America's New Energy Future:

The Unconventional Oil and Gas Revolution and the US Economy

Volume 3: A Manufacturing Renaissance

Appendix B. Production and Capital Expenditure Methodology and Outlook – Midstream and Downstream Energy and Energy-Related Chemicals

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Midstream and Downstream Energy

In developing a capital investment forecast for the seven segments of the midstream and downstream sectors related to unconventional oil and natural gas, a consistent evaluation methodology was applied, with adjustments made to specific conditions unique to each segment. For each segment, a zero-based, project-by-project build-up of announced and "likely" investments was developed using public information that was provided by companies and investment groups within the industries. Likely investments were defined as those needed, in IHS Energy Insight's view, to meet product demand either nationally or globally. For each individual line item, a screening level capital investment was developed using IHS proprietary methodology. Capital investments were then distributed across a typical project schedule for each category of project. The forecast timeframe covers 2012 through 2025.

The capital investment forecast was calibrated to our prior study, *America's New Energy Future: The Unconventional Oil and Gas Revolution and the US Economy*, as well as to the natural gas, natural gas liquids (NGLs), and crude oil production forecasts. It was further refined based on the dynamics of each industry segment.

For example, IHS forecast for crude oil production from shale oil formations in 2025 is projected to increase by 2.5 million barrels per day over 2012 production levels. This additional production will largely displace non-structural light sweet crude oil imports into the United States.[1] As individual US refineries are configured to process different grades of crude oil, the additional production activity will largely impact less complex sweet crude refineries. [2] IHS forecasts that the increase in light sweet crude oil production will be significant enough to begin to displace imported light sour crude oil, which typically requires processing in more complex facilities. Only a handful of refinery projects have been announced; however, based on IHS forecasts of production volumes, it is a reasonable to assume that another 6-10 projects will be initiated to improve the flexibility of complex refineries to process the growing volumes of light sweet crude oil. In cases such as this, unidentified "placeholder" projects were incorporated into IHS' capital expenditure forecast.

Using this methodology, there is inherently more certainty for expected capital expenditures in the first half of the forecast period (2012-2017) than in the second half of the forecast period (2018-2022). This was expected and is in alignment with the standard corporate planning cycle. After reviewing announced projects, a key conclusion reached by IHS is that for the midstream and downstream segments the capacity necessary for anticipated peak production will have been largely constructed by the end of the first half of the forecast period. With that in mind, and given the lack of project definition for the latter years of the forecast period, IHS has factored into its forecast and estimation methodology a combination of declining residual investment for

[1] Light crude oil refers to crude oil with an API gravity (density) greater than or equal to 28, heavy crude oil refers to crude oil with an API gravity less than 28. Sweet crude oil refers to crude oil with a sulfur weight concentration less than 1 percent, sour crude oil refers to crude oil with a sulfur concentration greater than or equal to 1 percent.

[2] The conversion of heavy sour crude oil requires more processing intensity and equipment, this is typically referred to as conversion capacity or complexity.

growth capital projects and sustaining capital, for the investments constructed in the front half of the forecast period,.

Within each midstream and downstream segment, the capital forecast is further detailed based on typical allocation categories for a given project type: steel, process equipment (pumps, compressors, heat exchangers, etc.), civil construction (earth works and concrete), electrical and instrumentation, erection labor, and engineering and project management. For example, a pipeline project will have a higher percentage allocation to steel and civil construction, while a liquefied petroleum gas (LPG) fractionator will have a higher percentage allocation to process equipment and engineering.

The IHS Energy Insight team has researched the capital requirements necessary to support unconventional oil and natural gas activity. The midstream elements consist of natural gas, NGL, and oil pipelines and storage, while the downstream elements include natural gas processing plants, LPG and NGL processing, and refineries. The following tables present the detailed capital expenditures outlook for midstream and downstream energy for the US and the four Census regions.

Midstream and Downstream Energy Capital Expenditures: United States

(Current $M)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2012-2025
LNG Processing	502	3,236	5,533	8,449	6,211	3,471	3,119	2,421	1,279	685	651	618	587	558	37,319
NG Processing	6,291	5,425	4,185	2,583	2,131	1,984	1,025	879	835	793	753	716	680	646	28,925
NG Logistics	8,871	9,148	7,222	5,084	3,069	4,295	5,065	3,545	2,244	3,608	3,560	4,045	3,994	2,315	66,065
NGL Processing	3,510	3,912	2,109	928	835	742	649	557	529	502	477	453	431	409	16,046
NGL Logistics	4,507	3,429	2,286	1,230	1,036	948	811	697	581	548	516	486	456	434	17,964
Crude Oil Processing	107	671	1,496	1,883	1,591	780	697	321	289	257	225	193	183	174	8,865
Crude Oil Logistics	5,199	7,590	8,272	5,960	2,742	2,635	1,812	1,519	1,206	1,046	885	834	785	746	41,233
Total	**28,987**	**33,412**	**31,102**	**26,117**	**17,615**	**14,855**	**13,179**	**9,938**	**6,963**	**7,439**	**7,068**	**7,345**	**7,117**	**5,282**	**216,418**

NOTE: Numbers may not sum due to rounding.
Source: IHS Energy

Midstream and Downstream Energy Capital Expenditures: Midwest Census Region

(Current $M)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2012-2025
LNG Processing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NG Processing	1,253	1,163	977	524	306	272	238	204	194	184	175	166	158	150	5,965
NG Logistics	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NGL Processing	551	669	467	164	148	131	115	99	94	89	85	80	76	72	2,841
NGL Logistics	323	510	339	155	119	108	93	80	67	63	59	56	52	50	2,072
Crude Oil Processing	36	200	462	351	83	0	64	53	48	42	37	32	30	29	1,466
Crude Oil Logistics	1,478	2,339	2,932	2,206	793	677	560	487	391	338	284	271	257	245	13,257
Total	**3,641**	**4,880**	**5,176**	**3,399**	**1,449**	**1,189**	**1,070**	**923**	**793**	**716**	**640**	**605**	**574**	**545**	**25,601**

NOTE: Numbers may not sum due to rounding.
Source: IHS Energy

Midstream and Downstream Energy Capital Expenditures: West Census Region

(Current $M)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2012-2025
LNG Processing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NG Processing	612	352	337	154	114	101	88	76	72	68	65	62	59	56	2,215
NG Logistics	300	470	273	47	0	171	511	448	122	223	525	703	707	193	4,690
NGL Processing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NGL Logistics	306	632	471	160	140	128	110	94	79	74	70	66	62	59	2,449
Crude Oil Processing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crude Oil Logistics	261	787	1,300	2,427	1,365	569	283	313	247	215	182	171	159	151	8,430
Total	**1,478**	**2,242**	**2,381**	**2,787**	**1,619**	**969**	**992**	**931**	**519**	**580**	**842**	**1,001**	**986**	**458**	**17,785**

NOTE: Numbers may not sum due to rounding.
Source: IHS Energy

Midstream and Downstream Energy Capital Expenditures: South Census Region

(Current $M)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2012-2025
LNG Processing	502	3,236	5,533	8,449	6,211	3,471	3,119	2,421	1,279	685	651	618	587	558	37,319
NG Processing	4,169	3,558	2,687	1,831	1,643	1,551	646	554	526	500	475	451	428	407	19,424
NG Logistics	4,498	5,705	6,153	4,951	3,059	4,124	4,435	2,863	2,050	3,385	3,035	3,342	3,287	2,122	53,011
NGL Processing	2,835	3,120	1,610	736	663	589	515	442	420	399	379	360	342	325	12,734
NGL Logistics	3,818	2,177	1,401	888	753	689	590	506	423	399	375	353	332	315	13,018
Crude Oil Processing	71	472	1,034	1,532	1,508	780	634	268	241	214	188	161	153	145	7,399
Crude Oil Logistics	3,245	4,039	3,637	928	115	828	685	595	476	412	347	330	314	298	16,249
Total	**19,138**	**22,306**	**22,055**	**19,315**	**13,952**	**12,032**	**10,623**	**7,648**	**5,414**	**5,993**	**5,450**	**5,615**	**5,444**	**4,171**	**159,155**

NOTE: Numbers may not sum due to rounding.
Source: IHS Energy

Midstream and Downstream Energy Capital Expenditures: Northeast Census Region

(Current $M)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2012-2025
LNG Processing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NG Processing	257	351	184	75	68	60	53	45	43	41	39	37	35	33	1,322
NG Logistics	4,074	2,973	796	86	10	0	119	234	72	0	0	0	0	0	8,364
NGL Processing	124	124	33	27	24	22	19	16	16	15	14	13	13	12	471
NGL Logistics	60	110	74	28	24	22	19	16	14	13	12	11	11	10	425
Crude Oil Processing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crude Oil Logistics	215	425	403	399	469	561	284	123	92	82	72	63	55	52	3,297
Total	**4,729**	**3,983**	**1,490**	**616**	**595**	**666**	**494**	**435**	**237**	**150**	**137**	**125**	**113**	**108**	**13,877**

NOTE: Numbers may not sum due to rounding.
Source: IHS Energy

Energy-Related Chemicals

This section outlines the methodology and assumptions used to develop the energy-related chemicals data contained in this study and defines the key terminology used.

Data Sources and Methodology

The energy-related chemicals data used in this study come from the following IHS databases:

- **IHS Chemical's Supply/Demand Database** which includes:
  - Historical and forecast production for every producing country and region and a global total;
  - Historical and forecast trade (imports/exports) for every country and region;
  - Historical and forecast operating rates for every producing country, region and a global total;
  - Historical and forecast demand for every consuming country, region and a global total;
  - Historical and forecast base year inventory change for every country, region and a global total;
  - Historical and forecast growth rates for capacity, production, trade and demand.
- **IHS Chemical's "Commercial Analysis and Planning System" (CAPS),** a continuously updated, proprietary capacity database, which includes:
  - Historical and forecast production capacities for every country and company,
  - Historical and planned capacity expansions, closures and name changes,
  - Capacity integration tables, by site, for every country and company,
  - Top production/consumption and surplus/deficit lists by company or shareholder,
  - Company ownership and shareholder or subsidiary data.

- **IHS Chemical's Price Database**, which is updated weekly, includes:
    - Historical pricing for each product for each major regions of the world;
    - A monthly forecast for each product through 2014 and annual forecast to 2035.

These IHS databases derive from various sources. Basic capacity data has evolved over a period of years and is updated as changes occur. This information is periodically verified in discussions with representatives of the companies listed in the capacity tables during personal visits to their offices or meetings at other venues. The statistics on production, imports and exports for several of the larger industrialized countries are generally obtained from government sources or trade associations. IHS Chemical has formed opinions by utilizing industry-based estimates to complement the data for countries that are smaller in market size or are problematic to analyze. IHS Chemical personnel from around the world also meet with companies known to have business activities in areas where data can be difficult to obtain or require further verification. Where there are known or suspected inconsistencies or errors in published data, corrections are made using IHS Chemical's best estimates. As a result, the materials and analyses presented in these reports are strictly the opinions of IHS Chemical and are based on publicly available information or on assessments by IHS Chemical staff.

Supply/Demand Balances

IHS Chemical generates its projections of chemicals supply and demand, prices and margins, uses IHS Global Insight's economic growth projections for at least 20 years into the future. The energy-related chemicals data used in this study cover a 14-year forecast period. Furthermore, the demand forecast incorporates the impact of economic growth (defined as growth in gross domestic product, or GDP), as well as end-use industry projections obtained from IHS Global Insight. Capacity projects typically have planning and construction lead times of about three to five years. However, IHS Chemical has provided its opinion of capacity additions beyond that five-year horizon, shown as "hypothetical capacity" in the supply/demand tables.

Due to the rapidly changing business environment in the chemical industry, it is difficult to capture the most up-to-date dynamics in the marketplace. Therefore, it is important to use this data properly. In presenting projections of future capacity, trade, supply and demand volumes, we use what we believe to be the most probable future scenarios as of the date of publication. The most likely or probable case is, of course, sensitive to alternative assumptions. Furthermore, market conditions change constantly.

Capacity

The production capacity data used in the supply/demand balances and presented in the capacity tables are snapshots from the IHS Chemical's database. These capacity figures represent the annual nameplate or rated production capability of a unit, excluding the effects of scheduled maintenance outages or turnarounds. Therefore, when a facility is shut down or runs at reduced operating rates for maintenance, inventory control, or other business reasons, no adjustment in capacity is shown. Likewise, the number of days each unit is out of service during planned or unplanned outages can vary greatly from year to year. Production units can also exceed their nameplate capacity for short periods of time. When changes in capacity are occurring during a particular year, the numbers in the capacity tables are shown on a pro-rated basis. For example, if a new unit with a nameplate capacity of 100,000 metric tons per year is expected to begin operation in early October, then the number shown for that year would be 25,000 metric tons and the capacity for the following full year of operation would be 100,000 metric tons. No attempt is made to adjust the capacity downward in early operating years to

reflect any start-up difficulties that may occur. Units that are dismantled are removed from future years.

Production

Historical production volumes for energy-related chemical products in this study are generally obtained from government sources or trade associations. IHS Chemical has formed opinions by utilizing industry-based estimates to complement data for countries with smaller markets or that are problematic to analyze. Future production is based on IHS Chemical forecasts of the amount of product that must be produced for any given year to meet the anticipated demand arising from direct domestic consumption or exports (if any). Future production levels are adjusted to reflect changes in anticipated operating rates due to capacity additions or the level of imports coming into the country. Production levels, therefore, reflective the amount of capacity available to produce the products in question, as well as the competitive position of the country under study, with low-cost producers generally being given export preference.

Imports and Exports

IHS Chemical includes imports and exports as important components of supply/demand balances. Some trade flows are between countries in the same region. Note that regional import and export totals are the sum of all national trade volumes and include shipments to countries within the same region. The difference between imports and exports is the net trade position of a country or region, and this is represented in *export* terms, so that net exporters show a positive net trade balance and net importers show a negative net trade balance. IHS Chemical utilizes global cost curves and other competitive production analyses to determine each country's export position or the amount of imports that will likely enter a country in any given year. During periods of global surplus capacity, preference is given to low-cost producers, which will prevail in more competitive international markets.

Chemical Capacity Growth Analysis

An analysis of the growth in chemicals capacity starts with announced and anticipated capacity additions generated by the World Supply/Demand forecasts performed by IHS Chemical, which were recently updated for this analysis. We isolated the capacity that is being added due to cost advantages that currently exist, and we forecast the cost advantages to remain in place for the entire forecast period. A cost advantage results from lower input costs relative to the rest of the world and are tied either directly or indirectly to reductions since 2008 in prices for natural gas and associated gas liquids relative to oil prices. Using this as the basis of screening, we identified 32 chemical products, which are experiencing capacity increases almost solely due to the shale gas impact of the US competitive position relative to the rest of the world.

Chemical Products Impacted by Unconventional Gas*	
Acrylic Acid	Linear Alpha Olefins
Acrylonitrile	Linear Low Density Polyethylene
Ammonium Nitrate	Diphenylmethane Diisocyanate (MDI)
Ammonia	Mono Ethylene Glycol
Aniline	Methanol
Butadiene	Methyl Methacrylate
Caustic Soda	MTBE
Chlorine	Nitrobenzene
Diethylene glycol (DEG)	Polyethylene Glycol
Ethylene Dichloride (EDC)	Polypropylene
Ethoxylates	Propylene
Ethylene Oxide	Propylene Oxide
Ethylene	Polyvinyl Chloride (PVC)
Formaldehyde	Triethylene Glycol (TEG)
High Density Polyethylene	Urea
Low Density Polyethylene	Vinyl Acetate

Note: *The products impacted by unconventional gas are either produced from unconventional gas, or from natural gas liquids produced with unconventional gas, or use electricity produced in power plants sourced by unconventional gas.

Source: IHS Chemical

For the affected sectors of the chemical industry, IHS Chemicals has estimated the capacity expansion and production increases due to the unconventional oil and gas revolution. All of the announced and expected plant expansions are compiled at the state level and divided into four Census regions – Northeast, South, Midwest, and West – and then consolidated at the national level. Expected production increases are provided for nine categories: Acrylics, Nitrogen Fertilizers, Chlor-alkali, Olefins, Polyolefins, Vinyls Chain, Glycols Chain, Methanol Chain, and Aromatics Chain. The following tables present the detailed value of production and capital expenditures outlook for energy-related chemicals for the US and the four Census regions.

Energy-Related Chemicals Value of Production and Capital Expenditures: United States

(Current $M)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2012-2025
Value of Production															
Acrylics	114	116	117	329	540	631	720	732	744	995	1,254	1,479	1,505	1,531	10,807
Nitrogen Fertilizers	333	526	686	697	2,128	3,641	4,838	4,919	5,003	5,981	6,087	6,194	6,302	6,411	53,747
Chlor-alkali	386	773	1,406	1,428	1,451	1,475	1,500	1,525	1,551	1,578	1,606	1,635	1,663	2,094	20,072
Olefins	28	203	302	436	802	1,256	1,738	2,661	3,720	4,019	5,194	5,285	5,455	5,890	36,990
Polyolefins	174	214	329	1,469	5,260	12,681	18,876	21,623	24,221	27,745	31,429	31,980	33,579	34,875	244,455
Vinyls Chain	112	114	146	705	1,176	2,043	2,540	3,792	4,706	5,610	6,554	6,669	7,759	7,969	49,893
Glycols Chain	378	384	688	731	743	2,525	2,600	2,693	3,648	4,068	4,140	4,212	4,286	4,360	35,457
Methanol Chain	170	435	1,179	1,914	2,782	4,104	4,174	4,824	5,041	5,264	5,358	5,452	6,122	6,524	53,342
Aromatics Chain	0	0	0	0	0	15	57	58	59	60	61	62	106	108	587
Total Value of Production	**1,695**	**2,765**	**4,854**	**7,709**	**14,883**	**28,371**	**37,042**	**42,827**	**48,694**	**55,320**	**61,683**	**62,968**	**66,777**	**69,761**	**505,350**
Total Capital Expenditures	**4,818**	**5,618**	**8,149**	**12,787**	**16,493**	**15,711**	**11,902**	**10,252**	**9,408**	**6,994**	**5,233**	**6,157**	**8,355**	**7,427**	**129,305**

NOTE: Numbers may not sum due to rounding.

Source: IHS Chemical

Energy-Related Chemicals Value of Production and Capital Expenditures: Midwest Census Region

(Current $M)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2012-2025
Value of Production															
Acrylics	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitrogen Fertilizers	13	13	41	41	961	1,842	2,578	2,621	2,666	2,712	2,760	2,809	2,857	2,907	24,819
Chlor-alkali	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Olefins	0	5	5	5	5	5	5	5	5	6	6	6	6	6	70
Polyolefins	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vinyls Chain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Glycols Chain	5	5	5	5	6	6	6	6	6	6	6	6	6	6	81
Methanol Chain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aromatics Chain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Value of Production	**18**	**23**	**51**	**52**	**971**	**1,853**	**2,589**	**2,632**	**2,677**	**2,724**	**2,772**	**2,821**	**2,870**	**2,919**	**24,971**
Total Capital Expenditures	**73**	**167**	**724**	**1,383**	**1,962**	**1,386**	**697**	**0**	**0**	**0**	**0**	**126**	**772**	**916**	**8,206**

NOTE: Numbers may not sum due to rounding.
Source: IHS Chemical

Energy-Related Chemicals Value of Production and Capital Expenditures: West Census Region

(Current $M)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2012-2025
Value of Production															
Acrylics	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitrogen Fertilizers	0	0	0	0	0	0	430	437	445	453	461	469	477	485	3,657
Chlor-alkali	78	83	84	86	87	88	90	91	93	94	96	98	100	101	1,269
Olefins	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polyolefins	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vinyls Chain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Glycols Chain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Methanol Chain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aromatics Chain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Value of Production	**78**	**83**	**84**	**86**	**87**	**88**	**520**	**529**	**538**	**547**	**557**	**567**	**577**	**587**	**4,926**
Total Capital Expenditures	**104**	**12**	**0**	**96**	**586**	**695**	**606**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2,099**

NOTE: Numbers may not sum due to rounding.
Source: IHS Chemical

Energy-Related Chemicals Value of Production and Capital Expenditures: South Census Region

(Current $M)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2012-2025
Value of Production															
Acrylics	114	116	117	329	540	631	720	732	744	995	1,254	1,479	1,505	1,531	10,807
Nitrogen Fertilizers	321	513	645	656	1,167	1,799	1,830	1,861	1,893	2,816	2,866	2,917	2,967	3,019	25,270
Chlor-alkali	308	690	1,321	1,343	1,364	1,387	1,410	1,434	1,459	1,484	1,510	1,537	1,563	1,993	18,803
Olefins	28	198	297	431	797	1,251	1,732	2,532	3,588	3,885	5,058	5,146	5,314	5,746	36,003
Polyolefins	174	214	329	1,469	5,260	12,681	18,876	19,790	22,356	25,847	29,497	30,014	31,580	32,841	230,929
Vinyls Chain	112	114	146	705	1,176	2,043	2,540	3,792	4,706	5,610	6,554	6,669	7,759	7,969	49,893
Glycols Chain	373	379	683	726	737	2,519	2,594	2,687	3,642	4,062	4,134	4,206	4,279	4,354	35,376
Methanol Chain	170	435	1,179	1,914	2,782	4,104	4,174	4,824	5,041	5,264	5,358	5,452	6,122	6,524	53,342
Aromatics Chain	0	0	0	0	0	15	57	58	59	60	61	62	106	108	587
Total Value of Production	**1,599**	**2,659**	**4,719**	**7,572**	**13,825**	**26,430**	**33,934**	**37,708**	**43,488**	**50,023**	**56,292**	**57,482**	**61,196**	**64,084**	**461,010**
Total Capital Expenditures	**4,642**	**5,439**	**7,425**	**11,308**	**13,781**	**12,631**	**9,414**	**9,219**	**9,408**	**6,994**	**5,233**	**6,031**	**7,584**	**6,511**	**115,620**

NOTE: Numbers may not sum due to rounding.
Source: IHS Chemical

Energy-Related Chemicals Value of Production and Capital Expenditures: Northeast Census Region

(Current $M)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2012-2025
Value of Production															
Acrylics	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nitrogen Fertilizers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chlor-alkali	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Olefins	0	0	0	0	0	0	0	124	126	129	131	133	136	138	917
Polyolefins	0	0	0	0	0	0	0	1,834	1,865	1,897	1,931	1,965	1,999	2,034	13,526
Vinyls Chain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Glycols Chain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Methanol Chain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aromatics Chain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Value of Production	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1,958**	**1,992**	**2,026**	**2,062**	**2,098**	**2,135**	**2,172**	**14,443**
Total Capital Expenditures	**0**	**0**	**0**	**0**	**164**	**998**	**1,185**	**1,033**	**0**	**0**	**0**	**0**	**0**	**0**	**3,379**

NOTE: Numbers may not sum due to rounding.
Source: IHS Chemical