UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Form 10-K

(Mark One)

☑ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2021

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to

Commission file number: 001-33492

CVR Energy, Inc.

(Exact name of registrant as specified in its charter)

Delaware		61-1512186
(State or Other Jurisdiction of Incorporation or Organization)		*(I.R.S. Employer Identification No.)*

2277 Plaza Drive, Suite 500, Sugar Land, Texas 77479
(Address of principal executive offices) (Zip Code)
281-207-3200
(Registrant's Telephone Number, including Area Code)

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Ticker Symbol(s)	Name of Each Exchange on Which Registered
Common Stock, $0.01 par value per share	CVI	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☑

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☑

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☑ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☑ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☐	Accelerated filer	☑	Non-accelerated filer	☐
Smaller reporting company	☐	Emerging growth company	☐		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm prepared or issued its audit report. ☑

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☑

At June 30, 2021, the aggregate market value of the voting common stock held by non-affiliates of the registrant was approximately $527 million based upon the closing price of its common stock on the New York Stock Exchange Composite tape. As of February 18, 2022, there were 100,530,599 shares of the registrant's common stock outstanding.

Documents Incorporated By Reference

Portions of the registrant's Proxy Statement to be filed pursuant to Regulation 14A pertaining to the 2022 Annual Meeting of Stockholders are incorporated by reference into Part III hereof. The Company intends to file such Proxy Statement no later than 120 days after the end of the fiscal year covered by this Form 10-K.

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GLOSSARY OF SELECTED TERMS

The following are definitions of certain terms used in this Annual Report on Form 10-K for the year ended December 31, 2021 (this "Report").

2-1-1 crack spread — The approximate gross margin resulting from processing two barrels of crude oil to produce one barrel of gasoline and one barrel of distillate. The 2-1-1 crack spread is expressed in dollars per barrel and is a proxy for the per barrel margin that a sweet crude oil refinery would earn assuming it produced and sold the benchmark production of gasoline and distillate.

Ammonia — Ammonia is a direct application fertilizer and is primarily used as a building block for other nitrogen products for industrial applications and finished fertilizer products.

Biodiesel — A domestically produced, renewable fuel that can be manufactured from vegetable oils, animal fats, or recycled restaurant grease for use in diesel vehicles or any equipment that operates on diesel fuel and has physical properties similar to those of petroleum diesel.

Blendstocks — Various compounds that are combined with gasoline or diesel from the crude oil refining process to make finished gasoline and diesel fuel; these may include natural gas liquids, ethanol, or reformate, among others.

Bpd — Abbreviation for barrels per day.

Bulk sales — Volume sales through third-party pipelines, in contrast to tanker truck quantity rack sales.

Capacity — Capacity is defined as the throughput a process unit is capable of sustaining, either on a calendar or stream day basis. The throughput may be expressed in terms of maximum sustainable, nameplate or economic capacity. The maximum sustainable or nameplate capacities may not be the most economical. The economic capacity is the throughput that generally provides the greatest economic benefit based on considerations such as crude oil and other feedstock costs, product values, regulatory compliance costs and downstream unit constraints.

Catalyst — A substance that alters, accelerates, or instigates chemical changes, but is neither produced, consumed nor altered in the process.

Corn belt —The primary corn producing region of the United States, which includes Illinois, Indiana, Iowa, Minnesota, Missouri, Nebraska, Ohio and Wisconsin.

Crack spread — A simplified calculation that measures the difference between the price for light products and crude oil.

Distillates — Primarily diesel fuel, kerosene and jet fuel.

Ethanol — A clear, colorless, flammable oxygenated hydrocarbon. Ethanol is typically produced chemically from ethylene, or biologically from fermentation of various sugars from carbohydrates found in agricultural crops and cellulosic residues from crops or wood. It is used in the United States as a gasoline octane enhancer and oxygenate.

Feedstocks — Petroleum products, such as crude oil or fluid catalytic cracking unit gasoline, that are processed and blended into refined products, such as gasoline, diesel fuel, and jet fuel during the refining process.

Group 3 — A geographic subset of the PADD II region comprising refineries in the midcontinent portion of the United States, specifically Oklahoma, Kansas, Missouri, Nebraska, Iowa, Minnesota, North Dakota, and South Dakota.

Light crude oil — A relatively expensive crude oil characterized by low relative density and viscosity. Light crude oils require lower levels of processing to produce high value products such as gasoline and diesel fuel.

Liquid volume yield — A calculation of the total liquid volumes produced divided by total throughput.

MMBtu — One million British thermal units, or Btu: a measure of energy. One Btu of heat is required to raise the temperature of one pound of water one degree Fahrenheit.

Petroleum coke (pet coke) — A coal-like substance that is produced during the refining process.

Product pricing at gate — Product pricing at gate represents net sales less freight revenue divided by product sales volume in tons. Product pricing at gate is also referred to as netback.

Rack sales — Sales which are made at terminals into third-party tanker trucks or railcars.

RBOB — Reformulated blendstocks for oxygenate blending.

Renewable diesel — An advanced biofuel that is made from the same renewable resources as biodiesel but using a process that involves heat, pressure and hydrogen to create a cleaner fuel that's chemically identical to petroleum diesel.

RDU — Renewable diesel unit.

Refined products — Petroleum products, such as gasoline, diesel fuel, and jet fuel, that are produced by a refinery.

Sour crude oil — A crude oil that is relatively high in sulfur content, requiring additional processing to remove the sulfur. Sour crude oil is typically less expensive than sweet crude oil.

Southern Plains — Primarily includes Oklahoma, Texas and New Mexico.

Spot market — A market in which commodities are bought and sold for cash and delivered immediately.

Sweet crude oil — A crude oil that is relatively low in sulfur content, requiring less processing to remove the sulfur. Sweet crude oil is typically more expensive than sour crude oil.

Throughput — The quantity of crude oil and other feedstocks processed at a refinery measured in barrels per day.

Turnaround — A periodically performed standard procedure to inspect, refurbish, repair, and maintain the refinery or nitrogen fertilizer plant assets. This process involves the shutdown and inspection of major processing units and occurs every four to five years for the refineries and every two to three years for the nitrogen fertilizer facilities. A turnaround will typically extend the operating life of a facility and return performance to desired operating levels.

UAN — An aqueous solution of urea and ammonium nitrate used as a fertilizer.

ULSD — Ultra low sulfur diesel.

Utilization — Measurement of the annual production of UAN and Ammonia expressed as a percentage of each facilities nameplate production capacity.

WCS —Western Canadian Select crude oil, a medium to heavy, sour crude oil, characterized by an American Petroleum Institute gravity ("API gravity") of between 20 and 22 degrees and a sulfur content of approximately 3.3 weight percent.

WTI — West Texas Intermediate crude oil, a light, sweet crude oil, characterized by an API gravity between 39 and 41 degrees and a sulfur content of approximately 0.4 weight percent that is used as a benchmark for other crude oils.

WTL — West Texas Light crude oil, a light, sweet crude oil, characterized by an API gravity between 44 and 50 degrees and a sulfur content of approximately 0.4 weight percent that is used as a benchmark for other crude oils with a slightly heavier grade than WTI.

Yield — The percentage of refined products that is produced from crude oil and other feedstocks.

Important Information Regarding Forward Looking Statements

This Annual Report on Form 10-K contains forward looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), including, but not limited to, those under Item 1. Business, Item 1A. Risk Factors, and Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations. These forward looking statements are subject to a number of risks and uncertainties, many of which are beyond our control. All statements other than statements of historical fact, including without limitation, statements regarding future operations, financial position, estimated revenues and losses, growth, capital projects, stock or unit repurchases, impacts of legal proceedings, projected costs, prospects, plans, and objectives of management are forward looking statements. The words "could," "believe," "anticipate," "intend," "estimate," "expect," "may," "continue," "predict," "potential," "project," and similar terms and phrases are intended to identify forward looking statements.

Although we believe our assumptions concerning future events are reasonable, a number of risks, uncertainties, and other factors could cause actual results and trends to differ materially from those projected or forward looking. Forward looking statements, as well as certain risks, contingencies or uncertainties that may impact our forward looking statements, include but are not limited to the following:

- volatile margins in the refining industry and exposure to the risks associated with volatile crude oil, refined product and feedstock prices;
- the availability of adequate cash and other sources of liquidity for the capital needs of our businesses;
- the severity, magnitude, duration, and impact of the novel coronavirus 2019 and any variant thereof (collectively, "COVID-19") pandemic and of businesses' and governments' responses to such pandemic on our operations, personnel, commercial activity, and supply and demand across our and our customers' and suppliers' business;
- changes in market conditions and market volatility arising from the COVID-19 pandemic, including crude oil and other commodity prices, demand for those commodities, storage and transportation capacities, and the impact of such changes on our operating results and financial position;
- expectations regarding our business and the economic recovery relating to the COVID-19 pandemic, including beliefs regarding future customer activity and the timing of the recovery;
- the ability to forecast our future financial condition, results of operations, revenues and expenses;
- the effects of transactions involving forward or derivative instruments;
- changes in laws, regulations and policies with respect to the export of crude oil, refined products, other hydrocarbons or renewable feedstocks or products including, without limitation, the actions of the Biden Administration that impact oil and gas operations in the U.S.;
- interruption in pipelines supplying feedstocks or distributing the petroleum business' products;
- competition in the petroleum and nitrogen fertilizer businesses, including potential impacts of domestic and global supply and demand and/or domestic or international duties, tariffs, or similar costs;
- capital expenditures;
- changes in our or our segments' credit profiles;
- the cyclical and seasonal nature of the petroleum and nitrogen fertilizer businesses;
- the supply, availability and price levels of essential raw materials and feedstocks;
- our production levels, including the risk of a material decline in those levels;
- accidents or other unscheduled shutdowns or interruptions affecting our facilities, machinery, or equipment, or those of our suppliers or customers;
- existing and future laws, regulations or rulings, including but not limited to those relating to the environment, climate change, renewables, safety, security and/or the transportation of production of hazardous chemicals like ammonia, including potential liabilities or capital requirements arising from such laws, regulations or rulings;
- potential operating hazards from accidents, fire, severe weather, tornadoes, floods, or other natural disasters;
- the impact of weather on commodity supply and/or pricing and on the nitrogen fertilizer business including our ability to produce, market or sell fertilizer products profitability or at all;
- rulings, judgments or settlements in litigation, tax or other legal or regulatory matters;
- the dependence of the nitrogen fertilizer business on customers and distributors including to transport goods and equipment;
- the reliance on, or the ability to procure economically or at all, pet coke our nitrogen fertilizer business purchases from Coffeyville Resources Refining & Marketing, LLC ("CRRM"), a subsidiary of CVR Refining, LP, and third-party suppliers or the natural gas, electricity, oxygen, nitrogen, sulfur processing and compressed dry air and other products purchased from third parties by the nitrogen fertilizer and petroleum businesses;

- risks associated with third party operation of or control over important facilities necessary for operation of our refineries and nitrogen fertilizer facilities;
- risks of terrorism, cybersecurity attacks, and the security of chemical manufacturing facilities and other matters beyond our control;
- our lack of diversification of assets or operating and supply areas;
- the petroleum business' and nitrogen fertilizer business' dependence on significant customers and the creditworthiness and performance by counterparties;
- the potential loss of the nitrogen fertilizer business' transportation cost advantage over its competitors;
- the potential inability to successfully implement our business strategies at all or on time and within our anticipated budgets, including significant capital programs or projects, turnarounds or renewable or carbon reduction initiatives at our refineries and fertilizer facilities, including pretreater, carbon sequestration, segregation of our renewables business and other projects;
- our ability to continue to license the technology used for our operations;
- our petroleum business' purchase of, or ability to purchase, renewable identification numbers ("RINs") on a timely and cost effective basis or at all;
- the impact of refined product demand, declining inventories, and Winter Storm Uri on refined product prices and crack spreads;
- Organization of Petroleum Exporting Countries' ("OPEC") production levels and pricing;
- the impact of RINs pricing, our blending and purchasing activities and governmental actions, including by the U.S. Environmental Protection Agency (the "EPA") on our RIN obligation, open RINs positions, small refinery exemptions, and our estimated consolidated cost to comply with our Renewable Fuel Standard ("RFS") obligations;
- our businesses' ability to obtain, retain or renew environmental and other governmental permits, licenses or authorizations necessary for the operation of its business;
- existing and proposed laws, regulations or rulings, including but not limited to those relating to climate change, alternative energy or fuel sources, and existing and future regulations related to the end-use of our products or the application of fertilizers;
- refinery and nitrogen fertilizer facilities' operating hazards and interruptions, including unscheduled maintenance or downtime and the availability of adequate insurance coverage;
- risks related to services provided by or competition among our subsidiaries, including conflicts of interests and control of CVR Partners, LP's general partner;
- instability and volatility in the capital and credit markets;
- restrictions in our debt agreements;
- asset impairments and impacts thereof;
- the variable nature of CVR Partners, LP's distributions, including the ability of its general partner to modify or revoke its distribution policy, or to cease making cash distributions on its common units;
- changes in tax and other laws, regulations and policies, including, without limitation, actions of the Biden Administration that impact conventional fuel operations or favor renewable energy projects in the U.S.;
- changes in CVR Partners' treatment as a partnership for U.S. federal income or state tax purposes; and
- our ability to recover under our insurance policies for damages or losses in full or at all.

All forward looking statements contained in this Report only speak as of the date of this Report. We undertake no obligation to publicly update or revise any forward looking statements to reflect events or circumstances that occur after the date of this Report, or to reflect the occurrence of unanticipated events, except to the extent required by law.

Information About Us

Investors should note that we make available, free of charge on our website at cvrenergy.com, our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and any amendments to those reports as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. We also post announcements, updates, events, investor information and presentations on our website in addition to copies of all recent news releases. We may use the Investor Relations section of our website to communicate with investors. It is possible that the financial and other information posted there could be deemed to be material information. Documents and information on our website are not incorporated by reference herein.

The SEC maintains a website at www.sec.gov that contains reports, proxy and information statements, and other information regarding issuers, including us, that file electronically with the SEC.

PART I

Part I should be read in conjunction with Management's Discussion and Analysis in Item 7 and our consolidated financial statements and related notes thereto in Item 8.

Item 1. *Business*

Overview

CVR Energy, Inc. is a diversified holding company formed in September 2006 which is primarily engaged in the petroleum refining and nitrogen fertilizer manufacturing industries through its holdings in CVR Refining, LP, which was a publicly traded limited partnership prior to January 29, 2019 (the "Petroleum Segment" or "CVR Refining"), and CVR Partners, LP, a publicly traded limited partnership (the "Nitrogen Fertilizer Segment" or "CVR Partners"). CVR Refining is an independent petroleum refiner and marketer of high value transportation fuels. CVR Partners produces and markets nitrogen fertilizers in the form of UAN and ammonia. As used in this Annual Report on Form 10-K, the terms "CVR Energy", the "Company", "we", "us", or "our" generally include CVR Refining, CVR Partners, and their respective subsidiaries, as consolidated subsidiaries of the Company, subject to certain exceptions where there are transactions or obligations between and among CVR Refining, CVR Partners, and CVR Energy, including their respective subsidiaries. Refer to "Petroleum" and "Nitrogen Fertilizer" below for further details on our two business segments.

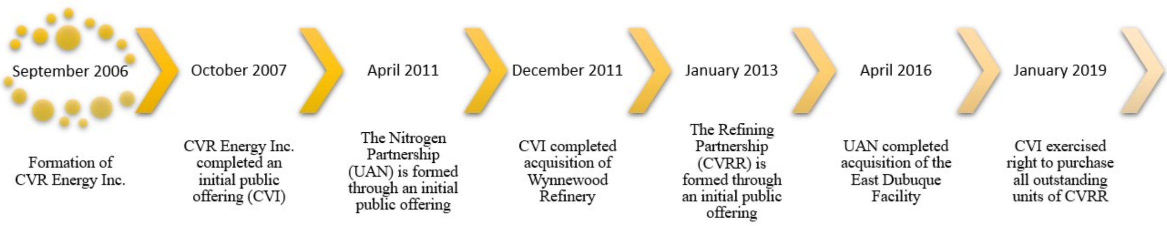
Our common stock is listed on the New York Stock Exchange ("NYSE") under the symbol "CVI," and CVR Partners' common units are listed on the NYSE under the symbol "UAN." As of December 31, 2021, Icahn Enterprises L.P. and its affiliates ("IEP") owned approximately 71% of our outstanding common stock.

As of December 31, 2021, we owned the general partner and approximately 36% of the outstanding common units representing limited partner interests in CVR Partners, with the public owning the remaining outstanding common units of CVR Partners.

As of December 31, 2021, we owned the general partner and all outstanding common units of CVR Refining, including the common units of CVR Refining that we or our subsidiaries purchased on January 29, 2019 from unaffiliated common unitholders following the assignment by CVR Refining's general partner to us of its right to purchase all such common units (the "Public Unit Purchase") and from IEP pursuant to an agreement containing substantially similar terms as the Public Unit Purchase (the "Affiliate Unit Purchase" and together with the Public Unit Purchase, the "CVRR Unit Purchase"). As a result of the CVRR Unit Purchase, CVR Refining's common units were delisted effective January 29, 2019, and its reporting obligations under Sections 13(a) and 15(d) of the Exchange Act were suspended as of February 8, 2019. Refer to Part II, Item 8, Note 1 ("Organization and Nature of Business") of this Report for further discussion of the CVRR Unit Purchase.

Our History

The following graphic depicts the Company's history and key events that have occurred since the Company's formation.



Petroleum

Our Petroleum Segment is composed of the assets and operations of CVR Refining, including two refineries located in Coffeyville, Kansas and Wynnewood, Oklahoma and supporting logistics assets in the region.

Facilities

Coffeyville Refinery - We own a complex full coking, medium-sour crude oil refinery in southeast Kansas, approximately 100 miles from Cushing, Oklahoma ("Cushing") with a name plate crude oil capacity of 132,000 bpd (the "Coffeyville Refinery"). The major operations of the Coffeyville Refinery include fractionation, catalytic cracking, hydrotreating, reforming, coking, isomerization, alkylation, sulfur recovery, and propane and butane recovery operating units. The Coffeyville Refinery benefits from significant refining unit redundancies, which include two crude oil distillation and vacuum towers, two sulfur recovery units, and five hydrotreating units. These redundancies allow the Coffeyville Refinery to continue to receive and process crude oil even if one tower requires maintenance without having to shut down the entire refinery. In addition, Coffeyville Resources Refining & Marketing, LLC ("CRRM"), a subsidiary of CVR Refining, has a hydrogen sale agreement with Coffeyville Resources Nitrogen Fertilizer, LLC ("CRNF"), a subsidiary of CVR Partners, where a fixed monthly volume of hydrogen is sold as part of the Coffeyville Master Service Agreement (the "Coffeyville MSA").

In May 2021, CVR Energy's board of directors (the "Board") approved the completion of the design for a potential conversion of an existing hydrotreater at our Coffeyville Refinery to renewable diesel service.

Wynnewood Refinery - We own a complex crude oil refinery in Wynnewood, Oklahoma approximately 65 miles south of Oklahoma City, Oklahoma and approximately 130 miles from Cushing with a name plate crude oil capacity of 74,500 bpd capable of processing 20,000 bpd of light sour crude oil (the "Wynnewood Refinery" and together with the Coffeyville Refinery, the "Refineries"). The major operations of the Wynnewood Refinery include fractionation, hydrocracking, hydrotreating, reforming, solvent deasphalting, alkylation, sulfur recovery, and propane and butane recovery operating units. Similar to the Coffeyville Refinery, the Wynnewood Refinery benefits from unit redundancies, including two crude oil distillation and vacuum towers and four hydrotreating units.

In December 2020, the Board approved a renewable diesel project at our Wynnewood Refinery, which would convert the Wynnewood Refinery's hydrocracker to an RDU capable of producing 100 million gallons of renewable diesel per year and approximately 170 to 180 million RINs annually. Currently, total estimated cost for the project is $170 million. Mechanical completion and startup of the RDU is expected to occur in the second quarter of 2022. As a result of the conversion of the hydrocracker to an RDU, the crude oil capacity of the Wynnewood Refinery would be reduced by approximately 4,500 bpd to 70,000 bpd. However, we may continue to choose to operate the Wynnewood Refinery in conventional hydrocracking mode instead of renewable diesel mode depending on which is most favorable economically.

In May 2021, CVR Energy's board of directors (the "Board") approved a $10 million capital expenditure for the completion of the design and ordering of certain long-lead equipment relating to a potential project to add pretreating capabilities for the RDU at our Wynnewood Refinery. In November 2021, the Board approved a project to install a renewable feedstock pretreatment unit at the Wynnewood Refinery, which is expected to be completed in the fourth quarter of 2022 at an estimated cost of $60 million. The pretreatment unit should enable us to process a wider variety of renewable diesel feedstocks at the Wynnewood Refinery, most of which have a lower carbon intensity than soybean oil and currently generate additional low carbon fuel standard credits.

Throughput by Refinery

	Year Ended December 31, 2021		
(in bpd)	Coffeyville	Wynnewood	Total
Total crude throughput	**121,514**	**73,386**	**194,900**
All other feedstock and blendstock	**10,788**	**3,396**	**14,184**
Total throughput	**132,302**	**76,782**	**209,084**

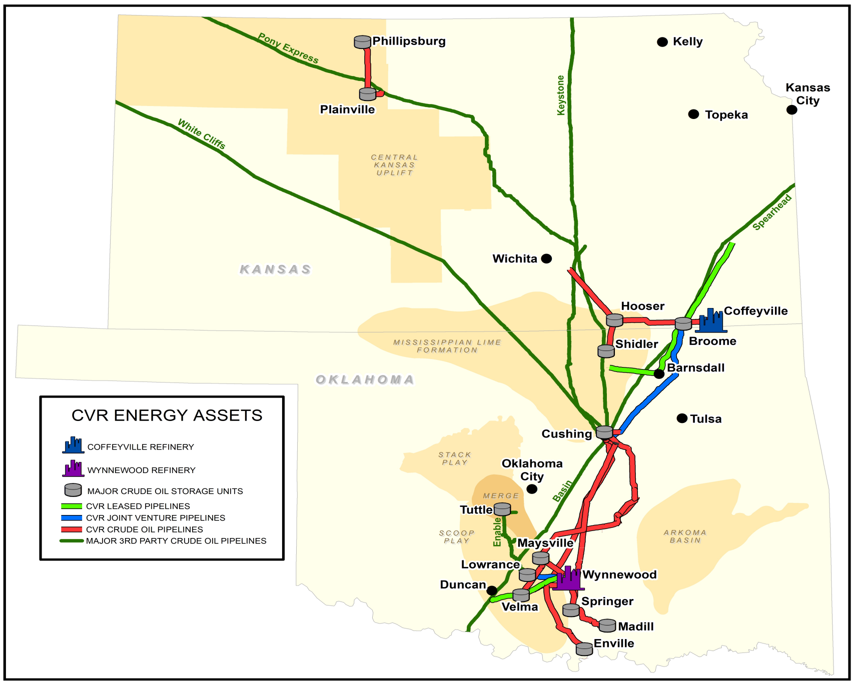
(in bpd)	Year Ended December 31, 2020		
	Coffeyville	Wynnewood	Total
Total crude throughput	100,722	70,636	171,358
All other feedstock and blendstock	8,321	3,616	11,937
Total throughput	109,043	74,252	183,295

Production by Refinery

(in bpd)	Year Ended December 31, 2021		
	Coffeyville	Wynnewood	Total
Gasoline	**71,070**	**39,858**	**110,928**
Diesel fuels	**53,441**	**31,662**	**85,103**
Other refined products	**8,727**	**2,883**	**11,610**
Total production	**133,238**	**74,403**	**207,641**

(in bpd)	Year Ended December 31, 2020		
	Coffeyville	Wynnewood	Total
Gasoline	59,419	38,640	98,059
Diesel fuels	43,209	30,638	73,847
Other refined products	7,072	2,654	9,726
Total production	109,700	71,932	181,632

Supply



The Coffeyville Refinery has the capability to process a variety of crude oils ranging from heavy sour to light sweet crude oil. Currently, the Coffeyville Refinery crude oil slate consists of a blend of mid-continent domestic grades and various Canadian medium and heavy sours and other similarly sourced crudes. Other blendstocks include ethanol, biodiesel, normal butane, natural gasoline, alkylation feeds, naphtha, gas oil, and vacuum tower bottoms. The Wynnewood Refinery has the capability to process a variety of crude oils ranging from medium sour to light sweet crude oil. Isobutane, gasoline components, and normal butane blendstocks are also typically used.

In addition to the use of third-party pipelines, we have an extensive gathering system consisting of logistics assets that are owned, leased, or part of a joint venture operation. These assets include the following:

	As of December 31, 2021	
Pipeline Segment	**Length *(miles)***	**Capacity *(bpd)***
Joint Ventures:		
Midway Pipeline LLC ("Midway JV") (1)	99	150,000
Enable South Central Pipeline ("Enable JV") (1)	26	115,000
Owned Pipelines:		
East Tank Farm to Refinery 16" (2)	2	160,000
Broome to East Tank Farm 16" (2)	19	120,000
Broome to East Tank Farm 12" (2)	19	52,000
Enable tie-in to Payson 8" (Red River)	78	40,000
Payson to Cushing 10" (Red River)	30	40,000
Springer to Cushing 8"	122	30,000
Hooser to Broome 8"	43	22,800
Wynnewood to Springer 8"	23	20,000
Wynnewood to Maysville 8"	21	20,000
Madill to Springer 6"	32	15,000
Maysville to Cushing 6" & 8"	131	14,000
Velma to Maysville 6" & 8"	29	8,000
Plainville to Natoma 6"	11	6,500
Shidler to Hooser 4"	23	6,500
Phillipsburg to Plainville 6"	36	6,000
Enville to Wynnewood 4" & 6"	74	6,000
Leased Pipelines:		
Kelly to Caney Jct. 8"	66	7,200
Humboldt to Broome 8"	63	7,000

(1) CVR Refining owns a 50% interest in the Midway JV and a 40% interest in the Enable JV. While CVR Refining has the ability to exercise influence through its participation on the board of directors of each of the Midway JV and the Enable JV, it does not serve as the day-to-day operator. We have determined that these entities should not be consolidated and apply the equity method of accounting. Refer to Part II, Item 8, Note 3 ("Equity Method Investments") of this Report for further discussion of these investments.

(2) In support of our Coffeyville Refinery, we own and operate a tank storage facility in close proximity to the Coffeyville Refinery (the "East Tank Farm").

For the acquisition of crude oil within close proximity of the Refineries, we operate a fleet of approximately 127 trucks and have contracts with third-party trucking fleets to acquire and deliver crude oil to our pipeline system or directly to the Refineries for consumption or resale. For the year ended December 31, 2021, the gathering system, which includes the pipelines outlined above and our trucking operations, supplied approximately 38% and 92% of the Coffeyville and Wynnewood Refineries' crude oil demand, respectively. Regionally sourced crude oils delivered to the Refineries usually have a transportation cost advantage compared to other domestic or international crudes given the Refineries' proximity to the producing areas. However, sometimes slightly heavier and more sour crudes may offer improved economics to the Refineries, notwithstanding the higher transportation costs. The regionally-sourced crude oils we purchase are light and sweet enough to allow the Refineries to blend higher percentages of lower cost crude oils, such as heavy Canadian sour, to optimize economics within operational constraints.

Crude oils sourced outside of our gathering system are delivered to Cushing by various third-party pipelines, including the Keystone and Spearhead pipelines on which we can be subject to proration, and subsequently to the Broome Station facility via the Midway JV pipeline. From the Broome Station facility, crude oil is delivered to the Coffeyville Refinery via the Petroleum Segment's 170,000 bpd proprietary pipeline system. Crude oils are delivered to the Wynnewood Refinery through third-party and joint venture pipelines and received into storage tanks at terminals located within or near the refinery. We also lease tank storage totaling 2.2 million barrels, including 2.0 million barrels at Cushing.

We acquired the Blueknight Energy Partners, LP pipelines (the "BKEP / CRCT Pipeline System") in February 2021, which complemented the Petroleum Segment's existing refineries and pipeline systems. The BKEP / CRCT Pipeline System is based in the Wynnewood area. This new system consists of gathering pipelines, which provide the ability to deliver local crude oil to the Wynnewood Refinery. In addition to the gathering capability, the BKEP / CRCT Pipeline System also provides the optionality to deliver and/or receive crude oil from Cushing, Oklahoma on two separate lines.

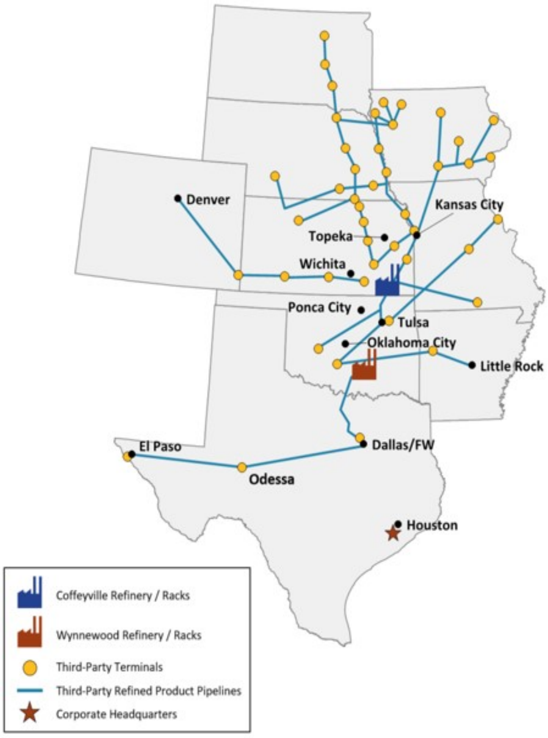
The Coffeyville Refinery is connected to the mid-continent natural gas liquid commercial hub at Conway, Kansas by the inbound Enterprise Pipeline Blue Line. Natural gas liquid blendstocks, such as butanes and natural gasoline, are sourced and delivered directly into the refinery. In addition, Coffeyville Refinery's proximity to Conway provides access to the natural gas liquid and liquid petroleum gas fractionation and storage capabilities.

Through the crude oil and other feedstock supply operations outlined above, and the associated markets available to us, we are able to source and refine crude oils from different locations and of different compositions when it is economically advantageous to do so. The tables below present the total crude throughput by refinery for the years ended December 31, 2021 and 2020:

	Year Ended December 31, 2021					
(in bpd)	Coffeyville		Wynnewood		Total	
Regional Crude	**27,133**	**22 %**	**60,287**	**82 %**	**87,420**	**45**
WTI	**62,694**	**52 %**	**—**	**— %**	**62,694**	**32**
WTL	**511**	**— %**	**3,430**	**5 %**	**3,941**	**2**
Midland WTI	**452**	**— %**	**2,107**	**3 %**	**2,559**	**1**
Condensate	**7,911**	**7 %**	**7,360**	**10 %**	**15,271**	**8**
Heavy Canadian	**3,684**	**3 %**	**—**	**— %**	**3,684**	**2**
Other Crude Oil	**19,129**	**16 %**	**202**	**— %**	**19,331**	**10**
Total crude throughput	**121,514**	**100 %**	**73,386**	**100 %**	**194,900**	**100**

	Year Ended December 31, 2020					
(in bpd)	Coffeyville		Wynnewood		Total	
Regional Crude	34,652	34 %	56,932	81 %	91,584	53 %
WTI	51,656	51 %	—	— %	51,656	30 %
WTL	—	— %	6,235	8 %	6,235	4 %
Midland WTI	—	— %	1,262	2 %	1,262	1 %
Condensate	8,243	8 %	6,207	9 %	14,450	8 %
Heavy Canadian	1,020	1 %	—	— %	1,020	1 %
Other Crude Oil	5,151	6 %	—	— %	5,151	3 %
Total crude throughput	100,722	100 %	70,636	100 %	171,358	100 %

Marketing and Distribution



Our Coffeyville product marketing efforts are focused in the central mid-continent area through rack marketing, which is the supply of product through tanker trucks and railcars directly to customers located in close geographic proximity to the refinery and to customers at terminals on third-party refined products distribution systems; and bulk sales into the mid-continent markets and other destinations utilizing third-party product pipeline networks.

The Wynnewood Refinery ships its finished product via pipeline, railcar, and truck, focusing its efforts in Oklahoma and parts of Arkansas, as well as eastern Missouri. The pipeline system used by the Wynnewood Refinery is capable of multi-directional flow, providing access to Texas markets as well as adjoining states with pipeline connections. The Wynnewood Refinery also sells jet fuel to the U.S. Department of Defense via its segregated truck rack.

Customers

Customers for the Refineries' petroleum products primarily include retailers, railroads, farm cooperatives, and other refiners/marketers in Group 3 of the PADD II region because of their relative proximity to the Refineries and pipeline access. We typically sell bulk products to long-standing customers at spot market prices based on a Group 3 basis differential to prices quoted on the New York Mercantile Exchange ("NYMEX") subject to other terms or adjustments, which are reported by industry market-related indices such as Platts and Oil Price Information Service ("OPIS").

Rack sales are at posted prices that are influenced by the competitive forces in Group 3 of the PADD II region among other factors. In addition, the Coffeyville Refinery sells hydrogen and by-products of its refining operations, such as pet coke, to an affiliate, CRNF, which is wholly owned by CVR Partners, pursuant to multi-year agreements. For the year ended December 31, 2021, the Petroleum Segment's top customer accounted for 16% of its net sales.

Competition

Our Petroleum Segment competes primarily on the basis of price, reliability of supply, availability of multiple grades of products, and location. The principal competitive factors affecting its refining operations are cost of crude oil and other feedstocks, refinery complexity, refinery efficiency, refinery product mix, product distribution and transportation costs, and costs of compliance with government regulations, including the Renewable Fuel Standards ("RFS"). The locations of the Refineries provides us with a reliable supply of crude oil and a transportation cost advantage over our competitors. We primarily compete against CHS Inc.'s McPherson Refinery; Holly Frontier Corporation's El Dorado Refinery, Tulsa East and West Refineries; Phillips 66 Company's Ponca Refinery; and Valero Energy Corporation's Ardmore Refinery in the mid-continent region. In addition to these refineries, we compete against trading companies, as well as other refineries located outside the region that are linked to the mid-continent market through product pipeline systems, including those near the Gulf Coast, the Great Lakes, and the Texas panhandle regions.

Seasonality

Our Petroleum Segment operations experience seasonal fluctuations as demand for gasoline products is generally higher during the summer months than during the winter months due to seasonal increases in highway traffic and road construction work. Demand for diesel fuel is higher during the planting and harvesting seasons. As a result, our results of operations for the Petroleum Segment for the first and fourth calendar quarters are generally lower compared to our results for the second and third calendar quarters. In addition, unseasonably cool weather in the summer months and/or unseasonably warm weather in the winter months in the markets in which we sell petroleum products can impact the demand for gasoline and diesel fuel.

Nitrogen Fertilizer

Our Nitrogen Fertilizer Segment is composed of the assets and operations of CVR Partners, including two nitrogen fertilizer manufacturing facilities located in Coffeyville, Kansas and East Dubuque, Illinois.

Facilities

Coffeyville Fertilizer Facility - We own and operate a nitrogen fertilizer production facility in Coffeyville, Kansas that includes a gasifier complex having a capacity of 89 million standard cubic feet per day of hydrogen, a 1,300 ton per day capacity ammonia unit, and a 3,000 ton per day capacity UAN unit (the "Coffeyville Fertilizer Facility"). The Coffeyville Fertilizer Facility is the only nitrogen fertilizer plant in North America that utilizes a pet coke gasification process to produce nitrogen fertilizer. The Coffeyville Fertilizer Facility's largest raw material expense used in the production of ammonia is pet coke, which it purchases from our Coffeyville Refinery and third parties. For the years ended December 31, 2021, 2020, and 2019, the Coffeyville Fertilizer Facility purchased approximately $23 million, $18 million, and $20 million, respectively, of pet coke, which equaled an average cost per ton of $44.69, $35.25, and $37.47, respectively. For the years ended December 31, 2021, 2020, and 2019, we upgraded approximately 87%, 87%, and 90%, respectively, of our ammonia production into UAN, a product that generated greater profit than ammonia for both 2021 and 2019 but, did not for 2020. When the economics are favorable, we expect to continue upgrading substantially all of our ammonia production into UAN.

East Dubuque Fertilizer Facility - We own and operate a nitrogen fertilizer production facility in East Dubuque, Illinois that includes a 1,075 ton per day capacity ammonia unit and a 1,100 ton per day capacity UAN unit (the "East Dubuque Fertilizer Facility"). The East Dubuque Fertilizer Facility has the flexibility to vary its product mix, enabling it to upgrade a portion of ammonia production into varying amounts of UAN, nitric acid, and liquid and granulated urea, depending on market demand, pricing, and storage availability. The East Dubuque Fertilizer Facility's largest raw material expense used in the production of ammonia is natural gas, which it purchases from third parties. For the years ended December 31, 2021, 2020, and 2019, the East Dubuque Fertilizer Facility incurred approximately $32 million, $20 million, and $20 million for feedstock natural gas used in production, respectively, which equaled an average cost of $3.95, $2.31, and $2.88 per MMBtu, respectively.

Commodities

The nitrogen products we produce are globally traded commodities and are subject to price competition. The customers for CVR Partners' products make their purchasing decisions principally on the basis of delivered price and, to a lesser extent, on customer service and product quality. The selling prices of its products fluctuate in response to global market conditions, feedstock costs, and changes in supply and demand.

Agriculture

The three primary forms of nitrogen fertilizer used in the United States are ammonia, urea, and UAN. Unlike ammonia and urea, UAN can be applied throughout the growing season and can be applied in tandem with pesticides and herbicides, providing farmers with flexibility and cost savings. As a result of these factors, UAN typically commands a premium price to urea and ammonia, on a nitrogen equivalent basis. However, during 2020, UAN commanded a discount price to urea and premium to ammonia, on a nitrogen equivalent basis.

Nutrients are depleted in soil over time and, therefore, must be replenished through fertilizer application. Nitrogen is the most quickly depleted nutrient and must be replenished every year, whereas phosphate and potassium can be retained in soil for up to three years. Plants require nitrogen in the largest amounts, and it accounts for approximately 59% of primary fertilizer consumption on a nutrient ton basis, per the International Fertilizer Industry Association ("IFIA").

Demand

Global demand for fertilizers is driven primarily by grain demand and prices, which, in turn, are driven by population growth, farmland per capita, dietary changes in the developing world and increased consumption of bio-fuels. According to the IFIA, from 1976 to 2019, global fertilizer demand grew 2% annually. Global fertilizer use, consisting of nitrogen, phosphate and potash, is projected to increase by 1% through 2023 to meet global food demand according to a study funded by the Food and Agricultural Organization of the United Nations. Currently, the developed world uses fertilizer more intensively than the developing world, but sustained economic growth in emerging markets is increasing food demand and fertilizer use. In addition, populations in developing countries are shifting to more protein-rich diets as their incomes increase, with such consumption requiring more grain for animal feed. As an example, China's wheat and coarse grains production is estimated to have increased 40% between 2011 and 2021, but still failed to keep pace with increases in demand, prompting China to grow its wheat and coarse grain imports by more than 1,452% over the same period, according to the United States Department of Agriculture ("USDA").

The United States is the world's largest exporter of coarse grains, accounting for 29% of world exports and 27% of world production for the fiscal year ended December 31, 2021, according to the USDA. A substantial amount of nitrogen is consumed in production of these crops to increase yield. Based on Fertecon Limited's ("Fertecon") 2021 estimates, the United States is the world's third largest consumer of nitrogen fertilizer and the world's largest importer of nitrogen fertilizer. Fertecon is a reputable agency which provides market information and analysis on fertilizers and fertilizer raw materials for fertilizer and related industries, as well as international agencies. Fertecon estimates indicate that the United States represented 12% of total global nitrogen fertilizer consumption for 2021, with China and India as the top consumers representing 22% and 15% of total global nitrogen fertilizer consumption, respectively.

North American nitrogen fertilizer producers predominantly use natural gas as their primary feedstock. Over the last five years, U.S. oil and natural gas reserves have increased significantly due to, among other factors, advances in extracting shale oil and gas, as well as relatively high oil and gas prices. More recently, European and Asian natural gas prices have increased significantly since 2020 due to reduced production volumes and higher global demand, as economies began to recover from the global COVID-19 pandemic. In Europe, the increase in natural gas prices as a feedstock has caused multiple fertilizer plant shut-ins, and certain European countries have curtailed industrial natural gas usage, resulting in deteriorated economics for producing fertilizers in the region. In addition, China and Russia have restricted exports of fertilizers in order to ensure domestic availability. In North America, natural gas prices also increased throughout 2021, but higher nitrogen fertilizer prices more than offset the rise in natural gas costs. As a result, North America continues to be the low-cost region for nitrogen fertilizer production.

Raw Material Supply

Coffeyville Fertilizer Facility - During the past five years, just under 48% of the Coffeyville Fertilizer Facility's pet coke requirements on average were supplied by our adjacent Coffeyville Refinery pursuant to a multi-year agreement. Historically, the Coffeyville Fertilizer Facility has obtained the remainder of its pet coke requirements through third-party contracts typically priced at a discount to the spot market. In 2021, 2020, and 2019, our supply of pet coke from the Coffeyville Refinery declined to approximately 43%, 33%, and 40%, respectively, generally attributable to increased processing of shale crude oil, which reduced the amount of pet coke produced by the refinery and increased the amount of third-party purchases made at spot prices.

With increased reliance on third-party pet coke, we have contracts with four vendors, which could be delivered by truck, railcar or barge.

Additionally, our Coffeyville Fertilizer Facility relies on a third-party air separation plant at its location that provides contract volumes of oxygen, nitrogen, and compressed dry air to the Coffeyville Fertilizer Facility gasifiers. The reliability of the air separation plant can have a significant impact on our Coffeyville Fertilizer Facility operations. In 2020, to mitigate future impacts, we executed a new product supply agreement that obligates the counterparty to invest funds to upgrade its facility to reduce downtime over the next several years. Should the oxygen volume fall below a specified level, the on-site vendor will provide excess oxygen through its own mechanism or through third-party purchases.

East Dubuque Fertilizer Facility - The East Dubuque Fertilizer Facility uses natural gas to produce nitrogen fertilizer. We are generally able to purchase natural gas at competitive prices due to the facility's connection to the Northern Natural Gas interstate pipeline system, which is within one mile of the facility, and a third-party owned and operated pipeline. The pipelines are connected to a third-party distribution system at the Chicago Citygate receipt point and at the Hampshire interconnect from which natural gas is transported to the East Dubuque Fertilizer Facility. As of December 31, 2021, we had commitments to purchase approximately 1 million MMBtus of natural gas supply for planned use in our East Dubuque Fertilizer Facility in both January and February of 2022 at a weighted average rate per MMBtu of approximately $5.96 and $5.95, respectively, exclusive of transportation cost.

Marketing and Distribution

Our Nitrogen Fertilizer Segment primarily markets UAN products to agricultural customers and ammonia products to agricultural and industrial customers. UAN and ammonia, including freight, accounted for approximately 65% and 28%, respectively, of our Nitrogen Fertilizer Segment's net sales for the year ended December 31, 2021.

UAN and ammonia are primarily distributed by truck or railcar. If delivered by truck, products are most commonly sold on a free-on-board ("FOB") shipping point basis, and freight is normally arranged by the customer. We operate a fleet of railcars for use in product delivery. If delivered by railcar, products are most commonly sold on a FOB destination point basis, and we typically arrange the freight.

The nitrogen fertilizer products leave the Coffeyville Fertilizer Facility either in railcars for destinations located principally on the Union Pacific or Burlington Northern Santa Fe railroads or in trucks for direct shipment to customers. The East Dubuque Fertilizer Facility primarily sells product to customers located within 200 miles of the facility. In most instances, customers take delivery of nitrogen products at the East Dubuque Fertilizer Facility and arrange to transport them to their final destinations by truck. Additionally, the East Dubuque Fertilizer Facility has direct access to a barge dock on the Mississippi River, as well as a nearby rail spur serviced by the Canadian National Railway Company.

Customers

Retailers and distributors are the main customers for UAN and, more broadly, the industrial and agricultural sectors are the primary recipients of our ammonia products. Given the nature of our nitrogen fertilizer business, and consistent with industry practice, we sell our products on a wholesale basis under a contract or by purchase order. Contracts with customers generally contain fixed pricing and most have terms of less than one year. Some of our industrial sales include long-term purchase contracts. For the year ended December 31, 2021, the Nitrogen Fertilizer Segment's top customer represented 13% of the its net sales.

Competition

Our Nitrogen Fertilizer Segment produces globally traded commodities and has competitors in every region of the world. The industry is dominated by price considerations, which are driven by raw material and transportation costs, currency fluctuations and trade barriers. Our Nitrogen Fertilizer Segment has experienced and is expected to continue to experience significant levels of competition from domestic and foreign nitrogen fertilizer producers, many of whom have significantly greater financial and other resources. During the spring and fall fertilizer application periods in the United States, farming activities intensify and geographic proximity to these activities is also a significant competitive advantage for domestic producers. We manage our manufacturing and distribution operations to best serve our customers during these critical periods.

Subject to location and other considerations, our major competitors in the nitrogen fertilizer business include CF Industries Holdings, Inc., including its majority owned subsidiary Terra Nitrogen Company, L.P.; LSB Industries, Inc.; Koch Fertilizer Company, LLC; and Nutrien Ltd. Domestic competition is intense due to customers’ sophisticated buying tendencies and competitor strategies that focus on cost and service. We also encounter competition from producers of fertilizer products manufactured in foreign countries, including the threat of increased production capacity. In certain cases, foreign producers of fertilizer who export to the United States may be subsidized by their respective governments.

Seasonality

Because the Nitrogen Fertilizer Segment primarily sells agricultural commodity products, its business is exposed to seasonal fluctuations in demand for nitrogen fertilizer products in the agricultural industry. In addition, the demand for fertilizers is affected by the aggregate crop planting decisions and fertilizer application rate decisions of individual farmers who make planting decisions based largely on the prospective profitability of a harvest. The specific varieties and amounts of fertilizer they apply depend on factors like crop prices, farmers’ current liquidity, soil conditions, weather patterns, and the types of crops planted. The Nitrogen Fertilizer Segment typically experiences higher net sales in the first half of the calendar year, which is referred to as the planting season, and its net sales tend to be lower during the second half of each calendar year, which is referred to as the fill season.

Environmental Matters

Our petroleum and nitrogen fertilizer businesses are subject to extensive and frequently changing federal, state, and local environmental laws and regulations governing the emission and release of regulated substances into the environment, the transportation, storage, and disposal of waste, the treatment and discharge of wastewater and stormwater, the storage, handling, use and transportation of petroleum and nitrogen products, and the characteristics and composition of gasoline, diesel fuels, UAN, and ammonia. These laws and regulations and the enforcement thereof impact our segments and their operations by imposing:

- restrictions on operations or the need to install enhanced or additional control and monitoring equipment;
- liability for the investigation and remediation of contaminated soil and groundwater at current and former facilities (if any) and for off-site waste disposal locations; and
- specifications for the products marketed by the Petroleum and Nitrogen Fertilizer Segments, primarily gasoline, diesel fuel, UAN, and ammonia.

Our operations require numerous permits, licenses, and authorizations. Failure to comply with these permits or environmental laws and regulations could result in fines, penalties, or other sanctions or a revocation of our permits, licenses, or authorizations. In addition, the laws and regulations to which we are subject are often evolving and many of them have or could become more stringent or have or could become subject to more stringent interpretation or enforcement by federal or state agencies. These laws and regulations could result in increased capital, operating, and compliance costs.

The Federal Clean Air Act (“CAA”)

The CAA and its implementing regulations, as well as corresponding state laws and regulations governing air emissions, affect the Petroleum and Nitrogen Fertilizer Segments both directly and indirectly. Direct impacts may occur through the CAA’s permitting requirements and/or emission control and monitoring requirements relating to specific air pollutants, as well as the requirement to maintain a risk management program to help prevent accidental releases of certain regulated substances. The CAA affects the Petroleum and Nitrogen Fertilizer Segments by extensively regulating the air emissions of sulfur dioxide (“SO_2”), volatile organic compounds, nitrogen oxides, and other substances, including those emitted by mobile sources, which are direct or indirect users of our products. Some or all of the regulations promulgated pursuant to the CAA, or any future promulgations of regulations, may require the installation of controls or changes to the petroleum facilities and/or the nitrogen fertilizer facilities (collectively referred to as the “Facilities”) to maintain compliance. If new controls or changes to operations are needed, the costs could be material.

The regulation of air emissions under the CAA requires that we obtain various construction and operating permits and incur capital expenditures for the installation of certain air pollution control devices at our operations. Various standards and programs specific to our operations have been implemented, such as the National Emission Standard for Hazardous Air Pollutants, the New Source Performance Standards, and the New Source Review.

The EPA regulates greenhouse gas ("GHG") emissions under the CAA. In October 2009, the EPA finalized a rule requiring certain large emitters of GHGs to inventory and report their GHG emissions to the EPA. In accordance with the rule, our Facilities monitor and report our GHG emissions to the EPA. In May 2010, the EPA finalized the "Greenhouse Gas Tailoring Rule," which established GHG emissions thresholds that determine when stationary sources, such as the Refineries and the nitrogen fertilizer facilities, must obtain permits under the Prevention of Significant Deterioration ("PSD") and Title V programs of the CAA. Under the rule, facilities already subject to the PSD and Title V programs that increase their emissions of GHGs by a significant amount are required to undergo PSD review and to evaluate and implement air pollution control technology, known as "best available control technology," to reduce GHG emissions.

The Biden Administration has signaled that it will take steps to address climate change. On January 20, 2021, the White House issued its Executive Order titled "Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis," as well as a formal notification re-accepting entry of the United States into the Paris Agreement. On January 27, 2021, the White house issued another climate-related Executive Order, titled "Tackling the Climate Crisis at Home and Abroad." On April 22, 2021, the Biden Administration announced a new target for the United States to achieve a 50 to 52 percent reduction from 2005 levels in economy-wide net GHG emissions in 2030.

The EPA's approach to regulating GHG emissions may change, including under future administrations. Therefore, the impact on our Facilities due to GHG regulation is unknown.

Recent Greenhouse Gas Footprint Reduction Efforts

In October 2020, the Nitrogen Fertilizer Segment announced that it generated its first carbon offset credits from voluntary nitrous oxide abatement at its Coffeyville Fertilizer Facility. The Nitrogen Fertilizer Segment has similar nitrous oxide abatement efforts at its East Dubuque Fertilizer Facility. According to the EPA, nitrous oxide represents approximately 7% of carbon dioxide-equivalent ("CO_2e") emissions in the United States.

The Nitrogen Fertilizer Segment previously entered into a Joint Development Agreement with ClimeCo, a developer of emission-reduction projects for nitric acid plants, to jointly design, install and operate a tertiary abatement system at one of its nitric acid plants in Coffeyville. The system was designed to abate 94% of all N_2O in the unit while preventing the release of approximately 450,000 metric tons of carbon dioxide equivalent on an annualized basis. The N_2O abatement systems at the East Dubuque Fertilizer Facility's two nitric acid plants have abated, on average, the annual release of approximately 265,000 metric tons of CO_2e during the past five years.

CVR Partners' N_2O abatement projects are registered with the Climate Action Reserve (the "Reserve"), a carbon offset registry for the North American market. The Reserve employs high-quality standards and an independent third-party verification process to issue its carbon credits, known as Climate Reserve Tonnes.

The Nitrogen Fertilizer Segment also sequesters carbon dioxide that is not utilized for urea production at its Coffeyville Fertilizer Facility by capturing and purifying the CO_2 as part of its manufacturing process and then transfers it to its partner, CapturePoint LLC (formerly Perdure Petroleum LLC), that compresses and ships the CO_2 for sequestration through Enhanced Oil Recovery ("EOR"). In January 2021, the Internal Revenue Service published final regulations under Section 45Q which provides tax credits to encourage CO_2 sequestration. We believe that our process for CO_2 sequestration would qualify for tax credits under Section 45Q and intend to pursue a claim of those credits starting in 2022.

Combining our nitrous oxide abatement and CO_2 sequestration activities should reduce our CO_2e footprint by over 1 million metric tons per year. In addition, our Coffeyville Fertilizer Facility is uniquely qualified to produce hydrogen and ammonia that could be certified 'blue' to a market that is increasingly demanding reduced carbon footprints. These greenhouse gas footprint reduction efforts support our core Values of Environment and Continuous Improvement, and our goal of continuing to produce nitrogen fertilizers that feed the world's growing population in the most environmentally responsible way possible.

Renewable Fuel Standard

Pursuant to the Energy Policy Act of 2005 and Energy Independence and Security Act of 2007 ("EISA"), the EPA has promulgated the RFS, which requires refiners to either blend "renewable fuels," such as ethanol and biofuels, into their transportation fuels or purchase renewable fuel credits, known as renewable identification numbers ("RINs"), in lieu of blending. Under the RFS, the volume of renewable fuels that refineries like Coffeyville and Wynnewood are obligated to blend into their finished transportation fuel is adjusted annually by the EPA based on expected fuel demand and other conditions to meet the statutory mandates that increase annually, but which may be waived by the EPA under certain conditions. The volume of renewable fuels required by EISA increased from 9 billion gallons in 2008 to 33 billion gallons in 2021. The EPA has statutory authority to determine RFS volumes after 2022. In addition to the total renewable fuel volume mandate, the regulation includes sub-mandates for advanced biofuel, cellulosic biofuel, and biomass-based diesel. Under the cellulosic waiver authority provided to the EPA by the CAA, if the EPA's projected volume of cellulosic biofuel production for a calendar year is less than its statutory mandate, the EPA must reduce the required volume of cellulosic biofuel accordingly and provide obligated parties the opportunity to purchase cellulosic waiver credits. The EPA also has the discretion to reduce the total renewable fuel and advanced biofuel requirements by the same amount as it reduced the cellulosic biofuel volume. The Petroleum Segment (like many refiners) is not able to meet its annual renewable volume obligation ("RVO") through blending, so it has had to purchase RINs on the open market as well as obtain cellulosic waiver credits from the EPA, in order to comply with the RFS. The cost of purchasing RINs and cellulosic waiver credits fluctuates and can be significant. The price of RINs became extremely volatile when the EPA's proposed renewable fuel volume mandates approached and exceeded the "blend wall." The blend wall refers to the point at which the amount of ethanol required to be blended into the gasoline supply exceeds the level at which most engines can safely run on gasoline blended with ethanol. The blend wall is generally considered to be reached when more than 10 percent ethanol by volume ("E10") is blended into gasoline. The volatility of RIN prices also increased significantly in response to a number of uncertainties regarding the implementation of the RFS program in 2020, 2021, and has continued into 2022.

In May 2019, the EPA finalized regulatory changes to allow gasoline blended with up to 15 percent ethanol ("E15") to take advantage of a waiver during the summer months that previously only applied to E10, which meant that E15 could be sold year-round rather than just eight months of the year. However, in June 2019, the rule was challenged in the United States District Court for the District of Columbia Circuit ("D.C. Circuit"). The D.C. Circuit ultimately overturned the E15 rule in July 2021, after which ethanol industry groups appealed the decision in the U.S. Supreme Court. On January 10, 2022, the U.S. Supreme Court denied the appeal, upholding the D.C. Circuit's vacatur of the E15 rule.

On December 7, 2021, the EPA proposed a package of actions setting renewable blending volumes for 2020, 2021, and 2022 (the "2020-2022 Volumes Proposal"). First, the 2020-2022 Volumes Proposal includes proposed renewable blending volumes for 2021 and 2022, after the EPA failed to meet its statutory deadlines to set the 2021 and 2022 renewable volume obligations by November 30, 2020 and 2021, respectively. The proposed volume requirements are 18.52 billion gallons for 2021 and 20.77 billion gallons for 2022. Second, the 2020-2022 Volumes Proposal would lower the previously established renewable fuel volume requirements for 2020 from 20.09 billion gallons to 17.13 billion gallons. The D.C. Circuit consolidated cases challenging various aspects of the previously established renewable fuel volume requirements for 2020, and the biomass-based diesel volume for 2021, remains active, but it is unknown at this time how those cases will be resolved in light of the EPA's proposed modifications to the 2020 renewable volume requirements.

Third, the proposal also partially reissues the 2016 renewable fuel volumes in response to a July 2017 D.C. Circuit decision (1) vacating the EPA's decision to reduce the 2016 volumes under its "inadequate domestic supply" waiver authority and (2) remanding to the EPA for reissuance of the 2016 renewable fuels volumes. Specifically, the EPA proposes a supplemental volume of 250 million gallons in 2022 and states its intention to propose an additional supplemental volume of 250 million gallons for 2023 in a subsequent action.

Finally, the proposal utilizes the CAA "reset" authority to reduce volumes for each 2020, 2021, and 2022. Under the reset provision, if the EPA waives the statutory volumes for any of the four fuel categories by at least 20% for two consecutive years or by at least 50% for a single year, then the EPA must modify the statutory volumes for all subsequent years for that fuel category. The reset has been triggered in previous years for both advanced biofuel and cellulosic biofuel, but this is the first time the EPA has applied the reset authority.

The final 2020-2022 volumes might differ from the proposal, and will determine the Coffeyville Refinery's and, unless exempted, the Wynnewood Refinery's renewable volume obligations.

On February 2, 2022, the EPA issued a final rule to extend the 2019 RFS compliance deadline for small refineries and the 2020 and 2021 RFS compliance deadlines for all obligated parties. The deadlines are tied to the date on which the 2021 renewable blending volumes are finalized. The EPA also issued a new method for determining RFS compliance deadlines for

2022 and beyond, under which the deadlines would automatically be extended in the event the EPA fails to promulgate the annual renewable fuel volumes by the deadline provided in the CAA. Unless overturned, this new rule alters the deadlines by which the Coffeyville Refinery and, unless exempted, the Wynnewood Refinery must comply with the RFS obligations. CRRM and WRC filed a Petition for Review of this final rule with the United States Court of Appeals for the District of Columbia Circuit on February 4, 2022, which Petition for Review remains pending.

Additional RFS-related rulemakings and administrative actions may occur and, if finalized, would impact the Coffeyville Refinery's and Wynnewood Refinery's obligations under the RFS. First, the EPA issued a document entitled Proposed RFS Small Refinery Exemption Decision ("Proposed Denial"), announcing that the EPA is changing its statutory interpretation of the CAA and, applying this new interpretation, proposing to deny 65 SRE petitions currently pending before the agency. Second, on January 3, 2022, the EPA informed small refineries (including WRC's Wynnewood Refinery) that the Agency is considering including the 2018 small refinery hardship petitions in the Proposed Denial. The EPA's review of the 2018 petitions follows the D.C. Circuit's December 8, 2021, order granting the EPA's motion for voluntary remand of all of the 2018 hardship decisions, and imposing a deadline of April 7, 2022, for the EPA to act on remand. The EPA requested comments on the Proposed Denial by February 7, 2022. The EPA's action on the pending 2019, 2020, and 2021 hardship petitions, and its review of the 2018 hardship petition, will impact the Wynnewood Refinery's renewable volume obligations.

The Federal Clean Water Act ("CWA")

The CWA and its implementing regulations, as well as the corresponding state laws and regulations that govern the discharge of pollutants into the water, affect the Petroleum and Nitrogen Fertilizer Segments. The CWA's permitting requirements establish discharge limitations that may be based on technology standards, water quality standards, and restrictions on the total maximum daily load of pollutants allowed to enter a particular water body based on its use. In addition, water resources are becoming more scarce, and many refiners, including us, are subject to use restrictions in the event of low availability conditions. Our Refineries and the Coffeyville Fertilizer Facility have contracts in place to receive water during certain water shortage conditions, but these conditions could change over time depending on the scarcity of water.

Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA") and the Emergency Planning and Community Right-to-Know Act ("EPCRA")

The release of hazardous substances or extremely hazardous substances into the environment is subject to release reporting requirements under federal and state environmental laws. Our Facilities also periodically experience releases of hazardous and extremely hazardous substances from their equipment and periodically have excess emission events. From time to time, the EPA has conducted inspections and issued information requests to us with respect to our compliance with reporting requirements under the CERCLA and the EPCRA. If we fail to timely or properly report a release, or if a release violates the law or our permits, we could become the subject of a governmental enforcement action or third-party claims. Government enforcement or third-party claims relating to releases of hazardous or extremely hazardous substances could result in significant expenditures and liability.

Resource Conservation and Recovery Act ("RCRA")

Our Facilities are subject to the RCRA requirements for the generation, transportation, treatment, storage, and disposal of solid and hazardous wastes. When feasible, RCRA-regulated materials are recycled instead of being disposed of on-site or off-site. RCRA establishes standards for the management of solid and hazardous wastes. Besides governing current waste disposal practices, RCRA also addresses the environmental effects of certain past waste disposal practices, the recycling of wastes, and the regulation of underground storage tanks containing regulated substances.

Impacts of Past Manufacturing - In March 2004, two of our subsidiaries entered into a Consent Decree ("2004 Consent Decree") with the EPA and the Kansas Department of Health and Environment (the "KDHE") that required us to assume two RCRA corrective action orders issued to Farmland, the prior owner of the Coffeyville Refinery. Until January 21, 2021, we were subject to a 1994 EPA administrative order related to investigation of possible past releases of hazardous materials to the environment at the Coffeyville Refinery. In accordance with the order, we have conducted the required investigation and interim remediation projects and documented existing soil and groundwater conditions. In June 2017, the Coffeyville Refinery submitted an amended RCRA post-closure permit application to the KDHE to complete closure of former hazardous waste management units at the Coffeyville Refinery and to perform corrective action at the site. The KDHE approved the post-closure permit application in July 2019, and the RCRA permit was issued in December 16, 2020. The EPA terminated the 1994 administrative order on January 21, 2021. On January 13, 2021, the Coffeyville Fertilizer Facility entered into an agreement with the KDHE to address certain historical releases of UAN located on property held by CRNF that comingled with legacy groundwater contamination from the adjacent Coffeyville Refinery. The cleanup provisions of the agreement with the KDHE are held in abeyance so long as the Coffeyville Refinery conducts corrective action for these comingled historical releases in accordance with CRRM's RCRA permit. The now-closed Phillipsburg terminal is subject to a 1996 EPA administrative order related to investigation of releases of hazardous materials to the environment at the Phillipsburg terminal, which operated as a refinery until 1991. The Phillipsburg terminal investigation is complete and corrective measures are in place implementing the EPA's Statement of Basis and Final Remedy Decision issued in July 2018. The Wynnewood Refinery operates under a RCRA permit. A RCRA facility investigation has been completed in accordance with the terms of the permit. Based on the facility investigation and other available information, Wynnewood Refining Company, LLC ("WRC") entered into a consent order with the Oklahoma Department of Environmental Quality (the "ODEQ") requiring further investigations of groundwater conditions and enhancements of existing remediation systems. We have completed the groundwater investigation at the Wynnewood Refinery and the ODEQ has approved our ongoing corrective actions. The consent order was terminated by the ODEQ in July 2019.

Financial Assurance - We are required under the 2004 Consent Decree, as modified by a 2010 agreement between CRRM, Coffeyville Resources Terminal, LLC ("CRT"), the EPA, and the KDHE, to establish financial assurance to secure the current projected clean-up cost for the now-closed Phillipsburg terminal. This financial assurance is currently provided by a bond in the amount of $2 million. The $2 million bond amount is reduced each year based on actual expenditures for corrective actions. Additional financial assurance of approximately $6 million and $3 million is required to meet our RCRA financial obligations for the Coffeyville Refinery and Phillipsburg terminal, respectively. Current RCRA financial assurance requirements for the Wynnewood Refinery total $0.3 million for hazardous waste storage tank closure and post-closure monitoring of a closed storm water retention pond. These RCRA financial assurance obligations are currently being satisfied by a surety bond. The Company's financial assurance mechanisms are re-evaluated and adjusted on an annual basis. In preparation for renewal of its RCRA permit, the Wynnewood Refinery supplied the ODEQ an estimate of the monitoring and clean-up costs anticipated under the reissued RCRA permit. Additional financial assurance of approximately $3 million will be required for the Wynnewood Refinery when the ODEQ issues the renewed RCRA permit.

Waste Management - There are fourteen closed hazardous waste units at the Coffeyville Refinery. There is one closed hazardous waste unit and one active hazardous waste storage tank at the Wynnewood Refinery. In addition, 30 years of long-term post-closure care was completed at one closed, interim status, hazardous waste landfarm located at the now-closed Phillipsburg terminal and is no longer subject to monitoring.

Environmental Remediation

As is the case with all companies engaged in similar industries, we face potential exposure from claims and lawsuits involving environmental matters, including soil and water contamination and personal injury or property damage allegedly caused by crude oil or hazardous substances that we processed, handled, used, stored, transported, spilled, disposed of, or released. There is no assurance that we will not become involved in future proceedings related to the release of hazardous or extremely hazardous substances or crude oil for which we have potential liability or that, if we were held responsible for damages in any existing or future proceedings, such costs would be covered by insurance or would not be material.

Environmental Insurance

We are covered by a site pollution legal liability insurance policies, which include business interruption coverage. The policies insure any location owned, leased, rented, or operated by the Company, including the Refineries and the nitrogen fertilizer facilities. The policies insure certain pollution conditions at or migrating from a covered location, certain waste transportation and disposal activities, and business interruption.

In addition to the site pollution legal liability insurance policy, we maintain umbrella and excess casualty insurance policies which include sudden and accidental pollution coverage. This insurance provides coverage due to named perils for claims involving pollutants where the discharge is sudden and accidental and first commences at a specific day and time during the policy period.

The site pollution legal liability policy and the pollution coverage provided in the casualty insurance policies are subject to retentions and deductibles and contain discovery requirements, reporting requirements, exclusions, definitions, conditions, and limitations that could apply to a particular pollution claim, and there can be no assurance such claim will be adequately insured for all potential damages.

Health, Safety and Security Matters

We are subject to a number of federal and state laws and regulations related to health and safety, including the Occupational Safety and Health Act ("OSHA") and comparable state statutes, the purposes of which are to protect the health and safety of workers. We also are subject to OSHA Process Safety Management regulations, which are designed to prevent or minimize the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals. We are committed to safe, reliable operations of our facilities to protect the health and safety of our employees, our contractors, and the communities in which we operate. Our health and safety management system provides a comprehensive approach to injury, illness and incident prevention, risk assessment and mitigation, and emergency management. Despite our efforts to achieve excellence in our health and safety performance, there can be no assurances that there will not be accidents resulting in injuries or even fatalities.

Our Refineries and the Coffeyville Fertilizer Facility are subject to the Chemical Facility Anti-terrorism Standards ("CFATS"), a regulatory program designed to ensure facilities have security measures in place to reduce the risk that certain hazardous chemicals are weaponized by terrorists. In addition, the East Dubuque Fertilizer Facility is regulated under the Maritime Transportation Security Act ("MTSA"). We implement and maintain comprehensive security programs designed to comply with regulatory requirements and protect our assets and employees.

We routinely assess risk and conduct audits of our programs and seek to continually improve our health, safety, and security management systems.

Human Capital

Core Values

At CVR Energy, our core Values define the way we do business every day. We put Safety first, care for our Environment, require high business ethics and Integrity consistent with our Code of Ethics and Business Conduct, are proud members of and good neighbors to the communities where we operate, and are committed to Corporate Citizenship. We believe in Continuous Improvement for individuals to achieve their maximum potential through teamwork, diversity and personal development. Our employees provide the energy behind our core Values to achieve excellence for all our key stakeholders – employees, communities and stockholders. See "Management's Discussion and Analysis" in Part II, Item 7 of this Report for further discussion on our core Values.

Workforce & Benefits

As of December 31, 2021, CVR Energy had 1,429 employees, all of which are located in the United States Of these, 598 employees are covered by collective bargaining agreements with various labor unions. We may engage independent contractors to provide flexibility for our business and operating needs.

We believe that our future success largely depends upon our continued ability to attract and retain highly skilled employees. We are committed to providing wages and benefits that are competitive with a market-based, pay-for-performance compensation philosophy. We provide paid time off and paid holidays, a 401(k) Company match program, a remote work program for eligible employees, dependent care flexible spending accounts, and an employee assistance program. In furtherance of our core Value of continuous improvement, we also offer programs for tuition reimbursement and dependent scholarships. We also offer a remote work policy for eligible employees to provide our employees with the flexibility that is key to a work-life balance. We encourage all employees to live our core Value of corporate citizenship by making a positive impact in our communities by taking advantage of our volunteerism policy pursuant to which eligible employees are provided paid time off from work to volunteer at 501(c)(3) non-profit entities.

Diversity

We are an equal opportunity employer and strive to maintain a diverse and inclusive work environment free from harassment and discrimination regardless of race, religion, color, age, gender, disability, minority, sexual orientation or any other protected class. Our commitment to diversity and inclusion helps us attract and retain the best talent, enables employees to realize their full potential, and drives high performance through innovation and collaboration. We offer diversity training that focuses on unconscious bias where employees learn to recognize and address the effects thereof by encouraging diversity of experience and opinion. Also, our Diversity & Inclusion Committee fosters innovative actions and promotes inclusiveness throughout our organization.

Health & Safety

We have an unwavering commitment to providing as safe and healthy of a workplace as possible for all employees. We accomplish this through strict compliance with applicable laws and regulations regarding workplace safety, engaging employee input, and maintaining robust training and emergency response and disaster recovery plans. We monitor and assess our safety performance by measuring and evaluating injuries, process safety incidents, environmental events, and other events, as well as by performing compliance audits and risk assessments. We believe these efforts reinforce our safety culture; promote a safe workplace, accountability, and stronger community relations; and reduce impact to personal safety, process safety, and the environment.

Our commitment to workplace safety was highlighted during the COVID-19 pandemic. Our leadership took immediate action aimed at maintaining a safe and healthy workplace for our employees and contractors, while continuing operations to meet the needs of our customers. Our cross-functional CVR Crisis Response Team was immediately activated, and we implemented a variety of policies and practices, including our enhanced entry requirements and return to the workplace clearance policy. We provided masks, barriers, additional sanitation, and supplies in all common areas and for employee personal use, implemented social distancing requirements and occupancy limits, and other protective measures. As the pandemic continues to evolve, our Crisis Response Team remains ready to respond quickly to protect our workforce.

Available Information

Our website address is www.CVREnergy.com. Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and all amendments to those reports, filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, are available free of charge through our website under “Investor Relations,” as soon as reasonably practicable after the electronic filing or furnishing of these reports is made with the Securities and Exchange Commission (the “SEC”) at www.sec.gov. In addition, our Corporate Governance Guidelines, Codes of Ethics and Business Conduct, and charters of the Audit Committee, the Nominating and Corporate Governance Committee, the Compensation Committee, and the Environmental, Health and Safety Committee of the Board of Directors are available on our website. These guidelines, policies, and charters are also available in print without charge to any stockholder requesting them. Information on our website is not a part of, and is not incorporated into, this Report or any other report we may file with or furnish to the SEC, whether before or after the date of this Report and irrespective of any general incorporation language therein.

Item 1A. *Risk Factors*

Risk Factors

The following risks should be considered together with the other information contained in this Report and all of the information set forth in our filings with the SEC. If any of the following risks or uncertainties develops into actual events, our petroleum and/or nitrogen fertilizer businesses, financial conditions, or results of operations could be materially adversely affected. References to CVR Energy, the Company, "we", "us", and "our" may refer to consolidated subsidiaries of CVR Energy, including CVR Refining or CVR Partners, as the context may require.

Risks Related to Our Entire Business

The COVID-19 pandemic, and actions taken in response thereto, as well as certain developments in the global oil markets have had, and may continue to have, material adverse impacts on the operations, business, financial condition, liquidity, and results of operations of the Company or its customers, suppliers, and other counterparties.

The COVID-19 pandemic and actions of governments and others in response thereto has resulted in significant business and operational disruptions, including business closures, supply chain disruptions, travel restrictions, stay-at-home orders, and limitations on the availability and effectiveness of the workforce. The worldwide vaccine rollouts in 2021 have allowed governments to ease COVID-19 restrictions and lockdown protocols; however, the recent increase in COVID-19 cases resulting from the Delta and Omicron variants has created questions about whether lockdown protocols must be adjusted and the ultimate impact of those variants is unknown. The ongoing effects of the COVID-19 pandemic have negatively impacted and may continue to negatively impact worldwide economic and commercial activity, financial markets, and have caused volatility in demand for and prices of crude oil and other petroleum products. These impacts may also potentially precipitate a prolonged economic slowdown and recession. These declines have been further exacerbated by the production dispute between members of OPEC and Russia and the subsequent actions taken by such countries and other countries and crude oil producers as a result thereof.

Declines in the market prices of crude oil and certain other petroleum products below the carrying cost of such commodities in the Company's inventory have required, and may continue to require, the Company to adjust the value of, and record a loss on, certain inventories, which has had, and may continue to have a negative impact on our operating income; adversely impact our ability to profitably operate our facilities, and our results of operations, such as revenues and cost of sales; could result in significant financial constraints on certain producers from which we acquire our crude oil; and could result in an increased risk that customers, lenders, and other counterparties may be unable to fulfill their obligations in a timely manner, or at all. Further, if general economic conditions continue to remain uncertain for an extended period of time, our liquidity and ability to repay our outstanding debt may be harmed and the trading price of our common stock, which has seen recent volatility, may decline.

Our petroleum and nitrogen fertilizer businesses are, and commodity prices are, cyclical and highly volatile, which could have a material adverse effect on our results of operations, financial condition and cash flows.

Our Petroleum Segment's financial results are primarily affected by margin between refined product prices and prices for crude oil and other feedstocks. Historically, refining margins have been volatile and vary by region, and we believe they will continue to be volatile in the future. Our cost to acquire feedstocks and the price at which we can ultimately sell refined products depend upon several factors beyond our control, including regional and global supply of and demand for crude oil, gasoline, diesel, and other feedstocks and refined products. These in turn depend on, among other things, the availability and quantity of imports, the production levels of U.S. and international suppliers, levels of refined petroleum product inventories, productivity and growth (or the lack thereof) of U.S. and global economies, U.S. relationships with foreign governments, political affairs, and the extent of governmental regulation.

We do not produce crude oil and must purchase all of the crude oil we refine long before we refine it and sell the refined products. Price level changes during the period between purchasing feedstocks and selling the refined petroleum products from these feedstocks could have a significant effect on our financial results. A decline in market prices may negatively impact the carrying value of our inventories. Price level changes during the period between purchasing feedstocks and selling the refined petroleum products from these feedstocks could have a significant effect on our financial results. A decline in market prices may negatively impact the carrying value of our inventories. Our Petroleum Segment profitability is also impacted by the ability to purchase crude oil at a discount to benchmark crude oils, such as WTI. Crude oil differentials can fluctuate significantly based upon overall economic and crude oil market conditions. Adverse changes in crude oil differentials can adversely impact refining margins, earnings and cash flows. In addition, the Petroleum Segment's purchases of crude oil, although based on WTI prices, have historically been at a discount to WTI because of the proximity of the Refineries to the sources, existing logistics infrastructure, and quality differences. Any changes to these factors could result in a reduction of the discount to WTI and may result in a reduction of the Petroleum Segment's cost advantage.

Our Nitrogen Fertilizer Segment is exposed to fluctuations in nitrogen fertilizer demand in the agricultural industry. These fluctuations historically have had and could in the future have significant effects on prices across all nitrogen fertilizer products and, in turn, our results of operations, financial condition and cash flows. Nitrogen fertilizer products are commodities, the price of which can be highly volatile. The prices of nitrogen fertilizer products depend on a number of factors, including general economic conditions, cyclical trends in end-user markets, supply and demand imbalances, governmental policies, and weather conditions, which have a greater relevance because of the seasonal nature of fertilizer application. If seasonal demand exceeds the projections on which we base our production levels, customers may acquire nitrogen fertilizer products from competitors, and our profitability may be negatively impacted. If seasonal demand is less than expected, we may be left with excess inventory that will have to be stored or liquidated.

The international market for nitrogen fertilizers is influenced by such factors as the relative value of the U.S. dollar and its impact upon the cost of importing nitrogen fertilizers, foreign agricultural policies, the existence of, or changes in, import or foreign currency exchange barriers in certain foreign markets, changes in the hard currency demands of certain countries, and other regulatory policies of foreign governments, as well as the laws and policies of the U.S. affecting foreign trade and investment. Supply is affected by available capacity and operating rates, raw material costs, government policies, and global trade. A decrease in nitrogen fertilizer prices would have a material adverse effect on our nitrogen fertilizer business and cash flow, including CVR Partners' ability to make distributions.

Petroleum and nitrogen fertilizer businesses face intense competition.

The refining industry is highly competitive with respect to both crude oil and other feedstock supply and refined petroleum product markets. We compete with many companies for available supplies of crude oil and other feedstocks and for sites for our refined petroleum products. Our Petroleum Segment may be unable to compete effectively with competitors within and outside of the industry, which could result in reduced profitability. In contrast to many of our competitors, we do not have a retail business and therefore are dependent upon others for outlets for our refined products, and we do not have arrangements exceeding a twelve-month period for much of our petroleum output and thus cannot offset losses from refining operations with profits from retail operations and may be less able to withstand periods of depressed refining margins or feedstock shortages. Some of our competitors also have materially greater financial and other resources than us and a greater ability to bear the economic risks inherent in our industry. In addition, our Petroleum Segment competes with other industries that provide alternative means to satisfy the energy and fuel requirements of its industrial, commercial, and individual customers. There are presently significant governmental incentives and consumer pressures to increase the use of alternative fuels in the United States. The more successful these alternatives become as a result of governmental incentives or regulations, technological advances, consumer demand, improved pricing, or otherwise, the greater the negative impact on pricing and demand for our products and profitability.

Our Nitrogen Fertilizer Segment is subject to intense price competition from both U.S. and foreign sources. With little or no product differentiation, customers make their purchasing decisions principally on the basis of delivered price and availability of the product. Increased global supply or decreases in transportation costs for foreign sources of fertilizer may put downward pressure on fertilizer prices. We compete with a number of U.S. producers and producers in other countries, including state-owned and government-subsidized entities that have greater total resources and are less dependent on earnings from fertilizer sales, which make them less vulnerable to industry downturns and better positioned to pursue new expansion and development opportunities. In addition, imports of fertilizer from other countries may be unfairly subsidized, as was found to be the case on November 30, 2021 by the U.S. Department of Commerce (the "USDOC") with respect to UAN imports from Russia and Trinidad. An inability to compete successfully could result in a loss of customers, which could adversely affect our sales, profitability, and cash flows, and therefore, have a material adverse effect on our results of operations, financial condition.

Our businesses are geographically concentrated, creating exposure to regional economic downturns and seasonal variations, which may affect our production levels, transportation costs, and inventory and working capital levels.

Our Refineries are both located in the southern portion of Group 3 of the PADD II region, and we primarily market refined products in a relatively limited geographic area. As a result, our Petroleum Segment is more susceptible to regional economic conditions than the operations of more geographically diversified competitors, and any unforeseen circumstances that affect our operating area could also materially adversely affect our revenues and cash flows. These factors include, among other things, changes in the economy, weather conditions, demographics and population, increased supply of refined products from competitors, and reductions in the supply of crude oil. In addition, if we deliver refined products to customers outside of the region, we may incur considerably higher transportation costs, resulting in lower refining margins, if any.

Our Nitrogen Fertilizer Segment's sales to agricultural customers are concentrated in the Great Plains and Midwest states, and nitrogen fertilizer demand is seasonal. Our quarterly results may vary significantly from one year to the next due to weather-related shifts in planting schedules and purchase patterns. Because we build inventory during low demand periods, the accumulation of inventory to be available for seasonal sales creates significant seasonal working capital and storage capacity requirements. The degree of seasonality can change significantly from year-to-year due to conditions in the agricultural industry and other factors. As a consequence of this seasonality, distributions by our Nitrogen Fertilizer Segment of available cash, if any, may be volatile and may vary quarterly and annually.

Both the Petroleum and Nitrogen Fertilizer Segments depend on significant customers, the loss of which may have a material adverse impact on our results of operations, financial condition and cash flows.

The Petroleum and Nitrogen Fertilizer Segments both have a significant concentration of customers. The largest customer of our Petroleum Segment represented 16% of its net sales for the year ended December 31, 2021. The largest customer of the Nitrogen Fertilizer Segment represented approximately 13% of its net sales for the same period. Given the nature of our businesses, and consistent with industry practice, we do not have long-term minimum purchase contracts with our customers. The loss of one or more of these significant customers, or a significant reduction in purchase volume by any of them, could have a material adverse effect on our results of operations, financial condition and cash flows.

If licensed technology were no longer available, our business may be adversely affected.

We have licensed, and may in the future license, a combination of patent, trade secret, and other intellectual property rights of third parties for use in our plant operations. If our use of technology on which our operations rely were to be terminated or face infringement claims, licenses to alternative technology may not be available, may only be available on terms that are not commercially reasonable or acceptable, or in the case of infringement may result in substantial costs, all of which could have a material adverse effect on our results of operations, financial condition and cash flows.

Compliance with and changes in environmental laws and regulations, including those related to climate change, could require us to make substantial capital expenditures and adversely affect our performance.

Our operations are subject to extensive federal, state, and local environmental laws and regulations relating to the protection of the environment, including those governing the emission or discharge of pollutants into the environment, product use and specifications, and the generation, treatment, storage, transportation, disposal, and remediation of solid and hazardous wastes. Violations of applicable environmental laws and regulations or of the conditions of permits issued thereunder can result in substantial penalties, injunctive orders compelling installation of additional controls or other injunctive relief, civil and criminal sanctions, operating restrictions, permit revocations, and/or facility shutdowns, which may have a material adverse effect on our ability to operate our facilities and accordingly our financial performance.

In addition, new environmental laws and regulations, new interpretations of existing laws and regulations, or increased governmental enforcement of laws and regulations, could require us to make additional unforeseen expenditures. It is unclear the impact of the new federal administration will have on the laws and regulations applicable to us, however, measures to address climate change and reduce GHG emissions (including carbon dioxide, methane, and nitrous oxides) are in various phases of discussion or implementation and could affect our operations by requiring increased operating and capital costs and/or increasing taxes on GHG emissions. There is also increased agency interest in polyfluoroalkyl substances or PFAS. On October 18, 2021, the U.S. Environmental Protection Agency (the "EPA") announced that the agency intends to designate at least two PFAS compounds as hazardous substances by 2023, with a proposed rule expected in the spring of 2022. If PFAS compounds are designated as hazardous substances, the EPA could have the ability to order the investigation and remediation of those compounds at the EPA clean-up sites. The EPA could also have the authority to reopen closed sites which are shown to be impacted by these PFAS compounds. This could lead to increased monitoring obligations and potential liability related thereto. If we are unable to maintain sales of our products at a price that reflects such increased costs, or could result in reduced demand for our fertilizer and hydrocarbon products, there could be a material adverse effect on our business, financial condition and results of operations.

Our facilities face significant risks due to physical damage hazards, environmental liability risk exposure, and unplanned or emergency partial or total plant shutdowns which could cause property damage and a material decline in production which are not fully insured.

If any of our facilities, logistics assets, or key suppliers sustain a catastrophic loss and operations are shutdown or significantly impaired, it would have a material adverse impact on our operations, financial condition and cash flows. Examples of unforeseen events and circumstances, which may not be within our control, include: (i) major unplanned maintenance requirements; (ii) catastrophic events caused by mechanical breakdown, electrical injury, pressure vessel rupture, explosion, contamination, fire, or natural disasters, including floods, windstorms, and other similar events; (iii) labor supply shortages or labor difficulties that result in a work stoppage or slowdown; (iv) cessation or suspension of a plant or specific operations dictated by environmental authorities; (v) acts of terrorism or other deliberate malicious acts; and (vi) an event or incident involving a large clean-up, decontamination, or the imposition of laws and ordinances regulating the cost and schedule of demolition or reconstruction, which can cause significant delays in restoring property to its pre-loss condition.

We are insured under casualty, environmental, property, and business interruption insurance policies. The property and business interruption policies insure our real and personal property. These policies are subject to limits, sub-limits, retention (financial and time-based), and deductibles. The application of these and other policy conditions could materially impact insurance recoveries and potentially cause us to assume losses which could impair earnings. There is potential for a common occurrence to impact both our Coffeyville Refinery and Coffeyville Fertilizer Facility, in which case the insurance limits and applicable sub-limits would apply to all damages combined.

There is finite capacity in the commercial insurance industry engaged in underwriting energy industry risk, and factors impacting cost and availability include: (i) losses in our industries, (ii) natural disasters, (iii) specific losses incurred by us, and (iv) inadequate investment returns earned by the insurance industry. If the supply of commercial insurance is curtailed, we may not be able to continue our present limits of insurance coverage or obtain sufficient insurance capacity to adequately insure our risks.

We could incur significant costs in cleaning up contamination at our facilities.

Our businesses handle petroleum and hazardous substances, and as a result, spills, discharges, or other releases of petroleum or hazardous substances into the environment may occur. Past or future spills related to any of our current or former operations and solid or hazardous waste disposal may give rise to liability (including for personal injury and property damage, penalties, strict liability and potential cleanup responsibility) to governmental entities or private parties under federal, state, or local environmental laws, as well as under common law. For example, we could be held strictly liable under CERCLA and similar state statutes for past or future spills without regard to fault or whether our actions were in compliance with the law at the time of the spills, including in connection with contamination associated with our current and former facilities, and facilities to which we transported or arranged for the transportation of wastes or byproducts containing hazardous substances for treatment, storage, or disposal. Such liability could have a material adverse effect on our results of operations, financial condition and cash flows and may not be covered by insurance.

Remedial activities to address known environmental contamination are underway at three of our facilities, including the Coffeyville Refinery, the now-closed Phillipsburg terminal (which operated as a refinery until 1991), and the Wynnewood Refinery. We also have assumed the previous owner’s responsibilities under certain administrative orders under RCRA related to contamination at or that originated from the Coffeyville Refinery and the Phillipsburg terminal. We continue to work with the applicable governmental authorities to implement remediation of these three sites on a timely basis. As of December 31, 2021, we have established an accrual of approximately $12 million for probable and reasonably estimable obligations associated with these sites.

Regulations concerning the transportation, storage, and handling of hazardous chemicals and materials, risks of terrorism, and the security of refineries and chemical manufacturing facilities could result in higher operating costs.

Our crude oil gathering division that operates as a motor carrier is subject to regulation by federal and various state agencies and possible regulatory and legislative changes that may affect the economics of the industry. Some of these possible changes include increasingly stringent fuel-economy environmental regulations, limits on vehicle weight and size, and increases to federal, state or local taxes, including taxes on motor fuels, which may increase our costs or adversely impact the recruitment of drivers.

Critical infrastructure such as petroleum refining and chemical manufacturing facilities may be at greater risk of terrorist attacks than other businesses in the United States. As a result, the petroleum and chemical industries are subject to security regulations relating to physical and cyber security. The costs of compliance therewith may have a material adverse effect on our results of operations, financial condition and cash flows.

If our access to transportation on which we rely for the supply of our feedstocks and the distribution of our products is interrupted, our inventory and costs may increase and we may be unable to efficiently distribute our products.

If one of the pipelines on which either of the Refineries relies for supply of crude oil or for distribution of fuel becomes inoperative, the Petroleum Segment would be required to use alternative pipelines or other transportation methods or increase inventory, which could increase its costs and result in lower production levels and profitability. Our Nitrogen Fertilizer business relies on railroad, trucking and barge companies to ship finished products to customers. Factors that could negatively impact transportation availability and have a material adverse effect on our results of operations, financial condition and ability to make cash distributions include extreme weather conditions, work stoppages, delays, spills, and derailments, new regulations restricting movements or increasing costs. The limited number of companies available for ammonia transport may also impact the availability of transportation for our Nitrogen Fertilizer Segment's products.

We may be unable to obtain or renew permits or approvals necessary for our operations, which could inhibit our ability to do business.

Our businesses hold numerous environmental and other governmental permits and approvals authorizing operations at our facilities and future expansion of our operations is predicated upon the ability to secure approvals therefore. A decision by a government agency to deny or delay issuing a new or renewed material permit or approval, or to revoke or substantially modify an existing permit or approval, could have a material adverse effect on our ability to continue operations and on our financial condition, results of operations and cash flows.

We are subject to strict laws and regulations regarding employee and process safety, and failure to comply with these laws and regulations could have a material adverse effect on our results of operations, financial condition and profitability.

We are subject to the requirements of OSHA and comparable state statutes that regulate the protection of the health and safety of workers, the proper design, operation, and maintenance of our equipment, and require us to provide information about hazardous materials used in our operations. Failure to comply with these requirements may result in significant fines or compliance costs, which could have a material adverse effect on our results of operations, financial condition and cash flows.

A significant portion of our workforce is unionized, and we are subject to the risk of labor disputes, which may disrupt our business and increase our costs.

As of December 31, 2021, approximately 53% and 31% of our petroleum and nitrogen fertilizer employees, respectively, were represented by labor unions under collective bargaining agreements. We may not be able to renegotiate our collective bargaining agreements when they expire on satisfactory terms or at all. A failure to do so may increase our costs. In addition, our existing labor agreements may not prevent a strike or work stoppage at any of our facilities in the future, and any work stoppage could negatively affect our results of operations, financial condition and cash flows.

We are subject to cybersecurity risks and other cyber incidents resulting in disruption.

We depend on internal and third-party information technology systems to manage and support our operations, and we collect, process, and retain sensitive and confidential customer information in the normal course of business. To protect our facilities and systems against and mitigate cyber risk, we have implemented several programs including externally performed cyber risk monitoring, audits and penetration testing and an information security training program, and we are actively engaged in evaluating the implementation of applicable Cybersecurity and Infrastructure Security Agency security standard guidelines. On an as needed basis, but no less than quarterly, we brief the Audit Committee of the Board on information security matters. Despite these measures (or those we may implement in the future), our facilities and these systems could be vulnerable to security breaches, computer viruses, lost or misplaced data, programming errors, human errors, acts of vandalism, or other events. Any disruption of these systems or security breach or event resulting in the misappropriation, loss or other unauthorized disclosure of confidential information, whether by us directly or our third-party service providers, could damage our reputation, expose us to the risks of litigation and liability, disrupt our business, or otherwise affect our results of operations.

Risks Related to the Petroleum Segment

If our Petroleum Segment is required to obtain its crude oil supply without the benefit of a crude oil supply agreement and significant crude oil gathering in the regions in which we operate, our exposure to the risks associated with volatile crude oil prices may increase, crude oil transportation costs could increase and our liquidity may be reduced.

Our Petroleum Segment obtains substantially all of its crude oil supply through crude oil gathering operations in Kansas and Oklahoma or through the crude oil intermediation agreement with Vitol Inc. The agreement, which currently extends through December 31, 2022, minimizes the amount of in-transit inventory and mitigates crude oil pricing risk by ensuring pricing takes place close to the time the crude oil is refined and the yielded products are sold. If we were required to obtain our crude oil supply without the benefit of crude oil located near the Refineries or through a supply intermediation agreement, our Petroleum Segment's exposure to crude oil pricing risk may increase, despite any hedging activity in which it may engage, crude oil transportation costs could increase and our liquidity could be negatively impacted due to increased inventory, potential need to post letters of credit, and negative impacts of market volatility. There is no assurance that our crude oil gathering operations will remain at current levels or that we will be able to renew or extend the Vitol agreement beyond December 31, 2022. Crude oil production disruptions could have a material impact on the Petroleum Segment because in such an event, we may be unable to obtain an adequate supply of crude oil, or we may only be able to obtain crude oil at unfavorable prices and we may experience a reduction in liquidity and our results of operations could be materially adversely affected.

Compliance with the U.S. Environmental Protection Agency Renewable Fuel Standard could adversely affect our performance.

The U.S. Environmental Protection Agency ("EPA") has promulgated and implemented the RFS pursuant to the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007. Under the RFS program, a RIN is assigned to each gallon of renewable fuel produced in or imported into the United States. The RFS program sets annual mandates for the volume of renewable fuels (such as ethanol and biodiesel) that must be blended into a refiner's transportation fuels. If a refiner of petroleum-based transportation fuels is unable to meet its renewable fuel mandate through blending and is not otherwise exempt from compliance, it must purchase RINs in the open market to meet its obligations under the RFS program.

Our Petroleum Segment is exposed to the volatility in the market price of RINs, which can be extreme. We cannot predict the future prices of RINs. RIN prices are dependent upon a variety of factors, including EPA regulations, the availability of RINs for purchase, levels of transportation fuels produced, the mix of the petroleum business' petroleum products, as well as the fuel blending performed at the Refineries and downstream terminals, all of which can vary significantly from period to period. RIN prices may also be impacted by the timing and content of the EPA's actions relating to the RFS and communications relating thereto, as well as the actions of market participants, such as non-obligated parties. If sufficient RINs are unavailable for purchase, if the Petroleum Segment has to pay a significantly higher price for RINs, or if the Petroleum Segment is otherwise unable to meet the EPA's RFS mandates or is unable to participate in programs or receive exemptions relieving compliance with RFS obligations, our business, financial condition and results of operations could be materially adversely affected.

Changes in our credit profile may affect our relationship with our suppliers, which could have a material adverse effect on our liquidity and ability to operate the Refineries at full capacity.

Changes in our credit profile may affect the way crude oil suppliers view our ability to make payments and may induce them to shorten the payment terms for purchases or require us to post security. Given the large dollar amounts and volume of our crude oil and other feedstock purchases, a burdensome change in payment terms may have a material adverse effect on liquidity and our ability to make payments to suppliers. This, in turn, could cause us to be unable to operate the Refineries at full capacity. A failure to operate at full capacity could adversely affect our profitability and cash flows.

The Petroleum Segment's commodity derivative contracts may limit potential gains, exacerbate potential losses, and involve other risks.

We may enter into commodity derivatives contracts to mitigate crack spread risk with respect to a portion of expected refined products production. However, hedging arrangements, if we are able to procure them, may fail to fully achieve this objective for a variety of reasons, including its failure to have adequate hedging contracts, if any, in effect at any particular time and the failure of hedging arrangements to produce the anticipated results. Moreover, such transactions may limit our ability to benefit from favorable changes in margins. In addition, our hedging activities may expose us to the risk of financial loss in certain circumstances, including instances in which the volumes of our actual use of crude oil or production of the applicable refined products is less than the volumes subject to the hedging arrangement; accidents, interruptions in transportation, inclement weather, or other events cause unscheduled shutdowns or otherwise adversely affect a refinery, suppliers, or customers; the counterparties to our futures contracts fail to perform under the contracts; or a sudden, unexpected event materially impacts the commodity or crack spread subject to the hedging arrangement. As a result, the effectiveness of our risk mitigation strategy could have a material adverse impact on our financial results and cash flows.

If we are unable to complete capital projects at their expected costs and/or in a timely manner, or if the market conditions assumed in project economics deteriorate, our financial condition, results of operations or cash flows could be adversely affected.

Equipment, even when properly maintained, may require significant capital expenditures and expenses to keep operating at optimum efficiency. Our facilities and equipment have been in operation for many years and may be subject to unscheduled downtime for unanticipated maintenance or repairs that are more frequent than our planned turnaround for facilities and equipment. In addition, our planned turnarounds for facilities and equipment reduce our revenues during the period of time that such assets are not operating and may take longer than anticipated to complete. Delays or cost increases beyond our control related to the engineering and construction of new facilities or improvements and repairs to existing facilities and equipment caused by delays in or denials of permits, disruptions to transportation, labor disagreements resulting in work stoppage, non-performance of vendors, or increases in financing costs, could have a significant impact on our petroleum business. If we are unable to make up for the delays or to recover the related costs, or if market conditions change, we could materially and adversely affect our financial condition, results of operations or cash flows.

One of the ways we may grow our business is through the conversion or expansion of our existing facilities, such as the conversion of the Wynnewood Refinery's hydrocracker to an RDU and the conversion of a hydrotreater to renewable diesel service at the Coffeyville Refinery. If we are unable to complete capital projects at their expected costs or in a timely manner, our financial condition, results of operations, or cash flows could be materially and adversely affected. Delays in making required changes or upgrades to our facilities could subject us to fines or penalties and also affect our ability to supply certain products we make. Moreover, we may construct facilities to capture anticipated future growth in demand for refined products or renewable diesel in a region in which such growth does not materialize, and our revenue may not increase immediately upon the expend of funds on a particular project. In addition, the long-term success of our Petroleum Segment depends on our ability to effectively address energy transition matters, which will require that we continue to adapt our existing facilities to potentially changing government requirements, among other things. As a result, new capital investments may not achieve our expected investment return, which could materially and adversely affect our financial position, results of operations or cash flows.

Investor and market sentiment towards climate change, fossil fuels, GHG emissions, environmental justice, and other Environmental, Social and Governance ("ESG") matters could adversely affect our business, cost of capital, and the price of our common stock and debt securities.

There have been efforts in recent years aimed at the investment community, including investment advisors, sovereign wealth funds, public pension funds, universities, and other groups, to promote the divestment of securities of companies in the energy industry, as well as to pressure lenders and other financial services companies to limit or curtail activities with companies in the energy industry. As a result, some financial intermediaries, investors, and other capital markets participants have reduced or ceased lending to, or investing in, companies that operate in industries with higher perceived environmental exposure, such as the energy industry. Pension funds at both the United States state and municipal level, as well other countries and jurisdictions across the world, particularly in Europe, have announced plans to divest holdings in companies engaged in fossil fuels activities. If these or similar divestment efforts are continued, the price of our common stock or debt securities, and our ability to access capital markets or to otherwise obtain new investment or financing, may be negatively impacted.

Members of the investment community are also increasing their focus on ESG practices and disclosures, including those related to climate change, GHG emissions targets, business resilience under demand-constraint scenarios, and net-zero ambitions in the energy industry in particular, and diversity, equity, and inclusion initiatives, political activities, and governance standards among companies more generally. As a result, we may face negative publicity, increasing pressure regarding our ESG practices and disclosures, and demands for ESG-focused engagement commenced by investors, stakeholders, and other interested parties. This could result in higher costs, disruption and diversion of management attention, an increased strain on company resources, and the implementation of certain ESG practices or disclosures that may present a heightened level of legal and regulatory risk, or that threaten our credibility with other investors and stakeholders. Investors, stakeholders, and other interested parties are also increasingly focusing on issues related to environmental justice. This may result in increased scrutiny, protests, and negative publicity with respect to our business and operations, and those of our counterparties, which could in turn result in the cancellation or delay of projects, the revocation of permits, termination of contracts, lawsuits, regulatory action, and policy change that may adversely affect our business strategy, increase our costs, and adversely affect our reputation and performance.

Additionally, members of the investment community may screen companies such as ours for ESG performance before investing in our common stock or debt securities, or lending to us. Credit ratings agencies are also increasingly using ESG as a factor in assigning their ratings, which could impact our cost of capital or access to financing. There has also been an acceleration in investor demand for ESG investing opportunities, and many institutional investors have committed to increasing the percentage of their portfolios that are allocated towards ESG-focused investments. As a result, there has been a proliferation of ESG-focused investment funds, and market participants seeking ESG-oriented investment products. There has also been an increase in third-party providers of company ESG ratings, and more ESG-focused voting policies among proxy advisory firms, portfolio managers and institutional investors. Some investors and stakeholders are also increasingly focused on pursuing strategies centered on ESG-related activism.

If we are unable to meet the ESG standards or investment, lending, ratings, or voting criteria and policies set by these parties, we may lose investors, investors may allocate a portion of their capital away from us, we may become a target for ESG-focused activism, our cost of capital may increase, the price of our securities may be negatively impacted, and our reputation may also be negatively affected.

Risks Related to the Nitrogen Fertilizer Segment

Any decline in U.S. agricultural production or limitations on the use of nitrogen fertilizer for agricultural purposes could have a material adverse effect on the sales, and on our results of operations, financial condition and cash flows.

Conditions in the U.S. agricultural industry significantly impact our operating results. The U.S. agricultural industry can be affected by a number of factors, including weather patterns and field conditions, current and projected grain inventories and prices, domestic and international population changes, demand for U.S. agricultural products, U.S., state and foreign policies regarding trade in agricultural products, and changes in governmental regulations and incentives for ethanol production that could affect future corn-based ethanol demand and production, including the RFS program. Developments in crop technology could also reduce the use of chemical fertilizers and adversely affect the demand for nitrogen fertilizer. All of the foregoing could have a material adverse effect on our results of operations, financial condition and cash flows.

Failure by CVR Energy's Coffeyville Refinery to continue to supply us with pet coke could negatively impact our results of operations.

Unlike our competitors, whose primary costs are related to the purchase of natural gas and whose costs are therefore largely variable, our Coffeyville Fertilizer Facility uses a pet coke gasification process to produce nitrogen fertilizer. Our profitability is directly affected by the price and availability of pet coke obtained from our Coffeyville Refinery pursuant to a long-term agreement. Our Coffeyville Fertilizer Facility has obtained the majority of its pet coke from our Coffeyville Refinery over the past five years, although it has decreased to 43% in 2021. Should our Coffeyville Refinery fail to perform in accordance with the existing agreement or to the extent pet coke from the Coffeyville Refinery is insufficient, we would need to purchase pet coke from third parties on the open market, which could negatively impact our results of operations to the extent third-party pet coke is unavailable or available only at higher prices. Currently, we purchase 100% of the pet coke our Coffeyville Refinery produces. However, we are still required to procure additional pet coke at fixed prices from third parties to maintain our production rates. Our contracts for 327,000 tons of third-party supply of pet coke currently end in December 2022.

The market for natural gas has been volatile, and fluctuations in natural gas prices could affect our competitive position.

Low natural gas prices benefit our competitors that rely on natural gas as their primary feedstock and disproportionately impact our operations at our Coffeyville Fertilizer Facility by making us less competitive with natural gas-based nitrogen fertilizer manufacturers. Low natural gas prices could result in nitrogen fertilizer pricing declines and impair the ability of the Coffeyville Fertilizer Facility to compete with other nitrogen fertilizer producers who use natural gas as their primary feedstock, which, therefore, would have a material adverse impact on the Nitrogen Fertilizer Segment's results of operations, financial condition and ability to make cash distributions.

The East Dubuque Fertilizer Facility uses natural gas as its primary feedstock, and as such, the profitability of operating the East Dubuque Fertilizer Facility is significantly dependent on the cost of natural gas. An increase in natural gas prices could make it less competitive with producers who do not use natural gas as their primary feedstock. In addition, an increase in natural gas prices in the United States relative to prices of natural gas paid by foreign nitrogen fertilizer producers may negatively affect our competitive position in the corn belt, and such changes could have a material adverse effect on our results of operations, financial condition, and cash flows.

Any interruption in the supply of natural gas to our East Dubuque Fertilizer Facility could have a material adverse effect on our results of operations and financial condition.

Our East Dubuque Fertilizer Facility depends on the availability of natural gas. We have two agreements for pipeline transportation of natural gas with expiration dates in 2022. We typically purchase natural gas from third parties on a spot basis and, from time to time, may enter into fixed-price forward purchase contracts. Upon expiration of the agreements, we may be unable to extend the service under the terms of the existing agreements or renew the agreements on satisfactory terms, or at all, necessitating construction of a new connection that could be costly and disruptive. Any disruption in the supply of natural gas to our East Dubuque Facility could restrict our ability to continue to make products at the facility and have a material adverse effect on our results of operations and financial condition.

Our operations are dependent on third-party suppliers, which could have a material adverse effect on our results of operations, financial condition and cash flows.

Operations of our Coffeyville Fertilizer Facility depend in large part on the performance of third-party suppliers, including the third-party air separation plant located adjacent to it and third-party electricity suppliers. Our East Dubuque Fertilizer Facility operations also depend in large part on the performance of third-party suppliers, including for the purchase of electricity. Should these, or any of our other third-party suppliers fail to perform in accordance with existing contractual arrangements, or should we otherwise lose the service of any third-party suppliers, our operations (or a portion thereof) could be forced to halt. Alternative sources of supply could be difficult to obtain. Any shutdown of our operations (or a portion thereof), even for a limited period, could have a material adverse effect on our results of operations, financial condition and ability to make cash distributions.

Any liability for accidents involving ammonia or other products we produce or transport that cause severe damage to property or injury to the environment and human health could have a material adverse effect on our results of operations, financial condition and ability to make cash distributions.

Our business manufactures, processes, stores, handles, distributes and transports ammonia, which can be very volatile and extremely hazardous. Major accidents or releases involving ammonia could cause severe damage or injury to property, the environment, and human health, as well as a possible disruption of supplies and markets. Such an event could result in civil lawsuits, fines, penalties and regulatory enforcement proceedings, all of which could lead to significant liabilities. Any damage or injury to persons, equipment or property or other disruption of our ability to produce or distribute products could result in a significant decrease in operating revenues and significant additional costs to replace or repair and insure our assets, which could have a material adverse effect on our results of operations, financial condition and ability to make cash distributions.

In addition, we may incur significant losses or increased costs relating to the operation of railcars used for the purpose of carrying various products, including ammonia. Due to the dangerous and potentially hazardous nature of the cargo we carry, in particular ammonia, a railcar accident may result in fires, explosions, and releases of material which could lead to sudden, severe damage or injury to property, the environment, and human health. In the event of contamination, under environmental law, we may be held responsible even if we are not at fault, and we complied with the laws and regulations in effect at the time of the accident. Litigation arising from accidents involving ammonia and other products we produce or transport may result in us being named as a defendant in lawsuits asserting claims for substantial damages, which could have a material adverse effect on our results of operations, financial condition and ability to make cash distributions.

Risks Related to Our Capital Structure

Instability and volatility in the capital, credit, and commodity markets in the global economy could negatively impact our business, financial condition, results of operations and cash flows.

Our business, financial condition and results of operations could be negatively impacted by difficult conditions and volatility in the capital, credit, and commodities markets and in the global economy. For example, there can be no assurance that funds under our credit facilities will be available or sufficient, and in such a case, we may not be able to successfully obtain additional financing on favorable terms, or at all; market volatility could exert downward pressure on the price of CVR Partners' common units, which may make it more difficult for us to raise additional capital and thereby limit its ability to grow, which could in turn cause CVR Energy's stock and/or CVR Partners' unit price to drop; or customers experiencing financial difficulties may fail to meet their financial obligations when due because of bankruptcy, lack of liquidity, operational failure, or other reasons could result in decreased sales and earnings for us.

Our indebtedness may increase and affect our ability to operate our businesses, and have a material adverse effect on our financial flexibility, financial condition and results of operations.

Although existing credit facilities contain restrictions on the occurrence of additional indebtedness, these restrictions are subject to a number of qualifications and exceptions and, under certain circumstances, additional indebtedness incurred in compliance with these restrictions could be substantial and secured. The level of indebtedness could have important consequences, including the following: (i) limiting our ability to obtain additional financing to fund working capital needs, capital expenditures, debt service requirements, acquisitions, general corporate, or other purposes; (ii) requiring us to utilize a significant portion of cash flows to service indebtedness, thereby reducing our funds available for operations, future business opportunities, and distributions to us and public common unitholders of CVR Partners; (iii) limiting our ability to use operating cash flow in other areas of our business because we must dedicate a substantial portion of these funds to service debt; (iv) limiting our ability to compete with other companies who are not as highly leveraged, as we may be less capable of responding to adverse economic and industry conditions; (v) limiting our ability to make certain payments on debt that is subordinated or secured on a junior basis; (vi) restricting the way in which we conduct business because of financial and operating covenants, including regarding borrowing additional funds, disposing of assets, and in the case of certain indebtedness of subsidiaries, restricting the ability of subsidiaries to pay dividends or make distributions; (vii) limiting our ability to enter into certain transactions with our affiliates; (viii) limiting our ability to designate our subsidiaries as unrestricted subsidiaries; (ix) exposing us to potential events of default (if not cured or waived) under financial and operating covenants contained in their or their respective subsidiaries' debt instruments; (x) increasing our vulnerability to general adverse economic and industry conditions or adverse pricing of products; (xi) increasing the likelihood for a reduction in the borrowing base under CVR Refining's Amended and Restated ABL Credit Facility following a periodic redetermination could require us to repay a portion of our then-outstanding bank borrowings; and (xii) limiting our ability to react to changing market conditions in our industries and in respective customers' industries.

Covenants in our debt agreements could limit our ability to incur additional indebtedness and engage in certain transactions, as well as limit operational flexibility, which could adversely affect our liquidity and ability to pursue our business strategies.

Our debt facilities and instruments contain, and any instruments governing future indebtedness would likely contain, a number of covenants that impose significant operating and financial restrictions on us and our subsidiaries and may limit our ability to engage in acts that may be in our long-term best interest, including restrictions on the ability, among other things, to: incur, assume, or guarantee additional indebtedness or issue redeemable or preferred stock; pay dividends or distributions in respect of equity securities or make other restricted payments; prepay, redeem, or repurchase certain debt; enter into agreements that restrict distributions from restricted subsidiaries; make certain payments on debt that is subordinated or secured on a junior basis; make certain investments; sell or otherwise dispose of assets, including capital stock of subsidiaries; create liens on certain assets; consolidate, merge, sell, or otherwise dispose of all or substantially all assets; enter into certain transactions with affiliates; and designate subsidiaries as unrestricted subsidiaries.

Any of these restrictions could limit our ability to plan for or react to market conditions and could otherwise restrict operating activities. Any failure to comply with these covenants could result in a default under existing debt facilities and instruments. Upon a default, unless waived, the lenders under such debt facilities and instruments would have all remedies available to a secured lender and could elect to terminate their commitments, cease making further loans, institute foreclosure proceedings against assets, and force bankruptcy or liquidation, subject to any applicable intercreditor agreements. In addition, a default under existing debt facilities and instruments would trigger a cross default under other agreements and could trigger a cross default under the agreements governing future indebtedness. Our operating segments' results may not be sufficient to service existing indebtedness or to fund other expenditures, and we may not be able to obtain financing to meet these requirements.

We may not be able to generate sufficient cash to service existing indebtedness and may be forced to take other actions to satisfy debt obligations that may not be successful.

Our ability to satisfy existing debt obligations will depend upon, among other things: future financial and operating performance, which will be affected by prevailing economic conditions and financial, business, regulatory, and other factors, many of which are beyond our control; future ability to borrow under CVR Refining's Amended and Restated ABL Credit Facility and CVR Partners' AB Credit Facility, the availability of which depends on, among other things, complying with the covenants in the applicable facility; and future ability to obtain other financing.

We cannot offer any assurance that our businesses will generate sufficient cash flow from operations, or that we will be able to draw under our credit facilities or from other sources of financing, in an amount sufficient to fund respective liquidity needs. In addition, our board of directors may in the future elect to pursue other strategic options including acquisitions of other businesses or asset purchases, which would reduce cash available to service our debt obligations.

If cash flows and capital resources are insufficient to service existing indebtedness, we may be forced to reduce or delay capital expenditures, sell assets, seek additional capital, restructure or refinance existing indebtedness, or seek bankruptcy protection. These alternative measures may not be successful and may not permit the meeting of scheduled debt service and other obligations. Our ability to restructure or refinance debt will depend on the condition of the capital markets and our financial condition, including that of our operating segments, at such time. Any refinancing of existing debt could be at higher interest rates and may require compliance with more onerous covenants, which could further restrict business operations.

The borrowings under our credit facilities bear interest at variable rates and other debt we or they incur could likewise be variable-rate debt. If market interest rates increase, variable-rate debt will create higher debt service requirements, which could adversely affect our cash flow and/or distributions to us. Although we may enter into agreements limiting exposure to higher interest rates, any such agreements may not offer complete protection from this risk.

We are authorized to issue up to a total of 350 million shares of our common stock and 50 million shares of preferred stock, potentially diluting equity ownership of current holders and the share price of our common stock.

Our board of directors may authorize us to issue the available authorized shares of common stock or preferred stock without notice to, or further action by, our stockholders, unless stockholder approval is required by law or the rules of the NYSE. The issuance of additional shares of common stock or preferred stock may significantly dilute the equity ownership of the current holders of our common stock.

Risks Related to Our Corporate Structure

The Company's reorganization of its entities and assets could trigger increased costs, complexity and risks.

In February 2022, the Board approved a plan to form multiple new entities, into which the Company expects to transfer various assets and make other changes relating to the Company's efforts to increase optionality and segregate its renewables business, including the development and execution of additional contractual arrangements and the transfer of consideration by and between various of the Company's subsidiaries, including subsidiaries of CVR Partners. Execution of the plan and the transfer of assets could subject the Company to increased costs and operational complexity and trigger transfer of or application for various permits, licenses and operating authorities; approval from the Company's noteholders or refinance of the Company's debt; and/or governmental response. Also, our plan may not be successful for many reasons, including but not limited to adverse legal and regulatory developments that may affect particular businesses. Failure to execute the plan or manage risks relating thereto could have a material adverse effect on our results of operations, financial condition and cash flows.

***We are a holding company and depend upon our subsidiaries for our cash flow*.**

We are a holding company, and our subsidiaries conduct substantially all of our operations and own substantially all of our assets. Consequently, our cash flow and our ability to meet our obligations or to pay dividends or make other distributions in the future will depend upon the cash flow of our subsidiaries and the payment of funds by our subsidiaries to us in the form of distributions.

Mr. Carl C. Icahn exerts significant influence over the Company, and his interests may conflict with the interests of the Company's other stockholders.

Mr. Carl C. Icahn indirectly controls approximately 71% of the voting power of our common stock and, by virtue of such stock ownership, is able to control or exert substantial influence over the Company, including the election and appointment of directors; business strategy and policies; mergers or other business combinations; acquisition or disposition of assets; future issuances of common stock, common units, or other securities; occurrence of debt or obtaining other sources of financing; and the payment of dividends on the Company's common stock and distributions on the common units of CVR Partners. The existence of a controlling stockholder may have the effect of making it difficult for, or may discourage or delay, a third-party from seeking to acquire a majority of the Company's outstanding common stock, which may adversely affect the market price of the Company's common stock.

Mr. Icahn's interests may not always be consistent with the Company's interests or with the interests of the Company's other stockholders. Mr. Icahn and entities controlled by him may also pursue acquisitions or business opportunities in industries in which we compete, and there is no requirement that any additional business opportunities be presented to us. We also have and may in the future enter into transactions to purchase goods or services with affiliates of Mr. Icahn. To the extent that conflicts of interest may arise between the Company and Mr. Icahn and his affiliates, those conflicts may be resolved in a manner adverse to the Company or its other stockholders.

In addition, if Mr. Icahn were to sell, or otherwise transfer, some or all of his interests in us to an unrelated party or group, a change of control could be deemed to have occurred under the terms of the indenture governing CVR Energy's 5.250% and 5.750% Senior Notes, which would require it to offer to repurchase all outstanding notes at 101% of their principal amount plus accrued interest to the date of repurchase, and an event of default could be deemed to have occurred under CVR Refining's Amended and Restated ABL Credit Facility, which would allow lenders to accelerate indebtedness owed to them. However, it is possible that we will not have sufficient funds at the time of the change of control to make the required repurchase of notes or repay amounts outstanding under CVR Refining's Amended and Restated ABL Credit Facility, if any.

Our stock price may decline due to sales of shares by Mr. Carl C. Icahn.

Sales of substantial amounts of the Company's common stock, or the perception that these sales may occur, may adversely affect the price of the Company's common stock and impede its ability to raise capital through the issuance of equity securities in the future. Mr. Icahn could elect in the future to request that the Company file a registration statement to sell shares of the Company's common stock. If Mr. Icahn were to sell a large number of shares into the public markets, Mr. Icahn could cause the price of the Company's common stock to decline.

We are a "controlled company" within the meaning of the NYSE rules and, as a result, qualify for, and are relying on, exemptions from certain corporate governance requirements.

A company of which more than 50% of the voting power is held by an individual, a group, or another company is a "controlled company" within the meaning of the NYSE rules and may elect not to comply with certain corporate governance requirements of the NYSE, including the requirements that a majority of our board of directors consist of independent directors; we have a nominating/corporate governance committee that is composed entirely of independent directors; and we have a compensation committee that is composed entirely of independent directors. We are relying on all of these exemptions as a controlled company. Accordingly, our stockholders may not have the same protections afforded to stockholders of companies that are subject to all of the corporate governance requirements of the NYSE. In addition, CVR Partners is relying on exemptions from the same NYSE corporate governance requirements described above.

We have various mechanisms in place to discourage takeover attempts, which may reduce or eliminate our stockholders' ability to sell their shares for a premium in a change of control transaction.

Various provisions of our amended certificate of incorporation and second amended and restated bylaws and of Delaware corporate law may discourage, delay, or prevent a change in control or takeover attempt of our Company by a third-party. Public stockholders who might desire to participate in such a transaction may not have the opportunity to do so. These anti-takeover provisions could substantially impede the ability of public stockholders to benefit from a change of control or change in our management and board of directors. These provisions include preferred stock that could be issued by our board of directors to make it more difficult for a third-party to acquire, or to discourage a third-party from acquiring, a majority of our outstanding voting stock; limitations on the ability of stockholders to call special meetings of stockholders; limitations on the ability of stockholders to act by written consent in lieu of a stockholders' meeting; and advance notice requirements for nominations of candidates for election to our board of directors or for proposing matters that can be acted upon by our stockholders at stockholder meetings.

Compliance with and changes in the tax laws could adversely affect our performance.

We are subject to extensive tax liabilities, including U.S. and state income taxes and transactional taxes such as excise, sales/use, payroll, franchise, and withholding taxes. New tax laws and regulations are continuously being enacted or proposed that could result in increased expenditures for tax liabilities in the future.

Risks Related to Our Ownership in CVR Partners

If CVR Partners were to be treated as a corporation for U.S. federal income tax purposes or if it becomes subject to entity-level taxation for state tax purposes, its cash available for distribution to its common unitholders, including to us, would be substantially reduced, likely causing a substantial reduction in the value of its common units, including the common units held by us.

The anticipated after-tax economic benefit of an investment in common units of CVR Partners depends largely on it being treated as a partnership for U.S. federal income tax purposes. Despite the fact that CVR Partners is organized as a limited partnership under Delaware law, it would be treated as a corporation for U.S. federal income tax purposes unless it satisfies a "qualifying income" requirement. CVR Partners may not find it possible to meet this qualifying income requirement, may inadvertently fail to meet this qualifying income requirement, or a change in current law could cause CVR Partners to be treated as a corporation for U.S. federal income tax purposes or otherwise subject CVR Partners to entity-level taxation. If CVR Partners were to be treated as a corporation for U.S. federal income tax purposes, it would pay U.S. federal income tax on all of its taxable income at the corporate tax rate. Distributions to its common unitholders (including us) would generally be taxed again as corporate distributions, and no income, gains, losses, or deductions would flow through to such common unitholders. Because a tax would be imposed upon CVR Partners as a corporation, its cash available for distribution to its common unitholders would be substantially reduced. Therefore, treatment of CVR Partners as a corporation would result in a material reduction in the anticipated cash flow and after-tax return to its common unitholders (including us), likely causing a substantial reduction in the value of such common units.

We may have liability to repay distributions that are wrongfully distributed to us.

Under certain circumstances, we may, as a holder of common units in CVR Partners, have to repay amounts wrongfully returned or distributed to us. Under the Delaware Revised Uniform Limited Partnership Act, a partnership may not make distributions to its unitholders if the distribution would cause its liabilities to exceed the fair value of its assets. Delaware law provides that for a period of three years from the date of an impermissible distribution, limited partners who received the distribution and who knew at the time of the distribution that it violated Delaware law will be liable to the company for the distribution amount.

Public investors own approximately 64% of the Nitrogen Fertilizer Segment through CVR Partners. Although we own the general partner of CVR Partners, the general partner owes a duty of good faith to public unitholders, which could cause them to manage their respective businesses differently than if there were no public unitholders.

Public investors own approximately 64% of CVR Partners' common units. We are not entitled to receive all of the cash generated by CVR Partners or freely transfer money to finance operations at the Petroleum Segment. Furthermore, although we own the general partner of CVR Partners, the general partner is subject to certain fiduciary duties, which may require the general partner to manage its business in a way that may differ from our best interests.

CVR Partners is managed by the executive officers of its general partner, who are employed by and also serve as part of the senior management team of the Company. Conflicts of interest could arise as a result of this arrangement.

CVR Partners is managed by the executive officers of its general partner, who are employed by and also serve as part of the senior management team of the Company. Furthermore, although CVR Partners has entered into a service agreement with the Company under which it compensates the Company for the services of its management, our management is not required to devote any specific amount of time to the Nitrogen Fertilizer Segment and may devote a substantial majority of their time to other business of the Company. Moreover, the Company may terminate the services agreement with CVR Partners at any time, subject to a 90-day notice period. In addition, key executive officers of the Company, including its president and chief executive officer, chief financial officer, and general counsel, will face conflicts of interest if decisions arise in which CVR Partners and the Company have conflicting points of view or interests.

General Risks Related to CVR Energy

The acquisition, expansion and investment strategy of our businesses involves significant risks.

From time to time, we may consider pursuing acquisitions and expansion projects to continue to grow and increase profitability. We also may make investments in other entities, such as our current investment in Delek US Holdings, Inc. ("Delek"). There can be no assurance that we will be able to consummate any acquisitions or expansions, successfully integrate acquired businesses or entities, or generate positive cash flow at any acquired company or expansion project. Challenges that may lead to failed consummation of an expansion/acquisition include intense competition for suitable acquisition targets, the potential unavailability of financial resources necessary, difficulties in securing sufficiently favorable terms, and the failure to obtain requisite regulatory or other governmental approvals or the approval of equity holders of the entities in which we have invested. In addition, any future acquisitions, expansions or investments may entail significant transaction costs and risks associated with entry into new markets and lines of business, including but not limited to new regulatory obligations and risks, and integration challenges such as disruption of operations; failure to achieve financial or operating objectives contributing to the accretive nature of an acquisition; strain on controls, procedures and management; the need to modify systems or to add management resources; the diversion of management time from the operation of our business; customer and personnel retention; assumption of unknown material liabilities or regulatory non-compliance issues; amortization of acquired assets, which would reduce future reported earnings; and possible adverse short-term effects on our cash flows or operating results. Also, our investments may not be successful for many reasons, including, but not limited to, lack of control; worsening of general economic and market conditions; or adverse legal and regulatory developments that may affect particular businesses. Failure to manage these acquisition, expansion and investment risks could have a material adverse effect on our results of operations, financial condition and cash flows. Our joint ventures involve similar risks.

We are subject to the risk of becoming an investment company.

From time to time, we may own less than a 50% interest in other public companies, which exposes us to the risk of inadvertently becoming an investment company required to register under the Investment Company Act ("ICA"). Events beyond our control, including significant appreciation or depreciation in the market value of certain of our publicly traded holdings or adverse developments, could result in our inadvertently becoming an investment company required to register under the ICA and subject to extensive, restrictive and potentially adverse regulations relating to, among other things, operating methods, management, capital structure, dividends and transactions with affiliates, and could also be subject to monetary penalties or injunctive relief for failure to register as such.

Internally generated cash flows and other sources of liquidity may not be adequate for the capital needs of our businesses.

Our businesses are capital intensive, and working capital needs may vary significantly over relatively short periods of time. For instance, crude oil price volatility can significantly impact working capital on a week-to-week and month-to-month basis. If we cannot generate adequate cash flow or otherwise secure sufficient liquidity to meet our working capital needs or support our short-term and long-term capital requirements, we may be unable to meet our debt obligations, pursue our business strategies, or comply with certain environmental standards, which would have a material adverse effect on our business and results of operations.

Our ability to pay dividends on our common stock is subject to market conditions and numerous other factors.

Dividends are subject to change at the discretion of the board of directors and may change from quarter to quarter and may not be paid at historical rates or at all. Our ability to continue paying dividends is subject to our ability to continue to generate sufficient cash flow from our operating segments, and the amount of dividends we are able to pay each year may vary, possibly substantially, based on market conditions, crack spreads, our capital expenditure and other business needs, covenants contained in any debt agreements we may enter into in the future, covenants contained in existing debt agreements, and the amount of distributions we receive from CVR Partners. If the amount of our dividends decreases, the trading price of our common stock could be materially adversely affected as a result.

Item 1B. *Unresolved Staff Comments*

None.

Item 2. *Properties*

Refer to Part I, Item 1, “Petroleum” and “Nitrogen Fertilizer” of this Report for more information on our core business properties. We also lease property for our executive and marketing offices in Sugar Land, Texas and Kansas City, Kansas, respectively.

Item 3. *Legal Proceedings*

In the ordinary course of business, we may become party to lawsuits, administrative proceedings, and governmental investigations, including environmental, regulatory, and other matters. Large, and sometimes unspecified, damages or penalties may be sought from us in some matters and certain matters may require years to resolve. Refer to Part II, Item 8, Note 11 (“Commitments and Contingencies”), Contingencies of this Report for further discussion on current litigation matters. Although we cannot provide assurance, we believe that an adverse resolution of the matters described therein would not have a material impact on our liquidity, consolidated financial position, or consolidated results of operations.

Item 4. *Mine Safety Disclosures*

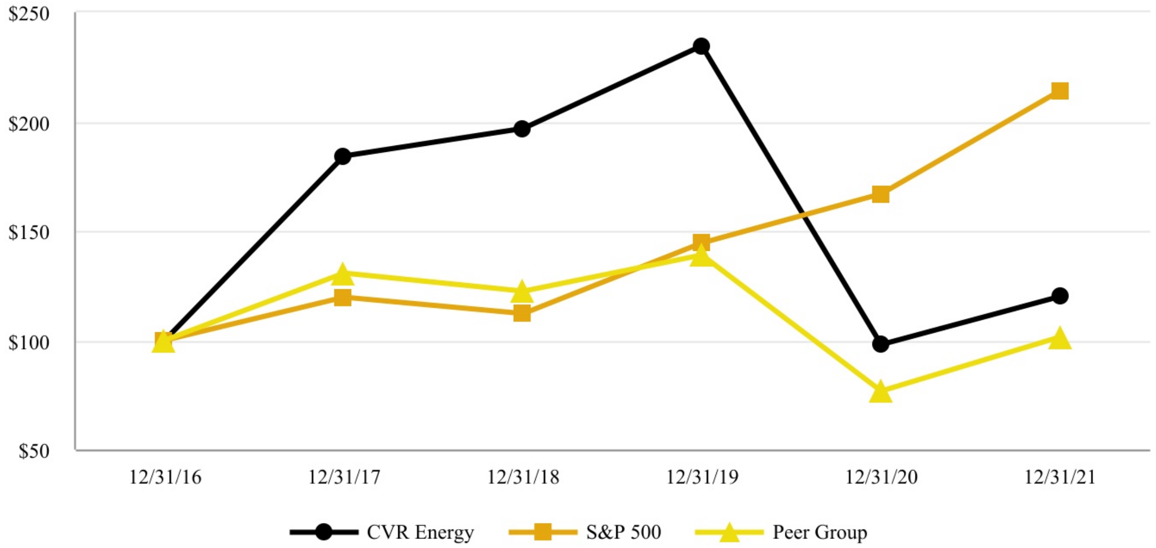
Not applicable.

PART II

Item 5. *Market For Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities*

Performance Graph

The performance graph below compares the cumulative total return of our common stock to (a) the cumulative total return of the S&P 500 Composite Index and (b) a composite peer group ("Peer Group") consisting of Delek US Holdings, Inc., HollyFrontier Corporation, Marathon Petroleum Corp., Par Pacific Holdings, Inc, PBF Energy Inc. and Valero Energy Corporation. The graph assumes that the value of the investment in common stock and each index was $100 on December 31, 2016 and that all dividends were reinvested. Investment is weighted on the basis of market capitalization.



The share price performance shown on the graph is not necessarily indicative of future price performance. Information used in the graph was obtained from Yahoo! Finance (finance.yahoo.com). The performance graph above is furnished and not filed for purposes of the Securities Act and the Exchange Act. The performance graph is not soliciting material subject to Regulation 14A.

Market Information

Our common stock is listed under the symbol "CVI" on the New York Stock Exchange ("NYSE"). The Company has 115 holders of record of the outstanding shares as of December 31, 2021.

Purchases of Equity Securities by the Issuer

On October 23, 2019, the Board of Directors of the Company (the "Board") authorized a stock repurchase program (the "Stock Repurchase Program"). The Stock Repurchase Program would enable the Company to repurchase up to $300 million of the Company's common stock. Repurchases under the Stock Repurchase Program may be made from time-to-time through open market transactions, block trades, privately negotiated transactions or otherwise in accordance with applicable securities laws. The timing, price and amount of repurchases (if any) will be made at the discretion of management and are subject to market conditions as well as corporate, regulatory and other considerations. While the Stock Repurchase Program currently has a duration of four years, it does not obligate the Company to acquire any stock and may be terminated or modified by the Board at any time.

We did not repurchase any of our common stock during the years ended December 31, 2021, 2020 and 2019.

Item 6. *[Reserved]*

Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations*

The following discussion and analysis of our financial condition, results of operations and cash flow should be read in conjunction with our consolidated financial statements and related notes and with the statistical information and financial data included elsewhere in this Report. References to CVR Energy, the Company, "we," "us," and "our" may refer to consolidated subsidiaries of CVR Energy, including CVR Refining or CVR Partners, as the context may require.

This discussion and analysis covers the years ended December 31, 2021 and 2020 and discusses year-to-year comparisons between such periods. The discussions of the year ended December 31, 2019 and year-to-year comparisons between the years ended December 31, 2020 and 2019 that are not included in this Annual Report on Form 10-K can be found in "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Part II, Item 7 of the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2020 filed on February 23, 2021, and such discussions are incorporated by reference into this Report.

Reflected in this discussion and analysis is how management views the Company's current financial condition and results of operations along with key external variables and management's actions that may impact the Company. Understanding significant external variables, such as market conditions, weather, and seasonal trends, among others, and management actions taken to manage the Company, address external variables, among others, which will increase users' understanding of the Company, its financial condition and results of operations. This discussion may contain forward looking statements that reflect our plans, estimates and beliefs. Our actual results could differ materially from those discussed in the forward looking statements. Factors that could cause or contribute to such differences include, but are not limited to those discussed below and elsewhere in this Report.

Strategy and Goals

Mission and Core Values

Our Mission is to be a top tier North American renewable fuels, petroleum refining, and nitrogen-based fertilizer company as measured by safe and reliable operations, superior performance and profitable growth. The foundation of how we operate is built on five core Values:

- *Safety* - We always put safety first. The protection of our employees, contractors and communities is paramount. We have an unwavering commitment to safety above all else. If it's not safe, then we don't do it.

- *Environment* - We care for our environment. Complying with all regulations and minimizing any environmental impact from our operations is essential. We understand our obligation to the environment and that it's our duty to protect it.

- *Integrity* - We require high business ethics. We comply with the law and practice sound corporate governance. We only conduct business one way—the right way with integrity.

- *Corporate Citizenship* - We are proud members of the communities where we operate. We are good neighbors and know that it's a privilege we can't take for granted. We seek to make a positive economic and social impact through our financial donations and the contributions of time, knowledge and talent of our employees to the places where we live and work.

- *Continuous Improvement* - We believe in both individual and team success. We foster accountability under a performance-driven culture that supports creative thinking, teamwork, diversity and personal development so that employees can realize their maximum potential. We use defined work practices for consistency, efficiency and to create value across the organization.

Our core values are driven by our people, inform the way we do business each and every day and enhance our ability to accomplish our mission and related strategic objectives.

Strategic Objectives

We have outlined the following strategic objectives to drive the accomplishment of our mission:

Safety - We aim to achieve continuous improvement in all environmental, health and safety areas through ensuring our people's commitment to environmental, health and safety comes first, the refinement of existing policies, continuous training, and enhanced monitoring procedures.

Reliability - Our goal is to achieve industry-leading utilization rates at our Facilities through safe and reliable operations. We are focusing on improvements in day-to-day plant operations, identifying alternative sources for plant inputs to reduce lost time due to third-party operational constraints, and optimizing our commercial and marketing functions to maintain plant operations at their highest level.

Market Capture - We continuously evaluate opportunities to improve the facilities' realized pricing at the gate and reduce variable costs incurred in production to maximize our capture of market opportunities.

Financial Discipline - We strive to be as efficient as possible by maintaining low operating costs and disciplined deployment of capital.

Achievements

We successfully executed a number of achievements in support of our strategic objectives shown below through the date of this filing despite the challenges experienced by the industry during 2021 as a result of the continuing COVID-19 pandemic:

	Safety	**Reliability**	**Market Capture**	**Financial Discipline**
Corporate:				
Achieved reductions in environmental events, process safety management tier 1 incidents and total recordable incident rate of 44%, 50% and 20%, respectively, compared to 2020	ü			
Announced and paid a special dividend equivalent to $4.89 per share, including a distribution to our stockholders of substantially all of our investment in Delek US Holdings, Inc. ("Delek") from which we recognized gains of over $100 million from our initial investment				ü
Petroleum Segment:				
Operated our refineries safely and reliably and at high utilization rates	ü	ü	ü	
Achieved reductions in environmental events and total recordable incident rate of 31% and 44%, respectively, compared to 2020	ü			
Received Board approval to construct a pretreater at Wynnewood and to complete process design for a potential Renewable Diesel project at Coffeyville			ü	ü
Completed the acquisition of Oklahoma crude oil pipeline in February 2021			ü	ü
Nitrogen Fertilizer:				
Operated both facilities safely and reliably and at high utilization rates	ü	ü	ü	
Achieved reductions in environmental events and process safety management tier 1 incidents of 67% and 73%, respectively, compared to 2020	ü			
Achieved record truck shipments from the Coffeyville Fertilizer Facility in March 2021		ü	ü	

	Safety	Reliability	Market Capture	Financial Discipline
Achieved record ammonia production at the Coffeyville Fertilizer Facility in September 2021 and at the East Dubuque Fertilizer Facility in November 2021		ü	ü	
Utilized downtime throughout the year to proactively complete maintenance work at the Coffeyville Fertilizer Facility, enabling the deferral of the planned turnaround from Fall 2021 to Summer 2022		ü	ü	ü
Increased UAN production capacity at Coffeyville by 100 tons per day through the installation of a CO2 compressor and ammonia pump			ü	
Reduced CVR Partners' annual cash interest expense by over 33% through refinancing a substantial portion of the 2023 UAN Notes and subsequently redeeming $30 million of the remaining balance of the 2023 UAN Notes				ü
Declared total cash distributions of $9.89 per common unit related to 2021 results				ü

Environmental, Social & Governance ("ESG") Highlights

In the past year, we achieved numerous milestones through our commitment to sustainability, including environmental and safety stewardship, diversity and inclusion, community outreach and sound corporate governance. We have also established our ESG Priorities, which will serve as a guide to the development of our ESG strategy and our first ESG Report, which we target for publication in 2022 based on Sustainability Accounting Standards Board standards. The following highlights some key achievements of 2021:

<table>
<tr><th></th><th>In our Petroleum Segment</th><th>In our Nitrogen Fertilizer Segment</th></tr>
<tr><td>Environmental, Health & Safety Stewardship</td><td>ü Renewable diesel unit conversion expected to occur in mid-April at the Wynnewood Refinery
ü Wynnewood Refinery Feedstock pretreater construction & installation expected to be completed by end of 2022
ü Board approved process design study for the conversion of an existing hydrotreater at Coffeyville Refinery to renewable diesel and sustainable aviation fuel services
ü Reduced total recordable incident rate by 44%</td><td>ü Mitigated >1mm metric tons of carbon dioxide equivalents (CO_2e)/year
ü Manufactured hydrogen and ammonia that qualifies as "blue" with carbon capture and sequestration through enhanced oil recovery
ü Reduced process safety Tier 1 incident rate by 73%</td></tr>
<tr><td>Supporting Our Employees & Contributing to Our Communities</td><td colspan="2">ü Diversity is key component of our Mission & Values
ü Site-Level Community Impact Committees steer local contributions, sponsorships and volunteer activities
ü Paid time off pursuant to Volunteerism Policy
ü Launched Company-wide Diversity & Inclusion training
ü Implemented Remote Work Policy supporting employee engagement and retention</td></tr>
<tr><td>Leadership Accountability</td><td colspan="2">ü Board-level ESG oversight
ü Average tenure of CVR Energy and CVR Partners' Directors is less than 8 years
ü Standing EH&S Committee chaired by independent Director, former Assistant Administrator for Enforcement of the EPA
ü Annual Code of Ethics & Business Conduct Acknowledgement for all employees and directors
ü More than 75% of CEO Compensation is variable and tied to Company performance</td></tr>
</table>

We make modern life possible through the products we manufacture while contributing to the economic well-being of our employees and the communities where we operate.

Industry Factors and Market Conditions

General Business Environment

Throughout 2020 and 2021, the COVID-19 pandemic and actions taken by governments and others in response thereto negatively impacted the worldwide economy, financial markets, and the energy and fertilizer industries. The COVID-19 pandemic also resulted in significant business and operational disruptions, including business closures, liquidity strains, destruction of non-essential demand, as well as supply chain challenges, travel restrictions, stay-at-home orders, and limitations on the availability of the workforce. Vaccination efforts underway domestically and internationally provide promise for a sustained, near-term economic recovery with approximately 76% of the total U.S. population receiving at least one dose of the vaccine and 64% considered fully vaccinated, as of February 10, 2022, according to the U.S. Centers for Disease Control and Prevention. As more businesses resume operations and governmental restrictions are being lifted, there is cautious optimism that the economy will continue to recover into 2022, but it is unknown if or when the economy will return to pre-COVID-19 levels. In addition, the spread of variants of COVID-19 could cause restrictions to continue or be reinstated, which could reverse any recent improvements.

Petroleum Segment

The earnings and cash flows of the Petroleum Segment are primarily affected by the relationship between refined product prices and the prices for crude oil and other feedstocks that are processed and blended into refined products. The cost to acquire crude oil and other feedstocks and the price for which refined products are ultimately sold depend on factors beyond the Petroleum Segment's control, including the supply of and demand for crude oil, as well as gasoline and other refined products which, in turn, depend on, among other factors, changes in domestic and foreign economies, driving habits, weather conditions, domestic and foreign political affairs, production levels, the availability of imports, the marketing of competitive fuels and the extent of government regulation. Because the Petroleum Segment applies first-in first-out accounting to value its inventory, crude oil price movements may impact net income in the short term because of changes in the value of its unhedged inventory. The effect of changes in crude oil prices on the Petroleum Segment results of operations is partially influenced by the rate at which the prices of refined products adjust to reflect these changes.

The prices of crude oil and other feedstocks and refined products are also affected by other factors, such as product pipeline capacity, system inventory, local market conditions, and the operating levels of other refineries. Crude oil costs and the prices of refined products have historically been subject to wide fluctuations. Widespread expansion or upgrades of competitors' facilities, price volatility, international political and economic developments, and other factors are likely to continue to play an important role in refining industry economics. These factors can impact, among other things, the level of inventories in the market, resulting in price volatility and a reduction in product margins. Moreover, the refining industry typically experiences seasonal fluctuations in demand for refined products, such as increases in the demand for gasoline during the summer driving season and for volatile seasonal exports of diesel from the United States Gulf Coast markets.

As a result of government actions taken to curb the spread of COVID-19 and significant business interruptions, the demand for gasoline and diesel in the regions in which our Petroleum Segment operates declined substantially beginning at the end of the first quarter of 2020. However, building on recovery signs observed in late 2020, the U.S. market for refined products continued to show signs of recovery throughout 2021. Gasoline demand increased due to increased mobility, which is the main driver for highway travel, while the increase in diesel demand is generally a result of the opening of coastal states such as California, New York, New Jersey, and Florida to global shipping and commerce. The combination of improving demand and declining inventories led to an increase in refined products prices and crack spreads during 2021. Additionally, the U.S. demand for jet fuels has begun to recover, albeit at a slower pace than gasoline and diesel, as international and domestic business and leisure air travel increases. Jet fuel demand is approximately 85% of pre-2020 demand levels. From a global perspective, the U.S. Energy Information Administration ("EIA") currently expects oil production will increase by more than global oil consumption, resulting in a rise of approximately 182 million barrels in 2022. However, these projections depend on the production decisions of OPEC, U.S. oil production, and the pace of oil demand growth. While the refining market is showing signs of recovery, refinery fleet utilization is still operating at lower rates, and there remains uncertainty as to whether another wave of COVID-19 cases may spur additional governmental restrictions and lock-downs in the future which could decrease the recovery efforts seen thus far in 2021.

In addition to current market conditions discussed above, we continue to be impacted by significant volatility related to compliance requirements under the Renewable Fuel Standard ("RFS"), proposed climate change laws, and regulations. The petroleum business is subject to the RFS, which, each year, requires blending “renewable fuels” with transportation fuels or purchasing renewable identification numbers (“RINs”), in lieu of blending, or otherwise be subject to penalties. Our cost to comply with the RFS is dependent upon a variety of factors, which include the availability of ethanol and biodiesel for blending at our refineries and downstream terminals or RINs for purchase, the price at which RINs can be purchased, transportation fuel production levels, and the mix of our products, all of which can vary significantly from period to period, as well as certain waivers or exemptions to which we may be entitled. Additionally, our costs to comply with the RFS depend on the consistent and timely application of the program by the Environmental Protection Agency (“EPA”), such as timely establishment of the annual renewable volume obligation (“RVO”). Due to the EPA’s unlawful failure to establish the 2021 and 2022 RVOs by the November 30, 2020 and 2021 statutory deadlines, respectively, the EPA’s delay in issuing decisions on pending small refinery hardship petitions, and the influence exerted and climate change initiatives announced by the Biden administration, among other factors, the price of RINs has been highly volatile and remains high. The price of RINs has also been impacted by the depletion of the carryover RIN bank, as demand destruction during the COVID-19 pandemic resulted in reduced ethanol blending and RIN generation did not keep pace with mandated volumes, requiring carryover RINs from the RIN bank to be used to settle blending obligations. As a result, our costs to comply with RFS (based on the 2020 RVO and proposed preliminary 2021 RVO range, for the respective periods, excluding the impacts of any exemptions or waivers to which the Petroleum Segment may be entitled) increased significantly throughout 2020 and remain significant through 2021. Additionally, the EPA’s unlawful failure to establish the 2021 and 2022 RVOs has made it difficult for regulators to forecast the demand for gasoline, diesel, and jet fuel consumption, which may drive a decrease in the availability and increase the cost of RINs.

On December 7, 2021, the EPA proposed revised 2020, preliminary 2021, and 2022 RVO ranges. In addition, a proposal to deny substantially all pending petitions for SREs was released. Although both of the previously mentioned proposals are not yet final and are pending public comments, these proposals have kept the price of RINs elevated. The EPA’s actions, and unlawful failure to act, as well as the outcome of numerous pending lawsuits relating to the RFS, could materially impact the price of RINs and existing waiver applications. As a result, we continue to expect significant volatility in the price of RINs during 2022 and such volatility could have material impacts on the Company’s results of operations, financial condition and cash flows.

In December 2020, CVR Energy’s board of directors (the “Board”) approved the renewable diesel project at our Wynnewood Refinery, which would convert the Wynnewood Refinery’s hydrocracker to a RDU expected to be capable of producing up to 100 million gallons of renewable diesel per year and approximately 170 to 180 million RINs annually. Currently, total estimated cost for the project is $170 million. Mechanical completion and startup of the RDU is expected to occur in the second quarter of 2022. The production of renewable diesel is expected to significantly reduce our net exposure to the RFS. Further, the RDU should enable us to capture additional benefits associated with the existing blenders’ tax credit currently set to expire at the end of 2022 and growing low carbon fuel standard programs across the country, with programs in place in California and Oregon and new programs anticipated to be implemented over the next few years. In May 2021, the Board approved a $10 million capital expenditure for the completion of the design and ordering of certain long-lead equipment relating to a potential project to add pretreating capabilities for the RDU at Wynnewood and for the completion of the design for a potential conversion of an existing hydrotreater at our refinery in Coffeyville, Kansas (the “Coffeyville Refinery”) to renewable diesel service. In November 2021, the Board approved the pretreater project at the Wynnewood Refinery, which is expected to be completed in the fourth quarter of 2022 at an estimated cost of $60 million. The pretreatment unit should enable us to process a wider variety of renewable diesel feedstocks and untreated soybean and corn oil at the Wynnewood Refinery, most of which have a lower carbon intensity than soybean oil and generate additional low carbon fuel standard credits. When completed, these collective renewable diesel efforts could effectively mitigate a substantial majority, if not all, of our RFS exposure. However, impacts from recent climate change initiatives under the Biden administration, actions taken by the Supreme Court, resulting administration actions under the RFS, and market conditions could significantly impact the amount by which our renewable diesel business mitigates our costs to comply with the RFS, if at all. Current plans are to convert the hydrocracker to renewable diesel service beginning in late February 2022, with expectations for the conversion to be complete in mid-April 2022. The Company anticipates the unit to be at full capacity in the second quarter of 2022, processing mainly treated soybean and corn oil.

As of December 31, 2021 and based on the 2020 RVO and proposed preliminary 2021 RVO range, we have an estimated open position (excluding the impacts of any exemptions or waivers to which we may be entitled) under the RFS for both 2020 and 2021 of approximately 370 million RINs, excluding approximately 2 million of net open, fixed-price commitments to purchase RINs, resulting in a potential liability of $494 million. The Company’s open RFS position, which does not consider open commitments expected to settle in future periods, is marked-to-market each period and thus significant market volatility, as experienced in late 2020 and in 2021, results in significant volatility in our RFS expense from period to period. We recognized an expense of $435 million and $190 million for the years ended December 31, 2021 and 2020, respectively, for the Petroleum Segment’s compliance with the RFS. The increase in 2021 compared to 2020 was driven by the significant increases in RINs pricing through the fourth quarter of 2021 and our open position with respect to both the 2020 and 2021 obligations (excluding the impacts of any exemptions or waivers to which we may be entitled). Of the expense recognized during the years ended December 31, 2021 and 2020, an expense of $63 million and $59 million relates to the revaluation of our net RVO position as of December 31, 2021, respectively. The revaluation represents the summation of the prior period obligation and current period commercial activities, marked at the period end market price. Based upon recent market prices of RINs in January 2022, current estimates related to other variable factors, including our anticipated blending and purchasing activities, and the impact of the open RFS positions and resolution thereof, and credits generated by the RDU, our estimated consolidated cost to comply with the RFS (without regard to any SREs we may receive) is $200 to $210 million for 2022.

Market Indicators

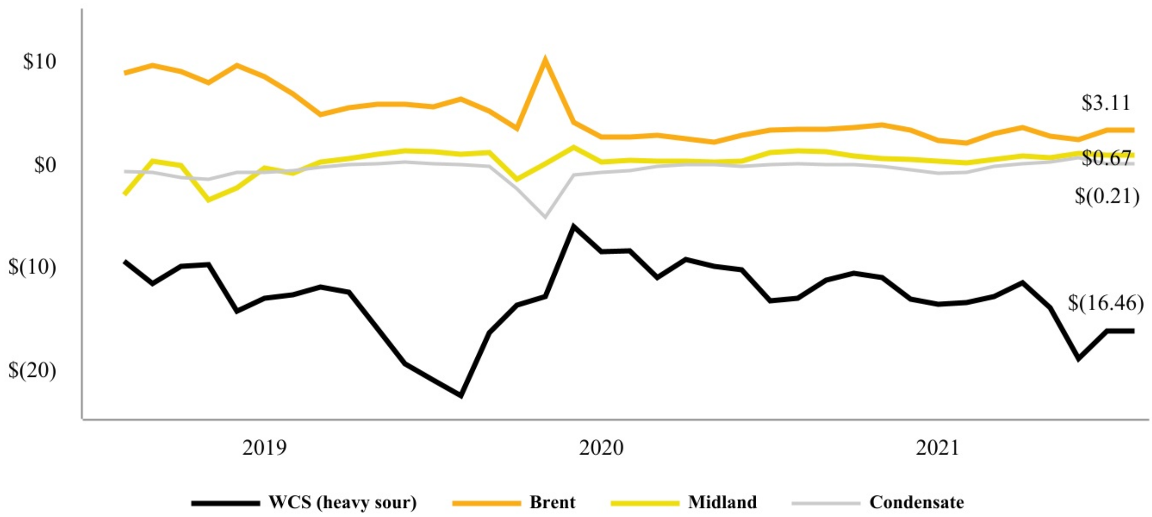
NYMEX WTI crude oil is an industry wide benchmark that is utilized in the market pricing of a barrel of crude oil. The pricing differences between other crudes and WTI, known as differentials, show how the market for other crude oils such as WCS, White Cliffs (“Condensate”), Brent Crude (“Brent”), and Midland WTI (“Midland”) are trending. Due to the COVID-19 pandemic, actions taken by governments and others in response thereto, refined product prices have experienced extreme volatility. As a result of the current environment, refining margins have been and could continue to be significantly reduced.

As a performance benchmark and a comparison with other industry participants, we utilize NYMEX and Group 3 crack spreads. These crack spreads are a measure of the difference between market prices for crude oil and refined products and are a commonly used proxy within the industry to estimate or identify trends in refining margins. Crack spreads can fluctuate significantly over time as a result of market conditions and supply and demand balances. The NYMEX 2-1-1 crack spread is calculated using two barrels of WTI producing one barrel of NYMEX RBOB Gasoline (“RBOB”) and one barrel of NYMEX NY Harbor ULSD (“HO”). The Group 3 2-1-1 crack spread is calculated using two barrels of WTI crude oil producing one barrel of Group 3 sub-octane gasoline and one barrel of Group 3 ultra-low sulfur diesel.

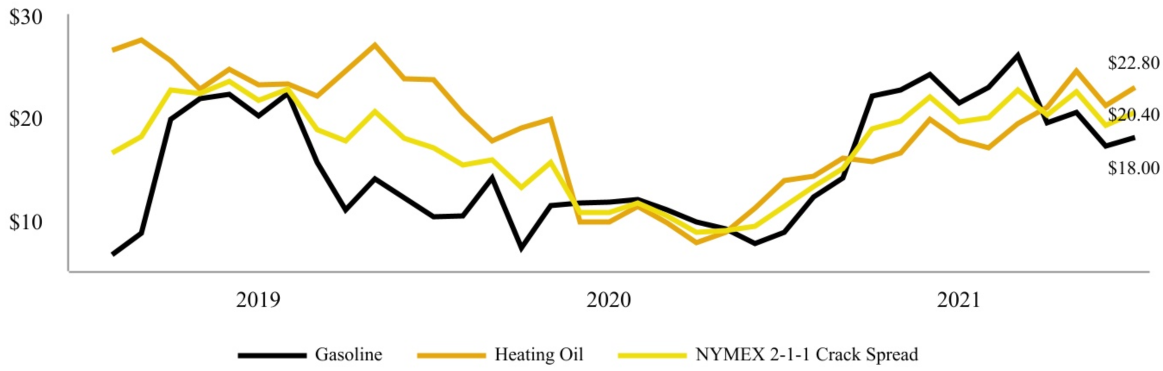
Both NYMEX 2-1-1 and Group 3 2-1-1 crack spreads increased during 2021 compared to 2020. The NYMEX 2-1-1 crack spread averaged $19.45 per barrel in 2021 compared to $11.73 per barrel in 2020. The Group 3 2-1-1 crack spread averaged $18.14 per barrel in 2021 compared to $9.41 per barrel in 2020. The benefit realized from increased cracks was partially offset by a substantial increase in RINs prices. Average monthly prices for RINs increased 170% during 2021 compared to 2020. On a blended barrel basis (calculated using applicable RVO percentages), RINs approximated $6.71 per barrel during 2021 compared to $2.48 per barrel during 2020.

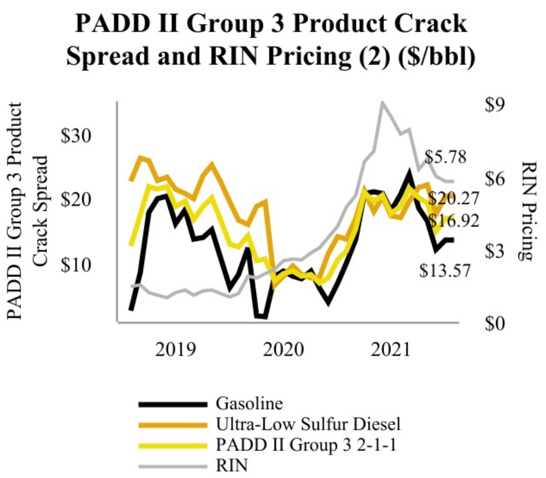
The tables below are presented, on a per barrel basis, by month through December 31, 2021:

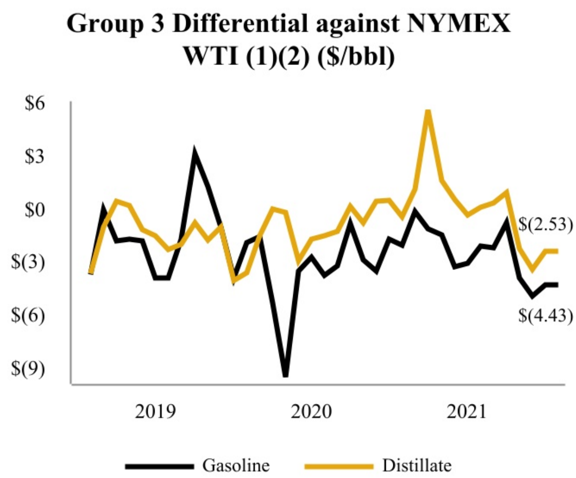
Crude Oil Differentials against WTI (1)(2)



NYMEX Crack Spreads (2)







(1) The change over time in NYMEX - WTI, as reflected in the charts above, is illustrated below.

(in $/bbl)	Average 2019	Average December 2019	Average 2020	Average December 2020	Average 2021	Average December 2021
WTI	$ 57.03	$ 61.06	$ 39.34	$ 47.07	$ 68.11	$ 71.69

(2) Information used within these charts was obtained from reputable market sources, including the New York Mercantile Exchange (“NYMEX”), Intercontinental Exchange, and Argus Media, among others.

Nitrogen Fertilizer Segment

Within the Nitrogen Fertilizer Segment, earnings and cash flows from operations are primarily affected by the relationship between nitrogen fertilizer product prices, utilization, and operating costs and expenses, including pet coke and natural gas feedstock costs.

The price at which nitrogen fertilizer products are ultimately sold depends on numerous factors, including the global supply and demand for nitrogen fertilizer products, world grain demand and production levels, changes in world population, the cost and availability of fertilizer transportation infrastructure, local market conditions, operating levels of competing facilities, weather conditions, the availability of imports, impacts of foreign imports and foreign subsidies thereof, and the extent of government intervention in agriculture markets. These factors can impact, among other things, the level of inventories in the market, resulting in price volatility and a reduction in product margins. Moreover, the industry typically experiences seasonal fluctuations in demand for nitrogen fertilizer products.

As a result of the overall decline in global demand for liquid transportation fuels driven by the broader impacts of the COVID-19 pandemic and actions taken by the government to mitigate its spread, ethanol production, which is a significant driver of demand for corn and therefore fertilizer, declined during 2020. However, as restrictions eased during 2021, demand for ethanol for fuels blending has largely recovered to pre-COVID-19 levels, although an increase in outbreaks of any variant of COVID-19 could reverse this recovery.

Market Indicators

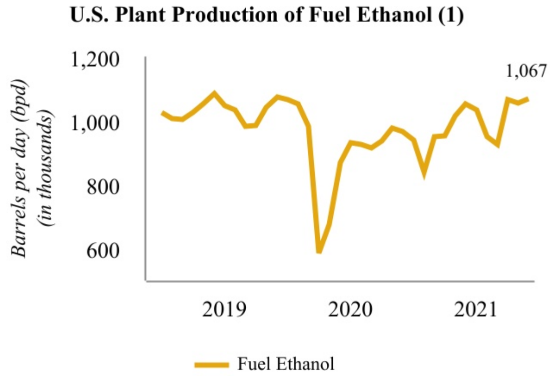
While there is risk of shorter-term volatility given the inherent nature of the commodity cycle, the Company believes the long-term fundamentals for the U.S. nitrogen fertilizer industry remain intact. The Nitrogen Fertilizer Segment views the anticipated combination of (i) increasing global population, (ii) decreasing arable land per capita, (iii) continued evolution to more protein-based diets in developing countries, (iv) sustained use of corn and soybeans as feedstock for the domestic production of ethanol and other renewable fuels, and (v) positioning at the lower end of the global cost curve should provide a solid foundation for nitrogen fertilizer producers in the U.S. over the longer term.

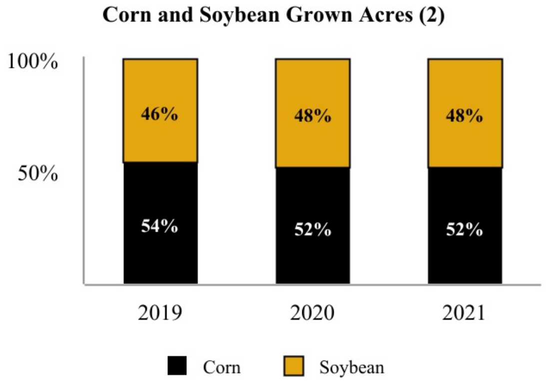
Corn and soybeans are two major crops planted by farmers in North America. Corn crops result in the depletion of the amount of nitrogen within the soil in which it is grown, which in turn, results in the need for this nutrient to be replenished after each growing cycle. Unlike corn, soybeans are able to obtain most of their own nitrogen through a process known as "N fixation." As such, upon harvesting of soybeans, the soil retains a certain amount of nitrogen which results in lower demand for nitrogen fertilizer for the following corn planting cycle. Due to these factors, nitrogen fertilizer consumers generally operate a balanced corn-soybean rotational planting cycle as evident through the chart presented below for 2021, 2020, and 2019.

The relationship between the total acres planted for both corn and soybean has a direct impact on the overall demand for nitrogen products, as the market and demand for nitrogen increases with increased corn acres and decreases with increased soybean acres. Additionally, an estimated 11 billion pounds of soybean oil is expected to be used in producing cleaner biodiesel in marketing year 2021/2022. Multiple refiners have announced renewable diesel expansion projects for 2022 and beyond, which will only increase the demand for soybeans and potentially for corn and canola. Due to the uncertainty of how these factors will truly affect the grain markets, it is not yet known how the nitrogen business will be impacted.

The 2021 United States Department of Agriculture ("USDA") reports on corn and soybean acres planted indicated farmers planted 93.4 million acres of corn, representing a slight increase of 3.0% in corn acres planted as compared to 90.7 million corn acres in 2020. Planted soybean acres are estimated to be 87.2 million acres, representing a 4.6% increase in soybean acres planted as compared to 83.4 million soybean acres in 2020. The combined corn and soybean planted acres of 180.6 million is the highest in history. Based on current grain inventories and crop prices, farm economics are expected to continue to be very attractive in 2022. Further, while natural gas prices, the primary input for nitrogen fertilizer production, were at historical lows across the world in 2020, they have escalated significantly since the summer of 2021, reducing the incentive to maximize production at nitrogen fertilizer production facilities.

Ethanol is blended with gasoline to meet renewable fuel standard requirements and for its octane value. Ethanol production has historically consumed approximately 35% of the U.S. corn crop, so demand for corn generally rises and falls with ethanol demand. There was a decline in ethanol demand that began in 2020 and continued through 2021 due to decreased demand for transportation fuels as a result of the COVID-19 pandemic. However, the lower ethanol demand did not alter the spring 2021 planting decisions by farmers, as evidenced through the charts below.





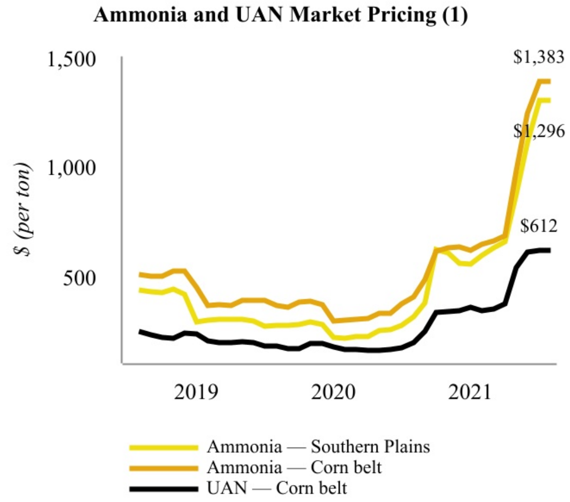
(1) Information used within this chart was obtained from the EIA.
(2) Information used within this chart was obtained from the USDA, National Agricultural Statistics Services.

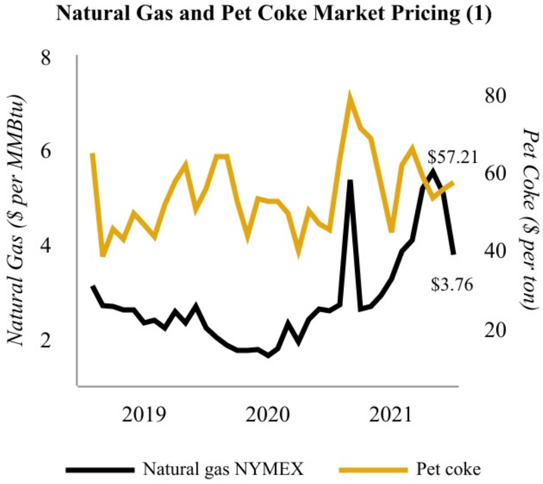
Weather continues to be a critical variable for crop production. Grain prices rose significantly from the summer of 2020 into the spring of 2021, leading to higher planted acreage for corn and soybeans. Even with higher planted acres and trendline yields per acre, inventory levels for corn and soybeans remain below historical levels and prices have remained elevated. The higher grain prices and historically low crop inventories are leading to strong farm economics in advance of spring 2022. These conditions are expected to drive strong demand for nitrogen fertilizer, as well as other crop inputs.

Fertilizer prices have risen significantly since January 1, 2021 due to strong grain prices, the strong spring 2021 planting season, lower fertilizer supply due to nitrogen fertilizer production outages during Winter Storm Uri and Hurricane Ida and significant escalation in global feedstock costs for nitrogen fertilizer production, and other factors discussed above.

On June 30, 2021, CF Industries Nitrogen, L.L.C., Terra Nitrogen, Limited Partnership, and Terra International (Oklahoma) LLC filed petitions with the U.S. Department of Commerce ("USDOC") and the U.S. International Trade Commission (the "ITC") requesting the initiation of antidumping and countervailing duty investigations on imports of UAN from Russia and Trinidad and Tobago ("Trinidad"). In August 2021, the U.S. Department of Commerce decided to pursue an investigation to determine the extent of dumping and unfair subsidies associated with imports from Russia and Trinidad, and the ITC initiated a concurrent investigation to determine whether such imports materially injure the U.S. industry. On November 30, 2021, USDOC determined that UAN imports from Russia are unfairly subsidized at rates ranging from 9.66% to 9.84% and UAN imports from Trinidad are unfairly subsidized at a rate of 1.83%. On November 30, 2021, USDOC determined that UAN imports from Russia are unfairly subsidized at rates ranging from 9.66% to 9.84% and UAN imports from Trinidad are unfairly subsidized at a rate of 1.83%. On January 27, 2022, USDOC found that Russian UAN imports are sold at less than fair value into the U.S. market at rates ranging from 9.15% to 127.19%, and that Trinidadian UAN imports at a rate of 63.08%. As a result of these determinations, USDOC will impose cash deposit requirements on imports of UAN from Russia and Trinidad, based on the preliminary rates of antidumping duties. We believe that if the antidumping and countervailing duty preliminary determinations are confirmed by USDOC, there will likely be lower amounts of imported UAN from Russia and Trinidad.

The tables below show relevant market indicators for the Nitrogen Fertilizer Segment by month through December 31, 2021:





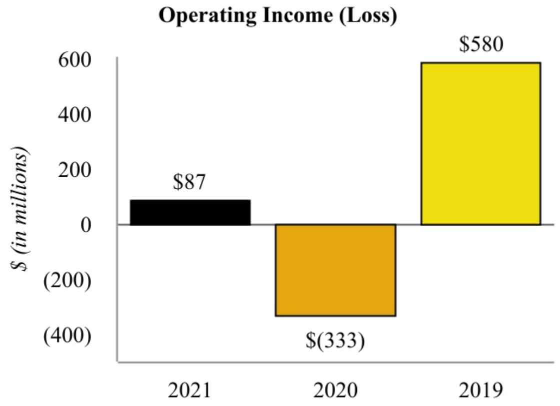
(1) Information used within these charts was obtained from various third-party sources including Green Markets (a Bloomberg Company), Pace Petroleum Coke Quarterly, and the EIA, amongst others.

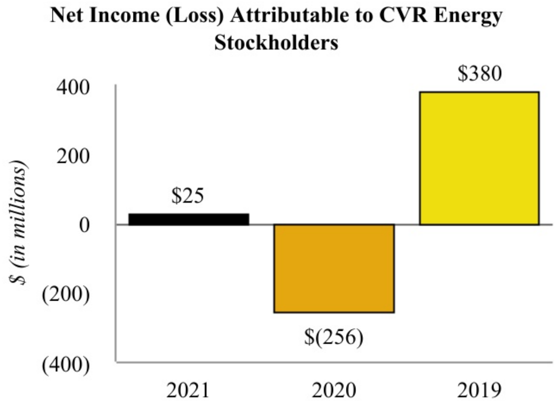
Results of Operations

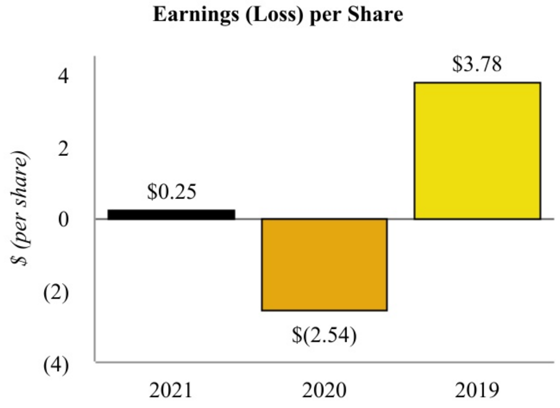
Consolidated

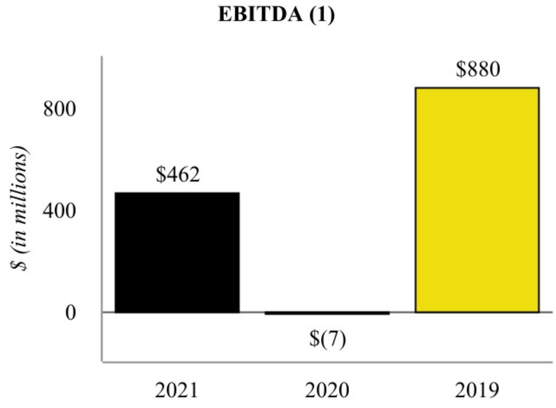
The following sections should be read in conjunction with the information outlined within the previous sections of this Part II, Item 7 and the consolidated financial statements and related notes thereto in Part II, Item 8 of this Report. Our consolidated results of operations include certain other unallocated corporate activities and the elimination of intercompany transactions and therefore do not equal the sum of the operating results of the Petroleum and Nitrogen Fertilizer Segments.

Consolidated Financial Highlights









(1) See “Non-GAAP Reconciliations” section below for reconciliations of the non-GAAP measure shown above.

Overview - The Company’s operating income and net income were $87 million and $74 million, respectively, for the year ended December 31, 2021, increases of $420 million and $394 million, respectively, compared to an operating loss and net loss of $333 million and $320 million, respectively, for the year ended December 31, 2020. These increases were driven by an improvement in operating loss of $254 million within the Petroleum Segment and $169 million within the Nitrogen Fertilizer Segment for the year ended December 31, 2021 compared to December 31, 2020. Refer to our discussion of each segment’s results of operations below for further information.

Investment Income from Marketable Securities - During the first quarter of 2020, we acquired a 14.9% ownership interest in Delek US Holdings, Inc. (“Delek”) (NYSE: DK). On June 10, 2021, the Company distributed substantially all of its holdings in Delek, of which the Company was the largest stockholder holding approximately 14.3% of Delek’s outstanding common stock, as part of a special dividend. As of December 31, 2021, the Company continued to hold other marketable securities of

Delek, but divested these remaining interests in January 2022. Prior to the special dividend in 2021, we received no dividend income compared to $7 million of dividend income received for the year ended December 31, 2020. The Company recognized a gain of $81 million for the year ended December 31, 2021, compared to an unrealized gain based on market pricing on December 31, 2020 of $34 million for the year ended December 31, 2020.

Income Tax Expense - The income tax benefit for the year ended December 31, 2021 was $8 million, or (12.4)% of income before income taxes, as compared to income tax benefit for the year ended December 31, 2020 of $95 million, or 23.0% of loss before income taxes. The fluctuation in income tax benefit was due primarily to changes in pretax earnings and pretax earnings attributable to noncontrolling interests between all periods presented. In addition, the change in the effective tax rate was due primarily to reductions in state income tax rates enacted during 2021, changes in pretax earnings attributable to noncontrolling interests and impacts of state income tax credits generated between all periods presented.

Segment Financial Highlights and Results of Operations

Petroleum Segment

The Petroleum Segment utilizes certain inputs within its refining operations. These inputs include crude oil, butanes, natural gasoline, ethanol, and bio-diesel (these are also known as "throughputs").

Refining Throughput and Production Data by Refinery

Throughput Data	**Year Ended December 31,**		
(in bpd)	**2021**	**2020**	**2019**
Coffeyville			
Regional crude	**27,133**	34,652	49,093
WTI	**62,694**	51,656	67,382
WTL	**511**	—	473
Midland WTI	**452**	—	3,888
Condensate	**7,911**	8,243	4,331
Heavy Canadian	**3,684**	1,020	4,711
Other Crude Oil	**19,129**	5,151	—
Other feedstocks and blendstocks	**10,788**	8,321	9,160
Wynnewood			
Regional crude	**60,287**	56,932	53,848
WTI	**—**	—	3
WTL	**3,430**	6,235	668
Midland WTI	**2,107**	1,262	10,995
Condensate	**7,360**	6,207	7,666
Other Crude Oil	**202**	—	—
Other feedstocks and blendstocks	**3,396**	3,616	3,753
Total throughput	**209,084**	183,295	215,971

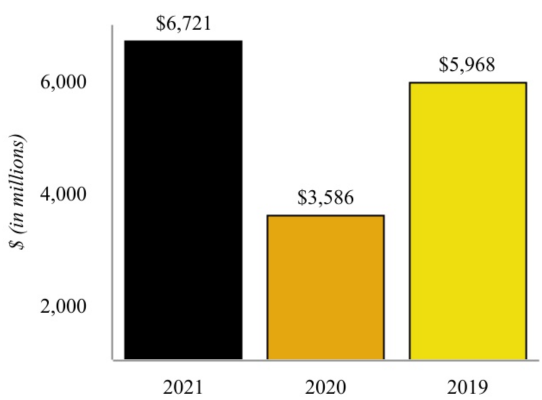
Production Data	**Year Ended December 31,**		
(in bpd)	**2021**	**2020**	**2019**
Coffeyville			
Gasoline	**71,070**	59,419	71,817
Distillate	**53,441**	43,209	57,549
Other liquid products	**4,481**	3,999	5,810
Solids	**4,246**	3,073	4,573
Wynnewood			
Gasoline	**39,858**	38,640	38,864
Distillate	**31,662**	30,638	32,380
Other liquid products	**2,862**	2,629	3,223
Solids	**21**	25	30
Total production	**207,641**	181,632	214,246
Light product yield (as % of crude throughput) (1)	**100.6 %**	100.3 %	98.8 %
Liquid volume yield (as % of total throughput) (2)	**97.3 %**	97.4 %	97.1 %
Distillate yield (as % of crude throughput) (3)	**43.7 %**	43.1 %	44.3 %

(1) Total Gasoline and Distillate divided by total Regional crude, WTI, WTL, Midland WTI, Condensate, and Heavy Canadian throughput.
(2) Total Gasoline, Distillate, and Other liquid products divided by total throughput.
(3) Total Distillate divided by total Regional crude, WTI, WTL, Midland WTI, Condensate, and Heavy Canadian throughput.

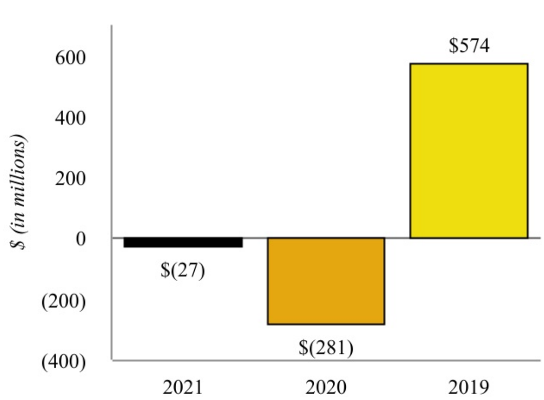
Financial Highlights

Overview - Petroleum Segment operating loss and net income for the year ended December 31, 2021 were $27 million and $4 million, respectively, an improvement of $254 million and $275 million, respectively, compared to an operating loss and net loss of $281 million and $271 million, respectively, for the year ended December 31, 2020. The improvement in both operating loss and net income compared to the prior period was primarily a result of favorable refining margins resulting from improved crack spreads and inventory pricing in the current period, partially offset by increased RFS compliance costs.

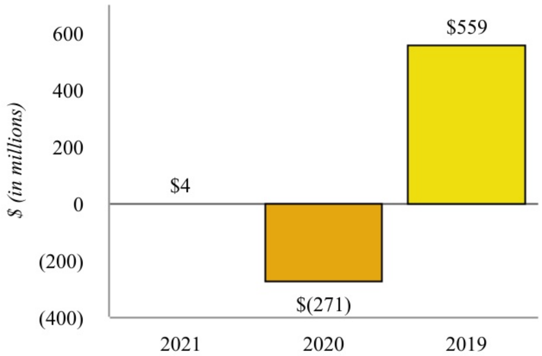
Net Sales



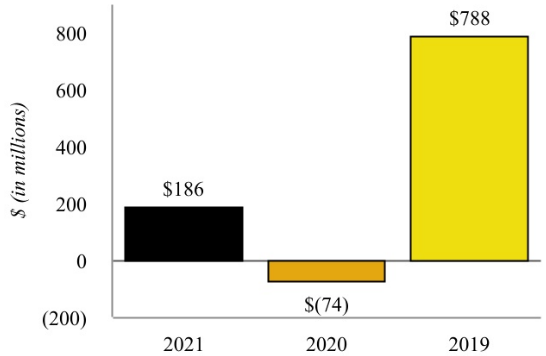
Operating (Loss) Income



Net Income (Loss)



EBITDA (1)



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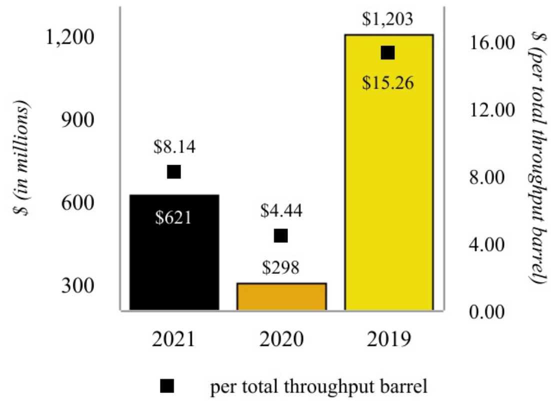
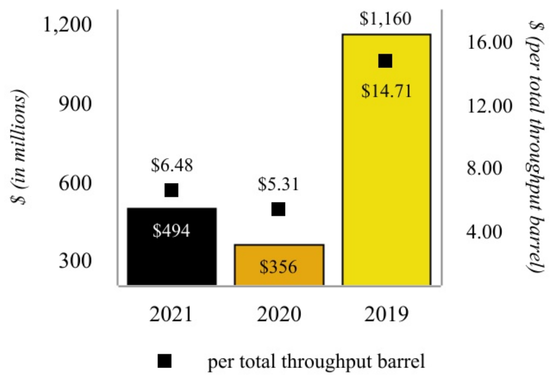
(1) See "Non-GAAP Reconciliations" section below for reconciliations of the non-GAAP measure shown above.

Net Sales - For the year ended December 31, 2021, net sales for the Petroleum Segment increased by $3.1 billion when compared to the year ended December 31, 2020. This improvement was primarily related to regional inventory draws, which are driven by increased demand and, as a result, increased market pricing, as Group 3 2-1-1 crack spreads improved $8.73 for the year ended December 31, 2021 compared to the year ended December 31, 2020. Further, 2020 was impacted by a full planned turnaround at the Coffeyville Refinery, which began in February 2020, as well as reduced utilization of the Wynnewood Refinery during the same quarter given the significant gasoline demand reductions experienced late in the first quarter of 2020 as a result of the COVID-19 pandemic.

Refining Margin (1)



Refining Margin (excluding Inventory Valuation Impacts) (1)



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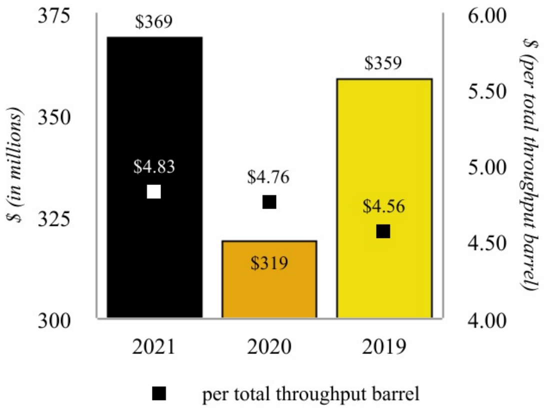
(1) See "Non-GAAP Reconciliations" section below for reconciliations of the non-GAAP measures shown above.

Refining Margin - For the year ended December 31, 2021, refining margin was $621 million, or $8.14 per throughput barrel, as compared to $298 million, or $4.44 per throughput barrel, for the year ended December 31, 2020. The increase in refining margin of $323 million was primarily driven by the 93% increase in the Group 3 2-1-1 crack spread caused by market improvements in 2021 as market demand for refined products improved compared to the economic downturn and demand destruction observed in 2020. This was combined with favorable inventory valuation impacts totaling $127 million, or $1.66 per total throughput barrel driven by increased prices for crude oil and refined products in 2021 compared to 2020. The unfavorable inventory valuation impacts of $58 million in 2020 were driven by lower crude oil prices in the first half of 2020 with some offsetting increases observed through the end of 2020. Offsetting these improvements to refining margin, the Company recognized RINs expense of $435 million, or $5.70 per throughput barrel, and $190 million, or $2.84 per throughput barrel, for the years ended December 31, 2021 and 2020, respectively, reflecting our costs to comply with RFS. The increase in 2021 is primarily related to significantly higher RIN prices during the year ended December 31, 2021 caused by price volatility for RINs and our open mark-to-market position for the 2020 compliance year of approximately 130 million RINs as of December 31, 2021. This was combined with derivative losses of $44 million recognized during the year ended December 31, 2021, a result of unfavorable crack spread swaps, partially offset by gains on WCS sales, compared to derivative gains of $55 million recognized during the year ended December 31, 2020, primarily resulting from WCS sales.

Direct Operating Expenses (1)



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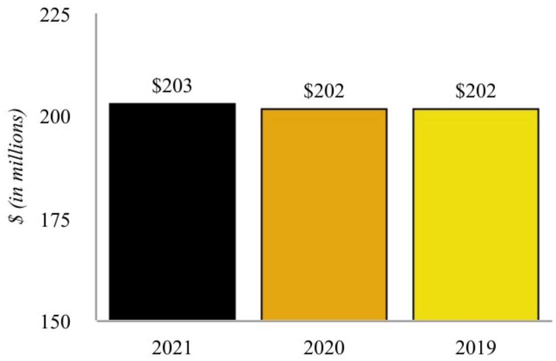
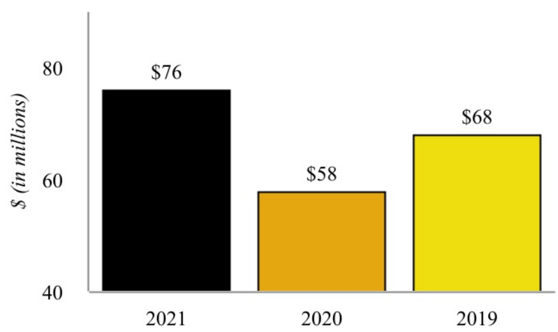
(1) Exclusive of depreciation and amortization expense.

Direct Operating Expenses (Exclusive of Depreciation and Amortization) - For the year ended December 31, 2021, direct operating expenses (exclusive of depreciation and amortization) were $369 million and $319 million for the years ended December 31, 2021 and 2020, respectively. The increase in the current period was primarily due to increased natural gas costs and share-based compensation. On a total throughput barrel basis, direct operating expenses increased to $4.83 per barrel from $4.76 per barrel, as a function of the increased expense in 2021, partially offset by the increase in total throughput in 2021 compared to 2020. Impacts of COVID-19 related factors and the Coffeyville Refinery's full, planned turnaround, which began the last week of February 2020 and extended into mid-April 2020, significantly decreased throughput in 2020.

Depreciation and Amortization Expense



Selling, General and Administrative Expenses, and Other



Selling, General, and Administrative Expenses, and Other - For the year ended December 31, 2021, selling, general and administrative expenses and other was $76 million compared to $58 million for the year ended December 31, 2020. The increase was primarily a result of increased personnel costs driven primarily by increased share-based and incentive-based compensation in 2021 as compared to 2020.

Nitrogen Fertilizer Segment

Utilization and Production Volumes - The following tables summarize the ammonia utilization at the Nitrogen Fertilizer Segment's facility in Coffeyville, Kansas (the "Coffeyville Fertilizer Facility") and East Dubuque, Illinois facility (the "East

Dubuque Fertilizer Facility"). Utilization is an important measure used by management to assess operational output at each of the Nitrogen Fertilizer Segment's facilities. Utilization is calculated as actual tons of ammonia produced divided by capacity adjusted for planned maintenance and turnarounds.

Utilization is presented solely on ammonia production, rather than each nitrogen product, as it provides a comparative baseline against industry peers and eliminates the disparity of facility configurations for upgrade of ammonia into other nitrogen products. With efforts primarily focused on ammonia upgrade capabilities, we believe this measure provides a meaningful view of how well we operate.

Gross tons produced for ammonia represent the total ammonia produced, including ammonia produced that was upgraded into other fertilizer products. Net tons available for sale represent the ammonia available for sale that was not upgraded into other fertilizer products. Production for the year ended December 31, 2021 was impacted by downtime associated with the Messer air separation plant at the Coffeyville Fertilizer Facility during the months of January, June, August, October, and November of 2021 (the "Messer Outages"), downtime at the East Dubuque Fertilizer Facility due to Winter Storm Uri in February 2021, downtime at the Coffeyville Fertilizer Facility and East Dubuque Fertilizer Facility in July and September 2021, respectively, due to externally driven power outages (the "Power Outages"), and downtime at the East Dubuque Fertilizer Facility in October 2021 for an R2 repair (the "R2 Outage"). The table below presents these Nitrogen Fertilizer Segment metrics for the years ended December 31, 2021, 2020, and 2019:

	Year Ended December 31,		
	2021	**2020**	**2019**
Consolidated Ammonia Utilization	**92 %**	98 %	92 %
Production Volumes (in thousands of tons)			
Ammonia (gross produced)	**807**	852	766
Ammonia (net available for sale)	**275**	303	223
UAN	**1,208**	1,303	1,255

On a consolidated basis, the Nitrogen Fertilizer Segment's utilization decreased 6% to 92% for the year ended December 31, 2021 compared to the year ended December 31, 2020. This decrease was primarily due to the Messer Outages, Winter Storm Uri, the Power Outages, and the R2 Outage.

Sales and Pricing per Ton - Two of the Nitrogen Fertilizer Segment's key operating metrics are total sales for ammonia and UAN along with the product pricing per ton realized at the gate. Total product sales volumes were unfavorable, driven by lower production due to the Messer Outages, Winter Storm Uri, the Power Outages, and the R2 Outage. For the year ended December 31, 2021, the lower sales volumes were more than offset by improved prices of 92% for ammonia and 74% for UAN. Ammonia and UAN sales prices were favorable primarily due to higher crop pricing coupled with lower fertilizer supply driven by production outages from Winter Storm Uri in February 2021 and Hurricane Ida in August and September 2021, as well as increased industry turnaround activity and lower global fertilizer production due to higher natural gas prices in Europe and Asia. Product pricing at the gate represents net sales less freight revenue divided by product sales volume in tons and is shown in order to provide a pricing measure comparable across the fertilizer industry.

	Year Ended December 31,		
	2021	**2020**	**2019**
Consolidated sales (thousand tons)			
Ammonia	**269**	332	24
UAN	**1,196**	1,312	1,26
Consolidated product pricing at gate (dollars per ton)			
Ammonia	**$ 544**	$ 284	$ 39
UAN	**264**	152	19

Feedstock - Our Coffeyville Fertilizer Facility utilizes a pet coke gasification process to produce nitrogen fertilizer. Our East Dubuque Fertilizer Facility uses natural gas in its production of ammonia. The table below presents these feedstocks for both facilities within the Nitrogen Fertilizer Segment for the years ended December 31, 2021, 2020, and 2019.

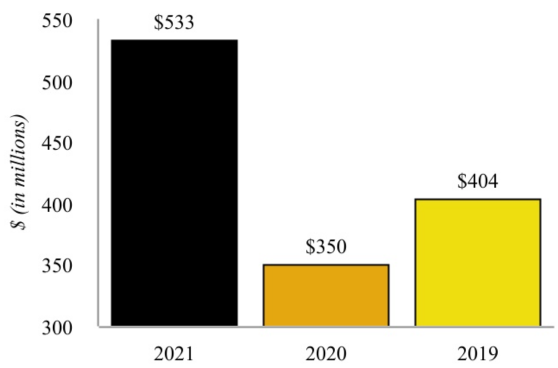
	Year Ended December 31,		
	2021	**2020**	**2019**
Pet coke used in production *(thousand tons)*	**514**	523	53
Pet coke *(dollars per ton)*	**$ 44.69**	$ 35.25	$ 37.4
Natural gas used in production *(thousands of MMBtu)* [1]	**8,049**	8,611	6,85
Natural gas used in production *(dollars per MMBtu)* [1]	**$ 3.95**	$ 2.31	$ 2.8
Natural gas in cost of materials and other *(thousands of MMBtu)* [1]	**7,848**	9,349	6,96
Natural gas in cost of materials and other *(dollars per MMBtu)* [1]	**$ 3.83**	$ 2.35	$ 3.0

(1) The feedstock natural gas shown above does not include natural gas used for fuel. The cost of natural gas used for fuel is included in Direct operating expenses (exclusive of depreciation and amortization).

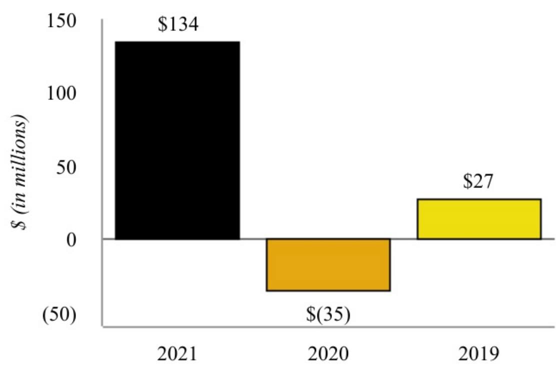
Financial Highlights

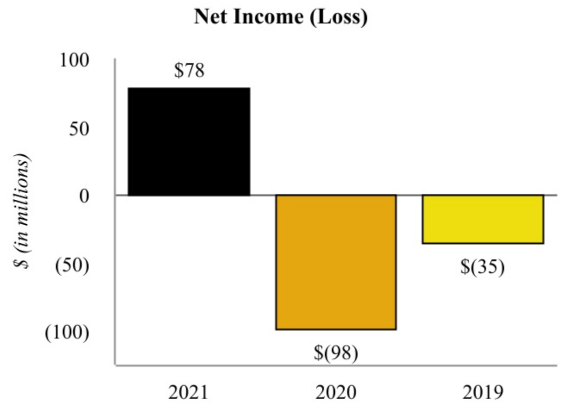
Overview - The Nitrogen Fertilizer Segment's operating income and net income for the year ended December 31, 2021 were $134 million and $78 million, respectively, improvements of $169 million and $176 million, respectively, compared to an operating loss and net loss of $35 million and $98 million, respectively, for the year ended December 31, 2020. Beyond the goodwill impairment of $41 million negatively impacting the 2020 period, these improvements were driven primarily by higher ammonia and UAN sales prices in 2021, partially offset by higher feedstock costs and operating expenses.

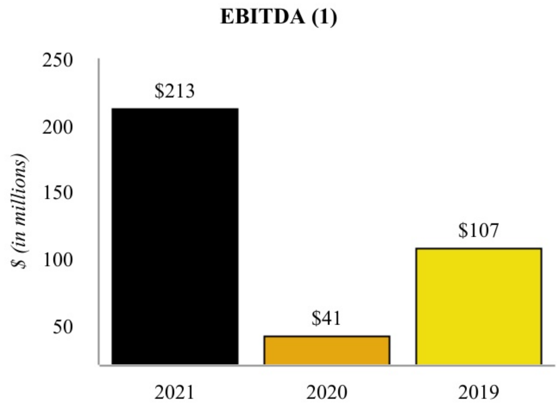
Net Sales



Operating Income (Loss)







(1) See "Non-GAAP Reconciliations" section below for reconciliations of the non-GAAP measure shown above.

Net Sales - The Nitrogen Fertilizer Segment's net sales increased by $183 million to $533 million for the year ended December 31, 2021 compared to the year ended December 31, 2020. This increase was primarily due to favorable sales pricing contributing $205 million in higher revenues, offset by decreased sales volumes, resulting in $35 million of lower revenue as compared to the year ended December 31, 2020. For the years ended December 31, 2021 and 2020, net sales included $31 million and $33 million in freight revenue, respectively, and $11 million and $10 million in other revenue, respectively.

The following table demonstrates the impact of changes in sales volumes and pricing for the primary components of net sales, excluding urea products, freight, and other revenue, for the year ended December 31, 2021 as compared to the year ended December 31, 2020.

(in millions)	Price Variance		Volume Variance	
UAN	$	135	$	(1
Ammonia		70		(1

For the year ended December 31, 2021 compared to the year ended December 31, 2020, ammonia and UAN sales prices were favorable primarily due to higher crop pricing coupled with lower fertilizer supply driven by production outages from Winter Storm Uri in February 2021 and Hurricane Ida in August and September 2021, as well as increased industry turnaround activity and lower global fertilizer production due to higher natural gas prices in Europe and Asia during 2021. Total product sales volumes were unfavorable driven by lower production due to the Messer Outages, Winter Storm Uri, the Power Outages, and the R2 Outage.

Cost of Materials and Other - Cost of materials and other for the year ended December 31, 2021 was $98 million, compared to $91 million for the year ended December 31, 2020. The $7 million increase was comprised primarily of a $12 million increase in natural gas costs at our East Dubuque Fertilizer Facility due to higher natural gas prices, a $5 million increase in pet coke costs at our Coffeyville Fertilizer Facility related to higher third-party coke pricing caused by higher crude oil prices and higher pet coke pricing with Coffeyville Resources Refining & Marketing, LLC due to the UAN-indexed pricing formula, and a $2 million increase in purchases of hydrogen. These increases were offset by a decrease in freight expenses and distribution costs of $4 million due to downtime in October and November 2021 and a discontinuation of the Gavilon Railcar Lease in April 2021, a decrease related to a build in our ammonia and UAN inventories contributing $4 million, and a decrease in ammonia purchases of $3 million.

Non-GAAP Measures

Our management uses certain non-GAAP performance measures, and reconciliations to those measures, to evaluate current and past performance and prospects for the future to supplement our GAAP financial information presented in accordance with U.S. GAAP. These non-GAAP financial measures are important factors in assessing our operating results and profitability and include the performance and liquidity measures defined below.

As a result of volatile market conditions related to the RFS during the first half of 2021 and the impacts certain significant non-cash items have on the evaluation of our operations, the Company began disclosing Adjusted EBITDA, as defined below, in the second quarter of 2021. We believe the presentation of this non-GAAP measure is meaningful to compare our operating results between periods and peer companies. All prior periods presented have been conformed to the definition below. The following are non-GAAP measures we present for the year ended December 31, 2021:

EBITDA - Consolidated net income (loss) before (i) interest expense, net, (ii) income tax expense (benefit) and (iii) depreciation and amortization expense.

Petroleum EBITDA and Nitrogen Fertilizer EBITDA - Segment net income (loss) before segment (i) interest expense, net, (ii) income tax expense (benefit), and (iii) depreciation and amortization.

Refining Margin - The difference between our Petroleum Segment net sales and cost of materials and other.

Refining Margin, adjusted for Inventory Valuation Impacts - Refining Margin adjusted to exclude the impact of current period market price and volume fluctuations on crude oil and refined product inventories purchased in prior periods and lower of cost or net realizable value adjustments, if applicable. We record our commodity inventories on the first-in-first-out basis. As a result, significant current period fluctuations in market prices and the volumes we hold in inventory can have favorable or unfavorable impacts on our refining margins as compared to similar metrics used by other publicly-traded companies in the refining industry.

Refining Margin and Refining Margin adjusted for Inventory Valuation Impacts, per Throughput Barrel - Refining Margin and Refining Margin adjusted for Inventory Valuation Impacts divided by the total throughput barrels during the period, which is calculated as total throughput barrels per day times the number of days in the period.

Direct Operating Expenses per Throughput Barrel - Direct operating expenses for our Petroleum Segment divided by total throughput barrels for the period, which is calculated as total throughput barrels per day times the number of days in the period.

Adjusted EBITDA, Adjusted Petroleum EBITDA and Adjusted Nitrogen Fertilizer EBITDA - EBITDA, Petroleum EBITDA and Nitrogen Fertilizer EBITDA adjusted for certain significant non-cash items and items that management believes are not attributable to or indicative of our on-going operations or that may obscure our underlying results and trends.

Adjusted Earnings (Loss) per Share - Earnings (loss) per share adjusted for certain significant non-cash items and items that management believes are not attributable to or indicative of our on-going operations or that may obscure our underlying results and trends.

Free Cash Flow - Net cash provided by (used in) operating activities less capital expenditures and capitalized turnaround expenditures.

Net Debt and Finance Lease Obligations - Net debt and finance lease obligations is total debt and finance lease obligations reduced for cash and cash equivalents.

Total Debt and Net Debt and Finance Lease Obligations to EBITDA Exclusive of Nitrogen Fertilizer - Total debt and net debt and finance lease obligations is calculated as the consolidated debt and net debt and finance lease obligations less the Nitrogen Fertilizer Segment's debt and net debt and finance lease obligations as of the most recent period ended divided by EBITDA exclusive of the Nitrogen Fertilizer Segment for the most recent twelve-month period.

We present these measures because we believe they may help investors, analysts, lenders and ratings agencies analyze our results of operations and liquidity in conjunction with our U.S. GAAP results, including but not limited to our operating performance as compared to other publicly-traded companies in the refining and fertilizer industries, without regard to historical cost basis or financing methods and our ability to incur and service debt and fund capital expenditures. Non-GAAP measures have important limitations as analytical tools, because they exclude some, but not all, items that affect net earnings and operating income. These measures should not be considered substitutes for their most directly comparable U.S. GAAP financial measures. See "Non-GAAP Reconciliations" included herein for reconciliation of these amounts. Due to rounding, numbers presented within this section may not add or equal to numbers or totals presented elsewhere within this document.

Factors Affecting Comparability of Our Financial Results

Our historical results of operations for the periods presented may not be comparable with prior periods or to our results of operations in the future for the reasons discussed below.

Petroleum Segment

Major Scheduled Turnaround Activities

Coffeyville Refinery - The Coffeyville Refinery's next planned turnaround is expected to start in the spring of 2023, with pre-planning expenditures of $5 million expected to be incurred during 2022. During the year ended December 31, 2020, we capitalized costs of $155 million related to the planned turnaround which began in February 2020 and was completed in April 2020. During the fourth quarter of 2019, our Coffeyville Refinery capitalized costs of $15 million related to preparations for the same planned turnaround.

Wynnewood Refinery - The next planned turnaround for the Wynnewood Refinery is in the spring of 2022. During the years ended December 31, 2021, we capitalized $7 million related to pre-planning activities at the Wynnewood Refinery. During the first quarter of 2019, the second phase of the fourth quarter 2017 turnaround on the Wynnewood Refinery hydrocracking unit was completed and $24 million was capitalized.

Nitrogen Fertilizer Segment

Major Scheduled Turnaround Activities

Coffeyville Fertilizer Facility - The next planned turnaround at the Coffeyville Fertilizer Facility is expected to occur in the summer of 2022. Additionally, the Coffeyville Fertilizer Facility had planned downtime for certain maintenance activities, which was completed in the fourth quarter of 2021 at a cost of $2 million. For the year ended December 31, 2021, we also incurred less than $1 million for the Coffeyville Fertilizer Facility expected turnaround in the summer of 2022.

East Dubuque Fertilizer Facility - The next planned turnaround at the East Dubuque Fertilizer Facility is expected to occur in the summer of 2022. For the year ended December 31, 2021, we incurred approximately $1 million in turnaround expense related to planning for the East Dubuque Fertilizer Facility's expected turnaround in the summer of 2022.

Goodwill Impairment

As a result of lower expectations for market conditions in the fertilizer industry during 2020, the market performance of CVR Partners' common units, a qualitative analysis, and additional risks associated with the business, CVR Partners performed an interim quantitative impairment assessment of goodwill for the Coffeyville Facility reporting unit as of June 30, 2020. The results of the impairment test indicated the carrying amount of this reporting unit exceeded the estimated fair value, and a full, non-cash impairment charge of $41.0 million was required.

Non-GAAP Reconciliations

Reconciliation of Net Income (Loss) to EBITDA and Adjusted EBITDA

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Net income (loss)	**$ 74**	$ (320)	$ 362
Interest expense, net	**117**	130	102
Income tax (benefit) expense	**(8)**	(95)	129
Depreciation and amortization	**279**	278	287
EBITDA	**$ 462**	$ (7)	$ 880
Adjustments:			
Revaluation of RFS liability	**63**	59	16
Gain on marketable securities	**(81)**	(34)	—
Unrealized (gain) loss on derivatives	**(16)**	9	(14)
Inventory valuation impact, (favorable) unfavorable	**(127)**	58	(43)
Goodwill impairment	**—**	41	—
Adjusted EBITDA	**$ 301**	$ 126	$ 839

Reconciliation of Basic and Diluted Earnings (Loss) per Share to Adjusted (Loss) Earnings per Share

	Year Ended December 31,		
	2021	**2020**	**2019**
Basic and diluted earnings (loss) per share	**$ 0.25**	$ (2.54)	$ 3.78
Adjustments: (1)			
Revaluation of RFS liability	**0.46**	0.43	0.12
Gain on marketable securities	**(0.59)**	(0.25)	—
Unrealized (gain) loss on derivatives	**(0.12)**	0.07	(0.10)
Inventory valuation impact, (favorable) unfavorable	**(0.93)**	0.43	(0.32)
Goodwill impairment (2)	**—**	0.07	—
Adjusted (loss) earnings per share	**$ (0.93)**	$ (1.79)	$ 3.48

(1) Amounts are shown after-tax, using the Company's marginal tax rate, and are presented on a per share basis using the weighted average shares outstanding for each period.
(2) Amount is shown exclusive of noncontrolling interests.

Reconciliation of Net Cash Provided By Operating Activities to Free Cash Flow

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Net cash provided by operating activities	**$ 396**	$ 90	$ 747
Less:			
Capital expenditures	**(224)**	(124)	(121)
Capitalized turnaround expenditures	**(5)**	(159)	(38)
Free cash flow	**$ 167**	$ (193)	$ 588

Reconciliation of Petroleum Segment Net Income (Loss) to EBITDA and Adjusted EBITDA

(in millions)	Year Ended December 31, 2021	2020	2019
Petroleum net income (loss)	**$ 4**	$ (271)	$ 559
Interest (income) expense, net	**(21)**	(5)	27
Depreciation and amortization	**203**	202	202
Petroleum EBITDA	**186**	(74)	788
Adjustments:			
Revaluation of RFS liability	**63**	59	16
Unrealized (gain) loss on derivatives	**(16)**	9	14
Inventory valuation impact, (favorable) unfavorable [(1) (2)]	**(127)**	58	(43)
Petroleum Adjusted EBITDA	**$ 106**	$ 52	$ 775

Reconciliation of Petroleum Segment Gross Profit (Loss) to Refining Margin and Refining Margin Adjusted for Inventory Valuation Impact

(in millions)	Year Ended December 31, 2021	2020	2019
Net sales	**$ 6,721**	$ 3,586	$ 5,968
Less:			
Cost of materials and other	**(6,100)**	(3,288)	(4,765)
Direct operating expenses (exclusive of depreciation and amortization)	**(369)**	(319)	(359)
Depreciation and amortization	**(197)**	(194)	(199)
Gross profit (loss)	**55**	(215)	645
Add:			
Direct operating expenses (exclusive of depreciation and amortization)	**369**	319	359
Depreciation and amortization	**197**	194	199
Refining Margin	**621**	298	1,203
Inventory valuation impact, (favorable) unfavorable [(1) (2)]	**(127)**	58	(43)
Refining margin, adjusted for inventory valuation impacts	**$ 494**	$ 356	$ 1,160

(1) The Petroleum Segment's basis for determining inventory value under GAAP is First-In, First-Out ("FIFO"). Changes in crude oil prices can cause fluctuations in the inventory valuation of crude oil, work in process and finished goods, thereby resulting in a favorable inventory valuation impact when crude oil prices increase and an unfavorable inventory valuation impact when crude oil prices decrease. The inventory valuation impact is calculated based upon inventory values at the beginning of the accounting period and at the end of the accounting period. In order to derive the inventory valuation impact per total throughput barrel, we utilize the total dollar figures for the inventory valuation impact and divide by the number of total throughput barrels for the period.

(2) Includes an inventory valuation charge of $58 million recorded in the first quarter of 2020, as inventories were reflected at the lower of cost or net realizable value. No adjustment was necessary the years ended December 31, 2021 or 2019 or any other period in 2020.

Reconciliation of Petroleum Segment Total Throughput Barrels

	Year Ended December 31, 2021	2020	2019
Total throughput barrels per day	**209,084**	183,295	215,971
Days in the period	**365**	366	365
Total throughput barrels	**76,315,701**	67,085,913	78,829,441

Reconciliation of Petroleum Segment Refining Margin per Total Throughput Barrel

(in millions, except per total throughput barrel)	Year Ended December 31, 2021	2020	2019
Refining margin	**$ 621**	$ 298	$ 1,203
Divided by: total throughput barrels	**76**	67	79
Refining margin per total throughput barrel	**$ 8.14**	$ 4.44	$ 15.26

Reconciliation of Petroleum Segment Refining Margin Adjusted for Inventory Valuation Impact per Total Throughput Barrel

(in millions, except per total throughput barrel)	Year Ended December 31, 2021	2020	2019
Refining margin, adjusted for inventory valuation impact	**$ 494**	$ 356	$ 1,160
Divided by: total throughput barrels	**76**	67	79
Refining margin adjusted for inventory valuation impact per total throughput barrel	**$ 6.48**	$ 5.31	$ 14.71

Reconciliation of Petroleum Segment Direct Operating Expenses per Total Throughput Barrel

(in millions, except per total throughput barrel)	Year Ended December 31, 2021	2020	2019
Direct operating expenses (exclusive of depreciation and amortization)	**$ 369**	$ 319	$ 359
Divided by: total throughput barrels	**76**	67	79
Direct operating expenses per total throughput barrel	**$ 4.83**	$ 4.76	$ 4.56

Reconciliation of Nitrogen Fertilizer Segment Net Income (Loss) to EBITDA and Adjusted EBITDA

(in millions)	Year Ended December 31, 2021	2020	2019
Nitrogen fertilizer net income (loss)	**$ 78**	$ (98)	$ (35)
Interest expense, net	**61**	63	62
Depreciation and amortization	**74**	76	80
Nitrogen Fertilizer EBITDA	**213**	41	107
Goodwill impairment	**—**	41	—
Adjusted Nitrogen Fertilizer EBITDA	**$ 213**	$ 82	$ 107

Reconciliation of Total Debt and Net Debt and Finance Lease Obligations to EBITDA Exclusive of Nitrogen Fertilizer

(in millions)		Twelve Months Ended December 31, 2021
Total debt and finance lease obligations [1]	**$**	**1,660**
Less:		
Nitrogen Fertilizer debt and finance lease obligations [1]	**$**	**(611)**
Total debt and finance lease obligations exclusive of Nitrogen Fertilizer		**1,049**
EBITDA exclusive of Nitrogen Fertilizer	**$**	**249**
Total debt and finance lease obligations to EBITDA exclusive of Nitrogen Fertilizer		**4.21**
Consolidated cash and cash equivalents	**$**	**510**
Less:		
Nitrogen Fertilizer cash and cash equivalents		**(113)**
Cash and cash equivalents exclusive of Nitrogen Fertilizer		**397**
Net debt and finance lease obligations exclusive of Nitrogen Fertilizer [2]	**$**	**652**
Net debt and finance lease obligations to EBITDA exclusive of Nitrogen Fertilizer [2]		**2.62**

(1) Amounts are shown inclusive of the current portion of long-term debt and finance lease obligations.
(2) Net debt represents total debt and finance lease obligations exclusive of cash and cash equivalents.

	Three Months Ended				
(in millions)	March 31, 2021	June 30, 2021	September 30, 2021	December 31, 2021	Twelve Months Ended December 31, 2021 [1]
Consolidated					
Net (loss) income	$ (55)	$ (2)	$ 106	**$ 25**	**$ 74**
Interest expense, net	31	38	23	**24**	**117**
Income tax benefit	(42)	(6)	47	**(7)**	**(8)**
Depreciation and amortization	66	72	67	**74**	**279**
EBITDA	$ —	$ 102	$ 243	**$ 116**	**$ 462**
Nitrogen Fertilizer					
Net (loss) income	$ (25)	$ 7	$ 35	**$ 61**	**78**
Interest expense, net	16	23	11	**11**	**61**
Depreciation and amortization	14	21	18	**21**	**74**
EBITDA	$ 5	$ 51	$ 64	**$ 93**	**$ 213**
EBITDA exclusive of Nitrogen Fertilizer	$ (5)	$ 51	$ 179	**$ 23**	**$ 249**

(1) Due to rounding, numbers within this table may not add or equal to totals presented.

Liquidity and Capital Resources

Our principal source of liquidity has historically been cash from operations. Our principal uses of cash are for working capital, capital expenditures, funding our debt service obligations, and paying dividends to our stockholders, as further discussed below.

The effects of the COVID-19 pandemic resulted in a reduction in U.S. economic activity during 2020 and into 2021 and, for our industry, resulted in significant changes in crude oil supply and a decline in prices, as well as decreases in refined product pricing due to reductions in demand for crude oil and our refined products, primarily gasoline and jet fuel. In February 2021, Winter Storm Uri caused unprecedented disruptions to natural gas, electricity supply and refinery operations throughout the Midwest and Gulf Coast regions. In August 2021, Hurricane Ida made landfall in Louisiana which also resulted in refinery shut-ins and upstream production disruptions in the Gulf Coast. These weather events and the related limitations to refining operations helped reduce refined product inventories and balance supply and demand throughout the region. This period of extreme economic disruption, low crude oil and refined product prices, and reduced demand has and is likely to continue to have an impact on our business, results of operations, and access to sources of liquidity.

While we believe demand for crude oil and refined products has nearly returned to pre-COVID-19 levels and commodity prices have rebounded, there is still uncertainty on the horizon as the COVID-19 vaccines are distributed and countries and states continue to monitor their efforts against the virus and virus variants. We continue to maintain our focus on safe and reliable operations, maintaining an appropriate level of cash to fund ongoing operations, and protecting the balance sheet. As a result of these factors, and in light of management's decision to cease actively pursuing petroleum refinery acquisitions given, among other factors, the uncertainty of the current environment and other potential future cash requirements of the Company and in light of the upcoming expiration of its right to use excess proceeds pursuant to the Indenture governing the 5.25% Senior Notes due 2025 and 5.75% Senior Notes due 2028 (the "Senior Notes"), the Board elected to declare a special dividend equal to $492 million during the second quarter of 2021 comprised of cash and substantially all of its investment in Delek common stock. No quarterly dividends were declared for the fourth quarter of 2020 or the first, second and third quarters of 2021. These decisions support the Company's continued focus on financial discipline through a balanced approach of evaluation of strategic investment opportunities and stockholder distributions while maintaining adequate capital requirements for ongoing operations throughout the uncertain environment. The Board will continue to evaluate the economic environment, the Company's cash needs, optimal uses of cash, and other applicable factors, and may elect to make additional changes to the Company's dividend (if any) in future periods. Additionally, in executing financial discipline, we have successfully implemented and are maintaining the following measures:

- Deferring the majority of our growth capital spending, with the exception of the RDU Project at the Wynnewood Refinery;
- Reducing the amount of refining maintenance capital expenditures to only include those projects which are a priority to support continuing safe and reliable operations, or which we consider are required to support future activities;
- Focusing future capital allocation to high-return assets and opportunities that advance participation in the energy industry transformation;
- Continuing to focus on discipled management of operational and general and administrative cost reductions;
- For the Petroleum Segment, deferring the Wynnewood Refinery turnaround from the spring of 2021 to the spring of 2022 and deferring the Coffeyville Refinery turnaround from fall of 2021 to spring of 2023; and
- For the Nitrogen Fertilizer Segment, taking advantage of downtime to perform maintenance activities which enabled us to defer the Coffeyville Fertilizer Facility turnaround from 2021 to 2022.

When paired with the actions outlined above, we believe that our cash from operations and existing cash and cash equivalents, along with borrowings, as necessary, will be sufficient to satisfy anticipated cash requirements associated with our existing operations for at least the next 12 months. However, our future capital expenditures and other cash requirements could be higher than we currently expect as a result of various factors including, but not limited to, rising material and labor costs, the costs associated with complying with the Renewable Fuel Standard's outcome of litigation and other factors. Additionally, our ability to generate sufficient cash from our operating activities and secure additional financing depends on our future operational performance, which is subject to general economic, political, financial, competitive, and other factors, some of which may be beyond our control.

Depending on the needs of our business, contractual limitations and market conditions, we may from time to time seek to issue equity securities, incur additional debt, issue debt securities, or redeem, repurchase, refinance, or otherwise retire our existing debt through, among other things, privately negotiated transactions, redemptions, exchange offers, or tender offers. There can be no assurance that we will seek to do any of the foregoing or that we will be able to do any of the foregoing on terms acceptable to us or at all.

On June 23, 2021, CVR Partners and certain of its subsidiaries completed a private offering of $550 million aggregate principal amount of 6.125% Senior Unsecured Notes due June 2028 (the “2028 UAN Notes”), which mature on June 15, 2028, and partially redeemed CVR Partners’ 9.25% Senior Notes due June 2023 (the “2023 UAN Notes”) in the amount of $550 million. On September 23, 2021 and December 22, 2021, CVR Partners redeemed an additional $15 million and $15 million, respectively, in aggregate principal of the 2023 UAN Notes. On February 22, 2022, CVR Partners redeemed the remaining $65 million in aggregate principal amount of the 2023 UAN Notes. Collectively, these transactions represent a significant and favorable change in CVR Partners’s cash flow and liquidity position, with annual savings of approximately $26 million in future interest expense, as compared to our 2020 Form 10-K. Additionally, on September 30, 2021, CVR Partners entered into a new credit agreement with an aggregate principal amount of up to $35 million with a maturity date of September 30, 2024 (the “Nitrogen Fertilizer ABL”) and terminated its $35 million ABL Credit Agreement, dated as of September 30, 2016, as amended (the “UAN 2016 ABL Credit Agreement”). Refer to Part II, Item 8 Note 6 (“Long-Term Debt and Finance Lease Obligations”) of this Report for further discussion. The Company, and its subsidiaries, were in compliance with all applicable covenants under their respective debt instruments as of December 31, 2021, as applicable.

We do not have any “off-balance sheet arrangements” as such term is defined within the rules and regulations of the SEC.

Cash and Other Liquidity

As of December 31, 2021, we had total liquidity of approximately $906 million which consisted of consolidated cash and cash equivalents of $510 million, $361 million available under the Petroleum ABL and $35 million available under the Nitrogen Fertilizer ABL. As of December 31, 2020, we had $667 million in cash and cash equivalents.

(in millions)		**December 31, 2021**		**December 31, 2020**
CVR Partners:				
9.25% Senior Secured Notes, due June 2023 [1]	**$**	**65**	$	64
6.125% Senior Notes, due June 2028		**550**		-
Unamortized discount and debt issuance costs		**(4)**		(1
Total CVR Partners debt	**$**	**611**	$	63
CVR Energy:				
5.25% Senior Notes, due February 2025	**$**	**600**	$	60
5.75% Senior Notes, due February 2028		**400**		40
Unamortized debt issuance cost		**(5)**		(
Total CVR Energy debt	**$**	**995**	$	99
Total long-term debt		**1,606**		1,62
Current portion of long-term debt [2]		**—**		
Total long-term debt, including current portion	**$**	**1,606**	$	1,63

(1) The call price of the 2023 UAN Notes decreased to par on June 15, 2021. On June 23, 2021, September 23, 2021, and December 22, 2021, CVR Partners redeemed $550 million, $15 million, and $15 million, respectively, of the 2023 UAN Notes, at par, plus accrued and unpaid interest on the redeemed portion. The remaining balance of $65 million is outstanding as of December 31, 2021. The $65 million outstanding balance of the 2023 UAN Notes was paid in full on February 22, 2022 at par, plus accrued and unpaid interest.
(2) The $2 million outstanding balance of the 6.50% Notes, due April 2021, was paid in full on April 15, 2021.

CVR Partners

On June 23, 2021, CVR Partners and its subsidiary, CVR Nitrogen Finance Corporation (“Finance Co.” and, together with CVR Partners, the “Issuers”), completed a private offering of $550 million aggregate principal amount of the 2028 UAN Notes. The net proceeds from the 2028 UAN Notes, plus cash on hand, were used to redeem $550 million aggregate principal amount of the 2023 UAN Notes. On September 23, 2021 and December 22, 2021, CVR Partners redeemed $15 million and $15 million aggregate principal amount of the outstanding 2023 UAN Notes, respectively. On September 30, 2021, CVR Partners entered into the Nitrogen Fertilizer ABL and terminated its UAN 2016 ABL Credit Agreement. As of December 31, 2021, the Nitrogen Fertilizer Segment had the remaining portion of the 2023 UAN Notes, the 2028 UAN Notes, and the Nitrogen Fertilizer ABL, the proceeds of which may be used to fund working capital, capital expenditures, and for other general corporate purposes. On February 22, 2022, CVR Partners redeemed the remaining $65 million in aggregate principal amount of the 2023 UAN Notes. Refer to Part II, Item 8 Note 6 (“Long-Term Debt and Finance Lease Obligations”) of this Report for further discussion.

CVR Refining

As of December 31, 2021, the Petroleum Segment has the Petroleum ABL, the proceeds of which may be used to fund working capital, capital expenditures, and for other general corporate purposes. Refer to Part II, Item 8 Note 6 (“Long-Term Debt and Finance Lease Obligations”) of this Report for further discussion.

CVR Energy

As of December 31, 2021, CVR Energy has the Senior Notes, the net proceeds of which may be used for general corporate purposes, which may include funding acquisitions, capital projects, and/or share repurchases or other distributions to our stockholders. Refer to Part II, Item 8 Note 6 (“Long-Term Debt and Finance Lease Obligations”) of this Report for further discussion.

Capital Spending

We divide capital spending needs into two categories: maintenance and growth. Maintenance capital spending includes non-discretionary maintenance projects and projects required to comply with environmental, health, and safety regulations. Growth capital projects generally involve an expansion of existing capacity and/or a reduction in direct operating expenses. We undertake growth capital spending based on the expected return on incremental capital employed.

In December 2020, our Board approved the renewable diesel project at our Wynnewood Refinery, which would convert the refinery’s hydrocracker to a RDU capable of producing 100 million gallons of renewable diesel per year. Currently, total estimated cost for the project is $170 million. Mechanical completion and startup of the RDU is expected to occur in the second quarter of 2022. In May 2021, the Board approved a $10 million capital expenditure for the completion of the design and ordering of certain long-lead equipment relating to a potential project to add pretreating capabilities for the RDU at the Wynnewood Refinery and for the completion of the design for a potential conversion of an existing hydrotreater at the Coffeyville Refinery to renewable diesel and sustainable aviation fuel services. In November 2021, the Board approved the pretreater project at the Wynnewood Refinery, which is expected to be completed in the fourth quarter of 2022 at an estimated cost of $60 million.

Our total capital expenditures for the year ended December 31, 2021, along with our estimated expenditures for 2022, by segment, are as follows:

	2021 Actual			**2022 Estimate** [1]					
				Maintenance		Growth		Total	
(in millions)	Maintenance	Growth	Total	Low	High	Low	High	Low	High
Petroleum	**$ 47**	**$ 3**	**$ 50**	$ 100	$ 110	$ 2	$ 6	$ 102	$ 1[illegible]
Renewables (2)	**—**	**148**	**148**	—	—	80	90	80	[illegible]
Nitrogen Fertilizer	**16**	**10**	**26**	32	34	4	5	36	[illegible]
Other	**2**	**—**	**2**	4	6	—	—	4	
Total	**$ 65**	**$ 161**	**$ 226**	$ 136	$ 150	$ 86	$ 101	$ 222	$ 2[illegible]

(1) Total 2022 estimated capitalized costs include approximately $7 million of growth related projects that will require additional approvals before commencement.
(2) Renewables reflects spending on the Wynnewood Refinery RDU project. Amounts spent in 2020 were previously reported under Other. Upon completion and meeting of certain criteria under accounting rules, Renewables is expected to be a new reportable segment. As of December 31, 2021, Renewables does not the meet the definition of a reportable segment as defined under ASC 280.

Our estimated capital expenditures are subject to change due to unanticipated changes in the cost, scope, and completion time for capital projects. For example, we may experience unexpected changes in labor or equipment costs necessary to comply with government regulations or to complete projects that sustain or improve the profitability of the refineries or nitrogen fertilizer facilities. We may also accelerate or defer some capital expenditures from time to time. Capital spending for CVR Partners is determined by the board of directors of its general partner (the “UAN GP Board”). We will continue to monitor market conditions and make adjustments, if needed, to our current capital spending or turnaround plans.

The Petroleum Segment completed its scheduled turnaround at the Coffeyville Refinery in April 2020 with total capitalized expenditures of $155 million. The next planned turnaround for the Wynnewood Refinery is in the spring of 2022. During the years ended December 31, 2021, we capitalized $7 million related to pre-planning activities at the Wynnewood Refinery. The Coffeyville Refinery’s next planned turnaround is expected to start in the spring of 2023, with pre-planning expenditures of $5 million expected to be incurred during 2022.

The Nitrogen Fertilizer Segment has planned turnarounds scheduled at our Coffeyville Fertilizer Facility and East Dubuque Fertilizer Facility. The turnaround at our Coffeyville Fertilizer Facility is expected to occur in the summer of 2022, with an estimated cost of $10 to $13 million, and the turnaround at our East Dubuque Fertilizer Facility is also expected to commence in the summer of 2022, with an estimated cost of $13 to $15 million. Additionally, the Coffeyville Fertilizer Facility had planned downtime for certain maintenance activities, which was completed in the fourth quarter of 2021 at a cost of $2 million. For the year ended December 31, 2021, we also incurred less than $1 million and approximately $1 million, in turnaround expense related to planning for the Coffeyville Fertilizer Facility’s and East Dubuque Fertilizer Facility’s expected turnarounds in 2022, respectively.

Dividends to CVR Energy Stockholders

Dividends, if any, including the payment, amount and timing thereof, are subject to change at the discretion of the Company’s Board of Directors. IEP, through its ownership of the Company’s common shares, is entitled to receive dividends that are declared and paid by the Company based on the number of shares held at each record date. No dividends were declared related to the fourth quarter of 2021, and there were no quarterly dividends declared or paid during 2021 related to the first, second, and third quarters of 2021 and fourth quarter of 2020. During the years ended December 31, 2020 and 2019, the Company paid dividends totaling $1.20 and $3.05 per common share, or $121 million and $306 million, respectively. Of these dividends, IEP received $85 million and $218 million, respectively, for the same periods.

On May 26, 2021, the Company announced a special dividend of approximately $492 million, or equivalent to $4.89 per share of the Company’s common stock, to be paid in a combination of cash (the “Cash Distribution”) and common stock of Delek held by the Company (the “Stock Distribution”). On June 10, 2021, the Company distributed an aggregate amount of approximately $241 million, or $2.40 per share of the Company’s common stock, pursuant to the Cash Distribution, and approximately 10,539,880 shares of Delek common stock, which represented approximately 14.3% of the outstanding shares of Delek common stock, pursuant to the Stock Distribution. IEP received approximately 7,464,652 shares of common stock of Delek and $171 million in cash. The Stock Distribution was recorded as a reduction to equity through a derecognition of our investment in Delek, and the Company recognized a gain of $112 million from the initial investment in Delek through the date of the Stock Distribution.

Distributions to CVR Partners' Unitholders

Distributions, if any, including the payment, amount and timing thereof, are subject to change at the discretion of the UAN GP Board. The following table presents distributions paid by CVR Partners to CVR Partners' unitholders, including amounts received by the Company, as of December 31, 2021.

			Distributions Paid *(in millions)*		
Related Period	**Date Paid**	**Distribution Per Common Unit**	**Public Unitholders**	**CVR Energy**	**Total**
2021 - 2nd Quarter	August 23, 2021	$ 1.72	$ 11	$ 7	$ [illegible]
2021 - 3rd Quarter	November 22, 2021	2.93	20	11	[illegible]
Total		$ 4.65	$ 31	$ 18	$ [illegible]

There were no distributions declared or paid by CVR Partners related to the first quarter of 2021 and fourth quarter of 2020, and no distributions were declared or paid during 2020. During the year ended December 31, 2019, CVR Partners paid distributions totaling $4.00 per common unit on a split-adjusted basis, or $45 million. Of these distributions, CVR Energy received $16 million.

For the fourth quarter of 2021, CVR Partners, upon approval by the UAN GP Board on February 21, 2022, declared a distribution of $5.24 per common unit, or $56 million, which is payable March 14, 2022 to unitholders of record as of March 7, 2022. Of this amount, CVR Energy will receive approximately $20 million, with the remaining amount payable to public unitholders.

Capital Structure

On October 23, 2019, the Board authorized a stock repurchase program (the "Stock Repurchase Program"). The Stock Repurchase Program would enable the Company to repurchase up to $300 million of the Company's common stock. Repurchases under the Stock Repurchase Program may be made from time-to-time through open market transactions, block trades, privately negotiated transactions or otherwise in accordance with applicable securities laws. The timing, price and amount of repurchases (if any) will be made at the discretion of management and are subject to market conditions as well as corporate, regulatory, debt maintenance and other considerations. While the Stock Repurchase Program currently has a duration of four years, it does not obligate the Company to acquire any stock and may be terminated by the Board at any time. As of December 31, 2021, the Company has not repurchased any of the Company's common stock under the Stock Repurchase Program.

On May 6, 2020, CVR Partners announced that the UAN GP Board, on behalf of CVR Partners, authorized a unit repurchase program (the "Unit Repurchase Program"). The Unit Repurchase Program enables CVR Partners to repurchase up to $10 million of its common units. On February 22, 2021, the UAN GP Board authorized an additional $10 million for the Unit Repurchase Program. During the year ended December 31, 2021, CVR Partners repurchased 24,378 common units on the open market in accordance with a repurchase agreement under Rules 10b5-1 and 10b-18 of the Securities Exchange Act of 1934, as amended, at a cost of $1 million, inclusive of transaction costs, or an average price of $21.70 per common unit. During the year ended December 31, 2020, as adjusted to reflect the impact of the 1-for-10 reverse unit split of CVR Partners's common units that was effective as of November 23, 2020, CVR Partners repurchased 623,177 common units, respectively, at a cost of $7 million, inclusive of transaction costs, or an average price of $11.35 per common unit. As of December 31, 2021, CVR Partners had $12 million in authority remaining under the Unit Repurchase Program. This Unit Repurchase Program does not obligate CVR Partners to acquire any common units and may be cancelled or terminated by the UAN GP Board at any time.

Cash Flows

The following table sets forth our consolidated cash flows for the periods indicated below:

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Net cash provided by (used in):			
Operating activities	**$ 396**	$ 90	$ 74
Investing activities	**(238)**	(423)	(12
Financing activities	**(315)**	355	(64
Net (decrease) increase in cash and cash equivalents and restricted cash	**$ (157)**	$ 22	$ (1

Operating Activities

The change in operating activities for the year ended December 31, 2021, as compared to the year ended December 31, 2020, was primarily due to a $469 million increase in EBITDA during 2021, which includes a $47 million increase in non-cash earnings on the Company's investment in Delek in 2021 compared to 2020, as well as favorable changes in working capital of $111 million associated with the increase in crude oil prices and increase in our open RFS position and a $42 million increase in non-cash share based compensation as a result of higher market prices for CVR Partners' units and CVR Energy's shares in 2021 compared to 2020. This is partially offset by an increase in net non-cash deferred tax expense of $68 million, as well as a 2020 lower of cost or market inventory charge of $59 million and a $41 million non-cash impairment of goodwill recognized in 2020.

Investing Activities

The change in investing activities for the year ended December 31, 2021, as compared to the year ended December 31, 2020, was primarily due to a reduction in turnaround expenditures of $154 million in 2021 due to the Coffeyville Refinery turnaround completed in April 2020 and the purchase of Delek common stock for $140 million in the first quarter of 2020. These decreases are partially offset by an increase in capital expenditures of $100 million primarily related to the Wynnewood Refinery's RDU in 2021 and payments for the acquisition of pipeline assets of $20 million in the first quarter of 2021.

Financing Activities

The change in net cash used in financing activities for the year ended December 31, 2021, as compared to the net cash provided by financing activities for year ended December 31, 2020 was due to the January 2020 private offering of the 5.25% Senior Notes due 2025 and 5.75% Senior Notes due 2028 totaling $1 billion, netted against the issuance was the redemption of the outstanding CVR Refining 2022 Notes in January 2020 of $500 million and call premium of $5 million. Additionally, during the second quarter of 2021, CVR Partners completed a private offering of the 2028 UAN Notes totaling $550 million and used the proceeds, plus cash on hand, to redeem a portion of the 2023 UAN Notes in the second, third, and fourth quarters of 2021. The result of these debt offerings and the respective redemptions of outstanding senior notes is a net reduction in financing activities of approximately $527 million in 2021 as compared to 2020. Further, CVR Energy paid dividends of $241 million in 2021 compared to $121 million in 2020, and CVR Partners paid cash distributions of $31 million in 2021 compared to no distributions in 2020.

Recent Accounting Pronouncements

Refer to Part II, Item 8, Note 2 ("Summary of Significant Accounting Policies") of this Report for a discussion of recent accounting pronouncements applicable to the Company.

Critical Accounting Estimates

We prepare our consolidated financial statements in accordance with GAAP requiring management to make judgments, assumptions, and estimates based on the best available information at the time. Accounting estimates are considered to be critical if (1) the nature of the estimates and assumptions is material due to the levels of subjectivity and judgment necessary to account for highly uncertain matters or the susceptibility of such matters to change; and (2) the impact of the estimates and assumptions on financial condition or operating performance is material. Actual results could differ from the estimates and assumptions used.

Inventory Valuation

The cost of our petroleum and nitrogen fertilizer product inventories is determined under the FIFO method. Our FIFO inventories are carried at the lower of cost or net realizable value. We compare the estimated realizable value of inventories to their cost by product at each of our facilities. In our Petroleum Segment, to determine the net realizable value of our inventories, we assume that crude oil and other feedstocks are converted into refined products, which requires us to make estimates regarding the refined products expected to be produced from those feedstocks and the conversion costs required to convert those feedstocks into refined products. We also estimate the usual and customary transportation costs required to move the inventory from our plants to the appropriate points of sale, if material. We then apply an estimated selling price to our inventories based primarily on actual prices observed subsequent to the end of the reporting period with any remaining volumes' selling price estimated using indicative market pricing available as of the time the estimate is made. If the net realizable value is less than cost, we recognize a loss for the difference in our statements of operations. For our Nitrogen Fertilizer Segment, depending on inventory levels, the per-ton realizable value of our fertilizer products is estimated using pricing on in-transit orders, pricing for open, fixed-price orders that have not shipped, and, if volumes remain unaccounted for, current management pricing estimates for fertilizer products. Management's estimate for current pricing reflects up-to-date pricing in each facility's market as of the end of each reporting period. Reductions to selling prices for unreimbursed freight costs are included to arrive at net realizable value, as applicable. During the year ended December 31, 2020, we recognized losses on inventory of $59 million to reflect net realizable value, primarily associated with our Petroleum Segment. No amounts were recognized for the years ended December 31, 2021 and 2019. Due to the amount and variability in volume of inventories maintained, changes in production costs, and the volatility of market pricing for our products, losses recognized to reflect inventories at the lower of cost or net realizable value could have a material impact on the Company's results of operations.

Impairment of Long-lived Assets and Goodwill

Long-lived assets used in operations are assessed for impairment whenever changes in facts and circumstances indicate a possible significant deterioration in future expected cash flows. If the sum of the undiscounted expected future cash flows of an asset group is less than the carrying value, including applicable liabilities, the carrying value is written down to its estimated fair value. Individual assets are grouped for impairment purposes based on a judgmental assessment of the lowest level for which there are identifiable cash flows that are largely independent of the cash flows of other assets (for example, at a refinery or fertilizer facility level).

One of the reporting units associated with our Nitrogen Fertilizer Segment's Coffeyville, Kansas facility (the "Coffeyville Fertilizer Facility") had a goodwill balance of $41 million at December 31, 2019. During the second quarter of 2020, following the completion of the spring planting season, the market pricing for ammonia and UAN, the Nitrogen Fertilizer Segment's two primary products, experienced significant pricing declines driven by updated market expectations around supply and demand fundamentals which were expected to continue into the second half of 2020. Additionally, significant uncertainty remained as to the nature and extent of impacts to be seen on the overall demand for corn and soybean given reduced ethanol production and broader economic conditions which may negatively impact demand. Therefore, in connection with the preparation of the financial statements for the three months ended June 30, 2020, given the pricing declines experienced in the second quarter of 2020, further muting of our near-term economic recovery assumptions, and market price performance of CVR Partners' common units, the Company concluded an impairment indicator was present and a triggering event under Accounting Standards Codification ("ASC") Topic 350, *Intangibles-Goodwill and Other*, had occurred as of June 30, 2020. Significant assumptions inherent in the valuation methodologies for goodwill are employed and include, but are not limited to, prospective financial information, growth rates, discount rates, inflationary factors, and cost of capital. Based on the interim quantitative analysis, it was determined that the estimated fair value of the Coffeyville Fertilizer Facility reporting unit did not exceed its carrying value. As a result, the Company recorded a full, non-cash impairment charge of $41 million during the year ended December 31, 2020.

As there was no goodwill balance at December 31, 2021, no annual impairment review was performed. The Company performed its annual impairment review of goodwill for 2019 associated with the Coffeyville Fertilizer Facility reporting unit and concluded there were no impairments. For the period ended December 31, 2019, no events or circumstances were identified which would trigger the performance of a quantitative analysis after reviewing all qualitative factors impacting the Coffeyville Fertilizer Facility reporting unit, including improved market conditions, financial results, and financial forecasts from those used in the fair value analysis at December 31, 2018. For the period ended December 31, 2018, the fair value of the Coffeyville Fertilizer Facility reporting unit exceeded its carrying value by approximately 36% based upon the results of the reporting unit's goodwill impairment test.

Item 7A. *Quantitative and Qualitative Disclosures About Market Risk*

Our market risk sensitive instruments and positions have inherent risks including potential loss from adverse changes in commodity prices, RINs prices, and interest rates.

Commodity Price Risk

The Petroleum Segment, as a manufacturer of refined petroleum products, and the Nitrogen Fertilizer Segment, as a manufacturer of nitrogen fertilizer products, all of which are commodities, have exposure to market pricing for products sold in the future. In order to realize value from our processing capacity, a positive spread between the cost of raw materials and the value of finished products must be achieved (i.e., gross margin or crack spread). The physical commodities that comprise our raw materials and finished goods are typically bought and sold at a spot or index price that can be highly variable.

The Petroleum Segment uses a crude oil purchasing intermediary, Vitol, Inc., to purchase the majority of its non-gathered crude oil inventory for the refineries, which allows it to take title to and price its crude oil at locations in close proximity to the refineries, as opposed to the crude oil origination point, reducing its risk associated with volatile commodity prices by shortening the commodity conversion cycle time. The commodity conversion cycle time refers to the time elapsed between raw material acquisition and the sale of finished goods. In addition, the Petroleum Segment seeks to reduce the variability of commodity price exposure by engaging in hedging strategies and transactions that will serve to protect gross margin as forecasted in the annual operating plan. With regard to its hedging activities, the Petroleum Segment may enter into, or has entered into, derivative instruments which serve to (1) lock in or fix a percentage of the anticipated or planned gross margin in future periods when the derivative market offers commodity spreads that generate positive cash flows, (2) hedge the value of inventories in excess of minimum required inventories, and (3) manage existing derivative positions related to a change in anticipated operations and market conditions.

RFS Compliance Price Risk

As a producer of transportation fuels from crude oil, the Petroleum Segment is required to blend biofuels into the products it produces or purchase RINs in the open market in lieu of blending to meet the mandates established by the EPA. The Petroleum Segment is exposed to market risk related to volatility in the price of RINs needed to comply with the RFS that are not otherwise generated through blending of renewable fuels in our refining and marketing operations. To mitigate the impact of this risk on the Petroleum Segment's results of operations and cash flows, the Petroleum Segment blends ethanol and biodiesel to the extent possible. Additionally, in December 2020, the Board approved full funding for the development of a RDU at our Wynnewood Refinery, which we estimate will result in the generation of approximately 180 million RINs each year. We continually monitor the impact of the RFS on our business and evaluate strategies to mitigate the impacts of the RFS program, the administration thereof, and the market volatility for RINs on our business. Refer to Part I, Item 1A, "Risk Factors," Part II, Item 7, "Management's Discussion and Analysis" and Part II, Item 8, Note 11 ("Commitments and Contingencies"), of this Report for further discussion about compliance with the RFS and the potential impacts on our business.

Item 8. *Financial Statements and Supplementary Data*

CVR Energy, Inc. and Subsidiaries
INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders of CVR Energy, Inc.

Opinion on the financial statements

We have audited the accompanying consolidated balance sheets of CVR Energy, Inc. (a Delaware corporation) and subsidiaries (the “Company”) as of December 31, 2021 and 2020, the related consolidated statements of operations, changes in equity, and cash flows for each of the three years in the period ended December 31, 2021, and the related notes (collectively referred to as the “financial statements”). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2021 and 2020, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2021, in conformity with accounting principles generally accepted in the United States of America.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (“PCAOB”), the Company’s internal control over financial reporting as of December 31, 2021, based on criteria established in the 2013 *Internal Control - Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”), and our report dated February 22, 2022 expressed an unqualified opinion.

Basis for opinion

These financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on the Company’s financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical audit matter

The critical audit matter communicated below is a matter arising from the current period audit of the financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Petroleum Segment’s Inventory Finished Goods Valuation

As described in Note 2 to the financial statements, the Company utilizes the ability-to-bear methodology to determine the valuation of its Petroleum Segment’s finished goods inventories, which was $198 million at December 31, 2021. Management makes certain estimates based on observable inputs, including monthly sales prices and current market prices to determine how much raw materials and production costs are capitalized into inventories. Management then assesses if a lower of cost or net realizable value adjustment is required. Changes in these estimates could have a significant impact on the Company’s valuation of finished goods inventory.

We identified the Company’s Petroleum Segment’s finished goods inventory valuation process as a critical audit matter. The principal consideration for our determination that the inventory valuation process is a critical audit matter is the degree of complexity and subjectivity inherent in determining management’s valuation estimates.

Our audit procedures to evaluate the Company’s valuation of finished goods inventory included the following procedures to test management’s process, among others:

- We tested the design and operating effectiveness of management’s processes and controls for determining the valuation of finished goods inventory.
- We obtained a sample of invoices to verify the accuracy of the production costs used in estimates.
- We tested or evaluated the reasonableness of inputs including sales volumes, monthly sales prices, and current market prices for each product by obtaining third-party market prices and a sample of sales transactions by product to verify the accuracy of the information used by management.

/s/ GRANT THORNTON LLP

We have served as the Company’s auditor since 2013.
Dallas, Texas
February 22, 2022

Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders of CVR Energy, Inc.

Opinion on internal control over financial reporting

We have audited the internal control over financial reporting of CVR Energy, Inc. (a Delaware corporation) and subsidiaries (the "Company") as of December 31, 2021, based on criteria established in the 2013 *Internal Control — Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2021, based on criteria established in the 2013 *Internal Control - Integrated Framework* issued by COSO.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated financial statements of the Company as of and for the year ended December 31, 2021, and our report dated February 22, 2022 expressed an unqualified opinion on those financial statements.

Basis for opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and limitations of internal control over financial reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ GRANT THORNTON LLP

Dallas, Texas
February 22, 2022

CVR Energy, Inc. and Subsidiaries
CONSOLIDATED BALANCE SHEETS

(in millions)	December 31, 2021	December 31, 2020
ASSETS		
Current assets:		
Cash and cash equivalents (including $113 and $31, respectively, of consolidated variable interest entity (VIE))	**$ 510**	$ 667
Accounts receivable (including $88 and $37, respectively, of VIE)	**299**	178
Inventories (including $52 and $42, respectively, of VIE)	**484**	298
Prepaid expenses and other current assets (including $9 and $8, respectively, of VIE)	**76**	259
Total current assets	**1,369**	1,402
Property, plant and equipment, net (including $850 and $898, respectively, of VIE)	**2,273**	2,240
Other long-term assets (including $14 and $17, respectively, of VIE)	**264**	336
Total assets	**$ 3,906**	$ 3,978
LIABILITIES AND EQUITY		
Current liabilities:		
Note payable and finance lease obligations (including $0 and $2, respectively, of VIE)	**$ 6**	$ 8
Accounts payable (including $50 and $25, respectively, of VIE)	**409**	282
Other current liabilities (including $111 and $49, respectively, of VIE)	**741**	369
Total current liabilities	**1,156**	659
Long-term liabilities:		
Long-term debt and finance lease obligations, net of current portion (including $611 and $634, respectively, of VIE)	**1,654**	1,683
Deferred income taxes	**268**	368
Other long-term liabilities (including $12 and $8, respectively, of VIE)	**58**	49
Total long-term liabilities	**1,980**	2,100
Commitments and contingencies (See Note 11)		
CVR stockholders' equity:		
Common stock $0.01 par value per share, 350,000,000 shares authorized, 100,629,209 and 100,629,209 shares issued as of December 31, 2021 and 2020, respectively	**1**	1
Additional paid-in-capital	**1,510**	1,510
Retained deficit	**(956)**	(490)
Treasury stock, 98,610 shares at cost	**(2)**	(2)
Total CVR stockholders' equity	**553**	1,019
Noncontrolling interest	**217**	200
Total equity	**770**	1,219
Total liabilities and equity	**$ 3,906**	$ 3,978

The accompanying notes are an integral part of these consolidated financial statements.

CVR Energy, Inc. and Subsidiaries
CONSOLIDATED STATEMENTS OF OPERATIONS

(in millions, except per share data)	Year Ended December 31, 2021	2020	2019
Net sales	**$ 7,242**	$ 3,930	$ 6,364
Operating costs and expenses:			
Cost of materials and other	**6,185**	3,373	4,851
Direct operating expenses (exclusive of depreciation and amortization)	**569**	478	533
Depreciation and amortization	**270**	268	278
Cost of sales	**7,024**	4,119	5,662
Selling, general and administrative expenses (exclusive of depreciation and amortization)	**119**	86	117
Depreciation and amortization	**9**	10	9
Loss (gain) on asset disposal	**3**	7	(4)
Goodwill impairment	**—**	41	—
Operating income (loss)	**87**	(333)	580
Other (expense) income:			
Interest expense, net	**(117)**	(130)	(102)
Investment income on marketable securities	**81**	41	—
Other income, net	**15**	7	13
Income (loss) before income tax expense	**66**	(415)	491
Income tax (benefit) expense	**(8)**	(95)	129
Net income (loss)	**74**	(320)	362
Less: Net income (loss) attributable to noncontrolling interest	**49**	(64)	(18)
Net income (loss) attributable to CVR Energy stockholders	**$ 25**	$ (256)	$ 380
Basic and diluted earnings (loss) per share	**$ 0.25**	$ (2.54)	$ 3.78
Dividends declared per share	**$ 4.89**	$ 1.20	$ 3.05
Weighted-average common shares outstanding:			
Basic and diluted	**100.5**	100.5	100.5

The accompanying notes are an integral part of these consolidated financial statements.

CVR Energy, Inc. and Subsidiaries
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY

	Common Stockholders							
(in millions, except share data)	**Shares Issued**	**Common Stock**	**Additional Paid-In Capital**	**Retained Deficit**	**Treasury Stock**	**Total CVR Stockholders' Equity**	**Noncontrolling Interest**	**Total Equity**
Balance at December 31, 2018	100,629,209	$ 1	$ 1,474	$ (187)	$ (2)	$ 1,286	$ 657	$ 1,943
Dividends paid to CVR Energy stockholders	—	—	—	(306)	—	(306)	—	(306)
Distributions from CVR Partners to public unitholders	—	—	—	—	—	—	(30)	(30)
Acquisition of CVR Refining non-controlling interest	—	—	(2)	—	—	(2)	(334)	(336)
Effect of turnaround accounting change	—	—	35	—	—	35	—	35
Net income (loss)	—	—	—	380	—	380	(18)	362
Balance at December 31, 2019	100,629,209	1	1,507	(113)	(2)	1,393	275	1,668
Dividends paid to CVR Energy stockholders	—	—	—	(121)	—	(121)	—	(121)
Changes in equity due to CVR Partners' common unit repurchases	—	—	3	—	—	3	(11)	(8)
Net loss	—	—	—	(256)	—	(256)	(64)	(320)
Balance at December 31, 2020	100,629,209	1	1,510	(490)	(2)	1,019	200	1,219
Dividends paid to CVR Energy stockholders	**—**	**—**	**—**	**(492)**	**—**	**(492)**	**—**	**(492)**
Distributions from CVR Partners to public unitholders	**—**	**—**	**—**	**—**	**—**	**—**	**(31)**	**(31)**
Changes in equity due to CVR Partners' common unit repurchases	**—**	**—**	**—**	**—**	**—**	**—**	**(1)**	**(1)**
Other	**—**	**—**	**—**	**1**	**—**	**1**	**—**	**1**
Net income	**—**	**—**	**—**	**25**	**—**	**25**	**49**	**74**
Balance at December 31, 2021	**100,629,209**	**$ 1**	**$ 1,510**	**$ (956)**	**$ (2)**	**$ 553**	**$ 217**	**$ 770**

The accompanying notes are an integral part of these consolidated financial statements.

CVR Energy, Inc. and Subsidiaries
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Cash flows from operating activities:			
Net income (loss)	**$ 74**	$ (320)	$ 362
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Depreciation and amortization	**279**	278	287
Loss on lower of cost or net realizable value adjustments	**—**	59	—
Goodwill impairment	**—**	41	—
Deferred income taxes	**(98)**	(30)	24
(Gain) loss on marketable securities	**(81)**	(34)	—
Loss (gain) on asset disposal	**3**	7	(4)
(Gain) loss on derivatives	**(16)**	10	14
Share-based compensation	**46**	4	17
Other non-cash items	**12**	10	6
Changes in assets and liabilities:			
Accounts receivable	**(91)**	31	(40)
Inventories	**(182)**	9	(10)
Prepaid expenses and other current assets	**12**	(28)	16
Accounts payable	**122**	(121)	94
Deferred revenue	**27**	(2)	(15)
Other current liabilities	**290**	178	(1)
Other long-term assets and liabilities	**(1)**	(2)	(3)
Net cash provided by operating activities	**396**	90	747
Cash flows from investing activities:			
Capital expenditures	**(224)**	(124)	(121)
Turnaround expenditures	**(5)**	(159)	(38)
Proceeds from sale of assets	**7**	1	37
Acquisition of pipeline assets	**(20)**	—	—
Investment in marketable securities	**3**	(140)	—
Other investing activities	**1**	(1)	1
Net cash used in investing activities	**(238)**	(423)	(121)
Cash flows from financing activities:			
Proceeds from issuance of senior secured notes	**550**	1,000	—
Principal payments on senior secured notes	**(582)**	(500)	—
Call premium on extinguishment of debt	**—**	(5)	—
Repurchase of CVR Partners common units	**(1)**	(7)	—
Acquisition of CVR Refining common units	**—**	—	(301)
Dividends to CVR Energy’s stockholders	**(241)**	(121)	(306)
Distributions to CVR Partners’ noncontrolling interest holders	**(31)**	—	(30)
Other financing activities	**(10)**	(12)	(5)
Net cash (used in) provided by financing activities	**(315)**	355	(642)
Net (decrease) increase in cash and cash equivalents and restricted cash	**(157)**	22	(16)
Cash and cash equivalents and restricted cash, beginning of period	**674**	652	668
Cash and cash equivalents and restricted cash, end of period	**$ 517**	$ 674	$ 652

The accompanying notes are an integral part of these consolidated financial statements.

CVR Energy, Inc. and Subsidiaries
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(1) Organization and Nature of Business

Organization

CVR Energy, Inc. ("CVR Energy," "CVR," "we," "us," "our," or the "Company") is a diversified holding company primarily engaged in the petroleum refining and nitrogen fertilizer manufacturing industries through its holdings in CVR Refining, LP (the "Petroleum Segment" or "CVR Refining") and CVR Partners, LP (the "Nitrogen Fertilizer Segment" or "CVR Partners"). CVR Refining is an independent petroleum refiner and marketer of high value transportation fuels. CVR Partners produces and markets nitrogen fertilizers in the form of urea ammonium nitrate ("UAN") and ammonia. CVR's common stock is listed on the New York Stock Exchange ("NYSE") under the symbol "CVI." Icahn Enterprises L.P. and its affiliates ("IEP") owned approximately 71% of the Company's outstanding common shares as of December 31, 2021.

Stock Repurchase Program

On October 23, 2019, the Board of Directors authorized a stock repurchase program (the "Stock Repurchase Program"). The Stock Repurchase Program enables the Company to repurchase up to $300 million of the Company's common stock. Repurchases under the Stock Repurchase Program may be made from time-to-time through open market transactions, block trades, privately negotiated transactions or otherwise in accordance with applicable securities laws. The timing, price and amount of repurchases (if any) will be made at the discretion of management and are subject to market conditions as well as corporate, regulatory and other considerations. While the Stock Repurchase Program currently has a duration of four years, it does not obligate the Company to acquire any stock and may be terminated by the Board of Directors at any time. We did not repurchase any of our common stock during the years ended December 31, 2021, 2020, and 2019.

CVR Refining, LP

On January 17, 2019, the general partner of CVR Refining assigned to the Company its right to purchase all of the issued and outstanding CVR Refining common units not already owned by CVR Refining's general partner or its affiliates. On January 29, 2019, the Company purchased all remaining CVR Refining common units not already owned by the Company or its affiliates for a cash purchase price of $10.50 per unit (the "Call Price"), or approximately $241 million in the aggregate (the "Public Unit Purchase"). In conjunction with the exercise of its call right for all CVR Refining common units not already owned by the Company or its affiliates, the Company entered into a purchase agreement with American Entertainment Properties Corporation ("AEP") and IEP, pursuant to which, on January 29, 2019, all of the Common Units held by AEP and IEP were purchased by the Company for a cash price per unit equal to the Call Price, or approximately $60 million in the aggregate (the "Affiliate Unit Purchase" together with the Public Unit Purchase, the "CVRR Unit Purchase"). The total purchase price of $301 million was funded with approximately $105 million in borrowings under a new credit agreement entered into by the Company on January 29, 2019, with the remaining amount being funded from the Company's cash on hand. Amounts drawn under the new credit agreement were fully repaid in February 2019. The consolidated results of operations and financial position of CVR Refining are reflected as CVR's Petroleum Segment. Following this transaction, CVR Refining became a wholly-owned subsidiary of the Company and, therefore, is no longer accounted for as a variable interest entity ("VIE"). Effective February 8, 2019, CVR Refining's reporting obligations under the Exchange Act were suspended.

CVR Partners, LP

Interest Holders - As of December 31, 2021, public common unitholders held approximately 64% of CVR Partners' outstanding common units, and CVR Services, LLC ("CVR Services"), a wholly-owned subsidiary of CVR Energy, held approximately 36% of CVR Partners' outstanding common units. In addition, CVR Services held 100% of CVR Partners' general partner, CVR GP, LLC ("CVR GP"), which held a non-economic general partner interest in CVR Partners as of December 31, 2021. Following the acquisition of the non-controlling interest in CVR Refining in January 2019, the non-controlling interest reflected on the Consolidated Balance Sheets of CVR is only impacted by the net income of, and distributions from, CVR Partners.

Unit Repurchase Program - On May 6, 2020, CVR Partners announced that the board of directors of its general partner (the "UAN GP Board"), on behalf of CVR Partners, authorized a unit repurchase program (the "Unit Repurchase Program").

The Unit Repurchase Program enabled CVR Partners to repurchase up to $10 million of its common units. On February 22, 2021, the UAN GP Board authorized an additional $10 million for the Unit Repurchase Program. During the year ended December 31, 2021, CVR Partners repurchased 24,378 common units on the open market in accordance with a repurchase agreement under Rules 10b5-1 and 10b-18 of the Securities Exchange Act of 1934, as amended, at a cost of $1 million, inclusive of transaction costs, or an average price of $21.70 per common unit. During the year ended December 31, 2020, as adjusted to reflect the impact of the 1-for-10 reverse unit split of CVR Partners's common units that was effective as of November 23, 2020, CVR Partners repurchased 623,177 common units, respectively, at a cost of $7 million, inclusive of transaction costs, or an average price of $11.35 per common unit. As of December 31, 2021, CVR Partners had $12 million in authority remaining under the Unit Repurchase Program. This Unit Repurchase Program does not obligate CVR Partners to acquire any common units and may be cancelled or terminated by the UAN GP Board at any time.

As a result of these repurchases, and the resulting change in CVR Energy's ownership of CVR Partners while maintaining control, CVR Energy recognized a nominal increase to additional paid-in capital from the reduction of non-controlling interests totaling $0.1 million and the recognition of a deferred tax liability totaling $0.1 million from changes in its book versus tax basis in CVR Partners as of December 31, 2021. CVR Energy recognized an increase of $3 million to additional paid-in capital from the non-cash reduction of non-controlling interests totaling $4 million and the recognition of a deferred tax liability totaling $1 million from changes in its book versus tax basis in CVR Partners as of December 31, 2020.

Subsequent Events

The Company evaluated subsequent events, if any, that would require an adjustment to the Company's consolidated financial statements or require disclosure in the notes to the consolidated financial statements through the date of issuance of the consolidated financial statements. Where applicable, the notes to these consolidated financial statements have been updated to discuss all significant subsequent events which have occurred.

(2) Summary of Significant Accounting Policies

Principles of Consolidation

The accompanying consolidated financial statements, prepared in accordance with U.S. generally accepted accounting principles ("GAAP") and in accordance with the rules and regulations of the Securities and Exchange Commission ("SEC"), include the accounts of the Company and its majority-owned direct and indirect subsidiaries. All intercompany accounts and transactions have been eliminated. The ownership interests of noncontrolling investors in the Company's subsidiaries are recorded as noncontrolling interests. CVR Energy has not recognized any other comprehensive income for the periods ended December 31, 2021, 2020, and 2019.

CVR Partners is considered a VIE. As the 100% owner of the general partner of CVR Partners, the Company has the sole ability to direct the activities that most significantly impact the economic performance of CVR Partners and is considered to be the primary beneficiary. In January 2019, following the CVRR Unit Purchase, CVR Refining was no longer considered a VIE and is accounted for as a wholly-owned subsidiary.

Investments in entities over which the Company has significant influence, but not control, are accounted for using the equity method of accounting. Income from equity method investments represents CVR Energy's proportionate share of net income generated by the equity method investees and is recorded in Other income, net on the Company's Consolidated Statements of Operations.

Reclassifications

Certain reclassifications have been made within the consolidated financial statements for prior periods to conform with current presentation.

Use of Estimates

The consolidated financial statements are prepared in conformity with GAAP, which requires management to make estimates and assumptions that affect the reported amounts and disclosure of assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Estimates are reviewed on an ongoing basis, based on currently available information. Changes in facts and circumstances may result in revised estimates, and actual results could differ from those estimates.

Cash and Cash Equivalents

Cash and cash equivalents include cash on hand and on deposit, investments in highly liquid money market accounts, and debt instruments with original maturities of three months or less.

Restricted Cash

Restricted cash consists of cash that must be maintained in a commercial escrow account pending resolution of certain litigation matters and is discussed further in Note 11 (“Commitments and Contingencies”).

Accounts Receivable, net

Accounts receivable, net primarily consist of customer accounts receivable recorded at the invoiced amounts and generally do not bear interest. Also included within accounts receivable of the Nitrogen Fertilizer Segment are unbilled fixed price contracts which is discussed further within Note 7 (“Revenue”).

Allowances for doubtful accounts are generally recorded when it becomes probable the receivable will not be collected and is booked to bad debt expense. The largest concentration of credit for any one customer was approximately 8% and 11% of the net accounts receivable balance at December 31, 2021 and 2020, respectively. During the year ended December 31, 2021, 2020 and 2019, the Company had nominal bad debt expense.

Inventories

Inventories consist primarily of domestic and foreign crude oil, blending stock and components, work-in-progress, fertilizer products, and refined fuels and by-products. All inventories are valued at the lower of GAAP First-In, First-Out (“FIFO”) cost, or net realizable value. The Petroleum Segment’s unfinished and finished products inventory values were determined using the ability-to-bear methodology. Other inventories in the Petroleum and Nitrogen Fertilizer Segments, including other raw materials, spare parts, and supplies, are valued at the lower of moving-average cost, which approximates FIFO, or net realizable value. The cost of inventories includes inbound freight costs.

The carrying amounts of the Petroleum Segment’s inventories exceeded their net realizable value (market value) by $58 million resulting in the recognition of a lower of cost or net realizable value adjustment as of March 31, 2020. The $58 million loss represents the difference between the carrying value of the Petroleum Segment’s inventories accounted for using the FIFO method and selling prices for refined products subsequent to March 31, 2020. No adjustment was necessary as of December 31, 2021 or December 31, 2020.

Inventories consisted of the following:

	December 31,	
(in millions)	**2021**	**2020**
Finished goods	**$ 215**	$ [illegible]
Raw materials	**177**	[illegible]
In-process inventories	**20**	[illegible]
Parts and supplies	**72**	[illegible]
Total inventories	**$ 484**	$ [illegible]

At December 31, 2021 and 2020, inventories related to the Nitrogen Fertilizer Segment included depreciation of approximately $3 million and $2 million, respectively.

Property, Plant and Equipment, net

Additions to property, plant and equipment, including capitalized interest and certain costs allocable to construction and property purchases, are recorded at cost. Expenditures for improvements that increase economic benefit or returns and/or extend useful life are capitalized. Depreciation is computed using the straight-line method over the estimated useful lives of the various classes of depreciable assets. The lives used in computing depreciation for significant asset classes are as follows:

Asset	Range of Useful Lives, in Years
Land and improvements	10 to 30
Buildings and improvements	1 to 30
Machinery and equipment	1 to 30
Furniture and fixtures	3 to 10
Right-of-use ("ROU") finance leases	3 to 18
Other	5 to 30

Property, plant and equipment, net consisted of the following:

	December 31,	
(in millions)	2021	2020
Machinery and equipment	$ **4,033**	$ 3,88
Buildings and improvements	**88**	8
ROU finance leases	**81**	8
Land and improvements	**71**	4
Furniture and fixtures	**37**	3
Construction in progress	**142**	10
Other	**15**	1
	4,467	4,24
Less: Accumulated depreciation	**(2,194)**	(2,00
Total property, plant and equipment, net	$ **2,273**	$ 2,24

Leasehold improvements and assets held under finance leases are depreciated or amortized on the straight-line method over the shorter of the contractual lease term or the estimated useful life of the asset. Expenditures for routine maintenance and repair costs are expensed when incurred. Such expenses are reported in Direct operating expenses (exclusive of depreciation and amortization) in the Company's Consolidated Statements of Operations.

On May 21, 2019, a subsidiary of CVR Energy sold its crude oil storage terminal located in Cushing, Oklahoma and related assets (the "Terminal"). As part of this transaction, the Company received cash consideration of $43 million for the Terminal and related crude oil inventories resulting in a recognition of a gain on sale of $10 million. The carrying value of the inventory sold as part of this transaction has been presented on a net basis, with the proceeds on sale, within the net cash used in investing section of the Consolidated Statements of Cash Flows.

As of December 31, 2021, the Company had not identified the existence of an impairment indicator for its long-lived asset groups as outlined under Accounting Standards Codification ("ASC") Topic 360, *Property, Plant, and Equipment*.

Leases

At inception, the Company determines whether an arrangement is a lease and the appropriate lease classification. Operating leases are included as operating lease ROU assets within Other long-term assets and lease liabilities within Other current liabilities and Other long-term liabilities on our Consolidated Balance Sheets. Finance leases are included as ROU finance leases within Property, plant, and equipment, net, and finance lease liabilities within Note payable and finance lease obligations and Long-term debt and finance lease obligations, net of current portion on our Consolidated Balance Sheets. Leases with an initial expected term of 12 months or less are considered short-term and are not recorded on our Consolidated Balance Sheets. The Company recognizes lease expense for these leases on a straight-line basis over the expected lease term.

ROU assets represent the Company's right to use an underlying asset for the lease term, and lease liabilities represent the obligation to make lease payments arising from the lease. ROU assets and liabilities are recognized at the commencement date based on the present value of minimum lease payments over the lease term using an incremental borrowing rate with a maturity similar to the lease term, as our leases do not generally provide an implicit rate. The lease term is modified to reflect options to extend or terminate the lease when it is reasonably certain we will exercise such option. The depreciable life of assets and leasehold improvements is limited by the expected lease term, unless there is a transfer of title or purchase option reasonably certain of exercise, in which case the depreciation policy in the "Property, Plant and Equipment, net" section above is applicable. The periodic lease payments are treated as payments of the lease obligation and interest is recorded as interest expense.

Deferred Financing Costs

Lender and other third-party costs associated with debt issuances are deferred and amortized to interest expense and other financing costs using the effective-interest method over the life of the debt. Deferred financing costs related to line-of-credit arrangements are amortized using the straight-line method through the maturity date of the facility. The deferred financing costs are included net within Long-term debt and finance lease obligations, net of current portion and in Other long-term liabilities for the line-of-credit arrangements where no debt balance exists.

Impairment of Long-Lived Assets and Goodwill

Long-lived assets (excluding goodwill, intangible assets with indefinite lives, and deferred tax assets) are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to estimated undiscounted future net cash flows expected to be generated by the asset. If the carrying amount of an asset exceeds its estimated undiscounted future net cash flows, an impairment charge is recognized for the amount by which the carrying amount of the asset exceeds their fair value. Assets to be disposed of are reported at the lower of their carrying value or fair value less cost to sell.

Goodwill represents the excess of the cost of an acquired entity over the fair value of the assets acquired less liabilities assumed. Intangible assets are assets that lack physical substance (excluding financial assets). Goodwill acquired in a business combination and intangible assets with indefinite useful lives are not amortized, while intangible assets with finite useful lives are amortized. Goodwill and intangible assets not subject to amortization are tested for impairment annually or more frequently if events or changes in circumstances indicate the asset might be impaired. The Company uses November 1 of each year as its annual valuation date for its goodwill impairment test.

One of the reporting units associated with our Nitrogen Fertilizer Segment's Coffeyville, Kansas facility (the "Coffeyville Fertilizer Facility") had a goodwill balance of $41 million at December 31, 2019. During the second quarter of 2020, following the completion of the spring planting season, the market pricing for ammonia and UAN, the Nitrogen Fertilizer Segment's two primary products, experienced significant pricing declines driven by updated market expectations around supply and demand fundamentals which were expected to continue into the second half of 2020. Additionally, significant uncertainty remained as to the nature and extent of impacts to be seen on the overall demand for corn and soybean given reduced ethanol production and broader economic conditions which may negatively impact demand. Therefore in connection with the preparation of the financial statements for the three months ended June 30, 2020, given the pricing declines experienced in the second quarter of 2020, further muting of our near-term economic recovery assumptions, and market price performance of CVR Partners' common units, the Company concluded an impairment indicator was present and a triggering event under ASC Topic 350, *Intangibles-Goodwill and Other*, had occurred as of June 30, 2020. Significant assumptions inherent in the valuation methodologies for goodwill are employed and include, but are not limited to, prospective financial information, growth rates, discount rates, inflationary factors, and cost of capital. Based on the interim quantitative analysis, it was determined that the estimated fair value of the Coffeyville Fertilizer Facility reporting unit did not exceed its carrying value. As a result, the Company recorded a full, non-cash impairment charge of $41 million during the year ended December 31, 2020.

As there was no goodwill balance at December 31, 2021 or 2020, no annual impairment review was performed. The Company performed its annual impairment review of goodwill for 2019 associated with the Coffeyville Fertilizer Facility reporting unit and concluded there were no impairments. For the period ended December 31, 2019, no events or circumstances were identified which would trigger the performance of a quantitative analysis after reviewing all qualitative factors impacting the reporting unit including improved market conditions, financial results, and financial forecasts from those used in the fair value analysis for December 31, 2018, which resulted in the fair value of the Coffeyville Fertilizer Facility reporting unit exceeding its carrying value by approximately 36%.

Loss Contingencies

In the ordinary course of business, the Company may become party to lawsuits, administrative proceedings, and governmental investigations, including environmental, regulatory, and other matters. The outcome of these matters cannot always be predicted accurately, but the Company accrues liabilities for these matters if the Company has determined that it is probable a loss has been incurred and the loss can be reasonably estimated. Accrued amounts are reflected in Other current liabilities or Other long-term liabilities depending on when the Company expects to expend such amounts. Refer to Note 11 (“Commitments and Contingencies”) for further discussion.

Environmental, Health & Safety (“EHS”) Matters

The Petroleum Segment and Nitrogen Fertilizer Segment are subject to various federal, state, and local environmental, health, and safety rules and regulations. Liabilities related to future remediation costs of past environmental contamination of properties are recognized when the related costs are considered probable and can be reasonably estimated. Estimates of these costs are based upon currently available facts, internal and third-party assessments of contamination, available remediation technology, site-specific costs, and currently enacted laws and regulations. In reporting environmental liabilities, no offset is made for potential recoveries. Loss contingency accruals, including those for environmental remediation, are subject to revision as further information develops or circumstances change, and such accruals can take into account the legal liability of other parties. Management periodically reviews and, as appropriate, revises its environmental accruals. Environmental expenditures for capital assets are capitalized at the time of the expenditure when such costs provide future economic benefits. Accrued amounts are reflected in Other current liabilities or Other long-term liabilities depending on when the Company expects to expend such amounts. Refer to Note 11 (“Commitments and Contingencies”) for further discussion.

Revenue Recognition

The Company recognizes revenue based on consideration specified in contracts or agreements with customers when performance obligations are satisfied by transferring control over products or services to a customer. The Company’s revenue recognition patterns are described below by reportable segment.

- *Petroleum Segment* - The vast majority of Petroleum Segment contracts contain pricing that is based on the market price for the product at the time of delivery. Obligations to deliver product volumes are typically satisfied and revenue is recognized when control of the product transfers to customers. Concurrent with the transfer of control, the right to payment for the delivered product is received, the customer accepts the product, and the customer has significant risks and rewards of ownership of the product. Payment terms require customers to pay shortly after delivery and do not contain significant financing components. Any pass-through finished goods delivery costs reimbursed by customers are reported in Net sales, while an offsetting expense is included in Cost of materials and other. Non-monetary product exchanges and certain buy/sell transactions which are entered into in the normal course of business are included on a net cost basis in Cost of materials and other on the Consolidated Statements of Operations.
- *Nitrogen Fertilizer Segment* - Revenue is recognized based on consideration specified in contracts or agreements with customers when performance obligations are satisfied by transferring control over products or services to a customer. The adoption of ASC Topic 606, *Revenue from Contracts with Customers*, resulted in the recognition of deferred revenue and related receivables, on a gross basis, associated with contracts that guarantee a price and supply of nitrogen fertilizer products in quantities expected to be delivered in the normal course of business.

Other considerations - For both segments, excise and other taxes collected from customers and remitted to governmental authorities are excluded from reported revenues.

Cost Classifications

Cost of materials and other includes cost of crude oil, other feedstocks, blendstocks, purchased refined products, purchased ammonia, purchased hydrogen, pet coke expenses, Renewable Identification Number ("RIN") expenses, derivative gains or losses, and freight and distribution costs. Direct operating expenses (exclusive of depreciation and amortization) consist primarily of energy and other utility costs, direct costs of labor, including applicable share-based compensation expense, property taxes, plant-related maintenance services, including turnaround, and environmental and safety compliance costs, as well as catalyst and chemical costs. Selling, general and administrative expenses (exclusive of depreciation and amortization) consist primarily of labor and other direct expenses associated with the Company's corporate activities, including accounting, finance, information technology, human resources, legal, and other related administrative functions. For the Company's Nitrogen Fertilizer Segment, each of these financial statement line items are also impacted by changes in inventory balances.

Derivatives and Fair Value of Financial Instruments

The Petroleum Segment uses futures contracts, swaps, and forward contracts primarily to reduce exposure to changes in crude oil and finished goods product prices to provide economic hedges of inventory positions. These derivative instruments do not qualify as hedges for hedge accounting purposes under ASC Topic 815, *Derivatives and Hedging*, and accordingly are recorded at fair value at the end of each reporting period based on quoted market prices. The Nitrogen Fertilizer Segment may enter into forward contracts with fixed delivery prices to purchase portions of its natural gas requirements. These natural gas contracts are not treated as derivatives under normal purchase and normal sale exclusions. Accordingly, the fair value of these contracts are not recorded at the end of each reporting period. Refer to Note 8 ("Derivative Financial Instruments, Investments and Fair Value Measurements") for further discussion of the Company's derivative activity.

Other financial instruments consisting of cash and cash equivalents, restricted cash, accounts receivable, and accounts payable are carried at cost, which approximates fair value, as a result of the short-term nature of the instruments. Refer to Note 8 ("Derivative Financial Instruments, Investments and Fair Value Measurements") for further fair value disclosures.

Turnaround Expenses

Turnarounds represent major maintenance activities that require the shutdown of significant parts of a plant to perform necessary inspection, cleaning, repairs, and replacements of assets. Costs incurred for routine repairs and maintenance or unplanned outages at our facilities are expensed as incurred. Planned turnaround activities for the Petroleum Segment vary in frequency dependent on refinery units, but generally occur every four to five years, while the frequency of turnarounds in the Nitrogen Fertilizer Segment is every two to three years. Further details of each segment's turnaround expensing method are discussed below.

Petroleum Segment - The Petroleum Segment follows the deferral method of accounting for turnaround activities. Under the deferral method, the costs of turnarounds are deferred and amortized on a straight-line basis over a four-year period of time, which represents the estimated time until the next turnaround occurs. The deferral method of accounting for turnarounds is considered preferable as it is more consistent with the accounting policy of our peer companies and better reflects the economic substance of the benefits earned from turnaround expenditures. Turnaround costs, and related accumulated amortization, are included in the Consolidated Balance Sheets as Other long-term assets. The amortization expense related to turnaround costs is included in Depreciation and amortization in the Consolidated Statements of Operations. During the years ended December 31, 2021, 2020, and 2019, the Petroleum Segment capitalized $8 million, $155 million, and $38 million, respectively.

Nitrogen Fertilizer Segment - The Nitrogen Fertilizer Segment follows the direct-expense method of accounting for turnaround activities. Costs associated with these turnaround activities were included in Direct operating expenses (exclusive of depreciation and amortization) in the Consolidated Statements of Operations. During the years ended December 31, 2021, 2020, and 2019, the Nitrogen Fertilizer Segment incurred turnaround expenses of $3 million, $1 million, and $10 million, respectively.

Share-Based Compensation

The Company accounts for share-based compensation in accordance with ASC Topic 718, *Compensation — Stock Compensation* ("ASC 718"). Currently, all of the Company's share-based compensation awards, including those issued by CVR Refining and CVR Partners, are liability-classified and are measured at fair value at the end of each reporting period based on the applicable closing unit price. Compensation expense will fluctuate based on changes in the applicable share or unit prices and expense reversals resulting from employee terminations prior to award vesting. Additionally, the Company has issued certain performance unit awards. The fair value of these performance unit awards is recognized as compensation expense only if the attainment of the performance conditions is considered probable. Uncertainties involved in this estimate include continued employment requirements and whether or not the performance conditions will be attained. The performance objectives are set in accordance with approved levels of the business plan for the fiscal year during the performance cycle and, therefore, are considered reasonably possible of being achieved. If this assumption proves not to be true and the awards do not vest, compensation expense recognized during the performance cycle will be reversed. See Note 9 (“Share-Based Compensation”) for further discussion.

Income Taxes

Income taxes are accounted for utilizing the asset and liability approach. Under this method, deferred tax assets and liabilities are recognized for the anticipated future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax basis. Deferred amounts are measured using enacted tax rates expected to apply to taxable income in the year those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date. In assessing the realizability of the deferred income tax assets, including net operating loss and state tax credit carryforwards, management considers whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of deferred income tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. Management considers the scheduled reversal of deferred income tax liabilities, projected future taxable income, and tax planning strategies in making this assessment. Further, the Company recognizes interest expense (income) and penalties on uncertain tax positions and income tax deficiencies (refunds) in Income tax (benefit) expense.

Earnings Per Share

There were no dilutive awards outstanding during the years ended December 31, 2021, 2020, and 2019.

Recent Accounting Pronouncements - ***Adoption of Income Tax Standard***

In December 2019, the Financial Accounting Standards Board (“FASB”) issued Accounting Standard Update (“ASU”) 2019-12, Income Taxes (Topic 740). The ASU simplifies the accounting for income taxes by removing certain exceptions to the general principles in Topic 740 and modifies other areas of the topic to clarify the application of GAAP. Certain amendments within the standard are required to be applied on a retrospective basis and others on a prospective basis. Effective January 1, 2021, we adopted this ASU with no material impact on the Company’s consolidated financial position or results of operations.

Recent Accounting Pronouncements - ***Adoption of Codification Improvements Standard***

In October 2020, the FASB issued ASU 2020-10, Codification Improvements. The ASU amends various sections of the codification in the FASB’s ongoing efforts to simplify and improve guidance. Effective January 1, 2021, we adopted this ASU with no material impact on the Company’s consolidated financial position or results of operations.

Recent Accounting Pronouncements - ***New Accounting Standards Issued But Not Yet Implemented***

In March 2020, the FASB issued ASU 2020-04, Reference Rate Reform (Topic 848). This ASU was issued because, by the end of 2022, banks will no longer be required to report information that is used to determine London Interbank Offered Rate (“LIBOR”), which is used globally by all types of entities. As a result, LIBOR could be discontinued, as well as other interest rates used globally. ASU 2020-04 provides companies with optional expedients for contract modifications under Topics 310, 470, 842, and 815-15, excluded components of certain hedging relationships, fair value hedges, and cash flow hedges, as well as certain exceptions, which are intended to help ease the potential accounting burden associated with transitioning away from these reference rates. In January 2021, the FASB issued ASU 2021-01, Reference Rate Reform (Topic 848), which clarifies certain optional expedients and exceptions for contract modifications and hedge accounting. Companies can apply the ASU immediately. However, the guidance will only be available for a limited time (generally through December 31, 2022). The Company is currently evaluating the impact of adopting this new accounting standard, but does not expect it to have a material impact on its consolidated financial statements and related disclosures.

(3) Equity Method Investments

For each of the following investments, CVR Refining has the ability to exercise influence through its participation in the management committees, which make all significant decisions. However, since CVR Refining has equal or proportionate influence over each committee as a joint partner without regard to its economic interest and does not serve as the day-to-day operator, we have determined that these entities should not be consolidated and have applied the equity method of accounting.

- *Enable South Central Pipeline, LLC* ("Enable JV") - CVR Refining owns a 40% interest in Enable JV, which operates a 12-inch 26-mile crude oil pipeline with a capacity of approximately 115,000 barrels per day that is connected to the Wynnewood Refinery. The remaining interest in Enable JV is owned by Enable Midstream Partners, LP, which was merged with Energy Transfer LP in December 2021.
- *Midway Pipeline, LLC* ("Midway JV") - CVR Refining owns a 50% interest in Midway JV, which operates a 16-inch 99-mile crude oil pipeline with a capacity of approximately 150,000 barrels per day which connects the Coffeyville Refinery to the Cushing Oklahoma oil hub. The remaining interest in Midway JV is owned by Plains Pipeline, L.P.

(in millions)	Enable JV	Midway JV	Total
Balance at December 31, 2019	6	75	81
Cash Distributions	(4)	(6)	(10)
Equity income	4	5	9
Balance at December 31, 2020	6	74	80
Cash Distributions	**(3)**	**(8)**	**(11)**
Equity income	**3**	**7**	**10**
Balance at December 31, 2021	**$ 6**	**$ 73**	**$ 79**

(4) Leases

Lease Overview

We lease certain pipelines, storage tanks, railcars, office space, land, and equipment across our refining, fertilizer, and corporate operations. Most leases include one or more options to renew, with renewal terms that can extend the lease term from one to 20 years or more. The exercise of lease renewal options is at our sole discretion. Certain leases also include options to purchase the leased property. Certain of our lease agreements include rental payments which are adjusted periodically for factors such as inflation. Our lease agreements do not contain any material residual value guarantees or material restrictive covenants. Additionally, we do not have any material lessor or sub-leasing arrangements.

Balance Sheet Summary as of December 31, 2021 and 2020

The following table summarizes the right of use asset and lease liability balances for the Company's operating and finance leases at December 31, 2021 and 2020:

	December 31, 2021		December 31, 2020	
(in millions)	Operating Leases	Finance Leases	Operating Leases	Finance Leases
ROU assets, net				
Pipeline and storage	**$ 17**	**$ 23**	$ 15	$ [illegible]
Railcars	**6**	**—**	8	[illegible]
Real estate and other	**14**	**18**	14	[illegible]
Lease liability				
Pipelines and storage	**$ 17**	**$ 35**	$ 16	$ [illegible]
Railcars	**6**	**—**	8	[illegible]
Real estate and other	**14**	**19**	14	[illegible]

Lease Expense Summary for the Year Ended December 31, 2021, 2020 and 2019

We recognize lease expense on a straight-line basis over the lease term and short-term lease expense within Direct operating expenses (exclusive of depreciation and amortization). For the year ended December 31, 2021, 2020, and 2019, we recognized lease expense comprised of the following components:

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Operating lease expense	**$ 15**	$ 17	$ [illegible]
Finance lease expense:			
Amortization of ROU asset	**$ 6**	$ 6	$
Interest expense on lease liability	**5**	6	
Short-term lease expense	**$ 7**	$ 8	$

Lease Terms and Discount Rates

The following outlines the remaining lease terms and discount rates used in the measurement of the Company's ROU assets and liabilities:

	December 31, 2021		December 31, 2020	
	Operating Leases	Finance Leases	Operating Leases	Finance Leases
Weighted-average remaining lease term	**4.1 years**	**7.2 years**	3.1 years	8.1 ye
Weighted-average discount rate	**5.4 %**	**9.0 %**	5.5 %	9.0

Maturities of Lease Liabilities

The following summarizes the remaining minimum lease payments through maturity of the Company's right-of-use assets and liabilities at December 31, 2021:

(in millions)	Operating Leases	Finance Leases
Year Ended December 31,		
2022	**$ 14**	**$ [illegible]**
2023	**12**	**[illegible]**
2024	**8**	**[illegible]**
2025	**3**	**[illegible]**
2026	**1**	**[illegible]**
Thereafter	**4**	**[illegible]**
Total lease payments	**42**	**[illegible]**
Less: imputed interest	**(5)**	**([illegible]**
Total lease liability	**$ 37**	**$ [illegible]**

On July 31, 2020, Coffeyville Resources Nitrogen Fertilizers, LLC ("CRNF"), a subsidiary of CVR Partners, and Messer LLC ("Messer") entered into an On-Site Product Supply Agreement (the "Messer Agreement"). On February 21, 2022, CRNF entered into the First Amendment to the On-Site Product Supply Agreement (the "Messer Amendment", and collectively, the "Amended Messer Agreement") with Messer. Under the Amended Messer Agreement, among other obligations, Messer is obligated to supply and make certain capital improvements during the term of the Amended Messer Agreement, and CRNF is obligated to take as available and pay for, oxygen, nitrogen, and compressed dry air from Messer's facility. This arrangement for CRNF's purchase of oxygen, nitrogen, and dry air from Messer does not meet the definition of a lease under FASB Accounting Standards Codification ("ASC") Topic 842, *Leases*, ("Topic 842"), as CRNF does not expect to receive substantially all of the output of Messer's on-site production from its air separation unit over the life of the Amended Messer Agreement. The Amended Messer Agreement also obligates Messer to install a new oxygen storage vessel, related equipment and infrastructure ("Oxygen Storage Vessel" or "Vessel") to be used solely by the Coffeyville Fertilizer Facility. This arrangement for the use of the Oxygen Storage Vessel meets the definition of a lease under Topic 842, as CRNF will receive all output associated with the Vessel. Based on terms outlined in the Amended Messer Agreement, the Company expects the lease of the Oxygen Storage Vessel to be classified as a financing lease with an amount of approximately $25 million being capitalized upon lease commencement when the Vessel is placed in service.

(5) Other Current Liabilities

Other current liabilities were as follows:

	December 31,	
(in millions)	**2021**	**2020**
Accrued Renewable Fuel Standards (“RFS”) obligation	**$ 494**	$ [illegible]
Deferred revenue	**87**	[illegible]
Personnel accruals	**46**	[illegible]
Accrued taxes other than income taxes	**45**	[illegible]
Accrued interest	**24**	[illegible]
Share-based compensation	**15**	[illegible]
Operating lease liabilities	**13**	[illegible]
Accrued derivatives	**2**	[illegible]
Other accrued expenses and liabilities	**15**	[illegible]
Total other current liabilities	**$ 741**	$ [illegible]

(6) Long-Term Debt and Finance Lease Obligations

	December 31,	
(in millions)	**2021**	**2020**
CVR Partners:		
9.25% Senior Secured Notes, due June 2023 [1]	**$ 65**	$ 645
6.125% Senior Notes, due June 2028	**550**	—
Unamortized discount and debt issuance costs	**(4)**	(11)
Total CVR Partners debt	**$ 611**	$ 634
CVR Refining:		
Finance lease obligations, net of current portion [2]	**48**	55
Total CVR Refining debt	**48**	55
CVR Energy:		
5.250% Senior Notes, due February 2025	**$ 600**	$ 600
5.750% Senior Notes, due February 2028	**400**	400
Unamortized debt issuance cost	**(5)**	(6)
Total CVR Energy debt	**995**	994
Total long-term debt and finance lease obligations	**$ 1,654**	$ 1,683
Current portion of long-term debt and finance lease obligations [2] [3]	**6**	8
Total long-term debt and finance lease obligations, including current portion	**$ 1,660**	$ 1,691

(1) The call price of the 9.25% Senior Secured Notes due June 2023 (the “2023 UAN Notes”) decreased to par on June 15, 2021. On June 23, 2021, September 23, 2021, and December 22, 2021, CVR Partners redeemed $550 million, $15 million, and $15 million, respectively, of the 2023 UAN Notes, at par, plus accrued and unpaid interest on the redeemed portion. The remaining balance of $65 million was outstanding as of December 31, 2021. The $65 million outstanding balance of the 2023 UAN Notes was paid in full on February 22, 2022 at par, plus accrued and unpaid interest.
(2) Current portion of finance lease obligations was approximately $6 million and $6 million as of December 31, 2021 and 2020, respectively.
(3) The $2 million outstanding balance of the 6.50% Notes, due April 2021, was paid in full on April 15, 2021.

Credit Agreements

(in millions)	Total Capacity	Amount Borrowed as of December 31, 2021	Outstanding Letters of Credit	Available Capacity as of December 31, 2021	Maturity Date
CVR Partners:					
Asset Based (“Nitrogen Fertilizer ABL”) Credit Agreement [1] [2]	$ 35	$ —	$ —	$ 35	September 30, 2024
CVR Refining:					
Amended and Restated Asset Based (“Petroleum ABL”) Credit Agreement [3]	$ 400	$ —	$ 39	$ 361	November 14, 2022

(1) On September 30, 2021, CVR Partners entered into a senior secured asset based ABL Credit Facility with an aggregate principal amount of up to $35 million with a maturity date of September 30, 2024 (the “Nitrogen Fertilizer ABL”) and terminated its $35 million ABL Credit Agreement, dated as of September 30, 2016, as amended (the “UAN 2016 ABL Credit Agreement”).
(2) Beginning September 30, 2021, loans under the Nitrogen Fertilizer ABL bear interest at an annual rate equal to, at the option of the borrowers, (i) (a) 1.615% plus the daily simple Secured Overnight Financing Rate (“SOFR”) or (b) 0.615% plus a base rate, if our quarterly excess availability is greater than or equal to 75%, (ii) (a) 1.865% plus SOFR or (b) 0.865% plus a base rate, if our quarterly excess availability is greater than or equal to 50% but less than 75%, or (iii) (a) 2.115% plus SOFR or (b) 1.115% plus a base rate, otherwise.
(3) Loans under the Petroleum ABL bear interest at an annual rate equal to (i) (a) 1.50% plus LIBOR, to the extent available, or (b) 0.50% plus a base rate, if our quarterly excess availability is greater than 50%, and (ii) (a) 1.75% plus LIBOR, to the extent available, or (b) 0.75% plus a base rate, otherwise.

CVR Partners

2028 UAN Notes - On June 23, 2021, CVR Partners and its subsidiary, CVR Nitrogen Finance Corporation (“Finance Co.” and, together with CVR Partners, the “Issuers”), completed a private offering of $550 million aggregate principal amount of 6.125% Senior Secured Notes due 2028 (the “2028 UAN Notes”). Interest on the 2028 UAN Notes is payable semi-annually in arrears on June 15 and December 15 each year, commencing on December 15, 2021. The 2028 UAN Notes mature on June 15, 2028, unless earlier redeemed or repurchased by the Issuers. The 2028 UAN Notes are jointly and severally guaranteed on a senior secured basis by all the existing domestic subsidiaries of CVR Partners, excluding Finance Co.

In relation to the issuance of the 2028 UAN Notes, CVR Partners received $547 million of net cash proceeds, net of underwriting fees and other third-party fees and expenses associated with the offering. The debt issuance costs of the 2028 UAN Notes totaled approximately $4 million and are being amortized over the term of the 2028 UAN Notes as interest expense using the effective-interest amortization method.

The Issuers may, at their option, at any time and from time to time prior to June 15, 2024, on any one or more occasions, redeem all or part of the 2028 UAN Notes, at a price equal to 100% of the principal amount plus a “make whole” premium, plus accrued and unpaid interest. On or after June 15, 2024, the Issuers may, on any one or more occasions, redeem all or part of the 2028 UAN Notes at the redemption prices set forth below, expressed as a percentage of the principal amount of the respective notes, plus accrued and unpaid interest to the applicable redemption date.

12-month period beginning June 15,	Percentage
2024	103.063%
2025	101.531%
2026 and thereafter	100.000%

The indenture governing the 2028 UAN Notes contains covenants that are substantially the same as the indenture governing the 2023 UAN Notes. However, the 2028 UAN Notes contain a permitted investment activity carveout that allows for the transfer of certain carbon capture assets to a joint venture for the purpose of monetizing potential tax credits.

2023 UAN Notes - On June 10, 2016, CVR Partners and Finance Co. (together the “2023 Notes Issuers”), certain subsidiary guarantors named therein and Wilmington Trust, National Association, as trustee and as collateral trustee, completed a private offering of $645 million aggregate principal amount of 9.25% Senior Secured Notes due 2023 (the “2023 UAN Notes”). The

2023 UAN Notes mature on June 15, 2023, unless earlier redeemed or repurchased by the issuers. Interest on the 2023 UAN Notes is payable semi-annually in arrears on June 15 and December 15 of each year. The 2023 UAN Notes are guaranteed on a senior secured basis by all of the Nitrogen Fertilizer Partnership's existing subsidiaries.

On or after June 15, 2021, the 2023 Notes Issuers may redeem all or part of the 2023 UAN Notes at a price equal to 100% of the principal amount plus accrued and unpaid interest to the applicable redemption date. The 2023 UAN Notes contain customary covenants for a financing of this type that, among other things, restrict CVR Partners' ability and the ability of certain of its subsidiaries to: (i) sell assets; (ii) pay distributions on, redeem or repurchase the Nitrogen Fertilizer Partnership's units or redeem or repurchase its subordinated debt; (iii) make investments; (iv) incur or guarantee additional indebtedness or issue preferred units; (v) create or incur certain liens; (vi) enter into agreements that restrict distributions or other payments from CVR Partners' restricted subsidiaries to CVR Partners; (vii) consolidate, merge or transfer all or substantially all of CVR Partners' assets; (viii) engage in transactions with affiliates; and (ix) create unrestricted subsidiaries. In addition, the indenture contains customary events of default, the occurrence of which would result in or permit the trustee or the holders of at least 25% of the 2023 UAN Notes to cause the acceleration of the 2023 UAN Notes, in addition to the pursuit of other available remedies.

On June 23, 2021, CVR Partners redeemed $550 million aggregate principal amount of the outstanding 2023 UAN Notes at par and settled accrued interest of approximately $1 million through the date of redemption. As a result of the redemption, CVR Partners recognized in Interest expense, net an $8 million loss on extinguishment of debt in the second quarter of 2021, which includes the write-off of unamortized deferred financing costs and discount of $3 million and $5 million, respectively.

On September 23, 2021 and December 22, 2021, CVR Partners redeemed $15 million and $15 million respectively, in aggregate principal amount of the outstanding 2023 UAN Notes at par and settled accrued interest of less than $1 million through the date of each redemption. As a result of these redemptions and for the year ended December 31, 2021, CVR Partners recognized in Interest expense, net a loss on extinguishment of debt of less than $1 million in 2021, which includes the write-off of unamortized deferred financing costs and discount.

On February 22, 2022, CVR Partners redeemed all of the outstanding 2023 UAN Notes at par and settled accrued interest of approximately $1 million through the date of redemption. As a result of this transaction, CVR Partners will recognize a loss on extinguishment of debt of $1 million in the first quarter of 2022, which includes the write-off of unamortized deferred financing costs and discount of less than $1 million each.

Nitrogen Fertilizer ABL - On September 30, 2021, CVR Partners, LP and its subsidiaries, CVR Nitrogen, LP, East Dubuque Nitrogen Fertilizers, LLC, Coffeyville Resources Nitrogen Fertilizers, LLC, CVR Nitrogen Holdings, LLC, Finance Co. and CVR Nitrogen GP, LLC, entered into the Nitrogen Fertilizer ABL with Wells Fargo Bank National Association, a national banking association ("Wells Fargo"), as administrative agent, collateral agent, and lender. The Nitrogen Fertilizer ABL has an aggregate principal amount of availability of up to $35 million with an incremental facility, which permits an increase in borrowings of up to $15 million in the aggregate subject to additional lender commitments and certain other conditions. The proceeds of the loans may be used for general corporate purposes of CVR Partners and its subsidiaries. The Nitrogen Fertilizer ABL provides for loans and letters of credit, subject to meeting certain borrowing base conditions, with sub-limits of $4 million for swingline loans and $10 million for letters of credit. The Nitrogen Fertilizer ABL is scheduled to mature on September 30, 2024.

Loans under the Nitrogen Fertilizer ABL initially bear interest at an annual rate equal to, at the option of the borrowers, (i) 1.615% plus SOFR or (ii) 0.615% plus a base rate. Based on the previous quarter's excess availability, such annual rate could increase to, at the option of the borrowers, (i) 2.115% plus SOFR or (ii) 1.115% plus a base rate. The borrowers must also pay a commitment fee on the unutilized commitments and also pay customary letter of credit fees.

The Nitrogen Fertilizer ABL contains customary covenants for a financing of this type and requires CVR Partners in certain circumstances to comply with a minimum fixed charge coverage ratio test and contains other restrictive covenants that limit the ability of CVR Partners and its subsidiaries ability to, among other things, incur liens, engage in a consolidation, merger, purchase or sale of assets, pay dividends, incur indebtedness, make advances, investments and loans, enter into affiliate transactions, issue certain equity interests, create subsidiaries and unrestricted subsidiaries, and create certain restrictions on the ability to make distributions, loans, and asset transfers among CVR Partners or its subsidiaries.

In connection with the Nitrogen Fertilizer ABL, CVR Partners incurred lender and other third-party costs of $1 million, which have been deferred in Prepaid expenses and other current assets and Other long-term assets and are being amortized as interest expense over the term of the Nitrogen Fertilizer ABL using the straight-line amortization method.

CVR Refining

Petroleum ABL - On November 14, 2017, CVR Services, CVR Refining, its wholly-owned subsidiary, CVR Refining, LLC ("Refining LLC") and each of the operating subsidiaries of Refining LLC (collectively, the "Credit Parties") entered into Amendment No. 1 to the Amended and Restated ABL Credit Agreement (the "Amendment", and collectively, the "Petroleum ABL") with a group of lenders and Wells Fargo, as administrative agent and collateral agent. The Petroleum ABL is a $400 million asset-based revolving credit facility, with sub-limits for letters of credit and swingline loans of $60 million and $40 million, respectively. The Petroleum ABL also includes a $200 million uncommitted incremental facility.

CVR Energy

2025 Notes and 2028 Notes - On January 27, 2020, CVR Energy completed a private offering of $600 million aggregate principal amount of 5.25% Senior Unsecured Notes due 2025 (the "2025 Notes") and $400 million aggregate principal amount of 5.75% Senior Unsecured Notes due 2028 (the "2028 Notes" and, collectively with the 2025 Notes, the "Notes"). Interest on the Notes is payable semi-annually in arrears on February 15 and August 15 each year, commencing on August 15, 2020. The 2025 Notes mature on February 15, 2025, unless earlier redeemed or repurchased by the issuers. The 2028 Notes mature on February 15, 2028, unless earlier redeemed or repurchased by the issuers. The Notes are jointly and severally guaranteed on a senior unsecured basis by the wholly-owned subsidiaries of CVR Energy with the exception of CVR Partners and its subsidiaries and certain immaterial wholly-owned subsidiaries of CVR Energy.

In relation to the issuance of the Notes, the Company received $993 million of net cash proceeds, net of underwriting fees and other third-party fees and expenses associated with the offering. The debt issuance costs of the Notes totaled approximately $7 million and are being amortized over the terms of the respective notes as interest expense using the effective-interest amortization method.

On or after February 15, 2022 and February 15, 2023, we may on any one or more occasions, redeem all or part of the 2025 Notes and 2028 Notes, respectively, at the redemption prices set forth below expressed as a percentage of the principal amount of the respective notes, plus accrued and unpaid interest to the applicable redemption date.

2025 Notes		2028 Notes	
12-month period beginning February 15,	**Percentage**	**12-month period beginning February 15,**	**Percentage**
2022	102.625%	2023	102.875%
2023	101.313%	2024	101.917%
2024 and thereafter	100.000%	2025	100.958%
		2026 and thereafter	100.000%

The indenture governing the Notes imposes covenants that will, among other things, limit our ability and the ability of our restricted subsidiaries to: (i) incur additional indebtedness or issue certain disqualified equity; (ii) create liens on certain assets to secure debt; (iii) pay dividends or make other equity distributions; (iv) purchase or redeem capital stock; (v) make certain investments; (vi) sell assets; (vii) agree to certain restrictions on the ability of restricted subsidiaries to make distributions, loans, or other asset transfers to us; (viii) consolidate, merge, sell, or otherwise dispose of all or substantially all of our assets; (ix) engage in transactions with affiliates; and (x) designate our restricted subsidiaries as unrestricted subsidiaries. In addition, the indenture contains customary events of default, the occurrence of which would result in or permit the trustee or the holders of at least 25% of the 2025 Notes and 2028 Notes to cause, amongst other available remedies, the acceleration of the respective notes.

Covenant Compliance

The Company is in compliance with all covenants of the Nitrogen Fertilizer ABL, the Petroleum ABL, and the senior notes as of December 31, 2021.

(7) Revenue

The following tables present the Company's revenue disaggregated by major product, which include a reconciliation of the disaggregated revenue by product and other revenue components for the Company's reportable segments.

	Year Ended December 31, 2021			
(in millions)	**Petroleum**	**Nitrogen Fertilizer**	**Other / Eliminations**	**Consolidated**
Gasoline	**$ 3,679**	**$ —**	**$ —**	**$ 3,67**
Distillates [1]	**2,809**	**—**	**—**	**2,80**
Ammonia	**—**	**146**	**—**	**14**
UAN	**—**	**316**	**—**	**31**
Other urea products	**—**	**29**	**—**	**2**
Freight revenue	**21**	**31**	**—**	**5**
Other [2]	**163**	**11**	**(12)**	**16**
Revenue from product sales	**6,672**	**533**	**(12)**	**7,19**
Crude oil sales	**47**	**—**	**—**	**4**
Other revenue [2]	**2**	**—**	**—**	
Total revenue	**$ 6,721**	**$ 533**	**$ (12)**	**$ 7,24**

	Year Ended December 31, 2020			
(in millions)	**Petroleum**	**Nitrogen Fertilizer**	**Other / Eliminations**	**Consolidated**
Gasoline	$ 1,882	$ —	$ —	$ 1,882
Distillates [1]	1,543	—	—	1,543
Ammonia	—	94	—	94
UAN	—	198	—	198
Other urea products	—	15	—	15
Freight revenue	18	33	—	51
Other [2]	79	10	(6)	83
Revenue from product sales	3,522	350	(6)	3,866
Crude oil sales	63	—	—	63
Other revenue [2]	1	—	—	1
Total revenue	$ 3,586	$ 350	$ (6)	$ 3,930

	Year Ended December 31, 2019			
(in millions)	Petroleum	Nitrogen Fertilizer	Other / Eliminations	Consolidated
Gasoline	$ 3,050	$ —	$ —	$ 3,050
Distillates [1]	2,705	—	—	2,705
Ammonia	—	94	—	94
UAN	—	251	—	251
Other urea products	—	18	—	18
Freight revenue	23	33	—	56
Other [2]	129	8	(8)	129
Revenue from product sales	5,907	404	(8)	6,303
Crude oil sales	58	—	—	58
Other revenue [2]	3	—	—	3
Total revenue	$ 5,968	$ 404	$ (8)	$ 6,364

(1) Distillates consist primarily of diesel fuel, kerosene, and jet fuel.
(2) Other revenue consists primarily of feedstock and asphalt sales and Cushing, OK storage tank lease revenue. See Note 2 ("Summary of Significant Accounting Policies") for further discussion on the Cushing, OK storage tanks.

Petroleum Segment

The Petroleum Segment's revenue from product sales is recorded upon delivery to customers, which is the point at which title is transferred and the customer has assumed the risk of loss. This generally takes place as product passes into the pipeline, as a product transfer order occurs within a pipeline system, or as product enters equipment or locations supplied or designated by the customer. Qualifying excise and other taxes collected from the Petroleum Segment's customers and remitted to governmental authorities are not included in reported revenues.

Many of the Petroleum Segment's contracts have index-based pricing which is considered variable consideration that should be estimated in determining the transaction price. The Petroleum Segment determined that it does not need to estimate the variable consideration because the uncertainty related to the consideration is resolved on the pricing date or the date when the product is delivered.

The Petroleum Segment may incur broker commissions or transportation costs prior to product transfer on some of its sales. The Petroleum Segment expenses these broker costs, since the contract durations are less than a year. Transportation costs are accounted for as fulfillment costs and are expensed as incurred since they do not meet the requirement for capitalization.

The Petroleum Segment's contracts with its customers state the terms of the sale, including the description, quantity, and price of each product sold. Depending on the product sold, payment from customers is generally due in full within 2 to 30 days of product delivery or invoice date. The Petroleum Segment generally provides no warranty other than the implicit promise that goods delivered are free of liens and encumbrances and meet the agreed upon specification. The Petroleum Segment has determined that product returns or refunds are very rare and will account for them as they occur.

Freight revenue recognized by the Petroleum Segment is primarily tariff and line loss charges rebilled to customers to reimburse the Petroleum Segment for expenses incurred from a pipeline operator. An offsetting expense is included in Cost of materials and other.

Nitrogen Fertilizer Segment

The Nitrogen Fertilizer Segment sells its products on a wholesale basis under a contract or by purchase order. The Nitrogen Fertilizer Segment's contracts with customers generally contain fixed pricing and most have terms of less than one year. The Nitrogen Fertilizer Segment recognizes revenue at the point in time at which the customer obtains control of the product, which is generally upon delivery and acceptance by the customer. The customer acceptance point is stated in the contract and may be at one of the Nitrogen Fertilizer Segment's manufacturing facilities, at one of the Nitrogen Fertilizer Segment's off-site loading facilities, or at the customer's designated facility. Freight revenue recognized by the Nitrogen Fertilizer Segment represents the pass-through finished goods delivery costs incurred prior to customer acceptance and is reimbursed by customers. An offsetting expense for freight is included in Cost of materials and other. Qualifying excise and other taxes collected from the Nitrogen Fertilizer Segment's customers and remitted to governmental authorities are not included in reported revenues.

Depending on the product sold and the type of contract, payments from customers are generally either due prior to delivery or within 15 to 30 days of product delivery.

The Nitrogen Fertilizer Segment generally provides no warranty other than the implicit promise that goods delivered are free of liens and encumbrances and meet the agreed upon specifications. Product returns are rare, and as such, the Nitrogen Fertilizer Segment does not record a specific warranty reserve or consider activities related to such warranty, if any, to be a separate performance obligation.

The Nitrogen Fertilizer Segment has an immaterial amount of variable consideration for contracts with an original duration of less than a year. A small portion of the Nitrogen Fertilizer Segment's revenue includes contracts extending beyond one year, some of which contain variable pricing in which the majority of the variability is attributed to the market-based pricing. The Nitrogen Fertilizer Segment's contracts do not contain a significant financing component.

The Nitrogen Fertilizer Segment has an immaterial amount of fee-based revenue, included in other revenue in the table above, that is recognized based on the net amount of the proceeds received, consistent with prior accounting practice.

Remaining Performance Obligations

As of December 31, 2021, the Nitrogen Fertilizer Segment had approximately $10 million of remaining performance obligations for contracts with an original expected duration of more than one year. The Nitrogen Fertilizer Segment expects to recognize approximately $6 million of these performance obligations as revenue by the end of 2022, an additional $4 million by 2023, and the remaining balance thereafter.

Contract Balances

The Nitrogen Fertilizer Segment's deferred revenue is a contract liability that primarily relates to nitrogen fertilizer sales contracts requiring customer prepayment prior to product delivery to guarantee a price and supply of nitrogen fertilizer. Deferred revenue is recorded at the point in time in which a prepaid contract is legally enforceable and the associated right to consideration is unconditional prior to transferring product to the customer. An associated receivable is recorded for uncollected prepaid contract amounts. Contracts requiring prepayment are generally short-term in nature and, as discussed above, revenue is recognized at the point in time in which the customer obtains control of the product.

A summary of the Nitrogen Fertilizer Segment's deferred revenue activity during the year ended December 31, 2021 is presented below:

(in millions)		
Balance at December 31, 2020	**$**	**31**
Add:		
New prepay contracts entered into during the period [(1)]		**147**
Less:		
Revenue recognized that was included in the contract liability balance at the beginning of the period		**(30)**
Revenue recognized related to contracts entered into during the period		**(60)**
Other changes		**(1)**
Balance at December 31, 2021	**$**	**87**

(1) Includes $94 million where the payment associated with prepaid contracts was collected.

Major Customers

Petroleum Segment - The Petroleum Segment had one customer who comprised 16% of petroleum net sales for the year ended December 31, 2021 and two customers who comprised 26% and 25% of petroleum net sales for the years ended December 31, 2020 and 2019, respectively.

Nitrogen Fertilizer Segment - The Nitrogen Fertilizer Segment had one customer who comprised 13% for the year ended December 31, 2021 and two customers who comprised 26% and 28% of nitrogen fertilizer net sales for the years ended December 31, 2020 and 2019, respectively.

(8) Derivative Financial Instruments, Investments and Fair Value Measurements

Derivative Financial Instruments

Our segments are subject to price fluctuations caused by supply conditions, weather, economic conditions, interest rate fluctuations, and other factors. To manage price risk on crude oil and other inventories and to fix margins on certain future production, the Petroleum Segment from time to time enters into various commodity derivative transactions. On a regular basis, the Company enters into commodity contracts with counterparties for the purchases or sale of crude oil, blendstocks, various finished products, and RINs. The contracts usually qualify for the normal purchase normal sale exception and follow the accrual method of accounting. All other derivative instruments are recorded at fair value using mark-to-market accounting on a periodic basis utilizing third-party pricing.

The Petroleum Segment holds derivative instruments, such as exchange-traded crude oil futures and over-the-counter forward swap agreements, which it believes provide an economic hedge on future transactions, but such instruments are not designated as hedges under GAAP. There are no premiums paid or received at inception of the derivative contracts or upon settlement. The Petroleum Segment may enter into forward purchase or sale contracts associated with RINs. As of December 31, 2021, the Petroleum Segment had open fixed-price commitments to purchase a net 2 million RINs.

Commodity derivatives include commodity swaps and forward purchase and sale commitments. There were no outstanding commodity swap positions as of December 31, 2021 compared to 7 million barrels in outstanding commodity swap positions as of December 31, 2020. As of December 31, 2021 and 2020, there were approximately 1 million and 4 million barrels in forward purchase commitments, respectively, and 1 million and 2 million barrels in forward sale commitments, respectively.

The following outlines the gains (losses) recognized on the Company's derivative activities, all of which are recorded in Cost of materials and other on the Consolidated Statements of Operations:

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Forward purchases and sales contracts, net	**$ 25**	$ 53	$ [illegible]
Commodity swap instruments	**(68)**	(8)	[illegible]
Futures contracts	**(1)**	10	[illegible]
Total (loss) gain on derivatives, net	**$ (44)**	$ 55	$ [illegible]

Offsetting Assets and Liabilities

The Company elected to offset the fair value amounts recognized for multiple derivative contracts executed with the same counterparty. These amounts are recognized as current assets and current liabilities within the Prepaid expenses and other current assets and Other current liabilities financial statement line items, respectively, in the Consolidated Balance Sheets as follows:

	Derivative Assets		Derivative Liabilities	
	December 31,		December 31,	
(in millions)	**2021**	2020	**2021**	2020
Commodity derivatives	**$ 5**	$ 1	**$ (7)**	$ (5)
Less: Counterparty netting	**(5)**	(1)	**5**	1
Total net fair value of derivatives	**$ —**	$ —	**$ (2)**	$ (4)

Investments

Investments consist of equity securities, which are reported at fair value in our Consolidated Balance Sheets. These investments are considered trading securities. Investment income on marketable securities consists of the following:

	Year Ended December 31,		
(in millions)	**2021**	2020	2019
Dividend income	**$ —**	$ 7	$ —
Gain on marketable securities	**81**	34	—
Investment income on marketable securities	**$ 81**	$ 41	$ —

On June 10, 2021, the Company distributed its investment of 10,539,880 shares of common stock of Delek US Holdings, Inc. ("Delek") in the form of a special dividend to its stockholders (the "Stock Distribution"). Following the Stock Distribution, the Company continued to hold a nominal investment in other marketable securities of Delek as of December 31, 2021. See further discussion of the distribution in Note 14 ("Related Party Transactions").

Fair Value Measurements

In accordance with FASB ASC Topic 820 — *Fair Value Measurements and Disclosures* ("Topic 820"), the Company utilizes the market approach to measure fair value for its financial assets and liabilities. The market approach uses prices and other relevant information generated by market transactions involving identical or comparable assets, liabilities, or a group of assets or liabilities, such as a business.

Topic 820 utilizes a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value into three broad levels. The following is a brief description of those three levels:

- Level 1 — Quoted prices in active markets for identical assets or liabilities
- Level 2 — Other significant observable inputs (including quoted prices in active markets for similar assets or liabilities)
- Level 3 — Significant unobservable inputs (including the Company's own assumptions in determining the fair value)

The following tables set forth the assets and liabilities measured or disclosed at fair value on a recurring basis, by input level, as of December 31, 2021 and 2020:

	December 31, 2021			
(in millions)	Level 1	Level 2	Level 3	Total
Location and Description				
Other current assets (commodity derivatives)	$ —	$ 1	$ —	$
Total Assets	$ —	$ 1	$ —	$
Other current liabilities (commodity derivatives)	$ —	$ (2)	$ —	$ (
Other current liabilities (RFS obligation)	—	(494)	—	(49
Long-term debt and finance lease obligations, net of current portion (long-term debt)	—	(1,620)	—	(1,62
Total Liabilities	$ —	$ (2,116)	$ —	$ (2,11

	December 31, 2020			
(in millions)	Level 1	Level 2	Level 3	Total
Location and Description				
Prepaid expenses and other current assets (investments)	$ 173	$ —	$ —	$ 173
Total Assets	$ 173	$ —	$ —	$ 173
Note payable and finance lease obligations (current portion of long-term debt)	$ —	$ (2)	$ —	$ (2)
Other current liabilities (commodity derivatives)	—	(17)	—	(17)
Other current liabilities (RFS obligation)	—	(214)	—	(214)
Long-term debt and finance lease obligations, net of current portion (long-term debt)	—	(1,604)	—	(1,604)
Total Liabilities	$ —	$ (1,837)	$ —	$ (1,837)

As of December 31, 2021 and 2020, the only financial assets and liabilities that are measured at fair value on a recurring basis are the Company's investments, derivative instruments, long-term debt, and the RFS obligation. The estimated fair value of cash equivalents, included amounts invested in short-term money market funds, and restricted cash approximate their carrying amounts. The Petroleum Segment's commodity derivative contracts and RFS obligation, which use fair value measurements and are valued using broker quoted market prices of similar instruments, are considered Level 2 inputs. The Company had no transfers of assets or liabilities between any of the above levels during the year ended December 31, 2021.

(9) Share-Based Compensation

Overview

CVR Energy, CVR Refining, and CVR Partners all have Long-Term Incentive Plans (collectively, the "LTIPs") that permit the granting of options, stock and unit appreciation rights, restricted shares, restricted stock units, phantom units, unit awards, substitute awards, other unit-based awards, cash awards, dividend and distribution equivalent rights, share awards, and performance awards (including performance share units, performance units, and performance-based restricted stock). Individuals who are eligible to receive awards and grants under or in connection with the LTIPs include the employees, officers, and directors of the Company, CVR Refining, and CVR Partners. The Company had 6.8 million shares or units, as applicable, available for future grants under our plans at December 31, 2021.

Incentive and Phantom Unit Awards

Incentive and phantom unit awards have been granted to officers, employees, and directors (collectively, the "Share-Based Awards"). As a result, Share-Based Awards that reflect the value and dividends or distributions of CVR Energy or CVR Partners, as applicable, have been granted and remain outstanding as of December 31, 2021. Each Share-Based Award and the related dividend or distribution equivalent right represents the right to receive, upon vesting, a cash payment equal to (i) the average fair market value of one share or unit, as applicable, in accordance with the award agreement, plus (ii) the per share or unit cash value of all dividends or distributions declared and paid, as applicable, from the grant date through the vesting date. The Share-Based Awards are generally graded-vesting awards, which vest over three years with one-third of the award vesting each year the grantee remains employed by the Company or its subsidiaries. Compensation expense is recognized ratably, based on service provided to the Company and its subsidiaries, with the amount recognized fluctuating as a result of the Share-Based Awards being re-measured to fair value at the end of each reporting period due to their liability-award classification.

A summary of activity for the Company's Share-Based Awards for the year ended December 31, 2021 is presented below:

	Shares or Units [1]	Weighted-Average Grant-Date Fair Value (per share or unit)	Aggregate Intrinsic Value (in millions)
Non-vested at December 31, 2020	2,454,641	$ 19.01	$ 37
Granted	**950,744**	**19.46**	
Vested	**(857,901)**	**21.14**	
Forfeited	**(254,379)**	**19.66**	
Non-vested at December 31, 2021	**2,293,105**	**$ 18.23**	**$ 62**

(1) As of December 31, 2021, there are no outstanding awards under the LTIPs, and the only outstanding and unvested awards are issued in connection with and not under the LTIPs.

Performance Unit Awards

Pursuant to an employment agreement with the Company's current chief executive officer, the Company entered into two performance award agreements on November 1, 2017. In connection with the performance period of January 1, 2018 to December 31, 2018, a performance award was granted with a target value of $1.5 million (the "2018 CEO Performance Award"). The payout of $1.9 million, paid in February 2019, under the 2018 CEO Performance Award was based on the Company's performance against certain safety, operating, and financial measures. Additionally, the Company entered into a performance award agreement (the "CEO Performance Award"). The CEO Performance Award represents the right to receive upon vesting, a cash payment equal to $10 million if the average closing price of the Company's common stock over the 30-trading day period from January 4, 2022 to February 15, 2022 is equal to or greater than $60 per share. Effective as of December 22, 2021, the Company entered into an amendment to the CEO Performance Award, which extended the end of the performance period thereunder to December 31, 2024, and changed the 30 day trading period on which the average closing price of the Company's common stock is based to January 6, 2025 through February 20, 2025.

Compensation Expense

A summary of total share based compensation expense and unrecognized compensation expense related to the Share-Based Awards and the Company's performance awards, the amounts allocated to each of the Company's segments, and the amounts that were not allocated to segments during the years ended December 31, 2021, 2020, and 2019 is presented below:

	Expenses For the year ended December 31,			Unrecognized Expense At December 31, 2021	
(in millions)	2021	2020	2019	Amount	Weighted-Average Remaining Years
Share based awards:					
Incentive Units	**$ 22**	$ 3	$ 12	**$ 27**	**2.4**
Phantom Units	**27**	1	5	**19**	**2.0**
Performance awards:					
CEO Performance Award [1]	**(3)**	—	—	**10**	**3.0**
Total expense	**$ 46**	$ 4	$ 17	**$ 56**	

(1) All expenses, recognized and unrecognized, related to the CEO Performance Award are contingent upon whether the performance parameters are probable of being met. If the performance parameters are not met, no expense will be recognized.

The total tax benefit recognized during the years ended December 31, 2021, 2020, and 2019 related to compensation expense was $12 million, $1 million and $4 million respectively. As of December 31, 2021 and 2020, the Company had a liability of $23 million and $5 million, respectively, for cash settled non-vested Share-Based Awards and associated dividend and distribution equivalent rights. For the years ended December 31, 2021, 2020, and 2019, the Company paid cash of $30 million, $8 million, and $23 million, respectively, to settle liability-classified awards upon vesting.

Other Benefit Plans

The Company sponsors and administers two defined-contribution 401(k) plans, the CVR Energy 401(k) Plan and the CVR Energy 401(k) Plan for Represented Employees (the "Plans"), in which the Company's employees may participate. Participants in the Plans may elect to contribute a designated percentage of their eligible compensation in accordance with the Plans, subject to statutory limits. The Company provides a matching contribution of 100% of the first 6% of eligible compensation contributed by participants. Participants in both Plans are immediately vested in their individual contributions. The Plans provide for a three-year vesting schedule for the Company's matching contributions and contain a provision to count service with predecessor organizations. The Company did not have contributions under the Plans for the year ended December 31, 2021, as the Company matching contributions for the Plans were suspended effective January 1, 2021, and had approximately $10 million and $9 million for the years ended December 31, 2020 and 2019, respectively. The Company matching contributions for the Plans resumed effective January 1, 2022.

(10) Income Taxes

Tax Allocation Agreement

In August 2018, CVR Energy completed an exchange offer whereby public unitholders tendered a total of 21,625,106 CVR Refining common units in exchange for a total of 13,699,549 shares of CVR Energy common stock (the "CVRR Unit Exchange"). Prior to the CVRR Unit Exchange, CVR Energy was a member of the consolidated federal tax group of AEP, an affiliate of IEP, and party to a tax allocation agreement with AEP (the "Tax Allocation Agreement"). The Tax Allocation Agreement provided that AEP would pay all consolidated federal income taxes on behalf of the consolidated tax group. As a result, CVR Energy was required to make payments to AEP in an amount equal to the tax liability, if any, that it would have had paid if it were to file as a consolidated group separate and apart from AEP.

Following the CVRR Unit Exchange, IEP and affiliates' ownership of CVR Energy was reduced below 80% and, since that time, CVR Energy is no longer eligible to file as a member of the AEP consolidated federal income tax group. On August 2, 2018, CVR Energy became the parent of a new consolidated group for U.S. federal income tax purposes, filing and paying its federal income tax obligations directly to the IRS. Pursuant to the terms of the Tax Allocation Agreement, however, CVR Energy may be required to make payments in respect of taxes owed by AEP for periods prior to the exchange. Similar principles may apply for state or local income tax purposes where CVR Energy filed combined, consolidated or unitary tax returns with AEP. AEP's federal income tax return for the periods ended December 31, 2017 and 2018 are currently under examination by the IRS.

As of December 31, 2021 and 2020, the Company recognized a nominal payable for state income taxes due to AEP. The payable is recognized in Other current liabilities in the Consolidated Balance Sheets. As of December 31, 2021 and 2020, the Company's Consolidated Balance Sheets reflected a receivable of $26 million and $44 million, respectively, from the IRS and certain state jurisdictions.

Income Tax (Benefit) Expense

Income tax (benefit) expense is comprised of the following:

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Current:			
Federal	**$ 84**	$ (63)	$ 9
State	**7**	(5)	
Total current	**91**	(68)	10
Deferred:			
Federal	**(76)**	(1)	
State	**(23)**	(26)	2
Total deferred	**(99)**	(27)	2
Total income tax (benefit) expense	**$ (8)**	$ (95)	$ 12

The following is a reconciliation of total income tax (benefit) expense to income tax (benefit) expense computed by applying the statutory federal income tax rate to pretax income (loss):

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Tax computed at federal statutory rate	**$ 14**	$ (87)	$ 10
State income taxes, net of federal tax benefit	**3**	(18)	2
Changes in enacted state tax rates, net of federal tax benefit	**(10)**	—	–
State tax incentives, net of federal tax expense	**(6)**	(7)	(
Noncontrolling interest	**(10)**	13	
Goodwill impairment	**—**	3	–
Other, net	**1**	1	(
Total income tax (benefit) expense	**$ (8)**	$ (95)	$ 12

Deferred Tax Assets and Liabilities

The income tax effect of temporary differences that give rise to the Deferred income tax assets and Deferred income tax liabilities at December 31, 2021 and 2020 are as follows:

	December 31,	
(in millions)	**2021**	**2020**
Deferred income tax assets:		
Personnel accruals	**$ 6**	$
State tax credit carryforward, net	**17**	2
Net operating loss carryforward	**2**	
Total gross deferred income tax assets	**25**	3
Deferred income tax liabilities:		
Unrealized gain	**—**	(
Investment in CVR Partners	**(70)**	(6
Investment in CVR Refining	**(222)**	(32
Other	**(1)**	(
Total gross deferred income tax liabilities	**(293)**	(39
Net deferred income tax liabilities	**$ (268)**	$ (36

Although realization is not assured, management believes that it is more likely than not that all of the deferred income tax assets will be realized, and therefore, no valuation allowance was recognized as of December 31, 2021 and 2020.

As of December 31, 2021, CVR Energy has state tax credits of approximately $26 million, which are available to reduce future state income taxes. These credits, if not used, will begin expiring in 2036.

Uncertain Tax Positions

A reconciliation of unrecognized tax benefits is as follows:

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Balance, beginning of year	**$ 17**	$ 22	$ 2
Decrease based on prior year tax position	**—**	(2)	–
Increase in current year tax positions	**—**	—	
Reductions related to expirations from statute of limitations	**—**	(3)	(
Balance, end of year	**$ 17**	$ 17	$ 2

Included in the balance of unrecognized tax benefits as of December 31, 2021, 2020, and 2019 are $13 million, $13 million, and $15 million, respectively, of tax benefits that, if recognized, would affect the effective tax rate. Additionally, the Company reasonably believes that $5 million unrecognized tax positions related to state income tax credits will be recognized by the end of 2022 as a result of the expiration of statute of limitations. Approximately $7 million and $8 million of unrecognized tax benefits were netted with Deferred income tax asset carryforwards as of December 31, 2021 and 2020, respectively. The remaining unrecognized tax benefits are included in Other long-term liabilities in the Consolidated Balance Sheets.

CVR Energy recognized $1 million interest expense and $2 million liability for interest as of December 31, 2021, nominal interest expense and $1 million liability for interest as of December 31, 2020, and a nominal interest benefit and a nominal liability for interest as of December 31, 2019. No penalties were recognized during 2021, 2020, or 2019.

At December 31, 2021, the Company's tax filings are generally open to examination in the United States for the tax years ended December 31, 2018 through December 31, 2020 and in various individual states for the tax years ended December 31, 2017 through December 31, 2020.

(11) Commitments and Contingencies

Supply Commitments

The minimum required payments for unconditional purchase obligations are as follows:

(in millions)	Unconditional Purchase Obligations
Year Ended December 31,	
2022	$ 13
2023	8
2024	8
2025	8
2026	7
Thereafter	25
	$ 71

Supply Commitments - The Company is a party to various supply agreements with both related and third parties which commit the Company to purchase minimum volumes of crude oil, hydrogen, oxygen, nitrogen, pet coke, and natural gas to run its facilities' operations. For the years ended December 31, 2021, 2020, and 2019, amounts purchased under these supply agreements totaled approximately $176 million, $153 million, and $167 million, respectively.

Crude Oil Supply Agreement

Effective on August 4, 2021, an indirect, wholly-owned subsidiary of CVR Refining entered into the Second Amended and Restated Crude Oil Supply Agreement (the "2021 Supply Agreement") with Vitol Inc. ("Vitol") which superseded, in its entirety, the August 31, 2012 Amended and Restated Crude Oil Supply Agreement (the "2012 Supply Agreement" and collectively with the 2021 Supply Agreement, the "Crude Oil Supply Agreement") between the parties. The 2021 Supply Agreement is on substantially similar terms as the 2012 Supply Agreement, other than revisions to certain inventory turnover and insurance provisions. Under the Crude Oil Supply Agreement, Vitol supplies the Petroleum Segment with crude oil and intermediation logistics helping to reduce the amount of inventory held at certain locations and mitigate crude oil pricing risk. Volumes contracted under the Crude Oil Supply Agreement, as a percentage of the total crude oil purchases (in barrels), was approximately 42%, 33%, and 36% for the years ended December 31, 2021, 2020, and 2019, respectively. The Crude Oil Supply Agreement, which currently extends through December 31, 2022, automatically renews for successive one-year terms (each such term, a "Renewal Term") unless either party provides the other with notice of nonrenewal at least 180 days prior to expiration of any Renewal Term.

Contingencies

The U.S. Attorney's office for the Southern District of New York contacted CVR Energy in September 2017 seeking production of information pertaining to CVR Refining's, CVR Energy's and Mr. Carl C. Icahn's activities relating to the RFS and Mr. Icahn's former role as an advisor to former President Trump. CVR Energy cooperated with the request and provided information in response to the subpoena. The U.S. Attorney's office has not made any claims or allegations against CVR Energy or Mr. Icahn. CVR Energy believes it maintains a strong compliance program and, while no assurances can be made, CVR Energy does not believe this inquiry will have a material impact on its business, financial condition, results of operations or cash flows.

Call Option Lawsuits - In 2019, the Company, CVR Refining and its general partner, CVR Refining Holdings, IEP, and certain directors and affiliates (collectively, the "Call Defendants") were named in at least one of nine now consolidated lawsuits filed in the Delaware Court of Chancery by purported former unitholders of CVR Refining, on behalf of themselves and an alleged class of similarly situated unitholders relating to the Company's exercise of the call option ("Call Option") under the CVR Refining Amended and Restated Agreement of Limited Partnership assigned to it by CVR Refining's general partner (collectively, the "Call Option Lawsuits"). The Call Option Lawsuits primarily allege breach of contract, tortious interference and breach of the implied covenant of good faith and fair dealing and seek monetary damages and attorneys' fees, among other remedies. In January 2020, the court dismissed CVR Holdings and certain former directors of CVR Refining's general partner from the Call Option Lawsuits, though permitted some or all of the claims to proceed against each remaining defendant. Trial of the Call Option Lawsuits concluded in July 2021, and the parties are currently in post-trial proceedings. The Company believes the Call Option Lawsuits are without merit and is vigorously defending against them. The plaintiffs filed their Opening Post-Trial Brief on December 22, 2021, now quantifying alleged damages in excess of $300 million; the Call Defendants strongly dispute the plaintiffs' claims and are preparing responsive briefings. Accordingly, the Company cannot determine at this time the outcome of the Call Option Lawsuits, including whether such outcome would have a material impact on the Company's financial position, results of operations, or cash flows. However, while we firmly believe this matter is without merit, if it is concluded in a manner adverse to the Company, it could have a material effect on the Company's financial position, results of operations, or cash flows.

The Call Defendants are also parties to two lawsuits relating to insurance coverage for the Call Option Lawsuits, one filed on January 27, 2021, in the 434th Judicial District Court of Fort Bend County, Texas by the Call Defendants' primary and excess insurers (the "Insurers") seeking a declaratory judgment determining that they owe no indemnity coverage for the Call Option Lawsuits in relation to insurance policies that have coverage limits of $50 million, and another filed on January 30, 2022 in the Superior Court of the State of Delaware by the Call Defendants against the Insurers for anticipatory breach of contract and breach of the implied covenant of good faith and fair dealing (the "Delaware Coverage Case"). On November 23, 2021, the court in the Delaware Coverage Case granted partial summary judgment in favor of the Call Defendants relating to the amount of the deductible. As both lawsuits are in their early stages, the Company cannot determine at this time the outcome of these lawsuits, including whether the outcome would have a material impact on the Company's financial position, results of operations, or cash flows.

Renewable Fuel Standards - The Company's Petroleum Segment is subject to the RFS, implemented by the Environmental Protection Agency (the "EPA"), which requires refiners to either blend renewable fuels into their transportation fuels or purchase renewable fuel credits, known as RINs, in lieu of blending. The Petroleum Segment is not able to blend the substantial majority of its transportation fuels and must either purchase RINs on the open market or obtain waiver credits for cellulosic biofuels, or other exemptions from the EPA, in order to comply with the RFS.

For the years ended December 31, 2021, 2020, and 2019, the Company recognized an expense of approximately $435 million, $190 million, and $43 million, respectively, for the Petroleum Segment's compliance with the RFS (based on the 2020 renewable volume obligation ("RVO") and proposed preliminary 2021 RVO range, for the respective periods, excluding the impacts of any exemptions or waivers to which the Petroleum Segment may be entitled). The recognized amounts are included within Cost of materials and other in the Consolidated Statements of Operations and represent costs to comply with the RFS obligation through purchasing of RINs not otherwise reduced by blending of ethanol or biodiesel. At each reporting period, to the extent RINs purchased and generated through blending are less than the RFS obligation (excluding the impact of exemptions or waivers to which the Petroleum Segment may be entitled), the remaining position is marked-to-market using RIN market prices at period end. As of December 31, 2021 and 2020, the Petroleum Segment's RFS position was approximately $494 million and $214 million, respectively, which is recorded in Other current liabilities in the Consolidated Balance Sheets.

RFS Disputes - On June 25, 2021, the Supreme Court of the United States (the "Supreme Court") overturned a decision of the 10th Circuit Court of Appeals ("10th Circuit") vacating three small refinery exemptions ("SREs") under the RFS, including one issued to the Wynnewood Refinery for 2017, to the extent such SREs were vacated based on failure to have continuously received an SRE in all applicable preceding years. Following the Supreme Court ruling, the Environmental Protection Agency (the "EPA") notified WRC that it would reconsider WRC's 2017 SRE on other grounds referenced in the 10th Circuit decision. On July 20, 2021, after remand from the Supreme Court, the 10th Circuit vacated its prior judgment, recalled its previous mandate denying WRC's 2017 SRE, entered a new judgment and issued a new mandate transferring jurisdiction back to the EPA. On August 26, 2021, the EPA filed a Motion for Clarification asking the 10th Circuit whether the alternative holdings that supported the 10th Circuit's prior judgment remain in effect and whether the new mandate returns the agency actions back to the EPA, which Motion for Clarification was denied. On September 15, 2021, WRC advised the EPA it considered its 2017 SRE intact and demanded that the EPA return the status of WRC's 2017 SRE to "granted." The EPA has not yet responded to WRC's demand. Given the EPA's failure to respond, we cannot currently estimate the outcome, impact or timing of resolution of this matter.

WRC and CRRM are also involved in or expected to be involved in several lawsuits relating to the RFS, including a lawsuit filed in 2019 in the D.C. Circuit by four ethanol and biofuels trade associations against the EPA claiming the EPA exceeded its authority in granting SREs for the 2018 compliance year, including the 2018 SRE granted to WRC's Wynnewood Refinery (the "2018 SRE Lawsuit"), which 2018 SRE petitions were remanded by the court back to the EPA on December 8, 2021, with instructions to act on such petitions by April 7, 2022; a lawsuit by WRC against the EPA relating to damages sustained by WRC as a result of the EPA's failure to timely issue WRC's 2018 SRE (the "WRC 2018 SRE Lawsuit"); and a Petition for Review of the EPA's February 2, 2022, final rule changing compliance deadlines under the RFS filed by WRC and CRRM with the D.C. Circuit on February 4, 2022 (the "Deadline Lawsuit"). The Company anticipates additional litigation to be filed in the future relating to the RFS, including one or more lawsuits by WRC against the EPA should it finalize the position set forth in its Proposed RFS Small Refinery Exemption Decision dated December 7, 2021 (the "Proposed Denial"), in which the EPA announced its intention to change its statutory interpretation of the CAA and deny 65 pending SRE petitions, including those submitted by WRC for 2019, 2020, and 2021, through which the Proposed Denial by the EPA has informed WRC it intends to also apply to deny all 2018 SREs previously approved by the EPA, including for WRC's Wynnewood Refinery. These matters are in their early stages, and the Company cannot determine at this time the outcomes of these matters, including whether such outcomes would have a material impact on the Company's financial position, results of operations, or cash flows.

Environmental, Health, and Safety ("EHS") Matters

Clean Air Act Matter - On August 21, 2018, CRRM received a letter from the United States Department of Justice ("DOJ") on behalf of the EPA and KDHE alleging violations of the CAA and a 2012 Consent Decree (the "CD") between Coffeyville Resources Refining & Marketing, LLC ("CRRM"), the United States (on behalf of the EPA) and the Kansas Department of Health and Environment ("KDHE") at CRRM's Coffeyville refinery, primarily relating to flares. In June 2020, a tolling agreement between the parties relating to such allegations expired, and the DOJ and KDHE sent demand letters relating to the allegations (the “Stipulated Claims”) and seeking stipulated penalties under the CD. In February 2021, the DOJ and KDHE sent CRRM a statement of position under the CD regarding its demand for Stipulated Claims. As CRRM disputes most claims asserted by the government, in accordance with the CD, CRRM deposited funds into a commercial escrow account pending resolution of disputed claims. The escrowed funds are legally restricted for use and are included within Prepaid expenses and other current assets on the consolidated balance sheets. In April 2021, CRRM filed a petition for judicial review of the Stipulated Claims with the United States District Court for the District of Kansas (“D. Kan.”), in accordance with the dispute resolution provisions of the CD. On September 23, 2021, the court ordered briefing on CRRM’s petition, which was completed in December 2021. Separately, in December 2020, the DOJ and KDHE filed a supplement complaint in the D. Kan asserting nine counts for alleged violations of the CAA, the Kansas State Implementation Plan and Kansas law seeking civil penalties, injunctive and related relief, which they sought leave to amend on February 10, 2022, to add an additional eight counts under Part 63 of the National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries Subparts CC and R (“NESHAP”), Kansas law, and CRRM’s permits relating to flares, heaters, and related matters (collectively, the “Statutory Claims”). In March 2021, CRRM filed a partial motion to dismiss certain Statutory Claims, which is still pending with the D. Kan. Negotiations relating to the Stipulated Claims and the Statutory Claims are ongoing and the Company cannot determine at this time the outcome of these matters, including whether such outcome, or any subsequent enforcement or litigation relating thereto would have a material impact on the Company’s financial position, results of operations, or cash flows.

Environmental Remediation - As of December 31, 2021 and 2020, environmental accruals representing estimated costs for future remediation efforts at certain Petroleum Segment sites totaled approximately $12 million and $11 million, respectively. These amounts are reflected in Other current liabilities or Other long-term liabilities depending on when the Company expects to expend such amounts.

(12) Business Segments

The Company has two operating segments: Petroleum and Nitrogen Fertilizer. These operating segments are also the Company’s reportable segments. As discussed in Note 1 (“Organization and Nature of Business”), the Petroleum Segment is comprised entirely of the consolidated operations of CVR Refining and its subsidiaries, while the Nitrogen Fertilizer Segment is comprised entirely of the consolidated operations of CVR Partners and its subsidiaries. The other amounts reflect intercompany eliminations, corporate cash and cash equivalents, income tax activities, and other corporate activities that are not allocated to the operating segments. All operations of the segments are located within the United States.

The following tables summarize operating results, capital expenditures, and total asset information by segment:

(in millions)	Year Ended December 31, 2021	2020	2019
Net sales:			
Petroleum	**$ 6,721**	$ 3,586	$ 5,96
Nitrogen Fertilizer	**533**	350	40
Other	**(12)**	(6)	(
Total net sales	**$ 7,242**	$ 3,930	$ 6,36
Operating income (loss):			
Petroleum	**$ (27)**	$ (281)	$ 57
Nitrogen Fertilizer	**134**	(35)	2
Other	**(20)**	(17)	(2
Total operating income (loss)	**87**	(333)	58
Interest expense, net	**(117)**	(130)	(10
Investment income from marketable securities	**81**	41	–
Other income, net	**15**	7	1
Income (loss) before income tax expense	**$ 66**	$ (415)	$ 49
Depreciation and amortization:			
Petroleum	**$ 203**	$ 202	$ 20
Nitrogen Fertilizer	**73**	76	8
Other [(2)]	**3**	—	
Total depreciation and amortization	**$ 279**	$ 278	$ 28
Capital expenditures: [(1)]			
Petroleum	**$ 50**	$ 90	$ 8
Nitrogen fertilizer	**26**	16	2
Other [(2)]	**150**	15	
Total capital expenditures	**$ 226**	$ 121	$ 11

The following table summarizes total assets by segment:

(in millions)	December 31, 2021	2020
Petroleum	**$ 3,368**	$ 2,991
Nitrogen Fertilizer	**1,127**	1,033
Other, including intersegment eliminations	**(589)**	(46)
Total assets	**$ 3,906**	$ 3,978

(1) Capital expenditures are shown exclusive of capitalized turnaround expenditures and business combinations.
(2) Other includes expenses related to and amounts incurred for the Wynnewood renewable diesel unit project.

(13) Supplemental Cash Flow Information

Cash flows related to income taxes, interest, leases, capital expenditures and deferred financing costs included in accounts payable, and non-cash dividends were as follows:

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Supplemental disclosures:			
Cash paid, net of refunds (received, net of payments) for income taxes	**$ 72**	$ (2)	$ 69
Cash paid for interest	**114**	107	104
Cash paid for amounts included in the measurement of lease liabilities:			
Operating cash flows from operating leases	**15**	17	16
Operating cash flows from finance leases	**5**	6	6
Financing cash flows from finance leases	**6**	5	5
Non-cash investing and financing activities:			
Change in construction in progress included in accounts payable (1)	**2**	(3)	(7)
Change in deferred financing costs included in accounts payable	**1**	—	—
Non-cash dividends to CVR Energy stockholders	**251**	—	—

(1) Capital expenditures are shown exclusive of capitalized turnaround expenditures.

Cash, cash equivalents and restricted cash consisted of the following:

	December 31,	
(in millions)	**2021**	**2020**
Cash and cash equivalents	**$ 510**	$ 6[illegible]
Restricted cash (2)	**7**	
Cash, cash equivalents and restricted cash	**$ 517**	$ 6[illegible]

(2) The restricted cash balance is included within Prepaid expenses and other current assets on the Consolidated Balance Sheets.

(14) Related Party Transactions

Activity associated with the Company's related party arrangements for the years ended December 31, 2021, 2020, and 2019 is summarized below:

Expenses with related parties

	Year Ended December 31,		
(in millions)	**2021**	**2020**	**2019**
Cost of materials and other:			
Enable Joint Venture Transportation Agreement	**$ 11**	$ 11	$ [illegible]
Payments (received) made:			
Dividends (1)	**348**	85	2[illegible]
AEP Tax Allocation Agreement	**—**	—	([illegible]

(1) See below for a summary of the dividends paid to IEP for the years ended December 31, 2021, 2020, and 2019.

Enable Joint Venture Agreement

CVR Refining is party to a transportation agreement as part of the Enable JV for an initial term of 20 years under which Enable provides transportation services for crude oil purchased within a defined geographic area. Additionally, CVR Refining entered into a terminalling services agreement with Enable JV under which it receives access to Enable JV's terminal in Lawrence, Oklahoma to unload and pump crude oil into Enable JV's pipeline for an initial term of 20 years.

Midway Joint Venture

For the years ended December 31, 2021, 2020, and 2019, CRRM incurred costs, which are included in Cost of materials and other, of $20 million, $17 million, and $21 million, respectively, from crude oil transportation services incurred on the Midway JV through Vitol as the intermediary purchasing agent.

Dividends to CVR Energy Stockholders

Dividends, if any, including the payment, amount and timing thereof, are determined in the discretion of CVR Energy's board of directors (the "Board"). IEP, through its ownership of the Company's common stock, is entitled to receive dividends that are declared and paid by the Company based on the number of shares held at each record date. No dividends were declared related to the fourth quarter of 2021, and there were no quarterly dividends declared or paid during 2021 related to the first, second, and third quarters of 2021 and fourth quarter of 2020. During the years ended December 31, 2020 and 2019, the Company paid dividends totaling $1.20 and $3.05 per common share, or $121 million and $306 million, respectively. Of these dividends, IEP received $85 million and $218 million, respectively, for the same periods.

On May 26, 2021, the Company announced a special dividend of approximately $492 million, or equivalent to $4.89 per share of the Company's common stock, to be paid in a combination of cash (the "Cash Distribution") and the Stock Distribution. On June 10, 2021, the Company distributed an aggregate amount of approximately $241 million, or $2.40 per share of the Company's common stock, pursuant to the Cash Distribution, and approximately 10,539,880 shares of Delek common stock, which represented approximately 14.3% of the outstanding shares of Delek common stock, pursuant to the Stock Distribution. IEP received approximately 7,464,652 shares of common stock of Delek and $171 million in cash. The Stock Distribution was recorded as a reduction to equity through a derecognition of our investment in Delek, and the Company recognized a gain of $112 million from the initial investment in Delek through the date of the Stock Distribution.

Distributions to CVR Partners' Unitholders

Distributions, if any, including the payment, amount and timing thereof, are subject to change at the discretion of the UAN GP Board. The following table presents distributions paid by CVR Partners to CVR Partners' unitholders, including amounts received by the Company, as of December 31, 2021.

			Distributions Paid *(in millions)*		
Related Period	**Date Paid**	**Distribution Per Common Unit**	**Public Unitholders**	**CVR Energy**	**Total**
2021 - 2nd Quarter	August 23, 2021	$ 1.72	$ 11	$ 7	$ [illegible]
2021 - 3rd Quarter	November 22, 2021	2.93	20	11	[illegible]
Total dividends		$ 4.65	$ 31	$ 18	$ [illegible]

There were no distributions declared or paid by CVR Partners related to the first quarter of 2021 and fourth quarter of 2020, and no distributions were declared or paid during 2020. During the year ended December 31, 2019, CVR Partners paid distributions totaling $4.00 per common unit on a split-adjusted basis, or $45 million. Of these distributions, CVR Energy received $16 million.

For the fourth quarter of 2021, CVR Partners, upon approval by the UAN GP Board on February 21, 2022, declared a distribution of $5.24 per common unit, or $56 million, which is payable March 14, 2022 to unitholders of record as of March 7, 2022. Of this amount, CVR Energy will receive approximately $20 million, with the remaining amount payable to public unitholders.

Item 9. *Changes in and Disagreements with Accountants on Accounting and Financial Disclosure*

None.

Item 9A. *Controls and Procedures*

Evaluation of Disclosure Controls and Procedures

The Company has evaluated, under the direction and with the participation of the Chief Executive Officer and Chief Financial Officer, the effectiveness of our disclosure controls and procedures, as defined in Exchange Act Rule 13a-15(e) and 15d-15(e). Based upon this evaluation, the Company's Chief Executive Officer and Chief Financial Officer concluded that disclosure controls and procedures were effective as of December 31, 2021.

Management's Report on Internal Control Over Financial Reporting

The Company's management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rule 13a-15(f). Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate. Under the supervision and with the participation of management, we conducted an evaluation of the effectiveness of its internal control over financial reporting based on the framework in the 2013 *Internal Control — Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). Based on that evaluation, the Company's Chief Executive Officer, Chief Financial Officer and Chief Accounting Officer have concluded that internal control over financial reporting was effective as of December 31, 2021. The Company's independent registered public accounting firm, that audited the consolidated financial statements included herein under Item 8, has issued a report on the effectiveness of the Company's internal control over financial reporting. This report can be found under Item 8.

Changes in Internal Control Over Financial Reporting

There have been no changes in our internal controls over financial reporting required by Rule 13a-15 of the Exchange Act that occurred during the fiscal quarter ended December 31, 2021 that materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. *Other Information*

During the fourth quarter of 2021, the Compensation Committee of our board of directors (the "Board") approved an amendment to extend the term of the CVR Energy, Inc. Change in Control and Severance Plan (the "Severance Plan"), which was to expire by its terms on January 1, 2022. The Severance Plan, as amended, now provides that the plan will continue until the occurrence of specified change in control events or until it is terminated by the Compensation Committee of the Board. The Severance Plan provides for severance benefits to certain officers of the Company, including our principal financial officer and other named executive officers, in the event of a termination of his or her employment under certain circumstances. The description of the amendment to the Severance Plan herein is qualified in its entirety by the text of the amended Severance Plan, filed as Exhibit 10.26.1 to this Annual Report on Form 10-K.

On February 21, 2022, the Compensation Committee of our Board adopted the CVR Energy, Inc. 2022 Performance Based Bonus Plan and the CVR Refining, LP 2022 Performance Based Bonus Plan (collectively, the "2022 CVI Plans"), which apply to all eligible employees of our subsidiaries (excluding those of CVR Partners and its subsidiaries) and contain terms equivalent to the CVR Energy, Inc. 2021 Performance Based Bonus Plan and the CVR Refining, LP 2021 Performance Based Bonus Plan. The 2022 CVI Plans will be filed with our Quarterly Report on Form 10-Q for the period ending March 31, 2022.

Item 9C. *Disclosure Regarding Foreign Jurisdictions that Prevent Inspections.*

Not applicable.

PART III

Item 10. *Directors, Executive Officers and Corporate Governance*

The information required by Items 401, 405, 406, and 407(c)(3), (d)(4), and (d)(5) of Regulation S-K in response to this item will be set forth in our definitive proxy statement for our 2022 annual meeting of stockholders.

Item 11. *Executive Compensation*

The information required by Items 402 and 407(e)(4) and (e)(5) of Regulation S-K in response to this item will be set forth in our definitive proxy statement for our 2022 annual meeting of stockholders.

Item 12. *Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters*

The equity compensation plan information required by Items 201(d) and the information required by Item 403 of Regulation S-K in response to this item will be set forth in our definitive proxy statement for our 2022 annual meeting of stockholders.

Item 13. *Certain Relationships and Related Transactions, and Director Independence*

The information required by Items 404 and 407(a) of Regulation S-K in response to this item will be set forth in our definitive proxy statement for our 2022 annual meeting of stockholders.

Item 14. *Principal Accounting Fees and Services*

The information required by Items 9(e) of Schedule 14A in response to this item will be set forth in our definitive proxy statement for our 2022 annual meeting of stockholders.

PART IV

Item 15. *Exhibits, Financial Statement Schedules*

(a)(1) Financial Statements - See Part II, Item 8 of this Annual Report on Form 10-K.

(a)(2) Financial Statement Schedules - All schedules for which provision is made in the applicable accounting regulations of the Securities and Exchange Commission (the “SEC”) are not required under the related instructions or are inapplicable and therefore have been omitted.

(a)(3) Exhibits

INDEX TO EXHIBITS

Exhibit Number	Exhibit Description
2.1**	Transaction Agreement among CVR Energy, Inc., IEP Energy LLC and each of the other Offeror Parties (as defined therein) dated as of April 18, 2012 (incorporated by reference to Exhibit 2.1 to the Company’s Form 8-K filed on April 23, 2012).
3.1**	Amended and Restated Certificate of Incorporation of CVR Energy, Inc. (incorporated by reference to Exhibit 3.1 to the Company’s Form 8-K filed on June 15, 2018).
3.2**	Second Amended and Restated Bylaws of CVR Energy, Inc. (incorporated by reference to Exhibit 3.2 to the Company’s Form 8-K filed on June 15, 2018).
4.1**	Description of Common Stock (incorporated by reference to Exhibit 4.1 to the Company’s Form 10-K filed on February 20, 2020).
4.2**	Specimen Common Stock Certificate (incorporated by reference to Exhibit 4.1 to the Company’s Registration Statement on Form S-1/A, File No. 333-137588, filed on June 5, 2007).
4.3**	Indenture, dated June 10, 2016, by and among CVR Partners, LP, CVR Nitrogen Finance Corporation, the Guarantors (as defined therein) and Wilmington Trust, National Association, as Trustee and Collateral Trustee (incorporated by reference to Exhibit 4.1 of the Form 8-K filed by CVR Partners, LP on June 16, 2016 (Commission File No. 001-35120)).
4.4**	Form of 9.250% Senior Secured Note due 2023 (included within the Indenture filed as Exhibit 4.4 and incorporated by reference to Exhibit 4.1 to the Form 8-K filed by CVR Partners, LP on June 16, 2016 (Commission File No. 001-35120)).
4.5**	Indenture, dated as of January 27, 2020, among CVR Energy, Inc., the guarantors named therein and Wells Fargo Bank, National Association, as Trustee (incorporated by reference to Exhibit 4.1 to the Form 8-K filed on January 27, 2020).
4.6**	Form of 5.250% Senior Notes due 2025 (incorporated by reference to Exhibit 4.2 to the Form 8-K filed on January 27, 2020).
4.7**	Form of 5.750% Senior Notes due 2028 (incorporated by reference to Exhibit 4.3 to the Form 8-K filed on January 27, 2020).
4.8**	Indenture, dated as of June 23, 2021, among CVR Partners, LP, CVR Nitrogen Finance Corporation, the Guarantors party thereto and Wilmington Trust, National Association, as trustee and collateral trustee (incorporated by reference to Exhibit 4.1 to the Company’s Form 8-K filed on June 23, 2021).
4.9**	Form of 6.125% Senior Secured Note due 2028 (incorporated by reference to Exhibit 4.2 to the Company’s Form 8-K filed on June 23, 2021).
10.1**	Amended and Restated ABL Credit Agreement, dated as of December 20, 2012, among Coffeyville Resources, LLC, CVR Refining, LP, CVR Refining, LLC, Coffeyville Resources Refining & Marketing, LLC, Coffeyville Resources Pipeline, LLC, Coffeyville Resources Crude Transportation, LLC, Coffeyville Resources Terminal, LLC, Wynnewood Energy Company, LLC, Wynnewood Refining Company, LLC and certain of their affiliates, the lenders from time to time party thereto, Wells Fargo Bank, National Association, as collateral agent and administrative agent (incorporated by reference to Exhibit 1.1 to the Company’s Form 8-K filed on December 27, 2012).

10.1.1**	Amendment No. 1 to Amended and Restated ABL Credit Agreement, dated November 14, 2017, by and among CVR Refining, LP, Coffeyville Finance Inc., CVR Refining, LLC, Coffeyville Resources Refining & Marketing, LLC, Coffeyville Resources Pipeline, LLC, Coffeyville Resources Crude Transportation, LLC, Coffeyville Resources Terminal, LLC, Wynnewood Energy Company, LLC, Wynnewood Refining Company, LLC, CVR Logistics, LLC, a group of lenders and Wells Fargo, National Association, as administrative agent and collateral agent (incorporated by reference as Exhibit 10.1 to the Form 8-K filed by CVR Refining, LP on November 17, 2017).
10.1.2**	Amendment No. 2 to Amended and Restated ABL Credit Agreement, dated as of December 23, 2019, and effective December 31, 2019, by and among CVR Refining, LP, Coffeyville Finance Inc., CVR Refining, LLC, Coffeyville Resources Refining & Marketing, LLC, Coffeyville Resources Pipeline, LLC, Coffeyville Resources Crude Transportation, LLC, Coffeyville Resources Terminal, LLC, Wynnewood Energy Company, LLC, Wynnewood Refining Company, LLC, CVR Logistics, LLC, a group of lenders and Wells Fargo Bank, National Association, as collateral agent and administrative agent (incorporated by reference to Exhibit 10.1.2 to the Company's Form 10-K filed on February 20, 2020).
10.2**	Amended and Restated ABL Pledge and Security Agreement, dated as of December 20, 2012, among CVR Refining, LP, CVR Refining, LLC, Coffeyville Resources Refining & Marketing, LLC, Coffeyville Resources Pipeline, LLC, Coffeyville Resources Crude Transportation, LLC, Coffeyville Resources Terminal, LLC, Wynnewood Energy Company, LLC, Wynnewood Refining Company, LLC and certain of their affiliates, and Wells Fargo Bank, National Association, as collateral agent (incorporated by reference to Exhibit 1.2 to the Company's Form 8-K filed on December 27, 2012).
10.3**	Master Service Agreement among Coffeyville Resources Refining & Marketing, LLC and Coffeyville Resources Nitrogen Fertilizers, LLC, dated February 19, 2020 (incorporated by reference to Exhibit 10.4 to the Company's Form 10-K filed on February 20, 2020).
10.4**	Master Service Agreement among CVR Services, LLC and subsidiaries of CVR Energy, dated February 19, 2020 (incorporated by reference to Exhibit 10.5 to the Company's Form 10-K filed on February 20, 2020).
10.5**	Purchase Agreement, by and among CVR Energy, Inc., American Entertainment Properties Corp., and Icahn Enterprises Holdings L.P. (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed on January 17, 2019).
10.6**	Amended and Restated Crude Oil Supply Agreement, dated August 31, 2012, by and between Vitol Inc. and Coffeyville Resources Refining & Marketing, LLC (incorporated by reference to Exhibit 10.2 to the Company's Form 10-Q filed on November 6, 2012) (Certain portions of this exhibit have been omitted and separately filed with the SEC pursuant to a request for confidential treatment which has been granted by the SEC).
10.6.1**	First Amendment to Amended and Restated Crude Oil Supply Agreement, dated as of June 8, 2015, by and between Vitol Inc. and Coffeyville Resources Refining & Marketing, LLC (incorporated by reference to Exhibit 10.1 to the Company's Form 10-Q filed on July 30, 2015).
10.6.2**	Second Amended and Restated Crude Oil Supply Agreement, dated August 4, 2021, by and between Vitol Inc. and Coffeyville Resources Refining & Marketing, LLC (incorporated by reference as Exhibit 10.1 to the Company's Form 10-Q filed on November 2, 2021).
10.7**+	Employment Agreement, dated as of November 1, 2017, by and between CVR Energy, Inc. and David L. Lamp (incorporated by reference as Exhibit 10.20 to the Form 10-K filed by CVR Partners, LP on February 23, 2018 (Commission File No. 001-35120)).
10.8**+	Performance Unit Award Agreement, dated as of November 1, 2017, by and between CVR Energy, Inc. and David L. Lamp (incorporated by reference as Exhibit 10.22 to the Form 10-K filed by CVR Partners, LP on February 23, 2018 (Commission File No. 001-35120)).
10.9**	Second Amended and Restated Agreement of Limited Partnership of CVR Partners, LP, dated April 13, 2011 (incorporated by reference to Exhibit 10.7 to the Company's Form 8-K/A filed on May 23, 2011).
10.10**	Amended and Restated Contribution, Conveyance and Assumption Agreement, dated as of April 7, 2011, among Coffeyville Resources, LLC, CVR GP, LLC, Coffeyville Acquisition III LLC, CVR Special GP, LLC and CVR Partners, LP (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K/A filed on May 23, 2011).
10.11**	Environmental Agreement, dated as of October 25, 2007, by and between Coffeyville Resources Refining & Marketing, LLC and Coffeyville Resources Nitrogen Fertilizers, LLC (incorporated by reference to Exhibit 10.7 to the Company's Form 10-Q filed on December 6, 2007).

10.11.1**	Supplement to Environmental Agreement, dated as of February 15, 2008, by and between Coffeyville Resources Refining and Marketing, LLC and Coffeyville Resources Nitrogen Fertilizers, LLC (incorporated by reference to Exhibit 10.17.1 to the Company's Form 10-K filed on March 28, 2008).
10.11.2**	Second Supplement to Environmental Agreement, dated as of July 23, 2008, by and between Coffeyville Resources Refining and Marketing, LLC and Coffeyville Resources Nitrogen Fertilizers, LLC (incorporated by reference to Exhibit 10.1 to the Company's Form 10-Q filed on August 14, 2008).
10.12**	Amended and Restated Omnibus Agreement, dated as of April 13, 2011, among CVR Energy, Inc., CVR GP, LLC and CVR Partners, LP (incorporated by reference to Exhibit 10.2 to the Company's Form 8-K/A filed on May 23, 2011).
10.13**	Lease and Operating Agreement, dated as of May 4, 2012, by and between Coffeyville Resources Terminal, LLC and Coffeyville Resources Nitrogen Fertilizers, LLC (incorporated by reference to Exhibit 10.2 to the Company's Form 10-Q filed on August 2, 2012).
10.14**	Form of Indemnification Agreement (incorporated by reference to Exhibit 10.49 to the Company's Form 10-K for the year ended December 31, 2008, filed on March 13, 2009).
10.15**+	Second Amended and Restated CVR Energy, Inc. 2007 Long Term Incentive Plan, dated as of June 6, 2017 (incorporated by reference to Appendix A to the Company's Proxy Statement filed on April 27, 2017) *(Corrected version of exhibit previously filed as Exhibit 10.23 to the Company's Annual Report on Form 10-K for the year ended December 31, 2020).*
10.16**+	Form of Incentive Unit Agreement (incorporated by reference to Exhibit 10.30.7 to the Company's Form 10-K filed on February 21, 2018.)
10.17**+	Form of CVR Energy, Inc. Incentive Unit Agreement (incorporated by reference to Exhibit 10.31 to the Company's Form 10-K filed on February 21, 2019).
10.17.1**+	Form CVR Energy, Inc. Incentive Unit Agreement (Executive) (incorporated by reference to Exhibit 10.31.1 to the Company's Form 10-K filed on February 21, 2019).
10.17.2*+	Form CVR Energy, Inc. Incentive Unit Agreement (Executive).
10.17.3*+	Form CVR Energy, Inc. Incentive Unit Agreement.
10.18**+	CVR Energy, Inc. Change in Control and Severance Plan (incorporated by reference to Exhibit 10.1 of the Company's Form 10-Q filed on October 25, 2018).
10.18.1*+	CVR Energy, Inc. Change in Control and Severance Plan, as amended effective January 1, 2022.
10.19**+	CVR Energy, Inc. Performance-Based Bonus Plan, approved March 19, 2019 (incorporated by reference to Exhibit 10.1 to the Company's Form 10-Q filed on April 25, 2019).
10.20**+	CVR Partners, LP Performance-Based Bonus Plan, approved March 19, 2019 (incorporated by reference to Exhibit 10.2 to the Company's Form 10-Q filed on April 25, 2019).
10.21**+	CVR Refining, LP Performance-Based Bonus Plan, approved March 19, 2019 (incorporated by reference to Exhibit 10.3 to the Company's Form 10-Q filed on April 25, 2019).
10.22**+	CVR Partners, LP Long-Term Incentive Plan (adopted March 16, 2011) (incorporated by reference to Exhibit 10.1 to the Form S-8 filed by CVR Partners, LP on April 12, 2011).
10.22.1**+	Form of CVR Partners, LP Long-Term Incentive Plan Employee Phantom Unit Agreement (incorporated by reference to Exhibit 10.38.3 to the Company's Form 10-K filed on February 20, 2015).
10.22.2**+	Form of CVR Partners, LP Long-Term Incentive Plan Employee Phantom Unit Agreement (Executive) (incorporated by reference to Exhibit 10.30.2 to the Company's Form 10-K filed on February 20, 2020).
10.22.3**+	Form of CVR Partners, LP Long-Term Incentive Plan Employee Phantom Unit Agreement (incorporated by reference to Exhibit 10.30.3 to the Company's Form 10-K filed on February 20, 2020).
10.22.4*+	Form of CVR Partners, LP Long-Term Incentive Plan Employee Phantom Unit Agreement (Executive).
10.22.5*+	Form of CVR Partners, LP Long-Term Incentive Plan Employee Phantom Unit Agreement.
10.23**+	CVR Refining, LP Long-Term Incentive Plan (incorporated by reference to Exhibit 10.2 to the Form 8-K filed by CVR Refining, LP on January 23, 2013 (Commission File No. 001-35781)).

10.23.1**+	Form of CVR Refining, LP Long-Term Incentive Plan Employee Phantom Unit Agreement (incorporated by reference to Exhibit 10.44.2 to the Company's Form 10-K filed on February 20, 2015).
10.24**	Registration Rights Agreement, dated as of August 9, 2015, by and among CVR Partners, Coffeyville Resources, LLC, Rentech Nitrogen Holdings, Inc., and DSHC, LLC (incorporated by reference to Exhibit 4.1 to the Form 8-K filed by CVR Partners, LP on August 13, 2015 (Commission File No. 001-35120)).
10.25**	Collateral Trust Agreement, dated as of June 10, 2016, among CVR Partners, LP, CVR Nitrogen Finance Corporation, the Guarantors (as defined therein) and Wilmington Trust, National Association, as Trustee and Collateral Trustee (incorporated by reference to Exhibit 10.1 of the Form 8-K filed by CVR Partners, LP on June 16, 2016 (Commission File No. 001-35120)).
10.26**	Parity Lien Security Agreement, dated as of June 10, 2016, among CVR Partners, LP, CVR Nitrogen Finance Corporation, the Guarantors (as defined therein) and Wilmington Trust, National Association, as Trustee and Collateral Trustee(incorporated by reference to Exhibit 10.2 of the Form 8-K filed by CVR Partners, LP on June 16, 2016 (Commission File No. 001-35120)).
10.27**	ABL Credit Agreement, dated as of September 30, 2016, among CVR Partners, LP, CVR Nitrogen, LP, East Dubuque Nitrogen Fertilizers, LLC, Coffeyville Resources Nitrogen Fertilizers, LLC, CVR Nitrogen Holdings, LLC, CVR Nitrogen Finance Corporation, CVR Nitrogen GP, LLC, certain of their affiliates from time to time party thereto, the lenders from time to time party thereto, UBS AG, Stamford Branch, as administrative agent and collateral agent (incorporated by reference to Exhibit 10.1 of the Form 8-K filed by CVR Partners, LP on October 6, 2016 (Commission File No. 001-35120)).
10.28**	Security Agreement, dated as of September 30, 2016, among CVR Partners, LP, CVR Nitrogen, LP, East Dubuque Nitrogen Fertilizers, LLC, Coffeyville Resources Nitrogen Fertilizers, LLC, CVR Nitrogen Holdings, LLC, CVR Nitrogen Finance Corporation, CVR Nitrogen GP, LLC, certain of their affiliates from time to time party thereto, and UBS AG, Stamford Branch, as administrative agent and collateral agent (incorporated by reference to Exhibit 10.2 of the Form 8-K filed by CVR Partners, LP on October 6, 2016 (Commission File No. 001-35120)).
10.29**	Intercreditor Agreement, dated as of September 30, 2016, among CVR Partners, LP, CVR Nitrogen, LP, East Dubuque Nitrogen Fertilizers, LLC, Coffeyville Resources Nitrogen Fertilizers, LLC, CVR Nitrogen Holdings, LLC, CVR Nitrogen Finance Corporation, CVR Nitrogen GP, LLC, certain of their affiliates from time to time party thereto, UBS AG, Stamford Branch, as administrative agent and collateral agent for the secured parties, Wilmington Trust, National Association, as trustee and collateral trustee for the secured parties in respect of the outstanding senior secured notes and other parity lien obligations and other parity lien representative from time to time party thereto (incorporated by reference to Exhibit 10.3 of the Form 8-K filed by CVR Partners, LP on October 6, 2016 (Commission File No. 001-35120)).
10.30**	On-Site Product Supply Agreement among Coffeyville Resources Nitrogen Fertilizers, LLC and Messer LLC dated as of July 31, 2020 (incorporated by reference to Exhibit 10.1 to the Company's Form 10-Q filed on August 4, 2020).
10.30.1*	Amendment No. 1 to On-Site Product Supply Agreement among Coffeyville Resources Nitrogen Fertilizers, LLC and Messer LLC dated as of February 21, 2022.
10.31**+	CVR Energy, Inc. 2020 Performance-Based Bonus Plan, approved February 19, 2020 (incorporated by reference to Exhibit 10.38 to the Company's Form 10-K filed on February 20, 2020).
10.32**+	CVR Partners, LP 2020 Performance-Based Bonus Plan, approved February 19, 2020 (incorporated by reference to Exhibit 10.39 to the Company's Form 10-K filed on February 20, 2020).
10.33**+	CVR Refining, LP 2020 Performance-Based Bonus Plan, approved February 19, 2020 (incorporated by reference to Exhibit 10.40 to the Company's Form 10-K filed on February 20, 2020).
10.34**	Amendment No. 1 to ABL Credit Agreement, dated as of September 29, 2020, among CVR Partners, LP, CVR Nitrogen, LP, East Dubuque Nitrogen Fertilizers, LLC, CVR Nitrogen Holdings, LLC, Coffeyville Resources Nitrogen Fertilizers, LLC, CVR Nitrogen GP, LLC and CVR Nitrogen Finance Corporation, the lenders party thereto and UBS AG, Stamford Branch, as administrative agent and collateral agent (incorporated by reference to Exhibit 10.1 to the Form 8-K filed by CVR Partners, LP on September 30, 2020).
10.35**+	CVR Energy, Inc. 2021 Performance-Based Bonus Plan, approved February 19, 2021 (incorporated by reference to Exhibit 10.41 to the Company's Form 10-K filed on February 23, 2021).
10.36**+	CVR Partners, LP 2021 Performance-Based Bonus Plan, approved February 19, 2021 (incorporated by reference to Exhibit 10.42 to the Company's Form 10-K filed on February 23, 2021).

10.37**+	CVR Refining, LP 2021 Performance-Based Bonus Plan, approved February 19, 2021 (incorporated by reference to Exhibit 10.43 to the Company's Form 10-K filed on February 23, 2021).
10.38**+	Letter Agreement, dated as of February 22, 2021, by and between CVR Services, LLC and David L. Landreth (incorporated by reference to Exhibit 10.44 to the Company's Form 10-K filed on February 23, 2021).
10.39**	Collateral Trust Joinder, dated as of June 23, 2021, among CVR Partners, LP, CVR Nitrogen Finance Corporation, the Guarantors party thereto and Wilmington Trust, National Association, as trustee and collateral trustee (incorporated by reference to Exhibit 10.3 to the Company's Form 8-K filed on June 23, 2021).
10.40**	The Joinder Agreement (Other Parity Lien Obligations), dated as of June 23, 2021, among Wilmington Trust, National Association, as an other parity obligations representative, UBS AG, Stamford Branch, as collateral agent under the Existing ABL Facility, Wilmington Trust, National Association, as applicable parity lien representative, Wilmington Trust, National Association, as parity lien collateral trustee and CVR Partners, LP (incorporated by reference to Exhibit 10.4 to the Company's Form 8-K filed on June 23, 2021).
10.41**+	Offer Letter, dated as of October 7, 2021, by and between CVR Services, LLC and Dane J. Neumann (incorporated by reference as Exhibit 10.2 to the Company's Form 10-Q filed on November 2, 2021).
10.42**+	Offer Letter, dated as of August 9, 2021, by and between CVR Services, LLC and Jeffrey D. Conaway (incorporated by reference as Exhibit 10.3 to the Company's Form 10-Q filed on November 2, 2021).
10.43**	Severance and Release Agreement, effective as of August 29, 2021, by and between CVR Services, LLC and Tracy D. Jackson (incorporated by reference as Exhibit 10.1 to the Company's Form 10-Q filed on November 2, 2021).
10.44**	Credit Agreement, dated as of September 30, 2021, among CVR Partners, LP, CVR Nitrogen, LP, East Dubuque Nitrogen Fertilizers, LLC, Coffeyville Resources Nitrogen Fertilizers, LLC, CVR Nitrogen Holdings, LLC, CVR Nitrogen Finance Corporation, CVR Nitrogen GP, LLC, certain of their subsidiaries from time to time party thereto, the lenders from time to time party thereto and Wells Fargo Bank, National Association, a national banking association, as administrative agent and collateral agent (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed on September 30, 2021).
10.45**	Guaranty and Security Agreement, dated as of September 30, 2021, among CVR Partners, LP, CVR Nitrogen, LP, East Dubuque Nitrogen Fertilizers, LLC, Coffeyville Resources Nitrogen Fertilizers, LLC, CVR Nitrogen Holdings, LLC, CVR Nitrogen Finance Corporation, CVR Nitrogen GP, LLC, certain of their subsidiaries from time to time party thereto, and Wells Fargo Bank, National Association, a national banking association, as administrative agent and collateral agent (incorporated by reference to Exhibit 10.2 to the Company's Form 8-K filed on September 30, 2021).
10.46**	Joinder Agreement (Other Parity Lien Obligations), dated as of September 30, 2021, among Wilmington Trust, National Association ("WTNA"), as an other applicable parity obligations representative, UBS AG, Stamford Branch ("UBS"), as collateral agent under the existing ABL Facility, WTNA, as applicable parity lien representative, WTNA, as parity lien collateral trustee, Wells Fargo, as collateral agent under the ABL Credit Facility and CVR Partners (on behalf of itself and its subsidiaries) to that certain intercreditor agreement dated as of September 30, 2016 (as amended, supplemented or otherwise modified to date), among the Credit Parties, certain of their subsidiaries from time to time party thereto, UBS as trustee and collateral trustee for the secured parties in respect of the outstanding senior secured notes and other parity lien obligations and other parity lien representative from time to time party thereto(incorporated by reference to Exhibit 10.3 to the Company's Form 8-K filed on September 30, 2021).
10.47**+	Employment Agreement, dated as of December 22, 2021, by and between CVR Energy, Inc. and David L. Lamp (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed on December 27, 2021).
10.48**+	Amendment to Performance Unit Award Agreement, dated as of December 22, 2021, by and between CVR Energy, Inc. and David L. Lamp (incorporated by reference to Exhibit 10.2 to the Company's Form 8-K filed on December 27, 2021).

10.49*+	Offer Letter, dated as of January 26, 2022, by and between CVR Services, LLC and Michael H. Wright, Jr.
21.1*	List of Subsidiaries of CVR Energy, Inc.
23.1*	Consent of Grant Thornton LLP.
31.1*	Rule 13a-14(a)/15d-14(a) Certification of President and Chief Executive Officer.
31.2*	Rule 13a-14(a)/15d-14(a) Certification of Executive Vice President, Chief Financial Officer.
31.3*	Rule 13a-14(a)/15d-14(a) Certification of Chief Accounting Officer and Corporate Controller.
32.1†	Section 1350 Certification of President and Chief Executive Officer and Executive Vice President, Chief Financial Officer, and Chief Accounting Officer and Corporate Controller.
101*	The following financial information for CVR Energy, Inc.'s Annual Report on Form 10-K for the year ended December 31, 2021, formatted in Inline XBRL ("Extensible Business Reporting Language") includes: (i) Consolidated Balance Sheets, (ii) Consolidated Statements of Operations, (iii) Consolidated Statements of Comprehensive Income, (iv) Consolidated Statements of Changes in Equity, (v) Consolidated Statements of Cash Flows, and (vi) the Notes to Consolidated Financial Statements, tagged in detail. The instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
104*	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101).

* Filed herewith.
** Previously filed.
† Furnished herewith.
\+ Denotes management contract or compensatory plan or arrangement.

PLEASE NOTE: Pursuant to the rules and regulations of the SEC, we may file or incorporate by reference agreements as exhibits to the reports that we file with or furnish to the SEC. The agreements are filed to provide investors with information regarding their respective terms. The agreements are not intended to provide any other factual information about the Company or its business or operations. In particular, the assertions embodied in any representations, warranties and covenants contained in the agreements may be subject to qualifications with respect to knowledge and materiality different from those applicable to investors and may be qualified by information in confidential disclosure schedules not included with the exhibits. These disclosure schedules may contain information that modifies, qualifies and creates exceptions to the representations, warranties and covenants set forth in the agreements. Moreover, certain representations, warranties and covenants in the agreements may have been used for the purpose of allocating risk between the parties, rather than establishing matters as facts. In addition, information concerning the subject matter of the representations, warranties and covenants may have changed after the date of the respective agreement, which subsequent information may or may not be fully reflected in the Company's public disclosures. Accordingly, investors should not rely on the representations, warranties and covenants in the agreements as characterizations of the actual state of facts about the Company or its business or operations on the date hereof.

Item 16. *Form 10-K Summary*

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this Report to be signed on its behalf by the undersigned, thereunto duly authorized.

CVR Energy, Inc.

By: /s/ DAVID L. LAMP
David L. Lamp
President and Chief Executive Officer

Date: February 22, 2022

Pursuant to the requirements of the Securities Exchange Act of 1934, this Report had been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ DAVID L. LAMP David L. Lamp	President, Chief Executive Officer, and Director (Principal Executive Officer)	February 22, 2
/s/ DANE J. NEUMANN Dane J. Neumann	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	February 22, 2
/s/ JEFFREY D. CONAWAY Jeffrey D. Conaway	Vice President, Chief Accounting Officer and Corporate Controller (Principal Accounting Officer)	February 22, 2
/s/ KAPILJEET DARGAN Kapiljeet Dargan	Director	February 22, 2
/s/ JAFFERY A. FIRESTONE Jaffery A. Firestone	Director	February 22, 2
/s/ HUNTER C. GARY Hunter C. Gary	Director	February 22, 2
/s/ STEPHEN MONGILLO Stephen Mongillo	Director	February 22, 2
/s/ JAMES M. STROCK James M. Strock	Director	February 22, 2
/s/ DAVID WILLETTS David Willetts	Director	February 22, 2

CVR ENERGY, INC.
INCENTIVE UNIT AGREEMENT - EXECUTIVE

THIS INCENTIVE UNIT AGREEMENT (this "Agreement") is made as of the [ ] day of [ ] (the "Grant Date"), between CVR Energy, Inc., a Delaware corporation (the "Company") (NYSE: CVI), on behalf of the employing entity of the Grantee, and the individual grantee designated on the signature page hereof (the "Grantee").

WHEREAS, the compensation committee (the "Committee") of the board of directors (the "Board") of the Company is responsible for establishing, reviewing and approving incentive compensation in order to provide an additional incentive to certain of the officers and employees of the Company and its "Subsidiaries" (as defined in Rule 12b-2 of the Exchange Act); and

WHEREAS, the Committee, on behalf of the employing entity of the Grantee, has authorized the grant of Incentive Units (as defined herein) to the Grantee as provided herein.

NOW, THEREFORE, the parties hereto agree as follows:

1. Grant of Incentive Units.

(a) The Company hereby grants to the Grantee, and the Grantee hereby accepts from the Company on the terms and conditions set forth in this Agreement, an award of <<units>> Incentive Units. Subject to the terms and conditions of this Agreement, each "Incentive Unit" described herein represents the right of the Grantee to receive, for each Incentive Unit that becomes vested, a cash payment equal to the average closing price of one Share for the 10 trading days preceding the applicable Vesting Date (as defined herein) pursuant to Section 2 or Section 3(a) or (b) below. The reference to the Incentive Units and Shares are used herein solely to calculate the cash payout, if any, to be awarded to the Grantee in accordance with this Agreement, and does not create any separate rights with respect to Shares or otherwise.

(b) Except as otherwise expressly set forth herein, the capitalized terms used in this Agreement shall have the same definitions as set forth in the Second Amended and Restated CVR Energy, Inc. 2007 Long Term Incentive Plan, as amended from time to time (the "2007 LTIP"). For the sake of clarity, the parties hereto acknowledge and agree that the Incentive Units awarded to the Grantee hereunder are not being granted under the 2007 LTIP, the CVR Refining, LP Long-Term Incentive Plan or any other employee benefit plan.

2. Vesting Date.

The Incentive Units are unvested on and after the Grant Date and shall vest, with respect to thirty-three and one-third percent (33 – 1/3%) of the total number of Incentive Units granted hereunder, on [], [] and [] (each such date, a "***Vesting Date***"), provided the Grantee continues to serve as an employee of the Company (or a Subsidiary thereof) from the Grant Date through the applicable Vesting Date.

3. Termination of Employment.

(a) In the event (i) of the Grantee's termination of employment with the Company or one of its Subsidiaries prior to any Vesting Date by reason of his or her death or Disability, or (ii) the Company exercises its right to cancel any Incentive Units under Section 8(d) while Grantee is employed by the Company or one of its Subsidiaries, then any Incentive

Units scheduled to vest within twelve months from the date on which such event occurs shall become immediately vested, and all other Incentive Units shall be deemed forfeited and the Grantee shall have no rights with respect thereto.

(b) If the Grantee's employment is terminated by the Company or one of its Subsidiaries other than for Cause or Disability, then any Incentive Units scheduled to vest within twelve months from the date on which such event occurs shall become immediately vested, and all other Incentive Units shall be deemed forfeited and the Grantee shall have no rights with respect thereto.

(c) Any Incentive Units that do not become vested in connection with the Grantee's termination of employment in accordance with Section 3(a) or (b) of this Agreement shall be forfeited immediately upon the Grantee's termination of employment.

(d) To the extent any payments provided for under this Agreement are treated as "nonqualified deferred compensation" subject to Section 409A of the Code, (i) this Agreement shall be interpreted, construed and operated in accordance with Section 409A of the Code and the Treasury regulations and other guidance issued thereunder, (ii) if on the date of the Grantee's separation from service (as defined in Treasury Regulation §1.409A-1(h)) with the Company or one of its Subsidiaries the Grantee is a specified employee (as defined in Section 409A of the Code and Treasury Regulation §1.409A-1(i)), no payment constituting the "deferral of compensation" within the meaning of Treasury Regulation §1.409A-1(b) and after application of the exemptions provided in Treasury Regulation §§1.409A-1(b)(4) and 1.409A-1(b)(9)(iii) shall be made to the Grantee at any time prior to the earlier of (A) the expiration of the six (6) month period following the Grantee's separation from service or (B) the Grantee's death, and any such amounts deferred during such applicable period shall instead be paid in a lump sum to the Grantee (or, if applicable, to the Grantee's estate) on the first payroll payment date following the earlier of the expiration of such six (6) month period or, if applicable, the Grantee's death, and (iii) for purposes of conforming this Agreement to Section 409A of the Code, any reference to termination of employment, termination or separation from employment, resignation from employment or similar terms shall mean and be interpreted as a "separation from service" as defined in Treasury Regulation §1.409A-1(h). For purposes of applying Section 409A of the Code to this Agreement (including, without limitation, for purposes of Treasury Regulation Section 1.409A-2(b)(2)(iii)), each payment that the Grantee may be entitled to receive under this Agreement shall be treated as a separate and distinct payment and shall not collectively be treated as a single payment.

4. Dividend Equivalent Rights

The Company hereby grants to the Grantee, and the Grantee hereby accepts from the Company, one "Dividend Equivalent Right" for each Incentive Unit granted herein equal to the cash value of all dividends declared and paid by the Company on one Share from the Grant Date to and including the Vesting Date. The reference to the cash value of such dividends is used herein solely to calculate the cash payout, if any, to be awarded in respect of such Dividend Equivalent Rights and does not create any separate rights with respect to the Dividend Equivalent Rights. The payment of Dividend Equivalent Rights will be deferred until and conditioned upon the underlying Incentive Units becoming vested pursuant to Section 2 or 3 hereof. Upon each Vesting Date, Dividend Equivalent Rights on all Incentive Units vesting on such date, with no interest thereon, shall become payable to the Grantee in accordance with Section 5 hereof.

5. Payment Date.

Within 15 business days following (i) each Vesting Date, (ii) if, prior to any Vesting Date, the Grantee's termination of employment with the Company or one of its Subsidiaries under circumstances described in Section 3(a) or (b), the date of such termination of employment, or (iii) if, prior to any Vesting Date, the cancellation of any Incentive Units pursuant to Section 8(d) while Grantee is employed by the Company or one of its Subsidiaries, the Company will deliver to the Grantee the cash payment underlying the Incentive Units and Dividend Equivalent Rights (if any) that become vested pursuant to Sections 2, 3 or 4 of this Agreement.

6. Administration.

(a) This Agreement shall be administered by the Committee, unless the Board has determined to administer this Agreement, at which time all references to the "Committee" will apply to the Board. The Committee may adopt such rules, regulations and guidelines as it deems are necessary or appropriate for the administration of this Agreement.

(b) Subject to the express terms and conditions set forth herein, the Committee shall have the power from time to time to: (i) construe and interpret this Agreement, amend and revoke rules and regulations for the administration of this Agreement, including, but not limited to, correcting any defect or supplying any omission, or reconciling any inconsistency in this Agreement, in the manner and to the extent it shall deem necessary or advisable, including so that this Agreement and the operation of this Agreement comply, where applicable, with Rule 16b-3 under Exchange Act, the Code, and other applicable law, and otherwise to make this Agreement fully effective; (ii) determine the duration and purpose of any leaves of absence which may be granted to the Grantee without constituting a "separation from service" as defined in Treasury Regulation §1.409A-1(h); (iii) exercise its discretion with respect to the rights and powers granted to it as set forth in this Agreement and which would be consistent with the powers and rights granted in this Agreement; and (iv) generally, exercise such powers and perform such acts as are necessary or advisable to promote the best interests of the Company with respect to this Agreement. All decisions and determinations by the Committee in the exercise of all powers under this Agreement shall be final, binding and conclusive upon the Company, its Subsidiaries, the Grantee and all other persons having any interest herein.

(c) Notwithstanding anything herein to the contrary, with respect to a Grantee working outside the United States, the Committee may determine the terms and conditions of this Agreement and make such adjustments to the terms hereof as are necessary or advisable to fulfill the purposes of this Agreement taking into account matters of local law or practice, including tax and securities laws of jurisdictions outside the United States.

(d) No member of the Committee shall be liable for any action, failure to act, determination or interpretation made in good faith with respect to this Agreement or any transaction hereunder. The Company hereby agrees to indemnify each member of the Committee for all costs and expenses and, to the extent permitted by applicable law, any liability incurred in connection with defending against, responding to, negotiating for the settlement of or otherwise dealing with any claim, cause of action or dispute of any kind arising in connection with any actions in administering this Agreement or in authorizing or denying authorization to any transaction hereunder.

7. Adjustment Upon Changes in Capitalization.

In the event of a Change in Capitalization (defined below), the Committee shall conclusively determine, in its good faith discretion, the appropriate adjustments, if any, to the maximum number and/or class of Incentive Units or other stock or securities with respect to which this Agreement relates in order to prevent substantial dilution or enlargement of the Grantee's rights with respect to the Incentive Units as of the date of such Change in Capitalization, except that no adjustment shall be made that would duplicate the Grantee's rights, if any, under Section 4 with respect to Dividend Equivalent Rights. A "Change in Capitalization" means any change in the capital structure or business of the Company by reason of a reclassification, recapitalization, merger, consolidation, reorganization, spin-off, split-up, issuance of warrants, rights or debentures without the Company's receipt of consideration, stock dividend, split or reverse split, extraordinary cash dividend, property dividend, combination or exchange of shares or other similar change in Shares or the Company's capital structure. The Committee may also make, in its sole discretion, such other adjustments as it deems necessary to take into consideration any other event if the Committee determines that such adjustment is appropriate to avoid substantial distortion of the operation of the Incentive Units.

8. Effect of Certain Transactions.

Following the liquidation or dissolution of the Company, or a merger or consolidation of the Company (as applicable, a "Transaction"), or a Change in Control, either this Agreement shall be treated as provided in the agreement entered into in connection with the Transaction or Change in Control, or if not so provided in such agreement, the Company may take one or more of the following actions: (a) remove any applicable forfeiture restrictions on the Incentive Units; (b) accelerate the time at which the restricted periods on the Incentive Units shall lapse; (c) require the mandatory surrender to the Company of the Incentive Units as of a specific date, in which event the Company shall cancel the Incentive Units and pay to the Grantee an amount of cash per Incentive Unit equal to the value the Committee has determined to be the fair market value of a Share at the time of the Change in Control or the Transaction, as applicable; (d) cancel any Incentive Units, without consideration, that remain unvested at the time of the Change in Control or the Transaction, as applicable; or (e) make such adjustments to this Agreement, if any, as the Committee deems appropriate to reflect the Change in Control or the Transaction (including, but not limited to, substituting a new award for the Incentive Units).

9. Non-transferability.

The Incentive Units may not be sold, transferred or otherwise disposed of and may not be pledged or otherwise hypothecated, other than by will or by the laws of descent or distribution. The Incentive Units shall not be subject to execution, attachment or other process.

10. Incentive Compensation Recoupment.

(a) In the event of a restatement of the Company's (or any of its Subsidiaries') financial results that would reduce (or would have reduced) the amount of any previously awarded Incentive Units to Grantee, any related outstanding Incentive Units will be cancelled or reduced accordingly as determined by the Board or Committee in its sole and absolute discretion. For Incentive Units that have been paid, the Grantee shall be obligated and required to pay over to the Company an amount equal to any gain realized by Grantee in respect of such Incentive Units.

(b) The Board or the Committee may at any time, in its sole and absolute discretion, cancel, declare forfeited, rescind, or require the return of any outstanding Incentive Units (or a portion thereof) upon the Board or Committee determining, at any time (whether before or after the Grant Date), that the Grantee has engaged in misconduct (including by omission) or that an event or condition has occurred, which, in each case, would have given the Company or its Subsidiaries the right to terminate the Grantee's employment for Cause. In addition, at any time following any payment in respect of the Incentive Units, the Board or Committee may, in its sole and absolute discretion, rescind any such payment and require the repayment of such amounts (or a portion thereof) upon the Board or Committee determining, at any time (whether before or after the payment date), that the Grantee has engaged in misconduct (including by omission) or that an event or condition has occurred, which, in each case, would have given the Company or its Subsidiaries the right to terminate the Grantee's employment for Cause.

(c) The Board's or Committee's determination that the Grantee has engaged in misconduct (including by omission), or that an event or condition has occurred, which, in each case, would have given the Company or its Subsidiaries the right to terminate the Grantee's employment for Cause, and its decision to require rescission of any payment made in respect of the Incentive Units, shall be conclusive, binding, and final on all parties. The Board's or Committee's determination that the Grantee has violated the terms of this Agreement (or any other agreement between Grantee and the Company or any of its affiliates), and the Board's or Committee's decision to cancel, declare forfeited, or rescind the Incentive Units (or any portion thereof) or to require rescission of any payment made in respect thereof shall be conclusive, binding, and final on all parties. In connection with any cancellation, forfeiture or rescission contemplated by this Section 10, the terms of repayment by the Grantee shall be determined in the Board's and/or Committee's sole and absolute discretion, which may include, among other terms, the repayment being required to be made (i) in one or more installments or payroll deductions or deducted from future bonus payments or (ii) immediately in a lump sum in the event that the Grantee incurs a termination of employment.

(d) To the extent not prohibited under applicable law, the Company, in its sole and absolute discretion, will have the right to set off (or cause to be set off) any amounts otherwise due to the Grantee from the Company (or any of its affiliates) in satisfaction of any repayment obligation of the Grantee hereunder, provided that any such amounts are exempt from, or set off in a manner intended to comply with the requirements of, Section 409A of the Code.

(e) If the Company subsequently determines that it is required by law to apply a "clawback" or alternate recoupment provision to the Incentive Units granted hereunder, under the Dodd-Frank Wall Street Reform and Consumer Protection Act or otherwise, then such clawback or recoupment provision also shall apply to such Incentive Units, as if it had been included on the effective date of this Agreement.

11. No Right to Continued Employment.

Nothing in this Agreement shall be interpreted or construed to confer upon the Grantee any right with respect to continuance of employment by the Company or one of its Subsidiaries or Affiliates, nor shall this Agreement interfere in any way with the right of the Company or one of its Subsidiaries or Affiliates to terminate the Grantee's employment therewith at any time.

12. Withholding of Taxes.

The Grantee shall pay to the Company, or the Company and the Grantee shall agree on such other arrangements necessary for the Grantee to pay, the applicable federal, foreign, state and local income taxes required by law to be withheld (the "Withholding Taxes"), if any, upon the vesting or payment of the Incentive Units. The Company shall have the right to deduct from any payment of cash to the Grantee an amount equal to the Withholding Taxes in satisfaction of the Grantee's obligation to pay Withholding Taxes.

13. Interpretation.

This Agreement is intended to comply with Rule 16b-3 of the Exchange Act and the Committee shall interpret and administer the provisions of this Agreement in a manner consistent therewith. Any provision inconsistent with such rule shall be inoperative and shall not affect the validity of this Agreement.

14. Modification or Termination of Agreement.

This Agreement may be modified, amended, suspended or terminated, and any terms or conditions may be waived, but only by a written instrument executed by the parties hereto; provided, however, that the Company may modify or amend this Agreement without the written consent of the Grantee to the extent that such action (i) does not materially impair the Grantee's rights or (ii) is necessary for compliance with an applicable law, regulation or exchange requirement that impacts this Agreement. No waiver by either party hereto of any breach by the other party hereto of any provision of this Agreement to be performed by such other party shall be deemed a waiver of similar or dissimilar provisions at the time or at any prior or subsequent time.

15. Severability.

Should any provision of this Agreement be held by a court of competent jurisdiction to be unenforceable or invalid for any reason, the remaining provisions of this Agreement shall not be affected by such holding and shall continue in full force in accordance with their terms.

16. Governing Law.

The validity, interpretation, construction and performance of this Agreement shall be governed by the laws of the State of New York without giving effect to the conflicts of laws principles thereof.

17. Entire Understanding.

This Agreement embodies the entire understanding and agreement of the parties in relation to the subject matter hereof, and no promise, condition, representation or warranty, expressed or implied, not herein stated, shall bind either party hereto.

18. Rights as Equity Holder.

In no event whatsoever shall the Grantee possess any incidents of ownership in any equity of the Company, including Shares, with respect to the Incentive Units granted hereunder.

19. Successors in Interest.

This Agreement shall inure to the benefit of and be binding upon any successor to the Company. This Agreement shall inure to the benefit of the Grantee's beneficiaries, heirs, executors, administrators, successors and legal representatives. All obligations imposed upon the Grantee and all rights granted to the Company under this Agreement shall be final, binding and conclusive upon the Grantee's beneficiaries, heirs, executors, administrators, successors and legal representatives.

20. Unfunded Status.

The Incentive Units constitute an unfunded and unsecured promise of the Company to deliver (or cause to be delivered) to the Grantee, subject to the terms and conditions of this Agreement, cash on the applicable Vesting Date for the applicable portion of such Incentive Units as provided herein. By accepting this grant of Incentive Units, the Grantee understands that this grant does not confer any legal or equitable right (other than those constituting the Incentive Units) against the Company or any of its Subsidiaries or Affiliates, directly or indirectly, or give rise to any cause of action at law or in equity against the Company or any of its Subsidiaries or Affiliates. The rights of the Grantee (or any person claiming through the Grantee) under this Agreement shall be solely those of an unsecured general creditor of the Company.

21. Resolution of Disputes.

Any dispute or disagreement which may arise under, or as a result of, or in any way relate to, the interpretation, construction or application of this Agreement shall be determined by the Committee (in its sole and absolute discretion). Any determination made hereunder shall be final, binding and conclusive on the Grantee and the Company for all purposes.

[signature page follows]

IN WITNESS WHEREOF, this Agreement has been executed as of the date first written above.

CVR ENERGY, INC.

By: <<Name>>
Title: <<Title>>

GRANTEE

Name: <<Name>>

CVR ENERGY, INC.
INCENTIVE UNIT AGREEMENT

THIS INCENTIVE UNIT AGREEMENT (this "Agreement") is made as of the [] day of [], 20[] (the "Grant Date"), between CVR Energy, Inc., a Delaware corporation (the "Company"), on behalf of the employing entity of the Grantee, and the individual grantee designated on the signature page hereof (the "Grantee").

WHEREAS, the compensation committee (the "Committee") of the board of directors (the "Board") of the Company is responsible for establishing, reviewing and approving incentive compensation in order to provide an additional incentive to certain of the officers and employees of the Company and its "Subsidiaries" (as defined in Rule 12b-2 of the Exchange Act), and may delegate its authority to the Company to approve such additional incentive to certain employees; and

WHEREAS, the Committee or the Company, as applicable, has authorized the grant of Incentive Units (as defined herein) to the Grantee as provided herein.

NOW, THEREFORE, the parties hereto agree as follows:

1. Grant of Incentive Units.

(a) The Company hereby grants to the Grantee, and the Grantee hereby accepts from the Company on the terms and conditions set forth in this Agreement, an award of <<UNITS>> Incentive Units. Subject to the terms and conditions of this Agreement, each "Incentive Unit" described herein represents the right of the Grantee to receive, for each Incentive Unit that becomes vested, a cash payment equal to the average closing price of one Share for the 10 trading days preceding the applicable Vesting Date (as defined herein) pursuant to Section 2 or Section 3(a) or (b) below. The reference to the Incentive Units and Shares are used herein solely to calculate the cash payout, if any, to be awarded to the Grantee in accordance with this Agreement, and does not create any separate rights with respect to Shares or otherwise.

(b) Except as otherwise expressly set forth herein, the capitalized terms used in this Agreement shall have the same definitions as set forth in the Second Amended and Restated CVR Energy, Inc. 2007 Long Term Incentive Plan, as amended from time to time (the "2007 LTIP"). For the sake of clarity, the parties hereto acknowledge and agree that the Incentive Units awarded to the Grantee hereunder are not being granted under the 2007 LTIP, the CVR Refining, LP Long-Term Incentive Plan or any other employee benefit plan.

2. Vesting Date.

The Incentive Units are unvested on and after the Grant Date and shall vest, with respect to thirty-three and one-third percent (33 – 1/3%) of the total number of Incentive Units granted hereunder, on [], [] and [] (each such date, a "Vesting Date"), provided the Grantee continues to serve as an employee of the Company (or a Subsidiary thereof) from the Grant Date through the applicable Vesting Date.

3. Termination of Employment.

(a) In the event (i) of the Grantee's termination of employment with the Company or one of its Subsidiaries prior to any Vesting Date by reason of his or her death or Disability, or (ii) the Company exercises its right to cancel any Incentive Units under Section

8(d) while Grantee is employed by the Company or one of its Subsidiaries, then any Incentive Units scheduled to vest within twelve months from the date on which such event occurs shall become immediately vested, and all other Incentive Units shall be deemed forfeited and the Grantee shall have no rights with respect thereto.

(b) Any Incentive Units that do not become vested in connection with the Grantee's termination of employment in accordance with Section 3(a) of this Agreement shall be forfeited immediately upon the Grantee's termination of employment.

(c) To the extent any payments provided for under this Agreement are treated as "nonqualified deferred compensation" subject to Section 409A of the Code, (i) this Agreement shall be interpreted, construed and operated in accordance with Section 409A of the Code and the Treasury regulations and other guidance issued thereunder, (ii) if on the date of the Grantee's separation from service (as defined in Treasury Regulation §1.409A-1(h)) with the Company or one of its Subsidiaries the Grantee is a specified employee (as defined in Section 409A of the Code and Treasury Regulation §1.409A-1(i)), no payment constituting the "deferral of compensation" within the meaning of Treasury Regulation §1.409A-1(b) and after application of the exemptions provided in Treasury Regulation §§1.409A-1(b)(4) and 1.409A-1(b)(9)(iii) shall be made to the Grantee at any time prior to the earlier of (A) the expiration of the six (6) month period following the Grantee's separation from service or (B) the Grantee's death, and any such amounts deferred during such applicable period shall instead be paid in a lump sum to the Grantee (or, if applicable, to the Grantee's estate) on the first payroll payment date following the earlier of the expiration of such six (6) month period or, if applicable, the Grantee's death, and (iii) for purposes of conforming this Agreement to Section 409A of the Code, any reference to termination of employment, termination or separation from employment, resignation from employment or similar terms shall mean and be interpreted as a "separation from service" as defined in Treasury Regulation §1.409A-1(h). For purposes of applying Section 409A of the Code to this Agreement (including, without limitation, for purposes of Treasury Regulation Section 1.409A-2(b)(2)(iii)), each payment that the Grantee may be entitled to receive under this Agreement shall be treated as a separate and distinct payment and shall not collectively be treated as a single payment.

4. Dividend Equivalent Rights

The Company hereby grants to the Grantee, and the Grantee hereby accepts from the Company, one "Dividend Equivalent Right" for each Incentive Unit granted herein equal to the cash value of all dividends declared and paid by the Company on one Share from the Grant Date to and including the Vesting Date. The reference to the cash value of such dividends is used herein solely to calculate the cash payout, if any, to be awarded in respect of such Dividend Equivalent Rights and does not create any separate rights with respect to the Dividend Equivalent Rights. The payment of Dividend Equivalent Rights will be deferred until and conditioned upon the underlying Incentive Units becoming vested pursuant to Section 2 or 3 hereof. Upon each Vesting Date, Dividend Equivalent Rights on all Incentive Units vesting on such date, with no interest thereon, shall become payable to the Grantee in accordance with Section 5 hereof.

5. Payment Date.

Within 15 business days following (i) each Vesting Date, (ii) if, prior to any Vesting Date, the Grantee's termination of employment with the Company or one of its Subsidiaries under circumstances described in Section 3(a), the date of such termination of employment, or (iii) if, prior to any Vesting Date, the cancellation of any Incentive Units pursuant to Section 8(d) while Grantee is employed by the Company or one of its Subsidiaries, the Company will deliver to the Grantee the cash payment underlying the Incentive Units and

Dividend Equivalent Rights (if any) that become vested pursuant to Sections 2, 3 or 4 of this Agreement.

6. Administration.

(a) This Agreement shall be administered by the Committee, unless the Board has determined to administer this Agreement, at which time all references to the "Committee" will apply to the Board. The Committee may adopt such rules, regulations and guidelines as it deems are necessary or appropriate for the administration of this Agreement.

(b) Subject to the express terms and conditions set forth herein, the Committee shall have the power from time to time to: (i) construe and interpret this Agreement, amend and revoke rules and regulations for the administration of this Agreement, including, but not limited to, correcting any defect or supplying any omission, or reconciling any inconsistency in this Agreement, in the manner and to the extent it shall deem necessary or advisable, including so that this Agreement and the operation of this Agreement comply, where applicable, with Rule 16b-3 under Exchange Act, the Code, and other applicable law, and otherwise to make this Agreement fully effective; (ii) determine the duration and purpose of any leaves of absence which may be granted to the Grantee without constituting a "separation from service" as defined in Treasury Regulation §1.409A-1(h); (iii) exercise its discretion with respect to the rights and powers granted to it as set forth in this Agreement and which would be consistent with the powers and rights granted in this Agreement; and (iv) generally, exercise such powers and perform such acts as are necessary or advisable to promote the best interests of the Company with respect to this Agreement. All decisions and determinations by the Committee in the exercise of all powers under this Agreement shall be final, binding and conclusive upon the Company, its Subsidiaries, the Grantee and all other persons having any interest herein.

(c) Notwithstanding anything herein to the contrary, with respect to a Grantee working outside the United States, the Committee may determine the terms and conditions of this Agreement and make such adjustments to the terms hereof as are necessary or advisable to fulfill the purposes of this Agreement taking into account matters of local law or practice, including tax and securities laws of jurisdictions outside the United States.

(d) No member of the Committee shall be liable for any action, failure to act, determination or interpretation made in good faith with respect to this Agreement or any transaction hereunder. The Company hereby agrees to indemnify each member of the Committee for all costs and expenses and, to the extent permitted by applicable law, any liability incurred in connection with defending against, responding to, negotiating for the settlement of or otherwise dealing with any claim, cause of action or dispute of any kind arising in connection with any actions in administering this Agreement or in authorizing or denying authorization to any transaction hereunder.

7. Adjustment Upon Changes in Capitalization.

In the event of a Change in Capitalization (defined below), the Committee shall conclusively determine, in its good faith discretion, the appropriate adjustments, if any, to the maximum number and/or class of Incentive Units or other stock or securities with respect to which this Agreement relates in order to prevent substantial dilution or enlargement of the Grantee's rights with respect to the Incentive Units as of the date of such Change in Capitalization, except that no adjustment shall be made that would duplicate the Grantee's rights, if any, under Section 4 with respect to Dividend Equivalent Rights. A "Change in Capitalization" means any change in the capital structure or business of the Company by reason of a reclassification, recapitalization, merger, consolidation, reorganization, spin-off, split-up, issuance of warrants, rights or debentures without the Company's receipt of consideration, stock dividend, split or reverse split, extraordinary cash dividend, property dividend, combination or exchange of shares or other similar change in Shares or the Company's capital structure. The Committee may also make, in its sole discretion, such other adjustments as it deems necessary to take into consideration any other event if the Committee determines that such adjustment is appropriate to avoid substantial distortion of the operation of the Incentive Units.

8. Effect of Certain Transactions.

Following the liquidation or dissolution of the Company, or a merger or consolidation of the Company (as applicable, a "Transaction"), or a Change in Control, either this Agreement shall be treated as provided in the agreement entered into in connection with the Transaction or Change in Control, or if not so provided in such agreement, the Company may take one or more of the following actions: (a) remove any applicable forfeiture restrictions on the Incentive Units; (b) accelerate the time at which the restricted periods on the Incentive Units shall lapse; (c) require the mandatory surrender to the Company of the Incentive Units as of a specific date, in which event the Company shall cancel the Incentive Units and pay to the Grantee an amount of cash per Incentive Unit equal to the value the Committee has determined to be the fair market value of a Share at the time of the Change in Control or the Transaction, as applicable; (d) cancel any Incentive Units, without consideration, that remain unvested at the time of the Change in Control or the Transaction, as applicable; or (e) make such adjustments to this Agreement, if any, as the Committee deems appropriate to reflect the Change in Control or the Transaction (including, but not limited to, substituting a new award for the Incentive Units).

9. Non-transferability.

The Incentive Units may not be sold, transferred or otherwise disposed of and may not be pledged or otherwise hypothecated, other than by will or by the laws of descent or distribution. The Incentive Units shall not be subject to execution, attachment or other process.

10. Incentive Compensation Recoupment.

(a) In the event of a restatement of the Company's (or any of its Subsidiaries') financial results that would reduce (or would have reduced) the amount of any previously awarded Incentive Units to Grantee, any related outstanding Incentive Units will be cancelled or reduced accordingly as determined by the Board or Committee in its sole and absolute discretion. For Incentive Units that have been paid, the Grantee shall be obligated and required to pay over to the Company an amount equal to any gain realized by Grantee in respect of such Incentive Units.

(b) The Board or the Committee may at any time, in its sole and absolute discretion, cancel, declare forfeited, rescind, or require the return of any outstanding Incentive Units (or a portion thereof) upon the Board or Committee determining, at any time (whether before or after the Grant Date), that the Grantee has engaged in misconduct (including by omission) or that an event or condition has occurred, which, in each case, would have given the Company or its Subsidiaries the right to terminate the Grantee's employment for Cause. In addition, at any time following any payment in respect of the Incentive Units, the Board or Committee may, in its sole and absolute discretion, rescind any such payment and require the repayment of such amounts (or a portion thereof) upon the Board or Committee determining, at any time (whether before or after the payment date), that the Grantee has engaged in misconduct (including by omission) or that an event or condition has occurred, which, in each case, would have given the Company or its Subsidiaries the right to terminate the Grantee's employment for Cause.

(c) The Board's or Committee's determination that the Grantee has engaged in misconduct (including by omission), or that an event or condition has occurred, which, in each case, would have given the Company or its Subsidiaries the right to terminate the Grantee's employment for Cause, and its decision to require rescission of any payment made in respect of the Incentive Units, shall be conclusive, binding, and final on all parties. The Board's or Committee's determination that the Grantee has violated the terms of this Agreement (or any other agreement between Grantee and the Company or any of its affiliates), and the Board's or Committee's decision to cancel, declare forfeited, or rescind the Incentive Units (or any portion thereof) or to require rescission of any payment made in respect thereof shall be conclusive, binding, and final on all parties. In connection with any cancellation, forfeiture or rescission contemplated by this Section 10, the terms of repayment by the Grantee shall be determined in the Board's and/or Committee's sole and absolute discretion, which may include, among other terms, the repayment being required to be made (i) in one or more installments or payroll deductions or deducted from future bonus payments or (ii) immediately in a lump sum in the event that the Grantee incurs a termination of employment.

(d) To the extent not prohibited under applicable law, the Company, in its sole and absolute discretion, will have the right to set off (or cause to be set off) any amounts otherwise due to the Grantee from the Company (or any of its affiliates) in satisfaction of any repayment obligation of the Grantee hereunder, provided that any such amounts are exempt from, or set off in a manner intended to comply with the requirements of, Section 409A of the Code.

(e) If the Company subsequently determines that it is required by law to apply a "clawback" or alternate recoupment provision to the Incentive Units granted hereunder, under the Dodd-Frank Wall Street Reform and Consumer Protection Act or otherwise, then such clawback or recoupment provision also shall apply to such Incentive Units, as if it had been included on the effective date of this Agreement.

11. No Right to Continued Employment.

Nothing in this Agreement shall be interpreted or construed to confer upon the Grantee any right with respect to continuance of employment by the Company or one of its Subsidiaries or Affiliates, nor shall this Agreement interfere in any way with the right of the Company or one of its Subsidiaries or Affiliates to terminate the Grantee's employment therewith at any time.

12. Withholding of Taxes.

The Grantee shall pay to the Company, or the Company and the Grantee shall agree on such other arrangements necessary for the Grantee to pay, the applicable federal, foreign, state and local income taxes required by law to be withheld (the "Withholding Taxes"), if any, upon the vesting or payment of the Incentive Units. The Company shall have the right to deduct from any payment of cash to the Grantee an amount equal to the Withholding Taxes in satisfaction of the Grantee's obligation to pay Withholding Taxes.

13. Interpretation.

This Agreement is intended to comply with Rule 16b-3 of the Exchange Act and the Committee shall interpret and administer the provisions of this Agreement in a manner consistent therewith. Any provision inconsistent with such rule shall be inoperative and shall not affect the validity of this Agreement.

14. Modification or Termination of Agreement.

This Agreement may be modified, amended, suspended or terminated, and any terms or conditions may be waived, but only by a written instrument executed by the parties hereto; provided, however, that the Company may modify or amend this Agreement without the written consent of the Grantee to the extent that such action (i) does not materially impair the Grantee's rights or (ii) is necessary for compliance with an applicable law, regulation or exchange requirement that impacts this Agreement. No waiver by either party hereto of any breach by the other party hereto of any provision of this Agreement to be performed by such other party shall be deemed a waiver of similar or dissimilar provisions at the time or at any prior or subsequent time.

15. Severability.

Should any provision of this Agreement be held by a court of competent jurisdiction to be unenforceable or invalid for any reason, the remaining provisions of this Agreement shall not be affected by such holding and shall continue in full force in accordance with their terms.

16. Governing Law.

The validity, interpretation, construction and performance of this Agreement shall be governed by the laws of the State of New York without giving effect to the conflicts of laws principles thereof.

17. Entire Understanding.

This Agreement embodies the entire understanding and agreement of the parties in relation to the subject matter hereof, and no promise, condition, representation or warranty, expressed or implied, not herein stated, shall bind either party hereto.

18. Rights as Equity Holder.

In no event whatsoever shall the Grantee possess any incidents of ownership in any equity of the Company, including Shares, with respect to the Incentive Units granted hereunder.

19. Successors in Interest.

This Agreement shall inure to the benefit of and be binding upon any successor to the Company. This Agreement shall inure to the benefit of the Grantee's beneficiaries, heirs, executors, administrators, successors and legal representatives. All obligations imposed upon the Grantee and all rights granted to the Company under this Agreement shall be final, binding and conclusive upon the Grantee's beneficiaries, heirs, executors, administrators, successors and legal representatives.

20. Unfunded Status.

The Incentive Units constitute an unfunded and unsecured promise of the Company to deliver (or cause to be delivered) to the Grantee, subject to the terms and conditions of this Agreement, cash on the applicable Vesting Date for the applicable portion of such Incentive Units as provided herein. By accepting this grant of Incentive Units, the Grantee understands that this grant does not confer any legal or equitable right (other than those constituting the Incentive Units) against the Company or any of its Subsidiaries or Affiliates, directly or indirectly, or give rise to any cause of action at law or in equity against the Company or any of its Subsidiaries or Affiliates. The rights of the Grantee (or any person claiming through the Grantee) under this Agreement shall be solely those of an unsecured general creditor of the Company.

21. Resolution of Disputes.

Any dispute or disagreement which may arise under, or as a result of, or in any way relate to, the interpretation, construction or application of this Agreement shall be determined by the Committee (in its sole and absolute discretion). Any determination made hereunder shall be final, binding and conclusive on the Grantee and the Company for all purposes.

[signature page follows]

IN WITNESS WHEREOF, this Agreement has been executed as of the date first written above.

CVR ENERGY, INC.	GRANTEE
______________________________	______________________________
By:	Name: <<NAME>>
Title:	

[Signature Page to Incentive Unit Agreement]

Exhibit 10.18.1

CVR ENERGY, INC.
CHANGE IN CONTROL AND SEVERANCE PLAN

1. **Introduction**. The purpose of this CVR Energy, Inc. Change in Control and Severance Plan (the "**Plan**") is to provide assurances of specified benefits to designated employees of the Company who are members of a select group of management or highly compensated employees (as determined in accordance with Section 201(2), 301(a)(3) and 401(a)(1) of ERISA) in the event their employment is involuntarily terminated in connection with a Change in Control under the circumstances described in this Plan. Effective as of the effective date of the Change in Control, but contingent on the occurrence of the Change in Control, unless otherwise agreed to in writing between the Company or an Affiliate and an Eligible Employee on or after the date hereof, this Plan shall supersede, and Eligible Employees covered by the Plan shall not be eligible to participate in, the Coffeyville Resources, LLC Severance Pay Plan, the CVR Partners, LP Severance Pay Plan, the CVR Refining, LP Severance Pay Plan, or any other severance or termination plan, policy or practice of the Company or any of its Affiliates that would otherwise apply under the circumstances described herein. The Plan is intended to be a "top-hat" pension benefit plan within the meaning of U.S. Department of Labor Regulation Section 2520.104-24.

2. **Important Terms**. In addition to the defined terms set forth throughout the Plan, the following words and phrases, when the initial letter of the term is capitalized, will have the meanings set forth in this Section 2, unless a different meaning is plainly required by the context:

2.1 "**Accrued Amounts**" means the sum of any Base Pay earned but unpaid through the date of termination, any unused accrued paid time off in accordance with the applicable Company paid time off policy, any unreimbursed expenses in accordance with the Company's expense reimbursement policy, and any accrued and vested rights or benefits under any Company sponsored employee benefits plans payable in accordance with the terms and conditions of such plans.

2.2 "**Administrator**" means the Company, acting through the Compensation Committee or another duly constituted committee of members of the Board, or any person to whom the Administrator has delegated any authority or responsibility with respect to the Plan pursuant to Section 10, but only to the extent of such delegation.

2.3 "**Affiliate**" means any Person that a Person either directly or indirectly through one or more intermediaries is in common control with, is controlled by or controls, each within the meaning of the Securities Act of 1933, as amended.

2.4 "**Base Pay**" means an Eligible Employee's annualized base salary in effect immediately prior to the termination of employment. Base Pay shall not include commissions, bonuses, overtime pay, incentive compensation, benefits paid under any qualified plan, any group medical, dental or other welfare benefit plan, non-cash compensation or any other additional compensation, but shall include amounts reduced pursuant to an Eligible Employee's salary reduction agreement under Section 125, 132(f)(4) or 401(k) of the Code, if any, or a nonqualified elective deferred compensation arrangement, if any, to the extent that in each such case the reduction is to base salary.

2.5 "**Board**" means the Board of Directors of the Company.

2.6 **"Cause"** means, with respect to an Eligible Employee, the occurrence of any of the following: (i) willful failure of an employee to perform substantially his/her duties (other than any such failure resulting from incapacity due to disability); (ii) commission of, or indictment for, a felony or any crime involving fraud or embezzlement or dishonestly or conviction of, or plea of guilty or *nolo contendere* to a crime or misdemeanor (other than a traffic violation) punishable by imprisonment under federal, state or local law; (iii) engagement in an act of fraud or other act of willful dishonesty or misconduct, towards the Company or any subsidiary, or detrimental to the Company or any subsidiary, or in the performance of the Eligible Employee's duties; (iv) negligence in the performance of employment duties that has a detrimental effect on the Company or any subsidiary; (v) violation of a federal or state securities law or regulation; (vi) the use of a controlled substance without a prescription or the use of alcohol which, in each case, significantly impairs the Eligible Employee's ability to carry out his or her duties and responsibilities; (vii) material violation of the policies and procedures of the Company or any subsidiary; (viii) embezzlement and/or misappropriation of property of the Company or any subsidiary; (ix) conduct involving any immoral acts which is reasonably likely to impair the reputation of the Company or any subsidiary; or (x) material breach of the Eligible Employee's covenants in Section 6 of the Plan after written notice of such breach and failure by the Eligible Employee to cure such breach within 10 business days; provided, however, that no such notice of, nor opportunity to cure, such breach shall be required hereunder if the breach cannot be cured by the Eligible Employee.

2.7 **"Change in Control"** means the first occurrence of any of the following:

(a) An acquisition (other than directly from the Company) of any voting securities of the Company (the "**Voting Securities**") by any "Person" (as the term "person" is used for purposes of Section 13(d) or 14(d) of the Securities Exchange Act of 1934, as amended (the "**Exchange Act**")), immediately after which such Person has "**Beneficial Ownership**" (within the meaning of Rule 13d-3 promulgated under the Exchange Act) of more than fifty percent (50%) of (i) the then-outstanding Shares or (ii) the combined voting power of the Company's then-outstanding Voting Securities; provided, however, that in determining whether a Change in Control has occurred pursuant to this paragraph (a), the acquisition of Shares or Voting Securities in a Non-Control Acquisition (as hereinafter defined) shall not constitute a Change in Control. A "**Non-Control Acquisition**" shall mean an acquisition by (i) an employee benefit plan (or a trust forming a part thereof) maintained by (A) the Company or (B) any corporation or other Person the majority of the voting power, voting equity securities or equity interest of which is owned, directly or indirectly, by the Company (for purposes of this definition, a "**Subsidiary**"), (ii) the Company, any Principal Stockholder or any Subsidiary, or (iii) any Person in connection with a Non-Control Transaction (as hereinafter defined);

(b) The consummation of:

(i) A merger, consolidation or reorganization of a Person (x) with or into the Company or (y) in which securities of the Company are issued (a "**Merger**"), unless such Merger is a "**Non-Control Transaction**." A "**Non-Control Transaction**" shall mean a Merger in which:

(A) the shareholders of the Company immediately before such Merger, or one or more Principal Stockholders, own directly or indirectly immediately following such Merger at least a majority of the combined voting power of the outstanding voting securities of (1) the corporation resulting from such Merger (the "**Surviving Corporation**"), if fifty percent (50%) or more of the combined voting power of the then outstanding voting securities by the Surviving Corporation is not Beneficially Owned, directly or indirectly, by another Person (a "**Parent Corporation**") or (2) if there is one or more than one Parent Corporation, the ultimate Parent Corporation;

(B) the individuals who were members of the Board immediately prior to the execution of the agreement providing for such Merger constitute at least a majority of the members of the board of directors of (1) the Surviving Corporation, if there is no Parent Corporation, or (2) if there is one or more than one Parent Corporation, the ultimate Parent Corporation; and

(C) no Person other than (1) the Company or another corporation that is a party to the agreement of Merger, (2) any Subsidiary, (3) any employee benefit plan (or any trust forming a part thereof) that, immediately prior to the Merger, was maintained by the Company or any Subsidiary, (4) any Person who, immediately prior to the Merger, had Beneficial Ownership of thirty percent (30%) or more of the then outstanding Shares or Voting Securities, or (5) any Principal Stockholder, has Beneficial Ownership, directly or indirectly, of fifty percent (50%) or more of the combined voting power of the outstanding voting securities or common stock of (x) the Surviving Corporation, if there is no Parent Corporation, or (y) if there is one or more than one Parent Corporation, the ultimate Parent Corporation.

(ii) A complete liquidation or dissolution of the Company; or

(iii) The sale or other disposition of all or substantially all of the assets of the Company and its subsidiaries taken as a whole to any Person (other than (x) a sale or transfer to a Subsidiary or a Principal Stockholder (or one or more Principal Stockholders acting together) or (y) the distribution to the Company's shareholders of the stock of a Subsidiary or any other assets).

Notwithstanding the foregoing, a Change in Control shall not be deemed to occur solely because any Person (the "**Subject Person**") acquired Beneficial Ownership of more than the permitted amount of the then outstanding Shares or Voting Securities as a result of the acquisition of Shares or Voting Securities by the Company which, by reducing the number of Shares or Voting Securities then outstanding, increases the proportional number of shares Beneficially Owned by the Subject Persons; provided that if a Change in Control would occur (but for the operation of this sentence) as a result of the acquisition of Shares or Voting Securities by the Company and, after such share acquisition by the Company, the Subject Person becomes the Beneficial Owner of any additional Shares or Voting Securities and such Beneficial Ownership increases the percentage of the then outstanding Shares or Voting Securities Beneficially Owned by the Subject Person, then a Change in Control shall occur.

For the avoidance of doubt, following the occurrence of the first event that constitutes a Change in Control hereunder, no other Change in Control shall occur for purposes of this Plan. Notwithstanding anything herein to the contrary, no payment shall be made under Section 4.1 (in the case of a Change in Control Related Termination) or under Section 4.2 (in the case of a Change in Control Related Termination or an Involuntary Termination) unless the "Change in Control" constitutes a "change in control event" within the meaning of Code Section 409A.

2.8 **"Change in Control Period"** means the time period beginning on the date of the first Change in Control occurring after the Effective Date and ending on the date that is twenty-four (24) months following the date of such Change in Control.

2.9 "**Change in Control Related Termination**" means a termination of the Eligible Employee's employment by the Company or any subsidiary of the Company other than for Cause or the Eligible Employee's resignation for Good Reason, in each case within the one hundred twenty (120) day period prior to the occurrence of a Change in Control and (A) the Company determines in good faith that such termination or the basis for resignation for Good Reason occurred in anticipation of a transaction that, if consummated, would constitute a Change in Control, (B) such termination or the basis for resignation for Good Reason occurred after the Company entered into a definitive agreement, the consummation of which would constitute a Change in Control or (C) the Company determines in good faith that such termination or the basis for resignation for Good Reason was implemented at the request of a third party who has indicated an intention or has taken steps reasonably calculated to effect a Change in Control.

2.10 **"Code"** means the Internal Revenue Code of 1986, as amended.

2.11 **"Company"** means CVR Energy, Inc., a Delaware corporation, and any successor that assumes the obligations of the Company under the Plan, by way of merger, acquisition, consolidation or other transaction.

2.12 **"Compensation Committee"** means the Compensation Committee of the Board.

2.13 "**Control**" means the possession, directly or indirectly, of the power to direct or cause the direction of management and policies of a Person, whether through the ownership of stock, by agreement or otherwise and "Controlled" has a corresponding meaning.

2.14 **"Effective Date"** means September 13, 2018.

2.15 **"Eligible Employee"** means an employee of the Company or any subsidiary of the Company who (a) has been specifically designated as eligible to participate in the Plan pursuant to notification in writing from the Administrator, (b) is a member of a select group of management or highly compensated employees and (c) has timely and properly executed and delivered a Participation Agreement to the Company. Appendix A sets forth an initial listing of employees whose positions will be eligible to participate in the Plan, provided he or she timely and properly executes a Participation Agreement.

2.16 **"ERISA"** means the Employee Retirement Income Security Act of 1974, as amended.

2.17 **"Good Reason"** means, the occurrence, without an Eligible Employee's consent, of any of the following: (a) the assignment of duties or responsibilities to the Eligible Employee that reflect a material diminution of the Eligible Employee's position with the Company; (b) a material reduction by the Company in the Eligible Employee's Base Pay, other than across-the-board reductions applicable to similarly situated employees of the Company; or (c) a relocation of the Eligible Employee's principal place of employment to a location more than fifty (50) miles from the Company's current headquarters in Sugar Land, Texas. In order for an event to qualify as Good Reason, (i) the Eligible Employee must not terminate employment with the Company without first providing the Company with written notice of the acts or omissions constituting the grounds for "Good Reason" within thirty (30) calendar days of the initial existence of the grounds for "Good Reason" and a reasonable cure period of thirty (30) calendar days following the date of written notice (the "**Cure Period**"), and such grounds must not have been cured during such time, and the Eligible Employee must resign his or her employment within the thirty (30) calendar days following the end of the Cure Period.

2.18 **"Incentive / Phantom Unit Awards"** means any outstanding cash-settled incentive or phantom unit award granted to an Eligible Employee by the Company or its Affiliates, and any other awards approved by the Compensation Committee at the time of the award.

2.19 **"Involuntary Termination"** means a termination of an Eligible Employee's employment by the Eligible Employee for Good Reason or by the Company or a subsidiary of the Company without Cause. For the avoidance of doubt, an Involuntary Termination shall not include any termination of employment by the Company or a subsidiary of the Company for Cause, due to an Eligible Employee's death or disability or for any other reason.

2.20 "**Participation Agreement**" means the individual agreement (a form of which is shown in Appendix B) provided by the Administrator to an Eligible Employee under the Plan, which has been signed and accepted by the employee.

2.21 "**Person**" shall mean any individual, partnership, limited partnership, corporation, limited liability company, trust, foundation, estate, cooperative, association (except for any homeowners association), organization, proprietorship, firm, joint venture, joint stock company, syndicate, company, committee, government or governmental subdivision or agency, or other entity, whether or not conducted for profit.

2.22 "**Principal**" means Carl Icahn.

2.23 "**Principal Stockholder**" means any of IEP Energy LLC, any Affiliate of IEP Energy LLC, the Principal and any Related Party.

2.24 “**Related Party**” means (1) the Principal and his siblings, his and their respective spouses and descendants (including stepchildren and adopted children) and the spouses of such descendants (including stepchildren and adopted children) (collectively, the “**Family Group**”); (2) any trust, estate, partnership, corporation, company, limited liability company or unincorporated association or organization (each, an “**Entity**” and collectively “**Entities**”) Controlled by one or more members of the Family Group; (3) any Entity over which one or more members of the Family Group, directly or indirectly, have rights that, either legally or in practical effect, enable them to make or veto significant management decisions with respect to such Entity, whether pursuant to the constituent documents of such Entity, by contract, through representation on a board of directors or other governing body of such Entity, through a management position with such Entity or in any other manner (such rights, hereinafter referred to as “**Veto Power**”); (4) the estate of any member of the Family Group; (5) any trust created (in whole or in part) by any one or more members of the Family Group; (6) any individual or Entity who receives an interest in any estate or trust listed in clauses (4) or (5), to the extent of such interest; (7) any trust or estate, substantially all the beneficiaries of which (other than charitable organizations or foundations) consist of one or more members of the Family Group; (8) any organization described in Section 501(c) of the Code, over which any one or more members of the Family Group and the trusts and estates listed in clauses (4), (5) and (7) have direct or indirect Veto Power, or to which they are substantial contributors (as such term is defined in Section 507 of the Code); (9) any organization described in Section 501(c) of the Code of which a member of the Family Group is an officer, director or trustee; or (10) any Entity, directly or indirectly (a) owned or Controlled by or (b) a majority of the economic interests in which are owned by, or are for or accrue to the benefit of, in either case, any Person or Persons identified in clauses (1) through (9) above. For the purposes of this definition, and for the avoidance of doubt, in addition to any Person or Persons that may be considered to possess Control, (x) a partnership shall be considered Controlled by a general partner or managing general partner thereof, (y) a limited liability company shall be considered Controlled by a managing member of such limited liability company and (z) a trust or estate shall be considered Controlled by any trustee, executor, personal representative, administrator or any other Person or Persons having authority over the control, management or disposition of the income and assets therefrom.

2.25 **“Restricted Period”** means, with respect to each Eligible Employee, the twelve (12) month period following such Eligible Employee’s termination of employment for any reason or such other time period specified in the Participation Agreement.

2.26 **“Section 409A Limit”** means two (2) times the lesser of: (i) an Eligible Employee’s annualized compensation based upon the annual rate of pay paid to the Eligible Employee during the Eligible Employee’s taxable year preceding the Eligible Employee’s taxable year of the Eligible Employee’s termination of employment as determined under, and with such adjustments as are set forth in, Treasury Regulation Section 1.409A-1(b)(9)(iii)(A)(1) and any Internal Revenue Service guidance issued with respect thereto; or (ii) the maximum amount that may be taken into account under a qualified plan pursuant to Section 401(a)(17) of the Code for the year in which the Eligible Employee’s employment is terminated.

2.27 **“Severance Benefits”** means the compensation and other benefits that an Eligible Employee is entitled to receive pursuant to Sections 4.1 and 4.2, provided that he or she is an Eligible Employee on the date he or she experiences an Involuntary Termination during the Change in Control Period.

2.28 **“Share”** means the common stock, par value $.01 per share, of the Company and any other securities into which such shares are changed or for which such shares are exchanged.

3. **Eligibility for Severance Benefits**. An individual is eligible for Severance Benefits under the Plan, as described in Section 4, only if he or she is an Eligible Employee on the date he or she (a) experiences an Involuntary Termination during the Change in Control Period, or (b) experiences a Change in Control Related Termination.

4. **Involuntary Termination During the Change in Control Period or Change in Control Termination**. If, (a) during the Change in Control Period, an Eligible Employee experiences an Involuntary Termination, or (b) an Eligible Employee experiences a Change in Control Related Termination, then, in either case, subject to the Eligible Employee’s compliance with the terms and conditions of the Plan, including without limitation, Section 6, in addition to the Accrued Amounts, the Eligible Employee will be entitled to receive the following Severance Benefits from the Company:

4.1 **Cash Severance Benefits**. A cash severance payment, equal to the sum of (a) twelve (12) months of Base Pay, and (b) the average of the annual bonuses actually paid to the Eligible Employee during the three calendar years immediately preceding the date of the Involuntary Termination or the date of the consummation of a Change in Control in the case of a Change in Control Related Termination (or, in each case, such shorter period of time if applicable), payable in a lump sum on the Company’s first payroll date following the 60th day after (i) the date of the Involuntary Termination or (ii) the date of the consummation of a Change in Control, as applicable. In the event an Eligible Employee has no previous annual bonus history (i.e. those hired after the most recent annual bonus payout), then the annual bonus portion of the cash severance payment will be calculated based on 100% of the Eligible Employee’s current target bonus; and

4.2 **Incentive / Phantom Unit Award Vesting Acceleration**. Accelerated vesting as to 100% of the unvested portion of any then outstanding Incentive / Phantom Unit Awards held by the Eligible Employee, or, in the event of a Change in Control Related Termination and with respect to any Incentive / Phantom Unit Awards issued by an Affiliate of the Company, payments equivalent to the amounts the Eligible Employee would have received had any then outstanding Incentive / Phantom Unit Awards accelerated (without any duplication of vesting and/or payment), in each case, with the payout value calculated based on the average closing price per share of the underlying unit for the twenty (20) business days preceding the date of the Involuntary Termination or the date of the consummation of the Change in Control in the case of a Change in Control Related Termination, as applicable, provided, however, that any Incentive / Phantom Unit Awards that vest (in whole or in part) upon the achievement of performance goals shall vest as if the target level of performance had been achieved. Such payment, if any, shall be payable in a lump sum on the Company’s first payroll date following the 60th day after (i) the date of the Involuntary Termination or (ii) the date of the consummation of a Change in Control, as applicable.

4.3 **Offset**. The Severance Benefits shall be reduced (offset) by any amounts payable (i) under any statutory entitlement (including notice of termination, termination pay and/or severance pay) of the Eligible Employee upon a termination of employment, including, without limitation, any payments related to an actual or potential liability under the Worker Adjustment and Retraining Notification Act (WARN) or similar state or local law, and (ii) pursuant to any agreement between the Eligible Employee and the Company or any of its Affiliates.

5. **Effect of Section 280G of the Code**.

5.1 **Payment Reduction**. Notwithstanding anything contained herein to the contrary, (i) to the extent that any payment or distribution of any type to or for the benefit of an Eligible Employee by the Company, any Affiliate of the Company, any Person who acquires ownership or effective control of the Company or ownership of a substantial portion of the Company's assets (within the meaning of Section 280G of the Code and the regulations thereunder), or any Affiliate of such Person, whether paid or payable or distributed or distributable pursuant to the terms of the Plan or otherwise (the "**Payments**") constitutes "parachute payments" (within the meaning of Section 280G of the Code), and if (ii) such aggregate Payments would, if reduced by all federal, state and local taxes applicable thereto, including the excise tax imposed under Section 4999 of the Code (the "**Excise Tax**"), be less than the amount the Eligible Employee would receive, after all taxes, if the Eligible Employee received aggregate Payments equal (as valued under Section 280G of the Code) to only three times the Eligible Employee's "base amount" (within the meaning of Section 280G of the Code), less $1.00, then (iii) such Payments shall be reduced (but not below zero) if and to the extent necessary so that no Payments to be made or benefit to be provided to the Eligible Employee shall be subject to the Excise Tax. If the Payments are so reduced, the Company shall reduce or eliminate the Payments (x) by first reducing or eliminating the portion of the Payments which are not payable in cash (other than that portion of the Payments subject to clause (z) hereof), (y) then by reducing or eliminating cash payments (other than that portion of the Payments subject to clause (z) hereof) and (z) then by reducing or eliminating the portion of the Payments (whether payable in cash or not payable in cash) to which Treasury Regulation Section 1.280G-1 Q/A 24(c) (or successor thereto) applies, in each case in reverse order beginning with payments or benefits which are to be paid the farthest in time.

5.2 **Determination of Amount of Reduction (if any)**. The determination of whether the Payments shall be reduced as provided in Section 5.1 hereof and the amount of such reduction shall be made at the Company's expense by a nationally-recognized accounting firm selected by the Company (the "**Accounting Firm**"). The Accounting Firm shall provide its determination (the "**Determination**"), together with detailed supporting calculations and documentation, to the Company and the Eligible Employee within 10 calendar days after the Eligible Employee's final day of employment. If the Accounting Firm determines that no Excise Tax is payable by the Eligible Employee with respect to the Payments, it shall furnish the Eligible Employee with an opinion reasonably acceptable to the Eligible Employee that no Excise Tax will be imposed with respect to any such payments and, absent manifest error, such Determination shall be binding, final and conclusive upon the Company and the Eligible Employee.

6. **Conditions to Receipt and Retention of Severance Benefits**. Each Eligible Employee is required to comply with all the terms and conditions set forth in this Section 6 in order to receive Severance Benefits under the Plan.

6.1 **Release Agreement**. As a condition to receiving the Severance Benefits under the Plan, each Eligible Employee will be required to sign and not revoke a separation and release of claims agreement in a form provided to such Eligible Employee, which will be provided by the Company within five (5) calendar days following the Involuntary Termination date (the "**Release**"). In all cases, the Release must become effective and irrevocable under applicable law no later than the sixtieth (60th) calendar day following the Eligible Employee's Involuntary Termination. If the Release does not become effective and irrevocable by such 60^{th} calendar day, the Eligible Employee will immediately forfeit any and all rights to the Severance Benefits. For the avoidance of doubt, in no event will the Severance Benefits be paid or provided until the Release becomes effective and irrevocable.

6.2 **Confidentiality and Non-Disparagement**.

6.2.1 During the term of an Eligible Employee's employment with the Company or any of its Affiliates and at all times thereafter, the Eligible Employee shall hold in a fiduciary capacity for the benefit of the Company and each of its Affiliates, all secret or confidential information, knowledge or data, including, without limitation, technical information, intellectual property, business and marketing plans, strategies, customer information and lists, software, trade secrets, sources of supplies and materials, designs, production and design techniques and methods, identity of investments, identity of contemplated investments, business opportunities, valuation models and methodologies, processes, technologies, and any other intellectual property relating to the business, or other information concerning the products, promotions, development, financing, expansion plans, business policies and practices, of the Company and each of its Affiliates, and their respective businesses, and other forms of information considered by the Company and its Affiliates to be confidential and in the nature of trade secrets (i) obtained by the Eligible Employee during the Eligible Employee's employment by the Company or any of its Affiliates and/or during any period of time in which the Eligible Employee has access to email and/or information technology services from the Company, and (ii) not otherwise in the public domain (collectively, "**Confidential Information**").

6.2.2 Each Eligible Employee must keep confidential and not to publish, post on his or her own or to disclose any personal information regarding any controlling Person of the Company (or any of its Affiliates), including, without limitation, Carl C. Icahn, or any of his Affiliates and their respective employees, and any member of the immediate family of any such Person (and all such personal information shall be deemed "Confidential Information" for the purposes of the Plan). Each Eligible Employee shall not, without the prior written consent of the Company (acting at the direction of the Board): (i) except to the extent compelled pursuant to the order of a court or other body having jurisdiction over such matter or based upon the advice of counsel that such disclosure is legally required, communicate or divulge any Confidential Information to anyone other than the Company and those designated by the Company; or (ii) use any Confidential Information for any purpose other than the performance of his or her duties pursuant to such Eligible Employee's employment with the Company or any of its Affiliates. Each Eligible Employee will assist the Company or its designee, at the Company's expense, in obtaining a protective order, other appropriate remedy or other reliable assurance that confidential treatment will be accorded any Confidential Information disclosed pursuant to the terms of the Plan. Each Eligible Employee agrees not to disparage the Company, its officers and directors, Mr. Icahn, any Related Parties, or any Affiliate of any of the foregoing, in each case during and/or after such Eligible Employee's employment with the Company or any of its Affiliates. Without limiting anything contained above, each Eligible Employee agrees and acknowledges that all personal and not otherwise public information about the Company and its Affiliates (including, without limitation, all information regarding Icahn Enterprises L.P. ("**IEP**"), Carl C. Icahn, Mr. Icahn's family, and employees of the Company, IEP and their respective Affiliates) shall constitute Confidential Information for purposes of the Plan.

6.2.3 Each Eligible Employee must not write, contribute to, or assist any other person in writing or creating, a book, film, broadcast, article, blog or any other publication (whether in print, electronic or any other form) about or concerning, in whole or in part, the Company, IEP, Mr. Icahn and his family members or any of the respective Affiliates and subsidiaries of any of the foregoing (as applicable), in any media, and not to publish or cause to be published in any media, any Confidential Information, and must keep confidential and not to disclose to any third party, including, but not limited to, newspapers, authors, publicists, journalists, bloggers, gossip columnists, producers, directors, script writers, media personalities, and the like, in any and all media or communication methods, any Confidential Information. In furtherance of the foregoing, following the termination of the Eligible Employee's employment with the Company or any of its Affiliates, the sole and only disclosure or statement the Eligible Employee shall be permitted to make about or concerning any or all of the Company, IEP, Mr. Icahn and his family members or any of the respective Affiliates and subsidiaries of any of the foregoing (as applicable) is to acknowledge that the Eligible Employee is or was employed by the Company (unless otherwise required by applicable law).

6.3 **Non-Competition and Non-Solicitation**. As a condition of receiving the Severance Benefits under the Plan, and in order to protect Confidential Information, each Eligible Employee will not, either directly or indirectly, during the Restricted Period:

6.3.1 own, manage, operate, join, control, be employed by, or participate in the ownership, management, operation or control of, or be connected in any manner with, including, without limitation, holding any position as a principal, agent, owner, stockholder, director, officer, consultant, advisor, independent contractor, employee, partner, or investor in, any Restricted Enterprise (as defined below); provided, that in no event shall ownership of one percent (1%) or less of the outstanding securities of any class of any issuer whose securities are registered under the Exchange Act, standing alone, be prohibited by this Section 6.3, so long as the Eligible Employee does not have, or exercise, any rights to manage or operate the business of such issuer other than rights as a stockholder thereof. For purposes of this paragraph, "**Restricted Enterprise**" shall mean any Person that is actively engaged in any business which is either (i) in competition with the business of the Company or any of its Affiliates conducted during the six months preceding the Eligible Employee's Involuntary Termination, or (ii) proposed to be conducted by the Company or any of its Affiliates in the Company's or Affiliate's business plan as in effect at the time of the Eligible Employee's Involuntary Termination; provided, that a Restricted Enterprise shall only include such a Person that primarily operates within the States of Kansas, Oklahoma or Texas or any other state where the Company or any of its subsidiaries conducts business operations. During the Restriction Period, upon request of the Company, the Eligible Employee shall notify the Company of the Eligible Employee's then-current employment status. For the avoidance of doubt, a Restricted Enterprise shall not include any Person or division thereof that is engaged in the business of supplying (but not refining) crude oil or natural gas;

6.3.2 solicit (or assist any Person to solicit) for employment any person who is, or within six months prior to the date of such solicitation was, an employee of the Company or any of its Affiliates, provided, however, that this Section 6.3 shall not prohibit the hiring of any individual as a result of the individual's response to an advertisement in a publication of general circulation; and

6.3.3 (i) solicit, interfere with or entice away from the Company or any of its Affiliates, any current supplier, customer or client, (ii) direct or solicit any current supplier, customer or client away from the Company or any of its Affiliates, or (iii) advise any Person not to do business with, or be employed by the Company or any of its Affiliates.

6.4 **Severability**. The covenants contained in Section 6 shall be construed as a series of separate covenants, one for each city, county and state of any geographic area. Except for geographic coverage, each such separate covenant shall be deemed identical in terms to the covenant contained in subsections 6.2 and 6.3 above. If, in any judicial or arbitration proceeding, a court or arbitrator refuses to enforce any of such separate covenants (or any part thereof), then such unenforceable covenant (or such part) shall be eliminated from the Plan to the extent necessary to permit the remaining separate covenants (or portions thereof) to be enforced. In the event the provisions of subsection 6.2 or 6.3 above are deemed to exceed the time, geographic, or scope limitations permitted by applicable law, then such provisions shall be reformed by the court or arbitrator to cover the maximum time, geographic, or scope limitations, as the case may be, then permitted by such law.

6.5 **Other Requirements**. An Eligible Employee's receipt and retention of the Severance Benefits will be subject to the Eligible Employee continuing to comply with the provisions of this Section 6 and the terms of any other confidentiality, proprietary information and inventions agreement, including any non-competition and non-solicitation covenants contained therein (which are additional obligations, and not replaced by the provisions of this Section 6), and such other appropriate agreements between the Eligible Employee and the Company. In the event an Eligible Employee fails to comply with his or her obligations or breaches any covenant or other agreement under this Section 6 or such other appropriate agreements between the Eligible Employee and the Company, (i) such Eligible Employee shall not be entitled to receive and/or retain the Severance Benefits and shall be required to immediately repay to the Company all Severance Benefits previously paid to him or her under the Plan and forfeit all unpaid Severance Benefits (if any) that remain payable to him or her under the Plan, (ii) the Company shall have the right to fully recover from such Eligible Employee all Severance Benefits paid to him or her under the Plan, and (iii) such Eligible Employee agrees not to assert any defenses, rights of set-off or counterclaims as a reason for not repaying such amount under subsections (i) and (ii).

7. **Non-Duplication of Benefits; Survival of Other Benefits**. Notwithstanding any other provision in the Plan to the contrary, if an Eligible Employee is entitled to any severance, change in control or similar benefits outside of the Plan by operation of applicable law or under another Company-sponsored plan, policy, contract, or arrangement, his or her benefits under the Plan will be reduced by the value of the severance, change in control or similar benefits that the Eligible Employee receives by operation of applicable law or under any Company-sponsored plan, policy, contract, or arrangement, all as determined by the Administrator in its discretion. Subject to the foregoing, the Plan is not intended to amend, modify, terminate, or supersede any severance, change in control or similar benefits provided under any contract with any Eligible

Employee, and to the extent any such contract offers severance, change in control or similar benefits that are more advantageous to the Eligible Employee than the terms hereof, such Eligible Employee shall continue to be entitled to such benefits.

8. **Section 409A**.

8.1 Notwithstanding anything to the contrary in the Plan, no severance payments or benefits to be paid or provided to an Eligible Employee, if any, under the Plan that, when considered together with any other severance payments or separation benefits, are considered deferred compensation under Section 409A of the Code, and the final regulations and any guidance promulgated thereunder ("**Section 409A**") (together, the "**Deferred Payments**") will be paid or provided until the Eligible Employee has a "separation from service" within the meaning of Section 409A. Similarly, no severance payable to an Eligible Employee, if any, under the Plan that otherwise would be exempt from Section 409A pursuant to Treasury Regulation Section 1.409A-1(b)(9) will be payable until the Eligible Employee has a "separation from service" within the meaning of Section 409A.

8.2 It is intended that none of the severance payments or benefits under the Plan will constitute Deferred Payments but rather will be exempt from Section 409A as a payment that would fall within the "short-term deferral period" as described in Section 8.4 below or resulting from an involuntary separation from service as described in Section 8.5 below. In no event will an Eligible Employee have discretion to determine the taxable year of payment of any Deferred Payment.

8.3 Notwithstanding anything to the contrary in the Plan, if an Eligible Employee is a "specified employee" within the meaning of Section 409A at the time of the Eligible Employee's separation from service (other than due to death), then the Deferred Payments, if any, that are payable within the first six (6) months following the Eligible Employee's separation from service, will become payable on the date six (6) months and one (1) day following the date of the Eligible Employee's separation from service. Notwithstanding anything herein to the contrary, in the event of the Eligible Employee's death following the Eligible Employee's separation from service, but before the six (6) month anniversary of the separation from service, then any payments delayed in accordance with this paragraph will be payable in a lump sum as soon as administratively practicable after the date of the Eligible Employee's death. Each payment and benefit payable under the Plan is intended to constitute a separate payment under Section 1.409A-2(b)(2) of the Treasury Regulations.

8.4 Any amount paid under the Plan that satisfies the requirements of the "short-term deferral" rule set forth in Treasury Regulation Section 1.409A-1(b)(4) will not constitute Deferred Payments for purposes of Section 8.1 above.

8.5 Any amount paid under the Plan that qualifies as a payment made as a result of an involuntary separation from service pursuant to Treasury Regulation Section 1.409A-1(b)(9)(iii) that does not exceed the Section 409A Limit will not constitute Deferred Payments for purposes of Section 8.1 above.

8.6 The foregoing provisions are intended to comply with or be exempt from the requirements of Section 409A so that none of the payments and benefits to be provided under the Plan will be subject to the additional tax imposed under Section 409A, and any ambiguities herein will be interpreted to so comply or be exempt. Notwithstanding anything to the contrary in the Plan, including but not limited to

Sections 10 and 13, the Company reserves the right to amend the Plan as it deems necessary or advisable, in its sole and absolute discretion and without the consent of an Eligible Employee, to comply with Section 409A or to avoid income recognition under Section 409A prior to the actual payment of benefits under the Plan or imposition of any additional tax. In no event will the Company reimburse an Eligible Employee for any taxes that may be imposed on the Eligible Employee as result of Section 409A.

9. **Withholdings**. The Company will withhold from any payments or benefits under the Plan all applicable U.S. federal, state, local and non-U.S. taxes required to be withheld and any other required payroll deductions.

10. **Administration**. The Plan will be administered and interpreted by the Administrator (in its sole and absolute discretion). Any decision made or other action taken by the Administrator with respect to the Plan, and any interpretation by the Administrator of any term or condition of the Plan, or any related document, will be conclusive and binding on all persons and be given the maximum possible deference allowed by law. In accordance with Section 2.2, the Administrator (a) may, in its sole and absolute discretion and on such terms and conditions as it may provide, delegate in writing to one or more officers of the Company all or any portion of its authority or responsibility with respect to the Plan, and (b) has the authority to act for the Company (in a non-fiduciary capacity) as to any matter pertaining to the Plan; *provided, however,* that any Plan amendment or termination or any other action that reasonably could be expected to increase materially the cost of the Plan must be approved by the Board.

11. **Eligibility to Participate**. To the extent that the Administrator has delegated administrative authority or responsibility to one or more officers of the Company in accordance with Sections 2.2 and 10, each such officer will not be excluded from participating in the Plan if otherwise eligible, but he or she is not entitled to act upon or make determinations regarding any matters pertaining specifically to his or her own benefit or eligibility under the Plan. The Administrator will act upon and make determinations regarding any matters pertaining specifically to the benefit or eligibility of each such officer under the Plan.

12. **Term**. The Plan will become effective upon the Effective Date. In the event that, during any period prior to termination of this Plan (the "**End Date**"), (i) a Change in Control occurs, or (ii) the Company enters into a definitive agreement which, if consummated, would result in a Change in Control ("**Potential Change in Control**"), and such Potential Change in Control results in a Change in Control, the Plan will terminate automatically upon the completion of all payments (if any) under the terms of the Plan. In the event that, a Potential Change in Control is pending as of the End Date and is subsequently abandoned (as publicly announced by the Company), the Plan will terminate automatically effective as of the date that such Potential Change in Control is abandoned.

13. **Amendment or Termination**. The Company, by action of the Administrator, reserves the right to amend or terminate the Plan at any time, without advance notice to any Eligible Employee and without regard to the effect of the amendment or termination on any Eligible Employee or on any other individual. Any amendment or termination of the Plan will be in writing. Notwithstanding the foregoing, during the pendency of a Potential Change in Control and on and following a Change in Control, the Company may not, without an Eligible Employee's written consent, amend or terminate the Plan in any way, nor take any other action, that (i) prevents that Eligible Employee from becoming eligible for the Severance Benefits under the Plan, or (ii) reduces or alters to the detriment of the Eligible Employee the Severance Benefits payable, or potentially payable, to an Eligible Employee under the Plan (including, without limitation, imposing additional conditions).

14. **Claims and Appeals**.

14.1 **Claims Procedure**. Any Eligible Employee or other person who believes he or she is entitled to any payment under the Plan may submit a claim in writing to the Administrator within ninety (90) calendar days of the earlier of (i) the date the claimant learned the amount of his or her benefits under the Plan or (ii) the date the claimant learned that he or she will not be entitled to any benefits under the Plan. If the claim is denied (in full or in part), the claimant will be provided a written notice explaining the specific reasons for the denial and referring to the provisions of the Plan on which the denial is based. The notice also will describe any additional information needed to support the claim and the Plan's procedures for appealing the denial. The denial notice will be provided within ninety (90) calendar days after the claim is received. If special circumstances require an extension of time (up to ninety (90) calendar days), written notice of the extension will be given within the initial ninety (90) day period. This notice of extension will indicate the special circumstances requiring the extension of time and the date by which the Administrator expects to render its decision on the claim.

14.2 **Appeal Procedure**. If the claimant's claim is denied, the claimant (or his or her authorized representative) may apply in writing to the Administrator for a review of the decision denying the claim. Review must be requested within sixty (60) calendar days following the date the claimant received the written notice of their claim denial or else the claimant loses the right to review. The claimant (or representative) then has the right to review and obtain copies of all documents and other information relevant to the claim, upon request and at no charge, and to submit issues and comments in writing. The Administrator will provide written notice of its decision on review within sixty (60) calendar days after it receives a review request. If additional time (up to sixty (60) calendar days) is needed to review the request, the claimant (or representative) will be given written notice of the reason for the delay. This notice of extension will indicate the special circumstances requiring the extension of time and the date by which the Administrator expects to render its decision. If the claim is denied (in full or in part), the claimant will be provided a written notice explaining the specific reasons for the denial and referring to the provisions of the Plan on which the denial is based. The notice also will include a statement that the claimant will be provided, upon request and free of charge, reasonable access to, and copies of, all documents and other information relevant to the claim and a statement regarding the claimant's right to bring an action under Section 502(a) of ERISA.

15. **Attorneys' Fees**. The parties shall each bear their own expenses, legal fees and other fees incurred in connection with the Plan.

16. **Source of Payments**. All Severance Benefits will be paid in cash from the general funds of the Company; no separate fund will be established under the Plan, and the Plan will have no assets. No right of any person to receive any payment under the Plan will be any greater than the right of any other general unsecured creditor of the Company.

17. **Inalienability**. In no event may any current or former employee of the Company or any of its subsidiaries or affiliates sell, transfer, anticipate, assign or otherwise dispose of any right or interest under the Plan. At no time will any such right or interest be subject to the claims of creditors nor liable to attachment, execution or other legal process.

18. **No Enlargement of Employment Rights**. Neither the establishment or maintenance or amendment of the Plan, nor the making of any benefit payment hereunder, will be construed to confer upon any individual any right to continue to be an employee of the

Company. The Company expressly reserves the right to discharge any of its employees at any time, with or without cause. However, as described in the Plan, an Eligible Employee may be entitled to benefits under the Plan depending upon the circumstances of his or her termination of employment.

19. **Successors**. Any successor to the Company of all or substantially all of the Company's business and/or assets (whether direct or indirect and whether by purchase, merger, consolidation, liquidation or other transaction) will assume the obligations under the Plan and agree expressly to perform the obligations under the Plan in the same manner and to the same extent as the Company would be required to perform such obligations in the absence of a succession. For all purposes under the Plan, the term "Company" will include any successor to the Company's business and/or assets which become bound by the terms of the Plan by operation of law, or otherwise.

20. **Applicable Law**. The provisions of the Plan will be construed, administered and enforced in accordance with ERISA and, to the extent applicable, the internal substantive laws of the state of New York (but not its conflict of laws provisions).

21. **Severability**. If any provision of the Plan is held invalid or unenforceable, its invalidity or unenforceability will not affect any other provision of the Plan, and the Plan will be construed and enforced as if such provision had not been included.

22. **Headings**. Headings in the Plan document are for purposes of reference only and will not limit or otherwise affect the meaning hereof.

Appendix A

CVR Energy, Inc. Change in Control and Severance Plan
Eligible Employees

- Executive Vice President & Chief Financial Officer
- Executive Vice President & Chief Commercial Officer
- President and CEO – CVR Partners & Executive Vice President – Corporate Services
- Executive Vice President, General Counsel & Secretary
- Chief Accounting Officer and Corporate Controller
- Vice President Tax
- Vice President Finance
- Sr. Vice President Marketing and Feedstocks
- Sr. Vice President Crude
- Vice President IT & Chief Information Officer
- Vice President Human Resources
- Vice President & Associate General Counsel
- Vice President Internal Audit
- Vice President Capital Projects

<u>Appendix B</u>

CVR Energy, Inc. Change in Control and Severance Plan
Form of Participation Agreement

CVR Energy, Inc. (the "Company") is pleased to inform you, ______________________, that you have been selected to participate in the Company's Change in Control and Severance Plan, as may be amended from time to time (the "Plan"). A copy of the Plan was delivered to you with this Participation Agreement. Your participation in the Plan is subject to all of the terms and conditions of the Plan.

In order to become a participant in the Plan (an "Eligible Employee" as described in the Plan), you must complete and sign this Participation Agreement and return it to [NAME] no later than [DATE].

The Plan describes in detail certain circumstances under which you may become eligible for Severance Benefits. As described more fully in the Plan, you may become eligible for certain Severance Benefits under Sections 4.1 and 4.2 of the Plan if, during the Change in Control Period, you experience an Involuntary Termination (as defined in the Plan), or if you experience a Change In Control Related Termination.

In order to receive and/or retain any Severance Benefits for which you otherwise become eligible under the Plan, you must sign and deliver to the Company the Release, which must have become effective and irrevocable within the requisite period, and you must also adhere to the confidentiality, non-disparagement, non-competition and non-solicitation provisions of the Plan as set forth in the Plan. Also, as explained in the Plan, your Severance Benefits (if any) may be reduced under certain circumstances, if necessary, to avoid your Severance Benefits from becoming subject to "golden parachute" excise taxes under the Internal Revenue Code.

By your signature below, you and the Company agree that your participation in the Plan is governed by this Participation Agreement and the provisions of the Plan. Your signature below confirms that: (1) you have received a copy of the Change in Control and Severance Plan; (2) you have carefully read this Participation Agreement and the Change in Control and Severance Plan; (3) you agree to comply with the restrictive covenants set forth in Sections 6.2 and 6.3 of the Plan and the terms of any other confidentiality, proprietary information and inventions agreement, including any non-competition and non-solicitation covenants contained therein; and (4) decisions and determinations by the Administrator under the Plan will be final and binding on you and your successors.

[*Signature Page Follows*]

CVR ENERGY, INC.	**[ELIGIBLE EMPLOYEE NAME]**
Signature	Signature
Name	Date
Title	

Attachment: CVR Energy, Inc. Change in Control and Severance Plan

[*Signature Page to the Participation Agreement*]

Exhibit 10.22.4

CVR PARTNERS, LP
LONG-TERM INCENTIVE PLAN
EMPLOYEE PHANTOM UNIT AGREEMENT – EXECUTIVE

THIS AGREEMENT (this “Agreement”), made as of the [ ] day of [ ] (the “Grant Date”), between CVR Partners, LP, a Delaware limited partnership (the “Partnership”), and the individual grantee designated on the signature page hereof (the “Grantee”).

WHEREAS, the board of directors of CVR GP, LLC, a Delaware limited liability company (the “General Partner”), has adopted the CVR Partners, LP Long-Term Incentive Plan (the “Plan”) in order to provide an additional incentive to certain of the Partnership’s and its Subsidiaries’ and Parents’ employees, officers, consultants and directors; and

WHEREAS, the Committee responsible for administration of the Plan has authorized the grant of Phantom Units to the Grantee as provided herein.

NOW, THEREFORE, the parties hereto agree as follows:

1. Grant of Phantom Units.

(a) The Partnership hereby grants to the Grantee, and the Grantee hereby accepts from the Partnership on the terms and conditions set forth in this Agreement, an award of <<UNITS>> Phantom Units. Subject to the terms of this Agreement, each Phantom Unit represents the right of the Grantee to receive, if such Phantom Unit becomes vested, a cash payment equal to the average closing price of the Units for the 10 business days preceding the applicable date of vesting pursuant to Section 2 or Section 3(a) or (b). The reference to the Units of the Partnership is used herein solely to calculate the cash payout, if any, to be awarded to the Grantee in accordance with this Agreement, and does not create any separate rights with respect to the Units of the Partnership or otherwise.

(b) This Agreement shall be construed in accordance with and consistent with, and subject to, the provisions of the Plan (the provisions of which are incorporated herein by reference). Except as otherwise expressly set forth herein, the capitalized terms used in this Agreement shall have the same definitions as set forth in the Plan.

2. Vesting Date.

The Phantom Units are unvested on and after the Grant Date and shall vest, with respect to thirty-three and one-third percent (33 – 1/3%) of the total number of Phantom Units granted hereunder, on [ ], [ ] and [ ] (each such date, a “Vesting Date”), provided the Grantee continues to serve as an employee of the Partnership or its Subsidiaries or Parents through the applicable Vesting Date.

3. Termination of Employment.

(a) In the event of the Grantee’s termination of employment with the Partnership or one of its Subsidiaries or Parents prior to any Vesting Date by reason of his or her death or Disability, then any Phantom Units scheduled to vest within twelve months from which such event occurs shall become immediately vested, and all other Phantom Units shall be deemed forfeited and Grantee shall have no rights with respect thereto.

(b) If the Grantee’s employment is terminated by the Partnership or one of its Subsidiaries or Parents other than for Cause or Disability, then any Phantom Units scheduled to vest within twelve months from which such event occurs shall become immediately vested, and all other Phantom Units shall be deemed forfeited and Grantee shall have no rights with respect thereto.

(c) Any Phantom Units that do not become vested in connection with the Grantee's termination of employment in accordance with Sections 3(a) or (b) of this Agreement shall be forfeited immediately upon the Grantee's termination of employment.

(d) To the extent any payments provided for under this Agreement are treated as "nonqualified deferred compensation" subject to Section 409A of the Code, (i) this Agreement shall be interpreted, construed and operated in accordance with Section 409A of the Code and the Treasury regulations and other guidance issued thereunder, (ii) if on the date of the Grantee's separation from service (as defined in Treasury Regulation §1.409A-1(h)) with the Partnership or its Subsidiaries or Parents the Grantee is a specified employee (as defined in Section 409A of the Code and Treasury Regulation §1.409A-1(i)), no payment constituting the "deferral of compensation" within the meaning of Treasury Regulation §1.409A-1(b) and after application of the exemptions provided in Treasury Regulation §§1.409A-1(b)(4) and 1.409A-1(b)(9)(iii) shall be made to the Grantee at any time prior to the earlier of (A) the expiration of the six (6) month period following the Grantee's separation from service or (B) the Grantee's death, and any such amounts deferred during such applicable period shall instead be paid in a lump sum to the Grantee (or, if applicable, to the Grantee's estate) on the first payroll payment date following expiration of such six (6) month period or, if applicable, the Grantee's death, and (iii) for purposes of conforming this Agreement to Section 409A of the Code, any reference to termination of employment, severance from employment, resignation from employment or similar terms shall mean and be interpreted as a "separation from service" as defined in Treasury Regulation §1.409A-1(h). For purposes of applying Section 409A of the Code to this Agreement (including, without limitation, for purposes of Treasury Regulation Section 1.409A-2(b)(2)(iii)), each payment that the Grantee may be entitled to receive under this Agreement shall be treated as a separate and distinct payment and shall not collectively be treated as a single payment.

4. Distribution Equivalent Rights

The Partnership hereby grants to the Grantee, and the Grantee hereby accepts from the Partnership, one Distribution Equivalent Right for each Phantom Unit granted herein equal to the cash value of all distributions declared and paid by the Partnership on Units from the Grant Date to and including the Vesting Date. The reference to the cash value of such distributions is used herein solely to calculate the cash payout, if any, to be awarded in respect of such Distribution Equivalent Rights and does not create any separate rights with respect to the Distribution Equivalent Rights. The payment of Distribution Equivalent Rights will be deferred until and conditioned upon the underlying Phantom Units becoming vested pursuant to Section 2 or 3 hereof. Upon each Vesting Date, Distribution Equivalent Rights on all vested Phantom Units, with no interest thereon, shall become payable to the Grantee in accordance with Section 5 hereof.

5. Payment Date.

Within 15 business days following (i) each Vesting Date, or (ii) if, prior to any Vesting Date, the Grantee's termination of employment with the Partnership or its Subsidiaries or Parents under circumstances described in Section 3(a) or (b), the date of such termination of employment, the Partnership will deliver to the Grantee the cash payment underlying the Phantom Units and Distribution Equivalent Rights (if any) that become vested pursuant to Section 2 or 3 of this Agreement.

6. Non-transferability.

The Phantom Units may not be sold, transferred or otherwise disposed of and may not be pledged or otherwise hypothecated, other than by will or by the laws of descent or distribution. The Phantom Units shall not be subject to execution, attachment or other process.

7. Incentive Compensation Recoupment.

(a) In the event of a restatement of the Partnership's (or any of its Subsidiaries') financial results that would reduce (or would have reduced) the amount of any previously awarded Phantom Units to Grantee, any related outstanding Phantom Units will be cancelled or reduced accordingly as determined by the Board or Committee in its sole and absolute discretion. For Phantom Units that have been paid, the Grantee shall be obligated and required to pay over to the Partnership an amount equal to any gain realized by Grantee in respect of such Phantom Units.

(b) The Board or the Committee may at any time, in its sole and absolute discretion, cancel, declare forfeited, rescind, or require the return of any outstanding Phantom Units (or a portion thereof) upon the Board or Committee determining, at any time (whether before or after the Grant Date), that the Grantee has engaged in misconduct (including by omission) or that an event or condition has occurred, which, in each case, would have given the Partnership or its Subsidiaries the right to terminate the Grantee's employment for Cause. In addition, at any time following any payment in respect of the Phantom Units, the Board or Committee may, in its sole and absolute discretion, rescind any such payment and require the repayment of such amounts (or a portion thereof) upon the Board or Committee determining, at any time (whether before or after the payment date), that the Grantee has engaged in misconduct (including by omission) or that an event or condition has occurred, which, in each case, would have given the Partnership or its Subsidiaries the right to terminate the Grantee's employment for Cause.

(c) The Board's or Committee's determination that the Grantee has engaged in misconduct (including by omission), or that an event or condition has occurred, which, in each case, would have given the Partnership or its Subsidiaries the right to terminate the Grantee's employment for Cause, and its decision to require rescission of any payment made in respect of the Phantom Units, shall be conclusive, binding, and final on all parties. The Board's or Committee's determination that the Grantee has violated the terms of this Agreement (or any other agreement between Grantee and the Partnership or any of its affiliates), and the Board's or Committee's decision to cancel, declare forfeited, or rescind the Phantom Units (or any portion thereof) or to require rescission of any payment made in respect thereof shall be conclusive, binding, and final on all parties. In connection with any cancellation, forfeiture or rescission contemplated by this Section 10, the terms of repayment by the Grantee shall be determined in the Board's and/or Committee's sole and absolute discretion, which may include, among other terms, the repayment being required to be made (i) in one or more installments or payroll deductions or deducted from future bonus payments or (ii) immediately in a lump sum in the event that the Grantee incurs a termination of employment.

(d) To the extent not prohibited under applicable law, the Partnership, in its sole and absolute discretion, will have the right to set off (or cause to be set off) any amounts otherwise due to the Grantee from the Partnership (or any of its affiliates) in satisfaction of any repayment obligation of the Grantee hereunder, provided that any such amounts are exempt from, or set off in a manner intended to comply with the requirements of, Section 409A of the Code.

(e) If the Partnership subsequently determines that it is required by law to apply a "clawback" or alternate recoupment provision to the Phantom Units granted hereunder, under the Dodd-Frank Wall Street Reform and Consumer Protection Act or otherwise, then such clawback or recoupment provision also shall apply to such Phantom Units, as if it had been included on the effective date of this Agreement.

8. No Right to Continued Employment.

Nothing in this Agreement or the Plan shall be interpreted or construed to confer upon the Grantee any right with respect to continuance of employment by the Partnership or any of its Subsidiaries or Parents, nor shall this Agreement or the Plan interfere in any way with the right of the Partnership and its Subsidiaries and Parents to terminate the Grantee's employment therewith at any time.

9. Withholding of Taxes.

The Grantee shall pay to the Partnership, or the Partnership and the Grantee shall agree on such other arrangements necessary for the Grantee to pay, the applicable federal, state and local income taxes required by law to be withheld (the "Withholding Taxes"), if any, upon the vesting or payment of the Phantom Units. The Partnership shall have the right to deduct from any payment of cash to the Grantee an amount equal to the Withholding Taxes in satisfaction of the Grantee's obligation to pay Withholding Taxes.

10. Grantee Bound by the Plan.

The Grantee hereby acknowledges receipt of a copy of the Plan and agrees to be bound by all the terms and provisions thereof.

11. Modification of Agreement.

This Agreement may be modified, amended, suspended or terminated, and any terms or conditions may be waived, but only by a written instrument executed by the parties hereto; provided, however, that the Partnership may modify or amend this Agreement without the written consent of the Grantee to the extent that such action is necessary for compliance with an applicable law, regulation or exchange requirement that impacts this Agreement. No waiver by either party hereto of any breach by the other party hereto of any provision of this Agreement to be performed by such other party shall be deemed a waiver of similar or dissimilar provisions at the time or at any prior or subsequent time.

12. Severability.

Should any provision of this Agreement be held by a court of competent jurisdiction to be unenforceable or invalid for any reason, the remaining provisions of this Agreement shall not be affected by such holding and shall continue in full force in accordance with their terms.

13. Governing Law.

The validity, interpretation, construction and performance of this Agreement shall be governed by the laws of the State of New York without giving effect to the conflicts of laws principles thereof.

14. Entire Understanding.

This Agreement embodies the entire understanding and agreement of the parties in relation to the subject matter hereof, and no promise, condition, representation or warranty, expressed or implied, not herein stated, shall bind either party hereto.

15. Rights as Equity Holder.

In no event whatsoever shall the Grantee possess any incidents of ownership in any equity of the Partnership with respect to the Phantom Units granted hereunder.

16. Successors in Interest.

This Agreement shall inure to the benefit of and be binding upon any successor to the Partnership. This Agreement shall inure to the benefit of the Grantee's beneficiaries, heirs, executors, administrators, successors and legal representatives. All obligations imposed upon the Grantee and all rights granted to the Partnership under this Agreement shall be final, binding and conclusive upon the Grantee's beneficiaries, heirs, executors, administrators, successors and legal representatives.

17. Unfunded Status.

The Phantom Units constitute an unfunded and unsecured promise of the Partnership to deliver (or cause to be delivered) to the Grantee, subject to the terms and conditions of this Agreement, cash on the applicable vesting date for the applicable portion of such Phantom Units as provided herein. By accepting this grant of Phantom Units, the Grantee understands that this grant does not confer any legal or equitable right (other than those constituting the Phantom Units) against the Partnership or any of its Affiliates, directly or indirectly, or give rise to any cause of action at law or in equity against the Partnership or any of its Affiliates. The rights of the Grantee (or any person claiming through the Grantee) under this Agreement shall be solely those of an unsecured general creditor of the Partnership.

18. Resolution of Disputes.

Any dispute or disagreement which may arise under, or as a result of, or in any way relate to, the interpretation, construction or application of this Agreement shall be determined by the Committee (in its sole and absolute discretion). Any determination made hereunder shall be final, binding and conclusive on the Grantee and the Partnership for all purposes.

[signature page follows]

IN WITNESS WHEREOF, this Agreement has been executed as of the date first written above.

CVR PARTNERS, LP
By: CVR GP, LLC, its general partner

____
By: <<FULL NAME>>
Title: <<TITLE>>

GRANTEE

____
Name: <<FULL NAME>>

[Signature Page to Phantom Unit Agreement]

CVR PARTNERS, LP
LONG-TERM INCENTIVE PLAN
EMPLOYEE PHANTOM UNIT AGREEMENT

THIS AGREEMENT (this “Agreement”), made as of the [] day of [], 20[] (the “Grant Date”), between CVR Partners, LP, a Delaware limited partnership (the “Partnership”), and the individual grantee designated on the signature page hereof (the “Grantee”).

WHEREAS, the board of directors of CVR GP, LLC, a Delaware limited liability company (the “General Partner”), has adopted the CVR Partners, LP Long-Term Incentive Plan (the “Plan”) in order to provide an additional incentive to certain of the Partnership’s and its Subsidiaries’ and Parents’ employees, officers, consultants and directors; and

WHEREAS, the Committee responsible for administration of the Plan has authorized the grant of Phantom Units to the Grantee as provided herein.

NOW, THEREFORE, the parties hereto agree as follows:

1. Grant of Phantom Units.

(a) The Partnership hereby grants to the Grantee, and the Grantee hereby accepts from the Partnership on the terms and conditions set forth in this Agreement, an award of <<units>> Phantom Units. Subject to the terms of this Agreement, each Phantom Unit represents the right of the Grantee to receive, if such Phantom Unit becomes vested, a cash payment equal to the average closing price of the Units for the 10 business days preceding the applicable date of vesting pursuant to Section 2 or Section 3(a). The reference to the Units of the Partnership is used herein solely to calculate the cash payout, if any, to be awarded to the Grantee in accordance with this Agreement, and does not create any separate rights with respect to the Units of the Partnership or otherwise.

(b) This Agreement shall be construed in accordance with and consistent with, and subject to, the provisions of the Plan (the provisions of which are incorporated herein by reference). Except as otherwise expressly set forth herein, the capitalized terms used in this Agreement shall have the same definitions as set forth in the Plan.

2. Vesting Date.

The Phantom Units are unvested on and after the Grant Date and shall vest, with respect to thirty-three and one-third percent (33 – 1/3%) of the total number of Phantom Units granted hereunder, on [], [] and [] (each such date, a “Vesting Date”), provided the Grantee continues to serve as an employee of the Partnership or its Subsidiaries or Parents through the applicable Vesting Date.

3. Termination of Employment.

(a) In the event of the Grantee’s termination of employment with the Partnership or one of its Subsidiaries or Parents prior to any Vesting Date by reason of his or her death or Disability, then any Phantom Units scheduled to vest within twelve months from the date on which such event occurs shall become immediately vested, and all other Phantom Units shall be deemed forfeited and Grantee shall have no rights with respect thereto.

(b) Any Phantom Units that do not become vested in connection with the Grantee's termination of employment in accordance with Section 3(a) of this Agreement shall be forfeited immediately upon the Grantee's termination of employment.

(c) To the extent any payments provided for under this Agreement are treated as "nonqualified deferred compensation" subject to Section 409A of the Code, (i) this Agreement shall be interpreted, construed and operated in accordance with Section 409A of the Code and the Treasury regulations and other guidance issued thereunder, (ii) if on the date of the Grantee's separation from service (as defined in Treasury Regulation §1.409A-1(h)) with the Partnership or its Subsidiaries or Parents the Grantee is a specified employee (as defined in Section 409A of the Code and Treasury Regulation §1.409A-1(i)), no payment constituting the "deferral of compensation" within the meaning of Treasury Regulation §1.409A-1(b) and after application of the exemptions provided in Treasury Regulation §§1.409A-1(b)(4) and 1.409A-1(b)(9)(iii) shall be made to the Grantee at any time prior to the earlier of (A) the expiration of the six (6) month period following the Grantee's separation from service or (B) the Grantee's death, and any such amounts deferred during such applicable period shall instead be paid in a lump sum to the Grantee (or, if applicable, to the Grantee's estate) on the first payroll payment date following expiration of such six (6) month period or, if applicable, the Grantee's death, and (iii) for purposes of conforming this Agreement to Section 409A of the Code, any reference to termination of employment, severance from employment, resignation from employment or similar terms shall mean and be interpreted as a "separation from service" as defined in Treasury Regulation §1.409A-1(h). For purposes of applying Section 409A of the Code to this Agreement (including, without limitation, for purposes of Treasury Regulation Section 1.409A-2(b)(2)(iii)), each payment that the Grantee may be entitled to receive under this Agreement shall be treated as a separate and distinct payment and shall not collectively be treated as a single payment.

4. Distribution Equivalent Rights

The Partnership hereby grants to the Grantee, and the Grantee hereby accepts from the Partnership, one Distribution Equivalent Right for each Phantom Unit granted herein equal to the cash value of all distributions declared and paid by the Partnership on Units from the Grant Date to and including the Vesting Date. The reference to the cash value of such distributions is used herein solely to calculate the cash payout, if any, to be awarded in respect of such Distribution Equivalent Rights and does not create any separate rights with respect to the Distribution Equivalent Rights. The payment of Distribution Equivalent Rights will be deferred until and conditioned upon the underlying Phantom Units becoming vested pursuant to Section 2 or 3 hereof. Upon each Vesting Date, Distribution Equivalent Rights on all vested Phantom Units, with no interest thereon, shall become payable to the Grantee in accordance with Section 5 hereof.

5. Payment Date.

Within 15 business days following (i) each Vesting Date, or (ii) if, prior to any Vesting Date, the Grantee's termination of employment with the Partnership or its Subsidiaries or Parents under circumstances described in Section 3(a), the date of such termination of employment, the Partnership will deliver to the Grantee the cash payment underlying the Phantom Units and Distribution Equivalent Rights (if any) that become vested pursuant to Section 2 or 3 of this Agreement.

6. Non-transferability.

The Phantom Units may not be sold, transferred or otherwise disposed of and may not be pledged or otherwise hypothecated, other than by will or by the laws of descent or distribution. The Phantom Units shall not be subject to execution, attachment or other process.

7. Incentive Compensation Recoupment.

(a) In the event of a restatement of the Partnership's (or any of its Subsidiaries') financial results that would reduce (or would have reduced) the amount of any previously awarded Phantom Units to Grantee, any related outstanding Phantom Units will be cancelled or reduced accordingly as determined by the Board or Committee in its sole and absolute discretion. For Phantom Units that have been paid, the Grantee shall be obligated and required to pay over to the Partnership an amount equal to any gain realized by Grantee in respect of such Phantom Units.

(b) The Board or the Committee may at any time, in its sole and absolute discretion, cancel, declare forfeited, rescind, or require the return of any outstanding Phantom Units (or a portion thereof) upon the Board or Committee determining, at any time (whether before or after the Grant Date), that the Grantee has engaged in misconduct (including by omission) or that an event or condition has occurred, which, in each case, would have given the Partnership or its Subsidiaries the right to terminate the Grantee's employment for Cause. In addition, at any time following any payment in respect of the Phantom Units, the Board or Committee may, in its sole and absolute discretion, rescind any such payment and require the repayment of such amounts (or a portion thereof) upon the Board or Committee determining, at any time (whether before or after the payment date), that the Grantee has engaged in misconduct (including by omission) or that an event or condition has occurred, which, in each case, would have given the Partnership or its Subsidiaries the right to terminate the Grantee's employment for Cause.

(c) The Board's or Committee's determination that the Grantee has engaged in misconduct (including by omission), or that an event or condition has occurred, which, in each case, would have given the Partnership or its Subsidiaries the right to terminate the Grantee's employment for Cause, and its decision to require rescission of any payment made in respect of the Phantom Units, shall be conclusive, binding, and final on all parties. The Board's or Committee's determination that the Grantee has violated the terms of this Agreement (or any other agreement between Grantee and the Partnership or any of its affiliates), and the Board's or Committee's decision to cancel, declare forfeited, or rescind the Phantom Units (or any portion thereof) or to require rescission of any payment made in respect thereof shall be conclusive, binding, and final on all parties. In connection with any cancellation, forfeiture or rescission contemplated by this Section 10, the terms of repayment by the Grantee shall be determined in the Board's and/or Committee's sole and absolute discretion, which may include, among other terms, the repayment being required to be made (i) in one or more installments or payroll deductions or deducted from future bonus payments or (ii) immediately in a lump sum in the event that the Grantee incurs a termination of employment.

(d) To the extent not prohibited under applicable law, the Partnership, in its sole and absolute discretion, will have the right to set off (or cause to be set off) any amounts otherwise due to the Grantee from the Partnership (or any of its affiliates) in satisfaction of any repayment obligation of the Grantee hereunder, provided that any such amounts are exempt from, or set off in a manner intended to comply with the requirements of, Section 409A of the Code.

(e) If the Partnership subsequently determines that it is required by law to apply a "clawback" or alternate recoupment provision to the Phantom Units granted hereunder, under the Dodd-Frank Wall Street Reform and Consumer Protection Act or otherwise, then such clawback or recoupment provision also shall apply to such Phantom Units, as if it had been included on the effective date of this Agreement.

8. No Right to Continued Employment.

Nothing in this Agreement or the Plan shall be interpreted or construed to confer upon the Grantee any right with respect to continuance of employment by the Partnership or any of its Subsidiaries or Parents, nor shall this Agreement or the Plan interfere in any way with the right of the Partnership and its Subsidiaries and Parents to terminate the Grantee's employment therewith at any time.

9. Withholding of Taxes.

The Grantee shall pay to the Partnership, or the Partnership and the Grantee shall agree on such other arrangements necessary for the Grantee to pay, the applicable federal, state and local income taxes required by law to be withheld (the "Withholding Taxes"), if any, upon the vesting or payment of the Phantom Units. The Partnership shall have the right to deduct from any payment of cash to the Grantee an amount equal to the Withholding Taxes in satisfaction of the Grantee's obligation to pay Withholding Taxes.

10. Grantee Bound by the Plan.

The Grantee hereby acknowledges receipt of a copy of the Plan and agrees to be bound by all the terms and provisions thereof.

11. Modification of Agreement.

This Agreement may be modified, amended, suspended or terminated, and any terms or conditions may be waived, but only by a written instrument executed by the parties hereto; provided, however, that the Partnership may modify or amend this Agreement without the written consent of the Grantee to the extent that such action is necessary for compliance with an applicable law, regulation or exchange requirement that impacts this Agreement. No waiver by either party hereto of any breach by the other party hereto of any provision of this Agreement to be performed by such other party shall be deemed a waiver of similar or dissimilar provisions at the time or at any prior or subsequent time.

12. Severability.

Should any provision of this Agreement be held by a court of competent jurisdiction to be unenforceable or invalid for any reason, the remaining provisions of this Agreement shall not be affected by such holding and shall continue in full force in accordance with their terms.

13. Governing Law.

The validity, interpretation, construction and performance of this Agreement shall be governed by the laws of the State of New York without giving effect to the conflicts of laws principles thereof.

14. Entire Understanding.

This Agreement embodies the entire understanding and agreement of the parties in relation to the subject matter hereof, and no promise, condition, representation or warranty, expressed or implied, not herein stated, shall bind either party hereto.

15. Rights as Equity Holder.

In no event whatsoever shall the Grantee possess any incidents of ownership in any equity of the Partnership with respect to the Phantom Units granted hereunder.

16. Successors in Interest.

This Agreement shall inure to the benefit of and be binding upon any successor to the Partnership. This Agreement shall inure to the benefit of the Grantee's beneficiaries, heirs, executors, administrators, successors and legal representatives. All obligations imposed upon the Grantee and all rights granted to the Partnership under this Agreement shall be final, binding and conclusive upon the Grantee's beneficiaries, heirs, executors, administrators, successors and legal representatives.

17. Unfunded Status.

The Phantom Units constitute an unfunded and unsecured promise of the Partnership to deliver (or cause to be delivered) to the Grantee, subject to the terms and conditions of this Agreement, cash on the applicable vesting date for the applicable portion of such Phantom Units as provided herein. By accepting this grant of Phantom Units, the Grantee understands that this grant does not confer any legal or equitable right (other than those constituting the Phantom Units) against the Partnership or any of its Affiliates, directly or indirectly, or give rise to any cause of action at law or in equity against the Partnership or any of its Affiliates. The rights of the Grantee (or any person claiming through the Grantee) under this Agreement shall be solely those of an unsecured general creditor of the Partnership.

18. Resolution of Disputes.

Any dispute or disagreement which may arise under, or as a result of, or in any way relate to, the interpretation, construction or application of this Agreement shall be determined by the Committee (in its sole and absolute discretion). Any determination made hereunder shall be final, binding and conclusive on the Grantee and the Partnership for all purposes.

[signature page follows]

IN WITNESS WHEREOF, this Agreement has been executed as of the date first written above.

CVR PARTNERS, LP
By: CVR GP, LLC, its general partner

____
By: <<NAME>>
Title: <<TITLE>>

GRANTEE

____
Name: <<NAME>>

[Signature Page to Phantom Unit Agreement]

PORTIONS OF THIS EXHIBIT DENOTED WITH THREE ASTERISKS [***] HAVE BEEN EXCLUDED FROM THIS EXHIBIT BECAUSE THEY (1) ARE NOT MATERIAL AND
(2) WOULD BE COMPETITIVELY HARMFUL IF PUBLICLY DISCLOSED

FIRST AMENDMENT
TO
ON-SITE PRODUCT SUPPLY AGREEMENT

This FIRST AMENDMENT TO ON-SITE PRODUCT SUPPLY AGREEMENT ("Amendment") is between Coffeyville Resources Nitrogen Fertilizers, LLC, a Delaware limited liability company ("Coffeyville Resources"), and Messer LLC, a Delaware limited liability company ("Messer"), and is effective on the date that the last Party signs this Amendment.

Background

WHEREAS, Messer and Coffeyville Resources are Parties to the ON-SITE PRODUCT SUPPLY AGREEMENT having an Effective Date of July 31, 2020 ("Agreement").

WHEREAS, The Parties have agreed to amend the Agreement to: (1) postpone the start date of the first Planned Turnaround under the Agreement from the second half of 2021 until July of 2022; and (2) for Messer to assume certain Coffeyville Resources obligations under Exhibit B to the Agreement, which is deleted and replaced as set forth herein.

NOW THEREFORE, the Parties agree as follows:

1. The Agreement is amended as follows:

(a) Section 3.4.1 is replaced with the following:

> 3.4.1 Install the Additional Oxygen Equipment, perform the obligations designated to Messer in Exhibit B(II), and perform work and commit the capital included in the Relife Capital Investment in accordance with Exhibit C. Regardless of any conflicting provision of this Agreement, Coffeyville Resources is not required to perform the obligations designated to Messer in Exhibit B(II). Messer may transfer relife work described in Exhibit C from the Second Planned Turnaround Scope to the First Planned Turnaround Scope, as Messer determines is reasonably required, provided however, Messer must transfer item 15 of Exhibit C from the Second Planned Turnaround to the First Planned Turnaround. Subject to the terms of this Agreement, including, but not limited to those set forth in Section 16 below, Messer may contract or subcontract any or all of the work described in this Section as it deems appropriate and Messer shall be responsible for such contractors or subcontractors and the contracted or subcontracted work as if Messer itself had performed such work. Messer shall complete such work consistent with Messer's practices and shall give Coffeyville Resources a written notice when the Additional Oxygen Equipment is ready for initial fill ("Additional Oxygen Equipment Completion Notice") and as items included in the Relife Capital Investment are complete. Regardless of Section 3.4.4, the items specified in Exhibit B(II) will be Coffeyville Resources' property at all times, and Messer will not be required to remove those items after the termination or expiration of this Agreement.

(b) The second sentence of Section 5.2 is deleted and replaced with the following:

> Payment for the Minimum Monthly Charge and the Additional Oxygen Equipment Infrastructure Fee shall be made no later than the last day of the corresponding month.

(c) In the first sentence of Section 13.2, "during the second half of 2021" is replaced with "starting in July of 2022."

(d) Section 13.3.2 is replaced with the following:

> 13.3.2 ASU downtime during: (i) the Allowable Planned Turnaround Hours; and (ii) the 72-hour period starting at the end of the Allowable Planned Turnaround Hours for the first Planned Turnaround.

(e) The following new Section 13.3.4 is added after Section 13.3.3:

> 13.3.4 Any reduction in or cessation of the supply of Product to Coffeyville Resources from the ASU from October 1, 2021 until the start of the first Planned Turnaround, if the issue that caused such reduction or cessation is in the scope of the first Planned Turnaround and/or the second Planned Turnaround.

(f) The following new definition is added after the definition of Additional Oxygen Equipment:

Additional Oxygen Equipment Infrastructure Monthly Charge	means the monthly charge for Messer's performance of the obligations designated to Messer in Exhibit B(II), payable by Coffeyville Resources as more specifically described in Exhibit A(V)(H).

(g) The definition of Allowable Planned Turnaround Hours in Appendix 1 is replaced with the following:

Allowable Planned Turnaround Hours	means: (a) 600 hours during the first Planned Turnaround, when Messer shall be permitted to shutdown the Messer Equipment; (b) 672 hours during the second Planned Turnaround, when Messer shall be permitted to shutdown the Messer Equipment; and (c) 504 hours per two-year period during Planned Turnarounds after the second Planned Turnaround, when Messer shall be permitted to shutdown the Messer Equipment. Messer shall work diligently to minimize the number of Allowable Planned Turnaround Hours during the first Planned Turnaround.

(h) The following new definition is added after the definition of Coffeyville Resources' Plant Site :

Coffeyville Resources Third Party Infrastructure Invoices	means: invoices of third parties engaged by Coffeyville Resources to perform obligations designated to Coffeyville Resources in Exhibit B(II).

(i) The following new Section V(H) is added after Section V(G) of Exhibit A:

H. Additional Oxygen Equipment Infrastructure Monthly Charge

(i) Coffeyville Resources shall pay the Additional Oxygen Equipment Infrastructure Monthly Charge each month during the 15-year period starting on July 1, 2022, or the date of completion of the pouring of the foundation for the oxygen storage vessel, whichever is later ("Infrastructure Charge Payment Period"). Effective as of July 1, 2022, or the date of completion of the pouring of the foundation for the oxygen storage vessel, whichever is later, the Additional Oxygen Equipment Infrastructure Monthly Charge is [***]. This amount is based upon an estimate of [***] for the sum of: (1) the Coffeyville Resources Third Party Infrastructure Invoices; and (2) Messer's total cost to perform the obligations designated to Messer in Exhibit B(II), including: (a) Messer's internal engineering and project execution costs (i.e., engineering and project execution costs excluding third party costs and fees) and Messer's internal costs to process the Coffeyville Resources Third Party Infrastructure Invoices (collectively, "Messer E/PE Costs") up to [***] ("Messer E/PE Cost Cap"); and (b) all third party costs and fees.

(ii) Messer shall provide Coffeyville Resources with engineering documents with respect to the items specified in Exhibit B(II)(M) located outside of the Messer Site ("Engineering Documents"). Coffeyville Resources will be deemed to have approved any Engineering Documents that they do not object to within ten (10) days of receipt, and shall return the Engineering Documents to Messer within that period. Messer estimates that its work under Exhibit B(II)(M) will require approximately 24 weeks to complete, and Messer intends to perform portions of that work concurrently with the installation of the liquid oxygen storage vessel. Messer may include in the determination of its actual total cost to perform the work, any Messer E/PE Costs in excess of the Messer E/PE Cost Cap ("Messer Excess E/PE Costs") incurred by Messer because of the acts or omissions of Coffeyville Resources or its employees or contractors, including: (1) their failure to complete the Engineering Document review and return the Engineering Documents to Messer within ten (10) days of receipt; or (2) their acts or omission that result in Messer's inability to complete the work in 24 weeks, or perform the work concurrently with the installation of the oxygen storage vessel.

(iii) Messer shall determine its actual total cost to perform its obligations under Exhibit B(II), including Messer E/PE Costs up to the Messer E/PE Cost Cap, Excess Messer E/PE Costs (if applicable), and all third-party costs and fees (collectively, "Actual Total Applied Cost") after completion of the work, and shall adjust the Additional Oxygen Equipment Infrastructure Monthly Charge as follows:

(1) If the [***] estimate exceeds the sum of the Coffeyville Resources Third Party Infrastructure Invoices, and the Actual Total Applied Cost, then Messer shall decrease the Additional Oxygen Equipment Infrastructure Monthly Charge by [***] for every [***] of that excess, prorated for any partial amount.

(2) If the sum of the Coffeyville Resources Third Party Infrastructure Invoices, and the Actual Total Applied Cost exceeds the [***] estimate, then Messer shall increase the Additional Oxygen Equipment Infrastructure Monthly Charge by [***] for every [***] of that excess, prorated for any partial amount.

(iv) Messer shall apply any adjustments to the Additional Oxygen Equipment Infrastructure Monthly Charge under this Section retroactively to July 1, 2022, or the date of completion of the pouring of the foundation for the oxygen storage vessel, whichever is later, and shall issue credits or additional invoices to Coffeyville Resources for the difference between the initial charge of [***] and the adjusted charge, as applicable. If the Agreement terminates before the end of the Infrastructure Charge Payment Period for any reason, then Coffeyville Resources shall pay Messer the Additional Oxygen Equipment Infrastructure Monthly Charge for the number of months that would have remained in the Infrastructure Charge Payment Period if not for the termination, prorated for any partial month.

(j) Exhibit B is deleted in its entirety and replaced with Exhibit B, attached to this Amendment.

(k) In Exhibit C, [***]

(l) In Exhibit C, [***]

Capitalized terms are either defined in this Amendment or the Agreement. Except as set forth in this Amendment, all other terms of the Agreement shall remain in full force and effect. In the event of a conflict between the terms of this Amendment and the terms of the Agreement, the terms of this Amendment shall control. This Amendment may be executed in multiple counterparts, each of which will be deemed an original but all of which together will constitute but one and the same instrument.

	Coffeyville Resources Nitrogen Fertilizers, LLC		Messer LLC
By:	/s/ Robby Collums	By:	/s/ Robert J. Capellman
	(Signature)		(Signature)
	Robby Lee Collums		Robert J. Capellman
	(Print Full Name)		(Print Full Name)
	VP & GM		Executive Vice President
	(Title)		(Title)
Date:	2-18-2022	Date:	February 21st, 2022

EXHIBIT B

ITEMS TO BE PROVIDED BY COFFEYVILLE RESOURCES

I. Items to be provided for the ASU

Except as otherwise provided in this Agreement, Coffeyville Resources shall provide the following:

A. Power: [***]
Coffeyville Resources shall be responsible to provide power for the ASU. Maximum annual average power consumption for ASU is [***]. For any additional consumption, Messer shall pay Coffeyville Resources its actual cost for such power, except that, if the additional consumption is due to an Off-Spec Condition, then: (i) Coffeyville Resources will be responsible for the cost of the additional power if Coffeyville Resources caused the Off-Spec Condition; (ii) Messer shall pay Coffeyville Resources its actual cost for the additional power if Messer caused the Off-Spec Condition; and (iii) Messer shall pay Coffeyville Resources half of its actual cost for the additional power in all other cases.

B. Steam
Flow (ASU Usage) : [***] LB/hr average, [***] LB/hr peak
Primary: [***] psig minimum, [***]ºF
Secondary: [***] psig, minimum, [***]ºF

Reactor: [***] LB/hr when Vaporizing
[***] psig minimum, [***]ºF

C. Hydrogen: [***] scfh average
(within specifications listed on Appendix 3)

D. Cooling water supply: [***] gpm (designed)
(within specifications listed on Appendix 3)

E. Steam and condensate drain

F. Sewer services, oil/water, storm and sanitary

G. Potable water

H. Fire Water

I. Instrument air

J. Telephone Line

K. Permanent Security and Site access

II. Items to be provided for the Additional Oxygen Equipment

Messer and Coffeyville Resources Obligations							
Section	Description	Messer		Coffeyville Resources		Messer Payment of Coffeyville Resources Third Party Infrastructure Invoices***	Comments****
		ISBL*	OSBL**	ISBL*	OSBL **		
A	Power			x	x	x	Power: [***] Construction power: [***] vac for construction trailer. Operating power (including commissioning): Coffeyville Resources shall be responsible to provide electric power for the Additional Oxygen Equipment. Power will be sufficient to start and operate: two (2) liquid oxygen pumps, each nominally up to 300 horsepower, a 15 horsepower load for the hot water bath vaporizer, and necessary controls and accessories required for the operation of the Additional Oxygen Equipment.
B	Steam			x	x	x	Steam: Flow: up to [***] lbs/hr Pressure: [***] psig (+/- [***] psi) Quality: clean, dry and saturated
C	Steam Condensate Drain			x	x	x	
D	Storm water drainage/ sewars			x	x	x	
E	Potable Water			x	x	x	
F	Fire water/fire protection			x	x	x	
G	Telephone lines			x	x	x	
H	Permanent Security and Site Access			x	x	x	
I	Security Fence			x	x	x	
J	Site lighting			x	x	x	
K	Permits required for construction and operation			x	x	x	

L	All civil design and construction including but not limited to equipment foundations, underground electrical conduits, underground mechanical items, grounding grid	x			x	x	Messer will be responsible for design and construction for ISBL foundations. Coffeyville Resources will be responsible for design and construction for OSBL foundations based on Messer's civil brief, and for all other civil design and construction specified in subsection L.
M	Pipe racks and cable trays sufficient for piping, electrical and communica-tions connection between the Additional Oxygen Equipment and the ASU	x	x		x	x	Pipe racks and cable trays will be for Messer requirements only. Routing will be generally as indicated in Ross CRNF LOX Tank AFE dated July 22, 2021. Messer will be responsible for ISBL pipe rack and cable tray design and installation, and for OSBL pipe rack and cable tray design. Coffeyville Resources will be responsible for OSBL pipe rack and cable tray installation per Messer’s design.
N	Paved roadways as required by Messer to and within Messer site for truck access to and from the filling station	x			x	x	Messer will pave N Pine St from E Martin St to E New St. Messer will select the materials to be used and determine when N Pine St needs to be shutdown to perform Messer’s work as it deems appropriate. Requests by Coffeyville Resources for other materials or a different shutdown schedule will likely result in cost increases. Coffeyville Resources will pave roads to N Pine, before Messer commissions the oxygen storage vessel, to allow Messer truck access.
O	Construction lay-down area			x	x	x	100ft x 100 ft adjacent to Messer Site with minimum soil-bearing capacity of 2500 psf

*ISBL is inside battery limits, where battery limits are the Messer Site.

**OSBL is outside battery limits (i.e. not on the Messer Site).

***Coffeyville Resources shall send Messer the Coffeyville Resources Third Party Infrastructure Invoices upon Coffeyville Resources' approval of each invoice. Messer shall pay each Coffeyville Resources Third Party Infrastructure Invoice within 30 days after Messer receives the invoice.

**** The obligation to maintain the items in Exhibit B(II) remains with Coffeyville Resources.

Exhibit 10.49

January 26, 2022

Michael H. Wright, Jr.
mwright@cvrenergy.com

Re: Internal Job Offer – Promotion

Dear Mr. Wright,

We are pleased to offer you the position of Executive Vice President and Chief Operating Officer with CVR Services, LLC (the "Company") at a bi-weekly salary of $19,230.77 (annualized at $500,000.00), subject to deductions as required by law. Your position is an exempt position that requires a significant level of responsibility, discretion, and independent judgment. As a result, it carries no additional compensation for overtime worked. In this position, you will report to Dave Lamp, Chief Executive Officer and Executive Chairman. We have selected January 31, 2022, as the transfer date ("Transfer Date"). This letter sets forth some of the additional terms of your employment with the Company.

You will continue to be eligible to participate in our medical, dental, vision, life insurance, matching 401(k), and paid time off ("PTO") plans, subject to and in accordance with our plan requirements, which may change from time to time. The Company reserves the right to add, change, or terminate benefits at any time including, but not limited to, those set forth above

You will be eligible to participate in our annual performance-based bonus plan, subject to the guidelines of our bonus plan and any changes to the same. Based on the current bonus plan in effect on your start date, your bonus target will be up to 120% of eligible compensation. Bonus payouts are calculated in accordance with our compensation plan and prorated for time in an eligible position. There is no guarantee of bonus payout in any year. Please note that your eligibility under this bonus target will be prorated based on the Promotion Date for the 2022 bonus payouts.

You will also be eligible to participate in the applicable annual Long Term Incentive Plan with an annual target of up to 120%, of your base salary. Such plan may be amended from time to time by the Company, in its discretion.

Subject to the terms of an Incentive Unit Agreement, you will be awarded Incentive Units, with an approximate target value of $420,000, on the next regular date for the issuance of such awards utilized by the Company following your promotion date, or such other date determined by the Company in its discretion, which will generally vest ratably on the anniversary of your award date in each of the three years following the date of award.

As a condition of your continued employment with the Company, you agree that during and after your employment you shall not disclose to any third party any confidential or proprietary information of the Company, any of its affiliates or subsidiaries, or any of their respective owners, members, directors, managers, and employees. However, neither the foregoing nor anything else in this letter shall prohibit you from reporting any possible violations of federal law or regulation to any government agency or entity, including but not limited to the Department of Justice and the Securities and Exchange Commission, or making any other disclosures that are protected under the whistleblower provisions of federal law or regulation. You are not required to notify the Company that you will make or have made such reports or disclosures provided, however, that any such reports or disclosures are made in a manner that limits, to the extent possible, disclosure of confidential or proprietary information of the Company.

Your employment will be "at will," meaning that your employment is for no specific duration and either you or the Company are free to end your employment at any time, for any reason. Nothing contained in this letter shall limit or otherwise alter the foregoing. Your employment will be subject to other Company policies, procedures, directives, terms, and conditions that may be established or modified by the Company from time to time.

To confirm your acceptance of this position please sign and return as soon as possible.

If you have any questions concerning this offer, please contact me promptly.

Sincerely,

/s/ Alicia Skalnik

Alicia Skalnik
VP – Human Resources

Acknowledged and Agreed:

/s/ Michael H. Wright Jr.	1/28/2022
Michael H. Wright, Jr.	Date

LIST OF SUBSIDIARIES OF
CVR ENERGY, INC*

The following is a list of all subsidiaries of CVR Energy, Inc and their jurisdiction of organization.

Entity	**Jurisdiction**
CVR Energy Holdings, Inc.	Delaware
Wynnewood Insurance Corporation	Texas
CVR Services, LLC	Delaware
CVR Refining GP, LLC	Delaware
CVR Refining, LP	Delaware
CVR Refining, LLC	Delaware
Wynnewood Energy Company, LLC	Delaware
Wynnewood Refining Company, LLC	Delaware
Coffeyville Resources Refining & Marketing, LLC	Delaware
Coffeyville Resources Crude Transportation, LLC	Delaware
Coffeyville Resources Terminal, LLC	Delaware
Coffeyville Resources Pipeline, LLC	Delaware
CVR GP, LLC	Delaware
CVR Partners, LP	Delaware
CVR Nitrogen GP, LLC	Delaware
CVR Nitrogen Holdings, LLC	Delaware
CVR Nitrogen, LP	Delaware
CVR Nitrogen Finance Corporation	Delaware
East Dubuque Nitrogen Fertilizers, LLC	Delaware
Coffeyville Nitrogen Fertilizers, LLC	Delaware

* Pursuant to Item 601(b)(21)(ii) of Regulation S-K, the names of other subsidiaries of CVR Energy, Inc. are omitted because, considered in the aggregate, they would not constitute a significant subsidiary as of the end of the year covered by this report.

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We have issued our reports dated February 22, 2022, with respect to the consolidated financial statements and internal control over financial reporting included in the Annual Report of CVR Energy, Inc. on Form 10-K for the year ended December 31, 2021. We consent to the incorporation by reference of said reports in the Registration Statements of CVR Energy, Inc. on Forms S-8 (File No. 333-146907 and File No. 333-148783).

/s/ GRANT THORNTON LLP

Dallas, Texas
February 22, 2022

EXHIBIT 31.1

**Certification of President and Chief Executive Officer Pursuant to
Rule 13a-14(a) or 15d-14(a) under the Securities Exchange Act of 1934,
As Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002**

I, David L. Lamp, certify that:

1. I have reviewed this report on Form 10-K of CVR Energy, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 22, 2022	By:	/s/ DAVID L. LAMP
		David L. Lamp *President and Chief Executive Officer* *(Principal Executive Officer)*

EXHIBIT 31.2

**Certification of Executive Vice President and Chief Financial Officer Pursuant to
Rule 13a-14(a) or 15d-14(a) under the Securities Exchange Act of 1934,
As Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002**

I, Dane J. Neumann, certify that:

1. I have reviewed this report on Form 10-K of CVR Energy, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 22, 2022

By: /s/ DANE J. NEUMANN
Dane J. Neumann
Executive Vice President and Chief Financial Officer
(Principal Financial Officer)

Exhibit 31.3

Certification of Vice President, Chief Accounting Officer and Corporate Controller Pursuant to Rule 13a-14(a) or 15d-14(a) under the Securities Exchange Act of 1934, As Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Jeffrey D. Conaway, certify that:

1. I have reviewed this report on Form 10-K of CVR Energy, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 22, 2022	By:	/s/ JEFFREY D. CONAWAY
		Jeffrey D. Conaway
		Vice President, Chief Accounting Officer and Corporate Controller
		(Principal Accounting Officer)

EXHIBIT 32.1

Certification Pursuant to 18 U.S.C. Section 1350,
as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

In connection with the filing of the Annual Report on Form 10-K of CVR Energy, Inc., a Delaware corporation (the "Company"), for the fiscal year ended December 31, 2021, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), each of the undersigned officers of the Company certifies, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that, to the best of such officer's knowledge and belief:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and,

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company as of the dates and for the periods expressed in the Report.

Date: February 22, 2022

By: /s/ DAVID L. LAMP
David L. Lamp
President and Chief Executive Officer

By: /s/ DANE J. NEUMANN
Dane J. Neumann
Executive Vice President, Chief Financial Officer

By: /s/ JEFFREY D. CONAWAY
Jeffrey D. Conaway
Vice President, Chief Accounting Officer and Corporate Controller