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THE OHIO ENERGY INDUSTRY: ANALYSIS OF THE OHIO ENERGY BUSINESS INVENTORY SURVEY

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EXECUTIVE SUMMARY

This study is an analysis of responses from the Ohio Energy Business Inventory Survey. Sponsored by the Appalachian Regional Commission and the U.S. Economic Development Administration and supported by the Ohio Department of Development, the Ohio Energy Business Inventory Survey was aimed at cataloging and strengthening energy investment opportunities in Ohio. This survey was a partnership between Bowling Green State University, Cleveland State University, and Ohio University.

The Ohio Energy Business Inventory Survey was designed to collect a record of energy companies in Ohio. This survey collected address information to create a directory, and so that geographic comparisons may be made, this report categorizes response data into three regions: Ohio, Northeast Ohio, and Remainder of Ohio.

Overall, the most telling indicator of the Ohio Energy Business Inventory Survey is that the majority of survey respondents engage primarily in energy related business activities. This result reveals that the surveyed companies are not large manufacturing or consulting firms dabbling in the energy sector; rather, these organizations have specific missions in the energy sector.

Respondents reported on their energy sector from a listing of categories and most of the respondents selected the following business sector:

Ohio:

- √ Solar Photovoltaics
- √ Wind Energy

Northeast Ohio:

- √ Wind Energy
- √ Solar Photovoltaics

Remainder of Ohio

- √ Solar Photovoltaics
- √ Energy Efficient Construction & Renovation

INTRODUCTION

The Ohio Energy Business Inventory Survey was a joint venture of Bowling Green State University, Cleveland State University, and Ohio University. The survey was sponsored by the Appalachian Regional Commission and the U.S. Economic Development Administration and supported by the Ohio Department of Development to help energy companies increase opportunities in Ohio and economic development.

METHODOLOGY

A listing of Ohio energy companies was obtained by the three universities and surveys were distributed. Surveys were sent via email to 664 energy companies in Ohio, with 332 located in Northeast Ohio.[1]. Participant solicitations took place over a four month period from February 2010 to May 2010.

The participant selection for this survey is not random and originated from a pre-screed list. Therefore, results of this survey may include bias in sampling, response, and non-response. With this knowledge, it is not possible for this report to create any assumptions or correlations from this data. This report only asses responses from this survey as given by the respondent and is considered as a "snapshot" into Ohio's Energy Industry.

SURVEY RESPONSE AND GROUPINGS

The total respondent count of the Ohio Energy Business Inventory Survey was 171. It was determined that 4 respondents were duplicates and removed. The unique respondents totaled167[2] creating an overall survey response rate of 25%. The response rate for companies located in Northeast Ohio was 23%. For consistent language, unique respondents for the remainder of this report will be referred to simply as respondents.

Once the survey results were compiled and tabulated, the data was broken out into three geographical regions: Ohio, Northeast Ohio, and the Remainder of Ohio. Since all respondents in the survey were located in Ohio, the "Ohio" designation refers to all respondents to the survey. The survey asked respondents to identify their address, and this allowed for the separation of Northeast Ohio respondents from the Ohio cohort. And finally, the grouping "Remainder of Ohio" equals the entire cohort of Ohio minus the identified Northeast Ohio respondents.

Twenty-one percent of survey respondents did not have a county designation and are included in the statewide respondent count. Northeast Ohio survey participants accounted for 46% (76 respondents) of the total respondents (Table 1) and 25% of the respondents from Northeast Ohio were located in Cuyahoga County (Table 2).

Table 1 - Survey Response Counts

	Respondent Count
Ohio	167
Northeast Ohio	76
No County Reported	35

[1] The listing for Northeast Ohio energy companies was provided by NorTech.

[2]Ohio University Consortium for Energy, Economics, and the Environment conducted tabulations from the Ohio Energy Business Inventory Survey using a different methodology. For Ohio University's purposes, all records not having addresses were removed, and duplicates were aggregated.

Table 2 - Distribution of Respondents in Northeast Ohio Counties

Northeast Ohio County	Respondent Count
Cuyahoga	19
Lorain	8
Summit	8
Mahoning	6
Medina	6
Erie	5
Lake	5
Stark	4
Carroll	3
Geauga	3
Richland	3
Tuscarawas	3
Portage	2
Trumbull	1

MAJOR FINDINGS

ENERGY SECTOR

The survey asked the respondents to report the energy sector that best describes the business function of their organization from a listing of 24 energy sector categories.[3] Respondents were asked to choose as many categories as needed to accurately encompass their business operations, therefore there may be multiple responses for each establishment.

For those respondents who selected "other" from the listing of 24 energy sector categories, an area was provided for open-ended descriptions of business activities not covered by the categories. "Other" business categories accounted for 35 responses. Only 4 establishments chose "other" as their sole descriptor. Major patterns observed in the open-ended self-described business activities not included in the 24 categories: HVAC - heating, ventilating, and air conditioning (2 respondents), energy audits (3 respondents), and energy management/systems (3 respondents). These nine respondents were located in the Remainder of Ohio.

An interesting comparison emerges in Table 3 between all three geographic categories when examining "the most selected" and "least selected" business sectors. The same pattern emerges: the same energy sectors are at the top and bottom of each list for Ohio, Northeast Ohio, and the Remainder of Ohio. The top two business sectors in Ohio, solar photovoltaics and wind energy, account for almost 19% of business sector responses. While wind, solar photovoltaics; energy efficient construction and renovation; and solar thermal energy sectors accounted for 33% of Northeast Ohio respondent business activities and 34% of the Remainder of Ohio.

The largest share of total responses, for the question about which businesses sector(s) respondents engage in, was the wind energy sector in Northeast Ohio (12%), as compared to solar photovoltaics in Ohio (10%) and the Remainder of Ohio (10%). With a big push on wind energy in Northeast Ohio and solar technologies in Northwest Ohio, it is not surprising that these categories are of high frequency (Table 3).

[3] Energy Sector Categories: advanced automotive, advanced liquid fuels, advanced materials, biofuels, biomass, clean coal, coal, combined heat & power, distributed generation/smart grid, energy efficient construction/renovation, energy storage, fuel cells, geothermal, hydroelectric, natural gas, nuclear, oil, pollution control, power electronics & controls, solar photovoltaics, solar thermal energy, waste to energy, wind, and other.

Table 3 - Top and Bottom 5 Energy Business Sectors in Ohio, Northeast Ohio, & Remainder of Ohio (Response Count)

Top 5 Business Sectors - Ohio 1. Solar Photovoltaics (69) 2. Wind (65) 3. Energy Efficient Construction/Renovation (54) 4. Solar Thermal Energy (51) 5. Geothermal (37), Waste to Energy (37)	**Bottom 5 Business Sectors - Ohio** 1. Oil (14) 2. Pollution control (14) 3. Hydroelectric (13) 4. Nuclear (13) 5. Advanced Liquid Fuels (9)
Top 5 Business Sectors - Northeast Ohio 1. Wind (42) 2. Solar Photovoltaics (33) 3. Energy Efficient Construction/Renovation (23) 4. Solar Thermal Energy (22) 5. Geothermal (18), Natural Gas (18)	**Bottom 5 Business Sectors - Northeast Ohio** 1. Hydroelectric (8) 2. Nuclear (8) 3. Oil (8) 4. Pollution Control (7) 5. Advanced Liquid Fuels (6)
Top 5 Business Sectors – Remainder of Ohio 1. Solar Photovoltaics (36) 2. Energy Efficient Construction/Renovation (31) 3. Solar Thermal Energy (29) 4. Other (24) 5. Wind (23)	**Bottom 5 Business Sectors – Remainder of Ohio** 1. Oil (6) 2. Clean Coal (5) 3. Hydroelectric (5) 4. Nuclear (5) 5. Advanced Liquid Fuels (3)

ENERGY SECTOR BY BUSINESS TYPE

In order to better understand the scope of the operation of energy businesses in Ohio, respondents were asked to indicate a business type(s)[4] for the sector(s) selected in the previous question. Survey participants were allowed to select as many business types in order to adequately classify their operations, therefore there may be multiple responses for each establishment.

Figure 1 illustrates the business type(s) Northeast Ohio respondents reported. Of the list of 18 business types, more than half of Northeast Ohio respondents selected one of the following: research and development, manufacturing, consulting, installation, and engineering/architectural/design (Figure 1).

[4]Business type categories: agriculture, business & legal services, consulting, energy audits/weatherization, energy provider: energy transmission & distribution, energy provider: power production, energy provider: wholesale, engineering/architectural/design, installation investment/finance, maintenance & repair, manufacturing, raw material/extraction, refining, research & development, retail product sales & distribution, training & education, and other

Figure 1 - Energy Sector Business Type as Reported by Northeast Ohio Energy Companies (Respondent Count)

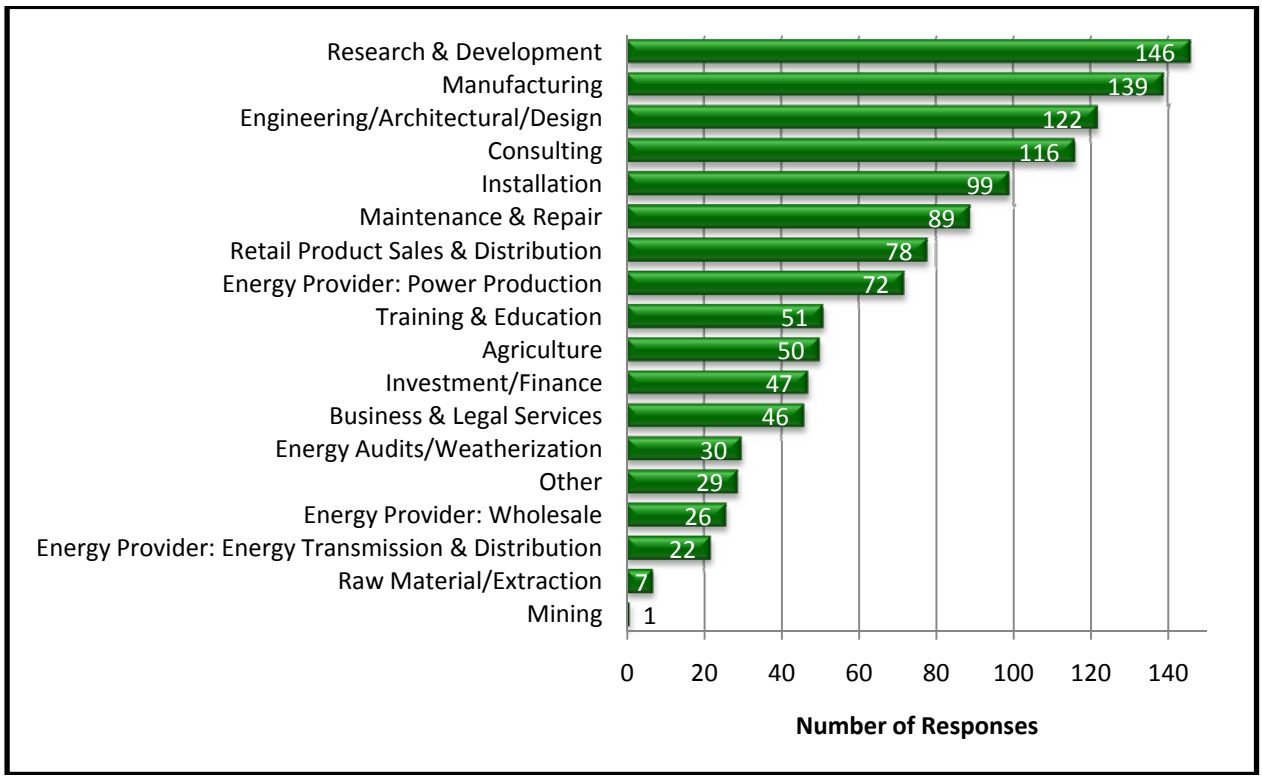


Table 4 compares the most selected business type by geographic category: Ohio, Northeast Ohio, and the Remainder of Ohio. The continuation of a strong manufacturing culture in Northeast Ohio is demonstrated in the data, 12% (139) reported that manufacturing was one of their business types as compared to 6% (79) in the Remainder of Ohio (Table 4, Appendix D). Agriculture is the fifth most popular business type in the Remainder of Ohio with 7% (87) selecting it, while it is not in the Top 5 in Northeast Ohio, showing the agricultural heritage in counties located outside of Northeast Ohio. In addition, energy consulting was the most selected business type in Ohio and the Remainder of Ohio but it was ranked fourth in Northeast Ohio.

Table 4 - Top Energy Sector Business Types as Reported in Ohio, Northeast Ohio, and Remainder of Ohio (Respondent Count)

Top 5 Energy Sector Business Type - Ohio

1. Consulting (266)
2. Engineering/Architectural/Design (234)
3. Research & Development (230)
4. Installation (228)
5. Manufacturing (212)

Top 5 Energy Sector Business Type – Northeast Ohio

1. Research & Development (146)
2. Manufacturing (139)
3. Engineering/Architectural/Design (122)
4. Consulting (116)
5. Installation (99)

Top 5 Energy Sector Business Type – Remainder of Ohio

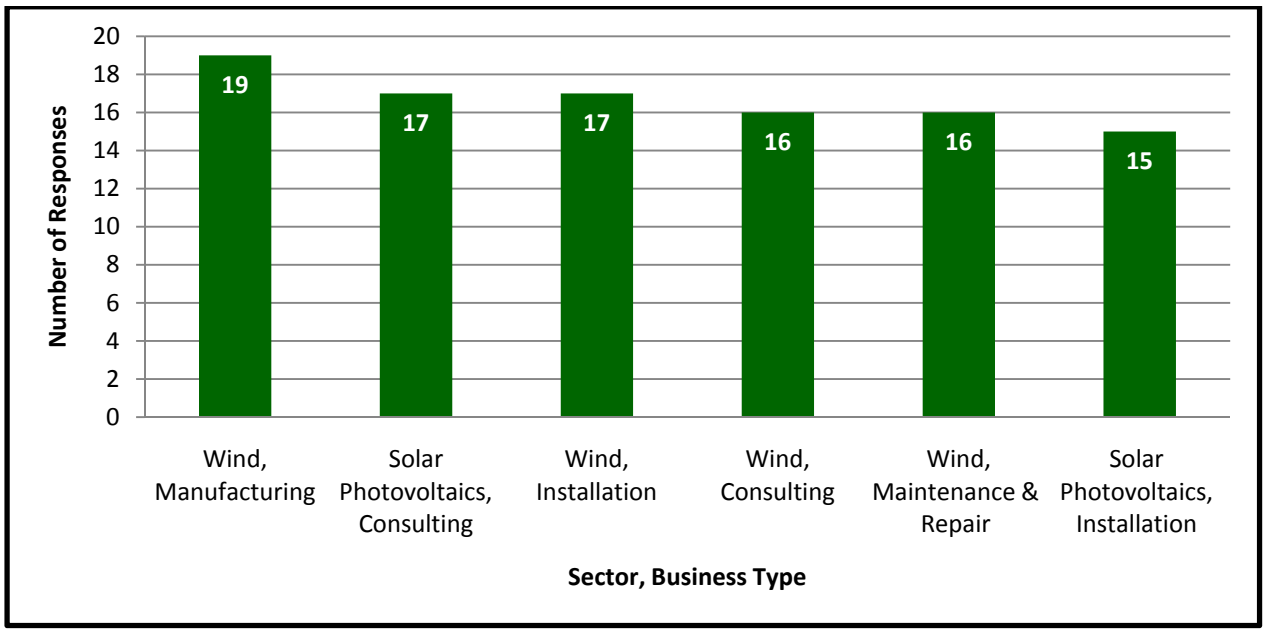
1. Consulting (150)
2. Installation (129)
3. Engineering/Architectural/Design (112)
4. Maintenance & Repair (106)

5. Agriculture (87)

Figure 2 presents the top six responses selected by Northeast Ohio survey participants of energy sector by business type. Since the wind energy and solar photovoltaics were the top two energy sectors selected by Northeast Ohio respondents, it is natural that they are the primary sector in this figure. Within these sectors, consulting and installation for both wind energy and solar photovoltaics, encompass four of the six tabulations (Figure 2) and accounted for 6% of all responses in Northeast Ohio. Summing all of the counts from business types, Northeast Ohio respondents selected in wind energy (156) and solar photovoltaics (124) account for 24% of the total business type responses.

Appendix B-D of this study contains the matrix of energy sector by business type for the three regions: Ohio, Northeast Ohio, and the Remainder of Ohio. For Northeast Ohio and the Remainder of Ohio cell counts greater than nine are highlighted, while Ohio cell counts greater than 19 are highlighted. These designations draw attention to the interesting patterns that have been discussed in Table 3, Table 4, and Figure 1.

Figure 2 -Frequency Counts of Energy Sector by Business Type as Reported by Northeast Ohio Energy Companies (Response Count)



PROPORTION OF ACTIVITIES IN ENERGY

The survey asked respondents whether all or part of their business is related to energy. In Ohio, 56% reported that all of their business activities were energy related, compared to an overwhelming 64% in Northeast Ohio (Table 5). Three respondents stated that none of their business activities were related to energy. Of these respondents, none designated an energy sector category as a description of their business function. This confirms their lack of participation in the energy sector, and non-response for the remainder of the questions.

Table 5 - Amount of Business Activities Related to Energy (Respondent Count)[5]

	Ohio	Northeast Ohio	Remainder of Ohio
Energy: All Business Activities	89 (56%)	47 (64%)	42 (50%)
Energy: A **Portion** of Business Activities	66 (42%)	27 (36%)	39 (46%)
Energy: None of Business Activities	3 (2%)	0 (0%)	3 (4%)

ENERGY REVENUE AND EMPLOYEE BASE

Figure 3 and 4 present the percentage of the respondent's revenue created (2009) and predicted (2010) by energy business in Ohio, Northeast Ohio, and the Remainder of Ohio. Over 50% of respondents in Ohio, Northeast Ohio and the Remainder of Ohio stated that in 2009 and 2010 almost all of their revenue came from energy related activities (76%-100% of their revenue). This reveals that most of the companies surveyed are engaging in energy related activities as their primary business function and do not focus their efforts outside of this sector. A comparison of Figure 3 and 4 illustrates that over the one-year time period (2009-2010), companies do not expect their revenue structures to change. This demonstrates that companies with a primary focus on energy related business activities in 2009 expect to continue to focus on energy related activities in 2010.

In analyzing Figures 3-6, a decrease occurred in the number of respondents that reported <5% of their revenue is related to energy from 2009 to 2010 (projected). It decreased from 17% (23) in Ohio, 18% (13) in Northeast Ohio, and 15% (9) in the Remainder of Ohio in 2009 to 9% (12), 7% (5), and 11% (7), respectively, in 2010. The survey does not provide an explanation for this event, but a similar decrease in this category is reported for the percentage of company's employee base related to energy (Figure 5 and 6).

Examining Figures 3-6 with Table 3 reaffirms the cohort of this survey. In both set of responses, companies surveyed responded in a way that displays that a majority of respondents solely engage in energy sector business.

[5] Responses total is 158 because of question non-response

Figure 3 - Percentage of Company's Revenue Related to Energy in 2009 (Percentage of Respondents)

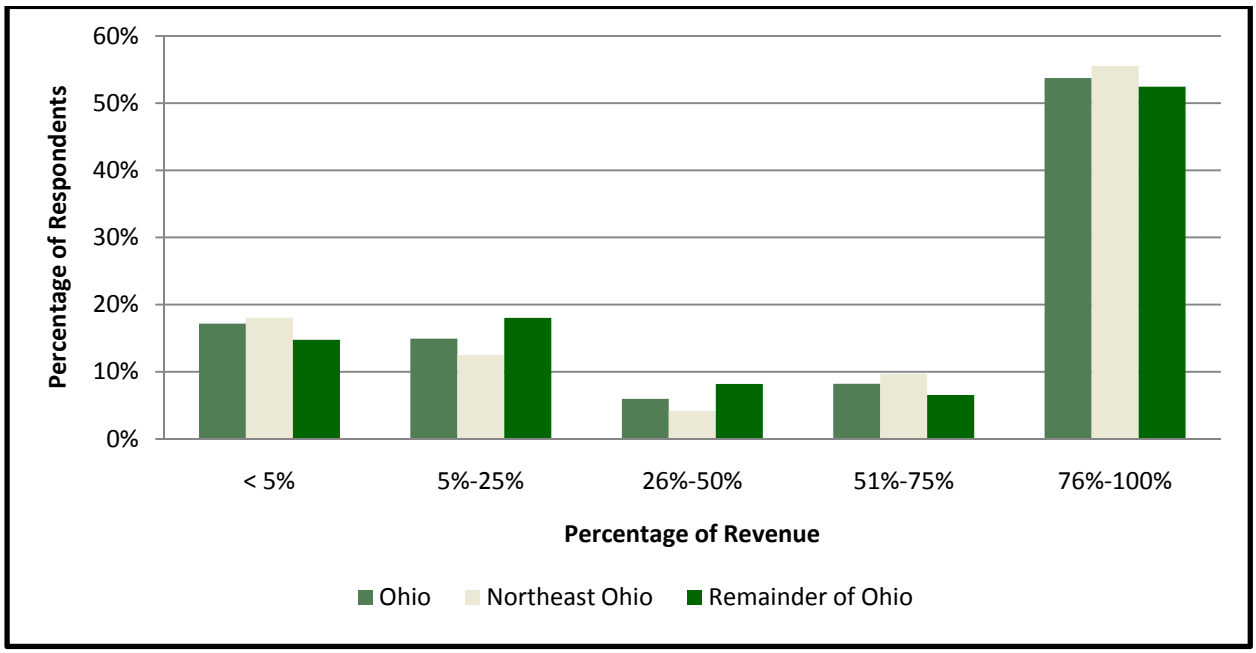
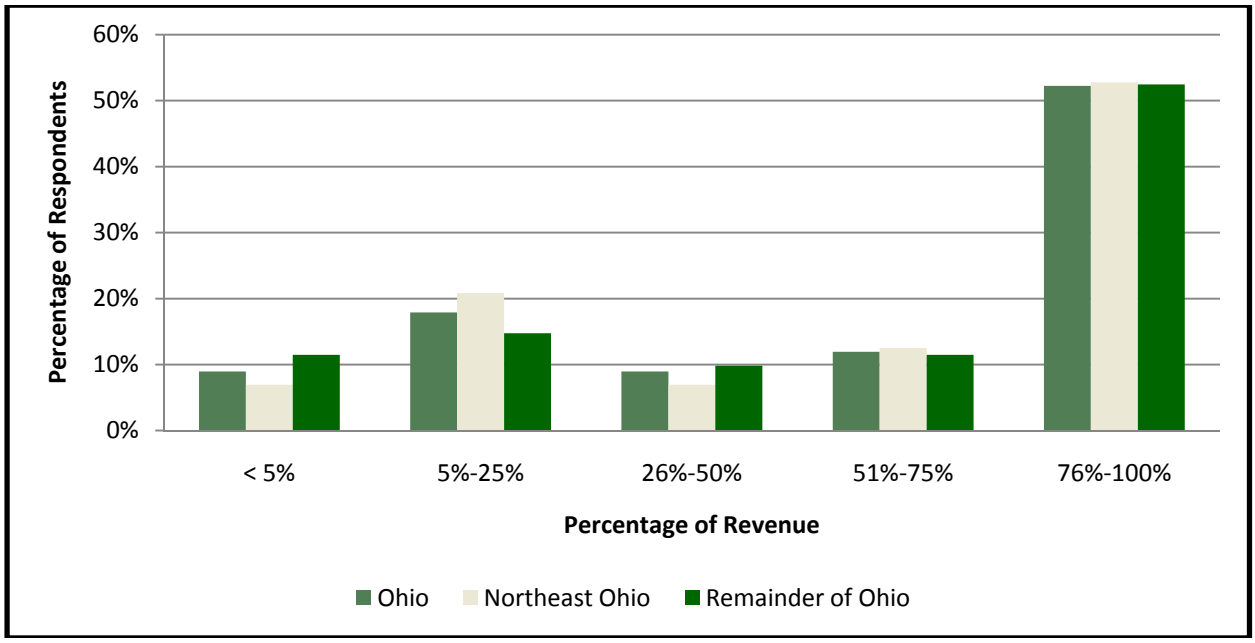


Figure 4 - Percentage of Company's Revenue Related to Energy Projected 2010 (Percentage of Respondents)



In addition to specializing in energy related business activities, over 50% of respondents in all three regions indicated that most of their employee base is related to the energy field (Figure 5 & 6). At this time it is difficult to confirm why such a large proportion of employees engage in energy activities since firm size was not collected. One could theorize that these energy companies are small firms which have low overhead which concentrate on creating and selling their energy product or service.

Figure 5 - Percentage of Company's Employee Base Related to Energy in 2009 (Percentage of Respondents)

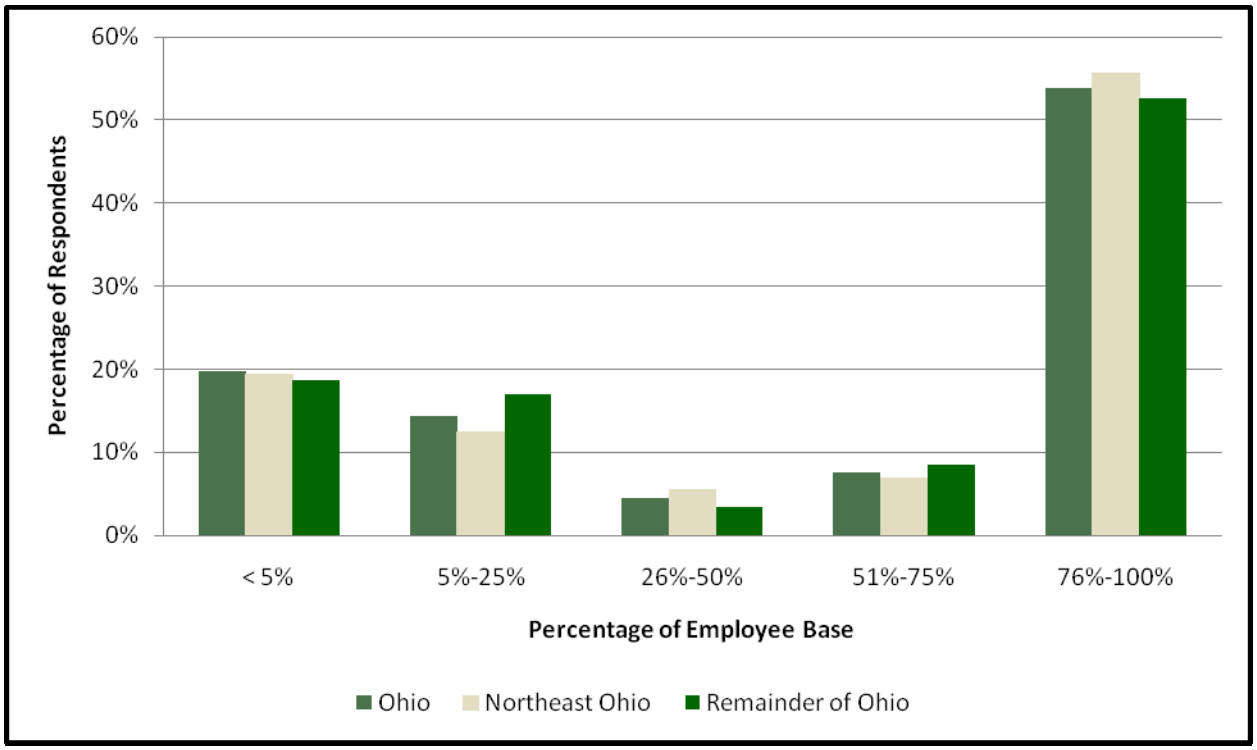
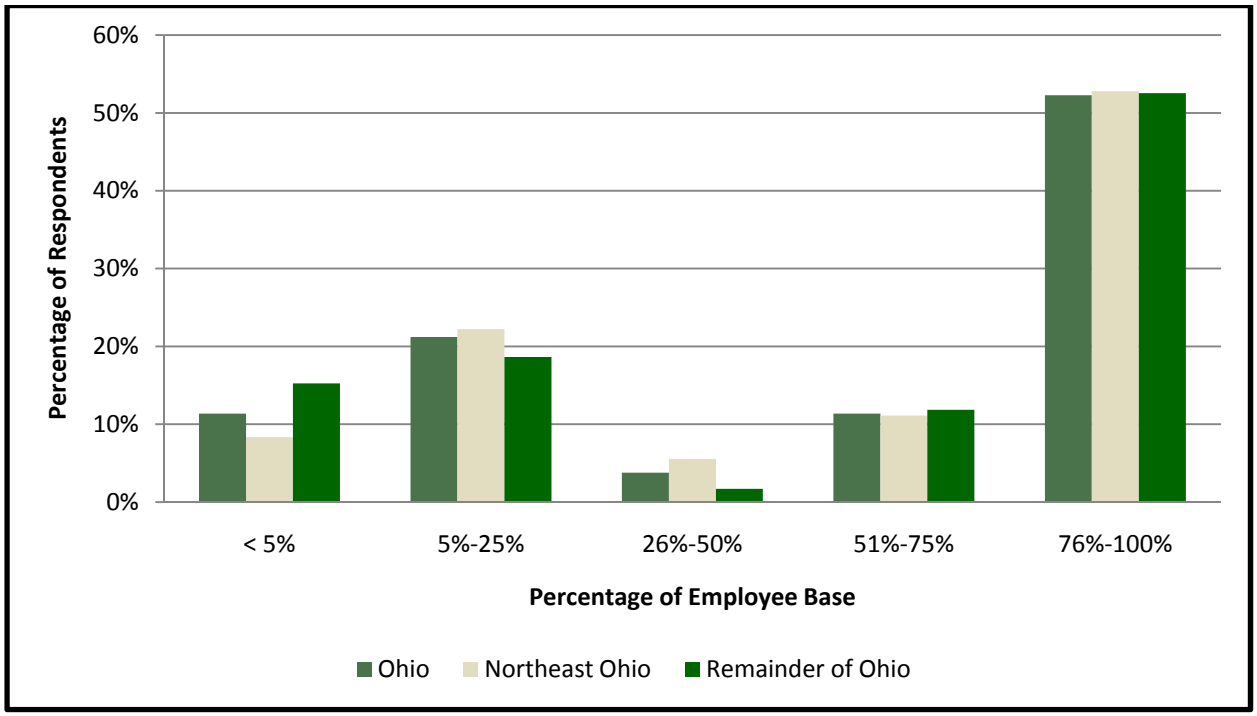


Figure 6 - Percentage of Company's Employee Base Related to Energy Projected 2010 (by Percentage of Respondents)



CONCLUDING COMMENTS

This report provides a glimpse into the Ohio energy industry through an analysis of the Ohio Energy Business Inventory Survey. Over 160 energy companies submitted responses allowing for study and geographic comparison of responses.

The two main business characteristic questions asked respondents to report on their energy sector and the business type within that sector. The most selected energy sectors by respondents, amongst all regions, were: solar photovoltaics, energy efficient construction/ renovation, wind, and solar thermal energy. Moreover, the most selected business types for the corresponding sector were engineering/architectural/design, consulting, and installation. This data exemplifies that Ohio companies are engaging in the energy sector in many ways.

Through this survey, Ohio energy companies provided valuable information on their locations, business operations, and revenue structures. A directory of the respondent companies who permitted to use their information can be found at: http://www.ce3.ohio.edu/Resources/EnergyInv.aspx. This information collected allows for better understanding of these emerging industries. Further research about the Ohio energy industry will provide valuable information to a variety of users to aid in policy decisions, investment, and sector growth.

Appendix A: Ohio Energy Business Inventory Survey – Questionnaire

1. Please confirm that all or a portion of your business activities are related to energy:

All or a portion of my business activities are related to energy
None of my business activities are related to energy

2. Please enter your email address here so we can remove you from our mailing list.

Email:

3. Please select from this list the energy sectors your company is involved in: (Check all that apply).

Advanced automotive
Advanced liquid fuels
Advanced materials
Biofuels
Biomass
Clean coal
Coal
Combined heat & power
Distributed generation/smart grid
Energy efficient construction/renovation
Energy storage
Fuel cells
Geothermal
Hydroelectric
Natural gas
Nuclear
Oil
Pollution control
Power electronics & controls
Solar photovoltaics
Solar thermal energy
Waste to energy
Wind
Other

4. If you selected "Other" as your energy sector please describe it here:

5. For each energy sector(s) you selected, please indicate your business type(s). Please select from the following options. Check all that apply.

Agriculture
Business & Legal Services
Consulting
Energy Audits/Weatherization
Energy Provider: Energy Transmission & Distribution
Energy Provider: Power Production
Energy Provider: Wholesale
Engineering/Architectural/Design
Installation
Investment/Finance
Maintenance & Repair
Manufacturing
Raw Material/Extraction
Refining
Research & Development
Retail Product Sales & Distribution
Training & Education
Other

6. If you selected "Other" as your business type, in question 5, above, please describe it here:

Ohio Energy Business Inventory Survey – Questionnaire (continued)

7. Please confirm that we can include your business's contact information on the Ohio Energy Business Web site. Contact information will consist of your company name, address, phone number, Web address, e-mail address, type and sector of your energy business.

Yes: Please include my business contact information on the Web site
No: Do not include my business contact information on the Web site

8. If answered yes to the previous question, please provide us with your business contact information as you wish it to appear on the Web site:

Company name:
Street address:
City:
State:
Zip:
Telephone number:
Web site address:
E-mail address:

The following information will not be posted on the Web site but will be useful for future efforts to attract investments to the region.
9. Contact Information:

Your name
Your e-mail address
The county in which your primary office is located
Your phone number

10. In 2008, what percentage of your company's revenue was related to energy in your Ohio operations?

Less than 5% 5%-25% 26%-50% 51%-75% 76%-100%

11. In 2010, what percentage of your company's revenue in your Ohio operations do you estimate will be energy related?

Less than 5% 5%-25% 26%-50% 51%-75% 76%-100%

10. In 2008, what percentage of your company's employee base was related to energy in your Ohio operations?

Less than 5% 5%-25% 26%-50% 51%-75% 76%-100%

Ohio Energy Business Inventory Survey – Questionnaire (continued)

11. In 2010, what percentage of your company's employee base in your Ohio operations do you estimate will be energy related?

Less than 5% 5%-25% 26%-50% 51%-75% 76%-100%

12. Do you have any other locations in Ohio?

Yes
No

13. If yes, please list their address(es):

Our goal is to reach as many energy-related businesses as possible across Ohio. You can help by forwarding the link to this survey to other energy-related companies.

Appendix B: Matrix of Energy Business Survey Responses Sector by Business Type (Ohio)

Energy Business Type

Energy Business Type

Energy Business Sector

Ohio	Agriculture	Business & Legal Services	Consulting	Energy Audits/ Weatherization	Energy Provider: Energy Transmission & Distribution	Energy Provider: Power Production	Energy Provider: Wholesale	Engineering/ Architectural/ Design	Installation	Investment/ Finance	Maintenance & Repair	Manufacturing	Raw Material/ Extraction	Refining	Research & Development	Retail Product Sales & Distribution	Training & Education	Other	TOTAL
Advanced Automotive	0	1	4	0	1	1	0	4	1	0	1	6	0	0	8	2	2	3	**34**
Advanced Liquid Fuels	1	1	2	0	1	2	1	2	1	1	2	1	0	0	5	2	0	1	**23**
Advanced Materials	2	4	10	2	0	3	2	7	2	2	4	13	3	1	20	5	1	3	**84**
Biofuels	5	3	5	1	0	2	2	3	3	1	3	4	1	0	10	2	2	4	**51**
Biomass	8	4	9	1	0	4	1	6	6	4	4	6	5	0	8	3	3	3	**75**
Clean Coal	0	1	2	0	0	2	0	4	2	0	2	5	0	0	6	3	2	3	**32**
Coal	0	1	1	0	0	2	0	2	1	0	4	8	1	0	4	3	1	1	**29**
Combined Heat & Power	8	3	12	5	1	8	3	14	9	7	9	10	0	0	14	7	4	1	**115**
Distributed Generation/Smart Grid	7	4	12	2	2	7	3	10	10	6	10	10	0	0	11	4	5	3	**106**
Energy Efficient Construction/ Renovation	13	6	27	22	3	5	2	25	25	10	16	13	1	1	8	9	16	4	**206**
Energy Storage	7	4	9	0	4	3	3	5	6	2	4	7	0	0	12	6	2	3	**77**
Fuel Cells	4	3	7	0	2	2	4	5	2	4	3	10	1	0	10	3	4	3	**67**
Geothermal	5	7	16	6	4	6	3	15	21	8	18	3	1	0	5	9	9	2	**138**
Hydroelectric	3	0	4	1	1	3	1	4	6	2	6	2	0	0	4	3	2	1	**43**
Natural Gas	3	5	10	4	3	8	5	11	13	5	13	11	1	1	7	4	4	2	**110**
Nuclear	0	2	2	0	0	2	0	2	1	0	3	4	0	0	4	2	3	3	**28**
Oil	0	0	0	0	0	2	1	4	2	0	2	7	0	0	4	1	0	3	**26**
Pollution Control	1	1	3	0	1	1	0	4	1	1	1	4	0	0	6	2	2	1	**29**
Power Electronics & Controls	3	5	8	3	0	3	3	6	7	4	4	10	0	0	9	3	4	4	**76**
Solar Photovoltaics	17	7	37	6	3	17	4	28	32	16	24	14	2	2	16	23	20	7	**275**
Solar Thermal Energy	16	6	28	7	2	9	3	25	24	9	20	11	1	1	14	14	17	4	**211**
Waste to Energy	10	5	16	4	0	9	5	14	11	6	8	10	3	1	12	3	7	4	**128**
Wind	15	9	26	3	2	15	2	23	28	12	24	23	0	0	17	15	14	5	**233**
Other	9	5	16	6	5	7	3	11	14	4	10	20	2	1	16	10	12	2	**153**
TOTAL	**137**	**87**	**266**	**73**	**35**	**123**	**51**	**234**	**228**	**104**	**195**	**212**	**22**	**8**	**230**	**138**	**136**	**70**	2349

Appendix C: Matrix of Energy Business Survey Responses Sector by Business Type (Northeast Ohio)

Energy Business Type

Energy Business Sector

Northeast Ohio	Agriculture	Business & Legal Services	Consulting	Energy Audits/ Weatherization	Energy Provider: Energy Transmission & Distribution	Energy Provider: Power Production	Energy Provider: Wholesale	Engineering/ Architectural/ Design	Installation	Investment/ Finance	Maintenance & Repair	Manufacturing	Raw Material/ Extraction	Refining	Research & Development	Retail Product Sales & Distribution	Training & Education	Other	TOTAL
Advanced Automotive	0	1	3	0	1	1	0	3	0	0	0	5	0	0	5	2	1	2	**24**
Advanced Liquid Fuels	1	1	1	0	1	2	1	1	0	1	0	1	0	0	4	1	0	0	**15**
Advanced Materials	2	1	6	1	0	3	2	6	0	1	1	10	2	0	11	3	0	1	**50**
Biofuels	2	3	1	1	0	1	1	1	2	1	1	3	1	0	6	1	1	1	**27**
Biomass	2	4	3	0	0	2	1	2	3	3	2	3	2	0	4	2	2	2	**37**
Clean Coal	0	1	1	0	0	2	0	3	1	0	0	4	0	0	5	2	2	2	**23**
Coal	0	1	0	0	0	2	0	1	0	0	2	5	1	0	4	2	1	0	**19**
Combined Heat & Power	4	2	6	3	1	5	2	10	4	4	5	9	0	0	10	5	1	0	**71**
Distributed Generation/Smart Grid	2	3	6	2	2	4	1	7	4	4	4	6	0	0	8	2	2	2	**59**
Energy Efficient Construction/ Renovation	5	2	11	8	2	3	0	11	8	3	7	9	0	1	5	4	5	1	**85**
Energy Storage	4	2	6	0	4	3	2	3	2	1	0	7	0	0	8	2	1	2	**47**
Fuel Cells	1	1	3	0	2	1	2	2	0	1	1	6	1	0	6	2	2	1	**32**
Geothermal	0	2	6	2	2	2	0	6	10	3	9	2	0	0	3	4	3	1	**55**
Hydroelectric	1	0	2	1	0	2	0	2	3	1	2	2	0	0	3	1	1	0	**21**
Natural Gas	1	3	5	3	1	6	4	7	8	3	8	5	0	0	4	2	2	1	**63**
Nuclear	0	1	0	0	0	2	0	1	1	0	1	2	0	0	2	0	1	2	**13**
Oil	0	0	0	0	0	2	1	2	0	0	1	4	0	0	4	1	0	1	**16**
Pollution Control	1	1	1	0	1	1	0	2	0	1	0	2	0	0	5	2	2	0	**19**
Power Electronics & Controls	1	3	3	2	0	1	2	3	4	1	2	4	0	0	4	1	1	2	**34**
Solar Photovoltaics	5	3	17	2	1	7	1	14	15	6	12	9	0	0	10	13	7	2	**124**
Solar Thermal Energy	5	1	11	2	1	2	0	11	8	2	8	8	0	0	9	7	4	1	**80**
Waste to Energy	1	4	5	1	0	5	4	7	5	3	4	6	0	0	7	2	2	2	**58**
Wind	9	6	16	2	2	10	1	14	17	8	16	19	0	0	13	13	7	3	**156**
Other	3	0	3	0	1	3	1	3	4	0	3	8	0	0	6	4	3	0	**42**
TOTAL	**50**	**46**	**116**	**30**	**22**	**72**	**26**	**122**	**99**	**47**	**89**	**139**	**7**	**1**	**146**	**78**	**51**	**29**	**1170**

Appendix D: Matrix of Energy Business Survey Responses Sector by Business Type (Remainder of Ohio)

Energy Business Type

Energy Business Sector

Remainder of Ohio	Agriculture	Business & Legal Services	Consulting	Energy Audits/ Weatherization	Energy Provider: Energy Transmission & Distribution	Energy Provider: Power Production	Energy Provider: Wholesale	Engineering/ Architectural/ Design	Installation	Investment/ Finance	Maintenance & Repair	Manufacturing	Raw Material/ Extraction	Refining	Research & Development	Retail Product Sales & Distribution	Training & Education	Other	TOTAL
Advanced Automotive	0	0	1	0	0	0	0	1	1	0	1	1	0	0	3	0	1	1	**10**
Advanced Liquid Fuels	0	0	1	0	0	0	0	1	1	0	2	0	0	0	1	1	0	1	**8**
Advanced Materials	0	3	4	1	0	0	0	1	2	1	3	3	1	1	9	2	1	2	**34**
Biofuels	3	0	4	0	0	1	1	2	1	0	2	1	0	0	4	1	1	3	**24**
Biomass	6	0	6	1	0	2	0	4	3	1	2	3	3	0	4	1	1	1	**38**
Clean Coal	0	0	1	0	0	0	0	1	1	0	2	1	0	0	1	1	0	1	**9**
Coal	0	0	1	0	0	0	0	1	1	0	2	3	0	0	0	1	0	1	**10**
Combined Heat & Power	4	1	6	2	0	3	1	4	5	3	4	1	0	0	4	2	3	1	**44**
Distributed Generation/Smart Grid	5	1	6	0	0	3	2	3	6	2	6	4	0	0	3	2	3	1	**47**
Energy Efficient Construction/ Renovation	8	4	16	14	1	2	2	14	17	7	9	4	1	0	3	5	11	3	**121**
Energy Storage	3	2	3	0	0	0	1	2	4	1	4	0	0	0	4	4	1	1	**30**
Fuel Cells	3	2	4	0	0	1	2	3	2	3	2	4	0	0	4	1	2	2	**35**
Geothermal	5	5	10	4	2	4	3	9	11	5	9	1	1	0	2	5	6	1	**83**
Hydroelectric	2	0	2	0	1	1	1	2	3	1	4	0	0	0	1	2	1	1	**22**
Natural Gas	2	2	5	1	2	2	1	4	5	2	5	6	1	1	3	2	2	1	**47**
Nuclear	0	1	2	0	0	0	0	1	0	0	2	2	0	0	2	2	2	1	**15**
Oil	0	0	0	0	0	0	0	2	2	0	1	3	0	0	0	0	0	2	**10**
Pollution Control	0	0	2	0	0	0	0	2	1	0	1	2	0	0	1	0	0	1	**10**
Power Electronics & Controls	2	2	5	1	0	2	1	3	3	3	2	6	0	0	5	2	3	2	**42**
Solar Photovoltaics	12	4	20	4	2	10	3	14	17	10	12	5	2	2	6	10	13	5	**151**
Solar Thermal Energy	11	5	17	5	1	7	3	14	16	7	12	3	1	1	5	7	13	3	**131**
Waste to Energy	9	1	11	3	0	4	1	7	6	3	4	4	3	1	5	1	5	2	**70**
Wind	6	3	10	1	0	5	1	9	11	4	8	4	0	0	4	2	7	2	**77**
Other	6	5	13	6	4	4	2	8	10	4	7	12	2	1	10	6	9	2	**111**
TOTAL	**87**	**41**	**150**	**43**	**13**	**51**	**25**	**112**	**129**	**57**	**106**	**73**	**15**	**7**	**84**	**60**	**85**	**41**	**1179**