 3.4 Overall Economic Impacts

The composite operations impact is broken down in terms of direct impacts, indirect impacts (supplier purchases), induced impacts (employee spending) and total impacts. All total, W.H. Sammis creates a total economic impact of \$585.6 million in the surrounding region each year, directly and indirectly supporting about 1,100 jobs and \$67.3 million in annual payroll, including jobs and payroll at the plant (Figure 5).

**FIGURE 5**  
**ANNUAL DIRECT AND TOTAL OPERATIONS IMPACT OF**  
**W.H. SAMMIS PLANT**  
**(millions of dollars)**

| Direct   |      |                 | Indirect (Supplier) Impacts |      |                 | Induced (Employee) Impacts |      |                 | Total    |       |                 |
|----------|------|-----------------|-----------------------------|------|-----------------|----------------------------|------|-----------------|----------|-------|-----------------|
| Output   | Jobs | Personal Income | Output                      | Jobs | Personal Income | Output                     | Jobs | Personal Income | Output   | Jobs  | Personal Income |
| \$502.32 | 535  | \$45.90         | \$50.85                     | 363  | \$15.82         | \$32.45                    | 160  | \$5.60          | \$585.62 | 1,059 | \$67.32         |

Direct impacts include the employees, payroll and value of production at the plant. Total jobs include local supplier businesses where W.H. Sammis makes purchases and increases in demand at local establishments where employees shop. These supported local businesses and their employees in turn make additional purchases that are captured in the total impact estimates. The total impact includes both the direct impacts as well as the secondary impacts created by other local businesses and their employees. Additional purchases by both W.H. Sammis and its employees also occur outside the region and are not represented here.

The multipliers used in this analysis are from IMPLAN, a national vendor of economic impact software, and are specific to the seven-county region including Jefferson OH, Mahoning OH, Belmont OH, Columbiana OH, Brooke WV, Hancock WV and Beaver PA. Industry specific multipliers were used for electric power generation and household spending. On average, the output multiplier for the power plant is 1.17. This means that for every \$1 million of power produced by W. H. Sammis, an additional \$170,000 in economic activity is generated in the region's economy. Similarly, for every direct job retained at W. H. Sammis an additional 1.0 jobs are supported at other businesses in the region.

## 4.0 Revenue Impacts

In addition to creating demand and supporting jobs and payroll in the regional economy, W. H. Sammis also generates substantial local and state tax revenues. Economic impacts represent the benefits to the private economy, while revenue impacts represent the benefits to state and local government. All total, W.H. Sammis generates an estimated \$11.1 million in direct and indirect revenues to local and state governments each year, including property taxes from the power plant facilities.

### 4.1 Direct Revenues

W.H. Sammis is currently the largest property tax payer in Jefferson County. This year, the plant will generate an estimated \$5.5 million in local property taxes (Figure 6).

**FIGURE 6**  
**LOCAL AND STATE REVENUE IMPACTS**  
**W.H. SAMMIS PLANT**

|  | Local Taxes        |                  |                    |                    |                    | Local &<br>State Total |
|--|--------------------|------------------|--------------------|--------------------|--------------------|------------------------|
|  | Property           | Sales            | Income             | Sales              | Income             |                        |
| Direct Revenues from W.H. Sammis Plant | \$5,500,000        | na               | na                 | na                 | na                 | \$5,500,000            |
| Indirect (Employee-Driven) Revenues    | \$908,727          | \$295,238        | \$1,089,650        | \$1,091,367        | \$2,221,898        | \$5,606,879            |
| Ohio region                            | \$781,085          | \$295,238        | \$1,055,651        | \$933,274          | \$1,831,155        |                        |
| Pennsylvania region                    | \$70,063           | \$0              | \$33,998           | \$63,237           | \$104,375          |                        |
| West Virginia region                   | \$57,579           | \$0              | \$0                | \$94,856           | \$286,368          |                        |
| <b>Total</b>                           | <b>\$6,408,727</b> | <b>\$295,238</b> | <b>\$1,089,650</b> | <b>\$1,091,367</b> | <b>\$2,221,898</b> | <b>\$11,106,879</b>    |

Note: Includes indirect revenues generated by Sammis employees based on county of residence.

\*Tri-State Region includes the following counties: Jefferson OH; Columbiana OH; Belmont OH; Mahoning OH; Brooke WV; Hancock WV; Beaver PA.

### 4.2 Indirect Revenues

W.H. Sammis employees and contractors living in the local area also generate a significant amount of property, sales and income tax revenues. Indirect revenue impacts shown here are for direct employees and contractors as well as indirect employment supported by local supplier purchases and employee spending as shown in the economic impact results. Based on residential assessed value per capita in each county and average local property tax rates, the direct and indirect employees at W.H. Sammis could generate an estimated \$909,000 in indirect property tax revenues this year to local jurisdictions within the seven-county region in Ohio, Pennsylvania and West Virginia.

Based on employee and contractor payroll at W.H. Sammis, as well as indirect personal income from supplier and employee spending, employees could also generate approximately \$295,000 in local sales tax revenues and \$1.1 million in state sales tax revenues this year. This estimate assumes that local employees spend approximately 31 percent of their wages on goods that are

subject to sales tax, based on data from the Census Annual Consumer Expenditure Survey. Applying this assumption to personal income of employees, and applying a local sales tax rate based on the distribution of employees by place of residence, yields an estimate of local sales tax revenues from employee spending.

In terms of state and local income tax, W.H. Sammis employees and local contractors could generate approximately \$1.1 million in local taxes and \$2.2 million in state taxes this year. Income taxes are based on average income per direct and indirect employee of \$63,600 times the appropriate state or local income tax rate. Note that there are no local income taxes in West Virginia.

## 5.0 Summary

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W.H. Sammis is a significant contributor to the region's economy. It provides high paying jobs with benefits to hundreds of workers and supports the area economy with millions of dollars each year in vendor purchases. In addition, the capital investments associated with this plant result in long term impacts in the form of additional property tax revenues to local governments. Cutbacks at this plant would not only impact FirstEnergy employees at the facility, but also many surrounding businesses that count on demand from purchases by FirstEnergy and its employees.



**ATTACHMENT 1**  
**SAMMIS PLANT INPUT DATA**

| 2013 Regular<br>Employees | 2013 Payroll <sup>1</sup> | Contractor<br>Labor Cost <sup>2</sup> | 2014 Real<br>Property Taxes | 2014 Personal<br>Property Taxes |
|---------------------------|---------------------------|---------------------------------------|-----------------------------|---------------------------------|
| 396                       | \$33,981,345              | \$11,914,917                          | \$4,600,000                 | \$900,000                       |

<sup>1</sup> Excludes benefits and loadings.

<sup>2</sup> \$3 million June-Aug, \$259K Aug-Nov, remainder is for year round contractors.



**ECONOMIC AND REVENUE IMPACTS OF  
DAVIS-BESSE NUCLEAR POWER STATION  
ON OTTAWA COUNTY  
AND THE STATE OF OHIO**

**PREPARED BY:**

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11209 N. TATUM BOULEVARD, SUITE 225  
PHOENIX, AZ 85028**

**JULY 2014**

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## **1.0 Introduction**

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### **Purpose of the Study**

Applied Economics was retained by FirstEnergy to perform an economic analysis of the Davis-Besse Nuclear Power Station (Davis-Besse). The analysis includes the on-going operations of the plant plus the steam generator placement and re-fueling project that took place over the last 6 months. This project included replacing the steam generator, which is an important component of the pressurized water reactor system, as well as routine outage maintenance and refueling of the reactor.

This analysis is intended to provide a framework for understanding the economic and revenue impacts that this nuclear generating facility creates through its regular operations as well as the impacts of this one-time capital investment. Davis-Besse, located about 21 miles east of Toledo, was the first nuclear plant in Ohio and has been in operation since 1977. It is capable of generating over 900 megawatts of electricity. This analysis documents economic and revenue impacts of Davis-Besse on Ottawa County and on the state as a whole.

Davis-Besse is not only a major employer in the Toledo area, but also makes a substantial amount of local supplier purchases that support the region's economy. Davis-Besse directly employs 689 people with an annual payroll of \$64.7 million. An estimated 2,290 additional local and non-local contractors were employed over the last six months to support regular refueling outages as well as the steam generator placement project.

### **Applied Economics Background**

Applied Economics is an economic consulting firm, based in Phoenix, Arizona, specializing in economic development, economic and fiscal impact assessment, socioeconomic modeling, urban planning and custom software applications. Applied Economics conducts economic and fiscal impact studies and develops models to measure the effects of a wide variety of activities. These activities include development land use and policy changes, business-driven economic impacts, incentives, and program-driven economic and fiscal impacts. The partners at Applied Economics have worked together for more than twenty years, and are very experienced in working with local and regional planning and development issues. Applied Economics was formed in 1995 and specializes in the technical aspects of economic research.

The information and observations contained in this report are based on our present knowledge of the components of development, and of the current physical, socioeconomic and fiscal conditions of the affected areas. Estimates made in this analysis are based on hypothetical assumptions, current tax policies, and the current economic structure of the region.<sup>1</sup>

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<sup>1</sup> This analysis is based on the best available information and is intended to aid FirstEnergy in quantifying Davis-Besse's impacts on the local economy. The assumptions in the report provided by FirstEnergy are attached hereto as Attachment A. Even if the assumptions outlined in this report were to occur, there will usually be differences between the estimates and the actual results because events and circumstances frequently do not occur as expected. In no way will Applied Economics be held responsible or have any liability or be subject to damages as a result of this analysis. This report may be used only for the purposes that it was intended.

## 2.0 Impact Summary

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The economic benefits shown here include the on-going operations of the power plant, as well as the impacts of additional local and non-local contract employees associated with the steam generator replacement and the reactor refueling. Economic impacts measure the effects of economic stimuli, or expenditures, in the local economy. These impacts include direct and indirect jobs, personal income, and economic activity or output that is generated by the nuclear power station. Indirect impacts are the result of the multiplier effect and capture supported supplier and consumer businesses and their employees in Ottawa County and throughout the state that benefit from Davis-Besse.

The operations of Davis-Besse detailed in this analysis provide substantial economic benefits to the county, region and state. These positive impacts include the following:

### **Economic Impacts of On-Going Operations**

- **On-Going Operations Impacts.** Davis-Besse creates an annual economic impact of \$473.3 million on the Ohio economy each year. The operations of the power plant directly and indirectly support an estimated 1,900 jobs and \$113.0 million in annual payroll in Ohio.<sup>2</sup>
- **Jobs and Income.** The facility directly employs 689 employees with an annual payroll of \$64.7 million. Through the multiplier effect, an additional 1,200 jobs and \$48.3 million in payroll are supported annually at other businesses throughout the state. These additional jobs and payroll stem from supplier demand created by Davis-Besse and consumer demand created by its employees.

### **Impacts of Steam Generator Placement and Refueling Project**

- **Overall Economic Impacts.** Over the last six months, an additional 2,290 contractors with an estimated payroll of \$219.4 million replaced the steam generator and performed routine outage maintenance and reactor re-fueling. These additional employees created a total economic impact of \$745.4 million over the last six months, which will more than double the impact of the facility on the state and regional economy this year.
- **Supplier Purchases and Employee Spending.** In addition to the 2,290 contract employees, the steam generator placement and refueling project supported an estimated indirect impact of \$99.6 million, along with 680 additional jobs and \$34.2 million in personal income statewide through local supplier purchases. The 930 of the 2,290 contractors that are from the local area will also re-spend a portion of their income at area businesses, creating an induced economic impact of \$119.4 million along with 980 jobs and \$38.0 million in personal income in Ohio. Combined

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<sup>2</sup> This level of annual economic impact is consistent with a 2009 report by the Nuclear Energy Institute that estimates the average 1,000 MW nuclear plant generates an annual economic impact of \$430 million, based on normalized averages from analyses of 22 U.S. nuclear power plants. (Nuclear Energy Institute, New Nuclear Plants: An Engine for Job Creation, Economic Growth, October 26, 2009.)

impacts from local supplier purchases and local contractor spending are estimated at \$219.0 million and are included in the overall economic impacts for the steam generator placement and refueling project.

- **Visitor Impacts.** In addition to spending by local contractors, there were approximately 19,200 visitor nights associated with non-local contractors working on this project that stayed in hotels or rental housing, ate in restaurants and made local retail purchases. These non-local contractors created an economic impact of \$2.5 million over the last six months, supporting about 30 jobs, mostly in the Toledo region.

### **Revenue Impacts**

- **Direct Revenue Impacts.** The re-fueling project will generate a significant amount of additional property tax revenues in Ottawa County. The project includes \$23.6 million in real property improvements and \$429.4 million in new equipment. Annual new property tax revenues from the nuclear power station are estimated at \$2.4 million per year. This is in addition to the \$6.3 million in estimated property taxes from existing facilities in 2014.
- **Indirect Revenue Impacts.** Davis-Besse also generates substantial indirect property, sales and income tax revenues in Ohio through employee spending and property ownership. Indirect state and local revenues from regular employees are estimated at \$5.3 million per year. In addition, the steam generator placement and refueling project generated additional income and sales taxes from local contractors, as well as sales and lodging taxes from visitor expenditures by non-local contractors. Additional state and local revenues over the last six months from contractors associated with the steam generator placement and refueling project are estimated at \$7.6 million.

**FIGURE 1**  
**SUMMARY OF RESULTS**  
(Millions of Dollars)

|  |          |
|--|----------|
| <b>Davis-Besse Regular Operations</b>                    |          |
| Direct Employees   | 689      |
| Estimated Payroll  | \$64.70  |
| <b>Steam Generator Placement &amp; Refueling Project</b> |          |
| Temporary Employees                                      | 2,290    |
| Estimated Payroll  | \$219.40 |
| <b>Annual Economic Impacts on Ohio</b>                   |          |
| <b>Regular Operations</b>                                |          |
| Total Output   | \$473.32 |
| Total Personal Income                                    | \$113.04 |
| Total Jobs   | 1,862    |
| <b>Steam Generator Placement &amp; Refueling Project</b> |          |
| Total Output   | \$745.39 |
| Total Personal Income                                    | \$292.50 |
| Total Jobs   | 3,984    |
| <b>Annual Direct and Indirect Revenue Impacts</b>        |          |
| <b>Direct</b>  |          |
| Property   | \$2.44   |
| <b>Indirect-Regular Employees</b>                        |          |
| Property   | \$1.39   |
| Sales  | \$0.90   |
| Personal Income  | \$3.00   |
| <b>Indirect-Contract Employees</b>                       |          |
| Sales and Lodging  | \$1.90   |
| Personal Income  | \$5.73   |

### 3.0 Economic Impacts

#### Operations Impacts

Davis-Besse has an estimated annual economic impact of \$473.3 million on Ohio's economy from its normal operations. It directly and indirectly supports close to 1,900 jobs and \$113.0 million in annual payroll throughout the state (Figure 2). This includes the impacts of production activity at Davis-Besse, as well as the impacts of supplier purchases and employee spending at other local businesses.

**FIGURE 2**  
**IMPACT OF ON-GOING OPERATIONS**  
**DAVIS-BESSE NUCLEAR POWER STATION**  
(millions of dollars)

|               | Direct   |      |                 | Indirect (Supplier) Impacts |      |                 | Induced (Employee) Impacts |      |                 | Total    |       |                 |
|---------------|----------|------|-----------------|-----------------------------|------|-----------------|----------------------------|------|-----------------|----------|-------|-----------------|
|               | Output   | Jobs | Personal Income | Output                      | Jobs | Personal Income | Output                     | Jobs | Personal Income | Output   | Jobs  | Personal Income |
| Ottawa County | \$315.88 | 689  | \$64.70         | \$25.17                     | 257  | \$8.22          | \$71.87                    | 684  | \$21.70         | \$412.92 | 1,629 | \$94.62         |
| State of Ohio | \$315.88 | 689  | \$64.70         | \$70.74                     | 461  | \$20.72         | \$86.70                    | 712  | \$27.62         | \$473.32 | 1,862 | \$113.04        |

Economic impact analysis is a means for identifying the nature of changes in jobs, personal income and business activity that can occur in a given area as a result of a project or program. Economic impacts include direct and indirect jobs, personal income, and economic activity or output that is generated by the facility through its operations. Indirect impacts are the result of the multiplier effect, and capture supported supplier and consumer businesses and employees in Ottawa County and throughout Ohio that benefit from Davis-Besse. Multiplier effects are a way of representing the larger economic effects on the local economy. In essence, the multiplier effect represents the recycling of local spending that, in turn, creates new business opportunities.

Direct impacts include the direct value of power generated by Davis-Besse, as well as employees and payroll at the facility. Total jobs include local vendors from whom Davis-Besse makes purchases, as well as local establishments where employees shop. These local vendors and their employees in turn make additional local purchases that are captured in the total impact estimates. The total impact includes both the direct impacts and the secondary impacts created by other local businesses and their employees. Additional purchases by both Davis-Besse and its employees also occur outside the region and are not represented here.

The largest component of Davis-Besse's impact is through its local vendor purchases. Based on the types of supplies typically purchased by electric generating facilities and the suppliers available locally and within the state, it is estimated that the company's vendor purchases create an impact of approximately \$25.2 million per year in Ottawa County and \$70.7 million statewide. This supports an estimated 460 jobs and \$20.7 million per year in personal income statewide.

In addition to impacts from vendor purchases, Davis-Besse creates economic impacts by virtue of its employees and payroll. A sizeable portion of employee payroll is spent at local establishments throughout the Northern Ohio region, with additional spending elsewhere in the state. The impacts of employee spending are based on typical spending patterns by income level.



This household consumption impact accounts for the wide range of products and services that are purchased by a typical household and is measured against the availability of those products and services locally and statewide. Approximately 39 percent of the workforce lives in Ottawa County, with the remainder living primarily in Sandusky, Wood, Lucas and Erie counties. Davis-Besse's 689 regular employees with a payroll of approximately \$64.7 million, plus all of the local supplier employees, create an annual employee spending or induced impact of \$71.9 million in Ottawa County and \$86.7 million throughout the state. This employee spending supported an estimated 680 local jobs and 710 jobs statewide.

### Steam Generator Placement and Refueling Impacts

In addition to the on-going impacts of operations, FirstEnergy made significant capital investments in Davis-Besse to replace the steam generator. At the same time, the plant went through outage maintenance and reactor re-fueling. This resulted in approximately 2,300 additional employees on-site over the last six months. These 2,290 employees, which include skilled trades as well as engineers and other professionals, have an estimated payroll of \$219.4 million. About 41 percent were from the Northern Ohio region, while the remaining workers were from outside the area.

During the six month period when this project took place, it created an economic impact of \$683.2 million on Ottawa County and \$745.4 million statewide (Figure 3). This includes the direct impacts or value of improvements to the power station, as well as local supplier purchases and purchases by local and non-local contractors. Although these impacts are non-recurring, they are very significant over the last six months and in fact are greater in magnitude than the normal annual impacts of plant operations. In addition to the 2,290 contractors working at Davis-Besse, there are an estimated 1,700 more local jobs that could be supported at other businesses throughout the state over the next several months.

**FIGURE 3**  
**IMPACT OF STEAM GENERATOR PLACEMENT AND REFUELING PROJECT**  
**DAVIS-BESSE NUCLEAR POWER STATION**  
(millions of dollars)

| Year          | Direct   |       |                 | Indirect (Supplier) Impacts |      |                 | Induced (Employee) Impacts |      |                 | Non-Local Contractor Impacts |      |                 | Total    |       |                 |
|---------------|----------|-------|-----------------|-----------------------------|------|-----------------|----------------------------|------|-----------------|------------------------------|------|-----------------|----------|-------|-----------------|
|               | Output   | Jobs  | Personal Income | Output                      | Jobs | Personal Income | Output                     | Jobs | Personal Income | Output                       | Jobs | Personal Income | Output   | Jobs  | Personal Income |
| Ottawa County | \$523.97 | 2,290 | \$219.40        | \$58.18                     | 503  | \$19.66         | \$98.98                    | 941  | \$29.89         | \$2.10                       | 26   | \$0.72          | \$683.23 | 3,760 | \$269.67        |
| State of Ohio | \$523.97 | 2,290 | \$219.40        | \$99.56                     | 684  | \$34.21         | \$119.40                   | 981  | \$38.04         | \$2.45                       | 30   | \$0.85          | \$745.39 | 3,984 | \$292.50        |

### Non-Local Contractor Impacts

Of the total 2,290 contractors, a sizeable portion are from outside the local area. Based on a detailed schedule of the number of non-local contractors that were working on the steam generator placement and refueling project each week, this translates into 2,737 person-weeks. During this time, these non-local contractors will make expenditures for food, transportation, lodging and retail. Based on information from the Ohio Division of Travel and Tourism, we are assuming these non-local contractors spent approximately \$79 per day. This is less than the \$105 per person per day average visitor spending for Ohio. Since these contractors are working during the day, it is likely that they spend less on retail and recreation than the average visitor.

Nonetheless, the 19,200 visitor nights generated by non-local contractors translates into estimated spending of \$1.5 million in the local economy during the project period (Figure 4).

**FIGURE 4**  
**ESTIMATED NON-LOCAL CONTRACTOR EXPENDITURES**

| Type of Expenditure                | Expenditures       | Distribution |
|------------------------------------|--------------------|--------------|
| Lodging                            | \$201,554          | 11%          |
| Food & Beverage                    | \$544,195          | 34%          |
| Transportation                     | \$624,817          | 19%          |
| Retail                             | \$151,165          | 23%          |
| <b>Total Visitor Expenditures</b>  | <b>\$1,521,731</b> | <b>87%</b>   |
| <b>Total Visitor Days</b>          | <b>19,159</b>      |              |
| <b>Average Expenditure per Day</b> | <b>\$79</b>        |              |

Sources: Ohio Division of Travel and Tourism, 2012 (spending patterns); FirstEnergy Ohio (visitor levels).

\*Based on 2,737 person-weeks for non-local contractors between January 2013 and April 2014.

These visitor expenditures support local jobs and payroll in the hospitality industry. All total, the \$1.5 million in contractor spending would result in a total economic impact of \$2.1 million in Ottawa County and \$2.5 million statewide (Figure 5). This corresponds to \$720,000 in personal income and about 26 jobs at local retail and hospitality establishments in Ottawa County, plus an additional 4 jobs and \$133,000 in personal income in the surrounding region.

**FIGURE 5**  
**VISITOR IMPACTS FROM NON-LOCAL CONTRACTORS**  
**DAVIS-BESSE NUCLEAR POWER STATION**

|                              | Direct              |           |                    | Total              |           |                    |
|------------------------------|---------------------|-----------|--------------------|--------------------|-----------|--------------------|
|                              | Visitor<br>Spending | Jobs      | Personal<br>Income | Output             | Jobs      | Personal<br>Income |
| <b>Ottawa County Impacts</b> | <b>\$1,521,731</b>  | <b>20</b> | <b>\$536,328</b>   | <b>\$2,102,856</b> | <b>26</b> | <b>\$718,403</b>   |
| Lodging                      | \$201,554           | 2         | \$57,120           | \$294,548          | 3         | \$87,324           |
| Food & Beverage              | \$544,195           | 10        | \$188,155          | \$763,530          | 12        | \$254,896          |
| Transportation               | \$624,817           | 5         | \$209,312          | \$840,010          | 7         | \$278,326          |
| Retail                       | \$151,165           | 2         | \$81,741           | \$204,768          | 3         | \$97,858           |
| <b>State of Ohio Impacts</b> | <b>\$1,521,731</b>  | <b>22</b> | <b>\$558,886</b>   | <b>\$2,453,121</b> | <b>30</b> | <b>\$851,526</b>   |
| Lodging                      | \$201,554           | 2         | \$59,333           | \$340,441          | 3         | \$105,373          |
| Food & Beverage              | \$544,195           | 10        | \$188,395          | \$911,031          | 13        | \$297,258          |
| Transportation               | \$624,817           | 7         | \$229,494          | \$967,115          | 10        | \$340,649          |
| Retail                       | \$151,165           | 2         | \$81,664           | \$234,534          | 3         | \$108,247          |

## Overall Economic Impacts

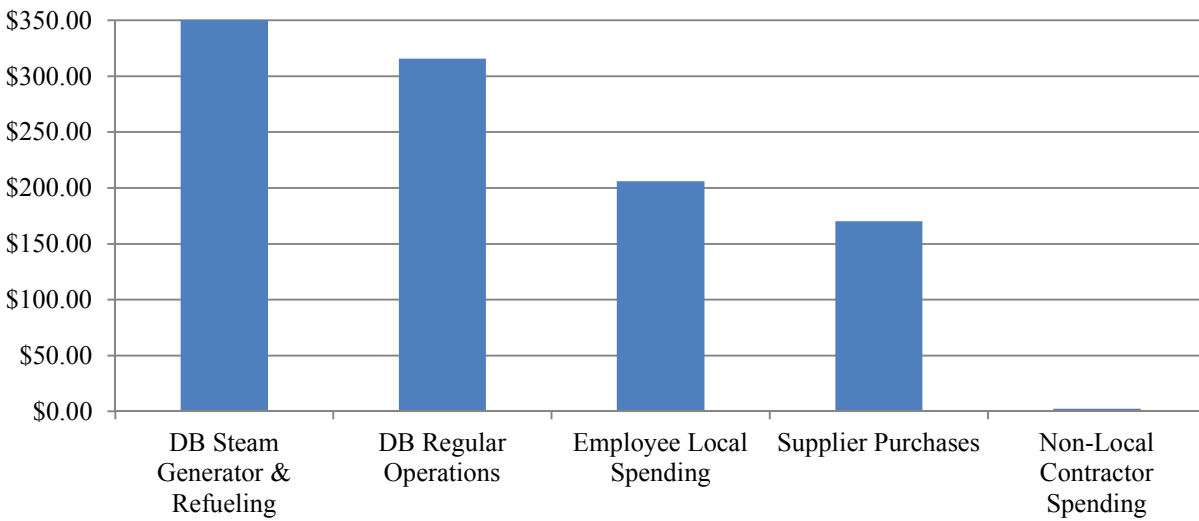
The composite operations impact results presented here are broken down in terms of direct impacts, indirect impacts (supplier purchases), induced impacts (employee spending), non-local contractor spending impacts and total impacts. All total, Davis Besse Nuclear Power Station will create a total economic impact of \$1.21 billion in Ohio this year, including regular plant operations plus the steam generator placement and refueling project. On an on-going basis, Davis-Besse creates an estimated annual economic impact of \$473.3 million on the state's economy, directly and indirectly supporting about 1,900 jobs and \$113.0 million in annual payroll, including jobs and payroll at the plant. This year, there are \$745.4 million in additional impacts associated with the steam generator placement and refueling project, along with 4,000 jobs and \$292.5 million in personal income.

Direct impacts include the employees, payroll and value of production at the plant. Total jobs include local supplier businesses where Davis-Besse makes purchases; the value of work being performed in the steam generator and refueling project; increases in demand local establishments where employees shop; and lodging, restaurants and retail where non-local contractors spend money. These supported local businesses and their employees in turn make additional local purchases that are captured in the total impact estimates. The total impact includes both the direct impacts and the secondary impacts created by other local businesses and their employees (Figures 6 and 7).

**FIGURE 6**  
**COMBINED IMPACT OF REGULAR OPERATIONS AND STEAM GENERATOR PLACEMENT AND REFUELING PROJECT**  
**DAVIS-BESSE NUCLEAR POWER STATION**  
(millions of dollars)

| Year  | Direct          |              |                 | Indirect (Supplier) Impacts |              |                 | Induced (Employee) Impacts |              |                 | Contractor Impacts |           |                 | Total             |              |                 |
|---|-----------------|--------------|-----------------|-----------------------------|--------------|-----------------|----------------------------|--------------|-----------------|--------------------|-----------|-----------------|-------------------|--------------|-----------------|
|   | Output          | Jobs         | Personal Income | Output                      | Jobs         | Personal Income | Output                     | Jobs         | Personal Income | Output             | Jobs      | Personal Income | Output            | Jobs         | Personal Income |
| <b>Ottawa County Impacts</b>                              |                 |              |                 |                             |              |                 |                            |              |                 |                    |           |                 |                   |              |                 |
| Regular Operations  | \$315.88        | 689          | \$64.70         | \$25.17                     | 257          | \$8.22          | \$71.87                    | 684          | \$21.70         | \$0.00             | 0         | \$0.00          | \$412.92          | 1,629        | \$94.62         |
| Steam Generator Placement & Refueling Project Contractors | \$523.97        | 2,290        | \$219.40        | \$58.18                     | 503          | \$19.66         | \$98.98                    | 941          | \$29.89         | \$2.10             | 26        | \$0.72          | \$683.23          | 3,760        | \$269.67        |
| <b>Total</b>  | <b>\$839.85</b> | <b>2,979</b> | <b>\$284.10</b> | <b>\$83.35</b>              | <b>760</b>   | <b>\$27.89</b>  | <b>\$170.85</b>            | <b>1,625</b> | <b>\$51.59</b>  | <b>\$2.10</b>      | <b>26</b> | <b>\$0.72</b>   | <b>\$1,096.16</b> | <b>5,389</b> | <b>\$364.29</b> |
| <b>State of Ohio Impacts</b>                              |                 |              |                 |                             |              |                 |                            |              |                 |                    |           |                 |                   |              |                 |
| Regular Operations  | \$315.88        | 689          | \$64.70         | \$70.74                     | 461          | \$20.72         | \$86.70                    | 712          | \$27.62         | \$0.00             | 0         | \$0.00          | \$473.32          | 1,862        | \$113.04        |
| Steam Generator Placement & Refueling Project Contractors | \$523.97        | 2,290        | \$219.40        | \$99.56                     | 684          | \$34.21         | \$119.40                   | 981          | \$38.04         | \$2.45             | 30        | \$0.85          | \$745.39          | 3,984        | \$292.50        |
| <b>Total</b>  | <b>\$839.85</b> | <b>2,979</b> | <b>\$284.10</b> | <b>\$170.30</b>             | <b>1,145</b> | <b>\$54.93</b>  | <b>\$206.11</b>            | <b>1,693</b> | <b>\$65.66</b>  | <b>\$2.45</b>      | <b>30</b> | <b>\$0.85</b>   | <b>\$1,218.71</b> | <b>5,846</b> | <b>\$405.54</b> |

**FIGURE 7**  
**STATEWIDE ECONOMIC IMPACTS BY TYPE**



The multipliers used in this analysis are from IMPLAN, a national vendor of economic impact software, and are specific to Ottawa County and Ohio. Industry specific multipliers were used for construction, electric power generation, each category of visitor spending and household spending. On average, the output multiplier for the nuclear power station is 1.45. This means that for every \$1 million of power produced by Davis Besse, an additional \$450,000 in economic activity is generated in the state's economy. Similarly, for every direct job created at Davis Besse an additional 1.7 jobs are supported at other businesses in the state.

## 4.0 Revenue Impacts

In addition to creating demand and supporting jobs and payroll in the regional and state economy, Davis-Besse also generates substantial local and state tax revenues. Economic impacts represent the benefits to the private economy, while revenue impacts represent the benefits to state and local government. The steam generator replacement will result in additional direct property taxes. Davis-Besse also indirectly supports additional revenues through employee and contractor spending, income and property ownership. All total, Davis Besse will generate an estimated \$15.4 million in direct and indirect revenues to local and state governments this year, not including any property taxes from existing power plant facilities which are estimated at \$6.3 million for 2014.

### Direct Revenues

As part of the steam generator replacement, FirstEnergy will invest \$23.6 million in real property for a containment access facility, a warehouse, renovation and expansion of the old steam generator storage facility and a new steam generator storage facility. In addition, they will purchase new equipment, including the steam generator, valued at \$429.4 million. These investments will generate approximately \$2.4 million in additional property taxes in the county on an on-going basis (Figure 8).<sup>3</sup>

**FIGURE 8**  
**LOCAL AND STATE REVENUE IMPACTS**  
**DAVIS-BESSE NUCLEAR POWER STATION**

|   | Local Taxes        |                  |                |                    | State Taxes        |                    | Local &<br>State Total |
|---|--------------------|------------------|----------------|--------------------|--------------------|--------------------|------------------------|
|   | Property           | Sales            | Lodging*       | Income             | Sales              | Income             |                        |
| Direct Revenues from New Capital Investment | \$2,439,563        | na               | na             | na                 | na                 | na                 | \$2,439,563            |
| Indirect (Employee-Driven) Revenues         |                    |                  |                |                    |                    |                    |                        |
| Regular Operations                          | \$1,390,494        | \$164,639        | \$0            | \$900,032          | \$736,048          | \$2,101,066        | \$5,292,279            |
| Steam Generator Placement & Refueling       |                    |                  |                |                    |                    |                    |                        |
| Local Contractors                           | na                 | \$387,591        | \$0            | \$891,013          | \$1,421,166        | \$4,834,283        | \$7,534,053            |
| Non-Local Contractors                       | na                 | \$17,686         | \$9,964        | \$0                | \$64,850           | \$0                | \$92,500               |
| <b>Total</b>                                | <b>\$3,830,057</b> | <b>\$569,916</b> | <b>\$9,964</b> | <b>\$1,791,045</b> | <b>\$2,222,064</b> | <b>\$6,935,350</b> | <b>\$15,358,395</b>    |

Note: Includes indirect revenues generated by Davis-Besse employees based on county of residence. Analysis assumes that 41 percent of Steam Generator Placement & Refueling employees are from the local area.

\*Includes city and county lodging taxes based on an average rate of 6 percent. Lodging stays for 30 days or more are exempt from tax.

### Indirect Revenues

Davis-Besse employees and contractors living in the local area also generate a significant amount of property, sales and income tax revenues. Indirect revenue impacts shown here are only for direct employees and contractors of Davis-Besse. There are additional indirect revenues generated by indirect employment supported by local supplier purchases and employee spending. Based on assessed value per capita in Ottawa County and average local property tax rates, the

<sup>3</sup> Public utility personal property is taxed at 24 percent of market value. For the purpose of this analysis, average depreciation of 50 percent is assumed. Real property is taxed at 35 percent of market value. A tax rate of 40.804 mills was used, consistent with the current tax rate at the Davis-Besse site.

direct employees at Davis-Besse could generate an estimated \$1.4 million in indirect property tax revenues this year.

Based on employee and contractor payroll at Davis-Besse, employees could also generate approximately \$552,000 in local sales tax revenues and \$2.2 million in state sales tax revenues this year. This estimate assumes that local employees spend approximately 29 percent of their wages on goods that are subject to sales tax, based on data from the Census Annual Consumer Expenditure Survey. Applying this assumption to personal income of employees, and applying a local sales tax rate based on the distribution of employees by place of residence, yields local sales tax revenues from employee spending.

In terms of state and local income tax, Davis-Besse employees and local contractors could generate approximately \$1.8 million in local taxes and \$6.9 million in state taxes this year. Income taxes are based on average income per employee of \$95,000 less a \$1,600 deduction, times the appropriate state, city or school tax rate. City and school tax rates are based on employee residence by zip code.

In addition, the non-local contractors generate a significant amount of revenues this year as a result of their visitor expenditures. This includes \$18,000 in local sales tax and \$65,000 in state sales taxes on hotel, restaurant, retail and car rental expenditures. In addition, they could generate about \$10,000 in local lodging taxes from an estimated \$166,000 in hotel expenditures based on an average county and local lodging tax rate of 6 percent. Note that this total excludes stays of more than 30 days which are exempt from lodging tax.<sup>4</sup>

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<sup>4</sup> Stays over 30 days are estimated at 18 percent of total room nights based on projected staffing patterns for non-local contractors.

## 5.0 Summary

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Davis-Besse is a significant contributor to the region's economy. It provides a clean, long-term source of power. It also provides high quality jobs to thousands of workers and supports the local economy with millions of dollars each year in vendor purchases. The steam generator replacement and refueling project generated significant one-time impacts over the last six months in terms of additional jobs, payroll, spending and taxes that will more than double the plant's annual impact this year. In addition, the capital investments associated with this project will result in long term impacts in the form of additional property tax revenues to local governments.

**ATTACHMENT 1**  
**DAVIS-BESSE INPUT DATA**

| On-Going Operations    |                          | Steam Generator Placement & Refueling Project |  |                                 |                        |
|------------------------|--------------------------|---|--|---------------------------------|------------------------|
| 2013 Regular Employees | 2013 Payroll (millions)* | Skilled Trade Contractors (60% local)         | Mgmt, Eng, Technical Contractors (20% local) | Oct-April Labor Cost (millions) | Non-Local Person-Weeks |
| 689                    | \$64.70                  | 1,190   | 1,100  | \$219.40                        | 2,737                  |

\* Excludes benefits and loadings.

| Property Improvements and Equipment                | Cost (millions) |
|--|-----------------|
| Containment access facility                        | \$16.40         |
| New warehouse                                      | \$1.30          |
| Old steam generator storage facility (renovations) | \$3.70          |
| New steam generator storage facility               | \$2.20          |
| Steam generators, associated equipment & refueling | \$429.40        |



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Summary: Testimony (Direct) of Sarah Murley electronically filed by Ms. Tamera J Singleton on behalf of Ohio Edison Company and The Cleveland Electric Illuminating Company and The Toledo Edison Company