

The Potential Economic and Fiscal Impact of the Pineywoods Carbon Capture and Sequestration Facility in Southeast Texas

May 2024



Contents

Executive Summary	i
Introduction	1
Economic Effects.....	3
Scenario 1: Houston Pipeline Segment Only	5
Scenario 2: Port Arthur Pipeline Segment Only	8
Scenario 3: Both Pipeline Segments	11
Fiscal Effects	14
Conclusion	16
Appendix A: Methods Used	17
Appendix B: Results by Industry	21
Sequestration Field.....	21
Construction	21
Operations	24
Houston Pipeline Segment	27
Construction	27
Operations	31
Port Arthur Pipeline Segment	35
Construction	35
Operations	38

Executive Summary

- Tenaska is proposing a carbon capture and sequestration (CCS) well field in Liberty and Hardin counties of southeast Texas. The Pineywoods CCS Hub offers key industries in southeast Texas a viable business solution for responding to environmental regulations and climate mandates, thus allowing them to remain stable regional employers and taxpayers.
- The construction and operation of the pipelines and well field related to the Hub would also lead to a notable economic stimulus. Two potential pipeline segments are under consideration, and the potential benefits were measured assuming construction of (1) the Houston pipeline segment, (2) the Port Arthur pipeline segment, and (3) both potential segments.
- Impacts would be concentrated in the local areas where pipelines or sequestration fields are located, with spillover to other parts of the state. (County results are included in the report.)
- **Houston pipeline segment:**
 - The Perryman Group estimates that construction of the pipeline and sequestration field would lead to a gain in Texas business activity of **\$765.5 million** in gross product and over **7,200** job-years (including multiplier effects).
 - Once the facilities are at full operations levels, the estimated economic benefits to the state include approximately **\$4.7 million** in annual gross product and **37** jobs (including multiplier effects).
 - Summing the effects of construction and the first 30 years of operations yields total economic benefits to Texas over the period of a projected **\$906.5 million** in gross product and over **8,360** job-years.
- **Port Arthur pipeline segment:**
 - Estimated economic impacts for the Port Arthur pipeline segment (and sequestration field) would be a projected **\$487.9 million** in gross product and **4,600** job-years of employment in Texas (including multiplier effects).
 - At full operations levels, the Port Arthur pipeline segment and sequestration field would lead to an increase in Texas business activity of an estimated **\$4.3 million** in gross product and **34** jobs.
 - Summing the effects of construction and the first 30 years of operations under a scenario in which only the Port Arthur segment of pipeline is

completed yields an estimate of total effects for Texas of **\$617.5 million** in gross product and **5,620** job-years (including multiplier effects).

- **Both the Houston and Port Arthur segments:**
 - If both pipeline segments and the sequestration field are constructed, estimated economic impacts would be **\$983.9 million** in gross product and almost **9,330** job-years of employment in Texas (including multiplier effects).
 - Once fully operational, the Pineywoods CCS Hub including both the Houston and Port Arthur pipeline segments and sequestration field would lead to an increase in Texas business activity of a projected **\$5.1 million** in annual gross product and **41** jobs (including multiplier effects).
 - The total economic impact of construction and the first 30 years of operations if both the Houston and Port Arthur segments and the sequestration field are completed yields an estimate of total effects for Texas of over **\$1.1 billion** in gross product and about **10,550** job-years (including multiplier effects).

- **Business activity generates tax receipts:**
 - During the **construction** period, the total indirect and induced fiscal benefits of the Pineywoods CCS Hub include almost **\$14.4 million** to the State and **\$12.4 million** to local government entities for the **sequestration** field.
 - **Pipeline segment construction** would generate another **\$26.2 million** to the State and **\$22.9 million** to local government entities for the Houston segment, **\$11.5 million** to the State and **\$10.1 million** to local government entities for the Port Arthur segment, and **\$37.7 million** to the State and **\$32.9 million** to local government entities if both segments are constructed.
 - Once **operational**, the facilities will generate notable benefits for many years into the future, primarily due to potential property tax increases. The projected **annual** indirect and induced fiscal benefits include more than **\$197,700** to the State and **\$3.7 million** to local government entities for the sequestration field. Operations of the pipelines would include an estimated **\$40,200** to the State and **\$5.7 million** to local government entities for the Houston segment, **\$21,600** to the State and **\$2.5 million** to local government entities for the Port Arthur segment, and **\$61,700** to the State and **\$8.2 million** to local government entities if both segments are constructed.
 - During construction and the first 30 years of operations, fiscal benefits total approximately **\$39.6 million** to the State and **\$279.0 million** to local government entities if both the Houston and Port Arthur pipeline segments are constructed.

- Global population growth and economic development is increasing the need for energy and many other products., and many of the major industrial facilities essential to meeting future needs are located along the Texas Gulf Coast. At the same time, climate issues must be dealt with. The Pineywoods CCS Hub can help preserve key industries crucial to the economies of the local areas and Texas as well as to ensuring the adequacy of the future supply of fuels and other products.

Introduction

Tenaska is proposing a carbon capture and sequestration (CCS) well field in Liberty and Hardin counties of southeast Texas. The Pineywoods CCS Hub facilities and related pipelines would connect directly to sources of emissions

In addition to helping key industries respond to environmental regulations and climate mandates, the Pineywoods CCS Hub would lead to a notable economic and fiscal stimulus through its construction and operations.

(industrial producers), capture carbon dioxide, transport it, and store it permanently deep underground. In this manner, Pineywoods CCS can assist firms in the region in reducing the climate impact of their production processes.

In southeast Texas, which includes the Beaumont and Port Arthur

areas, refining and related industries contribute approximately \$5.9 billion to annual economic output (gross product), while petrochemical-related facilities generate another \$6.3 billion in gross product per year. Totals for the greater Houston area are \$18.1 billion in refining industries and \$30.3 billion in petrochemicals. These areas comprise about 56% of the total Texas refining activity and 58% of the state's chemical activity.

In addition, these industries generate substantial activity, including upstream (by supporting oil and gas exploration, production, and pipelines) and downstream (by enhancing opportunities for shipping and industries which use their products as inputs). Refining and petrochemicals thus lead to very large dynamic responses in the economy, supporting activity across the state. They are very important export industries for the state and nation, and their products are vital to ongoing prosperity.

As pressures and requirements to limit carbon emissions intensify, solutions such as sequestration are going to become increasingly important. The Pineywoods CCS Hub can aid key industries in southeast Texas in responding to environmental regulations and climate mandates, thus allowing them to remain stable regional employers and taxpayers.

The construction and operation of the pipelines and well field would also lead to a notable economic stimulus. The Perryman Group (TPG) was

recently asked to assess the potential economic and fiscal impact of the Pineywoods CCS Hub. This report presents the results of TPG's analysis.

Economic Effects

Any economic stimulus leads to dynamic responses across the economy. The Perryman Group has developed complex and comprehensive models over the past four decades to measure these dynamic responses in order to estimate the total economic effects (not only direct, but also indirect and induced) associated with direct sources of stimulus.

Any economic stimulus leads to dynamic responses across the economy.

In this instance, capital investments for construction of pipelines and the wellfield would lead to a significant, though transitory, stimulus. Once operational, the ongoing

monitoring and other activity related to the Hub would generate an ongoing increase in business activity. These sources of stimulus, in turn, will lead to gains across the economy.

Two potential pipeline segments are under consideration, and the potential benefits were measured assuming construction of (1) the Houston pipeline segment, (2) the Port Arthur pipeline segment, and (3) both potential segments. Construction and operations related to the storage field were also measured. Operations effects are measured on an annual basis at maturity, with summary totals also included for the total of construction and the first 30 years of operations. Results related to the sequestration construction and operations are repeated within each scenario's section for completeness.

Results are provided for each affected county as well as the state as a whole. Note that Texas estimates include not only effects within the counties, but also spillover to other parts of the state. Impacts by major industry group are included in Appendix B.

Methods used in this analysis are summarized on the following page, with additional detail in Appendix A.

Measuring Economic and Fiscal Benefits

Any economic stimulus, whether positive or negative, generates multiplier effects throughout the economy. In this instance, construction and operation of the pipelines and well field associated with Pineywoods CCS Hub involve significant increases in direct activity which would lead to increases in a variety of sectors. Economic activity generates tax receipts to the State and local governments, and the fiscal effects of the economic impacts measured during the course of this study were also quantified. Further detail regarding methods and assumptions is provided in Appendix A.

The Perryman Group's dynamic input-output assessment system (the US Multi-Regional Impact Assessment System, which is described in further detail in the Appendices to this report) was developed by the firm about 40 years ago and has been consistently maintained and updated since that time. The model has been used in thousands of analyses for clients ranging from major corporations to government agencies and has been peer reviewed on multiple occasions. The impact system uses a variety of data (from surveys, industry information, and other sources) to describe the various goods and services (known as resources or inputs) required to produce another good/service. This process allows for estimation of the total economic impact (including multiplier effects) of the proposed development. The models used in the current analysis reflect the specific industrial composition and characteristics of each of the study area counties and Texas.

Total economic effects are quantified for key measures of business activity (further explained in the Appendix). Note that these measures are alternative means of expressing the same effects; they are not additive.

- **Total expenditures** (or total spending) measure the dollars changing hands as a result of the economic stimulus.
- **Gross product** (or output) is production of goods and services that will come about in the area as a result of the activity. This measure is parallel to the gross domestic product numbers commonly reported by various media outlets and is a subset of total expenditures.
- **Personal income** is dollars that end up in the hands of people in the area; the vast majority of this aggregate derives from the earnings of employees, but payments such as interest and rents are also included.
- **Job effects** are expressed as job-years of employment for a temporary stimulus such as construction and jobs for ongoing effects. A job-year is one person working for one year, though it could be multiple individuals working partial years.

Monetary values were quantified on a constant (2024 dollars) basis to eliminate the effects of inflation.

Scenario 1: Houston Pipeline Segment Only

If Tenaska moves forward with the Houston pipeline segment (but not the Port Arthur segment), The Perryman Group estimates that construction of the pipeline and sequestration field would lead to a gain in Texas business activity of **\$765.5 million** in gross product and almost **7,250** job-years (including multiplier effects).

The Potential Economic Benefits of Construction of the Houston Pipeline Segment and Sequestration Field of the Pineywoods CCS Hub

	Total Expenditures (Millions of 2024 Dollars)	Gross Product (Millions of 2024 Dollars)	Personal Income (Millions of 2024 Dollars)	Employment (Job-Years)
Pipeline Construction				
Liberty County	\$246.567	\$121.945	\$86.468	1,225
Chambers County	\$178.651	\$81.649	\$58.066	809
Harris County	\$413.725	\$197.514	\$137.608	1,870
Texas	\$1,042.949	\$496.024	\$340.112	4,721
Sequestration Field Construction				
Liberty County	\$255.911	\$126.236	\$89.190	1,250
Hardin County	\$173.973	\$85.268	\$59.899	846
Texas	\$569.354	\$269.519	\$183.654	2,526
TOTAL CONSTRUCTION				
Liberty County	\$502.478	\$248.181	\$175.659	2,475
Chambers County	\$178.651	\$81.649	\$58.066	809
Harris County	\$413.725	\$197.514	\$137.608	1,870
Hardin County	\$173.973	\$85.268	\$59.899	846
Texas	\$1,612.303	\$765.542	\$523.767	7,247

Based on current plans and The Perryman Group's estimates of related multiplier effects. The statewide total includes not only effects within the counties with facilities, but also spillover to other parts of the state. A job-year is one person working for one year, though it could be multiple individuals working partial years. Additional explanation of terms and methods may be found elsewhere in this report and in Appendix A. For results by major industry group, see Appendix B.

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Once the facilities are at full operations levels, the estimated economic benefits to the state include approximately **\$4.7 million** in annual gross product and **37 jobs** (including multiplier effects).

The Potential Annual Economic Benefits of Operations of the Houston Pipeline Segment and Sequestration Field of the Pineywoods CCS Hub

	Total Expenditures (Millions of 2024 Dollars)	Gross Product (Millions of 2024 Dollars)	Personal Income (Millions of 2024 Dollars)	Employment (Jobs)
Pipeline Operations				
Liberty County	\$0.624	\$0.206	\$0.134	2
Chambers County	\$0.452	\$0.135	\$0.086	1
Harris County	\$0.799	\$0.260	\$0.165	2
Texas	\$2.414	\$0.814	\$0.512	7
Sequestration Field Operations				
Liberty County	\$4.098	\$1.677	\$1.027	13
Hardin County	\$3.513	\$1.412	\$0.853	11
Texas	\$9.713	\$3.884	\$2.335	30
TOTAL OPERATIONS				
Liberty County	\$4.722	\$1.883	\$1.161	15
Chambers County	\$0.452	\$0.135	\$0.086	1
Harris County	\$0.799	\$0.260	\$0.165	2
Hardin County	\$3.513	\$1.412	\$0.853	11
Texas	\$12.128	\$4.698	\$2.847	37
Based on current plans and The Perryman Group's estimates of related multiplier effects. Includes operational activity as well as royalties. The statewide total includes not only effects within the counties with facilities, but also spillover to other parts of the state. A job-year is one person working for one year, though it could be multiple individuals working partial years. Additional explanation of terms and methods may be found elsewhere in this report and in Appendix A. For results by major industry group, see Appendix B. Source: US Multi-Regional Impact Assessment System, The Perryman Group				

Summing the effects of construction and the first 30 years of operations yields total economic benefits to Texas over the period of a projected **\$906.5 million** in gross product and over **8,360** job-years.

The Potential Economic Benefits of Construction and First 30 Years of Operations of the Houston Pipeline Segment and Sequestration Field of the Pineywoods CCS Hub

	Total Expenditures (Millions of 2024 Dollars)	Gross Product (Millions of 2024 Dollars)	Personal Income (Millions of 2024 Dollars)	Employment (Job-Years)
Pipeline Construction and First 30 Years of Operations				
Liberty County	\$265.295	\$128.137	\$90.474	1,281
Chambers County	\$192.213	\$85.692	\$60.654	844
Harris County	\$437.692	\$205.314	\$142.554	1,936
Texas	\$1,115.381	\$520.439	\$355.484	4,931
Sequestration Field Construction and First 30 Years of Operations				
Liberty County	\$378.847	\$176.541	\$120.011	1,655
Hardin County	\$279.373	\$127.628	\$85.497	1,184
Texas	\$860.753	\$386.050	\$253.692	3,431
TOTAL CONSTRUCTION AND FIRST 30 YEARS OF OPERATIONS				
Liberty County	\$644.142	\$304.678	\$210.485	2,936
Chambers County	\$192.213	\$85.692	\$60.654	844
Harris County	\$437.692	\$205.314	\$142.554	1,936
Hardin County	\$279.373	\$127.628	\$85.497	1,184
Texas	\$1,976.134	\$906.489	\$609.176	8,362
Based on current plans and The Perryman Group's estimates of related multiplier effects. The statewide total includes not only effects within the counties with facilities, but also spillover to other parts of the state. A job-year is one person working for one year, though it could be multiple individuals working partial years. Additional explanation of terms and methods may be found elsewhere in this report and in Appendix A. For results by major industry group, see Appendix B. Source: US Multi-Regional Impact Assessment System, The Perryman Group				

Scenario 2: Port Arthur Pipeline Segment Only

This section includes results if Tenaska moves forward with the Port Arthur pipeline segment (but not the Houston segment). If the Port Arthur pipeline segment and sequestration field are constructed, estimated economic impacts would be **\$487.9 million** in gross product and **4,600** job-years of employment in Texas (including multiplier effects).

The Potential Economic Benefits of Construction of the Port Arthur Pipeline Segment and Sequestration Field of the Pineywoods CCS Hub

	Total Expenditures (Millions of 2024 Dollars)	Gross Product (Millions of 2024 Dollars)	Personal Income (Millions of 2024 Dollars)	Employment (Job-Years)
Pipeline Construction				
Liberty County	\$36.560	\$18.081	\$12.821	182
Jefferson County	\$328.205	\$161.623	\$115.044	1,625
Texas	\$459.197	\$218.393	\$149.747	2,079
Sequestration Field Construction				
Liberty County	\$255.911	\$126.236	\$89.190	1,250
Hardin County	\$173.973	\$85.268	\$59.899	846
Texas	\$569.354	\$269.519	\$183.654	2,526
TOTAL CONSTRUCTION				
Liberty County	\$292.471	\$144.318	\$102.011	1,432
Jefferson County	\$328.205	\$161.623	\$115.044	1,625
Hardin County	\$173.973	\$85.268	\$59.899	846
Texas	\$1,028.551	\$487.912	\$333.401	4,605
<p>Based on current plans and The Perryman Group's estimates of related multiplier effects. The statewide total includes not only effects within the counties with facilities, but also spillover to other parts of the state. A job-year is one person working for one year, though it could be multiple individuals working partial years. Additional explanation of terms and methods may be found elsewhere in this report and in Appendix A. For results by major industry group, see Appendix B.</p> <p>Source: US Multi-Regional Impact Assessment System, The Perryman Group</p>				

At full operations levels, the Port Arthur pipeline segment and sequestration field would lead to an increase in Texas business activity of an estimated **\$4.3 million** in gross product and **34 jobs**.

The Potential Annual Economic Benefits of Operations of the Port Arthur Pipeline Segment and Sequestration Field of the Pineywoods CCS Hub

	Total Expenditures (Millions of 2024 Dollars)	Gross Product (Millions of 2024 Dollars)	Personal Income (Millions of 2024 Dollars)	Employment (Jobs)
Pipeline Operations				
Liberty County	\$0.093	\$0.031	\$0.020	0
Jefferson County	\$0.982	\$0.323	\$0.210	3
Texas	\$1.296	\$0.437	\$0.275	4
Sequestration Field Operations				
Liberty County	\$4.098	\$1.677	\$1.027	13
Hardin County	\$3.513	\$1.412	\$0.853	11
Texas	\$9.713	\$3.884	\$2.335	30
TOTAL OPERATIONS				
Liberty County	\$4.190	\$1.707	\$1.047	14
Jefferson County	\$0.982	\$0.323	\$0.210	3
Hardin County	\$3.513	\$1.412	\$0.853	11
Texas	\$11.009	\$4.321	\$2.610	34
<p>Based on current plans and The Perryman Group's estimates of related multiplier effects. Although jobs in Liberty County for pipeline operations round to zero, a fraction of a position would be supported. The statewide total includes not only effects within the counties with facilities, but also spillover to other parts of the state. Additional explanation of terms and methods may be found elsewhere in this report and in Appendix A. For results by major industry group, see Appendix B.</p> <p>Source: US Multi-Regional Impact Assessment System, The Perryman Group</p>				

Summing the effects of construction and the first 30 years of operations under a scenario in which only the Port Arthur segment of pipeline is completed yields an estimate of total effects for Texas of **\$617.5 million** in gross product and **5,620** job-years (including multiplier effects).

The Potential Economic Benefits of Construction and First 30 Years of Operations of the Port Arthur Pipeline Segment and Sequestration Field of the Pineywoods CCS Hub

	Total Expenditures (Millions of 2024 Dollars)	Gross Product (Millions of 2024 Dollars)	Personal Income (Millions of 2024 Dollars)	Employment (Job-Years)
Pipeline Construction and First 30 Years of Operations				
Liberty County	\$39.336	\$19.000	\$13.415	190
Jefferson County	\$357.655	\$171.309	\$121.342	1,713
Texas	\$498.075	\$231.498	\$157.998	2,191
Sequestration Field Construction and First 30 Years of Operations				
Liberty County	\$378.847	\$176.541	\$120.011	1,655
Hardin County	\$279.373	\$127.628	\$85.497	1,184
Texas	\$860.753	\$386.050	\$253.692	3,431
TOTAL CONSTRUCTION AND FIRST 30 YEARS OF OPERATIONS				
Liberty County	\$418.184	\$195.541	\$133.426	1,845
Jefferson County	\$357.655	\$171.309	\$121.342	1,713
Hardin County	\$279.373	\$127.628	\$85.497	1,184
Texas	\$1,358.828	\$617.548	\$411.690	5,622

Based on current plans and The Perryman Group's estimates of related multiplier effects. The statewide total includes not only effects within the counties with facilities, but also spillover to other parts of the state. A job-year is one person working for one year, though it could be multiple individuals working partial years. Additional explanation of terms and methods may be found elsewhere in this report and in Appendix A. For results by major industry group, see Appendix B.

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Scenario 3: Both Pipeline Segments

If both the Port Arthur and Houston pipeline segments and sequestration field are constructed, estimated economic impacts would be **\$983.9 million** in gross product and almost **9,330** job-years of employment in Texas (including multiplier effects).

The Potential Economic Benefits of Construction of Both the Houston and Port Arthur Pipeline Segments and Sequestration Field of the Pineywoods CCS Hub

	Total Expenditures (Millions of 2024 Dollars)	Gross Product (Millions of 2024 Dollars)	Personal Income (Millions of 2024 Dollars)	Employment (Job-Years)
Pipeline Construction				
Liberty County	\$283.126	\$140.026	\$99.289	1,406
Chambers County	\$178.651	\$81.649	\$58.066	809
Harris County	\$413.725	\$197.514	\$137.608	1,870
Jefferson County	\$328.205	\$161.623	\$115.044	1,625
Texas	\$1,502.145	\$714.416	\$489.859	6,800
Sequestration Field Construction				
Liberty County	\$255.911	\$126.236	\$89.190	1,250
Hardin County	\$173.973	\$85.268	\$59.899	846
Texas	\$569.354	\$269.519	\$183.654	2,526
TOTAL CONSTRUCTION				
Liberty County	\$539.037	\$266.263	\$188.480	2,657
Chambers County	\$178.651	\$81.649	\$58.066	809
Harris County	\$413.725	\$197.514	\$137.608	1,870
Hardin County	\$173.973	\$85.268	\$59.899	846
Jefferson County	\$328.205	\$161.623	\$115.044	1,625
Texas	\$2,071.499	\$983.935	\$673.513	9,326

Based on current plans and The Perryman Group's estimates of related multiplier effects. The statewide total includes not only effects within the counties with facilities, but also spillover to other parts of the state. A job-year is one person working for one year, though it could be multiple individuals working partial years. Additional explanation of terms and methods may be found elsewhere in this report and in Appendix A. For results by major industry group, see Appendix B.
Source: US Multi-Regional Impact Assessment System, The Perryman Group

Once fully operational, the Pineywoods CCS Hub including both the Houston and Port Arthur pipeline segments and sequestration field would lead to an increase in Texas business activity of a projected **\$5.1 million** in annual gross product and **41 jobs** (including multiplier effects).

The Potential Annual Economic Benefits of Operations of Both the Houston and Port Arthur Pipeline Segments and Sequestration Field of the Pineywoods CCS Hub

	Total Expenditures (Millions of 2024 Dollars)	Gross Product (Millions of 2024 Dollars)	Personal Income (Millions of 2024 Dollars)	Employment (Jobs)
Pipeline Operations				
Liberty County	\$0.717	\$0.237	\$0.153	2
Chambers County	\$0.452	\$0.135	\$0.086	1
Harris County	\$0.799	\$0.260	\$0.165	2
Jefferson County	\$0.982	\$0.323	\$0.210	3
Texas	\$3.710	\$1.251	\$0.787	11
Sequestration Field Operations				
Liberty County	\$4.098	\$1.677	\$1.027	13
Hardin County	\$3.513	\$1.412	\$0.853	11
Texas	\$9.713	\$3.884	\$2.335	30
TOTAL OPERATIONS				
Liberty County	\$4.815	\$1.914	\$1.181	16
Chambers County	\$0.452	\$0.135	\$0.086	1
Harris County	\$0.799	\$0.260	\$0.165	2
Hardin County	\$3.513	\$1.412	\$0.853	11
Jefferson County	\$0.982	\$0.323	\$0.210	3
Texas	\$13.424	\$5.135	\$3.122	41

Based on current plans and The Perryman Group's estimates of related multiplier effects. The statewide total includes not only effects within the counties with facilities, but also spillover to other parts of the state. Additional explanation of terms and methods may be found elsewhere in this report and in Appendix A. For results by major industry group, see Appendix B.

Source: US Multi-Regional Impact Assessment System, The Perryman Group

The total economic impact of construction and the first 30 years of operations if both the Houston and Port Arthur segments are completed and the sequestration field yields an estimate of total effects for Texas of over **\$1.1 billion** in gross product and about **10,550** job-years (including multiplier effects).

The Potential Economic Benefits of Construction and First 30 Years of Operations of the Houston and Port Arthur Pipeline Segments and Sequestration Field of the Pineywoods CCS Hub

	Total Expenditures (Millions of 2024 Dollars)	Gross Product (Millions of 2024 Dollars)	Personal Income (Millions of 2024 Dollars)	Employment (Job-Years)
Pipeline Construction and First 30 Years of Operations				
Liberty County	\$304.631	\$147.137	\$103.889	1,470
Chambers County	\$192.213	\$85.692	\$60.654	844
Harris County	\$437.692	\$205.314	\$142.554	1,936
Jefferson County	\$357.655	\$171.309	\$121.342	1,713
Texas	\$1,613.456	\$751.936	\$513.481	7,122
Sequestration Field Construction and First 30 Years of Operations				
Liberty County	\$378.847	\$176.541	\$120.011	1,655
Hardin County	\$279.373	\$127.628	\$85.497	1,184
Texas	\$860.753	\$386.050	\$253.692	3,431
TOTAL CONSTRUCTION AND FIRST 30 YEARS OF OPERATIONS				
Liberty County	\$683.478	\$323.678	\$223.900	3,126
Chambers County	\$192.213	\$85.692	\$60.654	844
Harris County	\$437.692	\$205.314	\$142.554	1,936
Hardin County	\$279.373	\$127.628	\$85.497	1,184
Jefferson County	\$357.655	\$171.309	\$121.342	1,713
Texas	\$2,474.209	\$1,137.986	\$767.173	10,553
Based on current plans and The Perryman Group's estimates of related multiplier effects. The statewide total includes not only effects within the counties with facilities, but also spillover to other parts of the state. A job-year is one person working for one year, though it could be multiple individuals working partial years. Additional explanation of terms and methods may be found elsewhere in this report and in Appendix A. For results by major industry group, see Appendix B. Source: US Multi-Regional Impact Assessment System, The Perryman Group				

Fiscal Effects

Business activity generates tax receipts. For example, the retail sales and hotel occupancy effects of the economic stimulus measured in this study was quantified. A portion of the retail sales is taxable, and receipts to the State and local taxing entities are affected by the direct stimulus. Moreover, additional room nights provide occupancy tax resources. Economic benefits also affect property tax values. Higher incomes increase housing demand, leading to higher taxable values as well as additional need for houses. Increased retail sales and incomes enhance the need for commercial space such as restaurants, retail outlets, and personal service facilities. Higher property values increase taxes to counties, cities, school districts, and other local taxing entities. These indirect taxes lead to significant incremental receipts to the State and local government entities.

During the construction period, the **total** indirect and induced fiscal benefits of the Pineywoods CCS Hub include almost **\$14.4 million** to the State and **\$12.4 million** to local government entities for the sequestration field. Pipeline segment construction would generate another **\$26.2 million** to the State and **\$22.9 million** to local government entities for the Houston segment, **\$11.5 million** to the State and **\$10.1 million** to local government entities for the Port Arthur segment, and **\$37.7 million** to the State and **\$32.9 million** to local government entities if both segments are constructed.

Once operational, the facilities will generate notable benefits for many years into the future, primarily due to potential property tax increases. The projected **annual** indirect and induced fiscal benefits include more than **\$197,700** to the State and **\$3.7 million** to local government entities for the sequestration field. Operations of the pipelines would include an estimated **\$40,200** to the State and **\$5.7 million** to local government entities for the Houston segment, **\$21,600** to the State and **\$2.5 million** to local government entities for the Port Arthur segment, and **\$61,700** to the State and **\$8.2 million** to local government entities if both segments are constructed.

During construction and the first 30 years of operations, fiscal benefits total approximately **\$39.6 million** to the State and **\$279.0 million** to local government entities if both the Houston and Port Arthur pipeline segments are constructed.

The Potential Fiscal Benefits of Construction and Operations of the Pineywoods CCS Hub

	State of Texas (2024 Dollars)	Local Government Entities (2024 Dollars)
Total for the Construction Period		
Sequestration Field	\$14,360,045	\$12,393,304
Houston Pipeline Segment	\$26,183,406	\$22,864,852
Port Arthur Pipeline Segment	\$11,528,212	\$10,067,096
Both Pipeline Segments	\$37,711,618	\$32,931,948
Annually Once Fully Operational		
Sequestration Field	\$197,730	\$3,732,752
Houston Pipeline Segment	\$40,173	\$5,691,431
Port Arthur Pipeline Segment	\$21,563	\$2,509,500
Both Pipeline Segments	\$61,736	\$8,200,931
Construction Period and First 30 Years of Operations		
Sequestration Field	\$20,291,946	\$124,375,878
Houston Pipeline Segment	\$27,388,601	\$193,607,777
Port Arthur Pipeline Segment	\$12,175,102	\$85,352,092
Both Pipeline Segments	\$39,563,703	\$278,959,869
<p>Note: Indirect and induced taxes based on the estimated increase in business activity as described in this study. Includes projected direct taxes; any potential abatement agreements are not considered. Source: US Multi-Regional Impact Assessment System, The Perryman Group</p>		

Conclusion

Global population growth and economic development is increasing the need for energy and many other products. At the same time, climate issues must be dealt with. Many of the major industrial facilities essential to meeting these needs are located along the Texas Gulf Coast. The industries which may utilize the Pineywoods CCS Hub are important to the economies of the local areas and Texas, providing fuels and products utilized by a variety of

industries.

Construction and operations of the Pineywoods CCS Hub will lead to a notable economic and fiscal stimulus for the local area and the state.

The Pineywoods CCS Hub can assist these facilities in reducing emissions and complying with current and future requirements, thus helping to preserve this key component of the local, state, and

national economy. In addition, the construction and operations of the Hub will lead to a notable economic stimulus. Business activity generates tax receipts, and the indirect/induced fiscal stimulus would also be significant. In summary, these facilities present a vital potential resource which will substantially enhance the economic prospects for the entire region.

Appendix A: Methods Used

The US Multi-Regional Impact Assessment System (USMRIAS) measures multiplier effects of economic stimuli. The USMRIAS was developed and is maintained by The Perryman Group. This model has been used in thousands of diverse applications across the country and has an excellent reputation for accuracy and credibility; it has also been peer reviewed on multiple occasions and has been a key factor in major national and international policy simulations.

The basic modeling technique is known as dynamic input-output analysis, which essentially uses extensive survey data, industry information, and a variety of corroborative source materials to create a matrix describing the various goods and services (known as resources or inputs) required to produce one unit (a dollar's worth) of output for a given sector. Once the base information is compiled, it can be mathematically simulated to generate evaluations of the magnitude of successive rounds of activity involved in the overall production process.

There are two essential steps in conducting an input-output analysis once the system is operational. The first major endeavor is to accurately define the levels of direct activity to be evaluated. In this instance, input information related to construction costs and ongoing operations effects (including employment at the facilities as well as estimated expenditures and royalties) were provided by Tenaska. These estimates are consistent with industry norms. The second phase involves model simulation to determine total (not only direct, but also indirect and induced) effects. Additional detail is provided in the following sections.

Model Simulation

The direct inputs were then implemented in a series of simulations of the USMRIAS to measure total (not only direct, but also indirect and induced) economic effects of the direct stimulus. The systems used reflect the unique industrial structures of each of the counties with facilities and Texas.

The USMRIAS is somewhat similar in format to the Input-Output Model of the United States which is maintained by the US Department of Commerce. The model developed by TPG, however, incorporates several important enhancements and refinements. Specifically, the expanded system includes (1) comprehensive 500-sector coverage for any county, multi-county, or urban region; (2) calculation of both total expenditures and value-added by industry and region; (3) direct estimation of expenditures for multiple

basic input choices (expenditures, output, income, or employment); (4) extensive parameter localization; (5) price adjustments for real and nominal assessments by sectors and areas; (6) comprehensive measurement of the induced impacts associated with payrolls and consumer spending; (7) embedded modules to estimate multi-sectoral direct spending effects; (8) estimation of retail spending activity by consumers; and (9) comprehensive linkage and integration capabilities with a wide variety of econometric, real estate, occupational, and fiscal impact models.

The impact assessment (input-output) process essentially estimates the amounts of all types of goods and services required to produce one unit (a dollar's worth) of a specific type of output. For purposes of illustrating the nature of the system, it is useful to think of inputs and outputs in dollar (rather than physical) terms. As an example, the construction of a new building will require specific dollar amounts of lumber, glass, concrete, hand tools, architectural services, interior design services, paint, plumbing, and numerous other elements. Each of these suppliers must, in turn, purchase additional dollar amounts of inputs. This process continues through multiple rounds of production, thus generating subsequent increments to business activity. The initial process of building the facility is known as the *direct effect*. The ensuing transactions in the output chain constitute the *indirect effect*.

Another pattern that arises in response to any direct economic activity comes from the payroll dollars received by employees at each stage of the production cycle. As workers are compensated, they use some of their income for taxes, savings, and purchases from external markets. A substantial portion, however, is spent locally on food, clothing, health care services, utilities, housing, recreation, and other items. Typical purchasing patterns in the relevant areas are obtained from the Center for Community and Economic Research *Cost of Living Index*, a privately compiled inter-regional measure which has been widely used for several decades, and the *Consumer Expenditure Survey* of the US Department of Labor. These initial outlays by area residents generate further secondary activity as local providers acquire inputs to meet this consumer demand. These consumer spending impacts are known as the *induced effect*. The USMRIAS is designed to provide realistic, yet conservative, estimates of these phenomena.

Sources for information used in this process include the Bureau of the Census, the Bureau of Labor Statistics, the Regional Economic Information System of the US Department of Commerce, and other public and private sources. The pricing data are compiled from the US Department of Labor and the US Department of Commerce. The verification and testing procedures make use of extensive public and private sources.

Impacts are typically measured in constant dollars to eliminate the effects of inflation.

The USMRIAS is also integrated with a comprehensive fiscal model, which links the tax payments by industry to the specific rates and structures associated with the relevant State and local governmental authorities.

Measures of Business Activity

The USMRIAS generates estimates of total economic effects on several measures of business activity. Note that these are different ways of measuring the same impacts; they are not additive.

The most comprehensive measure of economic activity is **Total Expenditures**. This measure incorporates every dollar that changes hands in any transaction. For example, suppose a farmer sells wheat to a miller for \$0.50; the miller then sells flour to a baker for \$0.75; the baker, in turn, sells bread to a customer for \$1.25. The Total Expenditures recorded in this instance would be \$2.50, that is, $\$0.50 + \$0.75 + \$1.25$. This measure is quite broad but is useful in that (1) it reflects the overall interplay of all industries in the economy, and (2) some key fiscal variables such as sales taxes are linked to aggregate spending.

A second measure of business activity is **Gross Product**. This indicator represents the regional equivalent of Gross Domestic Product, the most commonly reported statistic regarding national economic performance. In other words, the Gross Product of Texas is the amount of US output that is produced in that state; it is defined as the value of all final goods produced in a given region for a specific period of time. Stated differently, it captures the amount of value-added (gross area product) over intermediate goods and services at each stage of the production process, that is, it eliminates the double counting in the Total Expenditures concept. Using the example above, the Gross Product is \$1.25 (the value of the bread) rather than \$2.50. Alternatively, it may be viewed as the sum of the value-added by the farmer, \$0.50; the miller, \$0.25 ($\$0.75 - \0.50); and the baker, \$0.50 ($\$1.25 - \0.75). The total value-added is, therefore, \$1.25, which is equivalent to the final value of the bread. In many industries, the primary component of value-added is the wage and salary payments to employees.

The third gauge of economic activity used in this evaluation is **Personal Income**. As the name implies, Personal Income is simply the income received by individuals, whether in the form of wages, salaries, interest, dividends, proprietors' profits, or other sources. It may thus be viewed as the segment of overall impacts which flows directly to the citizenry.

The final aggregates used are **Jobs and Job-Years**, which reflect the full-time equivalent jobs generated by an activity. For an economic stimulus expected to endure (such as the

ongoing operations of a facility), the Jobs measure is used. It should be noted that, unlike the dollar values described above, Jobs is a “stock” rather than a “flow.” In other words, if an area produces \$1 million in output in 2022 and \$1 million in 2023, it is appropriate to say that \$2 million was achieved in the 2022-23 period. If the same area has 100 people working in 2022 and 100 in 2023, it only has 100 Jobs. When a flow of jobs is measured, such as in a construction project or a cumulative assessment over multiple years, it is appropriate to measure employment in Job-Years (a person working for a year, though it could be multiple individuals working for partial years). This concept is distinct from Jobs, which anticipates that the relevant positions will be maintained on a continuing basis.

Appendix B: Results by Industry

Sequestration Field

Construction

The Potential Economic Impact of Construction of the Pineywoods CCS Hub Sequestration Field - Texas

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	+\$7.9 m	+\$2.2 m	+\$1.5 m	+19
Mining	+\$8.0 m	+\$1.9 m	+\$1.1 m	+5
Utilities	+\$21.0 m	+\$4.7 m	+\$2.1 m	+7
Construction	+\$141.5 m	+\$60.0 m	+\$49.4 m	+566
Manufacturing	+\$87.3 m	+\$28.2 m	+\$16.7 m	+209
Wholesale Trade	+\$20.6 m	+\$13.9 m	+\$8.0 m	+74
Retail Trade*	+\$69.1 m	+\$52.0 m	+\$30.2 m	+753
Transportation & Warehousing	+\$20.8 m	+\$13.8 m	+\$9.1 m	+101
Information	+\$10.8 m	+\$6.6 m	+\$2.8 m	+21
Financial Activities*	+\$74.0 m	+\$20.0 m	+\$8.6 m	+76
Business Services	+\$60.9 m	+\$39.1 m	+\$31.9 m	+317
Health Services	+\$16.2 m	+\$11.3 m	+\$9.6 m	+129
Other Services	+\$31.3 m	+\$15.7 m	+\$12.6 m	+249
Total, All Industries	+\$569.4 m	+\$269.5 m	+\$183.7 m	+2,526

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in millions of 2024 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Potential Economic Impact of Construction of the Pineywoods CCS Hub Sequestration Field - Liberty County

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job Years*
Agriculture	+\$4.3 m	+\$1.2 m	+\$0.8 m	+10
Mining	+\$3.2 m	+\$0.8 m	+\$0.4 m	+2
Utilities	+\$8.9 m	+\$2.0 m	+\$0.9 m	+3
Construction	+\$82.3 m	+\$35.1 m	+\$28.9 m	+332
Manufacturing	+\$20.2 m	+\$7.2 m	+\$4.7 m	+56
Wholesale Trade	+\$6.3 m	+\$4.3 m	+\$2.5 m	+23
Retail Trade*	+\$36.2 m	+\$27.3 m	+\$15.9 m	+395
Transportation & Warehousing	+\$11.5 m	+\$7.6 m	+\$5.0 m	+56
Information	+\$3.7 m	+\$2.3 m	+\$1.0 m	+7
Financial Activities*	+\$26.2 m	+\$6.0 m	+\$2.5 m	+21
Business Services	+\$28.8 m	+\$18.6 m	+\$15.1 m	+150
Health Services	+\$8.7 m	+\$6.1 m	+\$5.1 m	+69
Other Services	+\$15.7 m	+\$7.8 m	+\$6.4 m	+127
Total, All Industries	+\$255.9 m	+\$126.2 m	+\$89.2 m	+1,250

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in millions of 2024 US dollars. A job-year is equivalent to one person working for one year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Potential Economic Impact of Construction of the Pineywoods CCS Hub Sequestration Field - Hardin County

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job Years*
Agriculture	+\$1.1 m	+\$0.3 m	+\$0.2 m	+2
Mining	+\$1.8 m	+\$0.4 m	+\$0.2 m	+1
Utilities	+\$6.3 m	+\$1.4 m	+\$0.6 m	+2
Construction	+\$58.6 m	+\$24.5 m	+\$20.2 m	+232
Manufacturing	+\$12.4 m	+\$3.9 m	+\$2.3 m	+27
Wholesale Trade	+\$4.7 m	+\$3.2 m	+\$1.8 m	+17
Retail Trade*	+\$25.5 m	+\$19.2 m	+\$11.2 m	+279
Transportation & Warehousing	+\$8.6 m	+\$5.7 m	+\$3.8 m	+42
Information	+\$2.2 m	+\$1.4 m	+\$0.6 m	+4
Financial Activities*	+\$18.5 m	+\$4.4 m	+\$1.9 m	+16
Business Services	+\$18.0 m	+\$11.7 m	+\$9.6 m	+95
Health Services	+\$5.1 m	+\$3.6 m	+\$3.0 m	+41
Other Services	+\$11.2 m	+\$5.5 m	+\$4.5 m	+89
Total, All Industries	+\$174.0 m	+\$85.3 m	+\$59.9 m	+846

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in millions of 2024 US dollars. A job-year is equivalent to one person working for one year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

Operations

The Potential Annual Economic Impact of Operations of the Pineywoods CCS Hub Sequestration Field - Texas

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	+\$105,458	+\$31,094	+\$20,556	+0
Mining	+\$3,977,926	+\$1,323,138	+\$775,013	+7
Utilities	+\$831,389	+\$174,222	+\$76,026	+0
Construction	+\$174,052	+\$92,067	+\$75,869	+1
Manufacturing	+\$1,151,126	+\$347,642	+\$196,908	+2
Wholesale Trade	+\$278,167	+\$188,133	+\$108,479	+1
Retail Trade*	+\$897,191	+\$672,319	+\$390,661	+10
Transportation & Warehousing	+\$242,110	+\$163,982	+\$108,452	+1
Information	+\$132,704	+\$81,402	+\$34,753	+0
Financial Activities*	+\$1,004,882	+\$282,436	+\$115,587	+1
Business Services	+\$304,075	+\$178,414	+\$145,540	+1
Health Services	+\$205,891	+\$144,225	+\$121,944	+2
Other Services	+\$408,328	+\$205,304	+\$164,802	+3
Total, All Industries	+\$9,713,299	+\$3,884,378	+\$2,334,590	+30

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in 2024 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Potential Annual Economic Impact of Operations of the Pineywoods CCS Hub Sequestration Field - Liberty County

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	+\$52,846	+\$15,593	+\$10,315	+0
Mining	+\$2,073,988	+\$692,667	+\$404,715	+4
Utilities	+\$313,790	+\$65,799	+\$28,713	+0
Construction	+\$88,339	+\$46,791	+\$38,559	+0
Manufacturing	+\$159,175	+\$55,742	+\$36,108	+0
Wholesale Trade	+\$78,469	+\$53,070	+\$30,601	+0
Retail Trade*	+\$428,877	+\$321,732	+\$187,006	+5
Transportation & Warehousing	+\$123,723	+\$83,753	+\$55,391	+1
Information	+\$42,037	+\$25,832	+\$11,028	+0
Financial Activities*	+\$335,630	+\$85,825	+\$35,192	+0
Business Services	+\$113,362	+\$66,084	+\$53,908	+1
Health Services	+\$100,799	+\$70,541	+\$59,643	+1
Other Services	+\$186,836	+\$93,396	+\$76,174	+2
Total, All Industries	+\$4,097,871	+\$1,676,825	+\$1,027,353	+13

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in 2024 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Potential Annual Economic Impact of Operations of the Pineywoods CCS Hub Sequestration Field - Hardin County

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	+\$15,965	+\$5,073	+\$3,191	+0
Mining	+\$1,792,920	+\$600,700	+\$351,641	+3
Utilities	+\$280,928	+\$58,854	+\$25,682	+0
Construction	+\$77,364	+\$40,998	+\$33,785	+0
Manufacturing	+\$196,964	+\$55,838	+\$31,476	+0
Wholesale Trade	+\$70,376	+\$47,596	+\$27,444	+0
Retail Trade*	+\$371,535	+\$278,122	+\$161,552	+4
Transportation & Warehousing	+\$108,619	+\$73,515	+\$48,620	+1
Information	+\$30,059	+\$18,491	+\$7,894	+0
Financial Activities*	+\$282,447	+\$71,796	+\$29,191	+0
Business Services	+\$51,704	+\$29,517	+\$24,078	+0
Health Services	+\$72,803	+\$51,029	+\$43,146	+1
Other Services	+\$161,633	+\$80,477	+\$65,573	+1
Total, All Industries	+\$3,513,316	+\$1,412,005	+\$853,274	+11

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in 2024 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

Houston Pipeline Segment

Construction

The Potential Economic Impact of Construction of the Pineywoods CCS Hub Houston Pipeline Segment - Texas

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job Years*
Agriculture	+\$14.6 m	+\$4.2 m	+\$2.8 m	+36
Mining	+\$14.0 m	+\$3.4 m	+\$1.9 m	+10
Utilities	+\$38.3 m	+\$8.6 m	+\$3.8 m	+13
Construction	+\$297.2 m	+\$136.2 m	+\$112.3 m	+1,286
Manufacturing	+\$168.8 m	+\$56.2 m	+\$33.5 m	+436
Wholesale Trade	+\$38.0 m	+\$25.7 m	+\$14.8 m	+137
Retail Trade*	+\$127.3 m	+\$95.9 m	+\$55.8 m	+1,388
Transportation & Warehousing	+\$30.3 m	+\$20.0 m	+\$13.2 m	+147
Information	+\$18.5 m	+\$11.5 m	+\$4.9 m	+36
Financial Activities*	+\$125.9 m	+\$30.7 m	+\$12.4 m	+107
Business Services	+\$84.2 m	+\$54.3 m	+\$44.3 m	+439
Health Services	+\$30.0 m	+\$21.0 m	+\$17.7 m	+239
Other Services	+\$55.7 m	+\$28.4 m	+\$22.8 m	+447
Total, All Industries	+\$1,042.9 m	+\$496.0 m	+\$340.1 m	+4,721

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in millions of 2024 US dollars. A job-year is equivalent to one person working for one year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Potential Economic Impact of Construction of the Pineywoods CCS Hub Houston Pipeline Segment- Liberty County

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job Years*
Agriculture	+\$4.2 m	+\$1.2 m	+\$0.8 m	+10
Mining	+\$3.0 m	+\$0.7 m	+\$0.3 m	+2
Utilities	+\$8.5 m	+\$1.9 m	+\$0.8 m	+3
Construction	+\$90.5 m	+\$41.5 m	+\$34.2 m	+392
Manufacturing	+\$21.1 m	+\$7.8 m	+\$5.0 m	+64
Wholesale Trade	+\$6.2 m	+\$4.2 m	+\$2.4 m	+22
Retail Trade*	+\$35.1 m	+\$26.5 m	+\$15.4 m	+382
Transportation & Warehousing	+\$8.9 m	+\$5.9 m	+\$3.9 m	+43
Information	+\$3.4 m	+\$2.1 m	+\$0.9 m	+7
Financial Activities*	+\$24.2 m	+\$5.1 m	+\$2.0 m	+17
Business Services	+\$18.3 m	+\$11.7 m	+\$9.6 m	+95
Health Services	+\$8.5 m	+\$5.9 m	+\$5.0 m	+67
Other Services	+\$14.7 m	+\$7.5 m	+\$6.1 m	+120
Total, All Industries	+\$246.6 m	+\$121.9 m	+\$86.5 m	+1,225

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in millions of 2024 US dollars. A job-year is equivalent to one person working for one year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Potential Economic Impact of Construction of the Pineywoods CCS Hub Houston Pipeline Segment - Chambers County

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job Years*
Agriculture	+\$3.2 m	+\$0.9 m	+\$0.6 m	+8
Mining	+\$2.8 m	+\$0.6 m	+\$0.3 m	+2
Utilities	+\$8.0 m	+\$1.8 m	+\$0.8 m	+3
Construction	+\$72.4 m	+\$33.2 m	+\$27.3 m	+313
Manufacturing	+\$29.6 m	+\$8.7 m	+\$5.2 m	+67
Wholesale Trade	+\$5.1 m	+\$3.5 m	+\$2.0 m	+19
Retail Trade*	+\$20.3 m	+\$15.2 m	+\$8.8 m	+221
Transportation & Warehousing	+\$6.9 m	+\$4.5 m	+\$3.0 m	+33
Information	+\$0.9 m	+\$0.5 m	+\$0.2 m	+2
Financial Activities*	+\$10.4 m	+\$1.5 m	+\$0.6 m	+5
Business Services	+\$7.3 m	+\$4.6 m	+\$3.8 m	+38
Health Services	+\$2.6 m	+\$1.9 m	+\$1.6 m	+21
Other Services	+\$9.3 m	+\$4.7 m	+\$3.8 m	+79
Total, All Industries	+\$178.7 m	+\$81.6 m	+\$58.1 m	+809

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in millions of 2024 US dollars. A job-year is equivalent to one person working for one year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Potential Economic Impact of Construction of the Pineywoods CCS Hub Houston Pipeline Segment - Harris County

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job Years*
Agriculture	+\$1.7 m	+\$0.5 m	+\$0.3 m	+4
Mining	+\$5.5 m	+\$1.3 m	+\$0.7 m	+3
Utilities	+\$16.4 m	+\$3.7 m	+\$1.6 m	+6
Construction	+\$133.2 m	+\$61.1 m	+\$50.3 m	+577
Manufacturing	+\$52.6 m	+\$16.6 m	+\$10.0 m	+126
Wholesale Trade	+\$15.1 m	+\$10.2 m	+\$5.9 m	+54
Retail Trade*	+\$47.4 m	+\$35.7 m	+\$20.8 m	+517
Transportation & Warehousing	+\$13.3 m	+\$8.8 m	+\$5.8 m	+64
Information	+\$6.2 m	+\$3.8 m	+\$1.6 m	+12
Financial Activities*	+\$50.7 m	+\$12.1 m	+\$4.8 m	+41
Business Services	+\$37.4 m	+\$24.1 m	+\$19.7 m	+195
Health Services	+\$11.8 m	+\$8.3 m	+\$7.0 m	+94
Other Services	+\$22.4 m	+\$11.4 m	+\$9.1 m	+177
Total, All Industries	+\$413.7 m	+\$197.5 m	+\$137.6 m	+1,870

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in millions of 2024 US dollars. A job-year is equivalent to one person working for one year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

Operations

The Potential Annual Economic Impact of Operations of the Houston Pipeline Segment of the Pineywoods CCS Hub - Texas

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	+\$22,616	+\$6,655	+\$4,375	+0
Mining	+\$56,749	+\$13,289	+\$7,573	+0
Utilities	+\$197,345	+\$45,880	+\$20,021	+0
Construction	+\$105,427	+\$53,120	+\$43,774	+1
Manufacturing	+\$237,494	+\$73,231	+\$41,684	+1
Wholesale Trade	+\$55,696	+\$37,676	+\$21,724	+0
Retail Trade*	+\$196,345	+\$147,481	+\$85,777	+2
Transportation & Warehousing	+\$1,102,821	+\$244,874	+\$161,951	+2
Information	+\$31,031	+\$19,160	+\$8,180	+0
Financial Activities*	+\$214,815	+\$59,712	+\$25,173	+0
Business Services	+\$58,656	+\$35,576	+\$29,021	+0
Health Services	+\$45,233	+\$31,610	+\$26,727	+0
Other Services	+\$90,189	+\$45,572	+\$36,405	+1
Total, All Industries	+\$2,414,418	+\$813,834	+\$512,385	+7

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in 2024 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Potential Annual Economic Impact of Operations of the Houston Pipeline Segment of the Pineywoods CCS Hub - Liberty County

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	+\$6,691	+\$1,970	+\$1,295	+0
Mining	+\$12,509	+\$2,828	+\$1,327	+0
Utilities	+\$43,979	+\$10,221	+\$4,460	+0
Construction	+\$32,478	+\$16,360	+\$13,482	+0
Manufacturing	+\$21,415	+\$7,668	+\$4,792	+0
Wholesale Trade	+\$9,255	+\$6,260	+\$3,610	+0
Retail Trade*	+\$55,532	+\$41,765	+\$24,300	+1
Transportation & Warehousing	+\$344,243	+\$76,173	+\$50,378	+1
Information	+\$5,780	+\$3,573	+\$1,525	+0
Financial Activities*	+\$42,260	+\$10,558	+\$4,433	+0
Business Services	+\$12,897	+\$7,771	+\$6,339	+0
Health Services	+\$13,097	+\$9,142	+\$7,730	+0
Other Services	+\$24,128	+\$12,123	+\$9,855	+0
Total, All Industries	+\$624,263	+\$206,411	+\$133,527	+2

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in 2024 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Potential Annual Economic Impact of Operations of the Houston Pipeline Segment of the Pineywoods CCS Hub - Chambers County

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	+\$4,771	+\$1,405	+\$924	+0
Mining	+\$10,969	+\$2,467	+\$1,155	+0
Utilities	+\$43,931	+\$10,228	+\$4,463	+0
Construction	+\$23,818	+\$11,996	+\$9,885	+0
Manufacturing	+\$35,166	+\$8,236	+\$4,580	+0
Wholesale Trade	+\$7,169	+\$4,849	+\$2,796	+0
Retail Trade*	+\$30,366	+\$22,677	+\$13,167	+0
Transportation & Warehousing	+\$254,665	+\$56,223	+\$37,184	+0
Information	+\$1,318	+\$820	+\$350	+0
Financial Activities*	+\$16,605	+\$2,964	+\$1,228	+0
Business Services	+\$4,936	+\$2,907	+\$2,371	+0
Health Services	+\$3,860	+\$2,733	+\$2,311	+0
Other Services	+\$14,488	+\$7,240	+\$5,851	+0
Total, All Industries	+\$452,064	+\$134,745	+\$86,265	+1

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in 2024 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Potential Annual Economic Impact of Operations of the Houston Pipeline Segment of the Pineywoods CCS Hub - Harris County

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	+\$2,049	+\$596	+\$395	+0
Mining	+\$18,351	+\$4,164	+\$2,145	+0
Utilities	+\$69,926	+\$16,265	+\$7,098	+0
Construction	+\$37,558	+\$18,921	+\$15,592	+0
Manufacturing	+\$58,026	+\$15,585	+\$8,964	+0
Wholesale Trade	+\$17,636	+\$11,930	+\$6,879	+0
Retail Trade*	+\$58,135	+\$43,645	+\$25,381	+1
Transportation & Warehousing	+\$396,057	+\$87,755	+\$58,038	+1
Information	+\$8,212	+\$5,074	+\$2,166	+0
Financial Activities*	+\$69,337	+\$19,008	+\$7,940	+0
Business Services	+\$20,530	+\$12,462	+\$10,166	+0
Health Services	+\$14,266	+\$9,973	+\$8,432	+0
Other Services	+\$28,834	+\$14,608	+\$11,654	+0
Total, All Industries	+\$798,919	+\$259,985	+\$164,850	+2

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in 2024 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

Port Arthur Pipeline Segment

Construction

The Potential Economic Impact of Construction of the Pineywoods CCS Hub Port Arthur Pipeline Segment - Texas

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job Years*
Agriculture	+\$6.4 m	+\$1.9 m	+\$1.2 m	+16
Mining	+\$6.2 m	+\$1.5 m	+\$0.8 m	+4
Utilities	+\$16.9 m	+\$3.8 m	+\$1.7 m	+6
Construction	+\$130.9 m	+\$60.0 m	+\$49.4 m	+566
Manufacturing	+\$74.3 m	+\$24.7 m	+\$14.7 m	+192
Wholesale Trade	+\$16.7 m	+\$11.3 m	+\$6.5 m	+60
Retail Trade*	+\$56.1 m	+\$42.2 m	+\$24.6 m	+611
Transportation & Warehousing	+\$13.3 m	+\$8.8 m	+\$5.8 m	+65
Information	+\$8.2 m	+\$5.0 m	+\$2.2 m	+16
Financial Activities*	+\$55.4 m	+\$13.5 m	+\$5.5 m	+47
Business Services	+\$37.1 m	+\$23.9 m	+\$19.5 m	+193
Health Services	+\$13.2 m	+\$9.2 m	+\$7.8 m	+105
Other Services	+\$24.5 m	+\$12.5 m	+\$10.0 m	+197
Total, All Industries	+\$459.2 m	+\$218.4 m	+\$149.7 m	+2,079

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in millions of 2024 US dollars. A job-year is equivalent to one person working for one year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Potential Economic Impact of Construction of the Pineywoods CCS Hub Port Arthur Pipeline Segment - Liberty County

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job Years*
Agriculture	+\$0.6 m	+\$0.2 m	+\$0.1 m	+2
Mining	+\$0.4 m	+\$0.1 m	+\$0.1 m	+0
Utilities	+\$1.3 m	+\$0.3 m	+\$0.1 m	+0
Construction	+\$13.4 m	+\$6.2 m	+\$5.1 m	+58
Manufacturing	+\$3.1 m	+\$1.2 m	+\$0.7 m	+10
Wholesale Trade	+\$0.9 m	+\$0.6 m	+\$0.4 m	+3
Retail Trade*	+\$5.2 m	+\$3.9 m	+\$2.3 m	+57
Transportation & Warehousing	+\$1.3 m	+\$0.9 m	+\$0.6 m	+6
Information	+\$0.5 m	+\$0.3 m	+\$0.1 m	+1
Financial Activities*	+\$3.6 m	+\$0.8 m	+\$0.3 m	+2
Business Services	+\$2.7 m	+\$1.7 m	+\$1.4 m	+14
Health Services	+\$1.3 m	+\$0.9 m	+\$0.7 m	+10
Other Services	+\$2.2 m	+\$1.1 m	+\$0.9 m	+18
Total, All Industries	+\$36.6 m	+\$18.1 m	+\$12.8 m	+182

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in millions of 2024 US dollars. A job-year is equivalent to one person working for one year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Potential Economic Impact of Construction of the Pineywoods CCS Hub Port Arthur Pipeline Segment - Jefferson County

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job Years*
Agriculture	+\$2.5 m	+\$0.8 m	+\$0.5 m	+6
Mining	+\$0.4 m	+\$0.1 m	+\$0.0 m	+0
Utilities	+\$11.6 m	+\$2.6 m	+\$1.1 m	+4
Construction	+\$117.1 m	+\$53.6 m	+\$44.2 m	+506
Manufacturing	+\$42.5 m	+\$13.1 m	+\$8.0 m	+101
Wholesale Trade	+\$7.9 m	+\$5.3 m	+\$3.1 m	+28
Retail Trade*	+\$46.5 m	+\$35.0 m	+\$20.4 m	+507
Transportation & Warehousing	+\$9.8 m	+\$6.5 m	+\$4.3 m	+48
Information	+\$4.1 m	+\$2.6 m	+\$1.1 m	+8
Financial Activities*	+\$26.8 m	+\$5.9 m	+\$2.7 m	+23
Business Services	+\$29.1 m	+\$18.8 m	+\$15.3 m	+152
Health Services	+\$11.1 m	+\$7.8 m	+\$6.6 m	+88
Other Services	+\$18.7 m	+\$9.6 m	+\$7.7 m	+153
Total, All Industries	+\$328.2 m	+\$161.6 m	+\$115.0 m	+1,625

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in millions of 2024 US dollars. A job-year is equivalent to one person working for one year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

Operations

The Potential Annual Economic Impact of Operations of the Port Arthur Pipeline Segment of the Pineywoods CCS Hub - Texas

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	+\$12,139	+\$3,572	+\$2,348	+0
Mining	+\$30,460	+\$7,133	+\$4,065	+0
Utilities	+\$105,925	+\$24,626	+\$10,746	+0
Construction	+\$56,588	+\$28,512	+\$23,496	+0
Manufacturing	+\$127,475	+\$39,307	+\$22,374	+0
Wholesale Trade	+\$29,895	+\$20,222	+\$11,660	+0
Retail Trade*	+\$105,388	+\$79,160	+\$46,041	+1
Transportation & Warehousing	+\$591,941	+\$131,436	+\$86,927	+1
Information	+\$16,656	+\$10,284	+\$4,391	+0
Financial Activities*	+\$115,302	+\$32,050	+\$13,512	+0
Business Services	+\$31,484	+\$19,095	+\$15,577	+0
Health Services	+\$24,279	+\$16,967	+\$14,346	+0
Other Services	+\$48,409	+\$24,461	+\$19,541	+0
Total, All Industries	+\$1,295,943	+\$436,827	+\$275,023	+4

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in 2024 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Potential Annual Economic Impact of Operations of the Port Arthur Pipeline Segment of the Pineywoods CCS Hub - Liberty County

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	+\$992	+\$292	+\$192	+0
Mining	+\$1,855	+\$419	+\$197	+0
Utilities	+\$6,521	+\$1,516	+\$661	+0
Construction	+\$4,816	+\$2,426	+\$1,999	+0
Manufacturing	+\$3,175	+\$1,137	+\$711	+0
Wholesale Trade	+\$1,372	+\$928	+\$535	+0
Retail Trade*	+\$8,234	+\$6,193	+\$3,603	+0
Transportation & Warehousing	+\$51,042	+\$11,294	+\$7,470	+0
Information	+\$857	+\$530	+\$226	+0
Financial Activities*	+\$6,266	+\$1,565	+\$657	+0
Business Services	+\$1,912	+\$1,152	+\$940	+0
Health Services	+\$1,942	+\$1,356	+\$1,146	+0
Other Services	+\$3,577	+\$1,798	+\$1,461	+0
Total, All Industries	+\$92,562	+\$30,606	+\$19,799	+0

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in 2024 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

The Potential Annual Economic Impact of Operations of the Port Arthur Pipeline Segment of the Pineywoods CCS Hub - Jefferson County

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	+\$4,813	+\$1,506	+\$954	+0
Mining	+\$1,913	+\$426	+\$200	+0
Utilities	+\$72,526	+\$16,859	+\$7,357	+0
Construction	+\$50,945	+\$25,662	+\$21,147	+0
Manufacturing	+\$67,105	+\$16,712	+\$9,665	+0
Wholesale Trade	+\$14,253	+\$9,641	+\$5,559	+0
Retail Trade*	+\$87,853	+\$65,955	+\$38,355	+1
Transportation & Warehousing	+\$535,516	+\$118,191	+\$78,168	+1
Information	+\$8,363	+\$5,171	+\$2,208	+0
Financial Activities*	+\$56,287	+\$14,745	+\$6,922	+0
Business Services	+\$24,654	+\$14,934	+\$12,182	+0
Health Services	+\$20,553	+\$14,346	+\$12,130	+0
Other Services	+\$36,893	+\$18,730	+\$15,089	+0
Total, All Industries	+\$981,673	+\$322,880	+\$209,936	+3

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in 2024 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.