

Economic Impact of Hydrogen and Ammonia Production Facility at Enbridge Ingleside Energy Center

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TEXAS A&M UNIVERSITY CORPUS CHRISTI | SOUTH TEXAS ECONOMIC DEVELOPMENT CENTER

Executive Summary

This report presents estimates for the regional economic impacts of a proposed hydrogen and ammonia production facility at the Enbridge Ingleside Energy Center. The Ingleside industrial site is located in San Patricio County of the Corpus Christi metro area.

The construction project for the facility involves more than $2 billion in capital expenditures and up to 3,000 construction workers at its peak. The industrial facility will be operated with 75 – 90 full-time-equivalent employees.

Construction Phase

Including indirect impacts that capture increased activity in regional supply chains, the facility's construction phase is expected to generate more than 2,867 jobs (direct and indirect employment) in the metro area.

The following displays three measures of the total economic impacts (direct, indirect, and induced impacts) on the metro area during the industrial facility's construction phase:

Employment	3,657 jobs
Output/Sales	$617.6 million
Personal Income	$247.2 million

Operations and Maintenance

Including indirect impacts, the operations and maintenance of the facility is expected to generate more than 111 permanent jobs (direct and indirect employment) in the metro area.

The following displays estimates of *total* permanent (annual) economic impacts on the metro area as a result of the regular operations and maintenance of the facility:

Employment	185 jobs
Output/Sales	$49.6 million
Personal Income	$22.2 million

The estimated regional business sales and personal income associated with the facility's operations and maintenance is expected to generate $0.86 million each year in local tax revenues, including sales and property taxes, across the Corpus Christi metro area; and $0.56 million each year for the City of Ingleside and other local taxing entities in San Patricio County.

Introduction

Enbridge and Humble Midstream have planned for the joint development of a hydrogen and ammonia production and export facility at the Enbridge Ingleside Energy Center (EIEC) in San Patricio County near Corpus Christi, Texas. This "blue" hydrogen and ammonia production facility will be built on the northeastern side of the EIEC property with an estimated project cost of more than $2 billion.

The new processing plant is projected to produce each year 73,000 metric tons of hydrogen and 1.4 million metric tons of ammonia. Up to 95 percent of the carbon dioxide (CO2) generated in the production process is expected to be sequestered in the newly developed carbon capture infrastructure. Enbridge's affiliate, Texas Eastern Transmission Pipeline, is expected to provide the transportation service for feed gas that will be used in the production process. Both hydrogen and ammonia have zero CO2 emissions at the point of use.

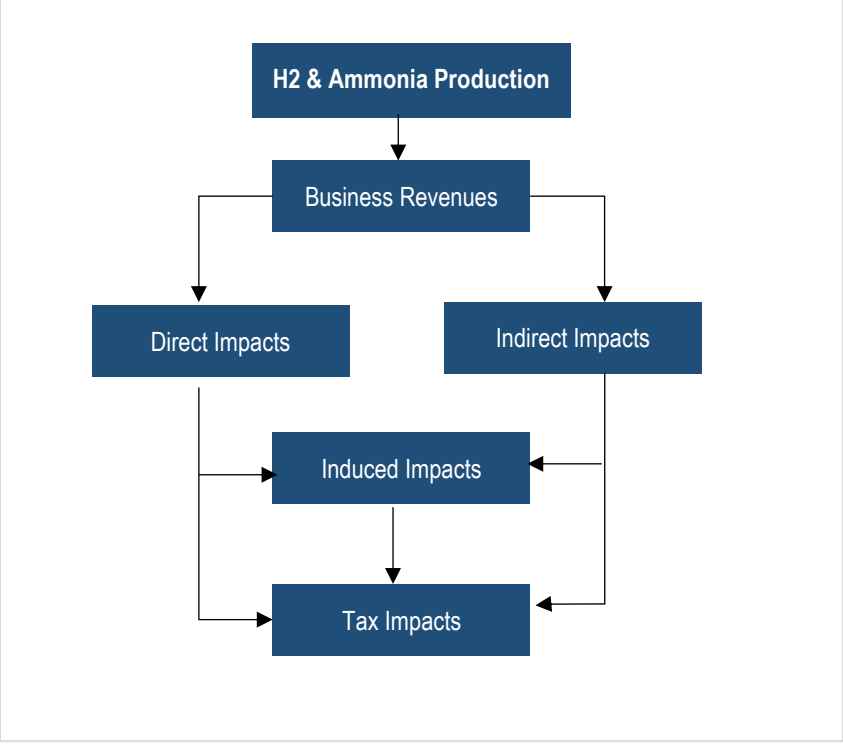
This report presents the key findings of an economic impact study on the proposed industrial project. The study was commissioned by Enbridge and conducted by Jim Lee at Texas A&M University-Corpus Christi's South Texas Economic Development Center. The findings include estimates for the economic impact of the project developments on the Corpus Christi regional economy. Regional economic impacts are measured by jobs, household earnings, and output created in the Corpus Christi metro area during the project's construction phase and the facility's permanent operations. The report also presents local tax revenues generated by estimated changes in business activity and household income associated with the facility's construction and operation.

By producing and distributing low-carbon fuels, the proposed project aligns with the United States' goal for net-zero emissions by 2050. The less tangible benefits to the region's environment and quality of life are, however, beyond the scope of this report.

Methodology

- Total economic impact estimates for the construction of the proposed hydrogen and ammonia production project at the EIEC are computed using the projected capital expenditures involved. The construction project's capital expenditures of more than $2 billion would first generate a one-time economic impact during the construction phase beginning with the direct impact on the industries of construction and engineering services. The construction project is expected to take 24 - 30 months beginning in late 2023 or early 2024.
- In addition to the transitory economic impacts during the construction phase, the operation of the hydrogen and ammonia production facility would generate *permanent* economic impacts on the regional economy of Corpus Christi. The facility is expected to be in service by 2026.
- The following diagram describes the flow of permanent economic impacts associated with the EIEC hydrogen and ammonia production facility:

Schematic Diagram of Regional Economic Impacts



- The total economic impacts of the proposed hydrogen and ammonia production facility include direct, indirect, and induced impacts. Quantitative measures of total economic output/sales, employment, personal income (e.g., wage earnings and benefits), and local tax revenues are computed using the IMPLAN model customized for the Corpus Christi metro area.
- In addition to the ***direct*** employment related to the construction and operation of the facility, ***indirect*** impacts occur when local business vendors benefit from the construction activities and operation of the industrial site, including power supply (utilities) and feedstock (mining and manufacturing) in its production process, as well as industrial engineers (professional services) and office management staff (administrative and waste management). These impacts represent spinoff effects from multiple rounds of supply chains that are required to support the industrial site's construction and operation.
- ***Induced*** impacts are generated initially by the spending of the industrial site's employees on local goods and services. Following multiple rounds of spinoff effects, these impacts are spread across nearly all sectors of the regional economy. Estimates for the indirect and induced impacts are generated using IMPLAN's multiplier data for the region.
- Local tax impacts are estimated tax payments (e.g., sales tax, property tax) to local taxing entities by local firms and individuals whose revenues and jobs are directly or indirectly associated with the project. In addition to the Corpus Christi metro area, this report provides tax impact estimates for the city of Ingleside and other taxing entities in San Patricio County by applying the IMPLAN model specifically to the county. Because of the small size of Ingleside relative to the entire metro area, the impact on tax revenues for the city is relatively smaller due to so-called leakages in economic activities associated with the proposed project.

Economic Impacts of Construction

- The total amount of capital expenditures for the proposed hydrogen and ammonia production facility in Ingleside is projected to be more than $2 billion. The construction phase is expected to last 24 – 30 months with a peak of 2,500 – 3,000 construction workers. The following table displays estimates of the regional economic impacts (direct, indirect, and induced impacts) during the construction phase:

Construction Impacts

	Direct	Indirect	Direct & Indirect	Induced	Total
Employment (job-years)	2,781	86	2,867	791	**3,657**
Output/Sales (mil)	$512.9	$12.1	$525.0	$92.7	**$617.6**
Personal Income (mil)	$205.1	$4.3	$209.4	$37.7	**$247.2**

Based on the lower ranges of official estimates, the project's construction phase is expected to generate a direct regional economic impact of $513 million, 2,781 local full-time-equivalent (FTE) job positions in construction and engineering, and $205 million in local personal income earnings (such as wages and benefits).

Including indirect impacts on local supply chains associated with the construction of the industrial site, the regional economic impact is $525 million and 2,867 jobs. The total economic impacts that also include the induced effects on the rest of the regional economy are estimated to be **$618 million** and **3,657 jobs**. The estimated impact on local businesses and employment supports an estimated total of $247 million in local household income and $5.1 million in local tax revenues across the Corpus Christi metro area.

Economic Impacts of Operations and Maintenance

- The EIEC hydrogen and ammonia production facility is expected to be operated with an annual operating budget of $250 million – $300 million and a staff of 75 – 80 FTE positions. The operating budget includes utility expenses and payrolls. According to wage data for the region, the current average salary of employees in that industry is about $97,000 per year.
- The following tables present estimates for the direct, indirect, and induced impacts of the operations and maintenance of the facility, drawing from the lower range of the official data on direct employment on site and the annual budget for operations:

Economic Impacts of Operations

	Direct	Indirect	Direct & Indirect	Induced	Total
Employment (FTEs)	94	7	101	68	**168**
Output/Sales (mil)	$35.8	$1.2	$37.0	$8.0	**$45.1**
Personal Income (mil)	$16.6	$0.4	$16.9	$3.3	**$20.2**

- The facility is expected to be operated with a minimum of 75 full-time employees. Including an estimate of 19 jobs hired by contractors and other businesses on site, such as ground crews, the facility operations are expected to generate 94 permanent direct jobs. Measured in dollar terms, the direct impact of the facility's operations is approximately $36 million in sales revenues, and $16.6 million in household income.
- Including indirect impacts that capture activities in local supply chains, the facility's operations generate an estimated $37 million in business revenues, 101 jobs, and $17 million in personal income.
- Including both indirect and induced impacts, the facility's operation is expected to generate a total of 168 permanent jobs, $45 million in annual sales revenues, and $20 million in annual personal earnings.

Economic Impacts of Maintenance

	Direct	Indirect	Direct & Indirect	Induced	Total
Employment (FTEs)	9	1	10	7	**17**
Output/Sales (mil)	$3.6	$0.1	$3.7	$0.8	**$4.5**
Personal Income (mil)	$1.7	$0.0	$1.7	$0.3	**$2.0**

- Other than operating expenses, regular facility maintenance is projected to cost $7.5 – $15 million annually. The minimum amount of maintenance spending is expected to generate an additional 17 jobs, $4.6 million in business revenues, and $2 million in household income across the Corpus Christi metro area.

Economic Impacts of Operations and Maintenance

	Direct	Indirect	Direct & Indirect	Induced	Total
Employment (FTEs)	103	8	111	74	**185**
Output/Sales (mil)	$39.4	$1.3	$40.7	$8.8	**$49.6**
Personal Income (mil)	$18.2	$0.4	$18.6	$3.6	**$22.2**

- The permanent regional economic impact of the facility's operations and maintenance, including indirect and induced effects, is an estimated **$50 million** each year. This total economic impact estimate in annual business revenues in different economic sectors in the Corpus Christi metro area supports **185 job positions** and $22 million in personal income. The impact on local businesses and employees, in turn, generates an estimated total of **$860,000 per year in local tax revenues** within the metro area.

Local Tax Impacts

- The proposed hydrogen and ammonia production facility is located in Ingleside. The economy of the city and San Patricio County will benefit from the facility's construction and its subsequent operation, although much of the impact in terms of employment and income will occur in the rest the Corpus Christi metro area.
- The construction phase will generate an estimated total of **$1.7 million** in tax revenues, including sales and property taxes, for the local taxing entitles of Ingleside and other communities in San Patricio County. The facility's operations and maintenance will also generate an estimated **$560,000 per year** in local tax revenues.


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