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DEO EXHIBIT 5.0

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of The East Ohio Gas Company d/b/a Dominion East Ohio for Approval of Tariffs to Recover Certain Costs Associated with a Pipeline Infrastructure Replacement Program Through an Automatic Adjustment Clause, And for Certain Accounting Treatment.	)	Case No. 08-169-GA-ALT

DIRECT TESTIMONY OF JOHN E. KLEINHENZ ON BEHALF OF THE EAST OHIO GAS COMPANY d/b/a DOMINION EAST OHIO IN SUPPORT OF MOTION TO MODIFY ORDER APPROVING ALTERNATIVE RATE PLAN

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1 **I. INTRODUCTION**

2 **Q1. Please introduce yourself.**

3 A1. My name is John E. Kleinhenz. I am the principal and chief economist of Kleinhenz &
4 Associates. My business address is 2602 Berkshire Road, Cleveland Heights, Ohio 44106.

5 **Q2. Please describe your educational background and work experience.**

6 A2. I graduated from the John Carroll University with an A.B. in Economics in 1974, and
7 from the University of Notre Dame with an M.A. and Ph.D. in Economics in 1979 and 1980,
8 respectively. I have also completed post-graduate programs at Case Western's Reserve
9 University's Weatherhead School of Management and Carnegie Mellon University.
10 Professionally, I have over 30 years of experience working with Fortune 500 companies,
11 financial service organizations, regulators, universities, chambers of commerce, and state and
12 local government agencies. Through my practice, I currently serve as the chief economist for the
13 National Retail Federation located in Washington, D.C. In addition to my consulting work, I
14 teach economics at the Weatherhead School of Management as an adjunct professor.

15 Prior to establishing my economic and financial consulting practice, I worked for the
16 Federal Reserve Bank of Cleveland from 1983 to 1995 and with the Federal Home Loan Bank of
17 Pittsburgh from 1980 to 1983. I also served as the chief economist and consultant to the Greater
18 Cleveland Growth Association, the nation's largest chamber of commerce for 7 years. From
19 2000 through 2010, I was recognized each year by the Federal Reserve Bank of Chicago for
20 forecasting excellence. In 2008, I was also awarded the title of Fellow by the National
21 Association for Business Economists ("NABE"). I am currently a member of the Governor of
22 Ohio's Council of Economic Advisors and the Northeast Ohio Council of Economic Policy
23 Advisors.

1 **Q3. What is the purpose of your testimony?**

2 A3. My testimony discusses the Kleinhenz & Associates' Economic Impacts of the Dominion
3 East Ohio Pipeline Infrastructure Replacement Program report ("Economic Impacts Study").
4 The Economic Impacts Study is attached to my testimony as DEO Exhibit 5.1.

5 **II. ECONOMICS IMPACTS STUDY**

6 **Q4. Please describe the Economic Impacts Study.**

7 A4. The East Ohio Gas Company d/b/a Dominion East Ohio ("DEO" or the "Company")
8 engaged me to determine the capital expenditure and labor cost impacts of the Pipeline
9 Infrastructure Replacement ("PIR") Program on the State of Ohio and Northeast Ohio. After
10 analyzing data with the support of the research department of Team NEO, and applying an input-
11 output model developed by Regional Economic Models, Inc. ("REMI"), I, along with my
12 colleague Russ Smith, Ph.D., determined the estimated economic impacts of the PIR Program.

13 **Q5. What is the REMI input-output model?**

14 A5. The REMI model is the preeminent model of its type and is widely recognized to be at
15 the forefront of modeling with clients throughout North America. The "NEO REMI" model used
16 in the study was custom designed to measure economic impacts in Ohio and the greater
17 Northeastern Ohio regional economy. The REMI model, in this study, combined county data to
18 create two regions of analysis: Northeast Ohio region and the State of Ohio. Data used in my
19 study encompassed the period 2009 through 2033.

20 **Q6. What does your Economic Impacts Study conclude?**

21 A6. At the time my study was performed, I concluded that DEO's PIR Program will create or
22 support 3,032 jobs in Ohio, with 1,504 jobs added statewide in the first year. The PIR Program
23 will also increase sales across Ohio by $176 million, with $72 million generated directly from

1 DEO and $104 million generated from indirect, ripple effects. Over the project lifetime, DEO's
2 $2.66 billion investment will result in $7.7 billion in sales and $3.4 billion in personal income.
3 The Gross Regional Product, an economic measure of the value of labor, profits, and rent added
4 to a final product or service, will total $4.4 billion. Analytically, this means that a significant
5 portion of the $7.7 billion in sales directly benefits Ohio's labor, profit and rents. Additionally,
6 the project will generate $253 million in estimated state tax revenues over the lifetime of the
7 project. Finally, Northeast Ohio is expected to receive 75% of the economic benefits generated
8 by the PIR Program.

9 **Q7. Does this conclude your testimony?**

10 A7. Yes.

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing Direct Testimony of John E. Kleinhenz was served by U.S. Mail to the following on this 31st day of March, 2011:

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860-013/277494

EXHIBIT

DEO EXHIBIT 5.1

Economic Impacts of the Dominion East Ohio Pipeline Infrastructure Replacement Program

July, 2008

A study conducted by
Kleinhenz & Associates

KLEINHENZ
& Associates

Prepared for

Dominion East Ohio

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Executive Summary

Dominion East Ohio has proposed undertaking a 25 year, $2.6 billion Pipeline Infrastructure Replacement ("PIR") program.[1] The natural gas utility company provides service to approximately 1.2 million customers in Ohio. Dominion East Ohio has identified 4,122 miles of pipeline to be replaced to ensure a continuation of safe and reliable service in the future.

Dominion East Ohio engaged Kleinhenz & Associates to examine capital expenditure and labor cost impacts of the Pipeline Infrastructure Replacement program on the State of Ohio economy and particularly Northeast Ohio. With the support of the research department of Team NEO, an input-output model developed by Regional Economic Models, Inc. (REMI) was employed to estimate economic impacts.

Approximately $4.4 billion in payments to labor, rent and profits will be generated specifically as Gross Regional Product in Ohio based on the project's lifetime expenditures of $2.6 billion. The project is expected to create or support as many as 3,032 jobs over the duration of the program. The number of jobs initially begins with 1,500 in the first year of the project and peaks at 3,032 jobs in 2033. Personal Income in Ohio will benefit from an additional $3.4 billion over the same period. Output, or sales will amount to $7.7 billion, some of which will inevitably leak from the Ohio economy as some goods and services are purchased from out of state. Annual sales will range from $176 million in the first year to $458 million in the project's last year and take into account total economic spin-off activity within the state, including direct, indirect and induced expenditures.

Within Ohio, the key industries of Construction, Plastics Products, Primary Metals and Retail will be among the most affected by the initial and spin-off economic activity due to the Pipeline Infrastructure Replacement Program. The Northeast Ohio region will account for approximately 75 percent of all the benefits that accrue to the state.

State and local government revenues will increase by a total of $321 million over the 25-year project life. Local government wage taxes will amount to $68 million and state government revenues based on income, CAT and sales taxes will amount to $253 million. Dominion East Ohio estimates property taxes in the first year will be $800,000 and grow to $29 million per year by the end of the program.[2]

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[1] Dominion East Ohio PIR Application PUCO Case No. 08-169 GA-UNC.

[2] Estimates provided by Dominion East Ohio Gas.

Preface

The Dominion East Ohio Company commissioned Kleinhenz & Associates of Cleveland, Ohio to analyze, study and report on the economic impacts of the Dominion East Ohio Pipeline Infrastructure Replacement Program on the State of Ohio. This report was prepared jointly by Jack Kleinhenz, Ph.D. and Russ Smith, Ph.D. of Kleinhenz & Associates, and Jim Robey, Ph.D. and the research department at Team NEO. We would like to thank the Dominion East Ohio project review committee for its overall project guidance, comments and support.

Background

Dominion East Ohio has proposed undertaking a 25 year, $2.6 billion Pipeline Infrastructure Replacement ("PIR") program. The natural gas utility company provides service to approximately 1.2 million customers in northeast, western and southeast Ohio. It has over 21,000 miles of distribution, transmission and gathering pipelines. Sixteen percent of these lines were installed before 1940; another twelve percent are noncathodically- protected bare-steel pipelines installed after 1940. The company also has over 110 miles of cast- and wrought-iron pipeline in its distribution system.

In order to provide the necessary and adequate service and facilities, natural gas companies are required to install, maintain and eventually replace pipelines and related infrastructure used to distribute natural gas to customers. While Dominion East Ohio's pipeline system presently provides safe and reliable service, the company has determined that a prioritized and methodical replacement of bare-steel, cast-iron, wrought-iron and copper pipelines is necessary to ensure a continuation of safe, reliable and adequate service in the future.

Dominion East Ohio has identified 4,122 miles of bare-steel, cast-iron, wrought-iron and copper pipeline that should be replaced in a prioritized manner over the next 25 years. The vintage of that pipeline is summarized in the table below:

Table 1. Existing Pipeline Vintage

Decade of Installation	Percent of the Pipeline To be Replaced
Pre-1909	7%
1910-1919	5%
1920-1929	17%
1930-1939	8%
1940-1949	24%
1950-1959	39%
1960-1969	1%

Source: Dominion East Ohio

Dominion East Ohio's comprehensive PIR program will incorporate the replacement of 4,122 miles of aging pipeline infrastructure and the replacement of all bare steel curb-to-meter service lines. The company would also assume responsibility and ownership of new service lines as well as existing service lines on which the company performs work.

To address its infrastructure needs, the company plans to replace approximately 4,008 miles of bare-steel pipe, 35 miles of cast-iron pipe, 78 miles of wrought-iron pipe and 1 mile of copper pipe. Because Dominion East Ohio's distribution system includes some

areas with mainline on both sides of the street that can be replaced with a single mainline, the net mileage estimated for this portion of the PIR program is approximately 3,567 miles. The program will also entail replacement of approximately 515,000 main-to-curb connections to which curb-to-meter service lines are connected. Miles of pipeline to be replaced were estimated across the 29 counties, with Cuyahoga County requiring 32 percent of all miles.

Table 2. Geographic Distribution of Pipeline Replacement

County	Miles	Percent
Allen	245.5	6.9%
Ashland	7.4	0.2%
Ashtabula	59.0	1.7%
Auglaize	40.0	1.1%
Belmont	11.0	0.3%
Columbiana	10.8	0.3%
Cuyahoga	1,139.6	31.9%
Erie	0.0	0.0%
Geauga	0.6	0.0%
Hancock	0.8	0.0%
Hardin	35.6	1.0%
Harrison	0.0	0.0%
Holmes	0.3	0.0%
Knox	7.2	0.2%
Lake	83.9	2.4%
Mahoning	316.4	8.9%
Medina	22.9	0.6%
Mercer	49.9	1.4%
Monroe	45.5	1.3%
Paulding	4.1	0.1%
Portage	44.7	1.3%
Putnam	55.4	1.6%
Stark	371.4	10.4%
Summit	503.2	14.1%
Trumbull	193.0	5.4%
Tuscarawas	83.7	2.3%
Van Wert	54.8	1.5%
Washington	130.9	3.7%
Wayne	49.4	1.4%
Total	3,567	100.0%

Source: Dominion East Ohio

Due to the magnitude of the program, Dominion East Ohio proposes to replace those portions of its system over a 25-year period. In 2007 dollars, Dominion East Ohio estimates that the pipeline replacement portion would cost approximately

$1,656,000,000. The main-curb portion of the service line is expected to cost approximately $490,000,000. Dominion East Ohio estimates that the replacement cost of service lines directly associated with the bare-steel and cast- and wrought-iron pipeline infrastructure will be $516,000,000 in 2007 dollars. Total cost over the 25 year project will be $2.6 billion. Management expects the first year's expenditures to be approximately $72 million. Specific expenditure details are offered in the Assumptions Section.

Under the PIR program, Dominion East Ohio is allowed to recover certain expenses. The Public Utility Commission of Ohio allows these recoveries but on behalf of ratepayers, requires minimal and gradual rate increases. Dominion East Ohio determined that a five percent increase after the first year, followed by annual three percent increases in expenditures, would provide the gradualism preferred by PUCO and would cover the costs of the replacement program.

Economic Impact of the Pipeline Replacement Project

Dominion East Ohio engaged Kleinhenz & Associates to examine capital expenditure and labor cost impacts of the Pipeline Infrastructure Replacement ("PIR") program on the State of Ohio economy and particularly Northeast Ohio, where Dominion has its largest gas distribution operations serving more than 1.2 million residential, commercial and industrial customers. Kleinhenz & Associates, with the support of the research department of Team NEO, used an input-output model developed by Regional Economic Models, Inc. (REMI) to estimate the capital expenditure and labor cost impacts of a pipeline replacement.[3] The REMI model is considered the preeminent model of its type and is widely recognized to be at the forefront of modeling with clients throughout North America. The "NEO REMI" model has been custom designed and tailored to the Ohio and greater NEO regional economy based on unique specifications. The economic model represents the major inter-industry linkages among private industries aggregated into 70 major industrial sectors including three public sectors (state and local, federal and military). The model combines county data to create regions, or spatial units of analysis. In this study, the analysis and its impacts are estimated for combined regions that include the 13-county Northeast Ohio region [4] and the State of Ohio.

Fundamentally, capital and labor expenditures of the Pipeline Infrastructure and Replacement Program will have three economic effects:

- **Direct Economic Impacts** are those changes in the flow of dollars that result directly from the initial capital spending for land acquisition, equipment, construction of facilities, engineering and design and all system components.
- **Indirect Economic Impacts** are investment or spending by suppliers whose goods and services are used in the project.
- **Induced Economic Impacts** result as household income changes (created by direct and indirect effects on wages) lead to further effect on consumer spending throughout the regional economies.

The total estimated economic impact as reported within this document is therefore the sum of the direct, indirect and induced economic effects of the investment in the study areas of Northeast Ohio and the entire state. We provide the total change in economic output, employment, personal income and local and state revenue generated by successive rounds of spending by businesses and households associated with this project.

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[3] The Northeast Ohio REMI Model was used in this analysis and includes all Ohio counties. The model has its own base forecast and requires individual inputs of economic activity. See Appendix for more detail.

[4] The Northeast Ohio region includes Ashtabula, Columbiana, Cuyahoga, Geauga, Lorain, Lake, Mahoning, Medina, Portage, Stark, Summit, Trumbull, and Wayne counties.

The annual expenditures to be made over the 25 year life of the project serve as inputs into the NEO REMI model. Expenditures are broken down by labor costs and materials costs for each county. The model then estimates, on a year-by-year basis, the impact of the pipeline replacement project on employment and business output, for each of 70 industry categories. The model also forecasts other variables such as personal income, population, wage rates and gross regional product (value added) at a similar detailed level.

The inputs to the REMI model (wages and spending of the pipeline replacement program) are modeled as increases in the flow of income and business sales in the region's economy.[5] The resulting business expansion leads to an increase in demand for labor. That in turn tends to drive up wages, which then attracts more people to live in the region (thus expanding the population and labor supply). The additional population further increases spending in the region and continues the cycle of growth. The factor which constrains this cycle is that it also pushes up costs of living and costs of doing business (which are estimated in the model's wage & price block, and then affect the model's projection of the region's market shares). This cycle continues until spending eventually leaks out of the region as a result of taxes, savings or purchase of goods or services from outside the state.

A baseline projection of the Ohio economy is imbedded in the model and serves as the baseline forecast that is used to estimate the impacts of economic change or shock. The baseline forecast establishes economic and labor conditions based on a series of assumptions and how they are affected by trends forecasted at the national level. The national trends are reflected in the baseline based on the states industry mix and competitive conditions. For purposes of this study, all impacts are compared to the baseline forecast. This underlying feature is what makes the model a dynamic model meaning that it is able to show how the Ohio economy will react over time.

[5] As discussed above, the expenditures made by Dominion East Ohio Gas are recoverable via slight rate increases to end-users. Alternative end-user expenditure patterns are not modeled.

Measuring Economic Impacts: Indicators

Economic impacts are reported for five elements:

1. Employment changes
2. Change in gross regional product (GRP)
3. Changes to income
4. Output
5. Taxes

- Employment: A Bureau of Economic Analysis (BEA) concept based on place of work including full-time and part-time employees, as well as seasonal employees. It is important to note that these jobs are simply "jobs" as they are counted and are not necessarily either full- or part-time positions. These jobs are distributed across a number of industries and so, in any given industry, a "job" may represent a summation of positions across a number of industries in which each industry has less than one complete or full-time-equivalent (FTE) position.

- Gross Regional Product (GRP): An economic measure of the value-added that labor contributes to the final product or service. This measure is used more often than output as it does not include the value of "intermediate goods" or inputs into estimating the economic impact. For example, if a $25,000 auto is comprised of $15,000 in parts (intermediate goods) and $10,000 in labor to assemble the parts into a complete car, then the $10,000 in GRP is what the state uses to measure its input or contribution into the value of the vehicle (output).

- Personal Income: This measure consists of total increases in payroll costs paid by local industries, plus income from self-employment, other property income and transfer payments.

- Output: This indicator is also estimated by the model as a measure of economic impact. Output is analogous to sales and is a measure of the total value of both the inputs to labor as well as the value of inputs from materials.

- Taxes: We measure the impact of "PIR" on the regional pool of income. This is measured as the impact to total income from both residents and commuters generated from this capital investment program. The income statistic is likely to be over estimated as it includes wages by place of residence as well as by place of work. In Ohio, wages taxes may be collected by place of residence and place of work, although most communities offer a credit to residents for taxes paid at the municipal-based place of work. This study does not attempt to estimate or control for these credits, but merely combines total earnings for residents and commuters. For purposes in this study and ease of use, 2 percent is used as the rate for all local taxes.

Across the state, the average annual wage is slightly below $40,000, which creates an average tax rate (ATR) of about 2.88 percent. The average is used to create efficiencies in estimating potential state income tax impacts. It is acknowledged that some workers (such as those in the construction and professional services industries) will earn more than the average annual salary and so pay a higher ATR, while others impacted by the projects will earn less than the average salary (such as service workers) and so pay a lower ATR.

Based on a REMI modeling methodology developed for an Ohio Department of Development study (2005) of its Commercial Activities Tax (CAT), the calculated output (or sales) by industry generated by the model is first discounted by the exempted amount of sales, and then, that product is multiplied by full CAT tax rate of .0026 effective in 2010. [6] The second application of the CAT tax is calculated based on the imports of goods and services from the rest of the United States into Ohio. These imports are also taxable under the CAT tax.

REMI also developed a methodology to estimate sales taxes for both business to business (B2B) transactions and for consumer transactions. For B2B transactions, REMI identified sales-tax exempt buying and selling industries. These industries are excluded from total B2B output (sales), with the residual or taxable amount of output taxed at the current state sales tax rate of 0.055[7].

REMI also computed estimates of consumer spending by Ohio households and sales taxes. There are 13 areas of consumption[8] identified and a "percent taxable" for each consumption category. Thus, to estimate taxable sales, the taxable share by output is multiplied by consumption. Taxable sales are then multiplied by 5.5 percent to estimate state revenues from the personal consumption-based sales tax.

---

[6] REMI study, "The Dynamic Economic and Fiscal Impact of the Ohio Administration's Proposed Changes to the Commercial Activity Tax, Corporate Franchise Tax, Personal Income Tax, Tangible Personal Property Tax, and Sales Tax, 2005," Prepared for Ohio Department of Development and the State of Ohio pp 75-76.

[7] This was done using the national input-out output table to estimate taxable share of industry output. The share of applicable industry output was multiplied by dollar output for those industries. A rate of 5.5 percent was then applied to share of output to estimate total B2B sales tax.

[8] These include vehicles & parts, computers & furniture, other durables, food & beverages, clothing & shoes, gasoline and oil, fuel oil & coal, other non-durables, housing, household operation, transportation, medical care and other services.

Methods and Assumptions

Expenditures data on the Pipeline Infrastructure Replacement program was supplied to Kleinhenz & Associates by Dominion East Ohio. These expenditures are projected over a 25 year period and calculated in current 2007 dollars. These estimates are not adjusted for inflation expectations since the model makes these adjustments internally. Thus, expected changes in annual inputs are estimates for real changes in investment rather than changes due to forecast rates of inflation.

For modeling purposes, it was determined that the activity of pipe replacement was similar to construction activities rather than those of a utility. Wages per worker as well as intermediate inputs and job functions/occupations were used to make this determination.

The REMI model includes 8 discrete Ohio regions comprised of selected counties. Seven of the eight regions approximate the Dominion East Ohio service delivery area. [9] Each region has individual costs of goods, services and labor. The expenditures were apportioned based on the geographic distribution of miles of pipeline replacement. By breaking out these expenditures, it allows the model to account for the relative value of regional costs and expenditures.

The table below indicates major categories of spending that were used as inputs into the model. The table is used to allocate annual expenditures into intermediate goods as well as labor.

Table 3. Expenditure Breakdowns

Estimated Breakdown in Costs	Percent
Materials	36%
Dominion Labor	25%
Contractor Labor	35%
Fleet/Equipment	2%
Other	2%
Total	100%

Source: Dominion East Ohio

[9] The northeast Ohio impact results include the following counties; Cuyahoga, Lake, Geauga, Ashtabula, Medina, Wayne, Summit, Portage, Stark, Mahoning, Trumbull and Columbiana. Due to configurations within the REMI model, these results also are affected by activities in Loraln and Carroll counties. The results for northeast Ohio do not include the following counties serviced by Dominion East Ohio; Allen, Ashland, Auglaize, Belmont, Erie, Hancock, Hardin, Harrison, Holmes, Knox, Mercer, Monroe, Paulding, Putnam, Tuscarawas, Van Wert and Washington.

Materials expenditures were allocated based on number of pipeline miles to two types of pipe and associated industries -- plastics and primary metals. Table 4 shows the percentage of estimated costs for steel and plastics materials. The distribution of spending from labor and materials, including the share of plastic and steel pipe was maintained through all 25 years of the project.

Table 4. Material Expenditure Breakdowns

Estimated Materials Costs	Percent
Materials (Plastic)	89%
Materials (Steel)	11%

The share of total expenditures for each year for each REMI region was determined by aggregating county revenue miles within each REMI-designated region and determining that regions share of the whole (Table 2, page 4).

"Fleet/equipment" expenditures were classified as inputs in the Transportation Equipment industry. Similarly the "other" expenditure category was used as an input into the Construction industry.

The final set of input adjustments, included combing Dominion and outside contractor labor into a single labor input. Compensation (wages and benefits) of $50,000 per worker per year was used to calculate the average number of jobs associated with the pipeline replacement. Based on $50,000 per job, and $42.7 million in labor costs for the first year, this equates to 850 direct full-time-equivalent jobs. As noted previously, the NEO REMI model for Ohio is segmented into eight regions and an adjustment was made in compensation component to reflect the higher wage Dominion East Ohio workers will receive relative to average annual compensation per worker internal to the model.

Annual inputs and "job equivalents" are used as inputs to drive or shock the model. The input amounts change slightly each year. [10]

Table 5. Highlights of Inputs or Shocks to the Model

	2009		2033	Project Life
Direct Jobs	850	→	1,584	1,584
Dominion Expenditures	$72,499,750	→	$135,180,000	$2,661,321,636

[10] See Appendix

Results

In the following tables, estimates for the various measures from each of the simulations are analyzed and reported as differences from the control forecast. Reported impact estimates are presented in 2007 dollars (2007$).

Economic Impact Results – Ohio

Over the 25 year period of investment, Dominion East Ohio will spend over $2.6 billion (2007$). These expenditures will result in 3,032 jobs being created in Ohio. It is estimated that Output (sales) of $7.7 billion and Personal Income of $3.4 billion (Table 6) will be generated across Ohio. Gross Regional Product, which is the combination of personal income, profits and other non-materials expense, amounts to $4.4 billion.

Table 6. Summary Economic Impacts on Ohio of Dominion East Ohio Gas Expenditures

East Ohio Gas Expenditures	*$2,661,321,636*
Measure	Economic Impacts
Employment	3,032
Output	$7,724,994,774
Gross Regional Product	$4,433,198,911
Personal Income	$3,405,205,085

In the first year, the project adds 1,504 in jobs statewide and increases to 3,032 in the later years. The jobs should not be considered as jobs created annually, rather as jobs that carryover from one year to the next. In the first year, Dominion will spend $72 million on pipeline replacement. This will result in output, or sales, across Ohio of $176 million ($72 million directly from Dominion and an additional $104 million from induced and indirect, ripple effects). Over the 25 year project lifetime, the $2.66 billion that Dominion invests is estimated to result in a combined total of over $7.7 billion in sales at the state level.

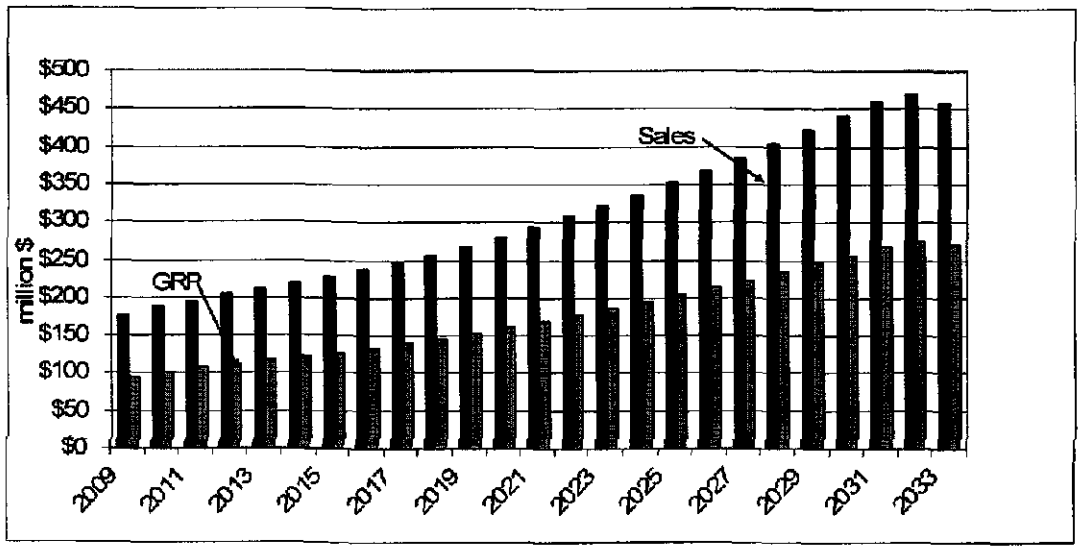
Table 7. Annual and Project Life Economic Impacts, Ohio

	2009	2010		2033	Project Life
East Ohio Gas Expenditures	*$72,499,750*	*$76,000,000*	→	*$135,180,000*	*$2,661,321,636*
Economic Impacts					
Employment	1,504	1,614	→	3,032	3,032
Output	$176,000,348	$188,399,826		$458,178,746	$7,724,994,774
Gross Regional Product	$93,664,220	$101,599,008		$269,349,350	$4,433,198,911
Personal Income	$62,682,872	$71,786,449	→	$209,382,296	$3,405,205,085

*All units are in 2007 dollars with the exception of employment

Gross Regional Product is an economic measure of the value-added that labor, profits and rent contributes to the final product or service. It does not include the value of "intermediate goods" or inputs into estimating the economic impact. Results show an estimated Gross Regional Product of $4.4 billion for Ohio. This implies that a very large portion of the $7.7 billion in sales (output) amounting to $4.4 billion (57 percent) will go directly to the benefit of Ohio labor, profit and rents. Annual impacts vary based upon the level of Dominion's investment.

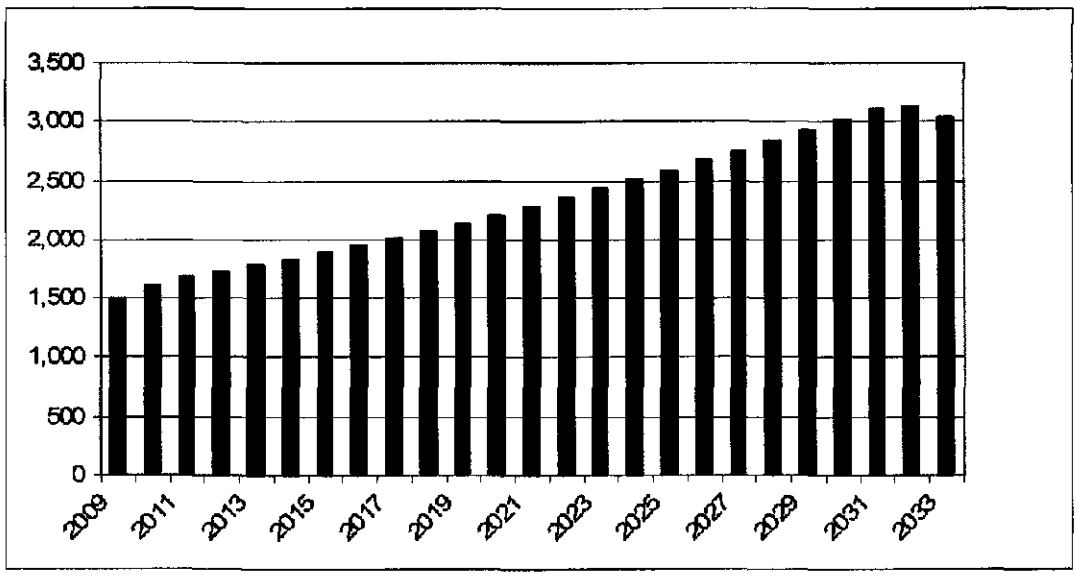
Figure 1. Ohio Additional Sales (Output) and Gross Regional Product



In year 1 of the project, 2009, the Dominion East Ohio and its contractors are projected to employ 850 workers. Based upon the initial 850 jobs directly created by Dominion and its contractors, an additional 654 spinoff job-equivalents will be created for a total of 1,504 jobs in 2009 Job equivalents have a unique definition and are not to be confused with the more budget-oriented measure of "full-time equivalents." A definition of job equivalent is provided by REMI, the firm providing the model employed in this analysis: "REMI and all other input-output models employ job estimates by economic sector published by the US Department of Commerce, Bureau of Economic Analysis. These job estimates are defined as any job; full or part time, highly paid or poorly paid. Job estimates are not additive since one person could hold two or more part-time jobs, each job being counted as "one" by the Department of Commerce." Due to the definition of the underlying data, the results of the REMI model can only be described as "jobs" and not as "full-time equivalents."[11]

The employment multiplier is 1.8 (Table 8). This multiplier effect grows due to the ripple effect the Dominion expenditures have on the rest of the Ohio economy. By the last year, the employment multiplier will have risen to 1.9.

Figure 2. Ohio Additional Jobs



The output multiplier grows over time as the project continues. A series of initial sales, intermediate sales and final sales, reverberate throughout the economy and result in the initial multiplier of 2.4 growing to 3.4 by 2033 for a project lifetime average output multiplier of 2.9 (Table 8). Dominion will spend $2.66 billion over the life of the project and create a total of $7.7 billion in output or sales across the state of Ohio.

[11] REMI counts the number of jobs, not the number of employed people. Thus a person holding 2 jobs is counted twice towards employment. Also, commuters can bolster a region's jobs numbers although they will not be counted in the region's labor force.(REMI.com).

Dominion initially spends $43.5 million on labor and the Ohio personal income grows to $62.7 million for a multiplier of 1.4 in year 1. Over the course of the project, Dominion will spend $1.6 billion on labor, generating a total of $3.4 billion in personal income across Ohio for a personal income multiplier of 2.1.

Table 8. Multiplier Impacts

	2009 (Year 1)	Project Life
Employment	1.8	1.9
Output	2.4	2.9
Personal Income	1.4	2.1

Tax Revenue Results

Estimated state tax revenues will total $253 million over the lifetime of the project. This estimate includes state income tax of $98 million and business-to-business sales taxes of $67 million. Local wage tax revenues will amount to $68 million for a total public revenue increase of $321 million over the 25 year period (Table 9). In addition to the $321 million in public revenues, Dominion East Ohio will pay property taxes on the new, undepreciated pipeline. Dominion East Ohio estimates property taxes in the first year will be $800,000 and grow to $29 million per year by the end of the program.[12]

Table 9. Public Revenue Impacts Over Project Lifetime

Public Revenue Impacts	Sum
State Income Tax (2.88% ATR)	$98,069,906
CAT Self Supply	$11,331,823
CAT Imports	$4,921,077
Sales Business-to-Business	$67,099,958
Sales Consumer	$71,881,597
Total State Revenue Estimates	$253,304,361
Local Wage Tax (@2%)	$68,104,102
Total Public Revenue Estimates	$321,408,462

*ATR = Average Tax Rate

[12] Estimates provided by Dominion East Ohio Gas.

Industry Sector Impacts

Construction, Plastics Manufacturing and Retail Trade are among the most affected sectors of the Ohio economy due to the investments by Dominion East Ohio Gas. Table 10 shows additional detail on the total economic impacts in other industry sectors that are affected by the pipeline replacement program in Ohio. This table contains estimates of impacts to employment, gross regional product and output (sales). Nearly all of the 70 industry sectors reported in REMI are affected by the Pipeline Infrastructure Replacement Program.

Table 10. Most Affected Economic Sectors in Ohio, 2009

Sector	Employment	Gross Regional Product	Output
Construction	908	$43,358,382	$83,887,211
Retail Trade	107	$5,915,572	$8,570,535
Plastics, Rubber Prod Mfg	79	$12,365,748	$29,704,285
Food Services	68	$1,414,776	$2,781,390
Administrative, Support Services	32	$1,113,881	$1,639,937
Professional, Tech Services	29	$2,149,256	$3,040,264
Real Estate	28	$5,667,534	$7,748,159
Ambulatory Healthcare Services	19	$1,447,286	$2,052,931
Wholesale Trade	19	$3,265,424	$4,644,079
Monetary Authorities	14	$2,121,563	$3,708,520
Hospitals	13	$769,398	$1,422,001
Primary Metal Mfg	7	$1,207,677	$3,435,198
Truck Transp; Couriers, Msngrs	7	$552,305	$1,038,024
Mgmnt of Companies, Enterprises	6	$1,166,619	$1,873,525
Chemical Mfg	5	$1,301,594	$3,171,507
Motor Vehicle Mfg	3	$551,221	$2,030,054
Utilities	2	$705,582	$1,182,753

Figure 3. Most Affected Economic Sectors, Ohio, 2009: Employment

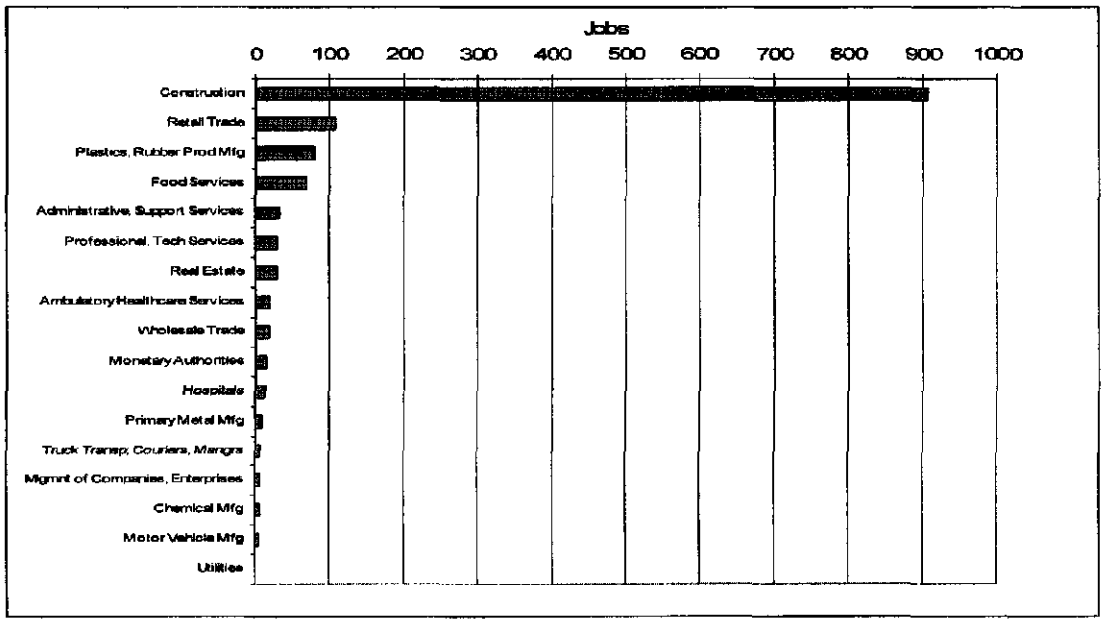


Figure 4. Most Affected Economic Sectors, Ohio, 2009: Gross Regional Product

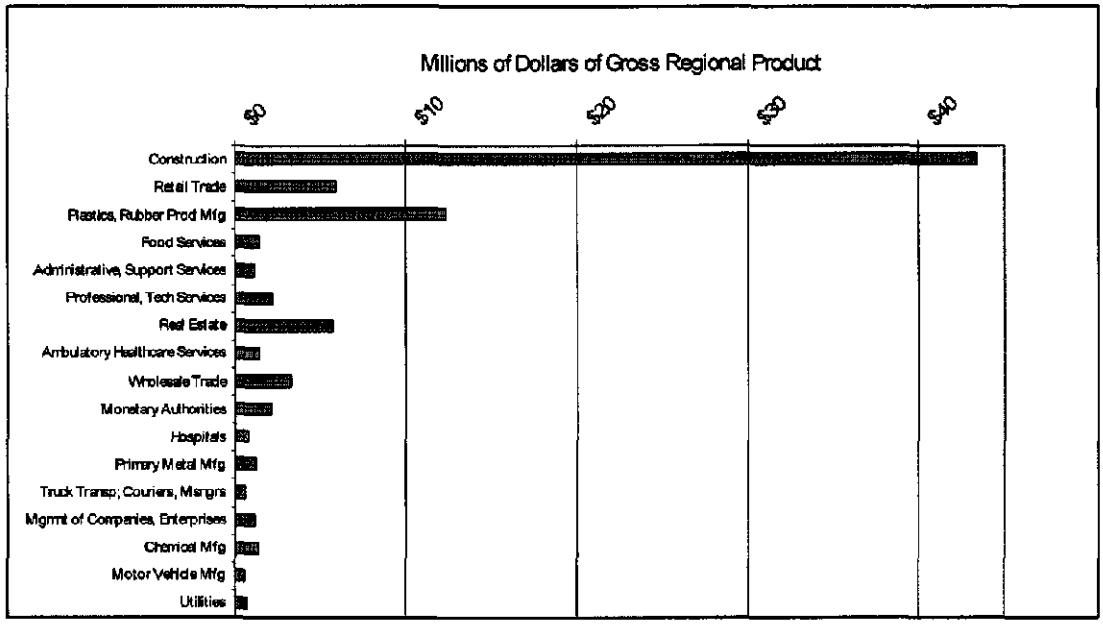
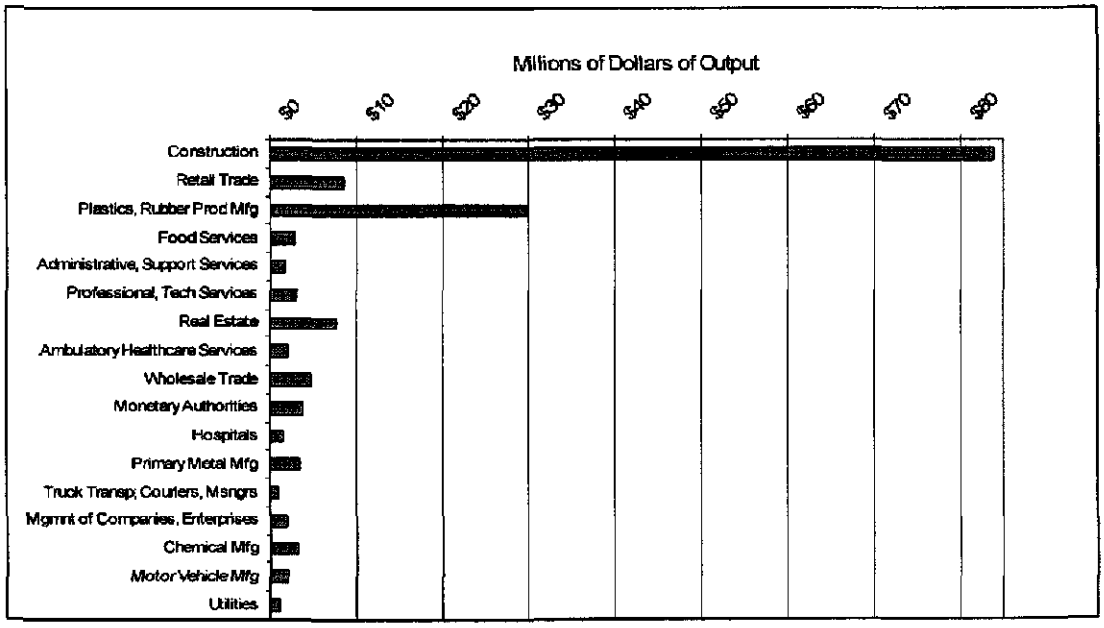
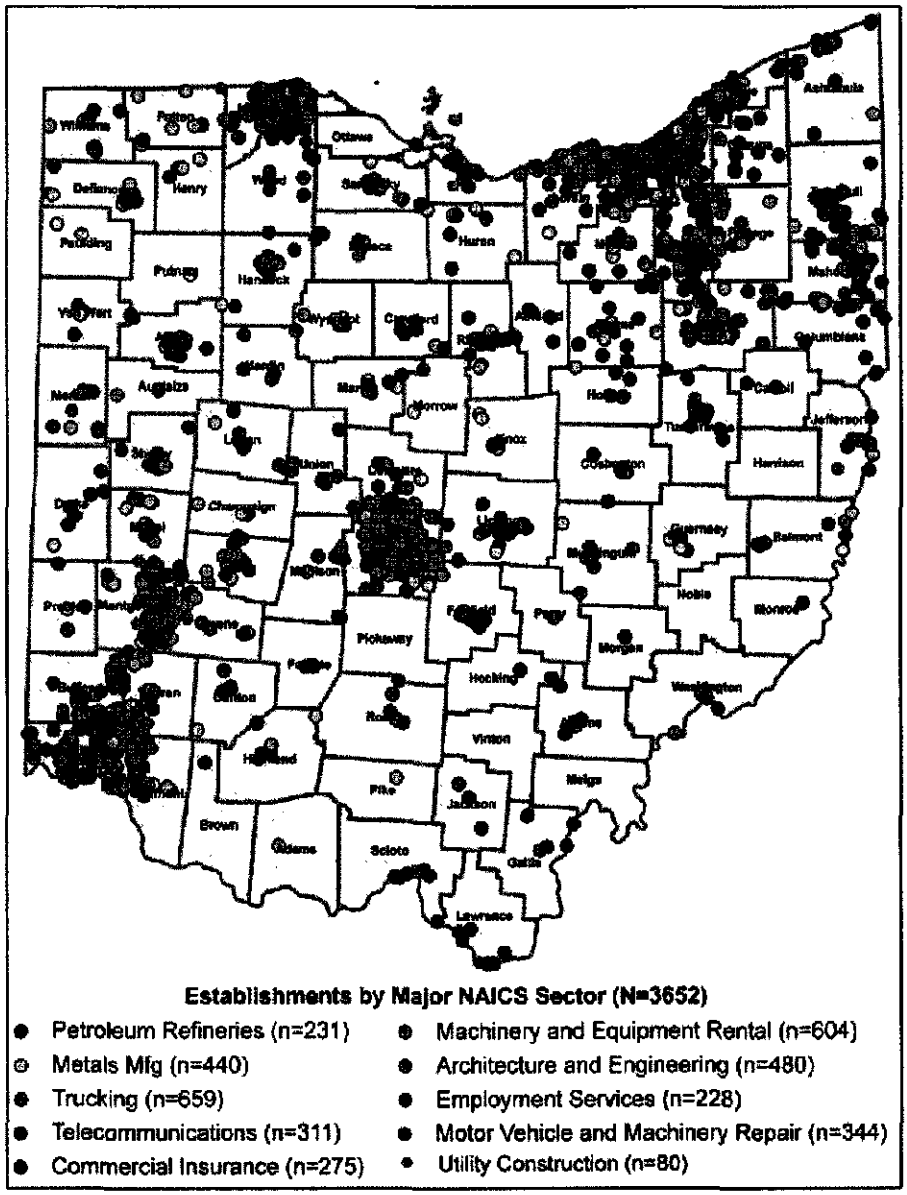


Figure 5. Most Affected Economic Sectors, Ohio, 2009: Output



Given Ohio's large manufacturing capacity, one could expect Ohio to self-supply for a large portion of the PIR program. Figure 6 shows the location of potential suppliers for pipeline replacement activity. Each of these 3,652 establishments employs more than 25 employees and falls within the NAICS codes of suppliers for Pipeline Construction.[13] Not all of the establishments mapped will be suppliers. Following figures offer locations for selected industries.

Figure 6. Location of Potential Suppliers Employing 25 or More Workers



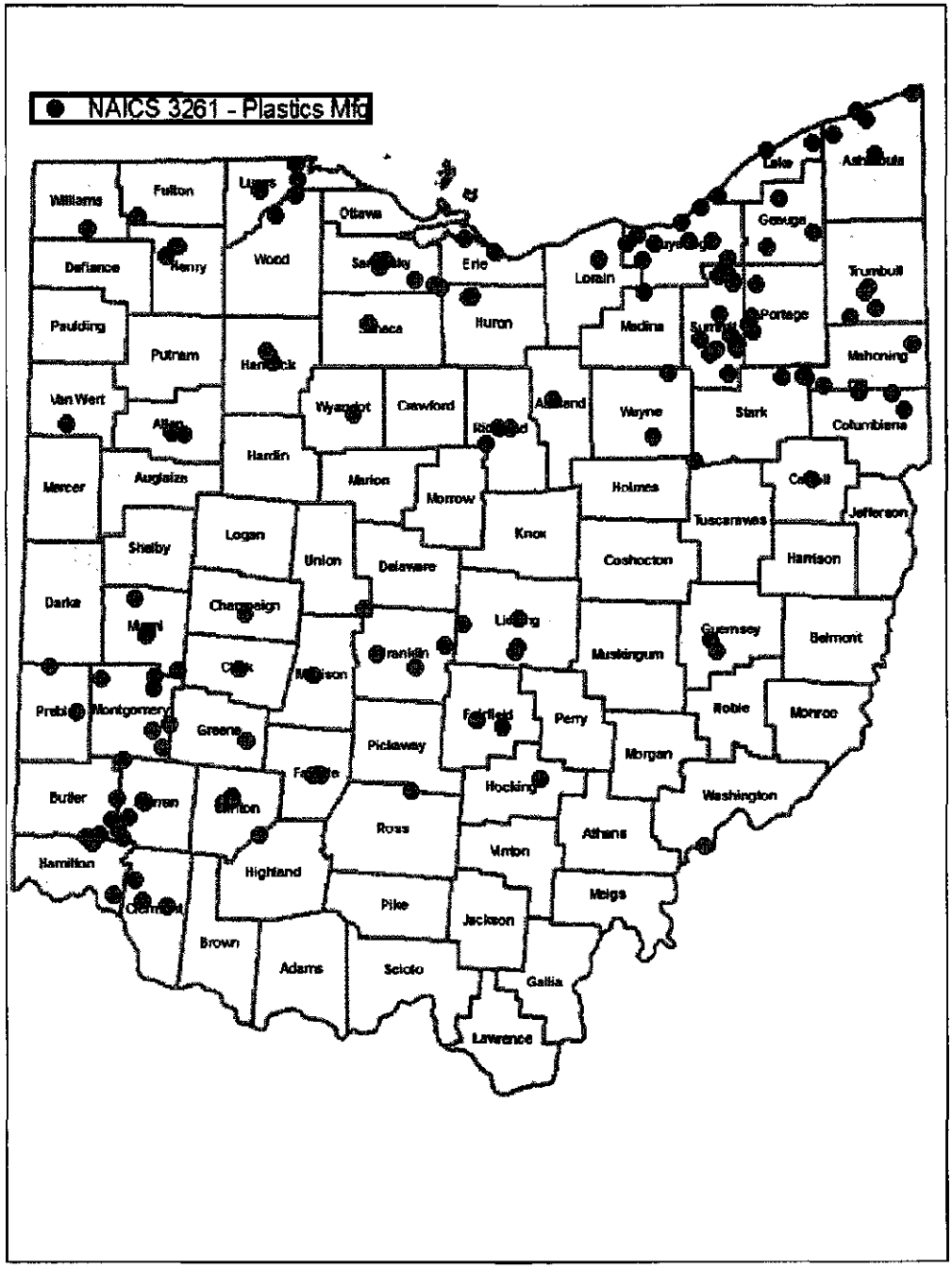
Source: Lexus-Nexis, Team NEO

[13] IMPLAN, 2007.

Figure 7. Location of Potential Construction Suppliers Employing 25 or More Workers

Source: Lexus-Nexis, Team NEO

Figure 8. Location of Potential Plastics Mfg Suppliers



Source: Lexus-Nexis, Team NEO

Figure 9. Location of Potential Primary Metals Suppliers

Source: Lexus-Nexis, Team NEO

Figure 10. Location of Potential Fabricated Metals Suppliers

Source: Lexus-Nexis, Team NEO

Economic Impact Results – Northeast Ohio

Northeast Ohio is expected to garner approximately 75 percent of the economic benefits to the state of Ohio (Table 11). Northeast Ohio counties are Cuyahoga, Lake, Geauga, Ashtabula, Medina, Wayne, Summit, Portage, Stark, Mahoning, Trumbull and Columbiana. The Dominion project will result in 2,322 jobs being created in Northeast Ohio along with $2.56 billion in personal income. Sales (output) will increase by $5.8 billion over the lifetime of the project.

Table 11. Results for Northeast Ohio

	Northeast Ohio	State of Ohio	NEO as % of Ohio
Economic Impacts			
Employment	2,322	3,032	77%
Gross Regional Product	$3,363,953,033	$4,433,198,911	76%
Personal Income	$2,561,014,941	$3,405,205,085	75%
Output	$5,884,214,111	$7,724,994,774	76%
Public Revenue Impacts			
State Income Tax (2.88% ATR)	$73,757,230	$98,069,906	75%
CAT Self Supply	$8,307,347	$11,331,823	73%
CAT Imports	$3,441,132	$4,921,077	70%
Sales B2B	$52,319,309	$67,099,958	78%
Sales Consumer	$54,314,049	$71,881,597	76%
Total State Revenue Estimates	$192,139,068	$253,304,361	76%
Local Wage Tax (@2%)	$51,220,299	$68,104,102	75%
Total Public Revenue Estimates	$243,359,366	$321,408,462	76%

Appendix

Notes on Computing Wages and Jobs as Model Inputs

The baseline estimate from the REMI model of pipeline replacement jobs for the State of Ohio approximates 850 FTE jobs per year. Using the Labor Market Information from the Division of Ohio Jobs and Family Services, Dominion East Ohio estimates and Census of Employment and Wages data, the average full labor cost of $50,000 per job equivalent was adopted.

Note on Model Outputs

A "job equivalent" measure is made due to the large degree of wage variation within the pipeline replacement industry as well as across counties within Ohio. A second factor to consider is that of part-time or fractional employment. These jobs are counted as "one job" by the U.S. Department of Commerce. Making this distinction is important since consumption expenditures of workers is a key driver of the model. For example, if the project were to result in a few, highly paid workers, they would spend their extremely large incomes on different purchases. The counter example is if the project results in many more typically paid workers spending their income and making more typical purchases. The REMI model was able to estimate job equivalents within several sub-regions of the greater Northeast Ohio region that was modeled. Note that while these jobs are not clearly designated as either full or part time, the *average* annual earnings per job, *including direct, indirect and induced jobs*, is nearly $42,000. This implies the jobs are well-paying.

While the state's average wage for the industry was applied to all regional components in the model, each region has different wage estimates and total wage bills. The total wage bill was used to re-estimate employment in each region based on dividing the wage bill for that region by the average wage for the state. Based on the marginal product of labor, which is tied to average wage within the model, each region had an estimate of output within the REMI model. Using employment, it was possible to estimate the output attributable to each worker.

The inputs to the REMI model (wages and spending of the pipeline replacement program) are modeled as increases in the flow of income and business sales in the region's economy.[14] The resulting business expansion leads to an increase in demand for labor. That in turn tends to drive up wages, which then attracts more people to live in the region (thus expanding the population and labor supply). The additional

[14] As discussed above, the expenditures made by Dominion East Ohio Gas are recoverable via slight rate increases to end-users. Alternative end-user expenditure patterns are not modeled.

population further increases spending in the region and continues the cycle of growth. The factor which constrains this cycle is that it also pushes up costs of living and costs of doing business (which are estimated in the model's wage & price block, and then affect the model's projection of the region's market shares). This cycle continues until spending eventually leaks out of the region as a result of taxes, savings or purchase of goods or services from outside the state.

Notes on Results

Estimates are reported in this form due to 2007 being the last full year for the provision of inflation estimates by the Bureau of Labor Statistics. While more current 2008 estimates are available, they are reported monthly and with energy and food costs highly volatile, more recent inflation estimates may reflect changes caused by volatility rather than core inflation increases. GRP, Output and revenue estimates are adjusted in this manner.

Income estimates are reported by REMI in nominal dollars. Income estimates were deflated using the PCE Index from REMI for future years. Using the REMI estimate for future inflation allows estimates reported in real dollars (GRP and Output) to be internally consistent with impacts reported in nominal dollars as their changes are both based on the same long run assumptions.

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Employment	1,504	1,614	1,676	1,732	1,785	1,839	1,892	1,949	2,009	2,071	2,138	2,204	2,277
Gross Regional Product	$93,664	$101,599	$106,933	$112,074	$117,035	$122,453	$127,751	$133,651	$140,033	$146,655	$153,518	$160,983	$168,810
Personal Income	$62,683	$71,786	$78,377	$84,260	$89,515	$94,713	$99,196	$104,085	$109,058	$114,109	$119,512	$125,092	$131,030
Local Wage Tax (@2%)	$1,254	$1,436	$1,568	$1,685	$1,790	$1,894	$1,984	$2,082	$2,181	$2,282	$2,390	$2,502	$2,621
State Income Tax (2.88% ATR)	$1,805	$2,067	$2,257	$2,427	$2,578	$2,728	$2,857	$2,998	$3,141	$3,286	$3,442	$3,603	$3,774
CAT Self Supply	$203	$226	$244	$260	$275	$291	$306	$323	$341	$361	$381	$403	$426
CAT Imports	$78	$89	$98	$107	$115	$123	$131	$140	$149	$158	$168	$177	$188
Sales B2B	$1,475	$1,604	$1,686	$1,769	$1,846	$1,930	$2,007	$2,093	$2,182	$2,274	$2,372	$2,473	$2,581
Sales Consumer	$1,227	$1,365	$1,489	$1,608	$1,724	$1,843	$1,960	$2,085	$2,214	$2,344	$2,477	$2,616	$2,759
Total State Revenue Estimates	$4,788	$5,352	$5,774	$6,170	$6,538	$6,914	$7,261	$7,639	$8,027	$8,422	$8,840	$9,272	$9,728
Total Public Revenue Estimates	$6,042	$6,768	$7,342	$7,855	$8,329	$8,808	$9,245	$9,721	$10,208	$10,705	$11,231	$11,774	$12,349
Output	$176,000	$188,400	$195,864	$203,327	$210,671	$218,616	$226,802	$235,072	$245,943	$256,657	$268,094	$280,252	$293,374

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Project Lifetime
Employment	2,352	2,426	2,505	2,585	2,669	2,753	2,840	2,927	3,016	3,113	3,128	3,032	3,032
Gross Regional Product	$177,238	$185,667	$194,697	$203,969	$213,962	$223,956	$234,552	$245,388	$256,707	$268,747	$273,804	$269,349	$4,433,199
Personal Income	$137,314	$143,603	$150,559	$157,513	$165,094	$172,809	$180,697	$188,980	$197,618	$206,796	$211,444	$209,382	$3,405,205
Local Wage Tax (@2%)	$2,746	$2,872	$3,011	$3,150	$3,302	$3,456	$3,614	$3,779	$3,952	$4,136	$4,229	$4,188	$68,104
State Income Tax (2.88% ATR)	$3,955	$4,136	$4,336	$4,536	$4,755	$4,977	$5,204	$5,442	$5,691	$5,956	$6,090	$6,030	$98,070
CAT Self Supply	$451	$476	$503	$531	$560	$590	$623	$655	$689	$725	$746	$744	$11,332
CAT Imports	$199	$209	$221	$233	$246	$259	$273	$287	$301	$317	$327	$327	$4,921
Sales B2B	$2,694	$2,809	$2,933	$3,059	$3,195	$3,336	$3,480	$3,632	$3,787	$3,957	$4,015	$3,911	$67,100
Sales Consumer	$2,910	$3,062	$3,224	$3,392	$3,565	$3,744	$3,933	$4,128	$4,326	$4,543	$4,672	$4,671	$71,882
Total State Revenue Estimates	$10,208	$10,691	$11,217	$11,751	$12,321	$12,906	$13,512	$14,144	$14,794	$15,498	$15,849	$15,684	$253,304
Total Public Revenue Estimates	$12,955	$13,563	$14,228	$14,901	$15,623	$16,362	$17,126	$17,923	$18,747	$19,634	$20,078	$19,872	$321,408
Output	$307,218	$321,183	$336,712	$352,121	$368,734	$385,588	$403,404	$421,582	$440,603	$460,948	$468,652	$458,179	$7,724,995

(Values in Thousands of Dollars Except for Employment)

Source: TeamNEO