



U.S. DEPARTMENT OF
ENERGY

Keystone XL Extension Permit Revocation: Energy Costs and Job Impacts

Report to Congress
December 2022

United States Department of Energy
Washington, DC 20585

Message from the Secretary

Pursuant to section 40434 of the Infrastructure Investment and Jobs Act (Pub. L. No. 117-58), the U.S. Department of Energy (DOE) prepared this report to estimate the job losses and consumer impacts associated with the revocation of the Keystone XL (KXL) pipeline permit.

DOE is providing this report to the following Members of Congress:

- **The Honorable Patrick Leahy**
Chairman, Senate Committee on Appropriations
- **The Honorable Richard C. Shelby**
Vice Chairman, Senate Committee on Appropriations
- **The Honorable Rosa DeLauro**
Chair, House Committee on Appropriations
- **The Honorable Kay Granger**
Ranking Member, House Committee on Appropriations
- **The Honorable Dianne Feinstein**
Chair, Subcommittee on Energy and Water Development
Senate Committee on Appropriations
- **The Honorable John Kennedy**
Ranking Member, Subcommittee on Energy and Water Development
Senate Committee on Appropriations
- **The Honorable Marcy Kaptur**
Chair, Subcommittee on Energy and Water Development, and Related Agencies House
Committee on Appropriations
- **The Honorable Mike Simpson**
Ranking Member, Subcommittee on Energy and Water Development and Related Agencies
House Committee on Appropriations
- **The Honorable Joseph Manchin**
Chairman, Senate Committee on Energy and Natural Resources
- **The Honorable John Barrasso**
Ranking Member, Senate Committee on Energy and Natural Resources

- **The Honorable Frank Pallone, Jr.**
Chairman, House Committee on Energy and Commerce
- **The Honorable Cathy McMorris Rodgers**
Ranking Member, House Committee on Energy and Commerce
- **The Honorable Bobby L. Rush**
Chairman, Subcommittee on Energy
House Committee on Energy and Commerce
- **The Honorable Fred Upton**
Ranking Member, Subcommittee on Energy
House Committee on Energy and Commerce

If you have any questions or need additional information, please contact Ms. Rebecca Ward, Deputy Assistant Secretary for Senate Affairs or Ms. Janie Thompson, Deputy Assistant Secretary for House Affairs, Office of Congressional and Intergovernmental Affairs, at (202) 586-5450; or Ms. Katie Donley, Director, Office of Budget, Office of the Chief Financial Officer, at (202) 586-0176.

Sincerely,



Jennifer Granholm

Executive Summary

The Keystone XL (KXL) pipeline extension was proposed by TransCanada (now TC Energy) as an 875-mile pipeline project that would extend from the Canadian border at Morgan, Montana, to Steele City, Nebraska.

The pipeline was originally proposed in 2008 to increase the capacity of the company's existing Keystone Pipeline System and allow for the delivery of up to 830,000 barrels per day (bpd) of crude oil from the Western Canadian Sedimentary Basin (WCSB) in Canada and the Bakken Shale Formation in the United States to Steele City, Nebraska, for onward delivery to refineries in the Gulf Coast area. Of this project's total 830,000 bpd capacity, 730,000 bpd was set aside for WCSB crude oil (oil sands crude) and 100,000 bpd for Williston Basin (Bakken) crude oil.

TransCanada's original KXL pipeline proposal also included a southern segment from Cushing, Oklahoma, to the Gulf Coast area, where it would have connected with existing pipeline infrastructure from Steele City, Nebraska, to Cushing, Oklahoma. The Cushing-Gulf Coast portion (Cushing MarketLink) is now an independent project and began operations in January 2014.

Studies conducted in the 2010-2014 timeframe about the potential impact of the construction of the KXL pipeline included the following information:

- The 2014 Final Supplemental Environmental Impact Statement found that there would be approximately 50 permanent jobs once the pipeline was operational. Construction jobs would be more significant but temporary; if construction were to take two years, about 3,900 direct jobs would be created annually during construction, and 21,050 U.S. total jobs would be created, counting indirect and induced jobs.
- Other estimates for temporary jobs during the construction phase ranged from 16,149 to 59,468 annually for a two-year period. However, the study includes segments of the Keystone pipeline that were not related to the XL portion and jobs corresponding to those sections that were built were realized. Additionally, the high-end figure comes from this study which faced significant criticism for including in its analysis project inputs from India, Russia, and Russian companies in Canada, thus including jobs outside the United States.
- Estimates of economic impacts from the Keystone XL pipeline showed wide variations across studies examined, and are not directly comparable due to large differences in modeling assumptions. The literature review for this report suggests that the impact on consumer prices from Keystone XL, had it been completed, was inconclusive, particularly in light of the changes that have occurred in Canadian and U.S. crude oil markets since the KXL pipeline was proposed. In addition, a 2010 study sponsored by the U.S. Department of Energy found "no significant change in total U.S. refining activity, total crude and product import volumes and costs...whether KXL is built or not."

On January 20, 2021, President Biden issued Executive Order 13990, *Protecting Public Health and the Environment and Restoring Science To Tackle the Climate Crisis*.¹ In section 6 of the Order, President Biden stated that the KXL pipeline “disserves the U.S. national interest,” as its construction and operation would not be consistent with U.S. climate goals and it would undermine the global energy and climate leadership role of the United States. Section 6(a) of the Order revoked the Presidential Permit to construct, operate, maintain, and connect the pipeline at the U.S.-Canada border. In June 2021, TC Energy announced it had halted construction of the KXL pipeline and canceled the project.² TC Energy has stated publicly, as recently as March 2022, that it does not plan to revive the KXL project.³

¹ 86 Fed. Reg. 7037 (Jan. 25, 2021). Exec. Ord. 13990 of Jan. 20, 2021, 86 Fed25, 2021) ([2021-01765.pdf \(govinfo.gov\)](#)).

² *TC Energy Confirms termination of Keystone XL Pipeline Project*, TC Energy (June 9, 2021)([f1a8a1a2-3b32-4853-bc20-ff143e81155c \(globenewswire.com\)](#).), <https://www.tcenergy.com/announcements/2021/2021-06-09-tc-energy-confirms-termination-of-keystone-xl-pipeline-project/>.

³ CBC News, *Calgary-based TC Energy will not revive Keystone XL oil pipeline project* (Mar. 8, 2022), <https://www.cbc.ca/news/canada/calgary/canada-s-tc-energy-will-not-revive-keystone-xl-oil-pipeline-project-1.6377165>.



Job Loss and Impacts on Consumer Energy Costs Due to the Revocation of the Permit for the Keystone XL Pipeline

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I. Legislative Language

This report responds to section 40434(b) of the Infrastructure Investment and Jobs Act (Pub. L. No. 117-58),⁴ that requires the Secretary of Energy to estimate the job losses and consumer impacts associated with the revocation of the permit for the Keystone XL pipeline:

The Secretary shall—

(1) conduct a study to estimate—

(A) the total number of jobs that were lost as a direct or indirect result of section 6 of Executive Order [13990] over the 10-year period beginning on the date on which the Executive Order was issued; and

(B) the impact on consumer energy costs that are projected to result as a direct or indirect result of section 6 of the Executive Order over the 10-year period beginning on the date on which the Executive Order was issued; and

(2) not later than 90 days after the date of enactment of this Act, submit to Congress a report describing the findings of the study conducted under paragraph (1).

II. Keystone XL History and Key Conclusions

The Keystone XL (KXL) pipeline extension was proposed by TransCanada (now TC Energy) as an 875-mile pipeline project that would extend from the Canadian border at Morgan, Montana (MT), to Steele City, Nebraska (NE). The pipeline extension was originally proposed in 2008 to allow delivery of up to 830,000 barrels per day (bpd) of crude oil from the Western Canadian Sedimentary Basin (WCSB) in Canada and the Bakken Shale Formation in the United States to Steele City, NE, for onward delivery to refineries in the Gulf Coast area. Of this project's total 830,000 bpd capacity, 730,000 bpd would have been set aside for the WCSB crude oil (oil sands crude) and 100,000 bpd for Williston Basin (Bakken) crude oil. TransCanada's original KXL pipeline proposal also included a southern segment from Cushing, Oklahoma (OK), to the Gulf Coast area, where it would have connected with existing pipeline infrastructure from Steele City, NE, to Cushing, OK. The Cushing-Gulf Coast portion (Cushing MarketLink) is now an independent project and began operations in January 2014.

On January 20, 2021, President Biden issued Executive Order 13990, *Protecting Public Health and the Environment and Restoring Science To Tackle the Climate Crisis*.⁵ In the Order, President Biden stated that the KXL pipeline "disserves the U.S. national interest," as its construction and operation would not be consistent with U.S. climate goals and it would

⁴ Public Law 117-58.

⁵ *Supra* note 1.

undermine the global energy and climate leadership role of the United States. The Order included the following statements:

Extreme weather events and other climate-related effects have harmed the health, safety, and security of the American people and have increased the urgency for combatting climate change and accelerating the transition toward a clean energy economy. The world must be put on a sustainable climate pathway to protect Americans and the domestic economy from harmful climate impacts, and to create well-paying union jobs as part of the climate solution. [Sec. 6(c)]

The Keystone XL pipeline disserves the U.S. national interest. The United States and the world face a climate crisis. That crisis must be met with action on a scale and at a speed commensurate with the need to avoid setting the world on a dangerous, potentially catastrophic, climate trajectory. At home, we will combat the crisis with an ambitious plan to build back better, designed to both reduce harmful emissions and create good clean-energy jobs. Our domestic efforts must go hand in hand with U.S. diplomatic engagement. [Sec. 6(d)]

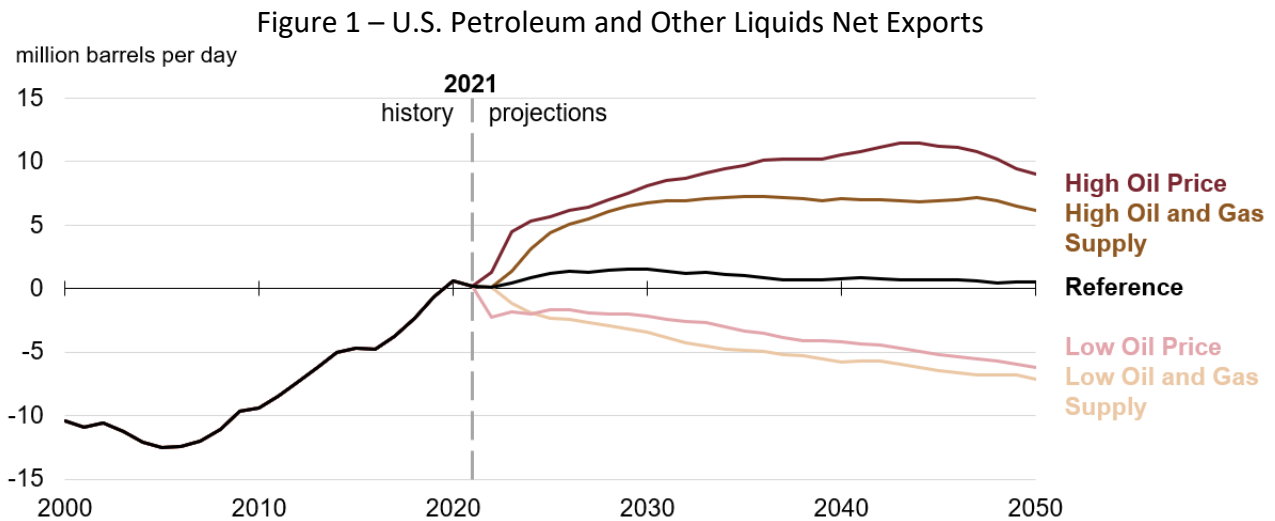
III. Introduction

In 2014, the U.S. Department of State (the State Department), the lead U.S. agency for the environmental review of cross-border oil pipelines, published its Final Supplemental Environmental Impact Statement (2014 Final SEIS)⁶ regarding the potential construction of the KXL pipeline, much of which was based on the original environmental impact assessment (EIS) published in 2011. The U.S. pipeline network that existed in 2010 at the onset of the tight oil revolution was developed to accommodate large import volumes of crude oil to the Midcontinent, with Cushing, OK being the major trading hub for crude oil in the United States. Thus, imported Brent was flowing from the U.S. Gulf Coast going north to Cushing, OK, and imported Canadian crude oil, as well as crude from the northwestern U.S., was flowing south to the Midcontinent. From 2005 through 2010, existing infrastructure could accommodate the additional volumes of U.S. tight crude oil as production increased at a slow but steady pace. However, in 2011, domestic crude production started to rise significantly.⁷ This made existing pipeline infrastructure insufficient and ill-configured. However, with the large increases in domestic oil and natural gas production throughout the 2010s, the U.S. became a net exporter

⁶ Final Supplemental Environmental Impact Statement for the Keystone XL Project, Vol. I (Dec. 2019), https://www.energy.gov/sites/prod/files/2019/12/f70/final-seis-eis-0433-s3-keystone-xl-pipeline-2019-12-vol-1_0.pdf. Supplemental Environmental Impact Statement for the Keystone XL Project, Vol. II (Dec. 2019), https://www.state.gov/wp-content/uploads/2019/12/Vol-II-Keystone-Final-SEIS-App-A-through-App-E_508-December-2019.pdf

⁷ [U.S. Field Production of Crude Oil \(Thousand Barrels per Day\) \(eia.gov\)](https://www.eia.gov) (retrieved March 3, 2022).

of petroleum, and other liquids in 2020.^{8,9} The Annual Energy Outlook 2022 (AEO 2022),¹⁰ Reference Case projections show the U.S. remaining a net exporter of total liquids and a net importer of crude oil through 2050.



Source: EIA, Annual Energy Outlook 2022

IV. Changes in Production Patterns and Transportation Routes since the KXL Pipeline was Proposed

The U.S. crude oil pipeline infrastructure and domestic crude oil trade flows are markedly different from the 2010-2014 timeframe when the major studies were conducted to evaluate the KXL pipeline project. In addition to the changes in the U.S. (and Canadian) crude oil market, the current economic environment is different from the economic environment that prevailed in the years during which previous studies were produced. New import tariffs on steel and aluminum products and more recently severe supply chain disruptions across industries, a tight labor market, as well as the worldwide uptick in inflation, constitute major changes that might impact the results of previous studies.

The U.S. pipeline network, which existed in 2010 at the onset of the tight oil revolution that made certain forms of oil and gas extraction more accessible, was developed to accommodate

⁸ See U.S. Energy Information Administration, *Petroleum & Other Liquids*, <https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=wtntus2&f=4> (retrieved Mar. 30, 2022).

⁹ While the U.S. continued to import more crude oil than it exported in 2020, crude oil net imports declined, and the positive trade balance for refined petroleum products and other liquids exceeded the negative trade balance for crude oil.

¹⁰ U.S. Energy Information Administration, *Annual Energy Outlook 2022* (Mar. 3, 2022), <https://www.eia.gov/outlooks/aeo/>.

large import volumes of crude oil to the mid-Continent, where Cushing, OK, was the major trading hub for crude oil in the United States. Thus, imported Brent crude oil was flowing from the U.S. Gulf Coast north to Cushing, OK, and imported Canadian crude oil, as well as crude from the northwestern U.S., was flowing south to the mid-Continent. From 2005 through 2010, existing infrastructure could accommodate the additional volumes of U.S. tight crude oil as production increased at a slow but steady pace.

In 2011, domestic crude production started to rise significantly.¹¹ This made existing pipeline infrastructure insufficient and ill-configured. Refiners in the Midwestern U.S. or Petroleum Administration for Defense Districts (PADD 2)¹² where the KXL pipeline would cross the Canadian-U.S. border, progressively switched from foreign to domestic crude oil but were unable to fully process all the domestic and Canadian crude oil available in the mid-Continent. This led to the transport of light Canadian and domestic crude oil from Cushing to refiners on the Gulf Coast and the East Coast. Limited pipeline availability led to the transportation of crude oil by rail, the reversal of the Seaway pipeline (150,000 bpd) between Cushing and the Gulf Coast in the fourth quarter of 2011, and the installation of Keystone Phase 3 from Cushing to the U.S. Gulf Coast. This was followed by a further increase in capacity of the existing Seaway pipeline that runs from Cushing, OK, to the Gulf Coast to 400,000 bpd day in June 2012. These developments were followed by further pipeline expansions from West Texas to Houston starting in 2013, in line with the increases in crude oil production coming from the Permian Basin.¹³ Additionally, another pipeline, Capline, was reversed to bring additional crude from the mid-Continent into Louisiana.¹⁴

The remaining analysis in this report reviews the major studies evaluating the KXL pipeline, and their major findings. Key relevant points from the review of prior studies show:

1. Estimates indicate approximately 50 permanent jobs once the pipeline would be operational. Studies found there would be between 16,149 to 59,468¹⁵ temporary jobs supported annually during the two-year construction period of the KXL pipeline, but the high-end figure overstates jobs, coming from a study that faced significant criticism for including in its analysis project inputs from India, Russia, and Russian companies in Canada, thus including jobs outside the United States, and also including portions of the Keystone pipeline project outside the XL segment in question.

¹¹ U.S. Energy Information Administration, U.S. Field Production of Crude Oil (Thousand Barrels per Day), <https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MCRFPUS2&f=A> (retrieved Mar. 30, 2022).

¹² https://www.eia.gov/petroleum/gasdiesel/diesel_map.php.

¹³ Isabella Ruble and John Powell, *The Brent-WTI spread revisited: A novel approach*, *The Journal for Economic Asymmetries*, 2021, Vol. 23, issue C, available at https://econpapers.repec.org/article/eeejoecas/v_3a23_3ay_3a2021_3ai_3ac_3as170349492100013.htm.

¹⁴ [EIA's updated liquids pipeline database shows 19 projects moving toward completion in 2021 - Today in Energy - U.S. Energy Information Administration \(EIA\)](#); and [EIA_LiqPipProject.xlsx https://www.eia.gov/petroleum/xls/EIA_LiqPipProject.xlsx](#)

¹⁵ *Supra* note 2.

2. Estimates of economic impacts show wide variations across studies and are not directly comparable due to large differences in modeling assumptions.
3. Crude oil production volume in the WCSB would not be affected by a positive or negative decision on the KXL pipeline.

Figure 2 – Map of Existing Keystone Pipeline and Proposed Expansions (adapted from State Department Final Supplemental EIS, 2014)



V. Key Dates

The following are the key milestones of the KXL pipeline:

- September 2008: TransCanada applies for a Presidential Permit for the cross-border Keystone XL Pipeline, extending from the Canadian border in Montana, to the U.S. Gulf Coast.¹⁶ The State Department begins EIS.

¹⁶ Receipt of Application for a Permit for Pipeline Facilities To Be Constructed and Maintained on the Borders of the United States, 73 Fed. Reg. 65,713 (Nov. 4, 2008).

- August 2011: The State Department publishes Final EIS.¹⁷
 - A key finding of this EIS is that approval or denial of the KXL pipeline permit would be unlikely to significantly impact Canadian oil sands production or the continued demand for heavy crude oil at refineries in the United States.
- Fall 2011: Nebraska officials raise concerns that the route through the state would cross the environmentally sensitive Sand Hills region; TransCanada agrees to change the route,¹⁸ and the State Department determines that additional analysis of the new route will be needed.
- December 2011: Congress directs the President to make a decision on the Presidential Permit within 60 days.¹⁹ The Presidential Permit is denied due to lack of time to complete additional analysis of the Nebraska route.²⁰
- Early 2012: TransCanada decides to go ahead with the Cushing MarketLink project, the portion of the original the KXL pipeline that extended from Cushing, Oklahoma, to the Gulf Coast, independently of the rest of the KXL pipeline project.²¹
- May 2012: TransCanada requests new Presidential Permit for shortened KXL pipeline.^{22, 23}
- January 2014: Cushing MarketLink pipeline begins operations.²⁴
- January 2014: The State Department publishes Final Supplemental EIS for the KXL pipeline.²⁵

¹⁷ Final Environmental Impact Statement for the Proposed Keystone XL Project, 76 Fed. Reg. 55,155 (Sept. 6, 2011).

¹⁸ State of Nebraska to Play Major Role in Defining New Keystone XL Route Away from the Sandhills (Nov. 14, 2011), <https://www.tcenergy.com/announcements/2011/2011-11-14state-of-nebraska-to-play-major-role-in-defining-new-keystone-xl-route-away-from-the-sandhills>.

¹⁹ Section 501 of the Temporary Payroll Tax Cut Continuation Act of 2011, Pub. L. No. 112-78 (, § 501) ([PUBL078.PS \(congress.gov\)](https://www.congress.gov/bills/112/78/sections/501)).

²⁰ Denial of the Keystone XL Pipeline Application (Jan. 18, 2012), <https://2009-2017.state.gov/r/pa/prs/ps/2012/01/181473.htm>.

²¹ TransCanada Set to Re-Apply for Keystone XL Permit (Feb. 27, 2012), <https://www.tcenergy.com/announcements/2012/2012-02-27transcanada-set-to-re-apply-for-keystone-xl-permit>.

²² TransCanada Applies for Keystone XL Presidential Permit (May 4, 2012), <https://www.tcenergy.com/announcements/2012/2012-05-04transcanada-applies-for-keystone-xl-presidential-permit>.

²³ “Application of TransCanada Keystone Pipeline, L.P. for a Presidential Permit . . .” (May 4, 2012), <https://www.tcenergy.com/announcements/2012/2012-05-04transcanada-applies-for-keystone-xl-presidential-permit>.

²⁴ Gulf Coast Project Begins Delivering Crude Oil to Nederland, Texas (Jan. 22, 2014), <https://www.tcenergy.com/announcements/2014/2014-01-22gulf-coast-project-begins-delivering-crude-oil-to-nederland-texas>.

²⁵ United States Department of State, Bureau of Oceans and International Environmental and Scientific Affairs: Final Supplemental Environmental Impact Statement for the Keystone XL Project, Executive Summary (Jan. 2014), <https://2012-keystonepipeline-xl.state.gov/documents/organization/221135.pdf>.

- November 2015: President Obama denies Presidential Permit for the KXL pipeline.^{26, 27}
- March 2019: President Trump issues new Presidential Permit for the KXL pipeline.²⁸
- 2020: Some construction begins for the KXL pipeline. In-service date was projected for late 2023.²⁹
- January 2021: President Biden revokes the Presidential Permit for the KXL pipeline.³⁰

VI. Literature Review: Economic and Job Impacts

Table 1 shows a listing of studies on impacts of the KXL pipeline. The studies reviewed in this analysis come from government, privately-funded, and industry-sponsored studies.

Table 1 – Studies of Keystone XL Impacts

Study	Sponsor	Topics Covered	Year
Perryman Group	TransCanada	Economic impacts	2010
Energy Policy Research Foundation, Inc. (EPRINC)	EPRINC non-directed research	Economic impacts	2010
Ensys	U.S. Department of Energy	Effect on Canadian production, U.S. refinery demand	2010
Wade and Nystrom Energy & Water Economics and Regional Economic Models, Inc. (REMI)	Non-directed from Energy & Water Economics and REMI	REMI Estimates of Economic Impacts from Construction and Operations based on the Keystone Record	2012
Environmental Impact Statement	U.S. Department of State	Environmental impacts, economic impacts, GHG emissions	2011, 2014

²⁶ Statement by the President on the Keystone XL Pipeline (Nov. 6, 2015), <https://obamawhitehouse.archives.gov/the-press-office/2015/11/06/statement-president-Keystone-XL-pipeline>.

²⁷ Notice of a Decision To Deny a Presidential Permit to TransCanada Keystone Pipeline LP for the Proposed Keystone XL Pipeline, 80 Fed. Reg. 76,611 (Dec. 9, 2015).

²⁸ Presidential Permit (Mar. 29, 2019), <https://trumpwhitehouse.archives.gov/presidential-actions/presidential-permit>.

²⁹ Natural Gas Intelligence, “TC Energy Maintains Keystone Start Date for 2023, Says Natural Gas Flows (So Far) Unaffected by Covid-19” (May 5, 2020), <https://www.naturalgasintel.com/tc-energy-maintains-keystone-start-date-for-2023-says-natural-gas-flows-so-far-unaffected-by-covid-19>.

³⁰ *Supra* note 1.

The first economic impact analysis on the Keystone XL pipeline was done by the Perryman Group (PG) for TransCanada in 2010, the company applying for the permit.³¹ Due to the high estimates for spending, output and jobs published by the PG, the study received significant attention and scrutiny. PG estimated the total impact of construction and development of the pipeline on the U.S. economy. PG estimated that pipeline construction would yield \$20.931 billion in total spending and \$9.605 billion in output over the lifetime of the project. Additionally, the project would support 118,936 person-years of employment over two years, or 59,468 jobs in each of the two years.³² However, the Wade and Nystrom study (described below) casts doubt on this high-end number.

Wade and Nystrom's independent 2012 analysis criticized the PG model and ran the following three KXL pipeline construction scenarios in the REMI model:³³

1. REMI using PG's inputs (to compare the scale of the total impacts from the same direct inputs)
2. Global Labor Institute (GLI) numbers (which provide a more accurate estimate of the direct inputs of KXL)
3. Continued operations and maintenance of the pipeline (from additional GLI research)

Wade and Nystrom's 2012 REMI model results were substantially more modest and therefore differed substantially from those of PG's USMRAIS model. The authors attributed the PG's overestimation of benefits to the PG's basic assumptions. The PG's estimates took a broad view of the potential job impacts, both in the U.S. and Canada; calculations were based on the construction of the entire Keystone pipeline and not just on the XL extension. Furthermore, some of the economic benefits to input procurement would not be reaped in the United States. However, inputs would come from India, Russia, or Russian companies in Canada.³⁴ The additional jobs created would therefore not be in the United States. The REMI model also used very different values for its multipliers and labor productivity. Differences in multiplier values can lead to sharp differences in labor market outcomes as they assume different magnitudes of effects of forward and backward linkages of industry output and employee spending. Wade

³¹ The Perryman Group, *The Impact of Developing the Keystone XL Pipeline Project on Business Activity in the US: An Analysis Including State-by-State Construction Effects and an Assessment of the Potential Benefits of a More Stable Source of Domestic Supply* (June 2010), https://grist.org/wp-content/uploads/2011/11/transcanada_us_report_06-10-10.pdf.

³² Swenson, Dave. "Multi-Year Capital Development Projects: Recent Insights from Oil Pipeline Impact Evaluations." <https://www2.econ.iastate.edu/prosci/swenson/Publications/Pipeline%20Projects%20Evaluations.pdf>.

³³ More information about the REMI model can be found at <https://www.remi.com/model/pi/>.

³⁴ "Perryman [Group] estimated that the direct construction and manufacturing tasks related to the entire project would employ 15,000 construction workers and 3,000 workers in metal manufacturing and fabrication. Some reports show 20,000 direct construction and manufacturing jobs. The overstated U.S. expenditures of \$7.0 billion (when the true number is closer to \$3.0 billion) and the inclusion of steel pipe manufacturing in the U.S. drive these overestimations." Wade, William W. and Nystrom, Scott M. "The Keystone XL Pipeline: REMI Estimates of Economic Impacts from Construction and Operations based on the Keystone Record." REMI (First presented at the REMI monthly policy luncheon, Washington DC), section 3.2, at 8 (Feb. 29, 2012), <https://www.remi.com/wp-content/uploads/2017/10/17-Keystone-XL-White-Paper.pdf>.

and Nystrom found that \$3-\$4 billion would be invested in the United States and not \$7 billion as stated by PG.

The Energy Policy Research Foundation, Inc. (EPRINC), in its independent analysis, categorized the benefits of the KXL pipeline project into the following:³⁵

“(i) greater efficiency in the production of transportation fuels by matching heavier crudes to the abundant and complex technology prevalent in the U.S. refining fleet, particularly in the Gulf Coast region, and (ii) greater efficiency in the delivery of crude oil into and within the U.S. market.”

EPRINC’s 2010 analysis further noted that the KXL pipeline project would improve the security of crude oil supplies because the project is tied to long-term delivery commitments.³⁶ According to EPRINC’s 2010 estimates, the KXL pipeline’s “net economic benefits from improved efficiencies in both the transportation and processing of crude oil” would reach “\$100-600 million annually, in addition to an immediate boost in construction employment.” EPRINC estimated that annual net benefits from the KXL pipeline to Bakken producers and Gulf Coast refiners would range from \$109.5 million to \$584 million.

The Ensys Energy & Systems (2010) study,³⁷ sponsored by the DOE, found that “The WORLD and DOE Energy Technologies Perspective (ETP) model analyses results show no significant change in total U.S. refining activity, total crude and product import volumes and costs, and in global refinery CO₂ and total life-cycle GHG emissions whether KXL is built or not.”³⁸ Global markets and emissions have changed since 2010.

Table 2 shows the economic impact of the construction of the KXL pipeline based on model input data from different studies and the use of different models. The Perryman Group’s results are the report’s original results and are displayed for comparison; the REMI results were obtained by using the Perryman Group study inputs in the REMI PI+ model; while the GLI/REMI results were obtained by using inputs from Cornell’s Global Labore Institute study in the REMI PI+ model. The last column displays the results of the 2014 Final SEIS. The construction employment numbers displayed in Table 2 are annual numbers, assuming the total construction

³⁵ Energy Policy Research Foundation, Inc., “The Value of the Canadian Oil Sands (...to the United States): An Assessment of the Keystone Proposal to Expand Oil Sands Shipments to Gulf Coast Refiners,” at 2 (Nov. 29, 2010), <https://eprinc.org/pdf/oilsandsvalue.pdf>.

³⁶ *Id.* at 2 n.3 (“The Gulf Coast Expansion will add an additional 509,000 barrels per day in late 2012. When completed, the expansion will increase the commercial design of the Keystone Pipeline system from 590,000 barrels per day to approximately 1.1 million barrels per day. With the additional contracts, the Keystone Pipeline has now secured long-term commitments for 910,000 barrels per day for an average term of approximately 18 years. These commitments represent approximately 83 percent of the commercial design of the system. The Keystone Pipeline System is expected to result in a capital investment of approximately US\$12 billion between 2008 and 2012.”)

³⁷ Ensys Energy & Systems, Inc., “Keystone XL Assessment”, Final Report (Dec. 23, 2010), prepared for the U.S. Department of Energy, Office of Policy & International Affairs (on file with DOE) (footnote omitted).

³⁸ *Supra* note 36.

of the KXL pipeline will take two years. The Oil and Gas Pipeline Construction industry has a market size of \$46 billion and employs 205,132 workers.³⁹

The 2014 Final SEIS estimated that about 42,100 total jobs, or 21,050 jobs annually, would be created if construction were to take two years (direct, indirect, and induced), as well as \$2.05 billion in earnings in the United States. About 3,900 of these jobs would be direct construction jobs in Montana, South Dakota, Nebraska, and Kansas. The project was expected to support 50 jobs during the operation. The SEIS estimated that the construction of the KXL pipeline would contribute \$3.4 Billion (or 0.02 percent) to the United States Gross Domestic Product.⁴⁰

At the time the KXL was cancelled, TC Energy announced that approximately 1,000 workers “on both sides of the border” were impacted.⁴¹ To the extent that some U.S. employment had already occurred, the numbers of jobs lost as a consequence of KXL’s cancellation would likely be less than these job estimates as they cover the total projected employment from the construction and operation of KXL.

Table 2 – Economic Impact of the KXL Construction Based on Inputs from Different Studies and Models ⁴²

U.S. average (2013-2014)	Units	Perryman Group	REMI	GLI/REMI	Final SEIS (2014)
Employment	Jobs per year	59,468 ⁴³	36,860	16,149	21,050
Business Sales	2011 \$ (billions)	\$20.93	\$9.22	\$6.01	-
Gross Domestic Product (GDP)	2011 \$ (billions)	\$9.61	\$5.14	\$3.12	\$3.4
Personal Income	Current \$ (billions)	\$6.50	\$3.19	\$1.36	\$2.05
Personal Income per Job	Annual \$	\$54,651	\$43,327	\$42,047	-

³⁹ IBISWorld, 2021. “Oil & Gas Pipeline Construction Industry in the U.S., - Market Research Report,” (updated July 1, 2021.), <https://www.ibisworld.com/united-states/market-research-reports/oil-gas-pipeline-construction-industry>. ⁴⁰*Supra* note 25.

⁴⁰*Supra* note 25.

⁴¹ World Oil, January 21, 2021. “TC Energy cuts 1,000 jobs after Keystone XL’s cancellation.”), <https://www.worldoil.com/news/2021/1/21/tc-energy-cuts-1-000-jobs-after-keystone-xl-s-cancellation>.

⁴² Wade, William W. and Nystrom, Scott M., *supra* note 40, figure 3.3.1, at 9 “[The Keystone XL Pipeline: REMI Estimates of Economic Impacts from Construction and Operations based on the Keystone Record](#),”.

⁴³ This study estimated both direct and indirect jobs, both in the United States and Canada.

VII. Conclusion

Estimates of economic benefits vary significantly among the studies and are not directly comparable due to large differences in modeling assumptions. The 875-mile KXL pipeline extension was originally proposed by TC Energy in 2008 to allow delivery of up to 830,000 bpd of crude oil from the WCSB in Canada and the Bakken Shale Formation in the United States for delivery to refineries in the Gulf Coast area. The proposal also included a southern segment from Cushing, Oklahoma to the Gulf Coast as an independent project, which was completed and began operations in January 2014.

The studies and assessments conducted during the 2010-2014 timeframe about the potential impact of the construction of the KXL pipeline found that:

- The SEIS and other estimates indicate there would be around 50 permanent jobs once the pipeline was operational. Additionally, estimates for the jobs created during the construction phase of the KXL pipeline ranged from 16,149 to 59,468 annually for a two-year period. However, the high-end figure overstates jobs, and the study it was based on included project input from other countries and included portions of the Keystone pipeline project outside the XL segment in question. The SEIS included an estimate that U.S. jobs would be 21,050 annually for two years, with a subset of the jobs, 3,900, as direct construction jobs.
- The literature review for this report showed that the effect on consumer prices was inconclusive, particularly in light of the changes that have occurred in Canadian and U.S. crude oil markets since the KXL pipeline was proposed.

On January 20, 2021, President Biden issued Executive Order 13990, in which he stated that the KXL project was not in the U.S. national interest as its construction and operation would not be consistent with U.S. climate goals. President Biden revoked the Presidential Permit to build the pipeline in January 2021 and, in June 2021, TC Energy halted construction⁴⁴ and canceled the KXL project. TC Energy has stated publicly, as recently as March 2022, that it does not plan to revive the KXL project.