

Iowa Power Fund Economic Impact Study

December 2010

Technical Report

Prepared for:
Iowa Office of Energy Independence and the Iowa Power Fund
Wallace State Office Building
502 East 9th Street
Des Moines, IA 50319

Prepared by:
Impact DataSource
4709 Cap Rock Drive
Austin, Texas 78735
(512) 892-0205
Fax (512) 892-2569
www.impactdatasource.com

ImpactDataSource

Executive Summary.....	5
Economic & Fiscal Impact Analysis of Funded Projects.....	12
1 Overview of Analysis.....	13
1.1 Direct, Indirect and Induced Impacts.....	14
2 Summary of Funded Projects.....	14
2.1 Impacts Calculated.....	15
2.2 Length of Analysis Period.....	16
2.3 Project Type.....	16
2.4 Funding Provided by the Iowa Power Fund.....	17
3 Project Impacts.....	18
3.1 Economic Impacts.....	18
3.2 Job Impacts.....	19
3.3 Impacted Industries Analysis.....	20
3.4 Fiscal Impacts.....	23
3.5 Securing Iowa’s Energy Future.....	24
4 Construction Impacts.....	26
4.1 Economic Impacts.....	26
4.2 Fiscal Impacts.....	27
5 Potential Long-Term Impacts.....	28
5.1 Value of Research and Projects.....	28
5.2 Potential Long-Term Economic Impacts for Iowa.....	28
5.3 Community & Infrastructure Growth.....	30
5.4 Potential Long-Term Fiscal Impacts for Iowa & Local Taxing Entities.....	32
5.5 Long-Term Impacted Industries Analysis for Iowa.....	32
5.6 Potential Long-Term Economic Impacts for the US.....	34
6 Methodology & Approach.....	36
APPENDIX A: Individual Project Summaries.....	42

LIST OF TABLES

Table ES1: Economic Output During the Term of the Projects..... 8

Table ES2: Employment During the Term of the Projects 8

Table ES3: Total Workers’ Earnings During the Term of the Projects 9

Table ES4: Revenue for the State During the Term of the Projects 9

Table ES5: Potential Long-Term Economic Impacts from 2014 to 2033 for Iowa
 Three Possible Scenarios..... 11

Table ES6: Estimated State & Local Revenues in Iowa 2014 to 2033 From Long-Term
 Impacts Three Possible Scenarios..... 11

Table 1: Number of Projects by Focus or Industry 14

Table 2: Economic Output During the Term of the Projects 18

Table 3: Employment During the Term of the Projects..... 18

Table 4: Total Workers’ Earnings During the Term of the Projects..... 19

Table 5: Overall Impact for Iowa Industries Resulting from the Projects..... 21

Table 6: Occupation Distribution Based on Industry Impacts 22

Table 7: Revenue for the State During the Term of the Projects 23

Table 8: Revenue for Local Taxing Entities During the Term of the Projects 23

Table 9: Economic Output During Project-Related Construction..... 26

Table 10: Employment During Project-Related Construction 26

Table 11: Economic Output During Project-Related Construction..... 27

Table 12: Total Workers’ Earnings During Project-Related Construction 27

Table 13: Potential Long-Term Economic Impacts from 2014 to 2033 for Iowa
 Three Possible Scenarios..... 29

Table 14: Annual Potential Long-Term Economic Impacts from 2014 to 2033 for Iowa
 Three Possible Scenarios..... 30

Table 15: Total New Workers, Residents & Students in Iowa 2014 to 2033
 Three Possible Scenarios..... 30

Table 16: Projected Infrastructure Costs in Iowa 2014 to 2033
 Three Possible Scenarios..... 31

Table 17: Estimated State & Local Revenues in Iowa 2014 to 2033 From Long-Term
 Impacts Three Possible Scenarios..... 32

Table 18: Overall Impact for Iowa Industries Resulting from
 Potential Long-Term Impacts - Mid Scenario 33

Table 19: Potential Long-Term Economic Impacts from 2014 to 2033 for the US Three Possible Scenarios.....	34
Table 20: Potential Long-Term Economic Impacts from 2014 to 2033 for the US Three Possible Scenarios.....	35

LIST OF GRAPHS

Graph 1: Impacts Calculated For The 31 Iowa Power Fund Projects	15
Graph 2: Number of Projects by Length	16
Graph 3: Number of Projects by Project Type	16
Graph 4: Direct Jobs - Created vs. Retained	19

Executive Summary

Overview of the Analysis

This report presents a summary of the economic impact of the 31 projects supported by the Iowa Power Fund from 2008 through September 2010. The focus of the report is on the economic and fiscal impacts resulting from the projects supported by the Iowa Power Fund. As a part of the study, project-related construction impacts were estimated for projects including a construction phase. In addition, Impact DataSource developed projections to estimate the potential long-term impacts of the project for the State of Iowa and the nation.

Using data reported by project managers on economic impact data sheets, information gathered from the project's application and conversations conducted with the project manager, an individual impact analysis was produced for each of the 31 projects.

Renewable Energy Research and Iowa

All of the research and commercialization projects funded by the Iowa Power Fund contribute to reducing the state's reliance on fossil fuels and increasing the use of renewable energy. These projects focus on many different types of renewable energy and various aspects of energy efficiency and conservation. Overall, the research supported by the Iowa Power Fund seeks to capitalize on Iowa's resources and economic base to help the state become a leader in renewable energy.

Iowa is the nation's leader in corn production and, not surprisingly also the nation's leader in ethanol production. A number of funded projects seek to increase or improve ethanol production through utilizing more parts of the corn plant or improving the drying processes related to production. Several biodiesel projects seek new ways to produce biodiesel and utilize more of the co-products in livestock feed. One project is demonstrating electricity generation from farm and other industrial waste at a large scale. While these advancements in biofuels and renewable energy may be replicated outside of the state, the funded projects will disproportionately benefit Iowa in the long run, given how these projects are so tied to Iowa's strong agriculture industry.

The manufacturing industry is the leading employment sector in Iowa and the state's focus on renewable energy may help strengthen this industry. Many of the projects supported by the Iowa Power Fund are researching ways to improve wind turbine manufacturing or reduce the cost of solar energy. Manufacturing related to renewable energy will likely grow in Iowa and help support a transitioning economy.

In addition to the fact that the research and commercialization projects seek to maximize Iowa's resources and economic base, Iowa is gaining a competitive advantage among states as it supports renewable energy research. By investing in renewable energy and energy efficiency research, Iowa signals its commitment to the burgeoning industry. Iowa will likely become a top choice for new renewable energy firms and attract companies from around the US and the world. Iowans will benefit through well-paying green jobs and increased economic vitality.

Iowa Power Fund Financial Support

While the Iowa Power Fund's portion of total funds invested in the 31 projects is approximately only 10%, it is important to note that many of these projects would not have occurred without the financial assistance from the Iowa Power Fund. In some cases, project managers considered multiple sites around the US but ultimately chose Iowa based on the support of the Iowa Power Fund. Ultimately, the Office of Energy Independence and the Iowa Power Fund played a role in attracting and promoting these 31 projects and the significant investments in renewable energy research and commercialization in Iowa.

Economic Impacts Presented in this Report

This report presents economic impacts in three common forms, economic output, employment and workers' earnings. Economic output is the value of goods and services produced in an economy. This report typically addresses economic output at the state level. Employment is presented on an annual basis and shows the number of jobs supported in a given year. Finally workers' earnings reflect the wages and benefits paid to employees during employment.

The scope of this report included the economic output, employment and workers' earnings during the term of the project and possible economic impacts resulting directly from the project. Other economic benefits may result from the activities described but are not studied in this report. For example, additional ethanol production and consumption reduces the overall demand for and reliance on gasoline and may reduce gasoline prices. In addition, many of the projects reduce or eliminate pollution in certain processes but the report does not quantitatively address the social benefit of less pollution. Finally, using local, renewable sources of energy for electricity generation reduces the amount of money Iowa spends purchasing coal or natural gas from other states and countries. This report, however, does not estimate the benefit to Iowa of spending less money on importing fossil fuels.

Overview of Projects

The Iowa Power Fund supported 31 research, commercialization and education projects from 2008 through September 2010. Project start dates range from 2007 to 2010. The typical project is expected to last three years. The organizations receiving support from the Iowa Power Fund range from private companies, industry organizations, cities and universities.

Economic Impacts for Iowa

Table ES1 illustrates the estimated annual economic output resulting from the 31 projects over the term of the funded projects. The majority of the impacts are concentrated during the 2009 to 2012 time period.

Year	Direct	Indirect	Induced	Total
2007	\$398,983	\$216,042	\$116,658	\$731,683
2008	\$2,499,979	\$1,197,344	\$661,566	\$4,358,890
2009	\$18,115,100	\$8,402,244	\$4,797,192	\$31,314,535
2010	\$21,575,952	\$9,563,494	\$7,126,193	\$38,265,639
2011	\$19,828,943	\$8,766,254	\$6,851,748	\$35,446,945
2012	\$32,697,621	\$16,908,732	\$9,496,332	\$59,102,685
2013	\$5,000,000	\$2,628,898	\$1,463,419	\$9,092,317
2014	\$1,675,159	\$880,764	\$490,292	\$3,046,215

The 31 projects assisted by the Iowa Power Fund supported direct, indirect and induced employment over the term of projects. Table ES2 illustrates the total annual employment supported as a result of the projects.

Year	Direct	Indirect	Induced	Total
2007	6	6	4	16
2008	19	20	14	53
2009	120	107	83	310
2010	158	120	98	376
2011	190	130	112	432
2012	84	89	66	239
2013	37	39	29	105
2014	37	39	29	105
Average Annual Employment	81	69	54	204

Executive Summary

Table ES3 summarizes the total annual workers' earnings paid to the workers supported during the term of the projects.

Table ES3: Total Workers' Earnings During the Term of the Projects				
Year	Direct	Indirect	Induced	Total
2007	\$230,465	\$333,674	\$136,578	\$700,717
2008	\$741,310	\$857,194	\$397,298	\$1,995,802
2009	\$4,879,339	\$3,985,738	\$2,253,011	\$11,118,089
2010	\$6,735,271	\$4,797,450	\$2,924,845	\$14,457,565
2011	\$8,050,719	\$4,672,161	\$3,264,457	\$15,987,337
2012	\$4,689,968	\$3,885,322	\$2,200,237	\$10,775,527
2013	\$1,626,368	\$1,456,887	\$791,037	\$3,874,292
2014	\$1,675,159	\$1,500,593	\$814,768	\$3,990,521

Table ES4 summarizes the fiscal impacts for the State of Iowa that result from the direct, indirect and induced economic activity generated by the 31 projects supported by the Iowa Power Fund.

Table ES4: Revenue for the State During the Term of the Projects					
Year	Income Tax Collections	Sales Tax Collections	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2007	\$17,460	\$12,716	\$1,198	\$11,736	\$43,110
2008	\$49,730	\$75,319	\$6,692	\$39,617	\$171,358
2009	\$277,032	\$224,791	\$47,518	\$231,211	\$780,552
2010	\$360,242	\$290,736	\$80,938	\$287,016	\$1,018,932
2011	\$398,360	\$1,266,292	\$82,596	\$338,042	\$2,085,290
2012	\$268,496	\$1,691,556	\$95,058	\$198,965	\$2,254,076
2013	\$96,537	\$61,346	\$14,732	\$91,470	\$264,085
2014	\$99,433	\$56,076	\$4,936	\$94,214	\$254,659

The economic and fiscal impacts detailed in the four tables above represent the total economic and fiscal impact that results from the 31 projects supported by the Iowa Power Fund. Eight of the projects also include a construction phase which supports construction activity in Iowa. The construction-related activity is detailed in *Section 4*.

Securing Iowa's Energy Future

All of the projects funded by the Iowa Power Fund will contribute to securing Iowa's energy future and making Iowa energy independent. The research and commercialization projects contribute to reducing the state's reliance on fossil fuels and increasing the use of renewable energy. The projects seek to maximize Iowa's natural features and farmland by combining agriculture and manufacturing to produce renewable energy. In addition to the research and commercialization projects, the Iowa Power Fund funded several educational projects. Some projects supported cities in Iowa in their efforts to research and implement sustainability and renewable energy projects. Some projects seek to raise awareness about renewable energy. All of these projects will encourage energy efficiency, conservation and help promote renewable energy. Using less energy will help Iowa reduce its reliance on fossil fuels imported from out-of-state or overseas. These projects and the awareness they raise in the state will contribute to securing Iowa's energy future.

Value of Research and Potential Long-Term Impact for Iowa

The projects funded by the Iowa Power Fund are helping to advance a wide range of renewable energy initiatives and research and commercialization in several industries. The value of each project was described briefly in the individual analyses. In most cases, Impact DataSource made an attempt to measure the value of the research or project by projecting possible long-term impacts for Iowa and the nation. Since most of the projects are focused on research or in the early stages of commercialization, the long-term impacts of the project are particularly uncertain. The individual analyses projected three possible scenarios that may result from the project. However, it is important to note that these possible economic impacts may not be realized since the outcomes depend on a number of factors. Among these factors are macroeconomic conditions, public policy, the reliability of the underlying technology or process and possible new or improved technology or processes.

In each individual analysis for which the potential long-term impacts were estimated, Impact DataSource developed three scenarios. The Mid scenario represents what Impact DataSource believes may reasonably occur in the future as a result of the project. The High and Low scenarios give a range of possible impacts above and below this scenario. While Impact DataSource attempted to make reasonable assumptions about the resulting impact of the projects, it is important to remember that there may be no additional economic impacts resulting from a project.

The tables below summarize the total economic impacts calculated over the 20-year period. All figures include direct, indirect and induced impacts. While this summary report combines all of the economic and fiscal impacts projected in the individual analyses, it is highly unlikely that all of these impacts will be realized. That being said, the projects represent significant economic potential for Iowa over the next two decades. The two tables below show the combined economic and fiscal impact estimated that results from this analysis.

ES5: Potential Long-Term Economic Impacts from 2014 to 2033 for Iowa Three Possible Scenarios			
	Low	Mid	High
Economic Output	\$40,319,182,228	\$76,363,785,672	\$113,453,377,174
Employment*	8,487	14,974	21,741
Cumulative Workers' Earnings	\$3,810,714,391	\$6,726,680,555	\$9,673,946,637

*Total permanent jobs added over the 20-year period.

Values presented in 2010 dollars.

ES6: Estimated State & Local Revenue in Iowa 2014 to 2033 From Long-Term Impacts Three Possible Scenarios			
	Low	Mid	High
State Revenue	\$475,113,723	\$889,610,895	\$1,312,923,563
Local Taxing Entities Revenue	\$390,946,958	\$735,636,081	\$1,089,779,363

Values presented in 2010 dollars.

Economic & Fiscal Impact of Funded Projects

1 Overview of Analysis

This report presents a summary of the economic impact of the 31 projects supported by the Iowa Power Fund from 2008 through September 2010. The focus of the report is on the economic and fiscal impacts resulting from the projects supported by the Iowa Power Fund. As a part of the study, project-related construction impacts were estimated for projects including a construction phase. In addition, Impact DataSource developed projections to estimate the potential long-term impacts of the project for the State of Iowa and the nation. The outline below lists the types of impacts that were analyzed at each step.

1. *Project Impacts*
 - a. *Economic output, employment and workers' earnings*
 - i. *Including direct, indirect, induced and retained job impacts*
 - b. *Impacted Industry Analysis*
 - c. *Fiscal Impact (Tax Base Analysis)*
 - d. *Value of Research*
2. *Construction Impacts (if appropriate)*
 - a. *Economic output, employment and workers' earnings*
 - b. *Fiscal Impact for the State*
3. *Potential Impacts of Research*
 - a. *Economic output, employment and workers' earnings for Iowa*
 - i. *Including direct, indirect, induced job impacts*
 - b. *Impacted Industry Analysis for Iowa*
 - c. *Community Growth and Infrastructure Analysis for Iowa*
 - d. *Fiscal Impact (Tax Base Analysis) for Iowa*
 - e. *Discussion of How the Project Contributes to Securing Iowa's Energy Future*
 - f. *Economic output, employment and workers' earnings for the US*
 - i. *Including direct, indirect, induced job impacts*
 - g. *Impacted Industry Analysis the US*

While all of the projects contribute to furthering the cause of renewable energy or improving energy efficiency, the types of projects vary greatly. The projects ranged from a multiday conference about renewable energy to a \$300 million dollar commercialization project. An analysis was prepared for each project and each project was evaluated for all of the impacts listed above; however, it was not possible to estimate all of the impacts for every project. As discussed more in the *Summary of Funded Projects* section, only certain impacts were estimated for some of the projects.

Impact DataSource reviewed each project's application to the Iowa Power Fund and developed a data sheet to collect the relevant impacts made by each project. An economic impact data sheet was e-mailed to each project

manager to be completed and returned. The analysis uses data reported by project managers on the data sheet, information gathered from the project’s application and conversations conducted with the project manager.

1.1 Direct, Indirect and Induced Impacts

The individual analyses calculated the direct, indirect and induced economic impacts related to the projects. Indirect output, employment and workers’ earnings are impacts that are created in new or existing firms in the state, such parts suppliers that may supply goods and services to the facility. In addition, induced output, employment and workers’ earnings are created and supported in new or existing businesses, such as retail stores, gas stations, banks, restaurants, and service companies that may supply goods and services to workers and their families.

2 Summary of Funded Projects

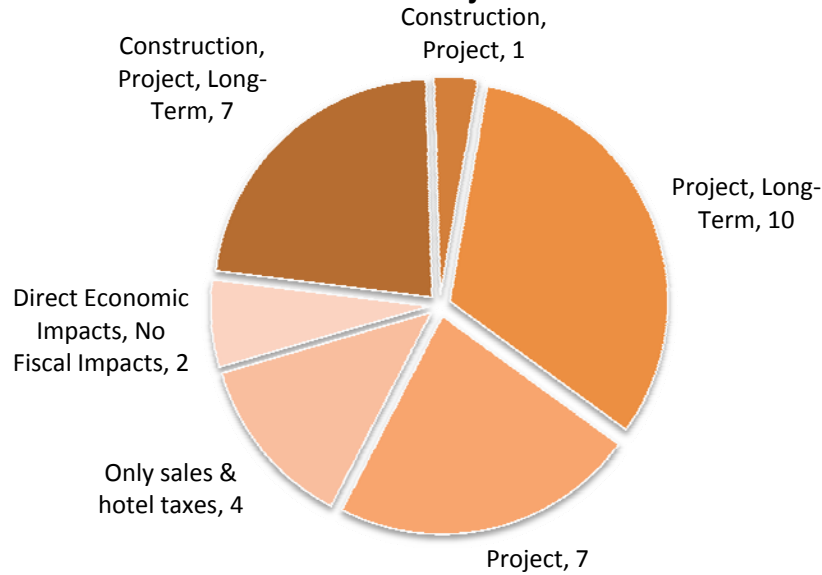
The 31 projects funded, or committed to be funded, by the Iowa Office of Energy Independence and Iowa Power Fund vary in length and type. While all of the projects are related to renewable energy, energy efficiency or help raise awareness about these topics, each one has its own unique focus. The list below identifies the general focus of the projects, in some cases indicating the related industry that may possibly be affected by the project.

Table 1: Number of Projects by Focus or Industry	
Focus or Industry	Number of Projects
Auto Hybrid	1
Biodiesel Education	1
Biodiesel Manufacturing	3
Crop / Biomass	2
Energy Efficiency	2
Ethanol and Livestock	1
Ethanol Manufacturing	2
Grain Drying Industry	1
Hydrogen Storage Research	1
Renewable Energy/Energy Efficiency	8
Renewable Power Generation	4
Solar Cell Manufacturing	2
Wind Turbine Manufacturing	3
Total	31

2.1 Impacts Calculated

Impact DataSource analyzed each project individually and determined which impacts to calculate for the given project. For example, some projects consisted of a conference. In these cases it was appropriate to only calculate impacts like taxable sales, lodging spending and resulting taxes. In other cases, the project included a significant construction period and other activities during the term of the project. In such cases, Impact DataSource calculated construction impacts and project impacts over the term of the project. Finally, in some cases Impact DataSource developed projections to estimate the potential long-term impacts of the project for the State of Iowa and the nation. The graph below illustrates the types of impacts calculated for all 31 projects.

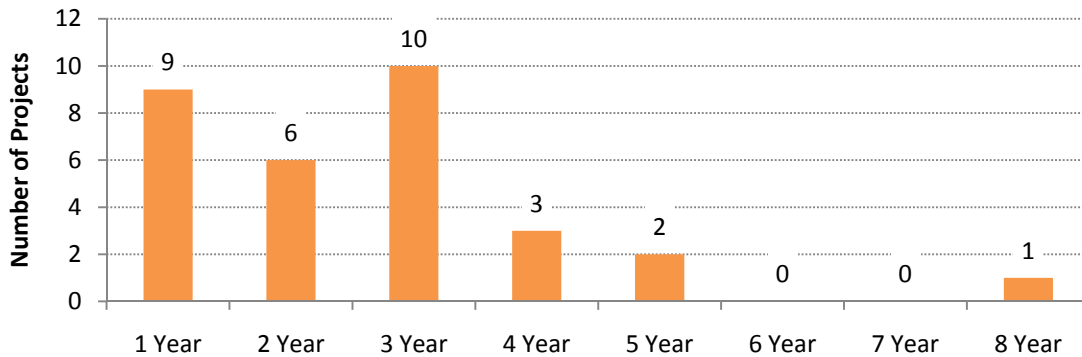
Graph 1: Impacts Calculated For The 31 Iowa Power Fund Projects



2.2 Length of Project

In each case, the funding provided by Iowa Power Fund supported a specific research, commercialization or education project. The projects varied in length from a multiday conference to several years. Only 6 projects are scheduled to last more than 3 years.

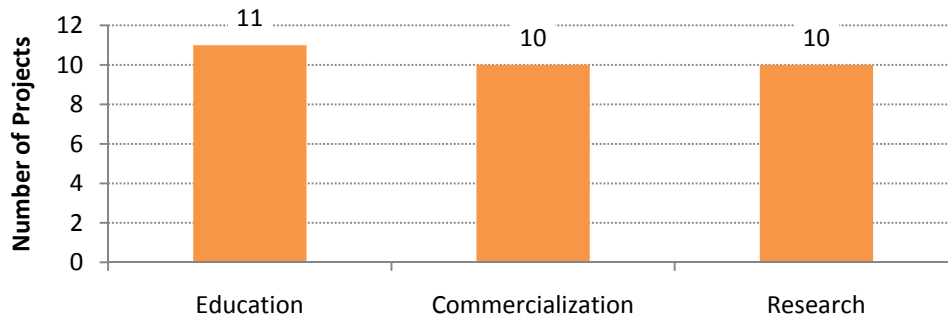
Graph 2: Number of Projects by Length



2.3 Project Type

The Iowa Power Fund funded a wide range of different types of projects. As a funding criterion, the project needed to demonstrate how it would contribute to the advancement of renewable energy or energy efficiency in Iowa. In addition, projects could be focused on research, commercialization or education. For the purposes of the economic impact study, Impact DataSource independently classified the projects into three broad categories based on the type of project – education, commercialization and research. Some education projects contained elements of research. Similarly, most commercialization projects contained significant research elements. Ultimately, the projects varied significantly, but these generalizations help understand the types of projects included in the analysis. The graph below illustrates the types of projects under analysis as classified by Impact DataSource.

Graph 3: Number of Projects by Project Type



2.4 Funding Provided by the Iowa Power Fund

Organizations seeking funding from the Iowa Power Fund contributed or raised a significant amount of money in addition to the Iowa Power Fund commitment. The Iowa Power Fund funded or committed to fund approximately \$38.3 million for these 31 projects as reported by the project managers. The Iowa Power Fund's contribution represents approximately 10.4% of total project funding. The total project funding, including construction and project funds, for the 31 projects under review is approximately \$368 million. The largest project, Project Liberty by POET, accounts for approximately 84% or \$306 million of the total project funding.

While the Iowa Power Fund's portion of total funds invested in the 31 projects is approximately only 10%, it is important to note that many of these projects would not have occurred without the financial assistance from the Iowa Power Fund. In some cases, project managers considered multiple sites around the US but ultimately chose Iowa based on the support of the Iowa Power Fund. Ultimately, the Office of Energy Independence and the Iowa Power Fund played a role in attracting and promoting these 31 projects and the significant investments in renewable energy research and commercialization in Iowa.

3 Project Impacts

The projects funded by the Iowa Power Fund generate significant economic impacts for Iowa. The spending, employment and workers' earnings during the term of the projects generate indirect and induced economic impacts. The indirect impacts are generated by businesses supplying inputs or other goods and services to the firm or project. The induced impacts are generated by businesses supplying goods and services to the workers generating the direct and indirect impacts.

3.1 Economic Impacts

Table 2 illustrates the annual economic output resulting from the 31 projects over the term of the funded projects. The majority of the impacts are concentrated during the 2009 to 2012 time period.

Year	Direct	Indirect	Induced	Total
2007	\$398,983	\$216,042	\$116,658	\$731,683
2008	\$2,499,979	\$1,197,344	\$661,566	\$4,358,890
2009	\$18,115,100	\$8,402,244	\$4,797,192	\$31,314,535
2010	\$21,575,952	\$9,563,494	\$7,126,193	\$38,265,639
2011	\$19,828,943	\$8,766,254	\$6,851,748	\$35,446,945
2012	\$32,697,621	\$16,908,732	\$9,496,332	\$59,102,685
2013	\$5,000,000	\$2,628,898	\$1,463,419	\$9,092,317
2014	\$1,675,159	\$880,764	\$490,292	\$3,046,215

The 31 projects funded by the Iowa Power Fund supported direct, indirect and induced employment over the term of projects. Table 3 illustrates the total annual employment supported as a result of the projects.

Year	Direct	Indirect	Induced	Total
2007	6	6	4	16
2008	19	20	14	53
2009	120	107	83	310
2010	158	120	98	376
2011	190	130	112	432
2012	84	89	66	239
2013	37	39	29	105
2014	37	39	29	105
Average Annual Employment	81	69	54	204

Table 4 summarizes the total annual workers' earnings paid to the workers supported during the term of the projects.

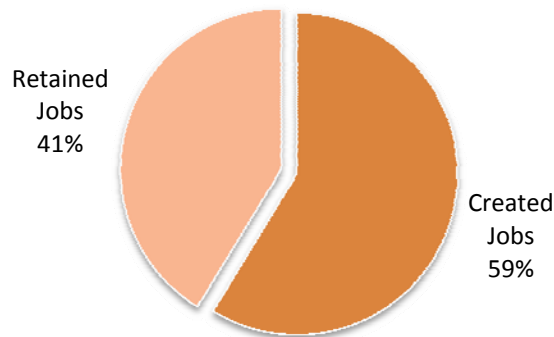
Year	Direct	Indirect	Induced	Total
2007	\$230,465	\$333,674	\$136,578	\$700,717
2008	\$741,310	\$857,194	\$397,298	\$1,995,802
2009	\$4,879,339	\$3,985,738	\$2,253,011	\$11,118,089
2010	\$6,735,271	\$4,797,450	\$2,924,845	\$14,457,565
2011	\$8,050,719	\$4,672,161	\$3,264,457	\$15,987,337
2012	\$4,689,968	\$3,885,322	\$2,200,237	\$10,775,527
2013	\$1,626,368	\$1,456,887	\$791,037	\$3,874,292
2014	\$1,675,159	\$1,500,593	\$814,768	\$3,990,521

The economic impacts detailed in the three tables above represent the total economic impact that results from the 31 projects supported by the Iowa Power Fund. Eight of the projects also include a construction phase which supports construction activity in Iowa. The construction-related activity is detailed in *Section 4*.

3.2 Job Impacts

The direct employment shown above includes jobs that were both created or retained as a result of the Iowa Power Fund projects. A created job was defined as a new position hired as a result of the project. A retained job was defined as an existing position funded by the Iowa Power Fund grant, partially or entirely. The majority of the direct employment was the result of created jobs. The graph below shows the direct employment breakdown between created and retained jobs.

**Graph 4: Direct Employment:
Created vs. Retained**



3.3 Impacted Industries Analysis

As mentioned previously in the *Summary of Funded Projects* section, the funded projects focused on a wide variety of different renewable energy and energy efficiency industries. Some projects focused on improving manufacturing processes related to ethanol, biodiesel, solar cell or wind turbine equipment. Other projects sought to identify the optimal amount and composition of manufacturing co-products to be fed to livestock. Some other projects focused on education and awareness about renewable energy, energy efficiency and conservation. It is no surprise that the total economic impacts generated by the Iowa Power Fund projects will impact each of the major industry categories. The table below illustrates the distribution of total economic output, employment and workers' earnings among the 20 major industry categories. The table shows the total impact including direct, indirect and induced impacts for all projects for which this information was calculated.

Table 5: Overall Impact for Iowa Industries Resulting from the Projects

Industry	Output	Employment	Workers' Earnings
	Percent	Percent	Percent
Agriculture, forestry, fishing, and hunting	14.7%	11.2%	9.5%
Mining	0.6%	0.2%	0.3%
Utilities	3.6%	1.8%	4.1%
Construction	7.5%	10.5%	7.3%
Manufacturing	42.4%	24.2%	37.9%
Wholesale trade	3.1%	3.3%	4.6%
Retail trade	2.5%	6.6%	3.7%
Transportation and warehousing	2.7%	3.3%	3.6%
Information	1.7%	1.5%	1.7%
Finance and insurance	4.6%	3.7%	5.3%
Real estate and rental and leasing	4.4%	2.6%	1.2%
Professional, scientific, and technical services	2.0%	3.3%	3.8%
Management of companies and enterprises	1.2%	1.4%	2.5%
Administrative and waste management services	1.3%	5.6%	3.0%
Educational services	0.6%	1.6%	0.8%
Health care and social assistance	2.6%	5.5%	5.3%
Arts, entertainment, and recreation	0.4%	0.7%	0.5%
Accommodation	0.3%	0.8%	0.4%
Food services and drinking places	0.7%	3.1%	1.0%
Other services	3.1%	9.3%	3.5%
Total	100.0%	100.0%	100.0%

The top-impacted industries include manufacturing, agriculture and construction. Other support industries such as finance and insurance are significantly impacted as well.

The types of jobs resulting from the economic activity in these industries vary greatly. The manufacturing, agriculture and construction industries employ more than just laborers and farmers. The 2009 Occupational

Economic & Fiscal Impact of Funded Projects

Employment Statistics (OES) Survey published by the US Department of Labor’s Bureau of Labor Statistics was used to identify specific occupations or types of occupations typically hired in a given major industry category. Table below provides a summary of the distribution of occupation categories based on the industry impacts.

Occupation Category	Percent of Employment
Production occupations	15.0%
Office and administrative support occupations	15.0%
Transportation and material moving occupations	8.2%
Sales and related occupations	8.0%
Farming, fishing, and forestry occupations	7.8%
Construction and extraction occupations	8.7%
Installation, maintenance, and repair occupations	5.8%
Management occupations	4.7%
Food preparation and serving related occupations	4.1%
Business and financial operations occupations	4.1%
Personal care and service occupations	2.3%
Building and grounds cleaning and maintenance occupations	2.8%
Healthcare practitioner and technical occupations	2.6%
Architecture and engineering occupations	2.4%
Computer and mathematical science occupations	2.0%
Healthcare support occupations	1.3%
Education, training, and library occupations	1.3%
Arts, design, entertainment, sports, and media occupations	1.0%
Protective service occupations	0.9%
Life, physical, and social science occupations	0.8%
Community and social services occupations	0.6%
Legal occupations	0.4%

Economic & Fiscal Impact of Funded Projects

3.4 Fiscal Impacts

The economic activity related to the 31 Iowa Power Fund projects translates into revenue for the State of Iowa and other local taxing entities. The activity during the projects, visitors and spinoff business activity generate income taxes, sales taxes, corporate income taxes and other taxes and revenue for the State. The table below shows the estimated revenue for the State to be collected during the term of the projects.

Table 7: Revenue for the State During the Term of the Projects

Year	Income Tax Collections	Sales Tax Collections	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2007	\$17,460	\$12,716	\$1,198	\$11,736	\$43,110
2008	\$49,730	\$75,319	\$6,692	\$39,617	\$171,358
2009	\$277,032	\$224,791	\$47,518	\$231,211	\$780,552
2010	\$360,242	\$290,736	\$80,938	\$287,016	\$1,018,932
2011	\$398,360	\$1,266,292	\$82,596	\$338,042	\$2,085,290
2012	\$268,496	\$1,691,556	\$95,058	\$198,965	\$2,254,076
2013	\$96,537	\$61,346	\$14,732	\$91,470	\$264,085
2014	\$99,433	\$56,076	\$4,936	\$94,214	\$254,659

Other Taxes & Revenues include revenue from beer and liquor, cigarette, and tobacco taxes in addition to motor vehicle related revenue and other miscellaneous revenue.

Local taxing entities such as cities, counties and school districts may benefit from the projects as well. Local entities may receive property taxes on the new property added to local tax rolls by the project or from residential property supported by workers. In addition, school districts receive revenue from sales taxes and local communities may receive hotel/motel tax revenue. The table below shows the estimated tax revenue to be collected during the term of projects.

Table 8: Revenue for Local Taxing Entities During the Term of the Projects

Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections	Hotel/Motel Tax Collections	Total Local Revenues
2007	\$0	\$26,665	\$2,543	\$4,625	\$33,833
2008	\$24,605	\$89,335	\$15,064	\$23,146	\$152,150
2009	\$68,635	\$522,486	\$44,958	\$21,831	\$657,910
2010	\$44,030	\$643,093	\$58,147	\$7,808	\$753,079
2011	\$341,269	\$751,242	\$253,258	\$4,295	\$1,350,065
2012	\$931,789	\$433,320	\$338,311	\$3,439	\$1,706,859
2013	\$931,789	\$196,006	\$12,269	\$2,985	\$1,143,049
2014	\$931,789	\$199,926	\$11,215	\$3,075	\$1,146,005

3.5 Securing Iowa's Energy Future

All of the projects funded by the Iowa Power Fund will contribute to securing Iowa's energy future and making Iowa energy independent. All of these research and commercialization projects contribute to reducing the state's reliance on fossil fuels and increasing the use of renewable energy. The projects seek to maximize Iowa's natural features and farmland by combining agriculture and manufacturing to produce renewable energy. Below are a few examples of how these projects will contribute to securing Iowa's energy future.

The research being conducted at POET Project Liberty is on the cutting edge of ethanol production research and has the potential to provide significant benefit to the State of Iowa. The project includes the transformation of a traditional ethanol biorefinery into an integrated corn-to-ethanol and cellulose-to-ethanol biorefinery. POET hopes to validate the technology and economics at commercial scale at multiple POET biorefineries in Iowa. The project will use corn grain and corn cobs to produce conventional and cellulosic ethanol in one facility. The corn suppliers and biorefinery operators seek to take advantage of the economies of scope - reducing total average cost by increasing the number of different products produced. The POET project will reduce the state's reliance on foreign oil by producing ethanol from renewable agriculture crops produced in Iowa.

Another project related to biofuel manufacturing and agriculture that helps Iowa reduce its reliance on foreign sources or energy is the Green Plains Renewable Energy Inc. and Bioprocess Algae project. This project seeks to capitalize on the state's ethanol production by creating a new fuel source for biodiesel and feedstock for livestock. The algae will be produced in close proximity to ethanol plants using waste products from the ethanol plant, carbon dioxide and waste water. The algae may then be used to produce biodiesel and a feedstock for poultry and swine. By capturing the waste carbon dioxide from an ethanol plant and using it in a bioreactor system to produce mass amounts of algae, carbon dioxide levels would not just be mitigated but would be eliminated from the environment. If and when carbon credits or cap and trade policies are enacted, users of this technology would be eligible for considerable new revenues.

Some projects were focused on finding uses for renewable energy co-products. Both Novecta and the Iowa State University Department of Animal Science are researching the processing and optimal amount of ethanol co-products that can be fed to livestock in the state. These projects could potentially translate into increased revenue for ethanol producers and reduced costs for farmers. Ultimately the research will contribute to expanding the renewable energy industry and reducing the state's reliance on fossil fuels.

Other projects focused on generating electricity from waste gas, biomass or wind or the projects researched improvements to these processes. These projects and potential advancements resulting from them will help Iowa consume fewer fossil fuels in the future.

In addition to the direct research and commercialization projects, the Iowa Power Fund funded several educational projects. Some projects consisted of a multi-day renewable energy conference allowing researchers and citizens the chance to learn about recent renewable energy developments and network with other like-minded individuals. Other projects supported cities in Iowa in their efforts to research and implement sustainability and renewable energy projects. Some projects seek to raise awareness about renewable energy. All of these projects will encourage energy efficiency, conservation and help promote renewable energy. Using less energy will help Iowa reduce its reliance on fossil fuels like coal, which currently produces 75% of the state's electricity. These projects and the awareness they raise in the state will contribute to securing Iowa's energy future.

4 Construction Impacts

4.1 Economic Impacts

Eight of the 31 projects included a construction phase as a part of the research or commercialization project. This construction spending will translate into economic impacts for Iowa as the projects support the construction industry in the state. The direct construction impacts generate indirect and induced impacts for other businesses in the state. Table 9 displays the combined economic impact on economic output related to construction for all eight projects.

Year	Direct	Indirect & Induced	Total
2007	\$1,500,000	\$1,373,850	\$2,873,850
2008	\$3,726,733	\$3,413,315	\$7,140,048
2009	\$3,501,647	\$3,207,158	\$6,708,805
2010	\$5,322,427	\$4,874,811	\$10,197,238
2011	\$103,228,719	\$94,547,184	\$197,775,903
2012	\$148,863,079	\$136,343,694	\$285,206,773

The majority of the above economic output resulting from project-related construction will be generated by Project Liberty by POET. As reported, Project Liberty generates 95% of the direct economic output shown above.

Table 10 shows the estimated construction-related employment supported during the construction period.

Year	Direct	Indirect & Induced	Total
2007	7	5	12
2008	18	13	31
2009	42	30	72
2010	26	19	45
2011	251	179	430
2012	310	222	532
Average Annual Construction Employment	109	78	187

Economic & Fiscal Impact of Funded Projects

The construction-related employment will result in the workers' earnings shown in Table 11.

Year	Direct	Indirect & Induced	Total
2007	\$225,000	\$146,340	\$371,340
2008	\$583,902	\$379,770	\$963,672
2009	\$1,294,909	\$842,209	\$2,137,118
2010	\$856,969	\$557,373	\$1,414,341
2011	\$8,741,404	\$5,685,409	\$14,426,813
2012	\$11,217,856	\$7,296,093	\$18,513,949

4.2 Fiscal Impacts

The construction-related economic activity described above will translate into fiscal impacts for Iowa. The construction projects and spinoff business activity generates income taxes, sales taxes, corporate income taxes and other taxes and revenue for the state. The table below shows the estimated revenue for the State to be collected during construction.

Year	Income Tax Collections	Sales Tax Collections	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2007	\$9,253	\$20,826	\$10,346	\$9,060	\$49,485
2008	\$24,012	\$53,430	\$25,704	\$23,513	\$126,659
2009	\$53,251	\$41,921	\$24,152	\$52,144	\$171,467
2010	\$35,241	\$41,435	\$36,710	\$34,509	\$147,895
2011	\$359,476	\$623,284	\$711,993	\$352,002	\$2,046,756
2012	\$461,316	\$870,760	\$1,026,744	\$451,725	\$2,810,545

Other Taxes & Revenues include revenue from beer and liquor, cigarette, and tobacco taxes in addition to motor vehicle related revenue and other miscellaneous revenue.

5 Potential Long-Term Impacts

5.1 Value of Research and Projects

The projects funded by the Iowa Power Fund helped advance a wide range of renewable energy initiatives and research and commercialization in several industries. The value of each project was described briefly in the individual analyses. In most cases, Impact DataSource made an attempt to measure the value of the research or project by projecting possible long-term impacts for Iowa and the nation. Since most projects are research related or in the early stages of commercialization, it is difficult to estimate long-term impacts of the projects.

5.2 Potential Long-Term Economic Impacts for Iowa

After studying the project application, reviewing the economic impact data sheet and in some cases contacting the project manager, Impact DataSource generated a range of long-term impact projections for some of the projects. No projections were made where it was too difficult to attribute some reasonable economic consequences to the project.

In some cases, Impact DataSource determined that the project may result in an expansion in a given industry or industries over the next 20 years due to the research or commercialization project. In these cases an expansion in the direct industry output was modeled as well as associated increases in employment and workers' earnings. The 2007 Economic Census for Iowa was used to help identify the size and other attributes of industries. In other cases, Impact DataSource modeled the economic, employment and workers' earnings growth of a project over time based on a firm's projections. Some other cases involved replicating the 20-year economic impacts of the project for multiple locations or firms.

In each case, Impact DataSource estimated three scenarios for the potential long-term impacts – a Low, Mid and High scenario. The Mid scenario represents what Impact DataSource believes may reasonably occur in the future as a result of the project. The High and Low scenarios give a range of possible impacts above and below this scenario. While Impact DataSource attempted to make reasonable assumptions about the resulting impact of the projects, it is important to remember that there may be no additional economic impacts resulting from a project.

In addition to the direct economic impacts related to the economic growth, indirect and induced economic impacts were estimated for each scenario. While these three scenarios provide a range for the potential impact,

nothing is guaranteed. There are no probabilities which we can ascribe to each of these scenarios. The potential impacts are simply our best judgment on the long-term impacts of the research or project. Government policy, other macroeconomic factors and possibly newer research will all play a role in any realization of the long-term impact. In all cases, significant private investment is assumed to attain these economic outcomes. Just as there is no guarantee that an individual project will generate the long-term projected impacts, future conditions may preclude some of these impacts from happening at the same time. In addition, the projects are not 'independent', since the success of one project may affect the economic potential of another, either positively or negatively. While this summary analysis combines all of the economic and fiscal impacts projected in the individual analyses, it is highly unlikely that all of these impacts would occur. That being said, the projects represent significant economic potential for Iowa over the next two decades.

As mentioned above, Impact DataSource did not calculate the potential long-term of all 31 projects. No projections were made where it was too difficult to attribute some reasonable economic consequences to the project. To make the analysis more realistic, it is assumed that the economic growth generating these impacts will not take place concurrently with the research or commercialization project. Most of the resulting long-term impacts are modeled to begin 5 years after the original start date of the project. The potential long-term impacts were estimated for 20 years typically beginning in 2014. The table below summarizes the total economic impacts over the 20-year period. All figures include direct, indirect and induced impacts. While this summary report combines all of the economic and fiscal impacts projected in the individual analyses, it is highly unlikely that all of these impacts will be realized. That being said, the projects represent significant economic potential for Iowa over the next two decades.

Table 13: Potential Long-Term Economic Impacts from 2014 to 2033 for Iowa Three Possible Scenarios			
	Low	Mid	High
Economic Output	\$40,319,182,228	\$76,363,785,672	\$113,453,377,174
Employment*	8,487	14,974	21,741
Cumulative Workers' Earnings	\$3,810,714,391	\$6,726,680,555	\$9,673,946,637

*Total permanent jobs added over the 20-year period.

Values presented in 2010 dollars.

Economic & Fiscal Impact of Funded Projects

As modeled, these impacts are phased in over the 20-year period. It is helpful to look at a rough estimate of the annual potential economic impacts. The table below shows the estimated annual impacts over the period 2014 to 2033. All figures include direct, indirect and induced impacts.

Table 14: Average Annual Potential Long-Term Economic Impacts from 2014 to 2033 for Iowa Three Possible Scenarios			
	Low	Mid	High
Economic Output	\$2,015,959,111	\$3,818,189,284	\$5,672,668,859
Employment**	424	749	1,087
Annual Total Workers' Earnings	\$19,410,571	\$32,511,376	\$45,390,906

** Average number of permanent jobs added each year

Values presented in 2010 dollars.

5.3 Community & Infrastructure Growth

The additional economic growth that may occur as a result of the long-term economic impact of the projects would likely spur population growth for the State of Iowa. The State will likely realize increased costs related to roads and school funding as a result. To estimate the possible increase in infrastructure costs due to community growth, the marginal cost of roads and schools are identified and applied on a per capita basis to new residents and school students.

It is assumed that new jobs to be created in Iowa will primarily be filled by residents of Iowa. However, it is unlikely that all jobs will be filled by Iowan residents as some migration is common. The analysis assumes Iowan's will fill 80% of the new jobs and uses other demographic attributes acquired from the US Census American Community Survey and the Iowa Department of Education. The table below identifies the estimated number of new workers, residents and school children for the three scenarios.

Table 15: Total New Workers, Residents & Students in Iowa 2014 to 2033 Three Possible Scenarios			
	Low	Mid	High
New Jobs	8,487	14,974	21,741
New Workers Moving to Iowa	1,697	2,995	4,348
New Residents	4,040	7,128	10,349
New School Children	648	1,143	1,660

Due to the increase in workers, residents and school children, the state will incur increased costs related to transportation and education. The table below summarizes the possible 20-year additional transportation cost and education cost for the three scenarios.

Table 16: Projected Infrastructure Costs in Iowa 2014 to 2033 Three Possible Scenarios			
	Low	Mid	High
State Transportation Costs	\$3,688,867	\$6,521,083	\$9,405,050
State Education Costs	\$27,323,385	\$48,301,563	\$69,663,060
Local Education Costs	\$3,903,341	\$6,900,223	\$9,951,866

Values presented in 2010 dollars.

5.4 Potential Long-Term Fiscal Impacts for Iowa & Local Taxing Entities

The estimated long-term impacts resulting from the Iowa Power Fund projects may generate income taxes, sales taxes, corporate income taxes and other taxes and revenue for the state. In addition, taxable property added by firms and residential property owned by employees will result in property taxes for local taxing entities. Local taxing entities will also receive some sales taxes. The table below summarizes the estimated revenue for state and local taxing entities over the 20-year period.

Table 17: Estimated State & Local Revenue in Iowa 2014 to 2033 From Long-Term Impacts Three Possible Scenarios			
	Low	Mid	High
State Revenue	\$475,113,723	\$889,610,895	\$1,312,923,563
Local Taxing Entities Revenue	\$390,946,958	\$735,636,081	\$1,089,779,363

Values presented in 2010 dollars.

5.5 Long-Term Impacted Industries Analysis for Iowa

Just as the economic impact resulting from the execution of the projects impacted many industries, the potential long-term impacts may have ripple effects for all major industry categories in Iowa. The table below illustrates the distribution of total economic output, employment and workers' earnings among the 20 major industry categories. The table shows the total impact including direct, indirect and induced impacts for all projects for which potential long-term impacts were calculated. The distribution of impacts between industries is constant between the Low, Mid and High scenarios.

Table 18: Overall Impact for Iowa Industries Resulting from Potential Long-Term Impacts

Industry	Output	Employment	Workers' Earnings
	Percent	Percent	Percent
Agriculture, forestry, fishing, and hunting	15.2%	12.5%	9.7%
Mining	0.6%	0.2%	0.3%
Utilities	3.7%	2.0%	4.3%
Construction	7.9%	12.0%	7.7%
Manufacturing	43.7%	26.7%	39.3%
Wholesale trade	3.1%	3.6%	4.7%
Retail trade	2.5%	7.0%	3.7%
Transportation and warehousing	2.7%	3.4%	3.6%
Information	1.6%	1.4%	1.7%
Finance and insurance	4.5%	3.7%	5.2%
Real estate and rental and leasing	4.3%	2.6%	1.2%
Professional, scientific, and technical services	1.6%	2.8%	3.1%
Management of companies and enterprises	1.3%	1.5%	2.6%
Administrative and waste management services	1.3%	5.7%	3.0%
Educational services	0.5%	1.4%	0.8%
Health care and social assistance	2.6%	5.7%	5.3%
Arts, entertainment, and recreation	0.5%	0.8%	0.5%
Accommodation	0.3%	0.7%	0.4%
Food services and drinking places	0.7%	3.1%	1.0%
Other services	1.5%	3.2%	2.0%
Total	100.0%	100.0%	100.0%

Recall from the Impacted Industry Analysis relating to the operations of the projects in section 3.3, manufacturing and agriculture were the most impacted industries. Here, again, the most impacted industries are agriculture and manufacturing. By modeling the potential long-term impacts based only on expansions in industry output or direct firm growth, the impact on construction may be understated.

5.6 Potential Long-Term Economic Impacts for the US

Just as 20-year economic impact projections were prepared for Iowa, Impact DataSource prepared potential long-term economic impacts for the United States. Again, potential long-term impacts were only calculated for some of the projects. No projections were made where it was too difficult to attribute some reasonable economic consequences to the project. In each case, Impact DataSource estimated three scenarios for the potential long-term impacts – a Low, Mid and High scenario. While these three scenarios provide a range for the potential impact, nothing is guaranteed. There are no probabilities which we can ascribe to each of these scenarios. The potential impacts are simply our best judgment on the long-term impacts of the research or project. Government policy, other macroeconomic factors and possibly newer research will all play a role in any realization of the long-term impact. In all cases, significant private investment is assumed to attain these economic outcomes. Just as there is no guarantee that an individual project will generate the long-term projected impacts, future conditions may preclude some of these impacts from happening at the same time. In addition, the projects are not ‘independent’, since the success of one project may affect the economic potential of another, either positively or negatively. While this summary analysis combines all of the economic and fiscal impacts projected in the individual analyses, it is highly unlikely that all of these impacts would occur. That being said, the projects represent significant economic potential for US over the next two decades.

The potential long-term impacts for the US were estimated for 20 years beginning in 2014. The table below summarizes the total economic impacts over the 20-year period. All figures are presented in 2010 dollars and include direct, indirect and induced impacts. While this summary report combines all of the economic and fiscal impacts projected in the individual analyses, it is highly unlikely that all of these impacts will be realized. That being said, the projects represent significant economic potential for Iowa over the next two decades.

	Low	Mid	High
Economic Output	\$103,167,773,718	\$199,666,503,288	\$299,155,454,464
Employment*	24,278	44,932	66,225
Cumulative Workers' Earnings	\$10,354,107,838	\$19,651,492,065	\$29,140,317,632

*Total permanent jobs added over the 20-year period.

Values presented in 2010 dollars.

Economic & Fiscal Impact of Funded Projects

As modeled, these impacts are phased in over the 20-year period. It is helpful to look at a rough estimate of the annual potential economic impacts. The table below shows the estimated annual impacts over the period 2014 to 2033 in the US.

Table 20: Potential Long-Term Economic Impacts from 2014 to 2033 for the US Three Possible Scenarios			
	Low	Mid	High
Economic Output	\$5,158,388,686	\$9,983,325,164	\$14,957,772,723
Employment**	1,214	2,247	3,311
Annual Workers' Earnings	\$51,469,590	\$94,597,135	\$137,931,929

Values presented in 2010 dollars.

6 Methodology & Approach

Direct, Indirect and Induced Economic Impacts

The individual analyses calculated the direct, indirect and induced economic impacts related to the projects. Indirect output, employment and workers' earnings are created in new or existing firms in the state, such parts suppliers that may supply goods and services to the facility. In addition, induced output, employment and workers' earnings are created and supported in new or existing businesses, such as retail stores, gas stations, banks, restaurants, and service companies that may supply goods and services to workers and their families.

To estimate the indirect and induced economic impact of the direct impacts on the state, regional economic multipliers were used. Regional economic multipliers for Iowa are included in the US Department of Commerce's Regional Input-Output Modeling System (RIMS II). Three types of regional economic multipliers were used in this analysis: an output multiplier, an employment multiplier and an earnings multiplier.

An output multiplier was used to estimate the indirect and induced output or revenues created and supported in the state. An employment multiplier was used to estimate the number of indirect and induced jobs created and supported in the state. An earnings multiplier was used to estimate the amount of salaries to be paid to workers in these new indirect and induced jobs. Each analysis used multipliers appropriate for the industry or industries impacted.

Construction Impacts – Economic Impacts

Impact DataSource used the data acquired from the project contacts and applications to determine the economic and fiscal impacts resulting from construction related to the project. Less than one-third of all of the projects included construction. Typically, project-related construction included the construction of a facility for the project or actual construction of a plant. Construction impacts were calculated separately from the project impacts since it simply utilized labor and materials temporarily to construct a facility or plant. Using the direct construction spending and the distribution of this spending between labor and materials, Impact DataSource estimated the direct economic output, employment and workers' earnings related to construction. Construction spending was used to approximate output. The portion of the spending used for labor and the average construction industry salary provided estimates of direct construction employment and construction workers' earnings. In addition to the direct impacts related to construction, Impact DataSource used RIMS II multipliers

from the US Department of Commerce’s Bureau of Economic Analysis for the construction industry in the State of Iowa to estimate the indirect and induced impacts that result from the direct construction impacts. The construction period ranged from one to three years.

Construction Impacts – Fiscal Impacts

The economic impacts related to construction were then translated into fiscal impacts for the State of Iowa. State income tax was estimated based on an effective income tax rate and the total construction workers’ earnings. In addition, state sales taxes will be collected on a portion of estimated worker spending, the portion of construction materials indicated to be for taxable items, and a portion spending by indirect and induced businesses. State corporate income taxes will be collected on a portion of the total economic activity related to construction. The analysis assumes corporate income taxes are collected on taxable corporate income - estimated at 5% of total output. Other taxes and revenues for Iowa were calculated on a per construction worker basis. The analysis estimated the per worker revenue generated by each of the following types of taxes and revenues and then calculated the revenue to be collected during construction.

Other Taxes & Revenues	
- Beer & liquor tax	- Miscellaneous tax
- Cigarette tax	- Motor Fuel Tax
- Franchise tax	- Motor Vehicle Registration Fee/Road Fee
- Inheritance tax	- Tobacco tax
- Insurance premium tax	

Project Impacts – Economic

Impact DataSource used the data acquired from the project contacts and applications to determine the economic and fiscal impacts resulting from the actual project. Using the reported total project budget less any construction spending, Impact DataSource estimated the direct economic output. Project contacts indicated direct jobs created or retained/supported. A created job was defined as a new position hired as a result of the project. A retained/supported job was defined as an existing position funded by the Iowa Power Fund grant (partially or entirely). For the purpose of this analysis, direct jobs consisted of created jobs and retained/supported jobs. In addition to the direct impacts related to project, Impact DataSource used RIMS II multipliers from the US Department of Commerce’s Bureau of Economic Analysis for the relevant industry in the State of Iowa to estimate the indirect and induced impacts that result from the direct project impacts. The economic impacts were calculated over the term of the project.

Project Impacts – Impacted Industry Analysis

The total economic output, employment and workers’ earnings were estimated to impact many industries beyond just the direct industry under analysis. Based on industry relationships provided by the Bureau of Economic Analysis through RIMS II multipliers for Iowa, a table was provided for each project indicating how much each major industry category is impacted by the project. Table shows how the direct, indirect and induced impacts on output, employment and workers’ earnings will be distributed across the industry categories.

Project Impacts – Fiscal Impacts

The economic impacts related to the actual project were then translated into fiscal impacts for the State of Iowa. State income tax was estimated based on an effective tax rate and the total workers’ earnings. Since many of the projects included out-of-town visitors visiting the project, taxes collected on visitor spending and lodging was also estimated. State sales taxes will be collected on a portion of estimated worker spending, project spending on taxable items, a portion spending by indirect and induced businesses and out-of-town-visitor spending. State corporate income taxes will be collected on a portion of the total economic activity related to the project. The analysis assumes corporate income taxes are collected on taxable corporate income - estimated at 5% of total indirect and induced output. This assumes these indirect and induced businesses are subject to state corporate income taxes. Other taxes and revenues for Iowa were calculated on a per worker basis. The analysis estimated the per worker revenue generated by each of the following types of taxes and revenues and then calculated the revenue to be collected during the project.

Other Taxes & Revenues	
- Beer & liquor tax	- Miscellaneous tax
- Cigarette tax	- Motor Fuel Tax
- Franchise tax	- Motor Vehicle Registration Fee/Road Fee
- Inheritance tax	- Tobacco tax
- Insurance premium tax	

The analysis estimated the taxable property to be added to the tax rolls as a result of the expansion in indirect and induced business and residential property supported by workers. Estimated property taxes collected by local taxing entities were also calculated.

Potential Impacts of Research – Securing Iowa’s Energy Future

Each individual analysis included a discussion of how the project will contribute to securing Iowa’s energy future. In general, the Iowa Power Fund projects will help Iowa depend less on fossil fuels like oil and coal by helping

Iowa's become more energy efficient and aware of energy consumption. In addition many projects sought ways to use renewable sources of energy in the state.

Potential Impacts of Research – Value of Research or Project

Each individual analysis included a discussion of the value of the research or project. Since most projects are research related or in the early stages of commercialization, it is difficult to estimate long-term impacts of the projects. An attempt to measure the value of the research or project was made by projecting possible long-term impacts for Iowa and the nation.

Potential Impacts of Research – Economic Impact for Iowa

After studying the project application, reviewing the economic impact data sheet and in some cases contacting the project manager, Impact DataSource generated a range of long-term impact projections for some of the projects. No projections were made where it was too difficult to attribute some reasonable economic consequences to the project.

In some cases, Impact DataSource determined that it is reasonable to expect an expansion in a given industry or industries over the next 20 years due to the research or commercialization project. In these cases an expansion in the direct industry output was modeled as well as associated increases in employment and workers' earnings. The 2007 Economic Census for Iowa was used to help identify the size and other attributes of industries. In other cases, Impact DataSource modeled the economic, employment and workers' earnings growth of a project over time based on a firm's projections. Some other cases involved replicating the 20-year economic impacts of the project for multiple firms.

In each case, Impact DataSource estimated three scenarios for the potential long-term impacts – a Low, Mid and High scenario. The Mid scenario represents what Impact DataSource believes may reasonably occur in the future as a result of the project. The High and Low scenarios give a range of possible impacts above and below this scenario. While Impact DataSource attempted to make reasonable assumptions about the resulting impact of the projects, it is important to remember that there may be no additional economic impacts resulting from a project.

In addition to the direct economic impacts related to the economic growth, indirect and induced economic impacts were estimated for each scenario. While these three scenarios provide a range for the potential impact,

nothing is guaranteed. There are no probabilities which we can ascribe to each of these scenarios. The potential impacts are simply our best judgment on the long-term impacts of the research or project. Government policy, other macroeconomic factors and possibly newer research will all play a role in any realization of the long-term impact.

Potential Impacts of Research – Impacted Industry Analysis

The long-term economic output, employment and workers' earnings were estimated to impact many industries beyond just the direct industry under analysis. Based on industry relationships provided by the Bureau of Economic Analysis through RIMS II multipliers for Iowa, a table was provided for each project indicating how much each major industry category may be impacted by the project's potential long-term impact. Three tables show how the direct, indirect and induced impacts on output, employment and workers' earnings may be distributed across the industry categories for each of the three scenarios.

Potential Impacts of Research – Community Growth and Infrastructure Analysis for Iowa

The economic growth associated with the potential long-term impacts would likely spur population growth for the State of Iowa. Since Iowa will likely realize increased costs related to roads and school funding, Impact DataSource estimates the possible increase in infrastructure costs due to community growth by estimating the marginal cost of roads and schools and applying these costs on a per capita basis to new residents and school students. Impact DataSource makes assumptions about the number of jobs to be filled by out of state residents, the average household size and number of school students per household. After estimating the number of new workers moving to Iowa, new residents, and new school children, we estimate the increase in state transportation costs and state and local school funding costs.

Potential Impacts of Research – Fiscal Impact for Iowa

The economic impacts related to the potential long-term impacts were then translated into fiscal impacts for the State of Iowa for a 20-year period. State income tax was estimated based on an effective tax rate and the total workers' earnings. In addition, state sales taxes will be collected on a portion of estimated worker spending, project spending on taxable items, and a portion spending by indirect and induced businesses. State corporate income taxes will be collected on a portion of the total economic activity related to the projected long-term potential. The analysis assumes corporate income taxes are collected on taxable corporate income - estimated at 5% of total output. Other taxes and revenues for Iowa were calculated on a per worker basis as described earlier under *Project Impacts – Fiscal Impacts*.

Potential Impacts of Research – Economic Impact for the US

Potential long-term impacts for the United States as a whole were also calculated. These impacts were modeled similarly to the potential long-term impacts for Iowa. In each case, Impact DataSource estimated three scenarios for the potential long-term impacts – a Low, Mid and High scenario. In addition to the direct economic impacts related to the economic growth, indirect and induced economic impacts were estimated for each scenario. While these three scenarios provide a range for the potential impact in the US, nothing is guaranteed. There are no probabilities which we can ascribe to each of these scenarios. The potential impacts are simply our best judgment on the long-term impacts of the research or project. Government policy, other macroeconomic factors and possibly newer research will all play a role in any realization of the long-term impact. As modeled, the US potential long-term impacts include the Iowa portion of the potential long-term impacts.

About Impact DataSource

Over the past sixteen years, Impact DataSource has conducted economic impact analyses of over 2,500 firms and projects in most industry groups and in 26 states. In recent years, Impact DataSource has conducted over 100 analyses of green energy projects, in Texas, New Mexico and other states. Each of the analyses required developing an appropriate economic impact model and projecting the economic impacts of each project over a 10- or 20-year period on the area and, in many cases, the state and projecting the fiscal impact of the project on local taxing districts and, in many cases, the state.

Over the past five years, Impact DataSource has conducted over 60 economic impact analyses of the projects applying for grants from the Texas Enterprise Fund, a \$200+ million economic development fund for firms and projects locating or expanding in the State of Texas.

Appendix A: Individual Project Summaries*

*See individual reports for additional detail.

Individual Project Summaries

Amana Farms

Farms to Fuel

Total Project Budget: \$5,415,613
 Funding Provided by IPF: \$1,082,575

Project Description

The Amana Farms – Farms to Fuel project will demonstrate technology to produce alternative renewable energy by combining cattle manure with organic industrial waste products in an anaerobic digester. The digester produces methane gas which fires an engine set to generate base load electricity. This would create environmental benefits by turning crop, livestock, and industrial waste into renewable energy in a sustainable and profitable way. Other benefits of the project include the production of a fertilizer that is more readily applicable to crops than in its raw form.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2007	\$0	\$0	\$0	\$0
2008	\$0	\$0	\$0	\$0
2009	\$260,000	\$119,317	\$77,008	\$456,325
Total	\$260,000	\$119,317	\$77,008	\$456,325

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2007	0	0	0	0
2008	3	2	2	7
2009	4	3	3	10

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2007	\$0	\$0	\$0	\$0
2008	\$120,000	\$77,851	\$50,762	\$248,613
2009	\$160,000	\$103,801	\$67,683	\$331,484
Total	\$280,000	\$181,652	\$118,444	\$580,097

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2007	\$0	\$875	\$0	\$0	\$875
2008	\$6,195	\$8,808	\$0	\$5,390	\$20,393
2009	\$8,260	\$5,563	\$707	\$7,662	\$22,191
Total	\$14,454	\$15,245	\$707	\$13,052	\$43,458

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Individual Project Summaries

Amana Farms

Farms to Fuel

Total Project Budget: \$5,415,613
Funding Provided by IPF: \$1,082,575

Project Impacts - Fiscal Impacts (continued)

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2007	\$0	\$0	\$175	\$2,125	\$2,300
2008	\$24,605	\$12,128	\$1,762	\$2,189	\$40,683
2009	\$24,605	\$17,071	\$1,113	\$2,254	\$45,043
Total	\$49,210	\$29,199	\$3,049	\$6,568	\$88,026

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Construction Impacts - Economic Impacts

Economic Output During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2007	\$1,500,000	\$1,373,850	\$2,873,850
2008	\$3,655,613	\$3,348,176	\$7,003,789
Total	\$5,155,613	\$4,722,026	\$9,877,639

Employment During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2007	7	5	12
2008	17	12	29

Workers' Earnings During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2007	\$225,000	\$146,340	\$371,340
2008	\$548,342	\$356,642	\$904,984
Total	\$773,342	\$502,982	\$1,276,324

Revenue for the State During Project-Related Construction					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2007	\$9,253	\$20,826	\$10,346	\$9,060	\$49,485
2008	\$22,550	\$50,755	\$25,214	\$22,081	\$120,600
Total	\$31,802	\$71,582	\$35,560	\$31,141	\$170,085

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.



Individual Project Summaries

Amana Farms

Farms to Fuel

Total Project Budget: \$5,415,613
 Funding Provided by IPF: \$1,082,575

Potential Long-Term Impacts for Iowa

Possible Total Economic Impact Over 20-Year Period for Iowa (Three Possible Scenarios)			
	Low	Mid	High
Economic Output (In Thousands)	\$484,670	\$969,340	\$1,454,010
Employment	72	145	217
Workers' Earnings	\$27,834,628	\$55,669,256	\$83,503,885

Individual Project Summaries

Carbon-Free Energy

Vertical Wind Turbine Manufacturer

Total Project Budget: \$703,000
Funding Provided by IPF: \$83,000

Project Description

Carbon-Free Energy is a small-scale wind turbine start-up company. Their vertical orientation wind turbine is well suited to residential, farming, and small commercial market segments. A patent applied for technology has increased vane RPMs by 207% in wind tunnel tests with a scale model. Their proprietary generator design produces electricity in light wind speeds and can also take advantage of very high wind speeds, unlike wind turbines with a horizontal orientation.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	\$195,000	\$62,673	\$37,850	\$295,523
2009	\$225,000	\$72,315	\$43,673	\$340,988
2010	\$283,000	\$90,956	\$54,930	\$428,887
Total	\$703,000	\$225,944	\$136,452	\$1,065,397

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	3	4	3	9
2009	6	7	5	19
2010	4	5	4	12

Totals may not equal sum due to rounding.

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	\$126,000	\$100,561	\$58,136	\$284,697
2009	\$222,500	\$177,577	\$102,662	\$502,739
2010	\$168,000	\$134,081	\$77,515	\$379,596
Total	\$516,500	\$412,219	\$238,313	\$1,167,032

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2008	\$7,094	\$3,915	\$362	\$6,787	\$18,158
2009	\$12,527	\$6,682	\$418	\$13,982	\$33,608
2010	\$9,458	\$5,221	\$525	\$9,601	\$24,805
Total	\$29,079	\$15,818	\$1,305	\$30,369	\$76,572

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.



Individual Project Summaries

Carbon-Free Energy

Vertical Wind Turbine Manufacturer

Total Project Budget: \$703,000
 Funding Provided by IPF: \$83,000

Project Impacts - Fiscal Impacts (continued)

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2008	\$0	\$15,421	\$783	\$124	\$16,327
2009	\$0	\$31,458	\$1,336	\$127	\$32,922
2010	\$0	\$21,391	\$1,044	\$131	\$22,567
Total	\$0	\$68,270	\$3,164	\$382	\$71,816

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Potential Long-Term Impacts for Iowa

Possible Total Economic Impact Over 20-Year Period for Iowa (Three Possible Scenarios)			
	Low	Mid	High
Economic Output (In Thousands)	\$2,023,839	\$2,698,451	\$3,373,064
Employment	766	1,021	1,276
Workers' Earnings	\$315,494,172	\$420,658,896	\$525,823,621



Individual Project Summaries

Cellencor

Reducing the Energy and Environmental Costs of Drying Corn Distillers Grains

Total Project Budget: \$2,000,000
Funding Provided by IPF: \$1,500,000

Project Description

Cellencor, in association with the Iowa Corn Growers Association, is developing process technology that involves replacement of natural gas- or coal-powered dryers of Distillers Dried Grains with Solubles (DDGS) with efficient, high-powered microwave drying systems at new or existing ethanol production plants. The process should produce substantial energy savings, higher value DDGS animal feeds, and significant environmental benefits including reduced emissions of greenhouse gasses, particulates, volatile organic gasses (VOCs), and odors. The process should also reduce plant water consumption by up to 25%. The process should represent a significant improvement of the corn-to-ethanol economic model and energy balance.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$1,500,000	\$788,669	\$439,026	\$2,727,695
2010	\$150,000	\$78,867	\$43,903	\$272,770
Total	\$1,650,000	\$867,536	\$482,928	\$3,000,465

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	2	2	2	6
2010	4	4	3	11

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$150,000	\$134,369	\$72,957	\$357,326
2010	\$200,000	\$179,158	\$97,277	\$476,435
Total	\$350,000	\$313,527	\$170,234	\$833,761

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate		Total State Revenues
			Income Tax Collections	Other Taxes and Revenues	
2009	\$8,904	\$10,036	\$4,420	\$4,062	\$27,421
2010	\$11,871	\$13,762	\$442	\$8,367	\$34,443
Total	\$20,775	\$23,798	\$4,862	\$12,429	\$61,863

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Individual Project Summaries

Cellencor

Reducing the Energy and Environmental Costs of Drying Corn Distillers Grains

Total Project Budget: \$2,000,000
Funding Provided by IPF: \$1,500,000

Project Impacts - Fiscal Impacts (continued)

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2009	\$0	\$9,228	\$2,007	\$0	\$11,235
2010	\$0	\$18,825	\$2,752	\$0	\$21,578
Total	\$0	\$28,053	\$4,760	\$0	\$32,813

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Construction Impacts - Economic Impacts

Economic Output During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2010	\$350,000	\$320,565	\$670,565
Total	\$350,000	\$320,565	\$670,565

Employment During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2010	5	3	8

Workers' Earnings During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2010	\$150,000	\$97,560	\$247,560
Total	\$150,000	\$97,560	\$247,560

Revenue for the State During Project-Related Construction					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2010	\$6,169	\$5,896	\$2,414	\$6,040	\$20,519
Total	\$6,169	\$5,896	\$2,414	\$6,040	\$20,519

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.



Individual Project Summaries

City of Cedar Rapids

21st Century Green Energy Project

Total Project Budget:	\$506,813
Funding Provided by IPF:	\$253,407

Project Description

The 21st Century Green Energy Project Feasibility Study hopes to determine a path forward to implement a solution to critical, post-flood energy system issues in Cedar Rapids. Initially conceived as a study to determine proof-of-concept and viability for a renewable fuel-powered energy system in Cedar Rapids, the scope and importance of the study have grown to include in-depth analysis of a range of energy solutions to replace the flood-damaged steam plant. Much effort has been expended by a variety of groups in the struggle to find both temporary and long-term solutions to the energy issue, but agreement on a path forward has not been reached due to a lack of clear and concise information that presents the full economic, environmental, and social implications of the various options. The study is bringing all of these elements together to provide a comparative analysis of the energy options and provide the basis for a community decision.

Project Impacts

Direct Economic Impacts, No Fiscal Impacts



Individual Project Summaries

City of Dubuque

Sustainable Communities Through Integrated,
Innovative Smarter City Information Technology

Total Project Budget: \$12,489,000
Funding Provided by IPF: \$1,400,000

Project Description

The City of Dubuque is creating an Integrated Sustainability Service model for measurement and monitoring of its energy and water systems, infrastructure components, and transportation networks with assistance from IBM. This system will allow City management and electric utility customers to track energy usage on a near real-time basis, track the impact of utilization changes, analyze the effectiveness of system design and incentives, and begin the process for cross-analytics with water and carbon utilization. The system will enable the City and its citizens to visualize and understand electric consumption patterns and the sustainability footprint of the community, as well as provide cross-analytics for all related areas of energy consumption within the community.

The City of Dubuque has implemented smart water meters and, with the assistance of the Iowa Power Fund, is installing 1,000 smart electricity meters as well. In addition, the city is installing the community infrastructure to collect, transmit and communicate the information from each type of meter. In addition, the City of Dubuque has plans to implement similar tracking systems for vehicle miles traveled, natural gas, solid waste management and health and wellness. It is anticipated that implementing these plans would cost \$20 million over 5 years. There is no definite funding in place for these subsequent projects. This analysis focuses on the impacts that may result from the smart electricity meter program only. Since the project is intended to be replicated, the long-term potential impacts consider the possible economic activity supported if other communities implement similar energy monitoring systems.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2010	\$5,675,000	\$2,510,053	\$2,687,680	\$10,872,733
2011	\$6,814,000	\$3,013,832	\$3,227,110	\$13,054,943
Total	\$12,489,000	\$5,523,885	\$5,914,790	\$23,927,675

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2010	33	10	13	56
2011	57	18	23	98

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2010	\$1,485,000	\$465,399	\$500,445	\$2,450,844
2011	\$2,565,000	\$803,871	\$864,405	\$4,233,276
Total	\$4,050,000	\$1,269,270	\$1,364,850	\$6,684,120



Individual Project Summaries

City of Dubuque

Sustainable Communities Through Integrated,
Innovative Smarter City Information Technology

Total Project Budget: \$12,489,000
Funding Provided by IPF: \$1,400,000

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2010	\$61,068	\$43,686	\$39,142	\$41,020	\$184,916
2011	\$105,481	\$68,576	\$46,998	\$73,938	\$294,993
Total	\$166,550	\$112,262	\$86,140	\$114,958	\$479,909

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2010	\$0	\$93,197	\$8,737	\$94	\$102,028
2011	\$0	\$166,357	\$13,715	\$97	\$180,169
Total	\$0	\$259,555	\$22,452	\$190	\$282,198

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Potential Long-Term Impacts for Iowa

Possible Total Economic Impact Over 20-Year Period for Iowa (Three Possible Scenarios)			
	Low	Mid	High
Economic Output (In Thousands)	\$913,842	\$1,580,160	\$2,246,477
Employment***	1,808	2,848	3,888
Workers' Earnings	\$386,605,969	\$645,611,369	\$904,616,769

*** Includes some temporary employment supported by retrofit activities.



Individual Project Summaries

City of Fairfield

Making Iowa Cities Sustainable: Fairfield Model

Total Project Budget: \$172,400
 Funding Provided by IPF: \$80,000

Project Description

The City of Fairfield proposed a sustainable city demonstration project, based on a goal of energy independence, community-based energy solutions, carbon neutrality, and a durable economic future. Using the "Fairfield Model" of integrating grassroots initiatives with formal city planning, the planning process engages a citizen commission in addressing the full range of sustainability issues of power, housing, transportation, industrial processes, waste management, and food. The Planning Commission includes representatives of all major stakeholders—citizens, business community, city government, agriculture, and nonprofit institutions. To inform the planning process, two studies will be conducted: 1) to identify baseline data of energy use and green house gas (GHG) production by source and by sector; and 2) to identify opportunities for utilizing renewable resources. Importantly, this project serves to both move Fairfield into energy independence and sustainability and to provide a state-wide model from which other rural communities in Iowa can learn and emulate.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$51,000	\$24,551	\$21,415	\$96,966
2010	\$41,400	\$19,930	\$17,384	\$78,714
2011	\$40,000	\$19,256	\$16,796	\$76,052
2012	\$40,000	\$19,256	\$16,796	\$76,052
Total	\$172,400	\$82,993	\$72,391	\$327,784

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	1	0	0	1
2010	1	0	0	1
2011	1	0	0	1
2012	1	0	0	1

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$38,900	\$16,851	\$14,304	\$70,055
2010	\$38,900	\$16,851	\$14,304	\$70,055
2011	\$38,900	\$16,851	\$14,304	\$70,055
2012	\$38,900	\$16,851	\$14,304	\$70,055
Total	\$155,600	\$67,406	\$57,214	\$280,220



Individual Project Summaries

City of Fairfield

Making Iowa Cities Sustainable: Fairfield Model

Total Project Budget: \$172,400
 Funding Provided by IPF: \$80,000

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2009	\$1,746	\$1,216	\$165	\$908	\$4,035
2010	\$1,746	\$1,201	\$134	\$935	\$4,016
2011	\$1,746	\$1,205	\$130	\$963	\$4,043
2012	\$1,746	\$1,212	\$130	\$992	\$4,079
Total	\$6,982	\$4,833	\$559	\$3,799	\$16,174

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2009	\$0	\$2,063	\$243	\$210	\$2,516
2010	\$0	\$2,105	\$240	\$216	\$2,561
2011	\$0	\$2,147	\$241	\$223	\$2,610
2012	\$0	\$2,190	\$242	\$229	\$2,661
Total	\$0	\$8,504	\$967	\$879	\$10,349

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Individual Project Summaries

Consumers Energy Cooperative

Plug-in Hybrid Electric Vehicle (PHEV)

Total Project Budget: \$100,205
Funding Provided by IPF: \$19,000

Project Description

Consumers Energy has purchased and retrofitted a standard hybrid electric vehicle (HEV) so that it can be plugged-in to a standard electrical outlet. They are testing and monitoring the performance of a Plug-In Electric Vehicle to determine the performance levels for Iowa's climate and then also assess the viability of converting internal combustion engine (ICE) fleets to PHEV.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$68,485	\$19,628	\$33,921	\$122,033
2010	\$15,735	\$4,510	\$7,794	\$28,038
2011	\$15,985	\$4,581	\$7,917	\$28,484
Total	\$100,205	\$28,719	\$49,632	\$178,555

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	1	0	0	1
2010	1	0	0	1
2011	1	0	0	1

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$11,610	\$2,372	\$3,587	\$17,569
2010	\$11,610	\$2,372	\$3,587	\$17,569
2011	\$11,610	\$2,372	\$3,587	\$17,569
Total	\$34,830	\$7,116	\$10,762	\$52,708

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate		Total State Revenues
			Income Tax Collections	Other Taxes and Revenues	
2009	\$438	\$553	\$193	\$666	\$1,850
2010	\$438	\$338	\$44	\$686	\$1,506
2011	\$438	\$339	\$45	\$707	\$1,529
Total	\$1,313	\$1,231	\$282	\$2,059	\$4,885

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.



Individual Project Summaries

Consumers Energy Cooperative

Plug-in Hybrid Electric Vehicle (PHEV)

Total Project Budget: \$100,205
 Funding Provided by IPF: \$19,000

Project Impacts - Fiscal Impacts (continued)

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2009	\$0	\$1,513	\$111	\$0	\$1,624
2010	\$0	\$1,544	\$68	\$0	\$1,611
2011	\$0	\$1,574	\$68	\$0	\$1,642
Total	\$0	\$4,631	\$246	\$0	\$4,877

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.



Individual Project Summaries

Green Plains Renewable Energy Inc. and BioProcess Algae LLC

Algae Project

Total Project Budget: \$11,479,084
Funding Provided by IPF: \$4,115,000

Project Description

The Green Plains Renewable Energy Inc. and BioProcess Algae LLC project addresses the affordable feedstock availability for the biofuel industry. This project is using breakthrough technology developed by BioProcess Algae for the mass production of a nonfood fuel feedstock: algae. The inputs for the mass production of algae are the waste products from an ethanol plant, carbon dioxide and wastewater. The project will identify the natural algae to be used in our climate and verify that these algae have the ability to produce continuously at a level in excess of 200 tons per acre per year. With this level of production and a 30% oil extraction rate, a 50 million gallon a year ethanol plant would expect to produce enough oil for the annual production of 5.8 million gallons of biodiesel and 51,000 tons of a high-protein meal product.

The project consists of three phases. The Iowa Power Fund has provided or committed to provide funds for Phase I and II in the amounts of \$2.085 million and \$2.03 million, respectively. For the purpose of the report, the project term analyzes Phases I-II only.

Phase I (April 2009 – June 2010): Proof of concept of BioProcess Algae LLC growth platform in industrial setting.

Phase II (Aug 2010 – July 2011): Increase in bioreactor capacity, dewatering capacity and water re-use, and continued economic modeling and partner development.

Phase III (2012): First commercial algae farm integrated with ethanol facility waste streams. On schedule for 2012 groundbreaking.

After Phase III, BioProcess Algae anticipates continued commercial development of algae farms. The firm anticipates creating as many as 10 algae farms by the end of 2015. It is estimated that each algae farm will employ approximately 20 direct workers with average annual wages of \$50,000. The *Potential Impacts of Research* section of this report estimates the potential impacts of BioProcess Algae constructing and operating these farms.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$2,673,186	\$1,477,203	\$652,525	\$4,802,913
2010	\$1,092,356	\$603,636	\$266,644	\$1,962,636
2011	\$2,330,000	\$1,287,558	\$568,753	\$4,186,311
Total	\$6,095,542	\$3,368,397	\$1,487,922	\$10,951,860

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	4	6	4	14
2010	6	8	6	19
2011	9	13	10	32

Totals may not equal sum due to rounding.

Individual Project Summaries

Green Plains Renewable Energy Inc. and BioProcess Algae LLC

Algae Project

Total Project Budget: \$11,479,084
Funding Provided by IPF: \$4,115,000

Project Impacts - Economic Impacts (continued)

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$257,883	\$252,287	\$130,876	\$641,045
2010	\$354,589	\$346,894	\$179,954	\$881,437
2011	\$540,000	\$528,282	\$274,050	\$1,342,332
Total	\$1,152,472	\$1,127,463	\$584,880	\$2,864,815

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2009	\$15,973	\$13,587	\$7,667	\$10,381	\$47,609
2010	\$21,963	\$13,464	\$3,133	\$14,703	\$53,263
2011	\$33,447	\$21,712	\$6,683	\$24,781	\$86,623
Total	\$71,383	\$48,764	\$17,483	\$49,865	\$187,495

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2009	\$0	\$23,587	\$2,717	\$325	\$26,629
2010	\$0	\$33,081	\$2,693	\$351	\$36,125
2011	\$0	\$55,215	\$4,342	\$380	\$59,937
Total	\$0	\$111,882	\$9,753	\$1,057	\$122,692

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Construction Impacts - Economic Impacts

Economic Output During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2009	\$2,244,317	\$2,055,570	\$4,299,887
2010	\$769,225	\$704,533	\$1,473,758
2011	\$2,370,000	\$2,170,683	\$4,540,683
Total	\$5,383,542	\$4,930,786	\$10,314,328

Individual Project Summaries

Green Plains Renewable Energy Inc. and BioProcess Algae LLC

Algae Project

Total Project Budget: \$11,479,084
Funding Provided by IPF: \$4,115,000

Construction Impacts - Economic Impacts (continued)

Employment During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2009	25	18	43
2010	8	6	14
2011	25	18	43

Workers' Earnings During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2009	\$785,511	\$510,896	\$1,296,407
2010	\$269,229	\$175,106	\$444,335
2011	\$829,500	\$539,507	\$1,369,007
Total	\$1,884,240	\$1,225,510	\$3,109,749

Revenue for the State During Project-Related Construction					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2009	\$32,303	\$24,991	\$15,480	\$31,631	\$104,405
2010	\$11,072	\$8,566	\$5,306	\$10,841	\$35,784
2011	\$34,112	\$26,391	\$16,346	\$33,403	\$110,251
Total	\$77,486	\$59,947	\$37,132	\$75,875	\$250,440

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Potential Long-Term Impacts for Iowa

Possible Total Economic Impact Over 20-Year Period for Iowa (Three Possible Scenarios)			
	Low	Mid	High
Economic Output (In Thousands)	\$6,253,284	\$7,689,849	\$9,126,414
Employment	567	709	850
Workers' Earnings	\$367,898,400	\$452,415,600	\$536,932,800



Individual Project Summaries

Hybrid Power Centers

Biomass/Coal Hybrid Power Center

Total Project Budget: \$650,000
Funding Provided by IPF: \$325,000

Project Description

The Biomass/Coal Hybrid Power Center project involves an initial stage of research with the engineering consultants Black & Veatch. Hybrid Power Centers' core strategy involves coupling two or more fuel sources into one power plant. The primary technology under development is a hybrid power plant that would combust both coal and biomass in a single integrated system. A technological advance review analysis demonstrates that the concept is viable using existing technology, can meet baseload energy needs at industrial scale, and can do so in a cost-efficient, environmentally friendly manner that returns investment to low. Successful research may translate into retrofitting existing coal plants to help meet possible carbon reduction targets.

For the purposes of this report, only the initial engineering study is considered during the project term. The *Potential Impacts of Research* section of the report analyzes possible implementation of the hybrid power system. At the time of this report, the prospects appear positive but the project is still tentative.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2010	\$325,000	\$135,514	\$110,803	\$571,318
2011	\$325,000	\$135,514	\$110,803	\$571,318
Total	\$650,000	\$271,028	\$221,607	\$1,142,635

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2010	1	1	1	2
2011	2	1	1	4

Totals may not equal sum due to rounding.

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2010	\$60,000	\$33,204	\$23,914	\$117,118
2011	\$105,000	\$58,107	\$41,850	\$204,957
Total	\$165,000	\$91,311	\$65,764	\$322,075

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2010	\$2,918	\$2,080	\$887	\$1,675	\$7,560
2011	\$5,107	\$3,178	\$887	\$3,019	\$12,190
Total	\$8,025	\$5,258	\$1,773	\$4,694	\$19,750

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.



Individual Project Summaries

Hybrid Power Centers

Biomass/Coal Hybrid Power Center

Total Project Budget: \$650,000
 Funding Provided by IPF: \$325,000

Project Impacts - Fiscal Impacts (continued)

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2010	\$0	\$3,805	\$416	\$0	\$4,221
2011	\$0	\$6,793	\$636	\$0	\$7,428
Total	\$0	\$10,598	\$1,052	\$0	\$11,650

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Potential Long-Term Impacts for Iowa

Possible Total Economic Impact Over 20-Year Period for Iowa (Three Possible Scenarios)			
	Low	Mid	High
Economic Output (In Thousands)	\$1,620,824	\$2,431,236	\$3,241,648
Employment	1,291	1,936	2,582
Workers' Earnings	\$986,600,109	\$1,479,900,164	\$1,973,200,219



Individual Project Summaries

Iowa Biodiesel Board

Biodiesel Education Program

Total Project Budget: \$145,000
 Funding Provided by IPF: \$50,000

Project Description

This program aims to dispel myths, provide solid information, and remove barriers to greater biodiesel acceptance in Iowa among diesel mechanics, and therefore the consuming public. Working collaboratively with One Source Training, the Iowa Biodiesel Board (IBB) aims to arm the diesel mechanics and renewable fuels instructors at 15 community colleges across Iowa with a biodiesel curriculum that can be implemented in their courses. Additionally, IBB will hold continuing education seminars with the target audience of diesel mechanics in Iowa. Instructors for these sessions will likely be the same community college instructors. The Board developed a curriculum sufficient to the task and will hold a train-the-trainer session which will allow the instructors to learn the curriculum and be provided an opportunity to ask questions of industry experts. A survey of attitudes and knowledge of biodiesel will be implemented both pre and post education so that the effectiveness of the training can be measured, as well as get feedback from the course participants as to opportunities for improvement.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$45,000	\$14,684	\$22,590	\$82,274
2010	\$100,000	\$32,630	\$50,200	\$182,830
Total	\$145,000	\$47,314	\$72,790	\$265,104

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	0	0	0	0
2010	0	0	0	0

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$0	\$0	\$0	\$0
2010	\$0	\$0	\$0	\$0
Total	\$0	\$0	\$0	\$0

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2009	\$0	\$93	\$134	\$0	\$227
2010	\$0	\$207	\$298	\$0	\$505
Total	\$0	\$300	\$432	\$0	\$733

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.



Individual Project Summaries

Iowa Biodiesel Board

Biodiesel Education Program

Total Project Budget: \$145,000
 Funding Provided by IPF: \$50,000

Project Impacts - Fiscal Impacts (continued)

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2009	\$0	\$0	\$19	\$0	\$19
2010	\$0	\$0	\$41	\$0	\$41
Total	\$0	\$0	\$60	\$0	\$60

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Individual Project Summaries

Iowa Department of Economic Development

Energy Efficient Rebuild for Iowa

Total Project Budget: \$1,740,464
Funding Provided by IPF: \$450,000

Project Description

AmeriCorps is financing equipment, materials, and labor for this GreenCorps project. The project will leverage \$1,161,850 from the National Corporation for Community Service. These additional funds will be dispensed by the Iowa Commission on Volunteer Service for energy efficient rebuilding of areas of Iowa that were affected with natural disasters in the summer of 2008. AmeriCorps pledges to conduct at least fifty energy conservation and efficiency education programs per year. Additionally, they will implement or advise property owners on energy efficiency and weatherization improvements for approximately 350 homes and businesses per year. Finally, they agree to recruit at least 1,000 volunteer labor hours per year in flood-affected communities.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$509,883	\$210,480	\$210,174	\$930,536
2010	\$559,692	\$231,041	\$230,705	\$1,021,438
2011	\$670,889	\$276,943	\$276,540	\$1,224,372
Total	\$1,740,464	\$718,464	\$717,419	\$3,176,347

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	25	9	8	41
2010	23	8	7	39
2011	32	11	10	53

Totals may not equal sum due to rounding.

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$161,486	\$67,001	\$58,636	\$287,122
2010	\$172,577	\$71,602	\$62,663	\$306,842
2011	\$205,526	\$85,273	\$74,626	\$365,425
Total	\$539,589	\$223,875	\$195,925	\$959,389

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2009	\$7,154	\$4,641	\$1,514	\$30,206	\$43,516
2010	\$7,646	\$9,220	\$1,662	\$29,115	\$47,643
2011	\$9,105	\$14,412	\$1,993	\$41,019	\$66,529
Total	\$23,905	\$28,273	\$5,169	\$100,340	\$157,688

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.



Individual Project Summaries

Iowa Department of Economic Development

Energy Efficient Rebuild for Iowa

Total Project Budget: \$1,740,464
 Funding Provided by IPF: \$450,000

Project Impacts - Fiscal Impacts (continued)

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2009	\$0	\$68,629	\$928	\$0	\$69,557
2010	\$0	\$65,508	\$1,844	\$0	\$67,352
2011	\$0	\$91,394	\$2,882	\$0	\$94,277
Total	\$0	\$225,531	\$5,655	\$0	\$231,186

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Individual Project Summaries

Iowa Environmental Council

Energy Independence Education Project

Total Project Budget: \$56,725
Funding Provided by IPF: \$20,000

Project Description

The Iowa Environmental Council, in collaboration with Iowa State University and the University of Iowa, brought author and speaker Bill McKibben to Iowa for three days to speak in Ames, Des Moines, and Iowa City. He focused on renewable energy and energy efficiency technology solutions and how they impact the environment and the economy as solutions to mitigate energy usage and enhance energy independence.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2010	\$56,725	\$0	\$0	\$56,725
Total	\$56,725	\$0	\$0	\$56,725

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2010	0	0	0	0

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2010	\$0	\$0	\$0	\$0
Total	\$0	\$0	\$0	\$0

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2010	\$0	\$856	\$0	\$0	\$856
Total	\$0	\$856	\$0	\$0	\$856

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2010	\$0	\$0	\$171	\$225	\$396
Total	\$0	\$0	\$171	\$225	\$396

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Individual Project Summaries

Iowa Renewable Energy Association

2008 I-Renew Energy & Sustainability EXPO

Total Project Budget: \$93,000
Funding Provided by IPF: \$41,000

Project Description

The Iowa Renewable Energy Association (I-Renew) started 17 years ago by hosting its first ever I-Renew Energy EXPO. Thousands of Iowans have attended I-Renew's EXPOs throughout the last 16 years, many learning about energy issues for the first time. The EXPO is now an important event for new businesses in energy efficiency and renewable energy to recruit new customers, for energy experts to network with others, and for consumers to learn about these issues from the most basic to advanced levels. The EXPO opens the door to future conservation for interested parties – those who have been affected by high gas prices, those whose interest in energy may have been stimulated by media, and those who come already eager to learn ways to conserve energy.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	\$93,000	\$0	\$0	\$93,000
Total	\$93,000	\$0	\$0	\$93,000

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	0	0	0	0

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	\$0	\$0	\$0	\$0
Total	\$0	\$0	\$0	\$0

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2008	\$0	\$16,525	\$0	\$0	\$16,525
Total	\$0	\$16,525	\$0	\$0	\$16,525

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2008	\$0	\$0	\$3,305	\$9,750	\$13,055
Total	\$0	\$0	\$3,305	\$9,750	\$13,055

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Individual Project Summaries

Iowa Renewable Energy Association

2009 I-Renew Energy & Sustainability EXPO

Total Project Budget: \$85,000
Funding Provided by IPF: \$30,000

Project Description

The Iowa Renewable Energy Association (I-Renew), which started 18 years ago, hosted the I-Renew Energy EXPO for 2009. The event is important for new businesses in energy efficiency and renewable energy to network with others, recruit new customers, and for consumers to learn about energy issues from the beginning levels to the advanced.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	\$85,000	\$0	\$0	\$85,000
Total	\$85,000	\$0	\$0	\$85,000

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	0	0	0	0

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	\$0	\$0	\$0	\$0
Total	\$0	\$0	\$0	\$0

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2008	\$0	\$22,313	\$0	\$0	\$22,313
Total	\$0	\$22,313	\$0	\$0	\$22,313

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2008	\$0	\$0	\$4,463	\$14,813	\$19,275
Total	\$0	\$0	\$4,463	\$14,813	\$19,275

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Individual Project Summaries

Iowa State University

2008 Biobased Industry Outlook Conference

Total Project Budget: \$72,500
Funding Provided by IPF: \$12,500

Project Description

The 2008 Growing the Bioeconomy Conference was the 6th annual conference held at Iowa State University that focuses on the latest advances in biofeedstock production, bioprocessing, utilization of biobased products, human, social and community dimensions of the bioeconomy, and the interface between the bioeconomy and climate change. The 2008 conference focused on technologies and strategies that will allow the Midwest to achieve the goals identified by the Midwest Governors Coalition (MGC), North Central Bioeconomy Consortium (NCBC), the North Central Sun Grant (NCSG), and the US Department of Agriculture Research, Education and Economics (USDA REE).

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	\$72,500	\$0	\$0	\$72,500
Total	\$72,500	\$0	\$0	\$72,500

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	0	0	0	0

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	\$0	\$0	\$0	\$0
Total	\$0	\$0	\$0	\$0

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2008	\$0	\$21,000	\$0	\$0	\$21,000
Total	\$0	\$21,000	\$0	\$0	\$21,000

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2008	\$0	\$0	\$4,200	\$8,400	\$12,600
Total	\$0	\$0	\$4,200	\$8,400	\$12,600

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.



Individual Project Summaries

Iowa State University

Clean Gasification Platform for Renewable Power,
Energy, and Ethanol from Biomass

Total Project Budget: \$3,224,047
Funding Provided by IPF: \$2,370,000

Project Description

The Iowa State University clean gasification project is developing more efficient biomass syngas burners and technology to produce ethanol from synthesis gas. Using waste agricultural products, the project is producing syngas which can be used for thermal applications or for combined heat and power. Another goal of the project is development of catalysts that will transform the syngas into ethanol. If successful, the resulting biomass syngas burners could be commercialized for thermal energy or for combined heat and power generation without compromising clean air standards.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$1,074,682	\$565,046	\$314,542	\$1,954,270
2010	\$1,074,682	\$565,046	\$314,542	\$1,954,270
2011	\$1,074,683	\$565,046	\$314,542	\$1,954,272
Total	\$3,224,047	\$1,695,138	\$943,626	\$5,862,812

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	11	12	8	31
2010	7	7	5	20
2011	7	7	5	20

Totals may not equal sum due to rounding.

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$300,000	\$268,738	\$145,915	\$714,652
2010	\$300,000	\$268,738	\$145,915	\$714,652
2011	\$300,000	\$268,738	\$145,915	\$714,652
Total	\$900,000	\$806,213	\$437,744	\$2,143,957

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2009	\$17,807	\$11,282	\$3,167	\$22,748	\$55,003
2010	\$17,807	\$11,287	\$3,167	\$14,910	\$47,170
2011	\$17,807	\$11,291	\$3,167	\$15,392	\$47,657
Total	\$53,421	\$33,860	\$9,500	\$53,050	\$149,831

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.



Individual Project Summaries

Iowa State University

Clean Gasification Platform for Renewable Power,
Energy, and Ethanol from Biomass

Total Project Budget: \$3,224,047
Funding Provided by IPF: \$2,370,000

Project Impacts - Fiscal Impacts (continued)

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2009	\$0	\$51,683	\$2,256	\$180	\$54,119
2010	\$0	\$33,547	\$2,257	\$185	\$35,990
2011	\$0	\$34,296	\$2,258	\$191	\$36,745
Total	\$0	\$119,526	\$6,772	\$556	\$126,854

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Potential Long-Term Impacts for Iowa

Possible Total Economic Impact Over 20-Year Period for Iowa (Three Possible Scenarios)			
	Low	Mid	High
Economic Output (In Thousands)	\$2,182,156	\$6,546,468	\$10,910,781
Employment	282	847	1,412
Workers' Earnings	\$179,893,422	\$539,680,265	\$899,467,109



Individual Project Summaries

Iowa State University

Efficient, Low Cost, Photovoltaic Solar Energy Conversion

Total Project Budget: \$2,030,000
Funding Provided by IPF: \$1,690,000

Project Description

The ISU solar project seeks to increase the conversion efficiency of thin film solar cells while also keeping their manufacturing costs relatively low. The goal is to produce electric power directly from sunlight without any fossil fuel consumption. This project would allow solar energy to become more cost-competitive with other forms of energy and would help to spur economic development in the solar energy sector. ISU anticipates acquiring and holding patents that result from this research.

The Iowa Power Fund grant enabled ISU to acquire critical infrastructure needed for solar energy research and development. The infrastructure allows ISU to obtain grants and conduct research it would have otherwise been unable to perform.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$704,240	\$202,680	\$181,694	\$1,088,614
2010	\$665,000	\$191,387	\$171,570	\$1,027,957
2011	\$660,760	\$190,167	\$170,476	\$1,021,403
Total	\$2,030,000	\$584,234	\$523,740	\$3,137,974

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	10	8	10	28
2010	10	8	10	28
2011	10	8	10	28

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$619,600	\$294,558	\$234,581	\$1,148,738
2010	\$597,600	\$284,099	\$226,251	\$1,107,950
2011	\$580,000	\$275,732	\$219,588	\$1,075,320
Total	\$1,797,200	\$854,389	\$680,420	\$3,332,009



Individual Project Summaries

Iowa State University

Efficient, Low Cost, Photovoltaic Solar Energy
Conversion

Total Project Budget: \$2,030,000
Funding Provided by IPF: \$1,690,000

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2009	\$28,623	\$15,845	\$1,384	\$20,623	\$66,475
2010	\$27,607	\$15,283	\$1,307	\$21,241	\$65,438
2011	\$26,794	\$14,870	\$1,298	\$21,879	\$64,840
Total	\$83,024	\$45,997	\$3,989	\$63,743	\$196,753

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2009	\$0	\$46,855	\$3,169	\$50	\$50,074
2010	\$0	\$47,792	\$3,057	\$52	\$50,900
2011	\$0	\$48,748	\$2,974	\$53	\$51,775
Total	\$0	\$143,395	\$9,199	\$155	\$152,749

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Potential Long-Term Impacts for Iowa

Possible Total Economic Impact Over 20-Year Period for Iowa (Three Possible Scenarios)			
	Low	Mid	High
Economic Output (In Thousands)	\$194,771	\$389,542	\$649,236
Employment	72	145	241
Workers' Earnings	\$26,664,794	\$53,329,588	\$88,882,647



Individual Project Summaries

Iowa State University Animal Science

Increasing The Use Of Distillers Grains In Livestock Diets

Total Project Budget: \$415,328
Funding Provided by IPF: \$172,994

Project Description

The Iowa State University Animal Science Department is conducting experiments aimed at increasing the use of distillers grains in livestock diets. Since 1999, there has been a 265% growth in ethanol production, with much of it centered in Iowa and surrounding states. Production of ethanol by-products in the U. S. has increased as well. Iowa ethanol plants currently produce about 4.3 million tons of distillers grains. Distillers grains are rich in protein and energy and are an economical feedstuff; however, some nutritional factors limit their inclusion in livestock diets. Distillers grains contain a relatively high content of insoluble fiber, which is not readily digested by non-ruminants, thus limiting their use in swine and poultry diets. The project will study distillers grains for swine, poultry and cattle to address strategies to overcome the insoluble fiber, antibiotic and sulfur limitations, respectively, and potentially increasing the use of distillers grains in livestock diets.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$234,649	\$185,044	\$73,493	\$493,186
2010	\$180,679	\$142,483	\$56,589	\$379,752
Total	\$415,328	\$327,528	\$130,082	\$872,938

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	3	3	2	8
2010	3	3	2	8

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$120,241	\$141,509	\$67,155	\$328,904
2010	\$122,940	\$144,685	\$68,662	\$336,287
Total	\$243,181	\$286,194	\$135,816	\$665,191

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate		Total State Revenues
			Income Tax Collections	Other Taxes and Revenues	
2009	\$8,195	\$4,758	\$931	\$5,963	\$19,847
2010	\$8,379	\$4,701	\$717	\$6,142	\$19,939
Total	\$16,575	\$9,459	\$1,647	\$12,104	\$39,785

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.



Individual Project Summaries

Iowa State University Animal Science

Increasing The Use Of Distillers Grains In Livestock Diets

Total Project Budget: \$415,328
 Funding Provided by IPF: \$172,994

Project Impacts - Fiscal Impacts (continued)

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2009	\$0	\$13,548	\$952	\$0	\$14,499
2010	\$0	\$13,818	\$940	\$0	\$14,759
Total	\$0	\$27,366	\$1,892	\$0	\$29,258

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Potential Long-Term Impacts for Iowa

Possible Total Economic Impact Over 20-Year Period for Iowa (Three Possible Scenarios)			
	Low	Mid	High
Economic Output (In Thousands)	\$6,793,685	\$13,674,044	\$20,642,253
Employment	588	1,186	1,797
Workers' Earnings	\$223,870,401	\$450,702,686	\$680,537,999



Individual Project Summaries

Iowa Stored Energy Plant Agency

Iowa Stored Energy Park

Total Project Budget: \$5,200,000
 Funding Provided by IPF: \$3,200,000

Project Description

The Iowa Stored Energy Park (ISEP) will be the nation’s first Compressed Air Energy Storage (CAES) facility to use a natural underground reservoir for compressed air energy storage from wind energy. Two other CAES plants have been operating for many years (one in Hundorf, Germany, and one in McIntosh, Alabama). ISEP plans to use a natural underground aquifer for air storage. Iowa has abundant wind resources; however, the variable and uncontrollable output of wind energy limits the amount of wind generating capacity that can be incorporated into the electric grid. The primary purpose of the ISEP is to provide an energy storage system to enable Iowa to integrate and use more of the wind energy. Air will be compressed and stored in an underground aquifer using inexpensive off-peak electricity from wind turbines and from the grid. When power is wanted, the compressed air is released to drive combustion turbines. Fuel for these combustion turbines will be natural gas, or if it is determined to be feasible, biofuels. These modified combustion turbines use much less fuel than other turbines since the air has already been compressed off-peak and because of the advanced heat recovery equipment. Other efficiencies are gained by utilizing off-peak energy from wind turbines and other base load units for compressing air at night.

The CAES system depends on the geological attributes at the site. Accordingly, much of the initial work is dedicated to determining if the CAES project as planned is feasible from the geological point of view. ISEP is drilling multiple wells to confirm the shape and size of the underground aquifer. ISEP is also awaiting an economic study to determine the economic aspects related to the project going forward. While the project has been under study for many years, this analysis focuses on the project funded by the Iowa Power Fund. The project as funded by the Iowa Power Fund includes the design and construction of two test wells. The data from the wells will include geophysical detailed logs and samples of the cap rock and target sandstone aquifers. Included in this work will be laboratory analysis of the samples to determine the tightness of the cap rock and the porosity, permeability, and chemistry of the aquifer sandstones. Correlation of this data with previous testing and with the seismic data interpretations will produce high quality data that will be incorporated into the computer simulation modeling previously prepared to further improve the predictions of reservoir performance.

If the project continues to proceed on course, additional air injection testing will occur in the near future and, pending positive results, construction on the system will commence in 2013. The additional testing will cost approximately \$12 million and the construction of the system is approximated at about \$400 million. This analysis does not consider these possible economic impacts. The possible long-term impacts consider an expansion in wind generation in the state due to the CAES project being completed.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$300,000	\$50,040	\$77,610	\$427,650
2010	\$1,300,000	\$216,840	\$336,310	\$1,853,150
2011	\$700,000	\$116,760	\$181,090	\$997,850
Total	\$2,300,000	\$383,640	\$595,010	\$3,278,650

Individual Project Summaries

Iowa Stored Energy Plant Agency

Iowa Stored Energy Park

Total Project Budget: \$5,200,000
 Funding Provided by IPF: \$3,200,000

Project Impacts - Economic Impacts (continued)

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	3	2	3	7
2010	4	2	4	10
2011	4	2	4	10

Totals may not equal sum due to rounding.

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$250,000	\$51,675	\$77,400	\$379,075
2010	\$452,000	\$93,428	\$139,939	\$685,368
2011	\$500,000	\$103,350	\$154,800	\$758,150
Total	\$1,202,000	\$248,453	\$372,139	\$1,822,593

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2009	\$9,445	\$5,120	\$460	\$5,445	\$20,470
2010	\$17,077	\$10,014	\$1,991	\$7,478	\$36,561
2011	\$18,891	\$10,288	\$1,072	\$7,703	\$37,954
Total	\$45,414	\$25,422	\$3,523	\$20,626	\$94,986

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2009	\$44,030	\$12,372	\$1,024	\$0	\$57,426
2010	\$44,030	\$16,826	\$2,003	\$0	\$62,859
2011	\$44,030	\$17,162	\$2,058	\$0	\$63,250
Total	\$132,090	\$46,360	\$5,084	\$0	\$183,535

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Individual Project Summaries

Iowa Stored Energy Plant Agency

Iowa Stored Energy Park

Total Project Budget: \$5,200,000
 Funding Provided by IPF: \$3,200,000

Construction Impacts - Economic Impacts

Economic Output During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2009	\$700,000	\$641,130	\$1,341,130
2010	\$700,000	\$641,130	\$1,341,130
2011	\$1,500,000	\$1,373,850	\$2,873,850
Total	\$2,900,000	\$2,656,110	\$5,556,110

Employment During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2009	6	4	10
2010	5	4	9
2011	11	8	19

Workers' Earnings During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2009	\$175,000	\$113,820	\$288,820
2010	\$175,000	\$113,820	\$288,820
2011	\$375,000	\$243,900	\$618,900
Total	\$725,000	\$471,540	\$1,196,540

Revenue for the State During Project-Related Construction					
Year	Income Tax Collections	Sales Tax Collections	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2009	\$7,197	\$6,526	\$4,828	\$7,047	\$25,597
2010	\$7,197	\$6,526	\$4,828	\$7,047	\$25,597
2011	\$15,421	\$13,983	\$10,346	\$15,101	\$54,851
Total	\$29,814	\$27,035	\$20,002	\$29,195	\$106,046

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Potential Long-Term Impacts for Iowa

Possible Total Economic Impact Over 20-Year Period for Iowa (Three Possible Scenarios)			
	Low	Mid	High
Economic Output (In Thousands)	\$135,423	\$969,340	\$1,550,231
Employment	31	251	471
Workers' Earnings	\$28,270,310	\$204,209,033	\$329,871,589

Individual Project Summaries

Novecta LLC

Utilizing Glycerol in Swine and Poultry Diets

Total Project Budget: \$97,500
Funding Provided by IPF: \$66,500

Project Description

The Novecta project consisted of four experiments designed to research the practical issues surrounding the handling and feeding of glycerol. Research from the project should result in the establishment of guidelines for feed manufacturers to ensure acceptable feed quality. Determining the feeding value of glycerol compared to more expensive ingredients should also aid nutritionists in incorporating glycerol in swine and poultry diets. The project sought to increase the demand for glycerol and provide increased economic competitiveness for biodiesel plants in Iowa.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	\$97,500	\$77,379	\$29,649	\$204,528
Total	\$97,500	\$77,379	\$29,649	\$204,528

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	1	1	1	3

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	\$48,750	\$58,127	\$27,420	\$134,297
Total	\$48,750	\$58,127	\$27,420	\$134,297

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate		Total State Revenues
			Income Tax Collections	Other Taxes and Revenues	
2008	\$3,346	\$1,991	\$385	\$2,194	\$7,917
Total	\$3,346	\$1,991	\$385	\$2,194	\$7,917

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
Total	\$0	\$4,984	\$398	\$15	\$5,397

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.



Individual Project Summaries

Novecta LLC

Utilizing Glycerol in Swine and Poultry Diets

Total Project Budget: \$97,500
 Funding Provided by IPF: \$66,500

Potential Long-Term Impacts for Iowa

Possible Total Economic Impact Over 20-Year Period for Iowa (Three Possible Scenarios)			
	Low	Mid	High
Economic Output (In Thousands)	\$2,843,902	\$5,724,086	\$8,641,045
Employment	426	860	1,302
Workers' Earnings	\$138,531,487	\$278,895,795	\$421,118,383



Individual Project Summaries

POET

POET Project Liberty

Total Project Budget: \$306,087,871
 Funding Provided by IPF: \$14,750,000

Project Description

Project LIBERTY is the transformation of the traditional ethanol biorefinery in Emmetsburg into an integrated corn-to-ethanol and cellulose-to-ethanol biorefinery. The biorefinery technology is the result of ongoing research and development conducted at POET. Key objectives of Project LIBERTY are to validate the technology and economics at commercial scale and enable replication at other biorefineries in Iowa and across the country. The rollout of LIBERTY technologies will help the nation rapidly advance toward its biofuels mandate and reduce its dependency on foreign oil. The feedstock for the cellulosic portion of the biorefinery will be a mix of corn fiber from the corn kernel and corn cobs.

In addition to producing ethanol, POET will create a new market for about 300,000 tons of corn cobs and corn stover per year. Once Project LIBERTY is complete, POET anticipates purchasing this material at a price of about \$12-\$14 million dollars from approximately 400-500 local farmers.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2007	\$344,983	\$181,385	\$100,971	\$627,339
2008	\$1,326,069	\$697,220	\$388,119	\$2,411,408
2009	\$5,739,817	\$3,017,879	\$1,679,952	\$10,437,648
2010	\$6,296,798	\$3,310,728	\$1,842,971	\$11,450,497
2011	\$3,043,124	\$1,600,012	\$890,673	\$5,533,810
2012	\$31,261,921	\$16,436,880	\$9,149,859	\$56,848,660
2013	\$5,000,000	\$2,628,898	\$1,463,419	\$9,092,317
2014	\$1,675,159	\$880,764	\$490,292	\$3,046,215
Total	\$54,687,871	\$28,753,766	\$16,006,256	\$99,447,894

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2007	4	4	3	11
2008	6	6	5	17
2009	10	11	8	29
2010	16	17	12	45
2011	20	21	15	56
2012	55	58	42	155
2013	37	39	29	105
2014	37	39	29	105

Individual Project Summaries

POET

POET Project Liberty

Total Project Budget: \$306,087,871
Funding Provided by IPF: \$14,750,000

Project Impacts - Economic Impacts (continued)

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2007	\$197,059	\$295,588	\$118,235	\$610,882
2008	\$309,897	\$464,846	\$185,938	\$960,682
2009	\$521,445	\$782,168	\$312,867	\$1,616,480
2010	\$826,872	\$1,240,307	\$496,123	\$2,563,302
2011	\$1,012,443	\$906,938	\$492,435	\$2,411,817
2012	\$2,491,718	\$2,232,060	\$1,211,928	\$5,935,706
2013	\$1,626,368	\$1,456,887	\$791,037	\$3,874,292
2014	\$1,675,159	\$1,500,593	\$814,768	\$3,990,521
Total	\$8,660,960	\$8,879,387	\$4,423,332	\$21,963,680

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2007	\$15,221	\$10,592	\$1,016	\$8,123	\$34,953
2008	\$23,937	\$17,039	\$3,907	\$12,550	\$57,434
2009	\$40,278	\$34,338	\$16,912	\$22,322	\$113,850
2010	\$63,870	\$82,416	\$18,553	\$36,306	\$201,146
2011	\$60,096	\$1,030,494	\$8,966	\$46,538	\$1,146,095
2012	\$147,901	\$1,628,152	\$92,112	\$132,032	\$2,000,198
2013	\$96,537	\$61,346	\$14,732	\$91,470	\$264,085
2014	\$99,433	\$56,076	\$4,936	\$94,214	\$254,659
Total	\$547,273	\$2,920,454	\$161,136	\$443,557	\$4,072,420

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2007	\$0	\$18,456	\$2,118	\$2,500	\$23,075
2008	\$0	\$28,238	\$3,408	\$2,575	\$34,221
2009	\$0	\$49,736	\$6,868	\$2,652	\$59,256
2010	\$0	\$80,109	\$16,483	\$2,732	\$99,324
2011	\$297,239	\$101,689	\$206,099	\$2,814	\$607,840
2012	\$931,789	\$285,697	\$325,630	\$2,898	\$1,546,015
2013	\$931,789	\$196,006	\$12,269	\$2,985	\$1,143,049
2014	\$931,789	\$199,926	\$11,215	\$3,075	\$1,146,005
Total	\$3,092,605	\$959,858	\$584,091	\$22,231	\$4,658,785

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Individual Project Summaries

POET

POET Project Liberty

Total Project Budget: \$306,087,871

Funding Provided by IPF: \$14,750,000

Construction Impacts - Economic Impacts

Economic Output During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2010	\$3,503,202	\$3,208,583	\$6,711,785
2011	\$99,158,719	\$90,819,471	\$189,978,190
2012	\$148,738,079	\$136,229,207	\$284,967,286
Total	\$251,400,000	\$230,257,260	\$481,657,260

Employment During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2010	8	6	13
2011	212	151	363
2012	309	220	529

Totals may not equal sum due to rounding.

Workers' Earnings During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2010	\$262,740	\$170,886	\$433,626
2011	\$7,436,904	\$4,836,962	\$12,273,866
2012	\$11,155,356	\$7,255,443	\$18,410,799
Total	\$18,855,000	\$12,263,292	\$31,118,292

Revenue for the State During Project-Related Construction					
Year	Income Tax Collections	Sales Tax Collections*	Corporate		Total State Revenues
			Income Tax Collections	Other Taxes and Revenues	
2010	\$10,805	\$20,448	\$24,162	\$10,580	\$65,995
2011	\$305,830	\$578,789	\$683,921	\$299,472	\$1,868,014
2012	\$458,746	\$868,184	\$1,025,882	\$449,209	\$2,802,020
Total	\$775,381	\$1,467,422	\$1,733,966	\$759,261	\$4,736,030

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Potential Long-Term Impacts for Iowa

Possible Total Economic Impact Over 20-Year Period for Iowa (Three Possible Scenarios)			
	Low	Mid	High
Economic Output (In Thousands)	\$11,804,820	\$24,384,700	\$37,793,795
Employment	861	1,807	2,846
Workers' Earnings	\$394,211,922	\$815,271,233	\$1,265,094,905

Individual Project Summaries

RENEW Energy Systems

Mobile Solid Biomass Briquette Plant

Total Project Budget: \$1,112,835
 Funding Provided by IPF: \$250,000

Project Description

The project relates to research and the purchase of two CF Nielsen mobile briquette presses in 20-foot sea containers and a ring compression feedstock dryer. The mobile briquette plant will be located at existing biomass sites to convert biomass into solid densified fuel for industrial and commercial heat and power generation. The briquette presses are mobile installations of the same type of press that is currently used in the firm's Osage, Iowa facility. The concept of having mobile containers is to be able to take the briquetter to the material. In order to be able to handle loose biomass one time. This also minimizes the use of fossil fuels in transportation and the impact this has on the finished product cost. The dryer is necessary for certain feed stocks that have higher than 15% moisture.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	\$347,238	\$184,899	\$97,414	\$629,551
2009	\$347,238	\$184,899	\$97,414	\$629,551
2010	\$347,238	\$184,899	\$97,414	\$629,551
Total	\$1,041,715	\$554,697	\$292,241	\$1,888,653

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	0	0	0	0
2009	0	0	0	0
2010	2	2	2	6

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	\$0	\$0	\$0	\$0
2009	\$0	\$0	\$0	\$0
2010	\$120,000	\$109,970	\$58,999	\$288,970
Total	\$120,000	\$109,970	\$58,999	\$288,970

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2008	\$0	\$737	\$1,016	\$0	\$1,753
2009	\$0	\$738	\$1,016	\$0	\$1,754
2010	\$7,200	\$4,351	\$1,016	\$4,668	\$17,235
Total	\$7,200	\$5,826	\$3,049	\$4,668	\$20,743

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Individual Project Summaries

RENEW Energy Systems

Mobile Solid Biomass Briquette Plant

Total Project Budget: \$1,112,835
 Funding Provided by IPF: \$250,000

Project Impacts - Fiscal Impacts (continued)

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2008	\$0	\$0	\$147	\$94	\$241
2009	\$0	\$0	\$148	\$97	\$244
2010	\$0	\$10,400	\$870	\$99	\$11,370
Total	\$0	\$10,400	\$1,165	\$290	\$11,855

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Construction Impacts - Economic Impacts

Economic Output During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2008	\$71,120	\$65,139	\$136,259
Total	\$71,120	\$65,139	\$136,259

Employment During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2008	1	1	2

Workers' Earnings During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2008	\$35,560	\$23,128	\$58,688
Total	\$35,560	\$23,128	\$58,688

Revenue for the State During Project-Related Construction					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2008	\$1,462	\$2,674	\$491	\$1,432	\$6,059
Total	\$1,462	\$2,674	\$491	\$1,432	\$6,059

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.



Individual Project Summaries

RENEW Energy Systems

Mobile Solid Biomass Briquette Plant

Total Project Budget: \$1,112,835
 Funding Provided by IPF: \$250,000

Potential Long-Term Impacts for Iowa

Possible Total Economic Impact Over 20-Year Period for Iowa (Three Possible Scenarios)			
	Low	Mid	High
Economic Output (In Thousands)	\$313,731	\$377,246	\$454,726
Employment	27	38	51
Workers' Earnings	\$22,983,635	\$27,769,174	\$33,628,632



Individual Project Summaries

Renewable Energy Group

Biodiesel Research Center

Total Project Budget: \$1,349,793
 Funding Provided by IPF: \$739,963

Project Description

The Biodiesel Research Center was created to focus on three immediate problems impacting the biodiesel industry. These problems were well known by industry producers and highly publicized in the general media but adequate research data was not available. This project had three goals related to biodiesel research: evaluate a variety of existing and potential biodiesel feedstocks under consistent processing conditions to determine their ability to be used as a raw material; define the capacity of biodiesel to retain moisture in a variety of conditions; and finally, provide reliable methods to measure soaps and sterol glycosides at low levels. The research may lead to enhanced energy independence within the State of Iowa as biodiesel production capacity exists but is not being utilized.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$792,463	\$421,975	\$222,316	\$1,436,754
Total	\$792,463	\$421,975	\$222,316	\$1,436,754

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	7	8	6	21

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$500,000	\$458,209	\$245,831	\$1,204,040
Total	\$500,000	\$458,209	\$245,831	\$1,204,040

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2009	\$30,001	\$29,034	\$2,319	\$15,399	\$76,754
Total	\$30,001	\$29,034	\$2,319	\$15,399	\$76,754

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2009	\$0	\$34,986	\$5,807	\$638	\$41,431
Total	\$0	\$34,986	\$5,807	\$638	\$41,431

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.



Individual Project Summaries

Renewable Energy Group

Biodiesel Research Center

Total Project Budget: \$1,349,793
 Funding Provided by IPF: \$739,963

Construction Impacts - Economic Impacts

Economic Output During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2009	\$557,330	\$510,459	\$1,067,789
Total	\$557,330	\$510,459	\$1,067,789

Employment During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2009	11	8	18

Totals may not equal sum due to rounding.

Workers' Earnings During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2009	\$334,398	\$217,492	\$551,890
Total	\$334,398	\$217,492	\$551,890

Revenue for the State During Project-Related Construction					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2009	\$13,752	\$10,404	\$3,844	\$13,466	\$41,465
Total	\$13,752	\$10,404	\$3,844	\$13,466	\$41,465

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Potential Long-Term Impacts for Iowa

Possible Total Economic Impact Over 20-Year Period for Iowa (Three Possible Scenarios)			
	Low	Mid	High
Economic Output (In Thousands)	\$1,406,119	\$2,904,557	\$4,501,767
Employment	110	232	365
Workers' Earnings	\$58,024,826	\$120,001,371	\$186,211,800



Individual Project Summaries

TPI Composites

TPI Wind Turbine Blade Advanced Manufacturing Initiative

Total Project Budget: \$6,300,000
Funding Provided by IPF: \$2,100,000

Project Description

This project is working to foster the mass production of wind turbines in Iowa. Through improving labor productivity in wind manufacturing by up to 35%, this project will increase manufacturing throughput through an Advanced Manufacturing Innovation Initiative. The results would be more employment opportunities in the state along with better-paying and technically-challenging employment possibilities. The project collaborates with both Iowa State University and the Sandia National Laboratories.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$1,500,000	\$482,100	\$291,150	\$2,273,250
2010	\$1,500,000	\$482,100	\$291,150	\$2,273,250
2011	\$1,800,000	\$578,520	\$349,380	\$2,727,900
2012	\$1,175,000	\$377,645	\$228,068	\$1,780,713
Total	\$5,975,000	\$1,920,365	\$1,159,748	\$9,055,113

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	12	15	11	38
2010	14	17	12	43
2011	16	19	14	49
2012	25	30	22	77

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$960,000	\$766,176	\$442,944	\$2,169,120
2010	\$1,120,000	\$893,872	\$516,768	\$2,530,640
2011	\$1,280,000	\$1,021,568	\$590,592	\$2,892,160
2012	\$2,000,000	\$1,596,200	\$922,800	\$4,519,000
Total	\$5,360,000	\$4,277,816	\$2,473,104	\$12,110,920

Individual Project Summaries

TPI Composites

TPI Wind Turbine Blade Advanced Manufacturing Initiative

Total Project Budget: \$6,300,000
Funding Provided by IPF: \$2,100,000

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2009	\$54,048	\$29,610	\$2,784	\$27,508	\$113,950
2010	\$63,056	\$34,146	\$2,784	\$32,678	\$132,664
2011	\$72,065	\$39,069	\$3,340	\$38,134	\$152,607
2012	\$112,601	\$58,616	\$2,181	\$61,622	\$235,020
Total	\$301,770	\$161,440	\$11,088	\$159,942	\$634,241

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2009	\$0	\$62,499	\$5,922	\$285	\$68,706
2010	\$0	\$73,525	\$6,829	\$294	\$80,648
2011	\$0	\$84,967	\$7,814	\$302	\$93,083
2012	\$0	\$135,968	\$11,723	\$311	\$148,003
Total	\$0	\$356,959	\$32,288	\$1,192	\$390,439

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Construction Impacts - Economic Impacts

Economic Output During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2011	\$200,000	\$183,180	\$383,180
2012	\$125,000	\$114,488	\$239,488
Total	\$325,000	\$297,668	\$622,668

Employment During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2011	3	2	5
2012	2	1	3



Individual Project Summaries

TPI Composites

TPI Wind Turbine Blade Advanced Manufacturing Initiative

Total Project Budget: \$6,300,000
Funding Provided by IPF: \$2,100,000

Construction Impacts - Economic Impacts (continued)

Workers' Earnings During Project-Related Construction			
Year	Direct	Indirect & Induced	Total
2011	\$100,000	\$65,040	\$165,040
2012	\$62,500	\$40,650	\$103,150
Total	\$162,500	\$105,690	\$268,190

Revenue for the State During Project-Related Construction					
Year	Income Tax Collections	Sales Tax Collections*	Corporate		Total State Revenues
			Income Tax Collections	Other Taxes and Revenues	
2011	\$4,112	\$4,121	\$1,379	\$4,027	\$13,640
2012	\$2,570	\$2,576	\$862	\$2,517	\$8,525
Total	\$6,683	\$6,697	\$2,242	\$6,544	\$22,164

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Potential Long-Term Impacts for Iowa

Possible Total Economic Impact Over 20-Year Period for Iowa (Three Possible Scenarios)			
	Low	Mid	High
Economic Output (In Thousands)	\$1,616,080	\$2,782,477	\$4,025,903
Employment	627	1,098	1,614
Workers' Earnings	\$269,102,628	\$463,876,919	\$671,976,543



Individual Project Summaries

Trees Forever

Community Educ. on Energy & Environmental
Benefits from Green Infrastructure

Total Project Budget: \$970,650
Funding Provided by IPF: \$232,249

Project Description

Trees Forever is working with ten communities that were impacted by natural disasters to develop long-term tree planting efforts that maximize energy savings and carbon sequestration. The recent natural disasters took a heavy toll on thousands of mature urban trees throughout the state. This Power Fund project engages volunteers, students, and city leaders in selected communities to replant and grow their urban tree canopy by identifying optimum sites available, choosing from a list of large benefit-producing shade tree species, and developing long-term management and maintenance plans. By restoring their community forests, lowans will reduce their energy consumption and carbon footprint as trees shade homes and businesses in the summer, provide protection from winter winds, and take in and store carbon dioxide. Even more impressive is that these benefits grow exponentially over time, impacting generations to come.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$22,250	\$9,185	\$9,171	\$40,606
2010	\$407,140	\$168,067	\$167,823	\$743,031
2011	\$448,560	\$185,166	\$184,896	\$818,622
2012	\$92,700	\$38,267	\$38,211	\$169,178
Total	\$970,650	\$400,684	\$400,102	\$1,771,436

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	1	0	0	2
2010	4	1	1	6
2011	4	1	1	7
2012	1	0	0	2

Totals may not equal sum due to rounding.

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$9,375	\$3,890	\$3,404	\$16,669
2010	\$109,734	\$45,529	\$39,844	\$195,107
2011	\$139,790	\$57,999	\$50,758	\$248,547
2012	\$36,350	\$15,082	\$13,199	\$64,630
Total	\$295,249	\$122,499	\$107,205	\$524,953



Individual Project Summaries

Trees Forever

Community Educ. on Energy & Environmental
Benefits from Green Infrastructure

Total Project Budget: \$970,650
Funding Provided by IPF: \$232,249

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2009	\$415	\$254	\$66	\$1,208	\$1,944
2010	\$4,862	\$7,509	\$1,209	\$4,356	\$17,935
2011	\$6,193	\$12,493	\$1,332	\$5,127	\$25,145
2012	\$1,610	\$999	\$275	\$1,320	\$4,205
Total	\$13,080	\$21,255	\$2,883	\$12,012	\$49,230

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2009	\$0	\$2,745	\$51	\$0	\$2,796
2010	\$0	\$9,800	\$1,502	\$0	\$11,302
2011	\$0	\$11,424	\$2,499	\$0	\$13,923
2012	\$0	\$2,913	\$200	\$0	\$3,113
Total	\$0	\$26,883	\$4,251	\$0	\$31,134

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Individual Project Summaries

Tri-Phase Drying Technologies

Ultra Energy Efficient Industrial Drying Technology

Total Project Budget: \$629,277
Funding Provided by IPF: \$300,000

Project Description

Tri-Phase Drying Technologies proposes to install the first, full-scale commercial Tri-Phase II Dryer at American Natural Soy, an organic processor of oils, flour, and meal from soy, flax, canola, safflower, and sunflower seeds. The project includes the final design, build, installation, and monitoring of the energy-efficient dryer. The new dryer will consume approximately 750 BTU when operated at 65 degrees Fahrenheit to evaporate one pound of water from 113 bushels of soybeans per hour. The new technology replaces the current inefficient dryer which consumes approximately 4,000 BTU, thus saving approximately \$15,000-20,000 per year and reducing CO2 emissions by 220 tons per year. If the project is successful, Tri-Phase hopes to commercialize the drying technology.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2010	\$118,000	\$60,935	\$50,221	\$229,156
2011	\$511,277	\$264,023	\$217,599	\$992,900
Total	\$629,277	\$324,959	\$267,820	\$1,222,056

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2010	0	0	0	0
2011	3	2	2	7

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2010	\$0	\$0	\$0	\$0
2011	\$150,000	\$70,305	\$56,520	\$276,825
Total	\$150,000	\$70,305	\$56,520	\$276,825

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2010	\$0	\$303	\$825	\$0	\$1,128
2011	\$6,898	\$8,790	\$3,574	\$5,133	\$24,395
Total	\$6,898	\$9,093	\$4,399	\$5,133	\$25,523

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.



Individual Project Summaries

Tri-Phase Drying Technologies

Ultra Energy Efficient Industrial Drying Technology

Total Project Budget: \$629,277
 Funding Provided by IPF: \$300,000

Project Impacts - Fiscal Impacts (continued)

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2010	\$0	\$0	\$61	\$23	\$83
2011	\$0	\$11,548	\$1,758	\$23	\$13,330
Total	\$0	\$11,548	\$1,819	\$46	\$13,413

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Potential Long-Term Impacts for Iowa

Possible Total Economic Impact Over 20-Year Period for Iowa (Three Possible Scenarios)			
	Low	Mid	High
Economic Output (In Thousands)	\$458,135	\$610,846	\$763,558
Employment	207	277	346
Workers' Earnings	\$104,750,580	\$139,667,440	\$174,584,300

Individual Project Summaries

University of Iowa

Iowa Alliance for Wind Innovation and Novel Development (IAWIND)

Total Project Budget: \$3,000,000
Funding Provided by IPF: \$1,800,000

Project Description

IAWIND is implementing research and training components to realize the scope of university-based, large-scale gearbox testing facilities to support the continued growth of turbine component manufacturing in Iowa. By doing this, IAWIND is supporting the State of Iowa in its efforts to continue to attract and nurture wind energy and related industries, and to become the national leader in alternative energy technologies.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$1,000,000	\$321,400	\$194,100	\$1,515,500
2010	\$1,000,000	\$321,400	\$194,100	\$1,515,500
2011	\$1,000,000	\$321,400	\$194,100	\$1,515,500
Total	\$3,000,000	\$964,200	\$582,300	\$4,546,500

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	5	6	4	15
2010	5	6	4	15
2011	5	6	4	15

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$353,333	\$281,995	\$163,028	\$798,357
2010	\$353,333	\$281,995	\$163,028	\$798,357
2011	\$353,333	\$281,995	\$163,028	\$798,357
Total	\$1,060,000	\$845,986	\$489,084	\$2,395,070

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate		Total State Revenues
			Income Tax Collections	Other Taxes and Revenues	
2009	\$19,893	\$21,468	\$1,856	\$11,069	\$54,286
2010	\$19,893	\$21,474	\$1,856	\$11,401	\$54,624
2011	\$19,893	\$21,480	\$1,856	\$11,743	\$54,972
Total	\$59,678	\$64,423	\$5,567	\$34,213	\$163,881

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.



Individual Project Summaries

University of Iowa

Iowa Alliance for Wind Innovation and Novel
Development (IAWIND)

Total Project Budget: \$3,000,000
Funding Provided by IPF: \$1,800,000

Project Impacts - Fiscal Impacts (continued)

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2009	\$0	\$25,149	\$4,294	\$200	\$29,642
2010	\$0	\$25,651	\$4,295	\$206	\$30,152
2011	\$0	\$26,165	\$4,296	\$212	\$30,673
Total	\$0	\$76,965	\$12,885	\$618	\$90,467

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Potential Long-Term Impacts for Iowa

Possible Total Economic Impact Over 20-Year Period for Iowa (Three Possible Scenarios)			
	Low	Mid	High
Economic Output (In Thousands)	\$1,060,182	\$2,189,972	\$3,394,233
Employment	408	857	1,350
Workers' Earnings	\$176,432,638	\$364,881,036	\$566,203,150



Individual Project Summaries

University of Northern Iowa

Creation of Novel Hydrogen Storage Materials for
Fuel Cell Application

Total Project Budget: \$539,000
Funding Provided by IPF: \$400,000

Project Description

The project is designed to develop a high density hydrogen storage medium for use in hydrogen fuel cells. Development of such a material would enable hydrogen power to be used in a wide variety of commercial applications, including automotives, industrial machinery, public transportation, industrial power generation, and portable electronics. The use of hydrogen power as a replacement for fossil fuels would greatly reduce the amount of pollution, carbon dioxide, and particulate matter released into the air every year throughout the United States. The researchers targeted a material that showed excellent performance capabilities in the lab, and could be far superior to existing technologies for energy storage. The first two years will focus on how to optimize this material with regards to hydrogen storage capability. During the second year, the researchers plan to begin efforts in developing device prototypes, a scalable production process, and testing in real world conditions. By the third year of the project, researchers hope to have developed sufficient prototypes and begin testing the process of commercialization, with products aimed especially at large scale energy storage, transportation, and commercial electronics.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	\$80,000	\$22,928	\$39,624	\$142,552
2009	\$100,000	\$28,660	\$49,530	\$178,190
2010	\$102,000	\$29,233	\$50,521	\$181,754
2011	\$129,000	\$36,971	\$63,894	\$229,865
2012	\$128,000	\$36,685	\$63,398	\$228,083
Total	\$539,000	\$154,477	\$266,967	\$960,444

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	0	0	0	0
2009	2	1	1	3
2010	3	1	1	5
2011	2	1	1	4
2012	2	1	1	4

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2008	\$0	\$0	\$0	\$0
2009	\$70,000	\$14,301	\$21,630	\$105,931
2010	\$97,000	\$19,817	\$29,973	\$146,790
2011	\$124,000	\$25,333	\$38,316	\$187,649
2012	\$123,000	\$25,129	\$38,007	\$186,136
Total	\$414,000	\$84,580	\$127,926	\$626,506



Individual Project Summaries

University of Northern Iowa

Creation of Novel Hydrogen Storage Materials for
Fuel Cell Application

Total Project Budget: \$539,000
Funding Provided by IPF: \$400,000

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2008	\$0	\$156	\$225	\$0	\$382
2009	\$2,640	\$1,520	\$281	\$2,333	\$6,773
2010	\$3,658	\$2,034	\$287	\$3,816	\$9,795
2011	\$4,676	\$2,598	\$363	\$2,911	\$10,548
2012	\$4,638	\$2,577	\$360	\$2,999	\$10,574
Total	\$15,611	\$8,885	\$1,517	\$12,058	\$38,071

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2008	\$0	\$0	\$31	\$0	\$31
2009	\$0	\$5,248	\$304	\$0	\$5,552
2010	\$0	\$8,502	\$407	\$0	\$8,909
2011	\$0	\$6,424	\$520	\$0	\$6,943
2012	\$0	\$6,552	\$515	\$0	\$7,068
Total	\$0	\$26,726	\$1,777	\$0	\$28,503

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Individual Project Summaries

University of Northern Iowa

Development of Less Expensive Dye Sensitized Solar Cells

Total Project Budget: \$97,281
Funding Provided by IPF: \$78,681

Project Description

The project seeks to develop a cheaper solar cell based on dye sensitized solar cell technology. Less expensive dyes are expected to be developed and their solar efficiency will then be tested. Once studies are completed, the research will be incorporated into an economically feasible device for sale to the general public. The project involved undergraduate students and faculty researching new less expensive solar cells. The students had the opportunity to work with Distek Integration and the department of Industrial Technology to incorporate the new solar cells in a solar device.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$97,281	\$27,997	\$25,098	\$150,377
Total	\$97,281	\$27,997	\$25,098	\$150,377

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	1	1	1	3

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2009	\$43,533	\$20,696	\$16,482	\$80,710
Total	\$43,533	\$20,696	\$16,482	\$80,710

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate		Total State Revenues
			Income Tax Collections	Other Taxes and Revenues	
2009	\$2,011	\$1,142	\$191	\$2,451	\$5,795
Total	\$2,011	\$1,142	\$191	\$2,451	\$5,795

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
Total	\$0	\$5,569	\$228	\$0	\$5,797

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.



Individual Project Summaries

University of Northern Iowa

Iowa Energy Poll

Total Project Budget:	\$51,456
Funding Provided by IPF:	\$51,456

Project Description

The Iowa Energy Poll collected, analyzed, and presented unbiased data regarding the opinions of Iowans on energy. The surveys showed how Iowans currently feel about state energy policies and what drives them to make the decisions they do about their own energy usage. Three separate mailings to 7,000 households targeted 21,000 Iowa residents in the course of this project. Subsequent surveys measured changes in attitudes and behaviors and the impact of newly adopted policies, programs, and activities implemented since the initial survey to determine effectiveness and return on investment.

Project Impacts

Direct Economic Impacts, No Fiscal Impacts



Individual Project Summaries

University of Northern Iowa - Tallgrass Prairie Center

Determining Maximum Sustainable Production
of Biomass with Mixture of Prairie Species

Total Project Budget: \$1,120,500
Funding Provided by IPF: \$612,000

Project Description

The project consists of developing a “biofuel prairie mix” containing 16 prairie species appropriate for non-prime agricultural land. The biomass productivity of this mix will be compared with a switchgrass control and two other mixtures on three different soil types without added fertilizer. Selected species of the biomass mix will be analyzed for slag producing minerals. Carbon sequestration in the soil and below ground plant materials will be determined by sampling prior to planting and 4 years later. Frequency and patterns of harvesting will be studied to determine those that will best retain optimal amounts of wildlife habitat in the production fields. Cubing and test burning of the mixed prairie species will be studied in conjunction with Cedar Falls Utilities. To complete the project, a brochure will be developed to inform farmers on the sustainable production of biomass with mixed prairie plantings and the harvesting frequency and patterns best suited to maintaining sufficient wildlife habitat.

Project Impacts - Economic Impacts

Economic Output During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2007	\$54,000	\$34,657	\$15,687	\$104,344
2008	\$237,216	\$152,245	\$68,911	\$458,372
2009	\$278,112	\$178,492	\$80,792	\$537,396
2010	\$285,507	\$183,238	\$82,940	\$551,685
2011	\$265,665	\$170,504	\$77,176	\$513,344
Total	\$1,120,500	\$719,137	\$325,505	\$2,165,142

Employment During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2007	2	2	1	5
2008	6	7	4	17
2009	13	14	7	34
2010	18	19	10	47
2011	18	19	10	47

Workers' Earnings During the Term of the Project				
Year	Direct	Indirect	Induced	Total
2007	\$33,406	\$38,086	\$18,343	\$89,835
2008	\$136,663	\$155,809	\$75,042	\$367,514
2009	\$129,433	\$147,567	\$71,072	\$348,071
2010	\$145,116	\$165,447	\$79,683	\$390,246
2011	\$145,116	\$165,447	\$79,683	\$390,246
Total	\$589,734	\$672,356	\$323,823	\$1,585,913



Individual Project Summaries

University of Northern Iowa - Tallgrass Prairie Center

Determining Maximum Sustainable Production
of Biomass with Mixture of Prairie Species

Total Project Budget: \$1,120,500
Funding Provided by IPF: \$612,000

Project Impacts - Fiscal Impacts

Revenue for the State During the Term of the Project					
Year	Income Tax Collections	Sales Tax Collections*	Corporate Income Tax Collections	Other Taxes and Revenues	Total State Revenues
2007	\$2,238	\$1,249	\$181	\$3,613	\$7,281
2008	\$9,157	\$5,147	\$796	\$12,696	\$27,796
2009	\$8,673	\$4,999	\$933	\$26,277	\$40,882
2010	\$9,724	\$7,183	\$958	\$37,918	\$55,783
2011	\$9,724	\$5,497	\$892	\$39,056	\$55,169
Total	\$39,517	\$24,075	\$3,761	\$119,560	\$186,912

* Includes only the portion of sales taxes retained by the State: 5% of taxable sales.

Revenue for Local Taxing Entities During the Term of the Project					
Year	Property Tax Collections – Project Property	Property Tax Collections – Residential Property	Sales Tax Collections**	Hotel/Motel Tax Collections	Total Local Revenues
2007	\$0	\$8,209	\$250	\$0	\$8,459
2008	\$0	\$28,565	\$1,029	\$0	\$29,595
2009	\$0	\$58,548	\$1,000	\$0	\$59,547
2010	\$0	\$83,666	\$1,437	\$3,200	\$88,303
2011	\$0	\$85,340	\$1,099	\$0	\$86,439
Total	\$0	\$264,327	\$4,815	\$3,200	\$272,342

** Includes only the portion of sales taxes distributed to school districts: 1% of taxable sales.

Potential Long-Term Impacts for Iowa

Possible Total Economic Impact Over 20-Year Period for Iowa (Three Possible Scenarios)			
	Low	Mid	High
Economic Output (In Thousands)	\$213,720	\$441,472	\$684,236
Employment	343	719	1,133
Workers' Earnings	\$103,544,470	\$214,140,727	\$332,292,287