

WORLDWIDE CONSTRUCTION UPDATE

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Listed are major construction projects by processing and pipeline categories. Contractors, estimated completion date, and added capacity are provided when available.

Construction project abbreviations:

Engr.	Engineer	PE	Procurement engineering
Contr.	Contractor	CS	Construction supervision
Tech.	Technology	PD	Process design
Dsgn.	Design	DD	Detailed design
Constr.	Construction	JV	Joint venture
PM	Project management	Lic.	License
CM	Construction management	FEED	Front-end engineering and design
EPC	Engineering procurement construction		

REFINING

Added capacity listed in barrels per day (b/d) unless otherwise specified.

Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
ALGERIA	Sonatrach SPA	Algiers	Revamp		Under constr.			Previously planned to expand capacity to 3.6 million tpy from 2.7 million tpy
	Sonatrach SPA	Biskra	Refinery	100,411	Planning		Amec Foster Wheeler--FEED; China Petroleum Engineering & Construction Corp--EPC	Grassroots project
	Sonatrach SPA	Hassi Messaoud	Refinery	5,000,000 tpy	Engineering		Técnicas Reunidas-Samsung Engineering--EPC	As part of the \$3.7-billion contract awarded in January 2020, Técnicas Reunidas and Samsung Engineering will jointly deliver EPC for the project, which will take 52 months to complete. The JV's scope of work includes construction of the completely new refinery, including all process and environmental units, as well as the necessary auxiliary services. Major units to be implemented as part of the project include a crude distillation unit, hydrocracker, gas oil hydrodesulfurizer, naphtha hydroprocessing unit, catalytic reformer, isomerization unit, solvent deasphalting unit, among others, all to be equipped with the latest technologies targeting deep conversion, clean-fuel production, and fulfillment of stringent environmental requirements. The new refinery also will include an amine recovery unit, a sulfur recovery unit, and a wastewater treatment plant. Part of Sonatrach's program to increase Algeria's domestic production of cleaner transportation fuels and energy products conforming to Euro 5-quality standards to help meet rising demand in the country as well as on export markets, the Hassi-Messaoud refinery is scheduled for start-up during first-half 2024. Alongside Hassi-Messaoud, two new 5 million-tpy refineries were to be built both in Biskra and Tiaret, with all three refineries to be configured for processing domestic Algerian crude oil. To date, however, Sonatrach has announced investment plans only for the proposed second refinery at Tiaret.
ANGOLA	Sonangol EP	Luanda	Refinery		Planning			
	Sonangol EP	Lobito	Refinery		Planning			
	Sonangol EP	Luanda	Naphtha hydrotreating		Engineering		Maire Tecnimont--EPC	Part of financing agreement with Eni SPA; to boost gasoline production. KT-Kinetics Technology will provide EPC services for the naphtha hydrotreater, including a naphtha splitter, and a catalytic reforming unit. Scope of work on the project also will include some unidentified utilities and offsites, as well as necessary tie-ins for integration with the existing refinery. Scheduled for start-up and testing in about 2 years from the start date of the project, the new units will enable the refinery to quadruple the gasoline production to 1,100 tonnes/day from 280 tonnes/day, as well as improve product quality while minimizing the site's global environmental footprint.
	Sonangol EP	Luanda	Gasoline production		Engineering		United Shine--EPC	Part of financing agreement with Eni SPA; to boost gasoline production.
	Sonangol EP	Luanda	Platforming unit		Engineering			Part of financing agreement with Eni SPA; to boost gasoline production.
	Sonangol	Lobito	Refinery	200,000	Under constr.		KBR--E/PE/Cm	\$2 billion. Technip (60%), Sonangol (40%).
	Sonangol EP	Cabinda	Refinery	60,000	Planning		United Shine Consortium	United Shine consortium 90% stake - Sonangol Fefinacion-Sonaref SA 10% stake

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ARUBA	Government of Aruba	San Nicolas	Refinery	235,000	Planning			In March 2020, Citgo Aruba Holding (CAH), a subsidiary of Petroleos de Venezuela S.A.S. PDV Holding Inc., reached an agreement with Refineria di Aruba NV (RDA) for the official transfer of operatorship of former Valero Energy Corp.'s 235,000-b/d refinery and terminal in San Nicolas, Aruba, which Citgo Aruba Refinery NV previously intended to restart. The agreement marks the first action of a process that will end execution of the termination agreement of the Aruba refinery project jointly planned by PDV Holding and partners RDA and the government of Aruba on March 16 after Aruba's parliament approved the termination. Following the signing of the October 2019 MOU, the Aruban government said it planned to start discussions with more than 25 companies that had expressed interest in taking over the refining and terminal operations with which the government previously was unable to negotiate. Alongside forming a negotiation committee and complying with requests from the local union for staffing the refinery, the government also planned to organize a formal roadshow in Houston targeting viable companies to trigger interest in investing in the refining and terminal assets.
AUSTRALIA	Darwin Clean Fuels Pty. Ltd. (DCF)	Darwin, Northern Territory	Condensate refinery	60,000-100,000	Engineering		McDermott--Prefeasibility/FEED/EPC	Under the late-October 2019 contract—to be finalized after a final investment decision is reached—McDermott will deliver the feasibility study, technology, FEED, and EPC services for the refinery, which would be equipped with McDermott's proprietary technologies, including alkylation and sulfur recovery. Early phase engineering work is scheduled to begin immediately and be completed by first-quarter 2020.
	ExxonMobil Corp.	Altona, Victoria	Crude distillation	10,000	Planning			Expansion, upgrading program.
	ExxonMobil Corp.	Altona, Victoria	Jet fuel treater	2,000	Under constr.			Expansion to 12,000 b/d from 10,000 b/d.
AZERBAIJAN	State Oil Co. of Azerbaijan Republic	Heydar Aliyev, Baku	Isomerization		Under constr.	2020	Honeywell UOP--TL	
	State Oil Co. of Azerbaijan Republic	Heydar Aliyev, Baku	MTBE		Under constr.	2020	Honeywell UOP--TL	
	State Oil Co. of Azerbaijan Republic	Heydar Aliyev, Baku	Fluid catalytic cracking		Under constr.	2020	Honeywell UOP--TL	
	State Oil Co. of Azerbaijan Republic	Heydar Aliyev, Baku	Sulfur removal		Under constr.	2020	Honeywell UOP--TL	
	State Oil Co. of Azerbaijan Republic	Heydar Aliyev, Baku	LPG Merox		Under constr.	2020	Honeywell UOP--TL	
	State Oil Co. of Azerbaijan Republic	Heydar Aliyev, Baku	PSA unit	30,100	Planning	2021	Honeywell UOP--TL	
	State Oil Co. of Azerbaijan Republic	Heydar Aliyev, Baku	Amine treatment		Under constr.	2020	Honeywell UOP--TL	
	State Oil Co. of Azerbaijan Republic	Heydar Aliyev, Baku	Naphtha hydrotreating		Under constr.	2020	Honeywell UOP--TL	
	State Oil Co. of Azerbaijan Republic	Heydar Aliyev, Baku	Sulfur recovery	1,205	Under constr.	2020	Maire Tecnimont--TL	
	State Oil Co. of Azerbaijan Republic	Heydar Aliyev, Baku	Refinery	30,123	Under constr.	2020	SOCAR-KBR--TL; Tecnicas Reunidas SA--EPC	Expansion. Modernization, upgrading.
BAHRAIN	Bahrain Petroleum Co.	Sitra	Diesel hydrotreating		Under const.	2022	Chevron Lummus Global--TL	
	Bahrain Petroleum Co.	Sitra	Delayed coking		Under const.	2022		
	Bahrain Petroleum Co.	Sitra	Vacuum gas oil hydrocracking		Under const.	2022	Chevron Lummus Global--TL	
	Bahrain Petroleum Co.	Sitra	Sulfur recovery		Under const.	2022		
	Bahrain Petroleum Co.	Sitra	Residue hydrocracking		Under const.	2022	Chevron Lummus Global--TL	
	Bahrain Petroleum Co.	Sitra	Refinery expansion	93,000		2022	TechnipFMC, Samsung Engineering, Tecnicas Reunidas--EPC; Worley Parsons--PM	Upgrade. \$56 million.
BANGLADESH	Eastern Refinery Ltd.	Chittagong	Crude distillation	60,247	Engineering		Engineers India--PMC	Expansion
CAMBODIA	Cambodian Petrochemical Co. Ltd.	Preah Sihanouk	Hydrocracker	100,411	Engineering		KBR-Tinajin Petrochemical Engineering Design Co. Ltd.--EPC, TL	2 million-tpy Phase 1 due in 2018.
CAMEROON	SONARA	Limbe refinery	Vacuum distillation		Engineering		Amec Foster Wheeler--EPC	
	SONARA	Limbe refinery	Crude distillation		Engineering		Amec Foster Wheeler--EPC	Expansion to 3.5 million tpy.
	SONARA	Limbe refinery	Catalytic reformer		Engineering		Amec Foster Wheeler--EPC	
CANADA	NARL Refining LP	Come-by-Chance, Newf.	Delayed coking		Planning	2023		
	NARL Refining LP	Come-by-Chance, Newf.	Crude flexibility expansion	30,000	Planning	2020		
	Kitimat Clean Ltd.	Kitimat, BC	Refinery	400,000	Planning	2024		Proposed bitumen-processing refinery.
CHECHNYA	OJSC Grozneftegaz	Grozny	Refinery	120,493	Planning		Genoil--TL/Constr.	

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CHILE	Empresa Nacional del Petroleo (Enap)	Hualpen, Bio Bio	ROSE solvent deasphalting unit	30,000	Under const.		KBR Inc.--TL/E/D	
CHINA	Chemical (Lianyungang) Co. Ltd.	Lianyungang City, Jiangsu Province	HyK Distillates Hydrocracking Unit	69,283	Engineering		Axens--TL	Based on Axens' HyK distillates hydrocracking technology.
	Sinochem Hongrun Petrochemical Co. Ltd.	Weifang City, Shandong Province	Alkylation Unit		Planning		Honeywell UOP--TL	Based on Honeywell UOP-licensed ISOALKY alkylation technology.
	Shenghong Petrochemical Group Co. Ltd.	Lianyungang City, Jiangsu Province	Alkylation	10,987 b/sd	Engineering	2021	DuPont Clean Technologies--TL, Eng., Equip.	The STRATCO alkylation unit will be designed to produce 10,987 b/sd of alkylate product, enabling the complex to generate low-sulfur, high-octane, low-RVP alkylate—with zero olefins—that meets the criteria of upcoming China VI standards which will take effect before start-up of Shenghong's 320,000-b/sd complex in 2021.
	Shenghong Petrochemical Group Co. Ltd.	Lianyungang City, Jiangsu Province	H-Oil Hydro-cracking Unit	64,263	Engineering		Axens--TL	Based on Axens' ebullated-bed residue hydrocracking technology (H-Oil).
	PetroChina Guangdong Petrochemical Co. Ltd. (China National Petroleum Corp.'s PetroChina Co. Ltd.)	Jieyang Nandahai Petrochemical Industrial Zone, Guangdong Province	CCR platforming	120,500	Under const.	2023	Honeywell UOP--TL	Part of a refining-chemical integration project under way at PetroChina Guangdong Petrochemical's 400,000-b/d heavy crude oil processing and petrochemical site in the Jieyang Nandahai Petrochemical Industrial Zone of China's Guangdong province.
	PetroChina Guangdong Petrochemical Co. Ltd. (China National Petroleum Corp.'s PetroChina Co. Ltd.)	Jieyang Nandahai Petrochemical Industrial Zone, Guangdong Province	Hydrocracking	74,300	Under const.	2023	Honeywell UOP--TL	Part of a refining-chemical integration project under way at PetroChina Guangdong Petrochemical's 400,000-b/d heavy crude oil processing and petrochemical site in the Jieyang Nandahai Petrochemical Industrial Zone of China's Guangdong province.
	Sinopec-Kuwait Petroleum Corp.	Donghai Island, Zhanjiang City, Guangdong Province	Refinery	300,000	Under constr.		DuPont Clean Technologies--TL/E/Eq.; LyondellBasell Industries BV--TL;Kaji Technology Corp.--Eq.	Integrated refining and petrochemical complex.
	Datong Coal Mine Group Co. Ltd.	Datong, China	Grassroots Polypropylene unit	430,000 tpy	Planning	2022		As part of the contract, Grace will license its proprietary UNIPOL PP process technology as well as its CONSISTA catalyst for the 430,000-tonne/year unit, which will enable the operator to produce more than 200 resin grades to provide more PP options to its customers, the service provider said.
	Shenghong Refining & Chemical (Lianyungang) Co. Ltd. (SRCLC; Shenghong Petrochemical Group Co. Ltd.)	Lianyungang City, Jiangsu Province	Refinery	16,000,000 tpy	Engineering		Honeywell UOP--TL, Eq.	As part of the April 2020 contract, Honeywell UOP will deliver five of its proprietary Polybed pressure swing adsorption (PSA) units to supply high-purity hydrogen. UOP's scope of delivery will include the four Polybed PSA systems—which are skid-mounted, modular units complete with hardware, adsorbents, control systems, and embedded process technology, as well as proprietary UOP adsorbents to remove impurities at high pressure from hydrogen-containing process streams, allowing hydrogen to be recovered and upgraded to more than 99.9% purity to meet refining needs. This latest contract to Honeywell UOP follows SRCLC's previous contract awards to E.I. DuPont de Nemours & Co.'s DuPont Clean Technologies and Axens, respectively, to deliver alkylation and residue hydrocracking technologies for the grassroots complex. To be located at Lianyungang Petrochemical Industrial Base in Xuwei New District, Lianyungang City, the proposed integrated complex will process imported crude oil for production of China VI-quality fuels, as well as produce 2.8 million tpy of aromatics and 1.1 million tpy of ethylene. Alongside its combined 16 million-tpy atmospheric-vacuum distillation unit, the complex will include the following unit capacities: light hydrocarbon recovery, 4 million tpy; kerosene hydrogenation, 1.8 million tpy; delayed coking, 2 million tpy; hydrocracking (Unit 1), 3.5 million tpy; hydrocracking (Unit 2), 3.6 million tpy; residue hydrogenation, 3.3 million tpy; gasoline-diesel hydrogenation, 3 million tpy; sulfur recovery, 600,000 tpy; continuous reforming (two units), 3.2 million tpy each; paraxylene production, 2.8 million tpy; ethylene production, 1.1 million tpy; acrylonitrile production, 260,000 tpy; methyl methacrylate production, 90,000 tpy; ethylene vinyl acetate production, 300,000 tpy.
	Zhejiang Petrochemical Co. Ltd. (ZPC)	Zhoushan, Zhejiang Province	RFCC	100,411	Engineering		Honeywell UOP,HPS--TL/E/D	UOP's RCD Unionfining and RFCC processes.
China Petrochemical Corp. [Sinopec (Maoming Petrochemical Co.)]	Maoming, Guangdong province	BOTB upgrading plant	46,000	Engineering	2020	Eni SPA--TL	Eni slurry technology.	
Saudi Aramco, China North Industries Group Corp., Panjin Sincen	Liaoning Province	Grassroots refining and petrochemical complex	300,000	Planning	2024			
Zhejiang Petrochemical Co. Ltd. (ZPC)	Zhoushan, Zhejiang Province	Paraxylene unit	80,329	Under constr.		Honeywell UOP,HPS--TL/E/D	UOP's LD Parex process, including Sulofane, Isomar, and Tataray technologies.	
Zhejiang Petrochemical Co. Ltd. (ZPC)	Zhoushan, Zhejiang Province	Diphenyl carbonate unit	4,418	Under constr.		McDermott--TL/E/D		
Zhejiang Petrochemical Co. Ltd. (ZPC)	Zhoushan, Zhejiang Province	PDH unit	12,049	Under constr.		Honeywell UOP,HPS--TL/E/D	UOP's Oleflex process.	

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	PetroChina Co. Ltd. (Dalian Petrochemical Co.)	Dalian, Liaoning province	Alkylation unit		Under const.		McDermott--TL/E/D	CDAlky units to ensure gasoline-diesel production complies with with China 6-quality specifications capping sulfur content at maximum of 10 ppm starting in 2020.
	Zhejiang Petrochemical Co. Ltd. (ZPC)	Zhoushan, Zhejiang Province	PSA unit (3)		Engineering		Honeywell UOP,HPS--TL/E/D	UOP's modular Polybed PSA unit.
	PetroChina Co. Ltd. (Urumqi Petrochemical Co.)	Urumqi, Xinjiang Uygar Autonomous Region	Alkylation unit		--		McDermott--TL/E/D	CDAlky units to ensure gasoline-diesel production complies with with China 6-quality specifications capping sulfur content at maximum of 10 ppm starting in 2020.
	Zhejiang Petrochemical Co. Ltd. (ZPC)	Zhoushan, Zhejiang Province	Diesel hydrocracker (2)		Engineering		McDermott--TL/E/D	
	Zhejiang Petrochemical Co. Ltd. (ZPC)	Zhoushan, Zhejiang Province	Naphtha hydrotreater		Engineering		Honeywell UOP,HPS--TL/E/D	UOP's Unionfining process.
	Tianjin Petroleum & Chemical Corp.	Tianjin Binhai New Area, Tianjin	Alkylation unit	7700	Under constr.		DuPont--TL/E/D	\$1.6 billion.
	Zhejiang Petrochemical Co. Ltd. (ZPC)	Zhoushan, Zhejiang Province	Continuous catalytic reformer (1)		Under constr.		Honeywell UOP,HPS--TL/E/D	UOP's CCR Platforming process.
	Zhejiang Petrochemical Co. Ltd. (ZPC)	Zhoushan, Zhejiang Province	Hydrocracker		Under constr.		Honeywell UOP,HPS--TL/E/D	UOP's Unicracking process.
	Zhejiang Petrochemical Co. Ltd. (ZPC)	Zhoushan, Zhejiang Province	PSA unit (1)		Under constr.		Honeywell UOP,HPS--TL/E/D	UOP's modular Polybed PSA unit.
	Zhejiang Petrochemical Co. Ltd. (ZPC)	Zhoushan, Zhejiang Province	Continuous catalytic reformer (2)		Under constr.		Honeywell UOP,HPS--TL/E/D	UOP's CCR Platforming process.
	Zhejiang Petrochemical Co. Ltd. (ZPC)	Zhoushan, Zhejiang Province	Alkylation unit		Engineering		McDermott--TL/E/D	
	Zhejiang Petrochemical Co. Ltd. (ZPC)	Zhoushan, Zhejiang Province	PSA unit (4)		Engineering		Honeywell UOP,HPS--TL/E/D	UOP's modular Polybed PSA unit.
	Zhejiang Petrochemical Co. Ltd. (ZPC)	Zhoushan, Zhejiang Province	Sulfuric acid regeneration unit		Under constr.		DuPont--TL/E/D	
	Zhejiang Petrochemical Co. Ltd. (ZPC)	Zhoushan, Zhejiang Province	Diesel hydrocracker (1)		Under constr.		McDermott--TL/E/D	
	Sinochem Hongrun Petrochemical Co. Ltd.	Weifang City, Shandong province	Residual upgrading	24,099	Engineering	2020	ExxonMobil Catalysts & Licensing Co.--TL	
	PetroChina Co. Ltd. (Jinzhou Petrochemical Co.)	Jinzhou, Liaoning province	Alkylation unit		--		McDermott--TL/E/D	CDAlky units to ensure gasoline-diesel production complies with with China 6-quality specifications capping sulfur content at maximum of 10 ppm starting in 2020.
	Zhejiang Petrochemical Co. Ltd. (ZPC)	Zhoushan, Zhejiang Province	PSA unit (2)		Engineering		Honeywell UOP,HPS--TL/E/D	UOP's modular Polybed PSA unit.
CROATIA	INA Industrija Nafta DD	Urinj	Residual upgrading		Planning			\$400 million.
	INA Industrija Nafta DD	Rijeka	Modernization		Planning	2023		In December 2019, the operator took FID the more-than \$600-million plan to modernize its 90,000-b/d Rijeka refinery as part of an organizational strategy to boost performance and competitiveness of its Croatian refining business. Part of its INA Downstream 2023 New Course program, the proposed investment plan—which intends to help reduce losses of the refining business by ensuring long-term sustainability and profitability of refining and marketing operations—will involve concentration of crude processing activities at the Rijeka refinery and conversion of the company's 44,000-b/d refinery in Sisak into a biorefining and petrochemical production site for bitumen, renewables, and potentially lubricants, as well as equipping it to perform as a modern logistics hub. The proposed 3-year conversion process coincides with the concurrent construction of a heavy residue upgrading plant—or delayed coking unit (DCU)—at the Rijeka refinery, which would include a delayed coker, a coke port, storage installations, as well related pipelines and off sites. The DCU aims to improve the refinery's production structure by increasing its output of more valuable products, such as motor fuels.
	INA Industrija Nafta DD	Rijeka	Delayed coking		Engineering	2023	KT-Kinetics Technology--EPC	KT's scope of work under the December 2019 contract will include execution of engineering and procurement of all equipment and materials, as well as construction and erection work for a new delayed coking unit with coke handling and ship loading, sour water stripper, amine recovery units, and revamping of the existing hydrocracker, sulfur recovery unit, and utilities and off site units. Alongside debottlenecking of existing units and implementation of grassroots ones, the EPC contract also covers work on coke storage and sea jetty construction at the site in a project that will involve more than 60% of the existing refinery.

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CURACAO	Refineria Di Korsou NV	Emmastad	Refinery modernization		Planning			In December 2019, Refineria Di Korsou signed an asset purchase and sale agreement with privately held Klesch Group, under which Klesch will take operational control of RdK's 320,000-b/d Isla refinery at Emmastad, Curacao, as well as an associated utilities plant and the Bullenbay oil terminal. With the APSA now signed, the parties will continue working to meet the agreed conditions, with the aim of signing two remaining agreements by the end of second-quarter 2020 to finalize the deal, under which Klesch has initiated major investments in upgrading refining and other equipment at the sites to improve processing, storage, and environmental performance, and will pay \$15 million annually, subject to an inflation rate of up to 2%, to lease the lands on which the assets are located. Refineria Isla Curacao—whose official lease was set to expire on Jan. 1, 2020—will temporarily continue to operate the refining and storage assets until Klesch officially takes over, according to local media reports out of Curacao.
CZECH REPUBLIC	Unipetrol RPA SRO - Rafinerie	Litvinov, Czech Republic	Unit Upgrading Project		Planning	2020	McDermott International Inc. - EPCM	
EGYPT	Middle East Oil Refinery Co.'s Ministry of Petroleum & Mineral Resources (MOPMR)	El Amreya Free Zone New Al-Alamein City	Refinery Grassroots integrated complex	2,500,000 tpy	Under constr. Planning	2022 2024	TechnipFMC PLC, EPC	Egypt's MOMPR said in January 2020 it is evaluating a project to construct a new integrated refining and petrochemical complex at New Al-Alamein City on Egypt's northwestern coast, near Marsa Matrouh governorate. The complex would have crude and condensate processing capacity of 2.5 million tpy for production of a variety of high-quality fuels and petrochemical products to meet local demand, with any surplus exported via the Al Hamra terminal near the Mediterranean Sea. The \$8.5-billion project, if realized, would be completed by yearend 2024 and supplied by Western Desert crude.
	Suez Oil Processing Co.	Al Zaytiyat, Suez	Vacuum distillation unit asphalt plant	726,000 tpy	Engineering			Scheduled to break ground in fourth-quarter 2021 is SOPC's \$68.5-million project to add a 726,000-tpy VDU asphalt plant, removing lighter fractions from residues of the refinery's existing CDU, and enabling improved processing of heavy-end feedstock fractions from both SOPC's CDU and that of state-owned Nasr Petroleum Co.'s (NPC) nearby Suez refinery. Once completed, SOPC's VDU asphalt plant will produce 396,000 tpy of asphalt and 323,000 tpy of vacuum gas oil. While EBRD referenced the addition of a new main VDU and distillate hydrotreater to be included as part of SOPC's planned coker revamp and VDU asphalt plant projects in a Jan. 29, 2020, prequalification invitation to potential service companies for work on the projects, further details regarding the scope of these units have yet to be made available. The financier, however, did confirm the combined projects would reduce SOPC's greenhouse gas emissions and water demand by 289,000 tpy and 385,000 cu m/year, respectively.
	Suez Oil Processing Co.	Al Zaytiyat, Suez	Delayed coking		Engineering			EGPC subsidiary Suez Oil Processing Co. (SOPC) is executing a multitiered energy efficiency and upgrade program to modernize the existing delayed coking complex, replace the existing VDU, add a new distillate hydrotreating unit to replace two existing units, add a grassroots VRU, and build a new asphalt production plant based on a VDU system at its refinery about 3 km west of Suez, at the entrance of the Suez Canal, MOMPR and the European Bank for Reconstruction and Development (EBRD) said in early 2020. As currently planned, the coker complex refurbishment project will involve installation of a new delayed coking unit with all supporting units to replace existing units at the complex, EBRD said. Alongside ensuring more stable production, cutting plant outage periods, and reducing energy demand, the revamp would return the complex to its initial design capacity of 5,000 tonnes/day, EBRD said. The project—which will involve replacing the complex's old six-drum coker design with a modern two-drum unit with key improvements in coke processing, off-gas utilization, and final coke storage—would allow the refinery to maximize production of Euro 5-quality diesel, gasoline, and LPG to meet growing domestic demand. An associated VRU also would be built as part of the project to help reduce hydrocarbon emissions from flaring and improve production yields. At an estimated cost of \$589 million, the coker revamp project is scheduled for start of construction in November 2021.

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	Middle East Oil Refinery Co.	Alexandria	Refinery expansion	60,000	Under constr.	2022	TechnipFMC--EPC	As of January 2020, EGPC's MIDOR was progressing with its project to further expand crude processing capacity of its 1.15,000-b/d Amreya refinery to 160,000 b/d. As main contractor on the project, TechnipFMC's scope of work includes debottlenecking existing units and delivering new units, including a crude distillation unit (CDU), vacuum distillation unit (VDU), and a hydrogen production plant based on proprietary steam reforming technology, as well as various process units, interconnecting off-sites, and utilities. Scheduled to be completed in first-quarter 2022, the \$2.3-billion project will boost the refinery's production of high-octane gasoline by 600,000 tpy, diesel by 1.3 million tpy, LPG by 145,000 tpy, coke by 226,000 tpy, and sulfur by 65,000 tpy.
	Assiut Oil Refining Co.	Assiut	Hydrocracking complex	2,500,000 tpy	Under const.	2022	ENPPI-Petrojet--EPC; TechnipFMC--D	In February 2020, ASORC let a contract to a consortium of ENPPI, Petroleum Projects & Technical Consultation Co. (Petrojet), and TechnipFMC PLC for construction of a grassroots hydrocracking complex at Assiut. ENPPI will deliver detailed engineering, procurement, construction (EPC), precommissioning, commissioning, and start-up tests for the complex's vacuum distillation unit, distillate hydrotreating unit, sulfur recovery unit, and sulfur solidification unit. Once completed, the \$2.5-billion hydrocracking complex will process 2.5 million tpy of heavy fuel oil (mazut) from ASORC's nearby refinery to produce about 2.8 million tpy of Euro 5-quality diesel and other high-value products to help meet regional product demand and reduce the country's reliance on imports. Alongside Euro 5-quality diesel, ENPPI and MOPMR said the new hydrocracking complex—scheduled for startup in 2022—also will produce 360,000-400,000 tpy of naphtha, 91,000-101,000 tpy of LPG, 331,000 tpy of coke, and 57,000-66,400 tpy of sulfur.
	Egyptian Petrochemicals Holding Co. (ECHM)	Suez Canal Economic Zone (SCZone)	Grassroots refining-petrochemicals complex	3,000,000	Engineering		Bechtel--EPC	As part of MOPMR's plan to boost Egypt's state-owned crude processing capacity, ECHM signed a heads of agreement (HOA) in February 2020 with Bechtel Corp. for execution of EPC on a proposed integrated refining and petrochemicals complex to be built in the SCZone. As part of the HOA, Bechtel also will assist in facilitating financing for the project from financial institutions. Overall cost of the proposed project is \$6.2-6.7 billion. Designed to help meet increased demand for transportation fuels and petrochemical products on Egypt's domestic market as well as create opportunity for possible exports abroad, the integrated refining complex—if realized—would be equipped to process 2.7-3.2 million tpy of crude oil to produce 900,000 tpy of petroleum products and 1.2-1.9 million tpy of petrochemical products. Details regarding precise location of the complex or a time for its development have yet to be released.
EQUATORIAL GUINEA	Ministry of Mines and Hydrocarbons (MMH)-Marathon Oil Co.	Punta Europa, Malabo	Refinery	5,000	Planning		VFuels Inc.--E/D	Under the April 2020 contract—which is scheduled to be completed within 12 weeks of the contract's signature—VFuels will deliver engineering and design of the proposed 5,000-b/d modular refinery to supply finished products for consumption by Equatorial Guinea's domestic market. The refining project comes as part of MMH's initiative of the Year of Investment 2020, which is seeking investments for a modular refinery and storage tanks in the continental region, as well as promotion of other projects derived from methanol, among others.
GERMANY	Royal Dutch Shell PLC (Shell Deutschland Oil GMBH)	Rheinland	Residue processing plant		Planning	2020		Proposed expansion to boost production of fuels conforming the International Maritime Organization's 0.5% sulfur cap on marine fuels taking effect on Jan. 1, 2020.
	OMV Deutschland GMBH (OMV AG)	Burghausen	Isobutene	60,000 tpy	Engineering	2020	OMV-BASF SE--TL	The 60,000-tpy ISO C4 unit—which will be integrated into the refinery's existing metathesis plant responsible for energy-efficient manufacturing of propylene for the plastics industry—will feature the first global application of an OMV-BASF SE jointly developed technology for direct production of high-purity isobutene.

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Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
GREECE	Motor Oil (Hellas) Corinth Refineries SA (MOH)	Agii Theodori, Corinth	Naphtha complex	22,000	Engineering	2021	TechnipFMC--EPCM	As part of the January 2020 contract, TechnipFMC will deliver EPCM services for the proposed 22,000-b/d naphtha complex, which will include a naphtha hydrotreating unit, a platforming unit, and an isomerization unit. The project also involves upgrading existing but unidentified utilities and offsite units to meet the requirements of the new complex. Once completed, the complex will enable MOH to increase its production of Euro 5-quality gasoline as part of the operator's strategy to expand production of clean fuels. Valued at between \$75-250 million, the EPCM contract follows MOH's previous award to TechnipFMC for execution of front-end engineering design on the naphtha complex, which has been completed. On May 29, 2019, privately held MOH's board of directors approved construction of the naphtha treatment complex at total budgeted expenditure of €310 million. The complex is scheduled for completion by yearend 2021.
GUINEA	Brahms Oil Refineries Ltd.	Kamsar	Refinery	12,000	Engineering		SNC-Lavalin Group Inc.--PM/FEED/EPC	Brahms Oil Refineries Ltd. and Africa Finance Corp. (AFC) agreed in December 2019 to codevelop Brahms's refinery and storage project, which will include a 12,000 b/d modular refinery (producing gasoil, kerosene, gasoline, and fuel oil), 76,000 cu m of crude oil storage, 114,200 cu m of refined products storage, and transportation infrastructure. A local company, Societe de Raffinage Guineenne SA, has been established to build the project.
INDIA	Chennai Petroleum Corp. Ltd.	Nagapattinam, Tamilnadu	Polypropylene	475,000 tpy	Engineering		McDermott--TL, Eng., D	McDermott will deliver licensing, basic engineering design, and proprietary catalyst supply for the 475,000-tpy polypropylene unit, which will be equipped with proprietary Novolen reactors and proprietary NHP catalyst from McDermott-Chevron Corp. joint venture Chevron Lummus Global LLC (CLG). Part of proposed grassroots Cauvery Basin refinery, will include 50,200-b/d delayed coker licensed by McDermott's CLG; total refinery project will require an investment of 274.5-274.6 billion rupees to complete.
	HPCL Rajasthan Refinery Ltd. Nayara Energy Ltd.	Barmer, Rajasthan Vadinar, Gujarat	Delayed coking Propylene	48,200 450,000 tpy	Engineering Engineering		Chevron Lummus Global--TL, Eng. W.R. Grace & Co.--TL	Grace will license its proprietary Unipol PP process technology as well as its Consista catalyst for the 450,000-tpy unit, which will process propylene feedstock to produce phthalate-free homopolymer products for the Indian market
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Residue upgrading facility	73,300	Engineering	2020	LTHE--EPCC; Lummus--TL	To be equipped with technology licensed by Chevron Lummus Global, the 70,300-b/d plant—to be the first of its kind in India—will enable HPCL to convert the heaviest oils into high-quality Euro 6 diesel while simultaneously eliminating fuel oil production, as well as increasing feedstock and product flexibility, according to the service provider. Awarded on a lump-sum turnkey basis, this latest contract follows previous contract awards to LTHE to deliver EPCC services for a crude distillation unit (CDU) and vacuum distillation unit (VDU) that will have a combined nameplate capacity of 180,700 b/d, as well as EPCC services on a 61,300-b/d full-conversion hydrocracker to be added as part of the VRMP.
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Fuel gas pressure-swing adsorption unit	723	Under constr.	2020	Engineers India Ltd.--EPC	New unit
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Amine regeneration unit (1)	94997	Under constr.	2020	Engineers India Ltd.--EPC	New unit

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	Indian Oil Corp. Ltd.	Barauni, Bihar	Refinery expansion	3,000,000 tpy	Engineering	2023	Engineers India Ltd.--EPC; L&T Hydrocarbon Engineering--EPCC; McDermott--TL/E/D	The April 2020 contract award to LTHE follows IOC's Jan. 30, 2020, official approval of the proposed 137.79 billion-rupee (±10%) project to expand crude processing capacity by 3 million tpy to 9 million tpy as well as add downstream polymer units at the Barauni refinery. According to the latest project documents available from IOC, India's Ministry of Environment, Forest, and Climate Change (EFCC), and Envirotech East Pvt. Ltd.—which completed the project's environmental impact assessment study in November 2018—the Barauni capacity expansion will include construction of the new 9 million-tpy AVU to replace the refinery's three existing AVUs, which will be idled. The expansion project also will involve revamps and upgrades to increase capacity of current units at the refinery, including: expanding the refinery's existing 210,000-tpy naphtha hydrotreating (NHD1) and catalytic reforming combined capacity to 300,000 tpy; expanding capacity of the existing 1.4 million-tpy residue fluid catalytic cracking unit to 1.7 million tpy; expanding capacity of the existing 500,000-tpy Coker B to 662,000 tpy. The project also entails installation of major grassroots units, including: two new sulfur recovery units, each with a capacity of 80 tonnes/day; a new 304,000-tpy isomerization unit; a new 360,000-tpy NHD1 unit designed to treat naphtha feed moving specifically to the isomerization unit; a new 1.2 million-tpy diesel hydrotreating unit; a new 61,000-tpy hydrogen generation unit; a new 1 million-tpy once-through hydrocracking unit; a new 562,000-tpy propylene recovery unit; a new 200,000-tpy polypropylene (PP) unit; a new 390,000-tpy LPG treatment unit; a new 880,000-tpy naphtha splitting unit; a new 500-tonnes/hr amine recovery unit; a new 220-tonnes/hr sour water stripping unit; a new 6,178-kg/hr flue gas amine treating unit. Designed to help meet growing domestic demand for petroleum products in India, the Barauni crude processing capacity expansion is currently scheduled for commissioning by April 2023.
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Propylene recovery unit	704	Under constr.	2020	Engineers India Ltd.--EPC	New unit
	HPCL Rajasthan Refinery Ltd.	Barmer, Rajasthan	Refinery	181,000	Under constr.	2022	Engineers India Ltd.--EPC; McDermott--TL, Eng.	McDermott will deliver license and basic engineering design of two 420,000-tonne/year polypropylene units that will use Lummus' proprietary Novolen process reactors and proprietary NHP catalyst to produce a full range of polypropylene products for the Indian and regional markets, the service provider said.
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Sulfur recovery unit (1)	2,639	Under constr.	2020	Engineers India Ltd.--EPC	New unit
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Hydrogen generation unit (2)	2,269	Under constr.	2020	Engineers India Ltd.--EPC; TechnipFMC--TL/EPCC/PM	New unit
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Hydroprocessing sour water stripper	32,545	Under constr.	2020	Engineers India Ltd.--EPC	New unit
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Slurry hydrocracker	50,205	Under constr.	2020	Engineers India Ltd.--EPC	New unit
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Continuous catalytic reformer	20,890	Under constr.	2020	Engineers India Ltd.--EPC	35% expansion to 1.04 million tpy.
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Sulfur recovery unit (2)	2,639	Under constr.	2020	Engineers India Ltd.--EPC	New unit
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Crude distillation unit	180,740	Under constr.	2020	L&T Hydrocarbon Engineering Ltd.--EPCC	New unit
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Hydrogen generation unit (1)	2,269	Under constr.	2020	Engineers India Ltd.--EPC; TechnipFMC--TL/EPCC/PM	New unit
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Nonhydroprocessing sour water stripper	52,776	Under constr.	2020	Engineers India Ltd.--EPC	New unit
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Gasoline hydrotreater	52,776	Under constr.	2020	Engineers India Ltd.--EPC	30% expansion to 1.5 million tpy.
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Effluent treatment plant	150,955	Under constr.	2020	Engineers India Ltd.--EPC; Larsen & Toubro--EPC	New unit
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Sulfur recovery LPG treating unit	2,249	Under constr.	2020	Engineers India Ltd.--EPC	New unit
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Diesel hydrotreater	57,430	Under constr.	2020	Engineers India Ltd.--EPC	30% expansion to 2.86 million tpy.
	Indian Oil Corp. Ltd.	Koyali, Vadadora, Gujarat	Refinery expansion	86,353	Engineering	2021	Amec Foster Wheeler--E/TL	McDermott International Inc. to provide proprietary technology and catalyst for new units.
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Solvent deasphalting unit	62,255	Under constr.	2020	Engineers India Ltd.--EPC; KBR--TL	New unit. As part of a November 2019 contract, KBR will license its residual oil solvent extraction (ROSE) SDA technology, which will be integrated with the LC-MAX technology ebullated-bed residue upgrading process from Chevron Lummus Global (CLG).
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	FCC naphtha hydrotreater	30,125	Under constr.	2020	Engineers India Ltd.--EPC	Upgrade to enable BS V, BS VI-quality fuels.

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	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Amine regeneration unit (2)	94,997	Under constr.	2020	Engineers India Ltd.--EPC	New unit
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Vacuum gas oil hydrocracker	66,271	Under constr.	2020	L&T Hydrocarbon Engineering Ltd.--EPC; Chevron Lummus--TL	New unit; LC-MAX, ISOTREATING technologies.
	Hindustan Petroleum Corp. Ltd.	Vishakhapatnam, Andhra Pradesh	Naphtha isomerization unit	5,864	Under constr.	2020	Engineers India Ltd.--EPC; Honeywell UOP--TL/E/D	New unit
INDONESIA	PT Pertamina (Persero)	Balikpapan	Sulfrex LPG SRU		Under constr.	2021	Axens--TL; Hyundai Engineering Co. Ltd.--EPC	
	PT Pertamina Rosneft Pengolahan dan Petrokimia (PJSC Rosneft-Pertamina)	Tuban, East Java	Refinery	300,000	Engineering	2024	Tecnicas Reunidas SA	The proposed refinery will have a crude processing capacity of 300,000 b/d and include a petrochemical complex equipped to produce more than 1 million tonnes/year of ethylene and 1.3 million tpy of aromatic hydrocarbons.
	PT Pertamina (Persero)	Bontang, East Kalimantan	Refinery	300,000	Planning	2025		To be integrated with some type of still--yet-to-be-identified petrochemical operation.
	PT Pertamina (Persero)	Cilacap	Hydrotreating	36,000	Engineering	2023	Axens--TL	
	PT Pertamina (Persero)	Balikpapan	Refinery expansion	100,000	Under constr.	2021	Hyundai Engineering Co. Ltd.--EPC	
	PT Pertamina (Persero)	Balikpapan	Hydrotreating	80,000	Under constr.	2021	Axens--TL; Hyundai Engineering Co. Ltd.--EPC	
	PT Pertamina (Persero)	Balikpapan	Continuous catalytic reforming	33,000	Under constr.	2021	Honeywell UOP--TL/E/D; Hyundai Engineering Co. Ltd.--EPC	
	PT Pertamina (Persero)	Balikpapan	RFCC	90,000	Under constr.	2021	Axens--TL; Hyundai Engineering Co. Ltd.--EPC	In January 2020, Pertamina entered a principle agreement with Mubadala Investment Co. of the United Arab Emirates to further evaluate investment cooperation opportunities in the processing sector, including a potential joint investment to accelerate development of Pertamina's previously announced \$3.9-billion Balikpapan Refining Development Master Plan (RDMP) project to upgrade and modernize its 260,000-b/sd Balikpapan refinery. Pertamina estimates the total investment needed for Balikpapan RDMP is about \$5.5 billion. Alongside expanding the refinery's crude processing capacity by 100,000 b/sd to 360,000 b/sd, the proposed Balikpapan RDMP also will include construction of units that will equip the refinery to produce fuels meeting Euro 5-quality standards. The Balikpapan RDMP project comes as part of the Pertamina's broader 10-year, \$30-billion plan to revitalize and expand operational capability of its Indonesian refineries by doubling existing overall processing capacity to 2 million b/d by 2026 to meet the country's growing demand for cleaner petroleum-derived products and reduce its dependence on foreign imports. Due to be completed in 2021, Balikpapan's RDMP Phase 1—which is to increase the refinery's crude processing capacity to 360,000 b/sd from 260,000 b/sd as well as enable production of fuels that conform to Euro 5-quality specifications—is to be followed by RDMP Phase 2, which will further expand Euro 5 fuel production.
	PT Pertamina (Persero)	Balikpapan	Unionfining hydrotreater	13,000	Under constr.	2021	Honeywell UOP--TL/E/D; Hyundai Engineering Co. Ltd.--EPC	
IRAQ	Iraqi Ministry of Oil	Karbala	Refinery	140000	Under constr.	2020	Hyundai Engineering & Construction	
IVORY COAST	Societe Ivoirienne de Raffinage (SIR)	Abidjan	Refinery modernization		Planning			Proposed modernization of the refinery; SIR has secured a €577-million debt financing to enable the project.
JAMAICA	Petrojam Ltd.	Kingston	Vacuum distillation unit		Engineering	2020	Sinohydro Corp. Ltd.--EPC	
	Petrojam Ltd.	Kingston	Tail gas treating		Engineering	2020	Sinohydro Corp. Ltd.--EPC	
	Petrojam Ltd.	Kingston	Wastewater treatment		Engineering	2020	Sinohydro Corp. Ltd.--EPC	
	Petrojam Ltd.	Kingston	Distillate hydrotreater		Engineering	2020	Sinohydro Corp. Ltd.--EPC	
	Petrojam Ltd.	Kingston	Sour water stripper		Engineering	2020	Sinohydro Corp. Ltd.--EPC	
	Petrojam Ltd.	Kingston	Delayed coker		Engineering	2020	Sinohydro Corp. Ltd.--EPC	
	Petrojam Ltd.	Kingston	Continuous catalytic reformer		Engineering	2020	Sinohydro Corp. Ltd.--EPC	
	Petrojam Ltd.	Kingston	Naphtha hydrotreater		Engineering	2020	Sinohydro Corp. Ltd.--EPC	
	Petrojam Ltd.	Kingston	Sulfur recovery unit		Engineering	2020	Sinohydro Corp. Ltd.--EPC	
	Petrojam Ltd.	Kingston	Amine treatment		Engineering	2020	Sinohydro Corp. Ltd.--EPC	
	Petrojam Ltd.	Kingston	Refinery expansion	14,000	Engineering	2020	Sinohydro Corp. Ltd.--EPC	
JORDAN	Jordan Petroleum Refinery Co.	Zarqa	CCR Platforming unit		Engineering		Honeywell UOP LLC--TL/FEED/E/D/Eq.	Preliminary engineering to be completed early 2018.
	Jordan Petroleum Refinery Co.	Zarqa	Hydrotreater		Engineering		Honeywell UOP LLC--TL/FEED/E/D/Eq.	Preliminary engineering to be completed early 2018.
	Jordan Petroleum Refinery Co.	Zarqa	Penex unit		Engineering		Honeywell UOP LLC--TL/FEED/E/D/Eq.	Preliminary engineering to be completed early 2018.

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	Jordan Petroleum Refinery Co.	Zarqa	Selectfining unit		Engineering		Honeywell UOP LLC--TL/FEED/E/D/Eq.	Preliminary engineering to be completed early 2018.
	Jordan Petroleum Refinery Co.	Zarqa	Merox unit		Engineering		Honeywell UOP LLC--TL/FEED/E/D/Eq.	Preliminary engineering to be completed early 2018.
	Jordan Petroleum Refinery Co.	Zarqa	Polybed PSA unit		Engineering		Honeywell UOP LLC--TL/FEED/E/D/Eq.	Preliminary engineering to be completed early 2018.
	Jordan Petroleum Refinery Co.	Zarqa	Residue hydro-processing unit		Engineering		KBR Inc.--E/D	Preliminary engineering to be completed early 2018.
	Jordan Petroleum Refinery Co.	Zarqa	MinAlk unit		Engineering		Honeywell UOP LLC--TL/FEED/E/D/Eq.	Preliminary engineering to be completed early 2018.
	Jordan Petroleum Refinery Co.	Zarqa	Unicracking unit		Engineering		Honeywell UOP LLC--TL/FEED/E/D/Eq.	Preliminary engineering to be completed early 2018.
	Jordan Petroleum Refinery Co.	Zarqa	Refinery expansion	20,000	Engineering		Honeywell UOP LLC--TL/FEED/E/D/Eq.	Preliminary engineering to be completed early 2018.
LIBERIA	Conex Petroleum Group Inc. (Conex Group JV Ltd.)	Monrovia	Refinery	10,000	Under const.	2020	VFuels LLC--EPC	Launched in April 2019, the modular refinery comes as part of the second-phase development of Conex's 55,000-tonnes petroleum storage terminal commissioned in 2016 at Monrovia. A factory acceptance test for the modular refinery was on schedule for March 2020, VFuels said.
MALAYSIA	Petronas	Melaka	Hydrogen generation unit		Planning		Hyundai Engineering--EPC; John Wood Group--E/Equip.; ABB Ltd.--Equip.	Steam methane reformer, Terrace Wall process technology, part of Diesel Euro-5 project.
	Hengyuan Refining Co. Bhd.	Port Dickson, Negeri Sembilan	Euro 5 gas oil project		Under constr.	2020		The \$26.61-million project involves a revamp of the refinery's existing hydrodesulfurization Unit No. 2 to help meet Malaysia's upcoming 10-ppmw Euro 5 gas oil sulfur specification—which takes effect on Sept. 1, 2020—and to reinstate the unit's capacity to 46,180 b/d.
	Hengyuan Refining Co. Bhd.	Port Dickson, Negeri Sembilan	Euro 4M-grade mogas		Under const.	2020		Targeted for completion during first-quarter 2020, the Euro 4M-grade mogas project involves installation of an integrated complex that is designed to desulfurize the full range cat-cracked gasoline produced by the refinery's long-residue catalytic cracking unit (LRCCU) to enable production of gasoline that meets the Euro 4M specification requiring sulfur content to be less than 50 ppmv.
	Hengyuan Refining Co. Bhd.	Port Dickson, Negeri Sembilan	Hydrogen Manufacturing Unit		Under constr.	2020		The \$66.4-million development comes as part of a hydrogen generation (H2Gen) project for production of cleaner fuels at the refinery by September 2020.
	Sabah Oil & Gas Development Corp. Sdn. Bhd.	Sipitang Oil & Gas Industrial Park (SOGIP), Sabah, Malaysia	Refinery	70,300	Planning			SOGDC signed a head of agreement with Petroventure Energy Sdn. Bhd. (PESB) in December 2019 for construction of a proposed petroleum oil storage and refinery in SOGIP. As part of the HOA, SOGDC and PESB will explore the possibility of building the oil storage and refinery, which would require a total investment of about \$2.3 billion. Further details regarding the proposed storage and refining complex could not be officially confirmed, but local media out of Sabah reported the refinery would have a nameplate crude processing capacity of about 70,300 b/d for production of gasoline and diesel. The storage terminal would have a capacity to house 2 million cu tonnes of oil. The entire project would take about 3-5 years to complete.
MEXICO	Pemex	Dos Bocas	Refinery	340,000	Planning	2022		
MONGOLIA	Mongol Refinery State Owned LLC (Government of Mongolia)	Altanshiree, Domogovi province	Refinery	30,100	Under constr.	2022	Engineers India Ltd.--FEED/EPC	
MOZAMBIQUE	Empresa Nacional de Hidrocarbonetos EP	TBD	Refinery		Planning			Feasibility study due.
NETHERLANDS	Gunvor Group Ltd.	Rotterdam	Refinery upgrade		Planning			
NIGERIA	Niger Delta Petroleum Resources Ltd.	Rivers State	Refinery	10,000	Engineering			Expansion
	Dangote Group	Lagos, Lekki Free Trade Zone	Refinery	650,000	Under constr.	2020	Engineers India Ltd.--EPC	
	Warri Refining & Petrochemical Co. Ltd.	Delta State	Refinery modernization		Under const.	2022		Nigerian National Petroleum Corp. rehabilitation program.
	PT Intim Perkasa Nigeria Ltd.	Akwa Ibom State	Refinery	10,000	Planning			Modular refinery.
	Kaduna Refining & Petrochemical Co. Ltd.	Kaduna State	Refinery modernization		Under const.	2022		Nigerian National Petroleum Corp. rehabilitation program.
	Port Harcourt Refining Co. Ltd.	Rivers State	Refinery modernization		Under const.	2022	Maire Technimont SPA	Nigerian National Petroleum Corp. rehabilitation program.
	Sinopec International Petroleum Service Corp. (SIPS), Peiyang Chemical Equipment Co. (PCC), and African Infrastructure Partners	Edo State	Refinery	5,500	Planning			Modular refinery.
	Waltersmith Refining & Petrochemical Ltd.	Ibige, Imo State	Refinery	5,000	Under constr.	2020	Lambert Electromec Ltd., VFuels LLC--EPC	Modular refinery. Precommissioning under way as of March 2020.

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	Nigerian National Petroleum Corp.	Western Forcados Area, Delta State	Refinery	100,000	Planning		KBR--PMC on FEED	New condensate refinery. As part of the December 2019 PMC contract for definition of FEED, KBR will act as co-consultant with NNPC subsidiary National Engineering and Technical Co. Ltd. to deliver technical consultancy services for four greenfield refineries in the ANOH and Western Forcados Areas. Scheduled to be completed over a 6-month period, KBR's specific scope of work includes providing strategic advisory consulting on elimination of condensate from Nigerian oil export streams.
	Nigerian National Petroleum Corp.	Assah North Ohaji South Area, Imo State	Refinery	100,000	Planning		KBR--PMC on FEED	New condensate refinery. As part of the December 2019 PMC contract for definition of FEED, KBR will act as co-consultant with NNPC subsidiary National Engineering and Technical Co. Ltd. to deliver technical consultancy services for four greenfield refineries in the ANOH and Western Forcados Areas. Scheduled to be completed over a 6-month period, KBR's specific scope of work includes providing strategic advisory consulting on elimination of condensate from Nigerian oil export streams.
	Eko Petrochem & Refining Co. Ltd.	Tomaro Island, Lagos	Refinery	20,000	Planning			Modular refinery.
OMAN	Duqm Refinery & Petrochemical Industries Co. LLC	Duqm	Delayed coker		Under const.		John Wood Group--FEED	FEED scheduled for completion in 2020.
	Duqm Refinery & Petrochemical Industries Co. LLC	Duqm	Refinery	230,000	Under constr.		Galfar Engineering & Contracting SAOG--Site preparation; Saipem SPA, McDermott--EPC Package 3; Petrofac International Ltd., Samsung Engineering Co. Ltd.--EPC Package 2; Tecnicas Reunidas SA, Daewoo Engineering & Construction Co. Ltd.--EPC Package 1; Amec Foster Wheeler--PM	
PAKISTAN	Pakistan Refinery Ltd.	Karachi	Refinery		Planning		Amec Foster Wheeler--D	Upgrade and expansion project.
	Falcon Oil PLC	Dera Ismail Khan, Khyber Pakhtunkhawa	Refinery	100,000	Engineering		Guandong Electrical Design Institute--EPC	
PHILIPPINES	Petron Corp.	Bataan	Unionfining unit		Engineering		Honeywell UOP--E/D/TL	Upgrading production capacity expansion project.
	Petron Corp.	Bataan	Merox unit		Engineering		Honeywell UOP--E/D/TL	Upgrading production capacity expansion project.
	Petron Corp.	Bataan	CCR Platforming unit		Engineering		Honeywell UOP--E/D/TL	Upgrading production capacity expansion project.
	Petron Corp.	Bataan	Naphtha hydrotreater		Engineering		Honeywell UOP--E/D/TL	Upgrading production capacity expansion project.
	Petron Corp.	Bataan	Condensate fractionation unit		Engineering		Honeywell UOP--E/D/TL	Upgrading production capacity expansion project.
	Petron Corp.	Bataan	Sulfolane unit		Engineering		Honeywell UOP--E/D/TL	Upgrading production capacity expansion project.
	Petron Corp.	Bataan	LPG unit		Engineering		Honeywell UOP--E/D/TL	Upgrading production capacity expansion project.
POLAND	Polski Koncern Naftowy SA (PKN Orlen)	Plock	Phenol	200,000 tpy	Planning		Honeywell UOP--TL/Eq.	As part of the February 2020 contract, UOP will deliver licensing for its proprietary Q-Max and Phenol 3G technologies to enable production of 200,000 tpy of phenol at the Plock site. Alongside technology licensing, UOP said it also will provide both a cumene unit and phenol unit with alpha methyl styrene hydrogenation, as well as basic engineering design services, key equipment, catalysts, adsorbents, and technical services for the new units.
	Polski Koncern Naftowy SA (PKN Orlen)	Plock	Visbreaking		Engineering	2022	McDermott-Shell--TL; KTI Poland SA-IDS-BUD SA--EPCC	In February 2020, PKN Orlen said the new visbreaking will be equipped with an unidentified visbreaking technology jointly licensed by Royal Dutch Shell PLC and McDermott International Inc. The operator additionally confirmed that it has awarded a 750 million-zloty contract for design, procurement, construction, installation, commissioning, and start-up services for the new unit to a consortium of KTI Poland SA and IDS-BUD SA. The operator also said it awarded additional contracts in the amount of about 200 million zloty for works related to supporting infrastructure for the project, but details of these associated contracts were not disclosed. The new visbreaking unit comes as part of the operator's plan to improve crude feedstock flexibility and efficiency by increasing the yield of high-margin products via in-depth conversion of vacuum residue from the refinery's crude distillation unit. While PKN Orlen did not reveal the specific Shell-McDermott technology to be implemented at the new unit, OGJ research based on information available from both Shell and McDermott's websites indicates the only historical, jointly licensed visbreaking technology offered by the companies was the Shell Soaker Visbreaking technology. McDermott, however, confirmed to OGJ in February 2020 that the visbreaking technology licensing partnership with Shell was terminated in March 2019. PKN Orlen said it expects the 1 billion-zloty visbreaking project—scheduled to enter commercial operation by yearend 2022—will add up to 415 million zloty to the company's annual EBITDA.

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Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/contract type	Project notes
	Polski Koncern Naftowy SA (PKN Orlen)	Plock	Hydrocracking, diesel hydrotreating		Under const.			In February 2020, PKN Orlen said projects under way at the Plock refinery included an upgrade of the refinery's hydrocracking unit that, once completed, will increase diesel oil production by 100,000 tpy, as well as a separate project to modernize a diesel hydrotreater as part of a plan to boost diesel oil production by 150,000 tpy. Both projects are scheduled to be completed in late 2020.
	PKN Orlen SA	Plock	Hydrogen		Under const.		Technip--EPC	
QATAR	Qatar Petroleum	Messaieed	Refinery	250,000	Engineering		Axens--E	\$60 million. Lump sum contract.
ROMANIA	Rompetrol Rafinare SA	Navodari	Refinery modernization		Planning	2022		In April 2020, the Kazakh-Romanian Energy Investment Fund (FIEKR) approved two new investment projects aimed at creating synergies to production processes at Rompetrol Rafinare Petromidia Navodari refinery. Scheduled to be completed in September 2022 at a cost of \$35 million, the first project will involve construction and integration of a new dewaxing plant at Petromidia to enable the refinery to expand production of wintertime diesel fuels as well as increase output of aviation jet fuel. Designed to expand polymer production at Petromidia by more than 30% to help meet regional demand for petrochemicals, the second major project—scheduled for completion in June 2021—involves an \$8-million conversion of the refinery's existing high-density polyethylene (HDPE) unit into a polypropylene (PP) plant to increase the site's current PP production of 90,000 tonnes/year to 120,000 tpy by 2022. While FIEKR will fully finance costs of the HDPE-PP unit conversion from its own resources, the fund will only cover about 30% of the new dewaxing plant, with the remaining project balance to be secured from local or international financial sources, according to KMG International.
RUSSIA	PJSC Gazprom Neft	Moscow	Amine regeneration unit		Under constr.			Euro+ CORU project.
	PAO Novatek	Ust-Luga	Hydrocracker Upgrade		Engineering	2020	Haldor Topsoe AS	Hydrocracker upgrade—which will cost an estimated 19 billion rubles—are scheduled to begin in 2019 and be completed by mid-2020.
	PJSC Lukoil	Kstovo	PSA unit		Under constr.	2021	KT-Kinetics Technology--EPC	Part of deep conversion complex.
	PJSC Lukoil	Kstovo	Hydrogen generation unit		Under constr.	2021	KT-Kinetics Technology--EPC	Part of deep conversion complex.
	PJSC Lukoil	Kstovo	Diesel fuel hydrotreater		Under constr.	2021	KT-Kinetics Technology--EPC	Part of deep conversion complex.
	PJSC Lukoil	Kstovo	Delayed coker	42,170	Under constr.	2021	McDermott--EPC	Part of deep conversion complex.
	PJSC Rosneft	Novokuibyshev, Samara Oblast	Delayed coker		Under constr.			Reconstruction.
	PJSC Gazprom Neft	Moscow	Gas fractionation unit		Under constr.			Euro+ CORU project.
	PJSC Lukoil	Kstovo	Sulfur recovery unit		Under constr.	2021	KT-Kinetics Technology--EPC	Part of deep conversion complex.
	PJSC Lukoil	Kstovo	Gas fractionation unit		Under constr.	2021	KT-Kinetics Technology--EPC	Part of deep conversion complex.
	PJSC Lukoil	Volgograd	Solvent deasphalting	1,000,000 tpy	Under const.			
	PJSC Lukoil	Kstovo	Deep conversion complex	42,173	Under constr.	2021	McDermott--EP/Eq.; Lummus--TL	
	PJSC Gazprom Neft	Moscow	Gasoline reforming unit	20,082	Under constr.			Euro+ CORU project.
	PJSC Gazprom Neft	Omsk	Delayed coker	40,164	Under constr.	2021	Maire Tecnimont--EPCM	
	PJSC Gazprom Neft	Moscow	Diesel hydrotreater	40,164	Under constr.			Euro+ CORU project.
	PJSC Gazprom Neft	Moscow	Atmospheric-distillation unit	120,493	Under constr.			Euro+ CORU project.
	PJSC Rosneft	Novokuibyshev, Samara Oblast	Hydrocracker		Under constr.			New unit.
	PJSC Rosneft	Novokuibyshev, Samara Oblast	Crude distillation unit 2		Under constr.			New unit.
	PJSC Rosneft	Novokuibyshev, Samara Oblast	Hydrotreater		Under constr.			New unit.
	PJSC Rosneft	Novokuibyshev, Samara Oblast	MDEA regeneration unit		Under constr.			New unit.
SAUDI ARABIA	Saudi Aramco Total Refinery & Petrochemicals Co. (Satorp)	Jubail	Debottlenecking		Under constr.	2020	KBR--EPC	Debottlenecking of Train 2 to increase refinery throughput capacity by 15%.
	Saudi Aramco	Riyadh	Solvent Deasphalting Unit Expansion		Engineering	2020	KBR--TL	SDA ROSE technology.
	Saudi Aramco Shell Refinery Co. (Sasref)	Jubail	Expansion		Engineering	2020	McDermott--EPCM	
	Saudi Aramco	Ras Tanura	Continuous catalytic reformer	90,000	Engineering	2021	Tecnicas Reunidas--EPC	
	Saudi Aramco	Ras Tanura	Naphtha hydrotreater	138,000	Engineering	2021	Tecnicas Reunidas--EPC	

REFINING CONT.

Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
	Saudi Aramco	Ras Tanura	Isomerization unit	65,000	Engineering	2021	Tecnicas Reunidas--EPCC	
SCOTLAND	Ineos AG	Grangemouth	Electric Power Plant		Under constr.		Fluor--EPCC	To support operations at Petroineos Refining Ltd.'s 180,700-b/d Grangemouth integrated complex.
SERBIA	Naftna Industrija Srbije JSC Novi Sad	Pancevo	FCC		Engineering		McDermott--TL/E/D	As part of the FCC modernization project launched in December 2019, McDermott's Lummus Technology will provide the license and basic engineering for its Lummus-Indian Oil Corp.'s jointly developed Indmax FCC technology to shift the yield of the existing FCC unit toward production of valuable olefins and higher-octane naphtha. McDermott's scope of work under the contract also includes delivery of license and basic engineering for a grassroots unit for production of bioethanol base ethyl tertiary butyl ether (ETBE) at the refinery based on Lummus's proprietary CDEbe technology. The CDEbe unit will convert part of the olefins from the FCC with bioethanol into ETBE, which will be used as a clean, octane-boosting, gasoline-blending component. This latest contract for Pancevo follows previous contract awards to Lummus as well as its joint venture Chevron Lummus Global for hydrocracking and delayed coking technology as part of the refinery's broader modernization and revitalization program. Now in its second phase, the ongoing modernization program at Pancevo includes the major bottom-of-the-barrel (BOTB) project, which involves the addition of a delayed coking unit that will be integrated with the refinery's FCC and hydrocracker. Previously scheduled for completion in third-quarter 2019, the BOTB project is slated for start-up by yearend 2020.
	Naftna Industrija Srbije JSC Novi Sad	Pancevo	Delayed coker	14,660	Engineering	2020	McDermott--EPCm	BOTB project.
SICILY	Isab SRL	Priolo, Syracuse province	Revamp		Engineering		Amec Foster Wheeler--E	
SOUTH AFRICA	Petro SA	Port Elizabeth	Refinery	400,000	Planning		WorleyParsons--E	
SPAIN	Compania Espanola de Petroleos SA	Gibraltar	Hydrofluoric acid alkylation unit conversion		Engineering	2020	Honeywell UOP--E/D/TL	Conversion to UOP proprietary Detal-Plus technology for production of linear alkybenzene (LAB), which will increase 50,000 tpy to 250,000 tpy.
	BP PLC (BP Oil Espana SAU)	Castellon	Vacuum distillation unit		Engineering		Amec Foster Wheeler--EPC	
	Repsol SA	La Coruna	Hydrosulfurization	17,271	Engineering		Intecsa Uhde--E; Honeywell UOP--TL	Revamp
	Repsol SA	Murcia	Hydrocracker	50,000	Planning		Axens--TL	Expansion
	Repsol SA	Cartagena	Hydrosulfurization	18,676	Engineering		Intecsa Uhde--E; Honeywell UOP--TL	Revamp
	Repsol SA	Cartagena	Refinery	100,000	Engineering		Fluor--PM	Expansion. \$4.8 billion. Final capacity: 200,000 b/d.
	Repsol SA	Tarragona	Hydrosulfurization	19,078	Engineering		Intecsa Uhde--E; Honeywell UOP--TL	Revamp
	Repsol SA	Puertollano	Hydrosulfurization	28,918	Engineering		Intecsa Uhde--E; Honeywell UOP--TL	Revamp
	Compania Espanola de Petroleos SA	Huelva	Vacuum distillation	30,500	Under constr.		Amec Foster Wheeler--EPC	
SRI LANKA	Ceylon Petroleum Corp.	Sapugaskanda	Hydrocracker		Planning			New unit.
	Ceylon Petroleum Corp.	Sapugaskanda	Refinery	50,000	Planning			Expansion.
SWEDEN	Preem AB	Lysekil	Carbon Capture Plant		Planning	2025	Aker Solutions--Feasibility	
	Preem AB	Gothenburg	Renewable fuels plant	16,000	Engineering	2024	Haldor Topsoe--TL/E/Eq.	As part of the March 2020 contract, Haldor Topsoe will license its proprietary HydroFlex renewable fuel technology as well as supply basic engineering, proprietary equipment, catalysts, and technical services for the unit to enable the refinery's production of clean, renewable diesel and jet fuel. Scheduled for startup in 2024, the new 16,000-b/d unit—which will be completely dedicated to producing renewable fuels from tall oil, tallow, and other renewable feedstocks—will produce about 1 million cu m/year of fuels and enable reduced carbon dioxide (CO2) emissions from cars and planes by 2.5 million tonnes/year. The Gothenburg renewable fuels plant comes as part of Preem's broader plan to become the world's first climate-neutral petroleum and biofuels company with net zero emissions across its entire value chain before 2045. The operator also said it plans to increase its renewable fuel production to 5 million tpy by 2030.

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Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
THAILAND	Thai Oil Public Co. Ltd.	Sriracha	Vacuum gas oil hydrocracker		Under const.	2023	Saipem,Petrofac,Samsung--EPCC	Part of Clean Fuels project. With construction started in September 2019 and scheduled to begin commercial operation in 2023, the \$4.825-million CFP involves retirement of two crude distillation units (CDU). The addition of a fourth, 220,000-b/d CDU to the existing third unit will raise the refinery's total crude capacity to 400,000 b/d.
	Thai Oil Public Co. Ltd.	Sriracha	Residue hydrocracker		Under const.	2023	Saipem,Petrofac,Samsung--EPCC	Part of Clean Fuels project. With construction started in September 2019 and scheduled to begin commercial operation in 2023, the \$4.825-million CFP involves retirement of two crude distillation units (CDU). The addition of a fourth, 220,000-b/d CDU to the existing third unit will raise the refinery's total crude capacity to 400,000 b/d.
	Thai Oil Public Co. Ltd.	Sriracha	Sulfur recovery unit		Under const.	2023	Saipem,Petrofac,Samsung--EPCC	Part of Clean Fuels project. With construction started in September 2019 and scheduled to begin commercial operation in 2023, the \$4.825-million CFP involves retirement of two crude distillation units (CDU). The addition of a fourth, 220,000-b/d CDU to the existing third unit will raise the refinery's total crude capacity to 400,000 b/d.
	Thai Oil Public Co. Ltd.	Sriracha	Hydrogen generation unit		Under const.	2023	Saipem,Petrofac,Samsung--EPCC	Part of Clean Fuels project. With construction started in September 2019 and scheduled to begin commercial operation in 2023, the \$4.825-million CFP involves retirement of two crude distillation units (CDU). The addition of a fourth, 220,000-b/d CDU to the existing third unit will raise the refinery's total crude capacity to 400,000 b/d.
	Thai Oil Public Co. Ltd.	Sriracha	Electric power plant		Under const.	2023	Saipem,Petrofac,Samsung--EPCC	Part of Clean Fuels project. With construction started in September 2019 and scheduled to begin commercial operation in 2023, the \$4.825-million CFP involves retirement of two crude distillation units (CDU). The addition of a fourth, 220,000-b/d CDU to the existing third unit will raise the refinery's total crude capacity to 400,000 b/d.
	Thai Oil Public Co. Ltd.	Sriracha	Naphtha hydrotreater		Under const.	2023	Saipem,Petrofac,Samsung--EPCC	Part of Clean Fuels project. With construction started in September 2019 and scheduled to begin commercial operation in 2023, the \$4.825-million CFP involves retirement of two crude distillation units (CDU). The addition of a fourth, 220,000-b/d CDU to the existing third unit will raise the refinery's total crude capacity to 400,000 b/d.
	Thai Oil Public Co. Ltd.	Sriracha	Diesel hydrodesulfurization unit		Under const.	2023	Saipem,Petrofac,Samsung--EPCC	Part of Clean Fuels project. With construction started in September 2019 and scheduled to begin commercial operation in 2023, the \$4.825-million CFP involves retirement of two crude distillation units (CDU). The addition of a fourth, 220,000-b/d CDU to the existing third unit will raise the refinery's total crude capacity to 400,000 b/d.
	Thai Oil Public Co. Ltd.	Chonburi	Refinery expansion	135,000	Engineering		Rotary Engineering Ltd.--Tank construction	Expansion and clean-fuels project.
	Thai Oil Public Co. Ltd.	Sriracha	Crude distillation unit	220,000	Under const.	2023	Saipem,Petrofac,Samsung--EPCC	Part of Clean Fuels project. With construction started in September 2019 and scheduled to begin commercial operation in 2023, the \$4.825-million CFP involves retirement of two crude distillation units (CDU). The addition of a fourth, 220,000-b/d CDU to the existing third unit will raise the refinery's total crude capacity to 400,000 b/d.
UGANDA	Albertine Graben Refinery Consortium	Kabaale, Hoima District	Refinery	60,000	Engineering	2023	Saipem SPA--FEED, EPC	\$3-4 billion grassroots project.
UNITED ARAB EMIRATES	Abu Dhabi National Oil Co.	Ruwais	Atmospheric desulfurization units (2)		Engineering	2022	Samsung Engineering,McDermott--EPC	
	Abu Dhabi National Oil Co.	Ruwais	Waste-heat recovery		Engineering	2022	Samsung Engineering--EPC	
	Abu Dhabi National Oil Co. Brooge Petroleum & Gas Investment Co. FZE (BPGIC; Brooge Energy Ltd. [formerly Brooge Holdings Ltd.])	Ruwais, Fujairah, UAE.	Crude flexibility Refinery	180,000	Engineering	2022	Samsung Engineering--EPC MUC Oil & Gas Engineering Consultancy LLC (MUC)--FEED/D/E	As part of an April 2020 contract, MUC will complete basic design for a potential 180,000-b/d refinery as well as FEED studies for the site's Phase 3 oil storage terminals, which could add up to three and a half times more storage capacity—or between 2.1-3.5 million cu m—for crude oil, fuel oil, and clean products than the projected 1.0 million-cu m storage capacity to be added following completion of the Phase 2 expansion currently under way at BPGIC's operations. FEED studies are scheduled to be completed within 3 months, after which time Brooge Energy said it expects to finalize layouts and capacity of the proposed refinery.
	Abu Dhabi National Oil Co.	Ruwais	Refinery	600,000	Engineering	2025	Wood--pre-FEED	New refinery to be built for integration with existing petrochemical infrastructure in Ruwais; part of ADNOC's broader \$45-billion program to become a global downstream leader under a new combined model of strategic partnerships and investments.

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Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
	Emirates National Oil Co.	Jebel Ali, Dubai	Isomerization unit		Under constr.	2020		In April, contractor TechnipFMC said the expansion, which included the addition of new units and infrastructure on an area bigger than six football fields to increase the refinery's processing capacity to 210,000 b/sd from 140,000 b/sd, had completed final testing.
	Emirates National Oil Co.	Jebel Ali, Dubai	Diesel hydrotreater		Under constr.	2020		In April, contractor TechnipFMC said the expansion, which included the addition of new units and infrastructure on an area bigger than six football fields to increase the refinery's processing capacity to 210,000 b/sd from 140,000 b/sd, had completed final testing.
	Emirates National Oil Co.	Jebel Ali, Dubai	LPG-naphtha hydrotreater		Under constr.	2020	Amec Foster Wheeler--E/Constr.; Axens--TL	In April, contractor TechnipFMC said the expansion, which included the addition of new units and infrastructure on an area bigger than six football fields to increase the refinery's processing capacity to 210,000 b/sd from 140,000 b/sd, had completed final testing.
	Emirates National Oil Co.	Jebel Ali, Dubai	Kerosine hydrotreater		Under constr.	2020		In April, contractor TechnipFMC said the expansion, which included the addition of new units and infrastructure on an area bigger than six football fields to increase the refinery's processing capacity to 210,000 b/sd from 140,000 b/sd, had completed final testing.
	Emirates National Oil Co.	Jebel Ali, Dubai	Condensate processing train	70,000	Under constr.	2020	Technip--EPC	New train. In April, contractor TechnipFMC said the expansion, which included the addition of new units and infrastructure on an area bigger than six football fields to increase the refinery's processing capacity to 210,000 b/sd from 140,000 b/sd, had completed final testing.
UNITED KINGDOM	Esso Petroleum Co. Ltd. (EPCCL; ExxonMobil Corp.)	Fawley	Hydrotreating		Planning	2021	Fluor--FEED; EPC	Following a November 2019 contract award, Fluor's scope of work on the Fawley Strategy (FAST) project includes design and construction of a new diesel hydrotreater and steam methane-reforming hydrogen plant as well as modifications to unidentified existing installations at the Fawley site. The more than \$1-billion expansion project, which intends to help reduce the need to import diesel into the UK by adding a hydrotreating unit to remove sulfur from fuel, supported by a hydrogen plant that, combined, will also help improve the refinery's overall energy efficiency and increase ULSD production at the site by 38,000 b/d. Pending regulatory approval, the FAST project is targeted for start-up in 2021.
UNITED STATES	CVR Refining LP	Wynnewood, Okla.	Hydrofluoric acid (HF) alkalation unit revamp		Planning		KBR Inc. engr	To be based on KBR's Solid Acid Alkylation Technology (K-SAAT) as part of a revamp of the existing HF alkylation unit.
	Meridian Energy Group Inc.	Winkler County, Tex.	Refinery	60,000	Engineering		Winkler Cos. LLC--Site control	Proposed grassroots refinery based on Meridian Energy's Davis refinery under construction in Billings County, ND.
	Phillips 66	Old Ocean, Tex.	Hydrogen		Engineering	2021	Linde PLC	To support P66's 256,000-b/d Sweeny refinery in Old Ocean, Tex.
	Freeport Commodities LLC-Rigby Refining LLC	US Gulf Coast	Refinery	10,000	Planning	2021		Freeport and Rigby Refining signed definitive contracts to form a joint venture to develop processing plants around the world to help meet the growing demand for International Marine Organization (IMO) 2020-compliant marine fuel. The JV's first project will be the design and construction of a 10,000-b/d fuel oil processing plant in the USGC. The facility would be equipped with Rigby's proprietary process to remove sulfur from fuel oil and produce low-sulfur, IMO 2020-compliant marine fuel.
	HollyFrontier Corp.	Woods Cross refinery, West Bountiful, Utah	Clean fuels project		Planning			In April 2020, HollyFrontier said subsidiary HollyFrontier Woods Cross Refining LLC's 45,000-b/sd Woods Cross refinery is making "a major investment" to begin producing low-sulfur fuels that comply with US Environmental Protection Agency (EPA) Tier 3 emissions control requirements for motor fuels and vehicles. The operator disclosed no further details directly regarding the proposed project or the value of its proposed "major" investment.
	HollyFrontier Corp.	Navajo refinery, Artesia, NM	Renewable diesel unit (RDU)	125 million gal/year (9,000 b/d)	Engineering	2022	KP Engineering LP--EPCM; Haldor Topsoe--TL	As part of the March 2020 contract with HollyFrontier subsidiary Artesia Renewable Diesel Co. LLC (ARDC), KPE will deliver EPCM for the on-site portion of the proposed RDU. ARDC previously awarded a contract to Haldor Topsoe AS to license its proprietary HydroFlex technology, as well as supply basic engineering, proprietary equipment, catalysts, and technical services, for the new RDU, which comes as part of HollyFrontier's expansion into renewable fuels. Implementation of HydroFlex technology for the unit will enable the refinery to process soybean oil and other renewable feedstocks into renewable diesel to help meet demand for low-carbon fuels while covering the cost of the operator's annual EPA-regulated RIN purchase obligation under current market conditions. HollyFrontier said it expects a total capital cost of \$350 million for the RDU project, which will include corresponding rail infrastructure and storage tanks. The RDU is scheduled to be completed during first-quarter 2022.

REFINING CONT.

Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
	Valero Energy Corp.	Norco, La.	Alkylation unit	17,000	Under constr.	2020	McDermott--TL/Eq.	In April 2020, Valero warned planned projects could be delayed as a result of changing market conditions due to the COVID-19 health crisis.
	Valero Energy Corp.	Port Arthur, Tex.	Coker Unit; Sulfur Recovery Unit	55,000	Under constr.	2022		In April 2020, Valero warned planned projects could be delayed as a result of changing market conditions due to the COVID-19 health crisis.
	Marathon Petroleum Corp. (MPC)	Dickinson, ND	Renewable diesel refinery (refinery conversion)	12,000	Engineering	2020	WorleyParsons--E/P/Eq.	Under the December 2019 contract, WorleyParsons will provide detailed engineering services for conversion of Marathon's 19,000-b/d refinery in Dickinson, ND, into a renewable diesel refinery. Worley will deliver engineering services as well as procure equipment and materials for the project. MPC plans to convert the existing Dickinson refinery into a 12,000-b/d, 100% renewable diesel refinery that will process refined soy oil and other organically derived feedstock by yearend 2020.
	MMEX Resources Corp. Husky Energy Inc.	Pecos County, Tex. Superior, Wis.	Refinery Refinery rebuild	10,000	Planning Under const.	2020 2022	Blanchard Industrial--EPC; VFuels LLC--E/D	VFuels contract awarded in March 2020. Husky Energy Inc. has received required permit approvals to begin reconstruction of its 47,500-b/c/d refinery in Superior, Wis., after a fire that broke out at the site on Apr. 26, 2018. Key features of the rebuild and modernization project will include: <ul style="list-style-type: none"> • Implementation of best available control technology (BACT) incorporating advances in technology and efficiencies from across the refining industry. • Increased energy efficiency, in full compliance with federal, state, and local regulations. • Configuration for the refinery to run in a continuous mode averaging 45,000 b/sd, which includes a 5,000-b/d average increase in heavy oil processing to 25,000 b/sd. • Work to equip the refinery to produce a full slate of products, including asphalt, gasoline, and diesel, enhancing Husky's ability to service the US Midwest. In April 2020, Husky said it has suspended the refinery rebuild due to safety and public health risks inherent in mobilizing and maintaining a large construction workforce during the COVID-19 pandemic. The refinery had been scheduled to return to full operations in 2021.
	ExxonMobil Corp.	Beaumont, Tex.	Refinery expansion (crude distillation)	250,000	Under constr.	2022	TechnipFMC--EPC; KBR--EPC (offsites and interconnections)	Expansion project to add a third crude unit within the refinery's existing footprint; will also include a new atmospheric pipe still, kerosine hydrotreater, diesel hydrotreater, and benzene recovery unit.
	Meridian Energy Group Inc.	Billings County, ND	Refinery	49,500	Under constr.	2020	Vepica--E/D; McDermott--FEED	
	Chevron Corp.	Salt Lake City, Utah	Alkylation unit	4,500	Under constr.	2020	Worley Parsons--EPCm; Honeywell UOP--TL	Hydrofluoric acid-to-ISOALKYL unit conversion.
	Limetree Bay Ventures LLC	St. Croix, US Virgin Islands	Refinery restart	200,000	Under const.	2020		Restart of portion of former Hovensa refinery by yearend 2019.
	Marathon Petroleum Corp. (MPC)	Detroit, Mich.	FCC-alkylation project		Planning			Emissions-compliance works.
	Marathon Petroleum Corp. (MPC)	Texas City, Tex.	South Texas Asset Repositioning program		Under constr.	2021	Fluor Corp.--EP	
	Marathon Petroleum Corp. (MPC)	Galveston Bay, Tex.	South Texas Asset Repositioning program		Under constr.	2021	Fluor Corp.--EP	Emissions-compliance works.
UZBEKISTAN	Jizzakh Petroleum JV LLC	Jizzakh	Merox unit		Engineering	2021	Honeywell UOP--E/D/TL	
	Jizzakh Petroleum JV LLC	Jizzakh	CCR Platforming unit		Engineering	2021	Honeywell UOP--E/D/TL	
	Jizzakh Petroleum JV LLC	Jizzakh	Distillate Unionfining unit		Engineering	2021	Honeywell UOP--E/D/TL	
	Jizzakh Petroleum JV LLC	Jizzakh	Par-Isom unit		Engineering	2021	Honeywell UOP--E/D/TL	
	Jizzakh Petroleum JV LLC	Jizzakh	Unicracking unit		Engineering	2021	Honeywell UOP--E/D/TL	
	Jizzakh Petroleum JV LLC	Jizzakh	Refinery	100,411	Under constr.	2021	Amec Foster Wheeler,Hyundai Engineering,Enter Engineering--EPC	
VIETNAM	PetroVietnam	Dung Quat	Hydrogen unit		Engineering	2021		New unit as part of expansion.
	PetroVietnam	Dung Quat	Alkylation unit		Engineering	2021		New unit as part of expansion.
	PetroVietnam	Dung Quat	Diesel hydrotreater		Engineering	2021		New unit as part of expansion.
	PetroVietnam	Dung Quat	Sulfur removal unit		Engineering	2021		New unit as part of expansion.
	PetroVietnam	Dung Quat	Gasoline hydrotreater		Engineering	2021		New unit as part of expansion.
	PetroVietnam	Dung Quat	Naphtha hydrotreater		Engineering	2021		New unit as part of expansion.
	PetroVietnam	Dung Quat	Solvent deasphalting unit		Engineering	2021		New unit as part of expansion.
	PetroVietnam	Dung Quat	Refinery expansion	40,164	Engineering	2021	Amec Foster Wheeler--FEED	Expansion

PETROCHEMICALS

Added capacity listed in tonnes per year (tpy) unless otherwise specified.

Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
ALGERIA	Sonatrach	Skikda	Benzene linear alkyl	100,000	Planning		Engineers India Ltd.--Feasibility study/PMC	
	Sonatrach	Skikda	Polypropylene	600,000	Planning		Engineers India Ltd.--Feasibility study/PMC	
	Sonatrach	Skikda	Methanol	1,000,000	Planning		Engineers India Ltd.--Feasibility study/PMC	
	Sonatrach	Arzew	Ethylene	1,100,000	Engineering		Total SA--Constr.	
	Sonatrach	Skikda	Ethylene	1,000,000	Planning		Engineers India Ltd.--Feasibility study/PMC	
	Sonatrach	Arzew	Methyl tertiary butyl ether	200,000	Planning		Amec Foster Wheeler--E	
	Sonatrach Total Enterprise Polymers	Arzew	Polypropylene	565,000	Planning		Honeywell UOP--TL/E/D/Eq.	Sonatrach 51%--Total SA 49% joint venture; FEED scheduled to begin in November 2018.
AUSTRALIA	Coogee Chemicals Pty. Ltd.	Darwin, Northern Territory	Methanol	350,000	Planning	2024		The methanol project would be built close to Inpex's Ichthys LNG plant at Middle Arm on Darwin Harbor. A final investment decision for the Darwin project is expected in early 2021 which would enable the plant to be brought on stream in 2024.
AZERBAIJAN	SOCAR GPC	Garadagh	Polyethylene	600,000	Engineering	2022	Univation Technologies--D/TL	
	SOCAR GPC	Garadagh	Propylene	120,000	Engineering	2022	Technip--D/TL	
	SOCAR GPC	Garadagh	Ethylene	610,000	Engineering	2022	Technip--D/TL	
BELGIUM	Borealis AG	Kallo	Propylene	740,000	Engineering	2021	Honeywell UOP--E/TL	
	Ineos AG	Antwerp	Propylene	750,000	Engineering	2023	McDermott--TL/D	CATOFIN dehydrogenation process technology.
	Ineos AG	Antwerp	Ethylene		Planning	2023		
	BASF Antwerpen NV	Verbund, Antwerp	Ethylene oxide	400,000	Engineering	2022		At a total investment amounting to more than €500 million, the expansion will add a second large EO plant at the site to increase production capacity by about 400,000 tonnes/year, as well as involve additional investments in various installations for EO derivatives, including nonionic surfactants, glycol ethers for automotive applications, and other alkoxylates.
	Borealis AG	Kallo, Belgium	Propane Dehydrogenation (PDH) plant	750,000	Engineering		Maire Tecnimont SPA--EPCM	
CANADA	West Coast Olefins Ltd.	Prince George, BC	Ethylene	1,000,000	Planning	2023		WCOL has now secured a 300-acre site in the BCR Industrial Area of Prince George in preparation for construction of the proposed petrochemical project, which would include both an ethylene and polyethylene (PE) plant for manufacturing of PE product for export to growing markets in Asia Pacific. The overall project also would include an NGL recovery plant to recover ethane, propane, butane, and natural gas condensate from Enbridge Inc.'s Westcoast Pipeline; a polyethylene plant to consume most of the ethylene produced; associated off-site facilities and infrastructure; and a possible monoethylene glycol plant on site to utilize the balance of produced ethylene.
	Canada Kuwait Petrochemical Corp.	Sturgeon County, Alta.	Propane Dehydrogenation (PDH)-Polypropylene (PP)	550,000	Engineering	2023	Honeywell UOP LLC--TL/Eq.; Heartland Canada Partners (HCP, Fluor Canada-Kiewit Construction Services JV)--EPC	As part of the January 2020 contract award, HCP will deliver EPC services for construction of the complex's PDH unit for the estimated overall \$4.5-billion PDH-PP complex. Pembina said CKPC now expects the PDH-PP complex to enter commercial service during second-half 2023. Once completed, the proposed complex will consume 23,000 b/d of Alberta-produced propane sourced from Pembina's Redwater fractionation complex as well as other regional facilities.

PETROCHEMICALS CONT.

Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
	Dow Chemical Canada ULC	Fort Saskatchewan, Alta.	Ethylene	130,000	Under constr.	2021		Known as the FS1 project, the ethylene expansion will involve increasing capacity of the ethylene plant by about 130,000 tpy with the addition of another furnace. Dow told investors in its latest earnings presentation for fourth-quarter 2019. Scheduled for startup during first-half 2021, additional ethylene produced by the \$200-225-million expansion will be consumed by existing polyethylene assets in the region. Dow said it will co-invest in the expansion with an unidentified regional customer, evenly sharing project costs and ethylene output. With all regulatory approvals previously secured from Alberta's Ministry of Environment and Parks, construction on the FS1 project—which, in addition to the new furnace, also will involve installation of unidentified associated equipment—is already under way. While Dow does not disclose production capacities of specific plants per company policy, Dow Canada's Fort Saskatchewan manufacturing site produces more than 1.4 million tpy of products, including ethylene and polyethylene, according to a 2018 regional company overview from Alberta's Industrial Heartland Association.
	Inter Pipeline Ltd.	Strathcona County, Alta.	Polypropylene	525,000	Engineering	2021	W.R. Grace & Co.--TL/Catalyst	
CHINA	ExxonMobil Corp.	Huizhou Dayawan Petrochemical Industrial Park, Guangdong Province	Ethylene	1,200,000	Planning	2023		
	ExxonMobil Corp.	Huizhou Dayawan Petrochemical Industrial Park, Guangdong Province	Polyethylene		Planning	2023		Polyethylene Line 2.
	ExxonMobil Corp.	Huizhou Dayawan Petrochemical Industrial Park, Guangdong Province	Polypropylene		Planning	2023		Polypropylene Line 2.
	Hubei Sanning Chemical Industry Co. Ltd.	Xhijiang, Hubei Province	Polybed pressure-swing adsorption unit	165,000 cu m/hr	Planning		Honeywell UOP--TL	
	ExxonMobil Corp.	Huizhou Dayawan Petrochemical Industrial Park, Guangdong Province	Polypropylene		Planning	2023		Polypropylene Line 1.
	ExxonMobil Corp.	Huizhou Dayawan Petrochemical Industrial Park, Guangdong Province	Polyethylene		Planning	2023		Polyethylene Line 1.
	Dongguan Grand Resource Science & Technology Co. Ltd.	Dongguan City, Guangdong Province	Propylene	600,000	Under constr.		McDermott--E/D/TL	Part of phased propane dehydrogenation and polypropylene project.
	CNOOC & Shell Petrochemicals Co. Ltd.	Ningbo, Huizhou, Guangdong Province	Unidentified expansion		Planning			Unidentified petrochemical manufacturing installations.
	Shandong Wonfull Petrochemical Co. Ltd.	Huantai Economic Development Zone, Shandong Province	Propylene	250,000	Engineering		Honeywell UOP--D/Equip./TL	C3 Oleflex propane dehydrogenation technology.
	Lihuayi Lijin Refining & Chemical Co. Ltd.	Dongying, Shandong Province	Olefins		Engineering		KBR--TL/Catalyst/E/D	Catalytic Olefins Technology (K-OTC) and Selective Cracking Optimum Recovery (SCORE) technologies.
	Jinneng Science & Technology Co. Ltd.	Qingdao, Shandong Province	Propylene	900,000	Engineering			
	Jiangsu Jiarui Chemical Co. Ltd.	Taixing Industrial Zone, Jiangsu Province	Propylene	450,000	Engineering		Honeywell UOP--E/D/TL	C3 Oleflex propane dehydrogenation technology.
	CNOOC Ningbo Daxie Petrochemicals Co. Ltd.	Ningbo, Guangdong Province	Polypropylene	300,000	Engineering		McDermott--TL/D	
	Lianyungang Petrochemical Co. Ltd.	Lianyungang City, Jiangsu Province	Ethylene	1,250,000	Engineering		McDermott--TL/D, Honeywell UOP LLC -T	Plant 1.
	Wanhua Chemical Group Co. Ltd.	Yantai, Shandong Province	Propane Dehydrogenation (PDH) Unit	750,000	Planning		Honeywell UOP LLC	
	Jiangsu Sailboat Petrochemical Co. Ltd.	Lianyungang City, Jiangsu Province	Propylene	700,000	Planning		Honeywell UOP--TL	
	Sinochem Quanzhou Petrochemical Co. Ltd.	Quanzhou, Fujian Province	Ethylene	1,000,000	Planning		Wood--EPCM	New ethylene unit at SQPCL's 240,000-b/d Quanzhou refinery.

PETROCHEMICALS CONT.

Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/contract type	Project notes
	Tianjin Bohua Chemical Development Co. Ltd.	Bohai Chemical Industry Park, Tianjin Port Economic Zone	Methanol-to-olefins recovery (1)	530,000	Engineering		McDermott--E/D/TL	
	Tianjin Bohua Chemical Development Co. Ltd.	Bohai Chemical Industry Park, Tianjin Port Economic Zone	Propylene oxide	200,000	Engineering		Repsol Quimica--TL	
	Tianjin Bohua Chemical Development Co. Ltd.	Bohai Chemical Industry Park, Tianjin Port Economic Zone	Styrene monomer	450,000	Engineering		Repsol Quimica--TL	
	Zhejiang Petroleum & Chemical Co. Ltd.	Zhoushan, Zhejiang Province	Ethylene	1,400,000	Under constr.		Wison Engineering (China) Ltd--EPC	Phase 1 of the complex is due for startup by December 2018, while Phase 2--which will double processing and production capabilities at the site--is scheduled for commissioning during first-quarter 2021.
	Tianjin Bohua Chemical Development Co. Ltd.	Bohai Chemical Industry Park, Tianjin Port Economic Zone	Methanol-to-olefins recovery (2)	1,800,000	Engineering		Luoyang Petrochemical Engineering-SYN Energy Technology--TL	
	Tianjin Bohua Chemical Development Co. Ltd.	Bohai Chemical Industry Park, Tianjin Port Economic Zone	Polypropylene	300,000	Engineering		McDermott--E/D/TL	
	SP Olefins (Taixing) Co. Ltd.	Taixing, Jiangsu Province	Ethylene	650,000	Engineering		Technip--D/TL	
	Tianjin Bohua Chemical Development Co. Ltd.	Bohai Chemical Industry Park, Tianjin Port Economic Zone	Ethylbenzene	530,000	Engineering		McDermott--E/D/TL	
	Lihuayi Lijin Refining & Chemical Co. Ltd.	Dongying, Shandong Province	Ethylene	1,250,000	Engineering		McDermott--TL/D	Plant 2.
	PetroChina Guangdong Petrochemical Co. Ltd. (China National Petroleum Corp.'s PetroChina Co. Ltd.)	Jieyang Nandahai Petrochemical Industrial Zone, Guangdong Province	Paraxylene	52,200 b/d	Under construction	2023	Honeywell UOP--TL	Part of a refining-chemical integration project under way at PetroChina Guangdong Petrochemical's 400,000-b/d heavy crude oil processing and petrochemical site in the Jieyang Nandahai Petrochemical Industrial Zone of China's Guangdong province.
	Datong Coal Mine Group Co. Ltd.	Datong	Polypropylene	430,000	Engineering	2022	W.R. Grace & Co.--TL	
	Fujian Meide Petrochemical Co. Ltd. (China Soft Packaging Group Co. Ltd.)	Fuzhou City, Fujian Province	Propylene	660,000	Engineering		Honeywell UOP--TL	Honeywell UOP will deliver its Honeywell Process Reliability Advisor service, which continuously feeds plant data through Honeywell UOP process and fault models with specialized software to provide key performance information and process recommendations to help the plant run more smoothly and detect problems before they can affect production and plant profitability.
	PetroChina Guangdong Petrochemical Co. Ltd. (China National Petroleum Corp.'s PetroChina Co. Ltd.)	Jieyang Nandahai Petrochemical Industrial Zone, Guangdong Province	Polypropylene	500,000	Under construction	2023	W.R. Grace & Co.--TL	Part of a refining-chemical integration project under way at PetroChina Guangdong Petrochemical's 400,000-b/d heavy crude oil processing and petrochemical site in the Jieyang Nandahai Petrochemical Industrial Zone of China's Guangdong province.
	Zibo Qixiang Tengda Chemical Co. Ltd. (Zibo Qixiang Petrochemical Industry Group Co. Ltd.)	Zibo, Shandong Province	Propylene		Engineering		Honeywell UOP--TL	Honeywell UOP will provide its proprietary C3 Oleflex technology for the grassroots polymer-grade propylene to expand production of propylene in response to growing demand for propylene derivatives. The new unit will join QXTD's existing C3-C4 Oleflex unit that converts propane and isobutane into propylene into propylene and isobutylene. Contract awarded in late-October 2019.
	Dayuewan (Zhuhai) Petrochemical Co. Ltd. (China Grain Petrochemical Group)	Gaolan Port Economic Zone, Guangdong Province	Uniflex MC slurry hydrocracking	1,400,000	Engineering		Honeywell UOP--TL/E	The Uniflex MC slurry hydrocracking unit to upgrade bottom-of-the-barrel fuel oil into light oil products that will be fed to a Uniflex cracking unit to produce naphtha for a CCR Platforming unit. The project also includes three Polybed pressure-swing adsorption (PSA) units to supply high-quality hydrogen for the Uniflex process. The PSA units are designed to generate 320,000 cu m/hr of hydrogen. When the project is completed, Dayuewan will be converting nearly all its vacuum residue to light oil products, representing one of the highest conversion rates in the world. The project also will adopt a range of unidentified advanced process technologies to recycle hydrogen and LPG. Contract awarded in November 2019.

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Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
	Formosa Chemicals Industries (Ningbo) Co. Ltd. (Formosa Chemicals & Fibre Corp.)	Ningbo, Zhejiang Province	Alpha-methylstyrene (AMS) recovery	10,000	Engineering		McDermott--TL/E	The AMS recovery unit to be equipped with AMS technology jointly licensed by McDermott's Lummus Technology and Eni SPA subsidiary Versalis SPA. Contract awarded in November 2019.
	LyondellBasell Industries NV-China Petroleum & Chemical Corp. (Sinopec)	Zhenhai, Ningbo Province	Styrene monomer (SM)	600,000	Planning	2022	LyondellBasell--TL	LyondellBasell signed a memorandum of understanding (MOU) in late-December 2019 to form a 50-50 joint venture with Sinopec to build a new PO-SM unit in Zhenhai, Ningbo, China, to satisfy rising demand in China's domestic market. If approved, construction of the new unit—which will be equipped with LyondellBasell's proprietary PO-SM production technology—would begin in early 2020 for scheduled start-up some time in 2022. This latest MOU for a proposed JV between the operators would be the second LyondellBasell-Sinopec partnership for PO-SM production in Zhenhai, where LyondellBasell 26.65% and Sinopec Zhenhai Refining & Chemical Co. Ltd. 73.35% already jointly own the existing Ningbo ZRCC Lyondell Chemical Co. Ltd. (NZLC), which produces 285,000 tpy of PO and 620,000 tpy of SM alongside SZRC's refinery. LyondellBasell has not disclosed a definitive timeframe for when the companies would take final investment decision on the project.
	LyondellBasell Industries NV-China Petroleum & Chemical Corp. (Sinopec)	Zhenhai, Ningbo Province	Propylene oxide (PO)	300,000	Planning	2022	LyondellBasell--TL	LyondellBasell signed a memorandum of understanding (MOU) in late-December 2019 to form a 50-50 joint venture with Sinopec to build a new PO-SM unit in Zhenhai, Ningbo, China, to satisfy rising demand in China's domestic market. If approved, construction of the new unit—which will be equipped with LyondellBasell's proprietary PO-SM production technology—would begin in early 2020 for scheduled start-up some time in 2022. This latest MOU for a proposed JV between the operators would be the second LyondellBasell-Sinopec partnership for PO-SM production in Zhenhai, where LyondellBasell 26.65% and Sinopec Zhenhai Refining & Chemical Co. Ltd. 73.35% already jointly own the existing Ningbo ZRCC Lyondell Chemical Co. Ltd. (NZLC), which produces 285,000 tpy of PO and 620,000 tpy of SM alongside SZRC's refinery. LyondellBasell has not disclosed a definitive timeframe for when the companies would take final investment decision on the project.
	Hainan Huasheng New Material Technology Co. Ltd.	Dongfang City, Hainan Province	Bisphenol A (BPA)	240,000	Engineering		KBR--TL/E/D	Under the December 2019 contract, KBR will license Mitsubishi Chemical Corp.'s (MCC) proprietary BPA technology, as well as deliver commissioning, start-up support, and training services for the new 240,000 tonnes/year BPA plant

PETROCHEMICALS CONT.

Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/contract type	Project notes
	LyondellBasell, Liaoning Bora Enterprise Group (Bora)	Panjin	Ethylene	1,100,000	Under construction	2020	LyondellBasell--TL	<p>LyondellBasell signed a memorandum of understanding to form a 50-50 joint venture with Liaoning Bora Enterprise Group (Bora) to operate the ethylene cracker. The facility will produce olefins and polyolefins that will be marketed by LyondellBasell. In a Nov. 13, 2019, presentation to investors, LyondellBasell said construction on the petrochemical complex—which will include the flexible naphtha-LPG cracker and units equipped to produce 800,000 tpy of PE-HDPE and 600,000 tpy of PP from flexible feedstock provided by Liaoning Bora Petrochemical Co. Ltd. subsidiary Panjin North Asphalt Fuel Co. Ltd.'s adjacent 10 million-tpy refinery—was about 50% completed.</p> <p>Alongside cracking, HDPE, and PP units, the Bora LyondellBasell Petrochemical complex is also to include a butadiene unit, a 120,000-tpy methyl tertiary butyl ether (MTBE) unit, a 35,000-tpy butene-1 plant, a cracked gasoline hydrogenation plant, an aromatics extraction plant, and a styrene plant, according to a series of August 2019 releases from Management Commission of New District of Liaodong Gulf of Panjin.</p>
	Chenghong Refining & Technology Co. Ltd.	Lianyungang City in China's province of Jiangsu	Residue Hydrocracking Process Technology		Planning		Axens--TL	
EGYPT	Sidi Kerir Petrochemicals Co. (Egyptian Petrochemicals Holding Co.)	El-Amerya—El-Nahda Territory, Alexandria	Polypropylene	450,000	Under constr.	2022	W.R. Grace & Co.--TL/Catalyst	<p>SKPC will produce 450,000 tonnes/year of polypropylene production, based on the quantities of propane feedstock, at its petrochemical complex in the El-Amerya—El-Nahda Territory of Alexandria, which also produces 300,000 tpy of ethylene, 225,000 tpy of polyethylene, 50,000 tpy of LPG, and 10,000 tpy of butene-1. The polypropylene project is scheduled for start-up in first-quarter 2022. The \$180-million project will produce 36,000 tpy of polybutadiene based on a feedstock of 20,000 tpy of butadiene sourced from Ethydc's own and Sidpec's operations. The project is scheduled for startup in fourth-quarter 2021.</p>
	Egyptian Ethylene & Derivatives Co.'s (Ethydc)	Alexandria	Polybutadiene	36,000	Engineering	2021		<p>Egypt's MOMPR said in January 2020 it is evaluating a project to construct a new integrated refining and petrochemical complex at New Al-Alamein City on Egypt's northwestern coast, near Marsa Matrouh governorate. The complex would have crude and condensate processing capacity of 2.5 million tpy for production of a variety of high-quality fuels and petrochemical products to meet local demand, with any surplus exported via the Al Hamra terminal near the Mediterranean Sea. The \$8.5-billion project, if realized, would be completed by yearend 2024 and supplied by Western Desert crude.</p>
	Ministry of Petroleum & Mineral Resources (MOPMR)	New Al-Alamein City	Grassroots integrated complex		Planning	2024		<p>The US Trade and Development Agency (USTDA) awarded a feasibility study grant in December 2019 to ECHEM for what will be Egypt's first POM plant. USTDA's study will provide expert analysis as ECHEM identifies the design, capital requirements, and technical specifications necessary to develop the POM plant, which will produce a recyclable thermoplastic for industrial and consumer products. The project will also drive local economic growth and provide a domestic supply of an important engineering plastic. ECHEM will select an American firm to conduct the study for the proposed POM plant. A timeframe for the project has yet to be disclosed.</p>
	Egyptian Petrochemicals Holding Co.		Polyoxymethylene (POM)		Planning			<p>The US Trade and Development Agency (USTDA) awarded a feasibility study grant in December 2019 to ECHEM for what will be Egypt's first POM plant. USTDA's study will provide expert analysis as ECHEM identifies the design, capital requirements, and technical specifications necessary to develop the POM plant, which will produce a recyclable thermoplastic for industrial and consumer products. The project will also drive local economic growth and provide a domestic supply of an important engineering plastic. ECHEM will select an American firm to conduct the study for the proposed POM plant. A timeframe for the project has yet to be disclosed.</p>

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Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
HUNGARY	MOL Petrochemicals Co. Ltd.	Tiszaújváros	Propylene	100,000	Engineering		McDermott--Eng., TL, FEED	McDermott will deliver licensing, basic engineering design, catalyst, and FEED for the olefins conversion technology (OCT) unit that will have a production capacity of 100,000 tpy of polymer-grade propylene from steam cracker and refinery feedstocks using McDermott-Chevron Corp. joint venture Chevron Lummus Global LLC's proprietary OCT as well as a CDHydro deisobutenizer unit,
INDIA	Indian Oil Corp. Ltd.	Koyali, Vadodara, Gujarat	Polypropylene	420,000	Planning		McDermott--TL, Eng.	Additional unit at Vadodara refinery.
	Indian Oil Corp. Ltd.	Barauni, Begusarai District, Bihar	Polypropylene	200,000	Planning		McDermott--TL, Eng.	Additional unit at Barauni refinery
	HPCL-Mittal Energy Ltd.	Guru Gobind Singh refinery, Village Phullokhar, Bathinda, Punjab State	Polypropylene	500,000	Engineering			Part of the Guru Gobind Singh Polymer Additions Complex.
	HPCL-Mittal Energy Ltd.	Guru Gobind Singh refinery, Village Phullokhar, Bathinda, Punjab State	Butene-1	55,000	Engineering			Part of the Guru Gobind Singh Polymer Additions Complex.
	HPCL-Mittal Energy Ltd.	Guru Gobind Singh refinery, Village Phullokhar, Bathinda, Punjab State	HDPE unit	450,000	Engineering			Part of the Guru Gobind Singh Polymer Additions Complex.
	HPCL-Mittal Energy Ltd.	Guru Gobind Singh refinery, Village Phullokhar, Bathinda, Punjab State	LLDPE-HDPE swing unit 2	400,000	Engineering			Part of the Guru Gobind Singh Polymer Additions Complex.
	HPCL-Mittal Energy Ltd.	Guru Gobind Singh refinery, Village Phullokhar, Bathinda, Punjab State	LLDPE-HDPE swing unit 1	400,000	Engineering			Part of the Guru Gobind Singh Polymer Additions Complex.
	HPCL-Mittal Energy Ltd.	Bathinda, Punjab State	Polypropylene	500,000	Engineering		Tecnimont SPA, Technimont Private Ltd.--EPCC	
	HPCL-Mittal Energy Ltd.	Bathinda, Punjab State	Ethylene	1,200,000	Planning			
	HPCL-Mittal Energy Ltd.	Bathinda, Punjab State	Polyethylene	450,000	Engineering		Tecnimont SPA, Technimont Private Ltd.--EPCC	
	HPCL Rajasthan Refinery Ltd.	Barmer, Rajasthan	Polypropylene	840,000	Engineering	2022	McDermott--TL, Eng.	McDermott will deliver licensing and basic engineering design of two 420,000-tpy polypropylene units that will use Lummus' proprietary Novolen process reactors and proprietary NHP catalyst to produce a full range of polypropylene products at the new integrated refinery.
	Abu Dhabi National Oil Co.- Adani Group-BASF SE-Borealis AG	Mundra, Gujarat	Propylene-polypropylene		Planning	2024		The partners said they plan to finalize the joint feasibility study by the end of first-quarter 2020. The collaboration includes evaluating a joint world-scale propane dehydrogenation (PDH) plant to produce propylene based on propane feedstock to be supplied by ADNOC that will be partially used as feedstock for a polypropylene (PP) complex, owned by ADNOC and Borealis, based on proprietary Borealis Borstar technology. New mixed-feed ethylene plant expandable to 1.5 million tpy as part of the Guru Gobind Singh Polymer Additions Complex.
	HPCL-Mittal Energy Ltd.	Guru Gobind Singh refinery, Village Phullokhar, Bathinda, Punjab State	Ethylene	1,200,000	Engineering		McDermott--TL/E	
	Indian Oil Corp. Ltd.	Paradip, Odisha	Monoethylene Glycol; Ethylene Recovery	357,000; 180,000	Planning		Larsen&Toubro--EPCC; Saudi Basic Industries Corp.- Scientific Design Co.--TL; Lummus--TL	New units at the Paradip refinery.

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Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
	Bharat Petroleum Corp. Ltd.	Kochi, at Ambalamugal, Ernakulam district, Kerala State	Polyols	300,000 (propylene)	Engineering	2024	Fluor--PMC/FEED	Fluor contract awarded in January 2020. Six new process units will be built and integrated into BPCL's integrated Kochi refinery and petrochemical complex as part of this project: a propylene oxide unit, propylene glycol unit, polyols unit, ethylene oxide-monoethylene glycol unit, ethylene recovery unit, and cumene unit. Once completed, the Kochi complex will produce propylene glycol, ethylene glycol, and various grades of polyols based on a feedstock of 250,000 tonnes/year of polymer-grade propylene from the refinery. BPCL is investing 111.3 billion rupees to set up the Kochi specialty polyols petrochemical plant, which is scheduled to be completed sometime during 2023-24. The project comes as part of BPCL's program to help meet growing domestic demand for polyols and reduce India's dependence on petrochemical imports.
	Chennai Petroleum Corp. Ltd	Tamilnadu, India	Cauvery Basin Refinery delayed coking unit	50,200	Planning		Lummus--TL	
INDONESIA	PT Chandra AsriPerkasal (CAP2)	Ciwandan, Cilegon, Banten Province	Ethylene	1,100,000	Engineering		McDermott--TL/E	In July 2019, OMV AG signed a memorandum of understanding with CAP2 and Mubadala Investment Co. to explore opportunities for collaboration in Indonesia's petrochemical business, including the proposed petrochemical complex.
	PT Chandra AsriPerkasal (CAP2)	Ciwandan, Cilegon, Banten Province	Butadiene	175,000	Engineering		McDermott--TL/E	In July 2019, OMV AG signed a memorandum of understanding with CAP2 and Mubadala Investment Co. to explore opportunities for collaboration in Indonesia's petrochemical business, including the proposed petrochemical complex.
	PT Chandra AsriPerkasal (CAP2)	Ciwandan, Cilegon, Banten Province	Propylene	600,000	Engineering		McDermott--TL/E	In July 2019, OMV AG signed a memorandum of understanding with CAP2 and Mubadala Investment Co. to explore opportunities for collaboration in Indonesia's petrochemical business, including the proposed petrochemical complex.
	PT Chandra Asri Petrochemical Tbk	Ciwandan, Cilegon, Banten Province	Polyethylene	400,000	Engineering	2020	Univation Technologies LLC.--TL; Toyo Engineering Corp.--FEED	New unit; UNIPOL PE and XCAT metallocene PE process technologies.
	PT Chandra Asri Petrochemical Tbk	Ciwandan, Cilegon, Banten Province	Propylene	20,000	Engineering	2020	McDermott--TL/E/D/Eq.	Expansion; construction to begin in third-quarter 2018.
	PT Chandra Asri Petrochemical Tbk	Ciwandan, Cilegon, Banten Province	Ethylene	40,000	Engineering	2020	McDermott--TL/E/D/Eq.	Expansion; construction to begin in third-quarter 2018.
	PT Chandra Asri Petrochemical Tbk	Ciwandan, Cilegon, Banten Province	Mixed C4s	15,000	Engineering	2020	McDermott--TL/E/D/Eq.	Expansion; construction to begin in third-quarter 2018.
	PT Chandra Asri Petrochemical Tbk	Ciwandan, Cilegon, Banten Province	Pygas	20,000	Engineering	2020	McDermott--TL/E/D/Eq.	Expansion; construction to begin in third-quarter 2018.
IRAN	Kangan Petro Refining Co.	Pars Special Economic Energy Zone, Tonbak, Boushehr Province	Monoethylene glycol	500,000	Engineering		Hyundai Engineering Co. Ltd.-Hyundai Engineering & Construction Co. Ltd.--EPC	
	Kangan Petro Refining Co.	Pars Special Economic Energy Zone, Tonbak, Boushehr Province	Polyethylene	700,000	Engineering		Hyundai Engineering Co. Ltd.-Hyundai Engineering & Construction Co. Ltd.--EPC	
	Kangan Petro Refining Co.	Pars Special Economic Energy Zone, Tonbak, Boushehr Province	Ethylene	1,000,000	Engineering		Hyundai Engineering Co. Ltd.-Hyundai Engineering & Construction Co. Ltd.--EPC	
KAZAKHSTAN	Kazakhstan Petrochemical Industries Inc. LLP	Atyrau	Polypropylene	500,000	Engineering		McDermott--TL/D/PM	
KUWAIT	Petrochemical Industries Co. KSC	Al-Zour	Polypropylene	940,000	Under constr.	2022	Amec Foster Wheeler--FEED/PMC	Integration project with Al-Zour refinery.
	Petrochemical Industries Co. KSC	Al-Zour	Paraxylene	1,400,000	Under const.	2022		
	Kuwait Petroleum Corp.	Al-Zour	Propylene	330,000	Under constr.		McDermott--TL, Eng.	

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Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
MEXICO	Braskem Idesa SAPI (Braskem SA-Grupo Idesa SA de CV)	Coatzacoalcos-Nanchital Region, Veracruz	Ethylene		Planning	2021		Braskem Idesa also plans to expand ethylene capacity of the Nanchital petrochemical complex between 10-20% during 2021. Further details regarding the proposed capacity expansion, however, were not revealed. Fully commissioned in 2016, Braskem Idesa's Nanchital complex—which was initially to receive 66,000 b/d of ethane under a 20-year supply agreement with state-owned Petroleos Mexicanos to feed the complex's 1.05 million-tpy ethane cracker—also includes two high-density polyethylene plants with capacities of 400,000 tpy and 350,000 tpy, respectively, as well as a 300,000-tpy low-density polyethylene plant. By yearend 2019, the Nanchital complex had achieved a total production of 3 million tonnes of polyethylene since starting operations three and a half years earlier, Braskem said on Jan. 6, 2020.
NIGERIA	Dangote Group	Lekki Free Trade Zone, Lagos	Polypropylene		Under constr.	2021	Engineers India Ltd.--EPC	
NORWAY	Ineos AG	Rafnes	Ethylene	450,000	Planning			Part of European ethylene, propylene growth plans announced in June 2017.
OMAN	Projects Development & Management International LLC	Muscat	Chloralkali polyvinyl chloride	225,000	Engineering		SNC-Lavalin Group--EPCm	
	Oman Oil Refineries & Petroleum Industries Co.	Sohar Industrial Port Area	Ethylene	880,000	Engineering	2020	McDermott--FEED	\$40 million.
	Duqm Refinery & Petrochemical Industries Co. LLC	Duqm	Ethylene		Under constr.		John Wood Group--FEED	Wood's capital projects teams in Oman and the UK will complete FEED services on the petrochemical complex by third-quarter 2020. The project comes as part of DRPIC's long-planned 230,000-b/d refinery and petrochemical complex to be built in SEZAD and follows the operator's previous award to Wood for delivery of two of its proprietary Terrace Wall double-fired delayed coker heaters for the refining portion of the project.
PHILIPPINES	JG Summit Petrochemicals Group	Barangay Simlong, Batangas City	Propylene	50,000	Engineering	2020	Fluor Corp.--EPCm	
	JG Summit Petrochemicals Group	Barangay Simlong, Batangas City	Ethylene	160,000	Engineering	2020	Fluor Corp.--EPCm	
POLAND	PKN Orlen SA	Plock	Paraxylene	400,000	Engineering	2023	Technip--EPC; Honeywell UOP--TL	\$221.9 million.
	PKN Orlen SA	Plock	Ethylene		Engineering	2023	Honeywell UOP--TL; Fluor--PMC+	Project will increase production of ethylene and aromatics, as well as improve flexibility of gasoline production, at its 327,300-b/d Plock integrated refining and petrochemical complex. Honeywell UOP will license its proprietary MaxEne process, which separates full-range naphtha into a stream of normal paraffins ideal for steam crackers because they produce high yields of light olefins, and a second stream of isoparaffins, naphthenes, and aromatics ideal for catalytic reforming units because they produce high yields of aromatics. The project comes as part of PKN Orlen's Petrochemicals Development Programme (PDP), which aims to position the company to take full advantage of its potential in petrochemicals. The company expects investments under the PDP to add some 30% to PKN Orlen's existing capacity, while ensuring a marked improvement in Poland's overall trade balance in petrochemicals. Launched in 2018 and requiring an estimated investment of about 8.3 billion zloty, the PDP will be implemented through yearend 2023. Alongside launching a new research and development center in 2020 to generate a range of proprietary technologies, PKN Orlen also said another ongoing PDP project to build an aromatic derivatives plant is also at an advanced stage.

PETROCHEMICALS CONT.

Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/contract type	Project notes
	PKN Orlen SA	Plock	Phenol	200,000	Engineering	2023	Honeywell UOP--TL	<p>UOP will deliver licensing for its proprietary Q-Max and Phenol 3G technologies to enable phenol production. Alongside technology licensing, UOP said it also will provide both a cumene unit and phenol unit with alpha methyl styrene hydrogenation, as well as basic engineering design services, key equipment, catalysts, adsorbents, and technical services for the new units. Specifically, UOP's Q-Max process will convert benzene and propylene into high-quality cumene—the primary building block for production of phenol and its derivatives—at low benzene-to-propylene ratios using regenerable catalysts that reduce byproduct transalkylation catalyst requirements, lowering utility consumption and capital requirements for the complex's downstream fractionation equipment. The UOP 3G Phenol unit will convert cumene into high-yield, high-quality phenol, which will then be converted into plastics and other related materials, including bisphenol-A—a building block for polycarbonate plastics—and phenolic resins used to make durable laminated boards and industrial adhesives. The integrated units and technologies also will increase operating flexibility, on-stream time, reliability, and safety at the proposed Plock phenol complex. Once completed, the new units will enable PKN Orlen to extend its benzene production into phenol and acetone derivatives, positioning the operator to meet growing demand for phenol and other petrochemicals in Poland and even become a net exporter of those products. The project comes as part of PKN Orlen's Petrochemicals Development Programme (PDP), which aims to position the company to take full advantage of its potential in petrochemicals. The company expects investments under the PDP to add some 30% to PKN Orlen's existing capacity, while ensuring a marked improvement in Poland's overall trade balance in petrochemicals. Launched in 2018 and requiring an estimated investment of about 8.3 billion zloty, the PDP will be implemented through yearend 2023.</p>
QATAR	Chevron Phillips Chemical Co. LLC-Qatar Petroleum	Ras Laffan Industrial City	Polyethylene	1,680,000	Planning	2025		<p>The proposed complex will include a 1.9 million-tpy ethane cracker as well as two HDPE derivative units with a combined capacity of 1.68 million tpy. In addition to exclusive licensing of its proprietary MarTECH loop slurry process for manufacturing HDPE, CPCC will provide project management, engineering, and construction services to develop the project. As part of the development phase, the companies also will study potential efficiencies that could be realized by harnessing existing capabilities of Qatar Chemical Co. joint ventures to provide overall operational management of the completed complex. In June 2019, CPCC said it expects the project's engineering design phase to begin shortly, with planned start-up of the complex targeted for late 2025. QP will own a 70% majority share of the joint venture, while CPCC will hold the remaining 30%.</p>

PETROCHEMICALS CONT.

Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/contract type	Project notes
	Chevron Phillips Chemical Co. LLC-Qatar Petroleum	Ras Laffan Industrial City	Ethylene	1,900,000	Engineering	2025	CPCC--PM, Eng., Constr., TL	The proposed complex will include a 1.9 million-tpy ethane cracker as well as two HDPE derivative units with a combined capacity of 1.68 million tpy. In addition to exclusive licensing of its proprietary MarTECH loop slurry process for manufacturing HDPE, CPCC will provide project management, engineering, and construction services to develop the project. As part of the development phase, the companies also will study potential efficiencies that could be realized by harnessing existing capabilities of Qatar Chemical Co. joint ventures to provide overall operational management of the completed complex. In June 2019, CPCC said it expects the project's engineering design phase to begin shortly, with planned start-up of the complex targeted for late 2025. QP will own a 70% majority share of the joint venture, while CPCC will hold the remaining 30%.
RUSSIA	Irkutsk Oil Co. Ltd. (Irkustsk Polymer Plant)	Irkutsk Region of East Siberia	Ethylene; Polyethylene	650,000; 650,000	Planning	2022	Toyo Engineering Corp - Eng., Proc., TL; McDermott--TL, Eng.	
	PJSC Nizhnekamskneftekhim	Nizhnekamsk, Tatarstan	Methanol Unit	500,000	Planning		Haldor Topsoe AS - Tech	
	SIBUR	Tobolsk	Propylene	500,000	Engineering		Linde AG--FEED	
	SIBUR	Tobolsk	Polypropylene	500,000	Engineering		Linde AG--FEED	
	PJSC Kazanorgsintez	Kazan, Tatarstan	Ethylene		Engineering		Technip--E/P/TL	Modernization project.
	JSC Gazprom Neftekhim Salavat	Salavat, Bashkortostan	Ethylene		Planning		Wison Engineering Services Co. Ltd.--Prefeasibility studies	
	SIBUR	Tobolsk	Polyethylene	1,500,000	Engineering		Linde AG--FEED	
	PJSC Kazanorgsintez	Kazan, Tatarstan	Propylene		Planning		Wison Engineering Services Co. Ltd.--Prefeasibility studies	
	SIBUR	Tobolsk	Butadiene	100,000	Engineering		Linde AG--FEED	
	SIBUR	Tobolsk	Ethylene	1,500,000	Engineering		Linde AG--FEED	
	JSC Sibur-Neftekhim (PJSC Sibur Holding)	Nizhny Novgorod	Benzene		Engineering		Sulzer Chemtech Ltd.--TL, E, Eq.	Modernization of a benzene production complex at Sibur Kstovo LLC's olefins production plant near Nizhny Novgorod. Sulzer GTC will deliver licensing of its proprietary pyrolysis gasoline (pygas) processing technologies for the proposed revamp, including design of a GT-BTX extractive distillation unit as well as revamp the existing pygas fractionation, first and second-stage hydrotreating, and the thermal hydrodealkylation unit to process additional feed.
	Nakhodka Mineral Fertilizer Plant CJSC	Vladivostok	Methanol	1,800,000	Under construction	2023	Haldor Topsoe--TL; China Chengda Engineering Co. Ltd.--EPC	Due for start-up in 2023 with a planned total capacity of as much as 1.8 million tonnes/year of methanol and up to 1.8 million tpy of ammonia, the plant—which will be located near the major Russian seaport Nakhodka in the Primorsky region—aims to export products to destinations in Southeast Asia.
	GTM One (AEON Infrastructure Corp.)	Khimprom, Volgograd	Methanol	3,000 tonne/day	FEED	2020	Haldor Topsoe--TL; Mitsubishi Heavy Industries Engineering--FEED	
	Gaz Sintez LLC	Vlyotsk, Leningrad Region	Methanol	1,600,000	Engineering	2023	Haldor Topsoe--TL; Hyundai Engineering--FEED; JSC NIIK--D	As part of its January 2020 contract award, Haldor Topsoe is licensing its proprietary SynCOR methanol technology for the proposed methanol plant. In April 2019, Hyundai Engineering said FEED activities would take 13 months to complete.
	PJSC Nizhnekamskneftekhim	Nizhnekamsk, Tatarstan	Ethylene	600,000	Engineering	2022	Linde AG--TL/D/P/E consulting	Expansion to double existing capacity; will include additional 600,000 tpy of other chemicals; further planned expansions to boost overall ethylene capacity to 1.8 million tpy by 2025.

PETROCHEMICALS CONT.

Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
	JSC Sayanskkhimplast	Sayano-Irkutsk development support area, Irkutsk Region, East Siberia	Gas chemical complex		Planning		Gazprom Proyektirovaniye--Pfeasibility	In January 2020, Gazprom Proyektirovaniye (Gazprom Design) said it completed a prefeasibility study on developing the gas chemical complex. The study evaluated the economic and technological parameters of developing the Sayano-Irkutsk gas chemical complex. Results indicated implementation of the project was in close connection with gasification of districts in the region, gas supply to industrial enterprises, conversion of coal from combined heat and power (CHP) to gas in large settlements and boiler houses in the Lake Baikal region, and increased use of natural gas in quality of motor fuel to improve the environmental situation as well as social conditions of the population in the Irkutsk region. In February 2018, Sayanskkhimplast said it had always emphasized its interest in creating a gas chemical complex on its Sayansk industrial site and was actively involved in the development of the project, noting it was ready to accept any profitable investment offers, regardless of the nationality of the investor. In October 2018, the government of Irkutsk region, upon visiting Sayanskkhimplast's industrial site, said it was continuing to cooperate with producer Gazprom in hopes of approaching the first stage of gasification of the region. Gas feedstock for the project would be sourced via pipeline to the Sayansk site from Kovykta gas condensate field. Sayanskkhimplast has yet to officially confirm specific details of the proposed gas chemical complex project.
	PJSC Gazprom-PJSC Sibur Holding	Svobodny, Amur	Gas chemical complex		Engineering		Linde--TL/E/P; NIPigazpererabotka (Nipigaz)--Contractor	As part of a February 2020 contract award, Linde will deliver engineering, procurement, and site services based on its proprietary technology for the GCC's cracker. Sibur's GCC will receive LPG and ethane fraction feedstock under a long-term contract from PJSC Gazprom subsidiary OOO Gazprom Pererabotka Blagoveshchensk's (GPB) nearby 42 billion-cu m/year grassroots Amur natural gas processing plant (GPP) now under construction. Sibur expects a proposed increase in the overall amount of ethane fraction and LPG feedstock supplies of up to 3.5 million tpy over time from GPB's GPP to the Amur GCC will allow the complex to expand design capacities at the site from an initial 1.5 million tpy of polyethylene to about 2.3 million tpy of polyethylene and 400,000 tpy of polypropylene.
	Baltic Chemical Complex LLC (RusGazDobycha)	Gulf of Finland, near Ust-Luga	Ethylene	2,800,000	Engineering	2024	McDermott--TL/E; China National Chemical Engineering Group--Contractor	As part of a November 2019 contract award, McDermott's Lummus Technology will provide both the process design package (PDP) engineering and the technology license for its olefin production and recovery technology, including Lummus Technology's proprietary ethylene steam cracking process, for production of polymer-grade ethylene at the complex. Slated to become the largest ethylene integration project in the world, the natural gas processing chemical plant will include two ethylene cracking sites, each with a capacity of 1.4 million tpy. Alongside the ethylene crackers, the project also will include six polyethylene trains with a combined processing capacity of 480,000 tpy, as well as two linear alpha olefin plants with a combined capacity of 137,000 tpy. Work on the project was scheduled to begin immediately. The more than \$13-billion project will take 60 months to build from the start of construction.
SAUDI ARABIA	Saudi Aramco-SABIC	Yanbu	COTC complex	9,000,000	Engineering	2025	KBR--FEED, John Wood Group--pre-FEED, PM	Proposed crude oil-to-chemicals complex; FID due upon completion of FEED.
	National Petrochemical Industrial Co.	Yanbu Industrial City	Propylene-Polypropylene	400,000	Planning		Maire Tecnimont--EPC	

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Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
	Huajin Aramco Petrochemical Co. Ltd.	Panjin, Liaoning Province	Ethylene; Paraxylene	1,500,000; 1,300,000	Planning	2024		JV of Saudi Aramco and China North Industries Group Corp. as part of the proposed integrated 300,000-b/d refinery and petrochemicals complex.
	Saudi Kayan Petrochemical Co.	Al-Jubail	Ethylene	93,000	Engineering		Technip--E	Expansion
	Saudi Aramco Total Refinery & Petrochemicals Co.	Jubail	Ethylene	1,500,000	Engineering	2024	Lummus Technology--TL, E	FEED under way; Amiral petrochemical complex.
SCOTLAND	Ineos AG	Grangemouth	Ethylene	450,000	Engineering	2020	Selas-Linde GMBH--Const.	Part of European ethylene, propylene growth plans announced in June 2017; construction to begin in 2019.
SOUTH KOREA	S-Oil Corp.	Ulsan	Ethylene	1,500,000	Planning	2023		Feasibility study under way.
	PolyMirae Co. Ltd.	Ulsan	Polypropylene	400,000	Engineering	2021		Scheduled to begin construction in 2019.
	Hanwha Total Petrochemicals Co. Ltd.	Daesan, Chungnam Province	Polyethylene	400,000	Engineering	2020		Expansion of polyethylene capacity to 1.1 million tpy. W.R. Grace & Co. will license its proprietary UNIPOL PP process technology as well as its CONSISTA catalyst for the 400,000-tonne/year unit.
	S-Oil Corp.	Ulsan	Polyethylene		Planning	2023		Feasibility study under way.
	GS Caltex Corp.	Yeosu, Jeollanam-do Province	Ethylene	700,000	Engineering		KBR--TL/E/D/Equip.	Scheduled to begin construction in 2019.
	GS Caltex Corp.	Yeosu, Jeollanam-do Province	Polyethylene	500,000	Engineering		KBR--TL/E/D/Equip.	Scheduled to begin construction in 2019.
	S-Oil Corp.	Ulsan	Polypropylene		Planning	2023		Feasibility study under way.
	Hyundai Chemical Co. Ltd.	Daesan, Chungcheongnam-do Province	Polyethylene	300,000	Under constr.	2021	Univation Technologies LLC--TL	Univation will provide its UNIPOL PE technology for the 300,000-tpy high-density polyethylene (HDPE) plant
	S-Oil Corp. Saudi Aramco	Ulsan	Ethylene	1,500,000	Planning	2024		In June 2019, S-Oil and Saudi Aramco signed a memorandum of understanding between the two companies to collaborate on Phase 2 of the Ulsan complex, which will involve construction of a \$6-billion, 1.5 million-tpy mixed-feed steam cracker and olefins downstream project scheduled to be completed by 2024
	Hyundai Chemical Co. Ltd.	Daesan, Chungcheongnam-do Province	Polypropylene	250,000	Under constr.	2021	W.R. Grace & Co.--TL	The UNIPOL PP unit, which will be used to produce high-end, specialty-grade random copolymer resins, comes as part of a larger cracker complex that is scheduled to begin operations in 2021.
	Lotte Chemical Corp.	Yeosu, Jeollanam-do Province	Ethylene	200,000	Engineering	2020		Expansion
	Lotte Chemical Corp.	Yeosu, Jeollanam-do Province	Propylene	100,000	Engineering	2020		Expansion
	LG Chem Ltd.	Daesan, Chungcheong Province	Ethylene	230,000	Engineering	2020	KBR--E/D/TL	Expansion
THAILAND	Map Ta Phut Olefins Co. Ltd.	Rayong Province	Ethylene	350,000	Engineering	2021	McDermott--E/D/TL	Debottlenecking project to increase ethylene production.
	IRPC PLC	Rayong Province	Benzene	495,000	Engineering	2022	Honeywell UOP--TL/D/Equip./Catalyst	
	IRPC PLC	Rayong Province	Paraxylene	1,200,000	Engineering	2022	Honeywell UOP--TL/D/Equip./Catalyst	
	Bangkok Synthetics Co. Ltd.	Map Ta Phut, Rayong	Butadiene; Butene-1	80,000; 34,000	Engineering	2021	Toyo--EPC	
	PTT Global Chemical PCL	Map Ta Phut, Rayong Province	Propylene	250,000	Engineering		McDermott--TL/E; Samsung Engineering, TTCL--EPC	
	PTT Global Chemical PCL	Map Ta Phut, Rayong Province	Ethylene	500,000	Engineering		McDermott--TL/E; Samsung Engineering, TTCL--EPC	
	GC Oxirane Co. Ltd. (PTT Global Chemical Public Co. Ltd.)		Propylene oxide	200,000	Under construction	2020	Sumitomo Chemical--TL	The PO project comes alongside a polyols project currently under execution by GC Polyols Co. Ltd. (GPC), a joint venture of PTTGC and Japanese partners Sanyo Chemical Industries and Toyota Tsusho Corp. GPC's polyols project also is due for start-up in 2020.
TURKEY	Ceyhan Polipropilen Uretim AS (Ronesans Holding--Sonatrach SPA)	Ceyhan Mega Petrochemistry Industry Zone, Ceyhan	Propylene	457,000	Engineering	2023	Honeywell UOP--TL, E, D, Eq.	Part of Ceyhan Polipropilen Uretim's grassroots petrochemical complex to be built in Ceyhan. The new PDH unit will enable Ceyhan Polipropilen Uretim to manufacture polypropylene domestically, reducing Turkey's dependence on imports from manufacturers in the Middle East and Western Europe.
	Ceyhan Polipropilen Uretim AS (Ronesans Holding--Sonatrach SPA)	Ceyhan Mega Petrochemistry Industry Zone, Ceyhan	Polypropylene	450,000	Engineering	2023		Formed in early 2019, Ceyhan Polipropilen Uretim plans to begin production at its new \$1.2-billion, 450,000-tpy polypropylene plant in 2023. The complex also will include a PDH unit that will produce 457,000 tpy of polymer-grade propylene.

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Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/contract type	Project notes
UNITED ARAB EMIRATES	Abu Dhabi Polymers Co. Ltd.	Ruwais	Polypropylene	480,000	Engineering	2021	Tecnimont SPA--EPC	<p>Proposed PP5 plant to be equipped with Borstar proprietary polyolefin multimodal process technology; tender planned to launch after July 2017; FID due by yearend 2018.</p> <p>Proposed Borouge 4 expansion; now under construction at the same location of the operator's three existing plants, the Borouge 4 complex will host what will become world's largest mixed-feed cracker with an estimated ethylene output of 1.8 million tpy as well as a total olefins and aromatics production capacity of 3.3 million tpy using a variety of feedstocks such as ethane, butane, and naphtha from ADNOC's refining and gas processing operations. Alongside ethylene, the cracker and its derivative units will produce propylene, butadiene, MTBE, 1-butene, pygas, 1-hexene, and benzene, with ethylene and propylene to be converted into PE and polypropylene (PP) products. Borouge plans to more than double the current 4.5 million-tpy capacity of its production site by 2030.</p> <p>Part of proposed Borouge 4 expansion; additionally, Axens will provide a methyl acetylene and propadiene (MAPD) unit, a C4 hydrogenation unit, and a second-stage pygas hydrogenation unit for downstream of the project's new steam cracker.</p> <p>Part of proposed Borouge 4 expansion; additionally, Axens will provide a methyl acetylene and propadiene (MAPD) unit, a C4 hydrogenation unit, and a second-stage pygas hydrogenation unit for downstream of the project's new steam cracker.</p> <p>Part of proposed Borouge 4 expansion; additionally, Axens will provide a methyl acetylene and propadiene (MAPD) unit, a C4 hydrogenation unit, and a second-stage pygas hydrogenation unit for downstream of the project's new steam cracker.</p> <p>As part of the December 2019 development agreement, ADNOC and RIL will evaluate the potential creation of a plant that manufactures EDC adjacent to ADNOC's integrated refining and petrochemical site in Ruwais and strengthen the companies' existing relationship supporting future collaboration in petrochemicals. ADNOC would supply ethylene to the potential joint venture and provide access to infrastructure at Ruwais, while RIL will deliver operational expertise and entry to the large and growing Indian vinyls market, in which it is a key participant.</p>
	Abu Dhabi Polymers Co. Ltd. (Borouge; Abu Dhabi National Oil Co.-Borealis AG)	Ruwais	Ethylene	1,800,000	Under constr.	2023	WorleyParsons--PMC; Tecnimont--FEED	
	Abu Dhabi Polymers Co. Ltd. (Borouge; Abu Dhabi National Oil Co.-Borealis AG)	Ruwais	MTBE	124,000	Engineering	2023	Axens--TL	
	Abu Dhabi Polymers Co. Ltd. (Borouge; Abu Dhabi National Oil Co.-Borealis AG)	Ruwais	1-butene	50,000	Engineering	2023	Axens--TL	
	Abu Dhabi Polymers Co. Ltd. (Borouge; Abu Dhabi National Oil Co.-Borealis AG)	Ruwais	1-hexene	75,000	Engineering	2023	Axens--TL	
	Abu Dhabi National Oil Co.-Reliance Industries Ltd.	Ruwais, Abu Dhabi	Ethylene dichloride (EDC)		Planning			
UNITED KINGDOM	SABIC UK Petrochemicals Ltd.	Teeside, Wilton, UK	Ethylene	250,000	Planning			<p>Olefins 6 plant Phase 2 expansion; feasibility study under way, with final investment decision to follow upon completion.</p> <p>A £140-million additional investment program over the next 2 years at the 800,000-tonne/year ethylene plant in Fife, Scotland, to upgrade key infrastructure and introduce technologies that will improve operational reliability and performance. A portion of the investment will go toward technologies that reduce the impact of flaring, including a state-of-the-art flare tip, which will reduce noise and vibration.</p>
	INEOS AG	Saltend, Hull	Vinyl acetate monomer	300,000	Engineering		Fluor Corp.--FEED	
	ExxonMobil Corp.	Fife, Scotland	Ethylene		Planning	2022		
UNITED STATES	Total SA	Port Arthur, Tex.	Polyethylene	625,000	Engineering	2020	Borealis AG--TL	
	Total SA	Port Arthur, Tex.	Ethylene	1,000,000	Engineering	2020	McDermott--FEED/TL	
	Bayport Polymers LLC	Bayport, Tex.	Polyethylene	625,000	Engineering	2021	McDermott--EPC	
	Bayport Polymers LLC	Port Arthur, Tex.	Ethylene	1,000,000	Under constr.	2020	McDermott--EPC	
	Bayport Polymers LLC (Bastar)	Pasadena, Tex.	Polyethylene unit		Under Constr.	2020		

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Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
	South Louisiana Methanol LP (SLM)/Saudi Arabian Basic Industries Corp. (SABIC)	St. James Parish	Methanol Complex	2,000,000	Planning			
	ExxonMobil Corp.	Baton Rouge, La.	Polypropylene unit	450,000	Planning	2021		
	Royal Dutch Shell PLC (Shell Chemical Appalachia LLC)	Potter Township, Beaver County, Pa.	Ethylene	1,500,000	Under constr.		McDermott--FEED/TL	
	Formosa Plastics Corp.	St. James Parish, La.	Ethylene		Planning			Construction could begin as soon as 2019 pending approvals.
	Formosa Plastics Corp.	Point Comfort, Tex.	Polyethylene	625,500	Engineering		ThyssenKrupp Industrial Solutions AG--E/TL	Expansion
	Formosa Plastics Corp.	Point Comfort, Tex.	Propylene	545,000	Engineering		ThyssenKrupp Industrial Solutions AG--E/TL	Expansion
	Chevron Phillips Chemical Co. LLC-Qatar Petroleum	US Gulf Coast	Polyethylene	1,000,000	Planning	2024	CPCC--PM, Eng., Constr., TL	To be known as the USGC II, the complex will include a 2 million-tpy ethylene cracker and two 1 million-tpy high-density polyethylene (HDPE) units. CPCC would own 51% interest in the project, with QP holding the remaining 49% interest. Alongside providing project management and oversight, CPCC also would be responsible for operation and management of the complex, which the companies estimate will cost about \$8 billion. CPCC and QP said they expect to take a final investment decision on the project no later than 2021, followed by full funding and award of engineering, procurement, and construction contracts, for a targeted start-up of the new complex in 2024.
	ExxonMobil Corp.	Baytown, Tex.	Polymers	400,000	Engineering	2022	Tecnimont SPA-Performance Contractors Inc.--FEED	A consortium of Maire Tecnimont SPA subsidiary Tecnimont SPA and Performance Contractors Inc. will provide FEED, early execution studies, and early procurement activities for new process units and associated offsites and utilities at the operator's \$2-billion project to expand its Baytown, Tex., chemical plant. The Tecnimont USA Inc.-led consortium's scope of work includes implementation of new innovative process units, including a 400,000-tonne/year Vista-maxx performance polymer unit as well as a 350,000-tpy linear alpha olefins unit.
	Methanex Corp.	Geismar, La.	Methanol	5,000 tonne/day	Planning	2022	KBR--FEED; Johnson Matthey--TL	Methanex will make a \$1.3-1.4-billion capital investment in the G3 project, which will involve construction of the company's third methanol plant at Geismar. Construction on the plant—which will be equipped with Johnson Matthey PLC's proprietary autothermal reforming and methanol technology to produce about 1.8 million tpy of methanol—will begin during second-half 2019.
	Chevron Phillips Chemical Co. LLC-Qatar Petroleum	US Gulf Coast	Ethylene	2,000,000	Planning	2024		To be known as the USGC II, the complex will include a 2 million-tpy ethylene cracker and two 1 million-tpy high-density polyethylene (HDPE) units. CPCC would own 51% interest in the project, with QP holding the remaining 49% interest. Alongside providing project management and oversight, CPCC also would be responsible for operation and management of the complex, which the companies estimate will cost about \$8 billion. CPCC and QP said they expect to take a final investment decision on the project no later than 2021, followed by full funding and award of engineering, procurement, and construction contracts, for a targeted start-up of the new complex in 2024.
	Ineos AG	Alvin, Tex.	Ethylene Oxide (EO) and Ethylene Oxide Derivatives (EOD) plant	520,000	Planning	2023		The new 1.2 billion-lb (520,000-tpy) EO unit and associated downstream EOD plant will be built at Ineos's Chocolate Bayou petrochemicals manufacturing site in Alvin, Tex., south of Houston on the Gulf of Mexico coast

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Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
	ExxonMobil Corp.	Baytown, Tex.	Linear alpha olefins (LAO)	350,000	Engineering	2022	Tecnimont SPA-Performance Contractors Inc.--FEED	A consortium of Maire Tecnimont SPA subsidiary Tecnimont SPA and Performance Contractors Inc. will provide FEED, early execution studies, and early procurement activities for new process units and associated offsites and utilities at the operator's \$2-billion project to expand its Baytown, Tex., chemical plant. The Tecnimont USA Inc.-led consortium's scope of work includes implementation of new innovative process units, including a 400,000-tonne/year Vista-maxx performance polymer unit as well as a 350,000-tpy linear alpha olefins unit.
	Dow Chemical Co.	Plaquemine, La.	Propylene	100,000	Under construction	2021	Dow Chemical--TL	Dow Chemical Co. is retrofitting its proprietary fluidized catalytic dehydrogenation technology into one of its mixed-feed crackers in Plaquemine, La., to produce on-purpose propylene. The Plaquemine retrofit comes amid Dow and other US cracker operator's growing consumption of ethane instead of heavier feed slates, resulting in a reduction of coproduct production, including propylene.
	Saudi Arabian Basic Industries Corp.-ExxonMobil Chemical Co.	San Patricio County, Tex.	Ethylene	1,800,000	Under construction	2022	Amec Foster Wheeler--EPC; Bay Ltd.--Civil, site maintenance; John Wood Group PLC, McDermott, Turner Industries, Chiyoda Corp., Kiewit Corp., Mitsubishi Heavy Industries Ltd., Zachry Group--EPC	CTCI McDermott Integrated--Constr.
	Saudi Arabian Basic Industries Corp.-ExxonMobil Chemical Co.	San Patricio County, Tex.	Monoethylene glycol	1,100,000	Under construction	2022		Two units.
	Saudi Arabian Basic Industries Corp.-ExxonMobil Chemical Co. PetroLogistics II LLC (Quantum Energy Partners)	San Patricio County, Tex. US Gulf Coast	Polyethylene Propane dehydrogenation (PDH)	500,000	Under construction FEED	2022	Dow Chemical Co.--TL; McDermott--FEED	The 500,000-tpy PDH unit will be equipped with Dow's proprietary fluidized catalytic dehydrogenation (FCDH) technology, which uses a novel reactor design based on fluidized catalytic cracking for on-purpose propylene production. PetroLogistics has yet to decide between two alternative USGC sites under evaluation for the project's location.
	Next Wave Energy Partners LP	Houston Ship Channel, Pasadena, Tex.	Alkylate	28,000 b/d	Under constr.	2022	McDermott (Lummus)--TL/process design package; DuPont Clean Technologies--TL/E/Eq	Known as Project Traveler, the facility will be able to convert over 1.2 billion lb/year of ethylene feedstock from North America's growing ethylene supply delivered to the site by multiple pipelines. Alkylate production will be delivered via direct-connection pipelines to major gasoline blending terminals in Pasadena, which have dock access to marine movements through the Houston Ship Channel as well as connections to major refined product distribution pipelines. If warranted, the facility is designed to accommodate receipt of feedstock and delivery of product by rail. Alkylate, a gasoline blending component, typically comprises 11-13% of the overall gasoline pool in the US. Next Wave's alkylate product, Optimate, can be produced with 96.0 road octane (98.0 Research Octane Number), a low 3.5 Reid vapor pressure, and 5 ppm or less of sulfur. McDermott's Lummus Technology is licensing its proprietary Dimer ethylene dimerization process, which converts ethylene to an unmatched high-purity butene-2 feed stream ideal for producing a higher-octane alkylate used for blending cleaner-burning gasoline. Next Wave reached FID on the project in November 2019.
	Sasol Ltd.	Westlake, La.	Polyethylene	900,000	Under constr.	2021		Part of Sasol's long-planned Lake Charles Chemicals Project (LCCP), an integrated ethane cracker and downstream derivatives complex under construction in Westlake, La., near Lake Charles. Includes two large polymers plants capable of producing a combined 900,000 tpy of low-density polyethylene (LDPE) and LLDPE. Rebuild of LCCP's LDPE unit following a Jan. 13, 2020, explosion also is progressing according to plan, with the LDPE unit now scheduled to reach beneficial operation in the first quarter of Sasol's 2021 fiscal year, which runs from July-September 2021.

PETROCHEMICALS CONT.

Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/contract type	Project notes
	YCI Methanol One LLC (Koch Methanol Investments LLC-Shandong Yuhuang Chemical Co.)	St. James Parish, La.	Methanol	1,700,000	Under constr.	2020	WorleyParsons--Commissioning; Air Liquide--TL	The first phase of the greenfield complex, which will produce 1.7 million tonnes/year of methanol using Air Liquide SA's proprietary MegaMethanol technology, is scheduled to be fully operational and ready for production in late 2020. Koch Methanol acquired a majority ownership stake in the YCI Methanol One JV in August 2019, at which time it said the JV was evaluating an expansion that would more than double production of methanol at the site. YCI previously let a series of contracts for the methanol complex, on which construction began in January 2017.
	Dow Inc.	Freeport, Tex.	Ethylene	500,000	Under constr.	2020		In early 2020, Dow said it expects to bring two new furnaces into service as part of its previously announced 500,000-tpy capacity expansion of its 1.5 million-tpy TX-9 ethylene cracker at the operator's olefins manufacturing complex in Freeport, Tex. With the furnaces scheduled to come online by the middle of second-quarter 2020, Dow said it expected to begin commissioning activities at the site by the end of first-quarter 2020. Once fully commissioned, the expanded TX-9 cracker will have a capacity of 2 million tpy, making it the world's largest ethylene facility, according to Dow.
	PTTGC America LLC (PTTGCA; PTT Global Chemical-Daelim Chemical USA LLC)	Shadyside, Belmont County, Ohio	Ethylene	1,500,000	Under constr.			JV reported in late-April 2020 that FID delayed indefinitely amid unidentified factors resulting from the COVID-19 pandemic. First phase of site preparation, engineering, and design work completed in February 2020. The proposed multibillion-dollar complex would also include the following: HDPE Unit 1, 350,000 tpy; HDPE Unit 2, 350,000 tpy; LLDPE-HDPE Unit 1, 450,000 tpy; and LLDPE-HDPE Unit 2, 450,000 tpy. It also would include on-site railcar and truck loading, supporting utilities, infrastructure, storage tanks, logistics facilities, and installations for either production or provision of required natural gas, water, air, nitrogen, steam, and electricity to support operation of process units. Daelim officially entered as a partner on the proposed Ohio petrochemical complex in early 2018.
	IGP Methanol LLC	Plaquemines Parish, La.	Methanol	1,800,000	Engineering		McDermott--FEED,EPC; Haldor Topsoe--TL	Plant 2.
	IGP Methanol LLC	Plaquemines Parish, La.	Methanol	1,800,000	Engineering		McDermott--FEED,EPC; Haldor Topsoe--TL	Plant 4.
	IGP Methanol LLC	Plaquemines Parish, La.	Methanol	1,800,000	Engineering		McDermott--FEED,EPC; Haldor Topsoe--TL	Plant 3.
	Braskem America Inc.	La Porte, Tex.	Polypropylene	450,000	Engineering		Linde AG--EPC; W.R. Grace & Co.--TL	The Delta PP plant project will more than double Braskem's capacity at La Porte to 804,000 tpy; Unipol PP process technology.
	LyondellBasell Industries NV	Channelview, Tex.	Propylene oxide	1 billion	Under constr.	2021		In late-March 2020, LyondellBasell warned of possible construction delays as a result of the COVID-19 health crisis.
	LyondellBasell Industries NV	La Porte, Tex.	Tertiary butyl alcohol	2.2 billion lb/year	Under constr.	2021		In late-March 2020, LyondellBasell warned of possible construction delays as a result of the COVID-19 health crisis.
	Enterprise Products Partners LP	Mont Belvieu, Tex.	Propylene	1.65 billion lb/year	Under constr.	2023	S&B Engineers & Constructors Ltd.--EPC; Honeywell UOP--TL	Part of a long-term contract with Lyondell-Basell Industries NV under which Enterprise will process LyondellBasell-provided propane to the unit for a fixed fee. The new PDH plant, which will have the capacity to process up to 35,000 b/d of propane to produce up to 1.65 billion lb/year of polymer-grade propylene, remains on schedule for completion in first-half 2023, EPP said in January 2020.
	Enterprise Products Partners LP	Mont Belvieu, Tex.	Propylene	750,000	Engineering	2023	Honeywell UOP--TL	Adds a second PDH plant at Mont Belvieu. As part of a November 2019 contract, Honeywell UOP will deliver licensing for its Oleflex technology, in addition to engineering, catalysts, adsorbents, services, and equipment for the PDH2 plant, will produce 750,000 tpy of polymer-grade propylene as part of Enterprise's expansion of propylene manufacturing capacity. The PDH2 unit is scheduled to begin service in first-half 2023.
	IGP Methanol LLC	Plaquemines Parish, La.	Methanol	1,800,000	Engineering	2020	McDermott--FEED,EPC; Haldor Topsoe--TL	Plant 1.

PETROCHEMICALS CONT.

Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/contract type	Project notes
UZBEKISTAN	JSC Uzneftgazdobycha (Shurtan Gas Chemical Complex LLC)	Guzar District, Kashkadarya Region	Hexene-1		Engineering		McDermott--TL/E	Part of grassroots ethylene plant to be built at existing Shurtan petrochemical complex. Project to increase the complex's current 125,000-tpy polyethylene production capacity to 450,000 tpy from 431,000 tpy of synthetic naphtha produced by NHC Uzbekneftegaz subsidiary Uzbekistan GTL LLC's Oltin Yo'l gas-to-liquids plant at Shurtan beginning in second-half 2020. Part of grassroots ethylene plant to be built at existing Shurtan petrochemical complex. Grassroots ethylene plant to be built at existing Shurtan petrochemical complex.
	JSC Uzneftgazdobycha (Shurtan Gas Chemical Complex LLC)	Guzar District, Kashkadarya Region	Polyethylene	325,000	Engineering	2020		
	JSC Uzneftgazdobycha (Shurtan Gas Chemical Complex LLC)	Guzar District, Kashkadarya Region	Polypropylene		Engineering		McDermott--TL/E	
	JSC Uzneftgazdobycha (Shurtan Gas Chemical Complex LLC)	Guzar District, Kashkadarya Region	Ethylene		Engineering		McDermott--TL/E	
VIETNAM	Long Son Petrochemical Co. Ltd.	Long Son Island in Vung Tau City, Ba Ria Province	Propylene	400,000	Engineering	2021	TechnipFMC,SK E&C--EPCC	Expansion of September 2017-commissioned 1.5 million-tpy Freeport ethylene plant; part of \$4-billion wave of comprehensive growth investments over the next 5 years to expand its US petrochemicals manufacturing business. \$1.4 billion. Plant 4. Plant 3. Plant 2. The Delta PP plant project will more than double Braskem's capacity at La Porte to 804,000 tpy; Unipol PP process technology. Part of Sasol's long-planned Lake Charles Chemicals Project (LCPP), an integrated ethane cracker and downstream derivatives complex under construction in Westlake, La., near Lake Charles. Includes two large polymers plants capable of producing a combined 900,000 tpy of low-density polyethylene (LDPE) and LLDPE. To be known as the USGC II, the complex will include a 2 million-tpy ethylene cracker and two 1 million-tpy high-density polyethylene (HDPE) units. CPCC would own 51% interest in the project, with QP holding the remaining 49% interest. Alongside providing project management and oversight, CPCC also would be responsible for operation and management of the complex, which the companies estimate will cost about \$8 billion. CPCC and QP said they expect to take a final investment decision on the project no later than 2021, followed by full funding and award of engineering, procurement, and construction contracts, for a targeted start-up of the new complex in 2024. Royal Dutch Shell PLC subsidiary Shell Chemical LP has started feasibility studies for a potential \$1.2-billion manufacturing expansion of MEG production at its 841-acre Geismar chemicals complex in Ascension Parish, La. As part of the project, the operator would build an MEG plant at the site that—pending final engineering, design, and investment decisions—Shell could approve as early as 2020.
	Long Son Petrochemical Co. Ltd.	Long Son Island in Vung Tau City, Ba Ria Province	Ethylene	950,000	Engineering	2021	TechnipFMC,SK E&C--EPCC	
	Vung Ro Petroleum Ltd. DowDupont	Phu Yen Province Freeport, Tex.	Polypropylene Ethylene	900,000 500,000	Engineering Planning		Ineos--TL	
	Shintech Inc. IGP Methanol LLC	Palquemie, La. Plaquemines Parish, La.	Ethylene Methanol	500,000 1.8 million	Engineering Engineering	2019	Toyo Engineering Corp--C; Lummus--TL McDermott--FEED,EPC; Haldor Topsoe--TL	
	IGP Methanol LLC	Plaquemines Parish, La.	Methanol	1.8 million	Engineering		McDermott--FEED,EPC; Haldor Topsoe--TL	
	IGP Methanol LLC	Plaquemines Parish, La.	Methanol	1.8 million	Engineering		McDermott--FEED,EPC; Haldor Topsoe--TL	
	Braskem America Inc.	La Porte, Tex.	Polypropylene	450,000	Engineering		Linde AG EPC; W.R. Grace & Co. TL	
	Sasol Ltd.	Westlake, La.	Polyethylene	900,000	Under constr.	2019		
	Chevron Phillips Chemical Co. LLC-Qatar Petroleum	US Gulf Coast	Polyethylene	1,000,000	Planning	2024	CPCC--PM, Eng., Constr., TL	
	Shell Chemical LP	Geismar, Ascension Parish, La.	Monoethylene glycol (MEG)		Planning			

PETROCHEMICALS CONT.

Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
	ExxonMobil Corp.	Baytown, Tex.	Polymers	400,000	Engineering	2022	Tecnimont SPA-Performance Contractors Inc.--FEED	A consortium of Maire Tecnimont SPA subsidiary Tecnimont SPA and Performance Contractors Inc. will provide FEED, early execution studies, and early procurement activities for new process units and associated offsites and utilities at the operator's \$2-billion project to expand its Baytown, Tex., chemical plant. The Tecnimont USA Inc.-led consortium's scope of work includes implementation of new innovative process units, including a 400,000-tonne/year Vista-maxx performance polymer unit as well as a 350,000-tpy linear alpha olefins unit.
	Methanex Corp.	Geismar, La.	Methanol	5,000 tonne/day	Planning	2022	KBR--FEED, Johnson Matthey--TL	Methanex will make a \$1.3-1.4-billion capital investment in the G3 project, which will involve construction of the company's third methanol plant at Geismar. Construction on the plant—which will be equipped with Johnson Matthey PLC's proprietary autothermal reforming and methanol technology to produce about 1.8 million tpy of methanol—will begin during second-half 2019.
	Chevron Phillips Chemical Co. LLC-Qatar Petroleum	US Gulf Coast	Ethylene	2,000,000	Planning	2024		To be known as the USGC II, the complex will include a 2 million-tpy ethylene cracker and two 1 million-tpy high-density polyethylene (HDPE) units. CPCC would own 51% interest in the project, with QP holding the remaining 49% interest. Alongside providing project management and oversight, CPCC also would be responsible for operation and management of the complex, which the companies estimate will cost about \$8 billion. CPCC and QP said they expect to take a final investment decision on the project no later than 2021, followed by full funding and award of engineering, procurement, and construction contracts, for a targeted start-up of the new complex in 2024.
	Ineos AG	Alvin, Tex.	Ethylene Oxide (EO) and Ethylene Oxide Derivatives (EOD) plant	520,000	Planning	2023		The new 1.2 billion-lb (520,000-tpy) EO unit and associated downstream EOD plant will be built at Ineos's Chocolate Bayou petrochemicals manufacturing site in Alvin, Tex., south of Houston on the Gulf of Mexico coast
	ExxonMobil Corp.	Baytown, Tex.	Linear alpha olefins (LAO)	350,000	Engineering	2022	Tecnimont SPA-Performance Contractors Inc.--FEED	A consortium of Maire Tecnimont SPA subsidiary Tecnimont SPA and Performance Contractors Inc. will provide FEED, early execution studies, and early procurement activities for new process units and associated offsites and utilities at the operator's \$2-billion project to expand its Baytown, Tex., chemical plant. The Tecnimont USA Inc.-led consortium's scope of work includes implementation of new innovative process units, including a 400,000-tonne/year Vista-maxx performance polymer unit as well as a 350,000-tpy linear alpha olefins unit.
	Enterprise Products Partners LP	Mont Belvieu, Tex.	Propylene	1.65 billion lb/year	Planning	2023	S&B Engineers & Constructors Ltd.--EPC; Honeywell UOP--TL	Part of a long-term contract with LyondellBasell Industries NV under which Enterprise will process LyondellBasell-provided propane to the unit for a fixed fee.
	Dow Chemical Co.	Plaquemine, La.	Propylene	100,000	Under construction	2021	Dow Chemical--TL	Dow Chemical Co. is retrofitting its proprietary fluidized catalytic dehydrogenation technology into one of its mixed-feed crackers in Plaquemine, La., to produce on-purpose propylene. The Plaquemine retrofit comes amid Dow and other US cracker operator's growing consumption of ethane instead of heavier feed slates, resulting in a reduction of coproduct production, including propylene.
	Saudi Arabian Basic Industries Corp.-ExxonMobil Chemical Co.	San Patricio County, Tex.	Ethylene	1,800,000	Under construction	2022	Amec Foster Wheeler--EPC; Bay Ltd.--Civil, site maintenance; John Wood Group PLC, McDermott, Turner Industries, Chiyoda Corp., Kiewit Corp., Mitsubishi Heavy Industries Ltd., Zachry Group--EPC	
	Saudi Arabian Basic Industries Corp.-ExxonMobil Chemical Co.	San Patricio County, Tex.	Monoethylene glycol	1,100,000	Under construction	2022	CTCI McDermott Integrated--Constr.	
	Saudi Arabian Basic Industries Corp.-ExxonMobil Chemical Co.	San Patricio County, Tex.	Polyethylene		Under construction	2022		Two units.

PETROCHEMICALS CONT.

Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
	Formosa Plastics Corp. Louisiana (Formosa Plastics Corp. USA)	Baton Rouge, La.	Polyvinyl chloride	300 million lb/year	Under construction			The project will include installation of new machinery and equipment for the expansion of the PVC resin production unit, expected to result in a 20% increase in production capacity and sales; installation of new machinery and equipment for a halogenated acid production unit for internal use in the production of vinyl chloride monomer, and installation of utilities equipment needed for operations.
	PetroLogistics II LLC (Quantum Energy Partners)	US Gulf Coast	Propane dehydrogenation (PDH)	500,000	FEED		Dow Chemical Co.--TL; McDermott--FEED	The 500,000-tpy PDH unit will be equipped with Dow's proprietary fluidized catalytic dehydrogenation (FCDH) technology, which uses a novel reactor design based on fluidized catalytic cracking for on-purpose propylene production. PetroLogistics has yet to decide between two alternative USGC sites under evaluation for the project's location.
UZBEKISTAN	JSC Uzneftegazdobycha (Shurtan Gas Chemical Complex LLC)	Guzar District, Kashkadarya Region	Polyethylene	325,000	Engineering	2020		Project to increase the complex's current 125,000-tpy polyethylene production capacity to 450,000 tpy from 431,000 tpy of synthetic naphtha produced by NHC Uzbekneftegaz subsidiary Uzbekistan GTL LLC's Oltin Yo'l gas-to-liquids plant at Shurtan beginning in second-half 2020.
	JSC Uzneftegazdobycha (Shurtan Gas Chemical Complex LLC)	Guzar District, Kashkadarya Region	Hexene-1		Engineering		McDermott TL/E	Part of grassroots ethylene plant to be built at existing Shurtan petrochemical complex.
	JSC Uzneftegazdobycha (Shurtan Gas Chemical Complex LLC)	Guzar District, Kashkadarya Region	Polypropylene		Engineering		McDermott TL/E	Part of grassroots ethylene plant to be built at existing Shurtan petrochemical complex.
	JSC Uzneftegazdobycha (Shurtan Gas Chemical Complex LLC)	Guzar District, Kashkadarya Region	Ethylene		Engineering		McDermott TL/E	Grassroots ethylene plant to be built at existing Shurtan petrochemical complex.
VIETNAM	Long Son Petrochemical Co. Ltd.	Long Son Island in Vung Tau City, Ba Ria Province	Propylene	400,000	Engineering	2021	TechnipFMC,SK E&C--EPCC	
	Long Son Petrochemical Co. Ltd.	Long Son Island in Vung Tau City, Ba Ria Province	Ethylene	950,000	Engineering	2021	TechnipFMC,SK E&C--EPCC	
	Phu My Plastics Production JSC	Vung, Tau Province, Vietnam	Propane Dehydrogenation (PDH) Unit	306,000	Planning		Honeywell UOP LLC	
	Vung Ro Petroleum Ltd.	Phu Yen Province	Polypropylene	900,000	Engineering		Ineos--TL	\$4 billion.

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Added capacity listed in MMcfd unless otherwise specified.

Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
ALGERIA	Sonatrach	Alrar	NGL automation		Planning		Emerson Electric Co. - engineering, procurement, commissioning, testing. Fores Engineering SRL	
	Sonatrach	Hassi Messaoud, ZCINA LPG Complex	LPG Train 4	282.5	Development		Maire Technimont SPA (Technimont SPA), EPC	
	Sonatrach	Adrar Province	Gas plant	141.3			Larsen & Toubro Ltd., EPCC	Hassi Tidjerane field
	Sonatrach	Adrar Province	Gas plant	141.3			Larsen & Toubro Ltd., EPCC	Tinerkouk field
	Sonatrach	Adrar Province	Gas plant	211.9			Larsen & Toubro, EPCC	Hassi Ba Hamou and Reg Mouaded field
AUSTRALIA	Senex Energy Ltd.	Garadagh	Gas plant	40	Planning			Project to accelerate proposed Atlas coal seam gas project in Surat basin of southeast Queensland for delivery of gas to domestic market by late 2019.
	Australian Gas Infrastructure Group (AGIG)	Western Australia	Gas Storage Facility		Planning			
AZERBAIJAN	SOCAR GPC	Garadagh	Gas plant	10	Engineering	2022	Technip--E/D/TL	
BAHRAIN	National Oil & Gas Authority	Bahrain field	Gas dehydration plant	500	Engineering		Petrofac--EPC	
BRAZIL	Petroleo Brasileiro SA	Itaboraí, Rio de Janeiro	Gas plant	21	Engineering	2020	Shandong Kerui Petroleum Equipment Co. Ltd.,Metodo Potencial Engenharia SA--EPC	
CANADA	SemCAMS ULC	Alberta	Gas plant	280	Planning			Pipestone Central plant; to serve Montney producers in the Pipestone region of the Western Canadian Sedimentary Basin. Phase 2 of the Wapiti development project to add another 150 MMcfd of sour gas processing capacity. In an August 2019 presentation to investors, Tidewater said there is large customer support for a Pipestone Plant Phase 2 project—for which it already has a 10-year, 20-MMcfd take-or-pay commitment—upon which the operator plans to reach a final investment decision in the coming months by yearend.
	Keyera Corp.	Grand Prairie, Alta.	Gas plant	150	Engineering	2020	Jacobs Engineering Group Inc.--EPC	
	Tidewater Midstream & Infrastructure Ltd.	Pipestone, Grande Prairie, Alta.	Gas processing		Planning			
CHINA	Sinochem Quanzhou Petrochemical	Quanzhou	Refinery Ethylene Project		Planning		John Wood Group PLC - EPC	
EGYPT	ENI SPA	Port Said	Gas plant	350	Under constr.		Frames Group--Equipment	The project includes construction of WDGC's proposed Train D, the complex's fourth production train, lifting WDGC's overall throughput to 1.5 bcf from 950 MMcfd. Alongside increasing output of ethane-propane mixture as feedstock to supply Egyptian petrochemical producers, the expansion will increase WDGC's production of LPG and condensates for local consumption, as well as increase WDGC's production of commercial propane to be used as feedstock for the first phase of Sidpec's 450,000-tpy polypropylene plant scheduled to be completed by second-quarter 2022.
	ENI SPA	Port Said	Gas plant	350	Under constr.		Frames Group--Equipment	
	ENI SPA	Port Said	Gas plant	350	Under constr.		Frames Group--Equipment	
	ENI SPA	Port Said	Gas plant	350	Under constr.		Frames Group--Equipment	
	Egyptian Natural Gas Co. (GASCO)	Western Desert Gas Complex (WDGC), Amreya, Alexandria	Expansion	600	Engineering		ENPPI-Petrojet JV--EPC	
INDONESIA	PT Pertamina EP Cepu	Bojonegoro, East Java	Gas plant	330	Engineering		JGC Corp.--EPC	
KUWAIT	Kuwait Oil Co.	Jurassic field	Gas plant		Engineering		Black & Veatch Corp.--FEED	
MOROCCO	Sound Energy PLC	eastern Morocco	Gas plant		Engineering		Enagas SA,Electron SA,Fomento--FEED	FEED activities scheduled to conclude late 2018-early 2019.
NIGERIA	Chevron Nigeria Ltd.	Western Niger Delta region	Gas plant		Engineering		Frames Group BV--EPC	Part of Okan field debottlenecking project.
	Southfield Petroleum Ltd.	Utorogu field	Gas plant	250	Engineering		China Machinery Engineering Corp.--EPC	
OMAN	BP PLC	Khazzan	Gas plant	500	Engineering	2020	Petrofac--EPCC	Phase 2, adding a third gas train to expand capacity to 1.5 bcf.

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Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/contract type	Project notes
ROMANIA	Winstar Satu Mare SA	Pannonian basin, Romania	Gas plant	15	Under constr.		Confind SRL--EPCC	To accommodate first production from the Moftinu gas development project on the Satu Mare concession in northwestern Romania's Pannonian basin, along the borders with Hungary and Ukraine.
RUSSIA	PJSC Gazprom-PJSC Sibur Holding	Tatarstan	Gas processing		Planning			Part of a first roadmap of agreements between Gazprom and Sibur stipulates, among other things, a feasibility study to be carried out regarding transmission of ethane-containing gas from fields in the Nadym-Pur-Taz region as well as construction of a gas processing plant in Tatarstan. The companies are evaluating cooperation on the proposed project.
	000 Gazprom Pererabotka Blagoveshchensk (GPB; PJSC Gazprom)	Amur region	Gas plant	42	Under constr.	2021	NIP gazpererabotka--Contr.; China Petroleum Engineering & Construction Corp.--EPC; China Gezhouba Group Corp.--Constr.; Linde AG--TL; Technimont SPA,Sinopec Ningbo Engineering Corp.--EPC (utilities,infrastructure,off sites)	GPB's grassroots Amur gas processing plant near Svobodny in Russia's far-east Amur region. Gazprom secured funding to complete the project in late-December 2019. About 54% completed as of late 2019, GPB's GPP includes six production lines, with the first two lines slated for commissioning in 2021 and remaining lines to be consecutively put in operation before yearend 2024. GPP is scheduled to reach full operational capacity by 2025, Gazprom said in February 2020.
UNITED STATES	Hess Midstream Partners LP	North Dakota	Gas plant expansion	150	Development	2021		Expanding capacity of 250-MMcfd Tioga gas plant to 400 MMcfd
	Raven Petroleum LLC	Duval County, Tex.	Fractionator	30,000	Development			Approved by Texas Commission on Environmental Quality
	Oneok Inc.	Mont Belvieu, Tex.	Fractionation		Planning	2021		MB-6 fractionator.
	Brazos Midstream Holdings LLC	Southern Delaware basin	Gas plant	200	Engineering		Honeywell UOP LLC--Modular turnkey plant	UOP Russell technology.
	Oneok Inc.	Williston basin	Gas processing	200	Planning	2021		Expansion of the Bear Creek gas processing facility and related systems.
	Lucid Energy Group	Lea County, NM	Gas processing	230	Engineering	2020		To be known as Red Hills V and scheduled for start-up in second-quarter 2020, the new plant will have the capacity to process 230 MMcfd and will bring the total processing capacity of Lucid's natural gas processing franchise in the northern Delaware basin to 1.2 bcf/d. The proposed expansion will follow scheduled commissioning of Lucid's 230-MMcfd Red Hills IV plant in October 2019.
	EnLink Midstream LLC	Midland basin, Texas	Gas plant expansion	65	Under constr.	2020		In February 2020, Enlink said the 65-MMcfd expansion to its Riptide plant, is due to be completed in fourth-quarter 2020.
	EnLink Midstream LLC	Delaware basin	Gas plant	200	Under constr.	2020		In February 2020, Enlink said the Tiger plant is on schedule to become operational second-half 2020.
	Epic Midstream Holdings LP (Epic Y-Grade LP)	Robstown, Tex.	Fractionation	110,000 b/d	Planning	2021		Announced in December 2019, the new 110,000-b/d greenfield fractionator will be the second at the Robstown complex, near Corpus Christi, which currently consists of 70,000 b/d of operational fractionation capacity, as well as the operator's first greenfield fractionator, which is still under construction. With the first 100,000-b/d greenfield fractionator due for mechanical completion in late first-quarter 2020, Epic will have a total fractionation capacity of 270,000 b/d at Robstown once the second fractionator is completed. A timeframe for start-up of the second fractionator was not disclosed, but the project is due for mechanical completion in third-quarter 2021, Epic said in a December 2020 presentation.

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Country	Company	Location	Project	Added capacity	Status	Expected completion	Contractor/ contract type	Project notes
	Primus Green Energy Inc.	Texas	Gas-to-gasoline (GTG)	28 MMcfd; 2,800 b/d (gasoline)			IHI E&C International Corp.--FEED	Announced in December 2019, the proposed Texas GTG plant—which would consume 28 MMcfd of natural gas to produce 2,800 b/d of gasoline—will be a scaled-up version of Primus's demonstration plant in New Jersey, which has safely and successfully produced methanol and gasoline. Underpinning the project is Primus's patented STG+ technology, which has been validated through more than 10,000 hr of operation. Over the past several years, Primus has collaborated with Koch Modular Process Systems LLC—who will also be participating in the project—to optimize the technology. The plant will produce RBOB-specification gasoline using low-cost natural gas from the nearby Permian basin. FEED is to be completed in mid-2020. A second train at the Texas plant also is under consideration, which would bring total gasoline production at the site to 5,600 b/d.
	Outrigger Energy II LLC	Williams County, ND	Gas plant	250	Under constr.	2020		In January 2020, Outrigger Energy said the high-efficiency gas plant will feature ethane-recovery and rejection capabilities providing direct market access to the TC Pipelines LP-Oneok Inc. jointly owned Northern Border Pipeline system for residue gas and to Oneok's NGL pipeline system for NGLs. While Outrigger said it may add future NGL fractionation facilities to provide finished NGL products for local markets, the midstream operator confirmed plans are already under way to expand the Williams County gas plant by additional 200 MMcfd for a total gas processing capacity of 450 MMcfd. Currently under construction, Outrigger's Williams County rich gas pipeline and associated gas processing plant are scheduled to become operational in December 2020. A timeframe for the proposed expansion of the gas plant was not disclosed.
	Nacero Inc.	Casa Grande, Ariz.	Gas-to-gasoline plant	35,000 b/d			Haldor Topsoe—TL/E	As part of the March 2020 contracts, Haldor Topsoe will deliver basic engineering and licensing of its proprietary Topsoe Improved Gasoline Synthesis (Tigas) GTG technology for the Casa Grande plant that, once in operation, will have the capacity to produce 35,000 b/d of finished gasoline from low-cost natural gas. Pending final investment decision (FID) on the project, Haldor Topsoe said it also will supply proprietary hardware, catalysts, and services for the plant. To be located on the operator's existing 1,000-acre site in Casa Grande's industrial and advanced-technology corridor, Nacero's proposed \$3-billion GTG plant—which will supply 80% of its own water needs, with the remaining 20% to come from municipal treatment plant effluents—aims to provide the US Southwest with a cleaner, cost-competitive source of gasoline. Construction is to begin in 2021.
	Oneok Inc.	Permian basin	Fractionation	65,000 b/d		2021		Expansions to Oneok's Midcontinent NGL fractionation facilities; to cost \$150 million, with 15,000 b/d expected to be completed in third-quarter 2020 and 50,000 b/d expected to be completed in first-quarter 2021.
	Phillips 66 Partners LP	Old Ocean, Tex.	Fractionation	150,000 b/d		2020	S&B Engineers & Constructors Ltd.--EPC	\$1.5-billion expansion to increase overall NGL fractionation capacity at Sweeny hub to 400,000 b/d and enable access to 15 million bbl of total storage capacity.
	Phillips 66 Partners LP	Old Ocean, Tex.	Fractionation	150,000 b/d		2020	S&B Engineers & Constructors Ltd.--EPC	\$1.5-billion expansion to increase overall NGL fractionation capacity at Sweeny hub to 400,000 b/d and enable access to 15 million bbl of total storage capacity.
	Enterprise Products Partners LP	Mont Belvieu, Tex.	Fractionation	150,000 b/d	Under constr.	2020		Tenth fractionator.
	Oneok Inc.	Mont Belvieu, Tex.	Fractionation	125,000 b/d		2021		MB-5 fractionator.
	Oneok Inc.	McKenzie County, ND	Gas plant	200		2020		Demicks Lake II plant.
	Enterprise Products Partners LP	Mont Belvieu, Tex.	Fractionation	150,000 b/d	Under constr.	2020		Eleventh fractionator.
VIETNAM	ExxonMobil Exploration & Production Vietnam Ltd.		Ca Voi Xanh (Blue Whale)			2020		

LNG

Added capacity listed in millions of tons per year (million tpy) unless otherwise specified.

Country	Company	Project	Location	Project type	Added capacity	Status	Completion	Contractor/ contract type	Project notes
ARGENTINA	YPF	Vaca Muerta LNG	Vaca Muerta shale field	LNG	5	Engineering	2024	McDermott International Inc., engineering design	The contract was valued at \$150 million
AUSTRALIA	Woodside, Shell, BP	Browse LNG	Offshore Western Australia	LNG		Planning	2027		Began FEED Q4 2019. FID first-half 2021
	Woodside	Pluto Train 2	Burrup Peninsula, Western Australia	LNG	5	Engineering		Bechtel-FEED	FID delayed to 2021 (March 2020)
	Australian Industrial Energy	Port Kembla LNG terminal	Port Kembla, NSW	LNG terminal	0	Planning		Hoegh LNG, FSRU; SCSB joint venture, wharf facility and pipeline construction	Lack of customers in face of low domestic gas prices has indefinitely delayed development
	AGL Energy		Crib Point, Victoria	LNG terminal	0	Planning	2022		Delayed as State of Victoria calls for full environmental assessment
	EPIK	Newcastle LNG	Port of Newcastle	LNG terminal		Planning	2021		Hope to secure regulatory approval Q2 2020
	ExxonMobil		Gippsland basin	LNG terminal	0	Planning	2022		Offshore, pipe to Victoria
	Venice Energy	Outer Harbor LNG	Port Adelaide	LNG terminal	0	Planning	2021		
BENIN	Total	Cotonou LNG		LNG terminal	0.5	Planning	2021		FSRU
BRAZIL	CELSE	Barra dos Coqueiros	Porto de Sergipe	LNG terminal	3	Under constr.	2020	Golar	Golar Nanook, 170,000 cu m
	Golar	Terminal Gas Sul	Babitonga Bay, Santa Catarina	LNG terminal	2	Planning			160,000-cu m FSRU near coast. Connection to Gasbol pipeline and Engie power plant
	Cosan	Santos	Santos, Sao Paulo	LNG terminal	2	Planning			FSRU. Supply local distributor Comgas, replacing pipeline imports from Bolivia.
	Copel, Shell	Pontal do Parana	Pontal do Parana or Paranagua	LNG terminal	2	Planning			Supply Parana state power plants
	Prumo Logistica, BP, Siemens	Acu Port	Sao Joao da Barra, Rio de Janeiro	LNG terminal	3	Engineering	2021	BW	FSRU BW Magna. Supply new-build power plants UTE GNA 1 (1.3 Gw, 2021) and UTE GNA 2 (1.6 Gw, 2023)
	TPK Logistica, Port of Rotterdam	Presidente Kennedy	Espirito Santo state	LNG terminal	3	Planning			FSRU. Supply two regional new-build power plants
	Golar	Sao Marcos Bay	Maranhao state	LNG terminal	3	Engineering			Supply regional power plants
	Celse, Golar	Barcarena	Vila do Conde port, Para state	LNG terminal	2	Planning			FSRU
CANADA	Chevron, Woodside	Kitimat LNG	Bish Cove	LNG	11	Engineering	2027	KBR-FEED, Fluor-EPC	Woodside looking to sell part of its 50% stake as of Sept. 2019
	Pieridae Energy Ltd.	Goldboro LNG	Nova Scotia	LNG	10	Planning	2025	KBR	FID delayed to after September 2020
	Liquefied Natural Gas Ltd.	Bear Head LNG	Strait of Canso, Nova Scotia	LNG	12	Planning	2024		Financing problems undermining project (April 2020)
	Pacific Oil and Gas Ltd.	Woodfibre LNG	Squamish	LNG	2.1	Engineering		McDermott-EPC	Construction start pushed back to 2021
	Shell, Petronas, PetroChina, Mitsubishi, Kogas	LNG Canada	Kitimat	LNG	14	Under constr.	2025	JGC-Fluor EPC	Construction on schedule as of March 2020.
CHINA	CNOOC	Shanghai LNG	Shanghai	LNG terminal	0	Under constr.	2020		200,000-cu m storage expansion
	CNOOC	Rudong LNG Phase 3	Binhai, Jiangsu	LNG terminal	0	Under constr.	2021		2 x 200,000 cu m storage, pipe most gas 156 km to Anhui
	Sinopec, Zhejiang Energy Group Co. Ltd.	Wenzhou LNG	Wenzhou, Zhejiang	LNG terminal	0	Planning	2021	4 x 200,000 cu m storage, 16 mile pipeline	Reached supply agreement with ExxonMobil April 2019.
	CNOOC	Zhangzhou LNG	Zhangzhou, Fujian	LNG terminal	2.6	Under constr.	2022		Design received final approval March 2019.
CONGO-BRAZZAVILLE	NewAge LNG		Block Marine XII	LNG	1.2	Planning	2021	SBM Offshore-JGC	FSRU
CROATIA	LNG Croatia		Island of Krk	LNG terminal	2	Planning	2021		EC aid approved Jan. 2020
CYPRUS	DEFA		Vasilikos Bay	LNG terminal		Engineering	2021	ETYFA, construction	FSRU
GERMANY	Uniper	Wilhelmshaven LNG	Wilhelmshaven	LNG terminal	7	Planning	2023	Mistui OSK, FSRU	Open season held May 2019. Seeking partner.
	Gasunie, Vopak, OilTanking	German LNG	Kiel Canal mouth	LNG terminal		Planning	2023		Ready to sign heads of agreement March 2020
GHANA	Quantum Power Ghana Gas Ltd., GNPC	Tema LNG	12 km off Tema	LNG terminal	2	Under constr.	2020	Micoperi, HR Wallingford, China Harbour Engineering Co.	FSU will be converted LNG Flora vessel. To be paired with barge-based FRU.
INDIA	Adani Group/IOC/GAIL	Dharma LNG	Dharma, Odisha	LNG terminal	5	Planning	2020		IOC booked 3 mtpy capacity
	Swan Energy	Swan LNG	Jafrabad, Gujarat	LNG terminal	5	Under construction	2020	NMIPL	FSRU. Expandable to 10 mtpy.
	H-Energy	West Bengal LNG	Hooghly River, East Medinipur	LNG terminal	5	Planning	2021		Initial capacity of 1.5-3.0 mtpy
	AG&P	Karaikal LNG	Karaikal port	LNG terminal	1	Under constr.	2021	Stolt-Nielsen	AI Khaznah LNG carrier to be converted to FSU
INDONESIA	Inpex/Shell	Masela LNG	South Tanimbar, Maluku	LNG	9	Engineering	2027	GE Oil & Gas	Onshore terminal will supply local gas by pipeline

LNG CONT.

Country	Company	Project	Location	Project type	Added capacity	Status	Completion	Contractor/ contract type	Project notes
	BP	Tangguh LNG	Papua Barat province	LNG	3.8	Under construction	2020	GE Oil & Gas/Tripatra/Chiyoda/Saipem/Suluh Ardhi/ABB	Third train. Will raise total capacity to 11.4 million tpy
	Inpex Holdings, Shell	Abadi LNG	Abadi field	LNG	9.5	Engineering	2021	KBR, pre-FEED	MOUs signed Feb. 2020
LATVIA	Skulte LNG Terminal Co.	Skulte LNG	Skulte Port, Gulf of Riga	LNG terminal		Planning			Able to receive carriers up to 174,000 du m.
LEBANON	Lebanon LNG	Lebanon LNG	Offshore Beddawi, Selaata, and Zahrani	LNG terminal	0	Planning			Three FSRU along coast. Tendered July 2019. Plans stalled as of April 2020.
MALAYSIA	Petronas	FLNG 2	Rotan gas field	LNG	1.5	Under constr.	2020	JGC, Samsung Heavy Industries-EPCIC	240 km off Sabah
MAURITANIA-SENEGAL	BP/Kosmos	Tortue LNG	Offshore both countries LNG	LNG	3	Engineering	2022	Black & Veatch, Keppel	Gimi FLNG will develop. BP invoked force majeure in petition for a 1-year delay in taking receipt of FLNG (April 2020).
MEXICO	Sempra LNG	Energia Costa Azul	Baja, Mexico	LNG	2.4	Planning	2023		Expected Q2 2020 FID postponed March 2020
MOZAMBIQUE	Anadarko Petroleum Corp.	Mozambique LNG		LNG	13	Engineering		CCS JV, EPC	CCS JV previously provided front-end engineering design services for the development. McDermott's values its initial portion of the EPC contract at \$2 billion.
	Eni	Coral South LNG	Area 4, Rovuma basin	LNG	3.4	Under constr.	2022	Samsung, Technip-FMC, JGC	Hull expected to be launched in 2020
	ExxonMobil, Eni, CNPC, ENH, Kogas, Galp	Rovuma LNG	Area 4	LNG	15	Engineering	2025	Mitsubishi, Hitachi	Late-2020 FID delayed indefinitely March 2020
	Total/ONGC/BPRL/OIL/PTT	Mozambique LNG (Area 1)	Onshore plant on the Afungi peninsula, Cabo Delgado	LNG	12.9	Under constr.	2024	TechnipFMC, VanOord-Subsea	FID reached June 2019. Construction started Aug. 2019
NIGERIA	Brass LNG Ltd.	Brass LNG	Bayelsa State	LNG	10	Engineering	0	Bechtel--Engr./Contr./PD/DD/PE/CS/PM	Two 5-million tpy/trains. Corruption investigation underway.
	Nigeria LNG	Bonny Island Trains 7-8	Bonny Island	LNG	8	Engineering	0	Chiyoda-FEED; Saipem, Chiyoda, Daewoo-EPC	Stalled. LOI for Train 7 EPC signed Sept. 2019. Construction delayed April 2020
PAKISTAN	Younus Bros., Sapphire, Halmore Power Generation	Energas LNG	Port Qasim, Karachi	LNG terminal	6	Planning	0		Awaiting site allocation at Port Qasim.
	Pakistan GasPort Ltd.	Gwadar LNG	Gwadar	LNG terminal	9.2	Planning	0		Two FSRU at a jetty. Delayed.
PAPUA NEW GUINEA	Total SA, Oil Search, ExxonMobil	Papua LNG	Caution Bay, Port Moresby	LNG	5.4	Planning	2026		Expansion. Delayed by gov't/ExxonMobil disagreement re: P'nyang field development
	ExxonMobil	PNG LNG	Port Morseby	LNG	2.7	Planning	2029		Expansion. Delayed by gov't/ExxonMobil dispute re: P'nyang field development
PHILIPPINES	CNOOC, Phoenix Petroleum, Philippine National Oil Co.	Batangas Energy Hub	Batangas Bay	LNG terminal	0	Planning	2023		Application suspended by developers February 2020 to evaluate options
	First Gen, Tokyo Gas Co. Ltd.		Batangas province	LNG terminal	5	Planning	2022		Moved forward from 2023 by switch to FSRU
POLAND			Gdansk Harbor	LNG terminal	2.8	Planning	2025		FSRU
	Gaz-System	Polskie LNG	Swinoujscie	LNG terminal	2.5	Planning	2021	Selas-Linde, SCV vaporizer supply	Expansion from 5 mtpy to 7.5. Co-financing deal signed with government April 2019.
QATAR	Qatar Petroleum	Expansion	Ras Laffan	LNG	33	Planning	2025	McDermott, Consolidated Contractors, Chiyoda	Four-train expansion to existing plant
RUSSIA	Gazprom/Shell/Mitsui/Mitsubishi	Sakhalin II Train 3		LNG	0	Planning	2024		Discussions between Gazprom, Mitsubishi ongoing
	Novatek		Kamchatka	LNG terminal	0	Planning	2022		Transshipment point for Russian exports to Asia
	ExxonMobil/Rosneft/SODECO, ONGC Videsh	Far East LNG	Di Kastri port, Khabarovsk	LNG	6.2	Planning	0		FID made Sept. 2019
	Gazprom	Portovaya LNG	Vyborgsky, Leningrad	LNG	13	Under constr.	2023	SREDI Oil & Gas Peton	Onshore storage, offshore terminal in progress
	Total SA/Novatek	Arctic LNG 2	Gydan Peninsula	LNG	20	Under constr.	2023	TechnipFMC, EPC; QMW, module supply	"Slightly ahead of schedule" April 2020
	Gazprom	Baltic LNG	Ust-Luga port	LNG	10	Planning	2025		Shell left project April 2019. State development bank VEB to invest \$1.68 billion
TAIWAN	CPC Corp.		Kuantan Industrial Zone, Taoyuan	LNG terminal	3	Under constr.	2023		
TANZANIA	Equinor/Shell/ExxonMobil/Ophir	Lindi LNG	Lindi region	LNG			2028		Partners plan to build onshore plant. Tanzania says construction to start 2022.
THAILAND	PTT LNG Co. Ltd.	Rayong LNG	Nong Fab, Rayong	LNG terminal	7.5	Engineering	2022	Saipem/CTCI Corp., EPC	
	Gulf MPT	Map Ta Phut LNG	Map Ta Phut (Rayong)	LNG terminal	5	Planning	2025		Government of Thailand joined project Oct. 2019

LNG CONT.

Country	Company	Project	Location	Project type	Added capacity	Status	Completion	Contractor/ contract type	Project notes
UNITED ARAB EMIRATES	SNOC/Uniper	Sharjah LNG	Hamriyah port, Sharjah	LNG terminal	4	Planning			Supply Sharjah Electricity and Water Authority. Put on hold March 2020 following Mahani field's discovery
UNITED KINGDOM	InfraStrata	Cumbria LNG	Offshore Barrow-in-Furness	LNG terminal	5	Planning			Exclusivity agreement with Meridian Holdings July 2019, extended Jan. 2020.
UNITED STATES	SCT&E LNG	Monkey Island LNG	Cameron Parish, La.	LNG	15.8	Planning	2022		FID Q4 2020
	Venture Global	Calcasieu Pass LNG	Cameron Parish, La.	LNG	10	Engineering	2022	BHGE, liquefaction trains	FID made August 2019. Equipment deliveries second-half 2020.
	Commonwealth Projects LLC	Commonwealth LNG	Cameron Parish, La.	LNG	8.4	Planning	2024	TechnipFMC	FID Q4 2020
	Sempra	Cameron LNG	Cameron Parish, La.	LNG	15	Under construction	2020	McDermott International Inc., Chiyoda Corp., lead contractors	Train 1 began commercial operations August 2019. Train 2 followed Q1 2020, Train 3 set for Q2 2020. Regulatory approval has been granted for two more trains, but a decision to build them has not been made.
	Tellurian	Driftwood LNG	Carlyss, La.	LNG	27.6	Planning	2022		FERC approved April 2019. DOE export authorization May 2019. Petronet LNG bought 18% equity Sept. 2019.
	Alaska Gasline Development Corp.	Alaska LNG	Nikiski, Alas.	LNG	0	Planning	2025		FERC issued draft EIS June 2019. Valdez competing for plant location. AGDC will decide whether to continue project June 2020.
	Fairwood Cheniere	Delfin LNG	Cameron Parish, La.	LNG	13	Planning	2023		1-year extension granted July 2019. FID pushed to 2020.
	Cheniere	Corpus Christi LNG Train 3	Corpus Christi, Tex.	LNG	9.5	Under constr.	2021	Bechtel	Nearly 70% complete Nov. 2019
	Freeport LNG	Freeport LNG	Quintana Island, Tex.	LNG	5	Under construction	2021	McDermott, Zachry Industrial, Chiyoda International Corp. KBR, Train 4	Production from Train 1 started August 2019, Train 2 Jan. 2020. Train 3 feedgas introduced March 2020. Fourth train in 2021 will bring production to 20 mtpy.
	Exelon Corp.	Annova LNG	Brownsville, Tex.	LNG	7	Planning	2024		FERC approved Nov. 2019. Environmental groups requested reversal Dec. 2019. Signed 20-year gas supply deal with Enbridge Jan. 2020
	Global Energy Megetrend Ltd.	Magnolia LNG	Lake Charles, La.	LNG	8.8	Engineering	2024	KBR-SKE&C	Sold by LNG Ltd for \$2.25 million May 2020
	Texas LNG	Texas LNG	Brownsville, Tex.	LNG	2	Planning	2024		FERC approved Nov. 2019. Environmental groups sought reversal Dec. 2019. FID expected in 2020.
	NextDecade	Rio Grande LNG	Brownsville	LNG	27	Planning	2023	Bechtel, EPC for Phase1	FERC approved Nov. 2019. Environmental groups asked for reversal Dec. 2019.
	Cheniere	Sabine Pass Train 6	Cameron Parish, La	LNG	4.9	Under constr.	2023	Bechtel Oil, Gas & Chemicals Inc, Construction	38% complete Nov. 2019
	Venture Global	Plaquemines LNG	Plaquemines Parish	LNG	20	Planning	2023		DOE authorized non-FTA exports Oct. 2019. FID expected mid-2020
	Venture Global	Delta LNG	Plaquemines Parish, La.	LNG	24	Planning	2024		FERC filed notice of intent to prepare EIS Aug. 2019.
	Pembina Pipeline Corp.	Jordan Cove LNG	Coos Bay	LNG	7.8	Planning	2025	KBJ	Received final FERC authorization March 2020. Still needs state and local permits
Qatar Petroleum, ExxonMobil	Golden Pass LNG	Sabine Pass, Tex.	LNG	15.6	Under constr.	2026		Construction started May 2019. FERC granted 7-year extension to 2026 for completion.	
Kinder Morgan	Elba Liquefaction Project	Elba Island	LNG	2.5	Under constr.	2020	IHI E&C International Corp.	First of 10 planned trains started operations Oct. 2019. Train 6 started April 2020. All units to be operational by mid-2020.	
Sempra	Port Arthur LNG	Port Arthur, Tex.	LNG	13.5	Planning	2023	Bechtel	Signed participation agreement with Aramco Jan. 2020, incl. 5 mtpy and 25% equity. FID delayed Q1 2020.	
Energy Transfer	Lake Charles LNG	Lake Charles, La.	LNG	11	Planning	2025	--	Shell left project March 2020. FID delayed to 2021.	
Kinder Morgan	Gulf LNG	Pascagoula, Miss.	LNG	11.7	Planning			FERC approved construction, DOE exports, July 2019. Placed on back burner Jan. 2020	
NextDecade	Galveston Bay LNG	Galveston, Tex.	LNG	16.5	Planning	2027		No progress since early 2019	
VIETNAM	Korea Gas Corp. (Kogas), Energy Capital Vietnam (ECV)	Mui Ke Ga LNG terminal	Mui Ke Ga, Binh Thuan Province	LNG terminal		Planning	2026	KBR, feasibility and cost estimates	A privately funded LNG regasification terminal, storage, gas supply system, and a 3,200-Mw gas-fired electric power project

PIPELINES

Diameter of pipe is listed in inches.

C
G
P
CN
Crude
Gas
Products
Condensate

Country	Company	Project	From Where	To Where	Pipeline Type	Project Miles	Diameter	Status	Expected Completion	Contractor	Project notes
ALGERIA	Sonatrach	EGDPF 48	El Aricha	Beni Saf	G	122	48	Engineering	2020		Link two existing export pipelines (GPDF and Medgaz) to improve efficiency of shipments to Europe via Spain.
ARGENTINA		Vaca Muerta gas pipeline	Southwestern Neuquen basin	Buenos Aires	G	620	24	Planning			Project delayed by financial crisis. Bid process suspended Apr. 1, 2020.
AUSTRALIA	Woodside Petroleum Ltd.	Scarborough export	Scarborough field	Pluto LNG, Karratha gas plant	G	233	Large	Engineering	2023	Subsea Engineering Associates; Boskalis, seabed intervention and shore crossing sectors	Deliver gas to Pluto LNG and Karratha gas plant
	Woodside	Pluto-NWS Interconnector	Karratha Gas Plant	Pluto LNG	G	2	30	Engineering	2020	Australian Gas Infrastructure Group	
	Woodside	Julimar-Brunello Phase 2			G	14	18	Engineering	2021		Will supply Wheatstone LNG
	ConocoPhillips	Barossa export	Barossa FLNG	Bayu-Darwin pipeline	G	162	26	Engineering	2020	Allseas	Extend life of Darwin LNG
BANGLADESH	Bangladesh Navy Bangladesh Army	A-1 Dhaka-Chittagong	Narayangaj Chittagong	Dhaka Dhaka	P P	11 147	8 16	Planning Planning	2020 2020		Ship A-1 jet fuel to international airport Ship diesel to capital
BULGARIA	BEH, DEPA, Edison	Gas Interconnector Greece-Bulgaria (ICGB Pipeline)	Greece	Bulgaria	G	113	32	Engineering	2020	Corinth Pipeworks	Provide gas from Turkey-Greece-Italy interconnector to Bulgaria and the Balkans. Pipe contract awarded Oct. 2019.
CANADA	Pembina	Peace Phase VI expansion	LaGlance, Alta.	Wapiti, Alta.	P	0	16	Planning	2020		Condensate, NGL, 16-in. LaGlance to Wapiti, Alta.; 20-in. Kakwa to Lator
	NGTL	2021 System Expansion			G	200	48	Planning	2021		Eight separate looping sections. Service starting Nov. 2020, full April 2021
	Enhance, Wolf Carbon Solutions	Alberta Carbon Trunk Line	Sturgeon refinery, Redwater fertilizer	Enhance EOR, Clive, Alta.	G	149	16	Planning	2020		Deliver CO2 from Sturgeon Refinery and Redwater Fertilizer to Enhance EOR project in Clive, Alta.
	Plains, SemGroup	Montney to Market	Montney	Market	C/P	0	0	Planning	2020		Transport NGL, condensate, light crude from Wapiti and maybe Pipestone to Edmonton and Fort Saskatchewan
	NGTL	North Montney Mainline	Eastern BC	NGTL Groundbirch mainline	G	128	42	Under Constr.	2020		Connect eastern BC to NGTL Groundbirch Mainline. Service to be phased in starting Jan. 2020.
	Government of Canada	Trans Mountain expansion	Edmonton	Westridge, BC	C	612	36	Planning	2022		Regulators approved June 2019. Court challenges from First Nations along route.
	NGTL	West Path Delivery	Saddle Hills, Alta.	Clear Hill, Alta.	G	15	42	Engineering	2021		Expansion between Saddle Hills and Clear Hills, Alta. Applications to be filed in 2020, construction as early as Q4 2021.
	TC Energy	Coastal GasLink	Dawson Creek, BC	LNG Canada near Kitimat, BC	G	415	48	Engineering	2024	JGC, Fluor	TC selling. Mubadala interested.
	Gazoduc		NE Ontario	Saguenay, Que.	G	465	42	Planning	2025		Part of system delivering from Alberta to Energie Saguenay
	Plains Midstream Canada (PMC)	Rangeland crude oil pipeline expansion	Edmonton, Alta	border at Carway, Alta	C			Planning	2021		Service between Edmonton and Sundre will be expanded to 100,000 b/d from 50,000 b/d and will be capable of bidirectional service. Sundre, south to the border, will be expanded up to 100,000 b/d from 20,000 b/d.
CHINA	CNOOC	Jiangsu to Anhui province	Jiangsu	Anhui province	G	98	0	Planning	2021		Move gas from Binhai LNG terminal to Anhui
	CNOOC	Caofeidian LNG	Tangshan	Tianjin	G	109	56	Planning	2022		Supply Beijing-Tianjin-Hebei
	CNOOC	Tianjin-Inner Mongolia	Bohai	Beijing-Tianjin-Hebei	G	237	56	Under Constr.	2020		Transport regasified LNG
	Sinopec	Xinjiang-Guangdong-Zhejiang	Xinjiang	Guangdong-Zhejiang	G	5563	40	Planning	2021		Move gasified coal east. Construction of underlying liquefaction plant began May 2019.
CYPRUS	Enegean		Eastern Med	Cyprus	G	124	24	Planning	2021		FPSO serving Karish and Tanin fields to Cyprus, up to 1 bcm/y.
EGYPT	Noble, Delek, Shell	Block 12 Aphrodite	Aphrodite field	Edku LNG	G			Planning	2025		Egypt approved Oct. 2019
GERMANY	Gascade	European Gas Pipeline Link (EUGAL)	Nord Stream landfall	Czech border	G	300	56	Under constr.	2020		Nord Stream to Czech border
	E.ON, OMV, Royal Dutch Shell, Gazprom	Nord Stream 2	Ust-Luga, Russia	Greifswald, Germany	G	759	48	Under constr.	2020		85% laid. Center section near Denmark missing. Denmark approved Oct. 2019. Nearing completion despite US sanctions. Allseas halted pipelay Jan. 2020.

PIPELINES CONT.

Country	Company	Project	From Where	To Where	Pipeline Type	Project Miles	Diameter	Status	Expected Completion	Contractor	Project notes
GHANA	Ghana Gas	Tema	Aboadze	Tema (Greater Accra)	G	172	24	Engineering	2020	Yantai Jereh Group	Chinese contractor will build-own-operate on 15-year initial term
INDIA	Bharat Petroleum Corp.	West Bengal to North Bangladesh	West Bengal	North Bangladesh	P	81	22	Under constr.	2021		Supply diesel to Bangladesh from India
	Gujarat State Petronet Ltd.	Mallavaram to Bhilwara	Mallavaram	Bhilwara	G	992	24	Under constr.	2020		30 MMscmd from India's east coast to central and northern parts of the country.
	GAIL (India) Ltd.		Barauni, Bihar	Guwahati, Assam	G	453	24	Engineering	2021		Part of spurs for the 2,111-mile Jagdishpur-Haldia-Bokaro-Dhamra system under construction in northeastern India.
	Gujarat State Petronet Ltd., Indian Oil Corp., HPCL, Bharat Petroleum Corp.	Mehsana-Srinagar	Mehsana	Srinagar	G	1525	42	Under constr.	2020		Phase 1 (Mehsana-Bhatinda) to be commissioned 2020. Construction of Phase 2 to Srinagar to follow.
	Indian Oil Corp.	Indian Oil Corp.	Ennore	Tuticorin	G	729	28	Under constr.	2020		Facing local opposition along route
	Indian Oil Corp., Bharat Petroleum Corp., Hindustan Petroleum Corp.	Kandla to Uttar Pradesh LPG pipeline	Kandla	Gorakhpur	P	1713	20-Aug	Engineering	2022		Shipping LPG. Construction to start April 2020.
	Indian Oil Corp., Nepal Oil Corp.	Motihari to Chitwan	Motihari	Chitwan	P	82	11	Under constr.	2020		LPG from India to Nepal. Motihari-Amlekhgunj section entered service Sept. 2019.
	Gas Authority of India	Jagdishpur to Dhamra spurs	Jagdishpur	Dhamra	G	699	12, 30	Under constr.	2020		Spur and feeder lines for above.
	Gas Authority of India	Jagdishpur to Dhamra	Jagdishpur	Dhamra	G	2111	24, 36	Under constr.	2020	MECON	Phase 1 completed Feb. 2019. Phase 2 to be complete by December 2020. All contracts awarded as of May 2019.
	Numaligarh Refinery Ltd. (NRL)	Paradip to Numaligarh	Paradip	Numaligarh	C	868	28	Planning	2023		
	Numaligarh Refinery Ltd. (NRL)		Numaligarh	Siliguri	P	406	16	Planning	2023		
	H-Energy	Jaigarh-Mangalore	Jaigarh	Mangalore	G	464	Large	Under constr.	2020	H-Energy Pvt. Ltd.	Building from both ends towards the middle
INDONESIA	Pertamina	Cirebon-Semarang	West Java	Central Java	G	158		Under Constr.		PT Rekayasa Industri	
IRAN	National Iranian Gas Co.	Iran to Oman	Iran	Oman	G	236	36, 56	Engineering	0		Progress curtailed by sanctions.
	National Iranian Gas Co.	IGAT IX	Asalouyeh	West Azerbaijan province	G	1147	56	Under constr.	2022	Kogas	Export gas to Europe.
IRAQ-JORDAN	NIOC	Basra-Aqaba pipeline	Basra, Iraq	Aqaba, Jordan	C	1043	56	Planning	2023		Iraq, Jordan agreed to revive project December 2018. Discussions continuing July 2019.
ISRAEL-GREECE	IGI Poseidon SA	EastMed	Eastern Mediterranean	Greece	G	1178	24	Planning	2025		10 bcm. Connect with Poseidon pipeline for continued shipment to Italy. Intergovernmental agreements signed January 2020.
LATVIA	Skulte LNG Terminal Co.	Regas pipeline	Skulte Port	Incukalna underground storage, Riga	G	24		Planning	2021		Kogas potential partner.
MEXICO	TC Energy	Tula-Villa de Reyes	Tula	Villa de Reyes	G	261	36	Under Constr.	2020		To begin service Q2 2020
MYANMAR	Woodside Petroleum Ltd.	Shwe Yee Htun export	Processing platform	Andaman Sea riser platform	G	149	30	Engineering			FEED expected 2H 2020
NIGER	China National Petroleum Corp.	Niger-Benin crude line	Agadem block	Niger Benin's Port of Seme	C	1181	20	Under Constr.	2021		Construction began Sept. 2019
NIGERIA	NNPC	OB3	Obiafu	Obrikom-Oben	G	79	48	Under constr.	2020		Boost domestic supply, reduce flaring.
	NNPC	AKK	Ajaokuta-Abuja	Kaduna-Kano	G	403	40	Under Constr.	2022		Phase 1 of Trans-Nigeria Gas Pipeline.
PAKISTAN	Pakistan Government	Machike-Taru Jabba Oil Pipeline Project	Machike	Taru Jabba	P	182	14, 18	Planning	2021	Frontier Oil Co.	Follow same route as Inter-State Gas Systems line. 109 miles of 14-in., balance 18.
	Pakistan Government	North-South Gas Pipeline Project	Karachi	Lahore	G	682	42	Planning	2023	Rostec	TMK-led consortium denied participation Jan. 2020. New Russian consortium put forward
POLAND	PGNiG	Baltic Pipe	Norway	Poland	G	171	40	Planning	2022		Construction to start Q2 2020. Turbines purchased Aug. 2019
ROMANIA	Transgaz	Midia	Black Sea wells	National gas grid	G	26	16, 8	Engineering	2021		FID made Sept. 2019. 24 km export line (16-in.), 18 km between offshore wells (8-in.).
	Transgaz	BRUA	Bulgaria	Austria	G			Engineering			Bridge from Podisor to Trans Adriatic Pipeline
	Transgaz	Podisor	Tuzla	Podisor	G			Under Constr.	2021		Black Sea landfall to connection with BRUA

PIPELINES CONT.

Country	Company	Project	From Where	To Where	Pipeline Type	Project Miles	Diameter	Status	Expected Completion	Contractor	Project notes
RUSSIA	Gazprom	Power of Siberia 2 (former Altai)	Western Siberia	Xinjiang, China	G	1612	56	Planning	2022		Negotiations still under way between Russia and China. China would rather route through Mongolia than Xinjiang (Sept. 2019) In East Siberia
	Rosneft	Danilovsky connector	North-Danilovskoye field	Verkhnechonskoye field	C	58		Under Constr.	2020		
SAUDI ARABIA	Saudi Aramco	Marjan field development	Offshore Saudi Arabia	Shore	G	40	36	Under Constr.	2020	McDermott	Work to be completed by DB50 and DB27.
TANZANIA	TPDC	Gas pipeline	Dar es Salaam	Uganda	G	1100	24	Planning	2024		Pass through Tanga to Mwanza. Second proposal would use Hoima-Tanga crude line corridor
THAILAND	TPN		Central Thailand	Northeast Thailand	C	212		Under Constr.	2022	China Petroleum Pipeline Engineering	Funded by Chinese government
TURKEY		Turkey-TRNC pipeline	Cyprus	Turkey	G	50		Planning	2025		Would be bidirectional
TURKMENISTAN	Turkmengaz, Afghan Gas Enterprise, Inter-State Gas Systems (Private) Ltd., GAIL (India) Ltd.	TAPI	Galkynysh field	Fazilka, India	G	1125	56	Under constr.	2021		Saudi-German JV supplying pipe to Turkmenistan, which began arriving Nov. 2018. No Afghan construction yet, delayed Jan. 2020 by land-acquisition issues.
UGANDA	Total/Tullow/CNOOC	East African Crude Oil Pipeline (EACOP)	Hoima, Uganda	Tanga, Tanzania	C	899	24	Engineering	2021		Allow export of Ugandan crude via the Indian Ocean through Tanzania
UKRAINE	UkrTransGaz	Gas Interconnector Poland-Ukraine	Hermanowice, Poland	Bliche Volytsia, Ukraine	G	62	40	Under Constr.	2020		Construction complete on Polish side
UNITED KINGDOM	Shell	Penguins	Penguins	FLAGS pipeline	G	6	16	Engineering	2021	Subsea 7	Export line. Part of greater field redevelopment.
	Shell	Pierce depressurization	Haewene Brim FPSO	Export pipeline	G	19		Engineering	2021	Subsea 7, EPCTI	Project 160 miles offshore, east of Aberdeen
UNITED STATES	Enterprise Products Partners (EPP), Lavaca Pipe Line	Baymark ethylene pipeline extension	Bayport, Harris County	Markham, Matagorda County	P	90		Planning	2020 Q4		
	Veresen Inc.	Pacific Connector	Malin hub	Jordan Cove LNG	G	232	42	Planning	2024		Supply gas to Jordan Cove LNG plant
	Transcontinental Gas Pipe Line Co. LLC	Northeast Supply Enhancement	Northeast Supply	NY citygate	G	34	26, 42	Planning	2020		Includes 23.5 miles of 26-in. in New York Bay.
	Tellurian	Driftwood	Gillis, La.	Driftwood LNG	G	96	48	Planning	2023		Gillis to Driftwood LNG
	Tellurian	Haynesville Global Access	Haynesville shale	Gillis, La.	G	200	42	Planning	2022		Haynesville shale to Gillis
	Summit Midstream Partners	Double E Pipeline	Delaware basin	Waha hub	G	120	30	Planning	2021		Delaware basin to Waha hub
	Enterprise Products Partners	Gulf Coast Ethylene	Mont Belvieu	Bayport, Tex.	P	24	24	Planning	2020		Connect producing and consuming sites with Houston Ship Channel.
	Enable Midstream	Gulf Run	NW Louisiana	SW Louisiana	G	165	42	Planning	2022		NW to SW Louisiana for LNG exports
	Crimson Midstream, MPLX	Swordfish Pipeline	St. James, Raceland, La.	LOOP	C	60	30	Planning	2020		Connect St. James and Raceland, La., terminals to LOOP
	Consumers Energy	Saginaw Trail	Zilwaukee City Gate	Clawson Control	G	78	24	Planning	2022		Replace 1940s-era pipe
	Midcoast Energy	CJ Express	Carthage, Tex.	Houston Ship Channel	G	150	36	Planning	2020		Carthage, Tex., to Houston Ship Channel
	Liberty Utilities	Granite Bridge	Manchester, NH	Strathan, NH	G	27	16	Planning	2021		Manchester to Strathan, NH
	Targa	Grand Prix extension	Southern Oklahoma	Kingfisher County, Okla., Bluestem	P	110	24	Planning	2021		
	Williams Cos.	Bluestem NGL	Overland Pass Pipeline	Grand Prix NGL	G	188	16	Planning	2020		
	MDU Resources Group Inc.	North Bakken Expansion Project	Tioga, ND	McKenzie Contry, ND	G	67	20	Engineering	2021		Dependent on regulatory and environmental permitting and finalization of transportation agreements with customers, construction is expected to begin in early 2021 and be completed late that year.
	Phillips 66 Partners, Harvest Midstream Co., and PBF Logistics LP	ACE Pipeline system	St. James, La.	Belle Chasse, Meraux, and Chalmette	C			Planning	2020		
	Tallgrass Pony Express Pipeline LLC	Pony Express expansion	Guernsey, Wyo	Cushing, Okla.	C	0	0	Planning	2020		
Crimson Midstream LLC, MPLX LP	Swordfish Pipeline	St. James, La. and Raceland, La.	Louisiana Offshore Oil Port LLC (LOOP) Clovelly, La.	C	50	16, 20, 30	Engineering	2020			
Williams	Leidy South expansion	Clinton County, Pa.	Lycoming County, Pa.	G	12	36, 42	Planning	2021		Replacement and looping to increase capacity by 580 MMcf/d	
Magellan	Saddlehorn Pipeline expansion	Ft. Laramie, Wyo.		C			Planning	2020			
Venture Global	TransCameron	TETCO interconnect	Calcasieu Pass LNG	G	24	42	Planning	2022		Deliver gas to Venture's liquefaction plant	
Tellurian	Permian Global Access	Waha, Tex.	Gillis, La.	G	625	42	Planning	2024		Interconnect to Creole Trail Pipeline and others. Company expects to file complete FERC application Oct. 2020.	

PIPELINES CONT.

Country	Company	Project	From Where	To Where	Pipeline Type	Project Miles	Diameter	Status	Expected Completion	Contractor	Project notes
	Shell Pipeline Co. LP	Falcon Ethane Pipeline System	Houston, Pa., and Cadiz, Ohio	Beaver County, Pa.	P	97	12	Under Constr.	2020		HDD under Ohio River completed Aug. 2019
	Holly Energy, Plains All American	Cushing Connect	Cushing, Okla.	Tulsa, Okla.	C			Planning	2021		Deliver crude to HollyFrontier Corp. refining complex
	Bridger, Phillips 66	Equality Pipeline	Bakken	Guernsey, Wyoming	C		20	Engineering	2020		Deliver crude through Guernsey terminal to Liberty Pipeline
	Easton Energy Services	Seadog	Markham, Tex.	Stratton Ridge, Tex.	P	53	12	Engineering	2020		Bidirectional. Connects Markham, Clemens Caverns, and Stratton Ridge storage, transporting ethane and propane.
	Easton Energy Services	Black Jack	Markham, Clemens Caverns storage	Purity Pipeline #2	P			Engineering	2020		Move butane, isobutane, natural gasoline to Houston and beyond.
	NAmerico Partners LP	Pecos Trail Pipeline	Permian basin	Corpus Christi	G	468	42	Under Constr.	2021		Link production to existing lines delivering to Mexico and Corpus Christi. Delayed Apr. 2019 to further gauge shipper interest.
	Oneok Inc.	West Texas LPG Expansion	Delaware basin	Arbuckle II interconnections	P	0	16	Planning	2021		Looping. Supported by production from six planned third-party gas plants. 80,000 by Q1 2020, +40,000 by Q1 2021
	Kinder Morgan	Texas Intrastate Crossover expansion	KM Tejas mainline	Freeport LNG Pipeline	G	40	0	Engineering	2020		Lateral
	Enbridge, NextDecade	Rio Bravo Pipeline		Brownsville, Tex.	G	138	42	Planning	2023		Supply gas to proposed Rio Grande LNG plant
	Saddlehorn Pipeline Co. LLC, ARB Midstream LLC	Matador Pipeline	Platteville, Colo.	Cushing, Okla.	C	38	20	Under Constr.	2020		
	EagleClaw Midstream	Delaware Link	Delaware basin	Waha hub	G	40	30	Engineering	2020		Starts at gas processing sites in Reeves County, Tex. 1.2 bcf/d.
	Magellan Midstream Partners LP, Navigator Energy Services	Voyager Pipeline	Cushing, Okla. and Midland, Tex.	Houston, Tx.	C	750	20 or 24	Planning	2021		To Frost, Tex., and then to Houston
	MPLX, Targa, NextEra, WhiteWater	Whistler	Waha, Tex.	Agua Dulce hub	G	477	42, 30	Planning	2021		450 miles of 42-in., 27-mile 30-in. extension into Midland basin.
	MPLX, WhiteWater	Belvieu Alternative NGL (BANGL)	Orla, Tex.	Sweeny, Tex.	P	400	24	Planning	2022		MPLX plans export hub in Texas City served by both BANGL and W2W. FID possible early 2020.
	Enterprise Products Partners LP	Gillis Lateral	Cheneyville, La.	Gillis, La.	G	80	36	Engineering	2021		Haynesville shale to LNG market via third-party interconnects near Gillis
	Plains All American, Valero	Byhalia Connection	Memphis	Marshall County, MS	C	45	24, 26	Planning	2020		Connect Diamond Pipeline and Capline Pipeline
	Tallgrass	Cheyenne Connector	Weld County, Colo.	Cheyenne Hub	G	71	36	Under Constr.	2020		
	Phillips 66, Plains All American	Red Oak	Cushing, Okla.	Corpus Christi, Tex. and Houston/Beaumont	C	650	30, 20	Planning	2021		Use 30-in. pipe from Cushing to Wichita Falls and Sealy, Tex. Also 30-in. from Sealy to Corpus/Ingleside. 20-in. pipe from Sealy to Houston/Beaumont
	SemGroup Corp., DCP Midstream	Gladiator Pipeline	Cushing, Okla.	Houston, Tx	C	0	0	Engineering	2020		Mostly conversion of existing NGL pipeline
	Salt Creek Midstream LLC	Delaware basin crude line	New Mexico's Eddy and Lea counties	SCM's Wink and Orla	C	95	20	Planning	2020		Open season Aug. 2019
	Energy Transfer Partners	Lone Star Express expansion	Permian basin	Fort Worth, Tex.	P	352	24	Under Constr.	2020		Existing pipeline network extends to Mont Belvieu
	Oneok Inc.	Arbuckle II	Oklahoma	Mont Belvieu, Tex.	P	530	24, 30	Under Constr.	2020		Oklahoma to Mont Belvieu
	Alaska Gasline Development Corp.	Alaska LNG	North Slope	Nikiski, Alas.	G	800	42	Planning	2024		Transport natural gas for liquefaction and export. Sales agreements with BP, ExxonMobil. Talks with ConocoPhillips. AGDC plans to build construction camps and access roads starting Q2 2020
	Oneok Inc.	West Texas LPG pipeline			P			Planning	2021		Cost of \$145 million. Part of greater system expansion, including gas processing and fractionation.
		Wyoming Pipeline Corridor Initiative		EOR sites	G	1914		Planning			Would carry CO2. FERC issued draft EIS March 2020
	Energy Transfer	Mariner East 2X	Mariner		P	350	16	Under Constr.	2020		Reached agreement with DEP to complete project (Jan. 2020). Construction suspended March 2020 due to COVID-19
	TC Energy	Buckeye XPress	Ohio	WV	G	66	36	Engineering			Range Resources contracted 50 MMcf/d Jan. 2020
	PennEast Pipeline Co. LLC	PennEast	Luzerne County, Pa.	NJ	G	116	36	Planning	2022		NDEEC denied water permit Oct. 2019. Circuit Court declined to rehear earlier ruling Dec. 2019. PennEast proposed splitting into two phases March 2020. Phase 1 650,000 MMcf/d inside Pennsylvania.
	TC Energy	Keystone XL	Hardisty, Alta.	Steele City, Neb.	C	1179	36	Planning	2021		Nebraska court approved Aug. 2019. Start of work delayed October 2019 waiting for US District Court hearing. TC Energy said Jan. 2020 mobilizing construction equipment. Preliminary work started March 2020. US District Court in Montana withdrew ACE water-crossing permit April 2020.
	Enterprise Products Partners LP	M2E4	Midland, Tex.	Echo Terminal in South Texas	C	500	30	Engineering	2021	Enterprise Products Partners LP	Expected in-service Q2 2021. Expandable to 540,000 b/d.
	Kinder Morgan	Permian Pass			G			Planning	2023		In early development stages. Timing of gas demand growth being monitored. Talks with producers still underway as of Feb. 2020.

PIPELINES CONT.

Country	Company	Project	From Where	To Where	Pipeline Type	Project Miles	Diameter	Status	Expected Completion	Contractor	Project notes
	Mountain Valley Pipeline	Southgate extension	Chatham, Va.	Graham, NC	G	74	24, 16	Engineering	2021		FERC EIS issued Feb. 2020.
	Kinder Morgan, EagleClaw, Apache, ExxonMobil	Permian Highway	Waha, Tex.	Katy, Tex.	G	430	42	Under Constr.	2021		99% of ROW acquired. Western segment under construction. US District Court denied request to block project Feb. 2020.
	Enbridge Inc.	Line 3 Replacement Project	Neche, ND	Superior, Wisc.	C	364	36	Planning	2021		Labor contracts signed Dec. 2019. MPUC ruled FEIS sufficient Feb. 2020
	ExxonMobil Corp., Plains All American Pipeline LP, Lotus Midstream LLC	Wink to Webster Pipeline LLC	Wink and Midland, Tex.	Webster, Baytown, Tex., with connectivity to Texas City and Beaumont, Tex.	C	650	36	Planning	2021		
	Enterprise	M2E3	Midland, Tex.	Enterprise Crude Houston (ECHO) terminal	C	500	30	Engineering	2020		Expected in-service Q3 2020
	Dominion Energy, Duke Energy, Piedmont Natural Gas, Southern Gas	Atlantic Coast Pipeline	Benson, WV	Prospect, NC	G	599	20, 36, 42	Under Constr.	2022		PHMSA cited project for unsafe construction practices Aug. 2019. US Supreme Court to hear case involving authority to cross Appalachian Trail. Construction resumes end-2020.
	Tellurian	Delhi Connector	Perryville Hub	Gillis, La.	G	180		Planning	2023		
	Eastern Shore Natural Gas Co.	Del-Mar Energy Pathway	Delaware	Maryland	G	19		Under Constr.	2021		12 miles in Delaware, 7 in Maryland
	Williams	Bluebonnet Market Express	Waha	Katy, Tex.	G	500	Large	Engineering	2021		
	Sendero	Sendero Carlsbad Gateway	Permian processing plant	Waha hub	G	23	24	Planning			FERC approved Oct. 2019
	National Fuel Gas Co.	Northern Access Pipeline	Sergeant Township, Pa.	Elma, NY	G	97	24	Planning	2023		FERC granted 3-year extension to complete project. NY Supreme Court ruled Feb. 2020 that FERC had authority, not NYDEC. To be built 2022-23
	Tallgrass Energy LP	Seahorse	Cushing, Okla.	St. James, La.	C	700	30	Planning	2021		State permits under review Nov. 2019
	EQM Midstream Partners	Mountain Valley	Wetzel County, WV	Pittsylvania County, Va.	G	303	42	Under Constr.	2020		Work suspended at 80% complete Oct. 2018. Federal appeals courts upheld eminent domain and FERC approval February 2019. FERC asked US Fish and Wildlife Service to start permitting over Aug. 2019. Federal court stays authorizations Oct. 2019. FERC, FWS reviews extended March 2020
	Phillips 66, Bridger Pipeline LLC	Liberty Pipeline	Bakken	Cushing, Okla.	C	1300	24	Planning	2022		Likely use at least some existing pipeline. Pipe arriving October 2019. Postponed by cost cutting March 2020.
VIETNAM	PetroVietnam	Nam Con Son Phase 2	Nam Con Son Phase 1	Long Hai landfall	G	73	26	Engineering	2020	TechnipFMC	Meet demand in SE Vietnam