Energy Tidbits

Time for 2022 Predictions: Our #1 is More Leaders Have a #MacronMoment & Admit Energy “Transition” Needs Changes

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Independent Statistics & Analysis
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December 2021

Short-Term Energy Outlook

Forecast highlights

Global liquid fuels

- The December *Short-Term Energy Outlook* (STEO) remains subject to heightened levels of uncertainty related to the ongoing recovery from the COVID-19 pandemic. Notably, the emergence of the SARS-CoV-2 Omicron variant raises uncertainty about the level of energy consumption throughout the world compared with last month's forecast. U.S. gross domestic product (GDP) declined by 3.4% in 2020 from 2019 levels. This STEO assumes U.S. GDP will grow by 5.5% in 2021 and by 4.4% in 2022. The U.S. macroeconomic assumptions in this outlook are based on forecasts by IHS Markit. The U.S. macroeconomic forecast and the global macroeconomic forecast from Oxford Economics were completed in mid-November before the Omicron variant was identified. In addition to uncertainty about macroeconomic conditions, winter weather along with the evolving effects of consumer behavior on energy demand because of the pandemic present a wide range of potential outcomes for energy consumption. Supply uncertainty in the forecast results from the production decisions of OPEC+ and with the rate at which U.S. oil and natural gas producers increase drilling.

- Brent crude oil spot prices averaged $81 per barrel (b) in November, a $3/b decrease from October 2021 but a $38/b increase from November 2020. Crude oil prices have risen over the past year as result of steady draws on global oil inventories, which averaged 1.4 million barrels per day (b/d) during the first three quarters of 2021. Crude oil prices fell significantly on November 26, and the Brent spot price began December below $70/b. The drop in prices followed the identification of the new COVID-19 Omicron variant, which raised the possibility that petroleum demand could decline in the near term.

- We expect Brent prices will average $71/b in December and $73/b in the first quarter of 2022 (1Q22). For 2022 as a whole, we expect that growth in production from OPEC+, of U.S. tight oil, and from other non-OPEC countries will outpace slowing growth in global oil consumption, especially in light of renewed concerns about COVID-19 variants. We expect Brent prices will remain near current levels in 2022, averaging $70/b.

- We estimate that 99.7 million b/d of petroleum and liquid fuels was consumed globally in November, a 4.9 million b/d increase from November 2020 but 1.1 million b/d less than in November 2019. We revised down our forecast of consumption of petroleum

Note: EIA completed modeling and analysis for this report on Thursday December 2, 2021

and liquid fuels for 4Q21 and 1Q22, partly as a result of recently announced travel restrictions following reported outbreaks of the Omicron variant of COVID-19. The potential effects of the spread of this variant are uncertain, which introduces downside risks to the global oil consumption forecast, particularly for jet fuel. We forecast that global consumption of petroleum and liquid fuels will average 96.9 million b/d for all of 2021, which is a 5.1 million b/d increase from 2020. We forecast that global consumption of petroleum and liquid fuels will increase by 3.5 million b/d in 2022 to average 100.5 million b/d.

- U.S. regular gasoline retail prices averaged $3.39 per gallon (gal) in November, a 10 cents/gal increase from October and $1.29/gal higher than in November 2020. The November monthly average was the highest since September 2014. We forecast that retail gasoline prices will average $3.13/gal in December before falling to $3.01/gal in January and $2.88/gal on average in 2022.

- Total U.S. crude oil production was an estimated 11.7 million b/d in November. We forecast that it will rise to an average of 11.8 million b/d in 2022 and to an average of 12.1 million b/d in 4Q22.

Natural Gas

- In November, the natural gas spot price at Henry Hub averaged $5.05 per million British thermal units (MMBtu), down from the October average of $5.51/MMBtu but up from an average of $3.25/MMBtu in the first half of 2021 (1H21). After rising in recent months, natural gas prices declined in November amid mild weather across much of the country that resulted in less natural gas used for space heating than expected. Decreased demand for natural gas also contributed to inventory levels moving closer to the five-year (2016–20) average. Global demand for U.S. liquefied natural gas (LNG) has remained high, limiting some downward pressure on natural gas prices.

- The Henry Hub spot price averages $4.58/MMBtu from December 2021 through February 2022 in our forecast and then generally declines through 2022, averaging $3.98/MMBtu in 2022 amid rising U.S. natural gas production and slowing growth in LNG exports. We forecast that U.S. inventory draws will be similar to the five-year average this winter, and we expect that factor, along with rising U.S. natural gas exports and relatively flat production through March, will keep U.S. natural gas prices near recent levels before downward price pressures emerge. Because of uncertainty around seasonal demand, we expect natural gas prices to remain volatile over the coming months, and winter temperatures will be a key driver of natural gas consumption and prices.

- We estimate that U.S. LNG exports averaged 10.7 billion cubic feet per day (Bcf/d) in November 2021, a 0.8 Bcf/d increase from October, supported by large price differences

between the Henry Hub price in the United States and spot prices in Europe and Asia. LNG exports resumed from Cove Point LNG in late October after that facility's annual maintenance was completed. In our forecast, LNG exports average 9.8 Bcf/d for all of 2021, a 50% increase from 2020. We expect that LNG exports will average 11.1 Bcf/d from December through March. We expect high levels of LNG exports to continue into 2022, averaging 11.5 Bcf/d for the year, a 17% increase from 2021. The forecast reflects our assumption that global natural gas demand remains high and U.S. LNG export capacity increases.

- U.S. natural gas inventories ended November 2021 at more than 3.5 trillion cubic feet (Tcf), 3% less than the five-year average for this time of year. Less natural gas was injected into storage this summer than the previous five-year average, largely as a result of more electricity consumption in June because of hot weather, and because of increased exports. However, storage levels moved closer to average as injections outpaced the five-year average in September, October, and early November. We expect natural gas inventories to fall by 2.0 Tcf during the November-to-March withdrawal season, ending March below 1.7 Tcf, which would be 2% less than the 2017–21 average for that time of year.

- We estimate dry U.S. natural gas production averaged 96.1 Bcf/d in the United States in November, up 1.0 Bcf/d from the average in October. Production in November was up from an average of 91.9 Bcf/d in 1H21. Natural gas production in the forecast rises to an average of 95.3 Bcf/d during the rest of this winter (December–March) and averages 96.0 Bcf/d for all of 2022, driven by natural gas and crude oil price levels that we expect will be sufficient to support enough drilling to sustain production growth.

Electricity, coal, renewables, and emissions

- We forecast that the share of electricity generation produced by natural gas in the United States will average 37% in 2021 and 35% in 2022, down from 39% in 2020. For 2021, the annual share for natural gas as a generation fuel declines in response to our expectation of a higher delivered natural gas price for electricity generators, which we forecast will average $4.99/MMBtu compared with $2.40/MMBtu in 2020. The natural gas share declines in 2022 as a result of continued high fuel costs and an increasing share of renewable generation. As a result of the higher expected natural gas prices, the annual forecast share of electricity generation from coal rises from 20% in 2020 to 23% in 2021 and then drops slightly to 22% in 2022. For renewable energy sources, new additions of solar and wind generating capacity have been offset somewhat by reduced generation from hydropower this year. As a result, we forecast that the share of all renewables in U.S. electricity generation will average 20% in 2021, about the same as last year, before rising to 22% in 2022. The nuclear share of U.S. electricity generation declines from 21% in 2020 to 20% in 2021 and 2022.

- We expect coal production to rise by 48 million short tons (MMst), or 9%, in 2021 and by an additional 38 MMst (6%) in 2022. The increase in production reflects more demand and higher prices for coal in the electric power sector because of higher natural gas prices this year compared with last year. Despite the increase in production, growth has not kept pace with rising domestic demand for steam coal in the electric power sector and export growth. As a result, coal inventories held by the electric power sector fall by an expected 51 MMst (38%) in 2021 and a further 10 MMst (13%) in 2022.

- Planned additions to U.S. wind and solar capacity in 2021 and 2022 increase electricity generation from those sources in our forecast. We estimate that the U.S. electric power sector added 14.6 gigawatts (GW) of new wind capacity in 2020. We expect 17.2 GW of new wind capacity will come online in 2021 and 7.1 GW in 2022. Utility-scale solar capacity rose by an estimated 10.4 GW in 2020. Our forecast for added utility-scale solar capacity is 16.2 GW for 2021 and 20.9 GW for 2022. We expect significant solar capacity additions in Texas during the forecast period. In addition, in 2020, small-scale solar capacity (systems less than 1 megawatt) increased by 4.4 GW to 27.6 GW. In particular, Texas and Florida had large increases of small-scale solar capacity in 2020. We project that small-scale solar capacity will grow by 5.1 GW in 2021 and by 5.0 GW in 2022.

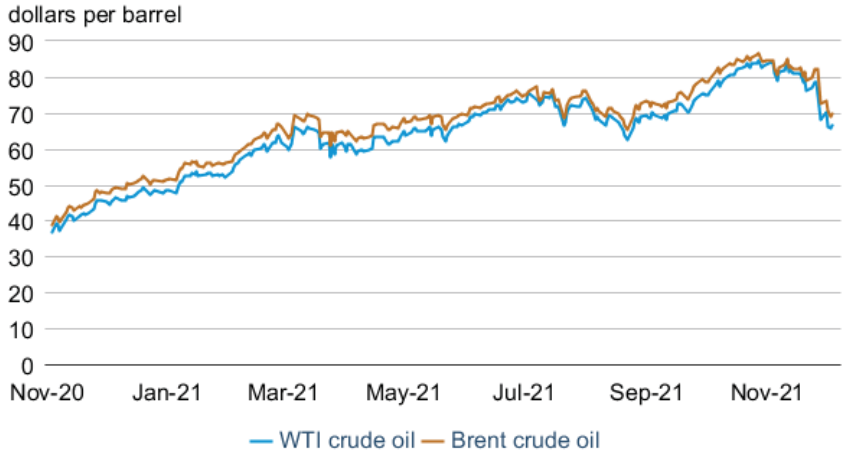
- U.S. energy-related carbon dioxide (CO_2) emissions decreased by 11% in 2020 as a result of less energy consumption due to reduced economic activity and to end user responses to the COVID-19 pandemic. For 2021, we forecast energy-related CO_2 emissions will increase about 7% from 2020 as economic activity increases and leads to rising energy use. We expect a 1% increase in energy-related CO_2 emissions in 2022. We forecast that after declining by 19% in 2020, coal-related CO_2 emissions will rise by 17% in 2021 and then fall by 3% in 2022.

Petroleum and natural gas markets review

Crude oil

Prices: The front-month futures price for Brent crude oil settled at $69.67 per barrel (b) on December 2, 2021, a decrease of $15.04/b from the November 1 price of $84.71/b. The front-month futures price for West Texas Intermediate (WTI) crude oil for delivery at Cushing, Oklahoma, decreased by $17.55/b during the same period, settling at $66.50/b on December 2 **(Figure 1)**.

Figure 1. Crude oil front-month futures prices



Source: Graph by EIA, based on CME Group and Intercontinental Exchange, as compiled by Bloomberg L.P.
Note: WTI=West Texas Intermediate

The front-month futures price for Brent crude oil decreased $9.50/b (11.6%) on November 26 after the World Health Organization designated the SARS-CoV-2 Omicron variant as a *Variant of Concern*. The price decline reflected market expectations that oil consumption might fall in the coming months as a result of the Omicron variant. The one-day percentage decrease for Brent crude oil on November 26 was the largest since April 21 2020, and larger percentage decreases have occurred on only four days since 2000 (three of which were in March and April 2020, the other in September 2001). In comparison, daily Brent crude oil prices typically change by less than 2%, and in 2021, prior to the price drop, the most the Brent crude oil price decreased in a single day was 6.9%.

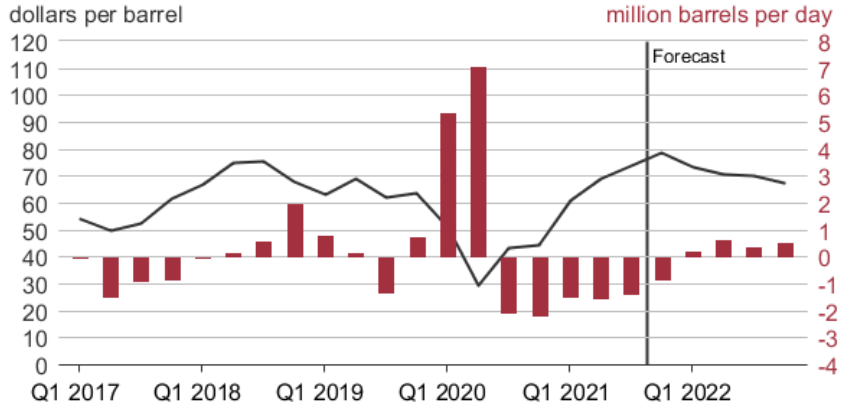
Prior to the price decrease on November 26, crude oil prices were already lower than they were at the beginning of November, likely due to gradual increases in production from OPEC+ members and the United States and rising COVID-19 counts in Europe. These factors had already introduced additional uncertainty in oil demand forecasts, even before the Omicron variant was identified. High COVID-19 case counts in November have prompted renewed mobility restrictions in Austria, work-from-home mandates in Ireland and the Netherlands, and several other guidelines in the rest of Europe. Although COVID-related concerns may have placed some

downward pressure on prices earlier in the month, prices remained above $80/b throughout most of November as a result of the same trends that have caused prices to rise for much of 2021. Those trends include declining global petroleum stocks amid crude oil production restraint from OPEC+ and the potential for natural gas-to-oil fuel switching in parts of Asia and Europe.

Crude oil prices may have also experienced downward pressures in early November because of expectations that the United States and other countries would release strategic oil reserves. The United States announced the release of 50 million barrels of crude oil from the Strategic Petroleum Reserve (SPR) on November 23, and other nations also agreed to release reserves.

We estimate that world crude oil consumption has exceeded crude oil production for five consecutive quarters going back to the third quarter of 2020 (3Q20), which has resulted in persistent global petroleum stock withdrawals that have averaged 1.7 million barrels per day (b/d) over this period **(Figure 2)**. These stock draws have contributed to consistent increases in crude oil prices in each of those quarters. We forecast stock draws will slow to 0.9 million b/d in 4Q21. With global oil stocks forecast to continue falling in December and with supply and demand moving into relative balance in 1Q22, we expect limited upward price pressure could emerge in the coming months. We forecast Brent spot prices will average $73/b in 1Q22. In our forecast, global oil stocks rise by an average of 0.5 million b/d from 2Q22 through 4Q22, as production begins to increase faster than global demand. These stock builds should contribute to downward pressure on crude oil prices, and our Brent forecast averages $71/b in 2Q22, $70/b in 3Q22, and $67/b in 4Q22.

Figure 2. World liquid fuels stock changes and Brent crude oil prices



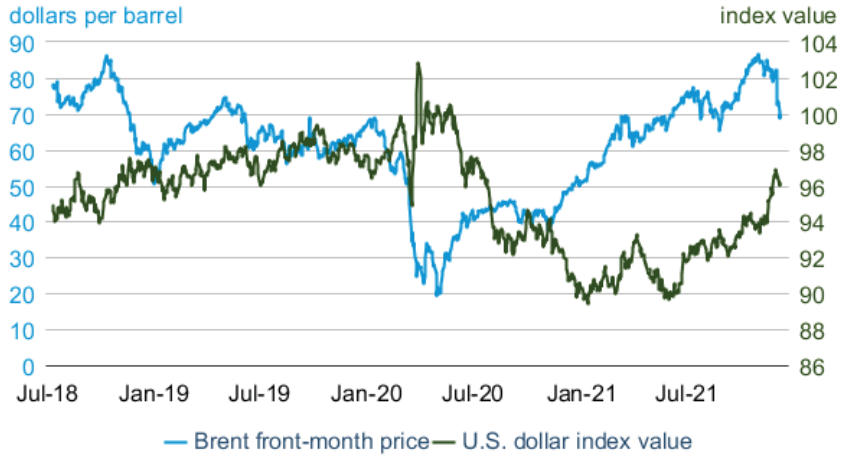
Source: U.S. Energy Information Administration

The Omicron variant has introduced additional uncertainty into oil markets for the coming months, and this uncertainty is reflected in the recent increase in oil price volatility. It is not yet clear how Omicron will affect oil markets and the broader economy. One of the most likely markets to be affected is jet fuel, and some flights have already been canceled because of the

variant. We expect global oil demand to rise by 3.5 million b/d in 2022. The forecast is subject to significant revisions.

Crude oil prices and the U.S. dollar index: The U.S. dollar index increased in November and developed a negative correlation with crude oil prices, which could reflect both reduced global economic growth expectations and financial flows from risky assets, such as commodities, into safer assets, such as U.S. Treasury bills. The U.S. dollar index measures the value of the U.S. dollar against the exchange rates of six currencies. The euro represents 58% of the currency weighting in the index, and the Japanese yen, British pound, Canadian dollar, Swiss franc, and Swedish krona make up the rest. The U.S. dollar index increased in November and reached 96.2 on December 2, which aside from a few days in late November was the highest since July 16, 2020 **(Figure 3)**. The higher value of the U.S. dollar likely reflects increased demand for dollars as a financial safe haven as the euro has decreased in value, likely following increased COVID-19 case counts in Eurozone countries. The higher value of the dollar may also reflect expectations of higher U.S. interest rates, following announcements that the Federal Reserve will reduce its monthly asset purchases.

Figure 3. Brent crude oil price vs. the value of the U.S. dollar



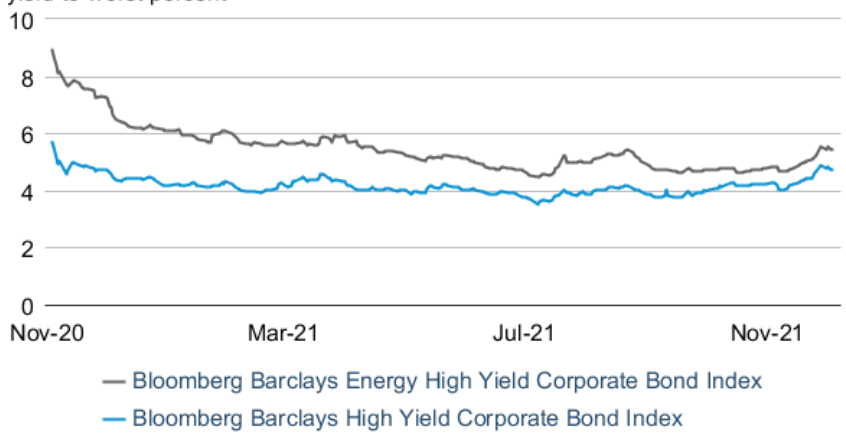
Source: Graph by EIA, based on data from Intercontinental Exchange, as compiled by Bloomberg L.P.

Because Brent crude oil is priced in dollars, oil-importing countries that use a currency that has depreciated relative to the dollar have not experienced the full extent of falling crude oil prices. From November 1 to December 2, the price of Brent crude oil decreased $15.04/b (17.8%). However, the euro fell by 2.6% compared with the U.S. dollar over the same period, meaning countries that use the euro have not experienced as steep of a relative price decrease in crude oil compared with countries that use the U.S. dollar or have currencies pegged to the dollar.

High yield bonds: Bond yields for companies with a credit rating lower than investment grade, called high yield bonds, were low for energy companies as well as broadly across all sectors in the first nine months of 2021. The lower yields reflected less default risk and reduced borrowing

costs for these companies. However, yields increased slightly in October and increased more substantially in November, particularly in the second half of the month, likely in response to some of the recent economic growth concerns and heightened market volatility. The Bloomberg Barclays Energy High Yield Corporate Bond Index's yield-to-worst (YTW), which represents the minimum achievable yield on the bonds after accounting for early prepayment, increased to 5.43% as of December 2, 2021, and the broader high yield index increased to 4.71% **(Figure 4)**. The low bond yields for exploration and production companies along with relatively high crude oil prices should result in an ample availability of funding to support the production increase in 2022. We forecast U.S. crude oil production will average 11.8 million b/d in 2022, a 0.7 million b/d increase from this year. Production in our forecast surpasses 12.0 million b/d in 4Q22.

Figure 4. High yield bonds



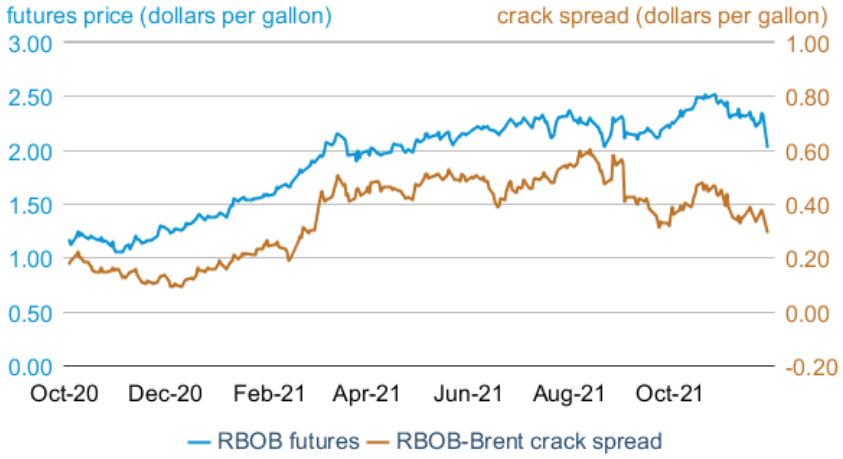
Source: Graph by EIA, based on data from Barclays, as compiled by Bloomberg L.P.

Recent declines in crude oil prices and heightened volatility increase the risk of some oil producers' ability to repay principal and interest on their debt. Furthermore, recent increases in interest rates likely reflect some market expectations for tighter monetary policy, which would also affect high yield bonds. Despite the recent increase in yields, the energy high yield bond index has narrowed to an average of 0.61% higher than the broad high yield index in November. Also, despite the recent increase in yields, bond yields for exploration and production companies remain relatively low.

Petroleum products

Gasoline prices: The front-month futures price of RBOB (the petroleum component of gasoline used in many parts of the country) settled at $1.97 per gallon (gal) on December 2, a 44 cents/gal decrease from November 1 **(Figure 5)**. The RBOB–Brent crack spread (the difference between the price of RBOB and the price of Brent crude oil) decreased by 8 cents/gal to settle at 31 cents/gal during the same period. The average RBOB–Brent crack spread in November was 36 cents/gal, a 7 cents/gal decrease from October.

Figure 4. Historical RBOB front-month futures prices and crack spreads

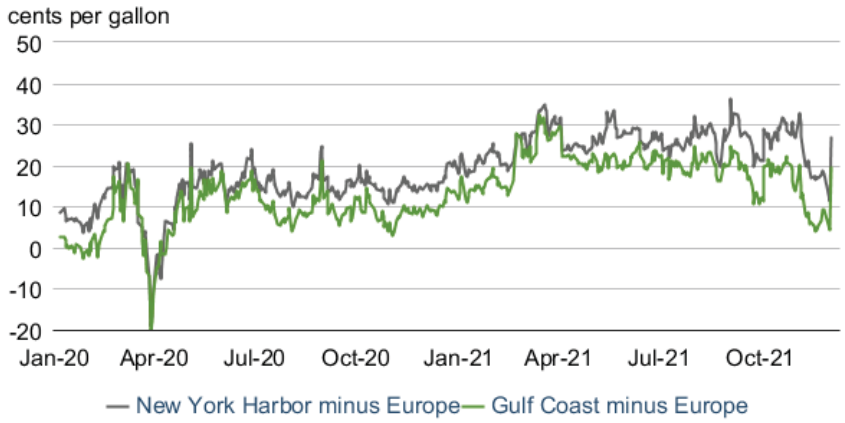


Source: Graph by EIA, based on data from CME Group, as compiled by Bloomberg L.P.
Note: RBOB is the petroleum component of gasoline used in many parts of the country.

The front-month RBOB price in November averaged $2.28/gal for the month, a 14 cent/gal decrease from October. The decrease partly reflects a decline in U.S. gasoline consumption, which fell by 0.3 million barrels per day (b/d) from October to 8.9 million b/d in November. Lower demand, combined with increased refinery production, contributed to an overall increase in gasoline inventories in the United States of almost 3.4 million barrels from October. The RBOB price decreased to $1.98/gal at the end of November, a 43 cents/gal decrease from November 1, primarily reflecting lower crude oil prices. The gasoline crack spread in late November similarly decreased to just under 30 cents/gal, its lowest level since February 2021. The decrease in RBOB prices and the crack spread likely reflected market expectations that responses to the Omicron variant could reduce demand.

Gasoline price differentials to Europe: In mid-November, U.S. gasoline spot price differentials to Europe narrowed to 17 cents/gal at New York Harbor (NYH) and 4 cents/gal at the U.S. Gulf Coast (USGC)—the smallest difference since 2020. Spreads in NYH narrowed further to 11 cents/gal at the end of November **(Figure 6)**. The narrowing spreads occurred as a drop in U.S. gasoline demand coincided with increased petroleum product prices in Europe. Higher prices in Europe likely reflect increased refining costs because of higher natural gas prices, along with higher-than-average gasoline demand since July. Gasoline crack spreads in Europe have been increasing compared with the five-year average since early October, during a period when they would normally be decreasing because of colder weather and lower seasonal demand. The rising prices in Europe have contributed to the mid-November decline in differentials to U.S. prices and to decreased U.S. imports of gasoline. According to our *Weekly Petroleum Status Report*, the rolling four-week average of U.S. gasoline imports decreased from 949,000 b/d during the week ending October 1 to 588,000 b/d during the week ending November 5, a 38% decline.

Figure 6. Gasoline spot price differentials, United States and Europe (Jan 2020–Nov 2021)

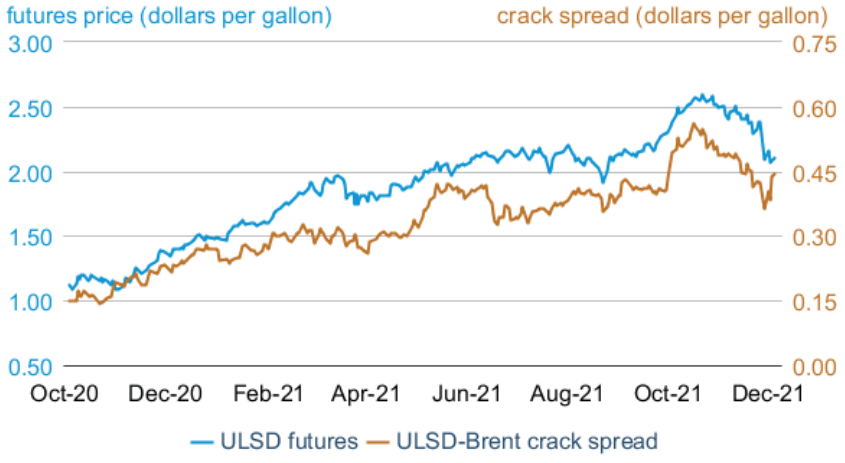


Source: Graph by EIA, based on data from Bloomberg L.P.

After the U.S. gasoline premiums narrowed for much of the past month, they widened during early December amid market volatility and uncertainty over the demand impact from the Omicron variant.

Ultra-low sulfur diesel prices: The front-month futures price for ultra-low sulfur diesel (ULSD) for delivery in New York Harbor settled at $2.10/gal on December 2, a 40 cents/gal decrease from November 1 **(Figure 7)**. The ULSD-Brent crack spread (the difference between the price of ULSD and the price of Brent crude oil) decreased 4 cents/gal during the same period and settled at 44 cents/gal on December 2.

Figure 7. Historical ULSD front-month futures prices and crack spreads



Source: Graph by EIA, based on data from CME Group, as compiled by Bloomberg L.P.
Note: ULSD=ultra-low sulfur diesel

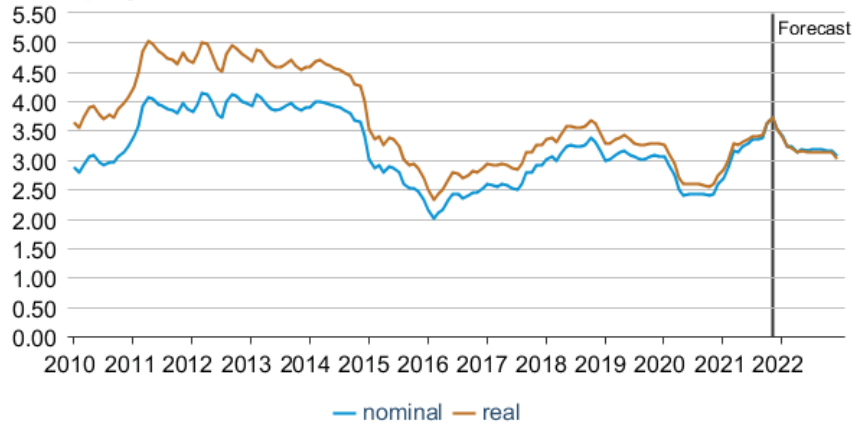
The ULSD–Brent crack spread in November averaged 45 cents/gal, down 7 cents/gal from October's average but up 25 cents/gal from November 2020. Recent changes in crude oil prices

caused by concerns about the Omicron variant increased volatility in the crack spread, which decreased 6 cents/gal on November 26 (the largest single-day decrease since April 2020) and then increased 7 cents/gal through December 1. We estimate that U.S. distillate consumption increased by 0.1 million b/d (2.8%) from October to 4.2 million b/d in November, more than the five-year average but just below 2019 levels. U.S. distillate production increased from October as refineries came back from maintenance, but it remained below the five-year average.

Our recent *Weekly Petroleum Status Report* data show that lower-than-average distillate production and relatively high distillate demand resulted in continued inventory drawdowns, mainly in the Midwest (PADD 2). In the Northeast (PADDs 1A and 1B), where heating oil is used as a primary source of home heating, inventories remained relatively flat, likely mild because of temperatures in October and November. Inventories in the Northeast have been at least 20% below average since mid-May.

Retail diesel prices: The average retail price for on-highway diesel in November was $3.73/gal, $1.30/gal (53%) higher than in November 2020. Compared with levels before the COVID-19 pandemic, prices are 66 cents/gal (21%) higher than at the same time in 2019 **(Figure 8)**. Rising crude oil prices are the primary driver of U.S. diesel prices, making up 52% of the total cost to produce a gallon of diesel in October 2021. Diesel serves as an input cost to other sectors of the economy, such as trucking, where rising diesel prices have contributed to freight rates increasing 36% year over year as of October. Although the November price was the highest since September 2014 in nominal terms, adjusting for inflation shows that recent prices are nearly the same in real terms as prices in 2018, but lower than prices in 2014. Compared with November 2014, November 2021 nominal prices are 2% higher, but in real terms they are 12% lower. We forecast nominal diesel prices will decline from December 2021 and average $3.19/gal in 2022.

Figure 8. U.S. monthly average retail diesel price

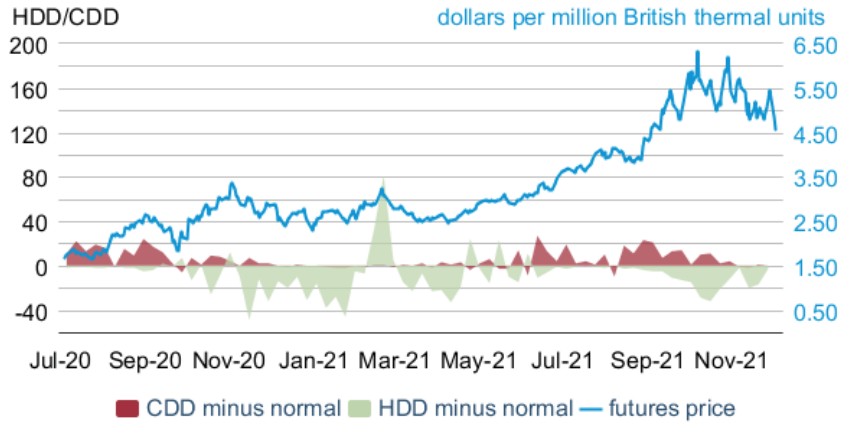


eia Sources: U.S. Energy Information Administration and FRED

Natural Gas

Prices: The front-month natural gas futures contract for delivery at the Henry Hub settled at $4.06 per million British thermal units (MMBtu) on December 2, 2021, down $1.13 cents/MMBtu from November 1, 2021 **(Figure 9)**. The average closing price for front-month natural gas futures in November was $5.12/MMBtu, the highest November monthly average in real terms since November 2009.

Figure 9. Natural gas front-month futures prices and actual minus historical average HDD and CDD

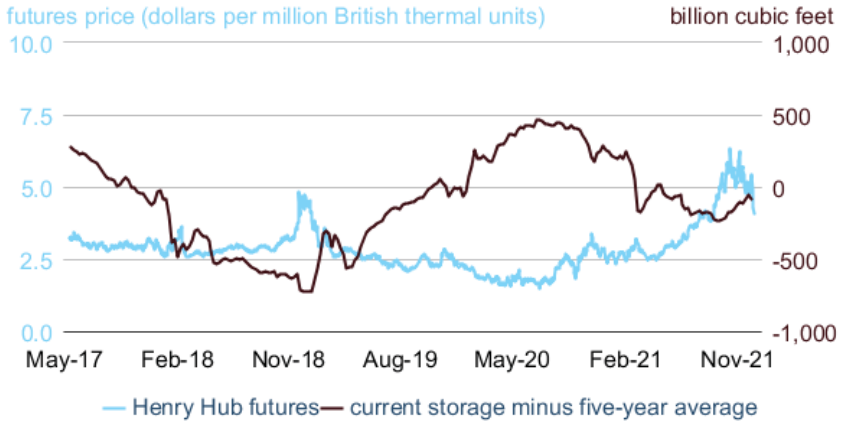


Sources: CME Group and National Oceanic and Atmospheric Administration, as compiled by Bloomberg L.P.
Note: HDD=heating degree days, CDD=cooling degree days.

Mild weather throughout November and forecasts for a warm start to December have contributed to a decline in natural gas futures prices. As weather gets colder, consumption of natural gas typically increases in the residential and commercial sectors for space heating. However, November 2021 was relatively warm; the United States experienced 479 heating degree days (HDDs), 38 fewer than the November 2011–20 average of 517 HDDs. Milder temperatures affected demand for natural gas in the residential and commercial sectors. We estimate that combined residential and commercial natural gas consumption was 26.7 billion cubic feet per day (Bcf/d) in November, 1.0 Bcf/d less than the five-year (2016–20) average.

Less-than-average natural gas consumption in the residential and commercial sectors in November resulted in natural gas storage levels increasing against their five-year average **(Figure 10)**. U.S. natural gas storage typically experiences a net draw during November. Injections often continue through mid-November, but those injections are usually more than offset by draws in the second half of the month. We estimate that U.S. working natural gas inventories decreased by 103 Bcf during November, which was 3.5% less than the five-year average inventory change for that time. At the end of the month, we estimate that storage inventories totaled 3,540 Bcf, which was 3.0% below the five-year average.

Figure 10. U.S. natural gas front-month futures prices and current storage deviation from five-year average

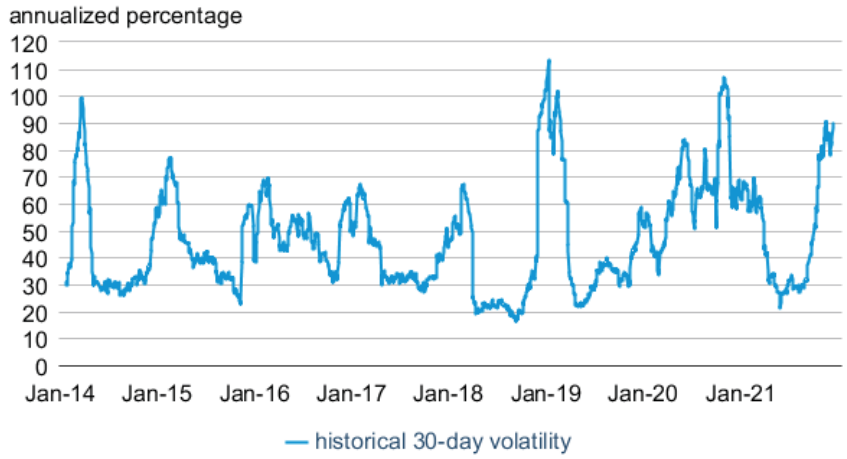


Source: Graph by EIA, based on data from CME Group, as compiled by Bloomberg L.P.

The spread between international and domestic natural gas prices remained high in November and contributed to high demand for U.S. liquefied natural gas (LNG) exports. International LNG spot and forward prices established records during the first week of October in northern Asia and Europe. They remained high throughout November. U.S. LNG exports averaged 10.7 Bcf/d in November, or approximately 104% of total nameplate LNG export capacity. We forecast LNG exports will continue to increase between December 2021 and late 2022 as a result of the optimization of operations at Cheniere's Sabine Pass and Corpus Christi terminals; the completion of Train 6 at Sabine Pass LNG, which started producing LNG in November; and the completion of a new LNG terminal at Calcasieu Pass, Louisiana. We forecast LNG exports will average 11.1 Bcf/d from December 2021 to February 2022, with exports above 11 Bcf/d in each month during that period. If those levels are reached, December would be the first month on record in which U.S. LNG exports are more than 11 Bcf/d.

Historical volatility: Volatility of U.S. natural gas futures prices has risen in the past three months **(Figure 11)**. Historical volatility measures the magnitude of daily changes in closing prices for a commodity during a given time in the past. Based on rolling front-month contracts, the 30-day historical volatility of U.S. natural gas futures prices was 29.8% for April through August of this year. In September, volatility rose to 49.4%, compared with the 2015–19 September average of 30.6%. In October, volatility once again rose to 78.3%, compared with the 2015–19 October average of 32.7%. In November, historical volatility averaged 85.0%, compared with the 2015−19 November average of 53.7%. During November, daily front-month prices for intraday natural gas futures contracts ranged as high as $5.88/MMBtu on November 4, and as low as $4.48/MMBtu on November 30.

Figure 11. Natural gas historical volatility



Source: Graph by EIA, based on data from Bloomberg L.P.

We forecast the Henry Hub spot price will average $4.50/MMBtu in December, $4.64/MMBtu in January, and $4.61/MMBtu in February. These prices are lower than we forecast last month. We expect U.S. working natural gas in storage to end March at 1,659 Bcf, which is 36 Bcf higher than forecast last month. However, this forecast is highly uncertain as reflected in the recent price volatility. Weather, which is a significant source of uncertainty in this forecast, will continue to be a key indicator of price formation this winter.

Notable forecast changes

- The December STEO forecast incorporates the latest updates to EIA's *International Energy Statistics*, including historical petroleum consumption and production data for all non-OECD countries for 2019 and updated 2020 petroleum consumption data for several of the largest consuming countries. These historical data updates resulted in us lowering supply and consumption data for 2019 and 2020, and lowering total supply and consumption forecasts through 2022. We made the most significant revisions to data for Argentina, Brazil, Russia, and Hong Kong for 2019 and 2020. We also made additional revisions to a number of data series from 2000 to 2019 that resulted in lower values for consumption, which were offset by nearly equivalent reductions to refinery gains for most countries. These changes to historical data are reflected in our forecast.

- We forecast natural gas spot prices at Henry Hub will average $4.58/MMBtu in 1Q22, compared with a forecast of $5.24/MMBtu in the November STEO. The lower forecast reflects our expectation that U.S. natural gas inventories will finish the withdrawal season at the end of March at a higher level than previously expected.

Table 3a. International Petroleum and Other Liquids Production, Consumption, and Inventories

U.S. Energy Information Administration | Short-Term Energy Outlook - December 2021

	2020				2021				2022				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2020	2021	2022
Production (million barrels per day) (a)															
OECD	**32.88**	**29.10**	**29.78**	**30.49**	**30.08**	**30.75**	**31.10**	*32.23*	*32.32*	*32.41*	*32.63*	*33.16*	**30.56**	*31.05*	*32.63*
U.S. (50 States)	**20.33**	**17.44**	**18.29**	**18.29**	**17.62**	**19.05**	**18.92**	*19.68*	*19.69*	*19.92*	*20.26*	*20.53*	**18.58**	*18.82*	*20.10*
Canada	**5.62**	**4.88**	**4.92**	**5.52**	**5.62**	**5.37**	**5.55**	*5.79*	*5.82*	*5.79*	*5.82*	*5.84*	**5.23**	*5.58*	*5.82*
Mexico	**2.00**	**1.93**	**1.91**	**1.90**	**1.93**	**1.95**	**1.90**	*1.92*	*1.94*	*1.90*	*1.87*	*1.83*	**1.93**	*1.92*	*1.89*
Other OECD	**4.93**	**4.85**	**4.66**	**4.78**	**4.91**	**4.38**	**4.74**	*4.85*	*4.87*	*4.80*	*4.69*	*4.96*	**4.81**	*4.72*	*4.83*
Non-OECD	**67.51**	**62.86**	**60.88**	**61.90**	**62.51**	**63.79**	**65.44**	*66.54*	*67.25*	*68.32*	*68.93*	*68.68*	**63.28**	*64.58*	*68.30*
OPEC	**33.49**	**30.71**	**28.64**	**29.99**	**30.36**	**30.76**	**32.21**	*33.15*	*33.78*	*33.90*	*33.95*	*33.98*	**30.70**	*31.63*	*33.90*
Crude Oil Portion	**28.28**	**25.65**	**23.63**	**24.88**	**25.08**	**25.49**	**26.86**	*27.73*	*28.20*	*28.44*	*28.44*	*28.44*	**25.60**	*26.30*	*28.38*
Other Liquids (b)	**5.21**	**5.06**	**5.01**	**5.11**	**5.28**	**5.27**	**5.35**	*5.42*	*5.58*	*5.46*	*5.50*	*5.54*	**5.10**	*5.33*	*5.52*
Eurasia	**14.71**	**13.15**	**12.69**	**13.11**	**13.38**	**13.61**	**13.58**	*14.23*	*14.41*	*14.61*	*14.74*	*14.88*	**13.41**	*13.70*	*14.66*
China	**4.89**	**4.85**	**4.88**	**4.83**	**4.99**	**5.03**	**5.01**	*4.99*	*4.99*	*5.02*	*5.02*	*5.07*	**4.86**	*5.01*	*5.02*
Other Non-OECD	**14.43**	**14.15**	**14.67**	**13.97**	**13.78**	**14.39**	**14.64**	*14.17*	*14.07*	*14.79*	*15.23*	*14.75*	**14.30**	*14.25*	*14.72*
Total World Production	**100.39**	**91.96**	**90.66**	**92.38**	**92.59**	**94.54**	**96.55**	*98.77*	*99.58*	*100.73*	*101.56*	*101.84*	**93.84**	*95.63*	*100.93*
Non-OPEC Production	**66.90**	**61.25**	**62.02**	**62.39**	**62.23**	**63.78**	**64.34**	*65.62*	*65.79*	*66.83*	*67.61*	*67.85*	**63.14**	*64.00*	*67.03*
Consumption (million barrels per day) (c)															
OECD	**45.44**	**37.42**	**42.24**	**42.79**	**42.27**	**43.94**	**45.43**	*45.91*	*45.34*	*45.17*	*46.16*	*46.20*	**41.98**	*44.40*	*45.72*
U.S. (50 States)	**19.50**	**16.07**	**18.45**	**18.72**	**18.45**	**20.03**	**20.21**	*20.35*	*19.79*	*20.43*	*20.86*	*20.80*	**18.19**	*19.77*	*20.47*
U.S. Territories	**0.11**	**0.12**	**0.13**	**0.12**	**0.17**	**0.15**	**0.16**	*0.17*	*0.18*	*0.16*	*0.16*	*0.17*	**0.12**	*0.16*	*0.17*
Canada	**2.42**	**1.97**	**2.25**	**2.14**	**2.12**	**2.16**	**2.39**	*2.41*	*2.34*	*2.29*	*2.41*	*2.39*	**2.19**	*2.27*	*2.36*
Europe	**13.34**	**11.01**	**12.88**	**12.51**	**11.90**	**12.60**	**13.73**	*13.42*	*13.16*	*13.25*	*13.56*	*13.20*	**12.43**	*12.92*	*13.29*
Japan	**3.78**	**2.93**	**3.06**	**3.53**	**3.73**	**3.08**	**3.08**	*3.44*	*3.72*	*3.04*	*3.13*	*3.45*	**3.33**	*3.33*	*3.33*
Other OECD	**6.30**	**5.34**	**5.47**	**5.77**	**5.89**	**5.91**	**5.86**	*6.13*	*6.15*	*6.00*	*6.04*	*6.20*	**5.72**	*5.95*	*6.10*
Non-OECD	**49.50**	**47.51**	**50.50**	**51.79**	**51.72**	**52.13**	**52.48**	*53.72*	*53.95*	*54.90*	*55.00*	*55.09*	**49.84**	*52.52*	*54.74*
Eurasia	**4.42**	**4.45**	**4.80**	**4.67**	**4.65**	**4.73**	**5.08**	*4.92*	*4.83*	*4.89*	*5.25*	*5.12*	**4.59**	*4.85*	*5.02*
Europe	**0.71**	**0.69**	**0.71**	**0.72**	**0.74**	**0.75**	**0.74**	*0.76*	*0.77*	*0.77*	*0.77*	*0.78*	**0.71**	*0.75*	*0.77*
China	**13.89**	**14.08**	**14.65**	**15.11**	**15.26**	**15.47**	**14.98**	*15.46*	*15.84*	*16.00*	*15.71*	*15.98*	**14.43**	*15.29*	*15.88*
Other Asia	**13.26**	**11.61**	**12.54**	**13.66**	**13.57**	**13.12**	**13.02**	*13.96*	*14.18*	*14.29*	*13.87*	*14.25*	**12.77**	*13.42*	*14.15*
Other Non-OECD	**17.22**	**16.67**	**17.80**	**17.64**	**17.49**	**18.07**	**18.65**	*18.62*	*18.33*	*18.95*	*19.39*	*18.95*	**17.34**	*18.21*	*18.91*
Total World Consumption	**94.94**	**84.93**	**92.74**	**94.59**	**93.98**	**96.07**	**97.91**	*99.63*	*99.29*	*100.06*	*101.15*	*101.29*	**91.81**	*96.91*	*100.46*
Total Crude Oil and Other Liquids Inventory Net Withdrawals (million barrels per day)															
U.S. (50 States)	**-0.49**	**-1.67**	**0.53**	**0.91**	**0.47**	**0.51**	**0.37**	*0.57*	*0.09*	*-0.53*	*-0.09*	*0.39*	**-0.18**	*0.48*	*-0.03*
Other OECD	**-0.51**	**-1.16**	**0.04**	**0.69**	**0.81**	**0.13**	**0.56**	*0.09*	*-0.12*	*-0.04*	*-0.10*	*-0.29*	**-0.23**	*0.40*	*-0.14*
Other Stock Draws and Balance	**-4.45**	**-4.20**	**1.52**	**0.60**	**0.12**	**0.88**	**0.43**	*0.20*	*-0.26*	*-0.09*	*-0.22*	*-0.64*	**-1.62**	*0.41*	*-0.30*
Total Stock Draw	**-5.45**	**-7.03**	**2.08**	**2.20**	**1.39**	**1.52**	**1.36**	*0.87*	*-0.29*	*-0.67*	*-0.41*	*-0.54*	**-2.02**	*1.28*	*-0.48*
End-of-period Commercial Crude Oil and Other Liquids Inventories (million barrels)															
U.S. Commercial Inventory	**1,327**	**1,458**	**1,423**	**1,343**	**1,302**	**1,271**	**1,241**	*1,208*	*1,224*	*1,289*	*1,297*	*1,269*	**1,343**	*1,208*	*1,269*
OECD Commercial Inventory	**2,970**	**3,206**	**3,168**	**3,025**	**2,911**	**2,868**	**2,786**	*2,745*	*2,772*	*2,841*	*2,858*	*2,857*	**3,025**	*2,745*	*2,857*

(a) Supply includes production of crude oil (including lease condensates), natural gas plant liquids, biofuels, other liquids, and refinery processing gains.

(b) Includes lease condensate, natural gas plant liquids, other liquids, and refinery processing gain. Includes other unaccounted-for liquids.

(c) Consumption of petroleum by the OECD countries is synonymous with "petroleum product supplied," defined in the glossary of the EIA *Petroleum Supply Monthly* , DOE/EIA-0109. Consumption of petroleum by the non-OECD countries is "apparent consumption," which includes internal consumption, refinery fuel and loss, and bunkering.

- = no data available

OECD = Organization for Economic Cooperation and Development: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, South Korea, Spain, Sweden, Switzerland, Turkey, the United Kingdom, the United States.

OPEC = Organization of the Petroleum Exporting Countries: Algeria, Angola, Congo (Brazzaville), Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, the United Arab Emirates, Venezuela.

Notes: EIA completed modeling and analysis for this report on December 2, 2021.

The approximate break between historical and forecast values is shown with historical data printed in bold; estimates and forecasts in italics.

Historical data: Latest data available from Energy Information Administration international energy statistics.

Minor discrepancies with published historical data are due to independent rounding.

Forecasts: EIA Short-Term Integrated Forecasting System.

Table 4a. U.S. Petroleum and Other Liquids Supply, Consumption, and Inventories

U.S. Energy Information Administration | Short-Term Energy Outlook - December 2021

	2020				2021				2022				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2020	2021	2022
Supply (million barrels per day)															
Crude Oil Supply															
Domestic Production (a)	**12.81**	**10.67**	**10.79**	**10.87**	**10.69**	**11.28**	**11.11**	*11.63*	*11.67*	*11.72*	*11.91*	*12.09*	**11.28**	*11.18*	*11.85*
Alaska	**0.48**	**0.41**	**0.44**	**0.46**	**0.46**	**0.44**	**0.41**	*0.44*	*0.43*	*0.38*	*0.41*	*0.42*	**0.45**	*0.44*	*0.41*
Federal Gulf of Mexico (b)	**1.99**	**1.66**	**1.43**	**1.50**	**1.80**	**1.79**	**1.49**	*1.78*	*1.84*	*1.82*	*1.83*	*1.87*	**1.64**	*1.71*	*1.84*
Lower 48 States (excl GOM)	**10.35**	**8.60**	**8.92**	**8.91**	**8.44**	**9.05**	**9.22**	*9.41*	*9.40*	*9.52*	*9.66*	*9.80*	**9.19**	*9.03*	*9.60*
Crude Oil Net Imports (c)	**2.89**	**3.06**	**2.24**	**2.50**	**2.87**	**2.96**	**3.60**	*3.64*	*3.65*	*4.35*	*4.67*	*3.82*	**2.67**	*3.27*	*4.12*
SPR Net Withdrawals	**0.00**	**-0.23**	**0.15**	**0.04**	**0.00**	**0.18**	**0.04**	*0.22*	*0.27*	*0.18*	*0.00*	*0.08*	**-0.01**	*0.11*	*0.13*
Commercial Inventory Net Withdrawals	**-0.56**	**-0.54**	**0.38**	**0.13**	**-0.18**	**0.59**	**0.30**	*-0.06*	*-0.34*	*-0.05*	*0.25*	*-0.03*	**-0.14**	*0.16*	*-0.04*
Crude Oil Adjustment (d)	**0.63**	**0.20**	**0.46**	**0.36**	**0.42**	**0.63**	**0.56**	*0.27*	*0.22*	*0.22*	*0.23*	*0.16*	**0.41**	*0.47*	*0.21*
Total Crude Oil Input to Refineries	**15.77**	**13.16**	**14.02**	**13.90**	**13.81**	**15.65**	**15.60**	*15.69*	*15.47*	*16.42*	*17.05*	*16.14*	**14.21**	*15.19*	*16.27*
Other Supply															
Refinery Processing Gain	**1.02**	**0.82**	**0.93**	**0.92**	**0.84**	**0.97**	**0.97**	*1.04*	*1.07*	*1.05*	*1.08*	*1.10*	**0.92**	*0.96*	*1.08*
Natural Gas Plant Liquids Production	**5.17**	**4.96**	**5.34**	**5.22**	**4.86**	**5.46**	**5.52**	*5.67*	*5.67*	*5.81*	*5.91*	*5.98*	**5.17**	*5.38*	*5.84*
Renewables and Oxygenate Production (e)	**1.11**	**0.81**	**1.03**	**1.07**	**1.03**	**1.13**	**1.10**	*1.13*	*1.07*	*1.12*	*1.14*	*1.13*	**1.01**	*1.10*	*1.11*
Fuel Ethanol Production	**1.02**	**0.70**	**0.92**	**0.97**	**0.90**	**0.99**	**0.96**	*1.04*	*0.97*	*1.01*	*1.02*	*1.02*	**0.91**	*0.97*	*1.01*
Petroleum Products Adjustment (f)	**0.22**	**0.19**	**0.20**	**0.19**	**0.19**	**0.22**	**0.22**	*0.21*	*0.21*	*0.22*	*0.22*	*0.22*	**0.20**	*0.21*	*0.22*
Product Net Imports (c)	**-3.86**	**-2.96**	**-3.07**	**-3.33**	**-2.94**	**-3.13**	**-3.24**	*-3.80*	*-3.86*	*-3.53*	*-4.20*	*-4.10*	**-3.30**	*-3.28*	*-3.92*
Hydrocarbon Gas Liquids	**-1.95**	**-1.84**	**-1.83**	**-2.06**	**-2.02**	**-2.23**	**-2.16**	*-2.19*	*-2.24*	*-2.30*	*-2.32*	*-2.22*	**-1.92**	*-2.15*	*-2.27*
Unfinished Oils	**0.37**	**0.23**	**0.35**	**0.18**	**0.14**	**0.25**	**0.22**	*0.26*	*0.20*	*0.25*	*0.30*	*0.20*	**0.29**	*0.22*	*0.24*
Other HC/Oxygenates	**-0.09**	**-0.04**	**-0.04**	**-0.04**	**-0.08**	**-0.04**	**-0.03**	*-0.12*	*-0.06*	*-0.04*	*-0.03*	*-0.03*	**-0.05**	*-0.07*	*-0.04*
Motor Gasoline Blend Comp.	**0.40**	**0.37**	**0.49**	**0.44**	**0.55**	**0.79**	**0.66**	*0.24*	*0.57*	*0.77*	*0.43*	*0.21*	**0.42**	*0.56*	*0.49*
Finished Motor Gasoline	**-0.71**	**-0.41**	**-0.58**	**-0.76**	**-0.66**	**-0.66**	**-0.68**	*-0.81*	*-1.02*	*-0.61*	*-0.66*	*-0.75*	**-0.62**	*-0.70*	*-0.76*
Jet Fuel	**-0.07**	**0.09**	**0.12**	**0.08**	**0.03**	**0.09**	**0.09**	*0.05*	*0.02*	*0.02*	*0.03*	*0.05*	**0.05**	*0.06*	*0.03*
Distillate Fuel Oil	**-1.14**	**-0.86**	**-1.16**	**-0.72**	**-0.49**	**-0.90**	**-0.94**	*-0.79*	*-0.77*	*-1.03*	*-1.25*	*-0.95*	**-0.97**	*-0.78*	*-1.00*
Residual Fuel Oil	**-0.02**	**-0.01**	**0.05**	**0.05**	**0.08**	**0.05**	**0.08**	*0.10*	*-0.02*	*0.00*	*-0.04*	*0.04*	**0.02**	*0.08*	*0.00*
Other Oils (g)	**-0.64**	**-0.49**	**-0.48**	**-0.48**	**-0.49**	**-0.49**	**-0.50**	*-0.55*	*-0.53*	*-0.59*	*-0.66*	*-0.63*	**-0.52**	*-0.50*	*-0.60*
Product Inventory Net Withdrawals	**0.06**	**-0.90**	**0.00**	**0.73**	**0.65**	**-0.26**	**0.03**	*0.42*	*0.17*	*-0.66*	*-0.34*	*0.33*	**-0.02**	*0.21*	*-0.13*
Total Supply	**19.50**	**16.07**	**18.45**	**18.72**	**18.43**	**20.03**	**20.21**	*20.35*	*19.79*	*20.43*	*20.86*	*20.80*	**18.19**	*19.76*	*20.47*
Consumption (million barrels per day)															
Hydrocarbon Gas Liquids	**3.37**	**2.85**	**3.01**	**3.68**	**3.40**	**3.33**	**3.31**	*3.60*	*3.81*	*3.31*	*3.36*	*3.88*	**3.23**	*3.41*	*3.59*
Unfinished Oils	**0.18**	**0.12**	**0.03**	**0.03**	**0.05**	**0.03**	**-0.05**	*0.01*	*0.00*	*0.00*	*0.00*	*0.00*	**0.09**	*0.01*	*0.00*
Motor Gasoline	**8.51**	**7.12**	**8.51**	**8.06**	**8.00**	**9.07**	**9.13**	*8.94*	*8.40*	*9.28*	*9.41*	*8.96*	**8.05**	*8.79*	*9.01*
Fuel Ethanol blended into Motor Gasoline	**0.85**	**0.73**	**0.87**	**0.85**	**0.82**	**0.93**	**0.94**	*0.93*	*0.85*	*0.95*	*0.95*	*0.93*	**0.82**	*0.90*	*0.92*
Jet Fuel	**1.56**	**0.69**	**0.97**	**1.09**	**1.13**	**1.34**	**1.52**	*1.53*	*1.44*	*1.59*	*1.71*	*1.68*	**1.08**	*1.38*	*1.61*
Distillate Fuel Oil	**4.02**	**3.49**	**3.70**	**3.94**	**3.97**	**3.93**	**3.87**	*4.09*	*4.14*	*4.04*	*3.98*	*4.15*	**3.79**	*3.97*	*4.08*
Residual Fuel Oil	**0.17**	**0.11**	**0.32**	**0.22**	**0.26**	**0.25**	**0.33**	*0.35*	*0.24*	*0.21*	*0.26*	*0.26*	**0.21**	*0.30*	*0.24*
Other Oils (g)	**1.69**	**1.68**	**1.92**	**1.71**	**1.63**	**2.08**	**2.10**	*1.84*	*1.77*	*2.01*	*2.15*	*1.87*	**1.75**	*1.91*	*1.95*
Total Consumption	**19.50**	**16.07**	**18.45**	**18.72**	**18.45**	**20.03**	**20.21**	*20.35*	*19.79*	*20.43*	*20.86*	*20.80*	**18.19**	*19.77*	*20.47*
Total Petroleum and Other Liquids Net Imports	**-0.97**	**0.11**	**-0.83**	**-0.84**	**-0.07**	**-0.16**	**0.35**	*-0.16*	*-0.21*	*0.83*	*0.47*	*-0.28*	**-0.63**	*-0.01*	*0.20*
End-of-period Inventories (million barrels)															
Commercial Inventory															
Crude Oil (excluding SPR)	**483.3**	**532.7**	**497.7**	**485.5**	**501.9**	**448.0**	**420.4**	*426.2*	*457.0*	*461.7*	*438.5*	*441.0*	**485.5**	*426.2*	*441.0*
Hydrocarbon Gas Liquids	**182.9**	**235.7**	**298.7**	**228.2**	**168.6**	**195.8**	**225.6**	*191.2*	*150.9*	*202.9*	*248.3*	*208.9*	**228.2**	*191.2*	*208.9*
Unfinished Oils	**101.9**	**92.5**	**81.4**	**77.6**	**93.3**	**93.0**	**90.2**	*83.5*	*93.5*	*91.2*	*90.0*	*83.3*	**77.6**	*83.5*	*83.3*
Other HC/Oxygenates	**33.4**	**25.4**	**24.6**	**29.7**	**29.1**	**27.5**	**25.4**	*26.0*	*28.1*	*26.9*	*26.6*	*26.9*	**29.7**	*26.0*	*26.9*
Total Motor Gasoline	**261.8**	**254.5**	**227.6**	**243.4**	**237.6**	**237.2**	**227.0**	*229.6*	*240.6*	*246.2*	*233.8*	*248.5*	**243.4**	*229.6*	*248.5*
Finished Motor Gasoline	**22.6**	**23.5**	**22.5**	**25.4**	**20.3**	**18.6**	**18.5**	*24.0*	*24.0*	*23.9*	*23.1*	*26.1*	**25.4**	*24.0*	*26.1*
Motor Gasoline Blend Comp.	**239.2**	**231.0**	**205.0**	**218.0**	**217.4**	**218.6**	**208.5**	*205.6*	*216.6*	*222.3*	*210.6*	*222.5*	**218.0**	*205.6*	*222.5*
Jet Fuel	**39.9**	**41.6**	**40.1**	**38.6**	**39.0**	**44.7**	**42.0**	*35.8*	*36.3*	*37.9*	*40.8*	*38.0*	**38.6**	*35.8*	*38.0*
Distillate Fuel Oil	**126.8**	**176.9**	**172.5**	**161.2**	**145.5**	**140.1**	**131.7**	*131.4*	*122.7*	*128.4*	*136.1*	*137.4*	**161.2**	*131.4*	*137.4*
Residual Fuel Oil	**34.8**	**39.5**	**32.1**	**30.2**	**30.9**	**31.1**	**28.0**	*28.0*	*29.6*	*31.1*	*29.8*	*31.1*	**30.2**	*28.0*	*31.1*
Other Oils (g)	**61.9**	**59.0**	**48.3**	**49.1**	**55.8**	**54.1**	**50.5**	*56.5*	*65.2*	*62.6*	*53.0*	*54.3*	**49.1**	*56.5*	*54.3*
Total Commercial Inventory	**1326.7**	**1457.7**	**1423.2**	**1343.3**	**1301.7**	**1271.5**	**1240.7**	*1208.3*	*1223.9*	*1288.9*	*1296.9*	*1269.3*	**1343.3**	*1208.3*	*1269.3*
Crude Oil in SPR	**635.0**	**656.0**	**642.2**	**638.1**	**637.8**	**621.3**	**617.8**	*597.3*	*573.3*	*556.7*	*556.7*	*548.9*	**638.1**	*597.3*	*548.9*

(a) Includes lease condensate.

(b) Crude oil production from U.S. Federal leases in the Gulf of Mexico (GOM).

(c) Net imports equals gross imports minus gross exports.

(d) Crude oil adjustment balances supply and consumption and was previously referred to as "Unaccounted for Crude Oil."

(e) Renewables and oxygenate production includes pentanes plus, oxygenates (excluding fuel ethanol), and renewable fuels. Beginning in January 2021, renewable fuels includes biodiesel, renewable diesel, renewable jet fuel, renewable heating oil, renewable naphtha and gasoline, and other renewable fuels. For December 2020 and prior, renewable fuels includes only biodiesel.

(f) Petroleum products adjustment includes hydrogen/oxygenates/renewables/other hydrocarbons, motor gasoline blend components, and finished motor gasoline.

(g) For net imports and inventories “Other Oils" includes aviation gasoline blend components, finished aviation gasoline, kerosene, petrochemical feedstocks, special naphthas, lubricants, waxes, petroleum coke, asphalt and road oil, still gas, and miscellaneous products; for consumption “Other Oils” also includes renewable fuels except fuel ethanol.

- = no data available

SPR: Strategic Petroleum Reserve

HC: Hydrocarbons

Notes: EIA completed modeling and analysis for this report on December 2, 2021.

The approximate break between historical and forecast values is shown with historical data printed in bold; estimates and forecasts in italics.

Historical data: Latest data available from Energy Information Administration databases supporting the following reports: *Petroleum Supply Monthly* , DOE/EIA-0109; *Petroleum Supply Annual* , DOE/EIA-0340/2; and *Weekly Petroleum Status Report* , DOE/EIA-0208.

Minor discrepancies with published historical data are due to independent rounding.

Forecasts: EIA Short-Term Integrated Forecasting System.

Table 5a. U.S. Natural Gas Supply, Consumption, and Inventories

U.S. Energy Information Administration | Short-Term Energy Outlook - December 2021

	2020				2021				2022				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2020	2021	2022
Supply (billion cubic feet per day)															
Total Marketed Production	**103.02**	**96.83**	**97.29**	**98.53**	**97.65**	**101.12**	**101.99**	*103.72*	*103.32*	*103.46*	*104.27*	*105.48*	**98.91**	*101.14*	*104.14*
Alaska	**0.96**	**0.88**	**0.88**	**0.98**	**1.02**	**0.95**	**0.90**	*0.90*	*0.92*	*0.78*	*0.74*	*0.87*	**0.92**	*0.94*	*0.82*
Federal GOM (a)	**2.80**	**2.28**	**1.75**	**1.81**	**2.26**	**2.25**	**1.81**	*2.32*	*2.33*	*2.26*	*2.16*	*2.14*	**2.16**	*2.16*	*2.22*
Lower 48 States (excl GOM)	**99.25**	**93.68**	**94.67**	**95.75**	**94.37**	**97.92**	**99.28**	*100.50*	*100.07*	*100.42*	*101.37*	*102.47*	**95.83**	*98.04*	*101.09*
Total Dry Gas Production	**95.29**	**89.57**	**89.99**	**91.14**	**90.62**	**93.20**	**94.01**	*95.59*	*95.22*	*95.35*	*96.10*	*97.21*	**91.49**	*93.37*	*95.97*
LNG Gross Imports	**0.24**	**0.12**	**0.09**	**0.09**	**0.15**	**0.02**	**0.03**	*0.20*	*0.32*	*0.18*	*0.18*	*0.20*	**0.13**	*0.10*	*0.22*
LNG Gross Exports	**7.92**	**5.52**	**3.91**	**8.78**	**9.27**	**9.81**	**9.60**	*10.50*	*11.14*	*11.26*	*11.55*	*12.01*	**6.53**	*9.80*	*11.49*
Pipeline Gross Imports	**7.60**	**6.08**	**6.39**	**7.27**	**8.68**	**6.81**	**7.24**	*6.88*	*7.35*	*6.35*	*6.38*	*6.72*	**6.84**	*7.40*	*6.70*
Pipeline Gross Exports	**8.15**	**7.17**	**8.09**	**8.21**	**8.31**	**8.67**	**8.49**	*8.86*	*9.00*	*8.49*	*9.29*	*9.33*	**7.91**	*8.58*	*9.03*
Supplemental Gaseous Fuels	**0.18**	**0.17**	**0.17**	**0.17**	**0.18**	**0.15**	**0.15**	*0.17*	*0.17*	*0.17*	*0.17*	*0.17*	**0.17**	*0.16*	*0.17*
Net Inventory Withdrawals	**12.74**	**-12.24**	**-7.68**	**5.36**	**17.19**	**-9.12**	**-7.87**	*3.73*	*14.47*	*-10.21*	*-7.86*	*4.89*	**-0.46**	*0.92*	*0.27*
Total Supply	**99.98**	**71.00**	**76.96**	**87.05**	**99.23**	**72.57**	**75.48**	*87.21*	*97.37*	*72.09*	*74.12*	*87.84*	**83.74**	*83.56*	*82.81*
Balancing Item (b)	**-0.09**	**-0.18**	**-0.80**	**-0.84**	**0.16**	**-0.62**	**-0.43**	*0.47*	*0.09*	*-0.84*	*0.87*	*1.04*	**-0.48**	*-0.11*	*0.30*
Total Primary Supply	**99.89**	**70.83**	**76.16**	**86.21**	**99.39**	**71.94**	**75.05**	*87.67*	*97.47*	*71.25*	*74.99*	*88.88*	**83.26**	*83.46*	*83.10*
Consumption (billion cubic feet per day)															
Residential	**22.95**	**8.25**	**3.84**	**16.10**	**25.67**	**7.50**	**3.62**	*15.98*	*24.42*	*7.77*	*3.85*	*17.41*	**12.77**	*13.14*	*13.32*
Commercial	**14.04**	**5.85**	**4.39**	**10.40**	**14.87**	**6.24**	**4.68**	*10.64*	*14.58*	*6.64*	*5.23*	*11.53*	**8.66**	*9.08*	*9.47*
Industrial	**24.31**	**20.32**	**20.92**	**23.53**	**23.81**	**21.47**	**21.12**	*24.01*	*24.78*	*22.51*	*21.64*	*24.56*	**22.27**	*22.60*	*23.37*
Electric Power (c)	**30.00**	**29.16**	**39.50**	**28.28**	**26.75**	**29.17**	**37.93**	*28.79*	*25.11*	*26.64*	*36.42*	*26.98*	**31.75**	*30.69*	*28.81*
Lease and Plant Fuel	**5.14**	**4.83**	**4.85**	**4.91**	**4.87**	**5.04**	**5.08**	*5.17*	*5.15*	*5.16*	*5.20*	*5.26*	**4.93**	*5.04*	*5.19*
Pipeline and Distribution Use	**3.31**	**2.32**	**2.53**	**2.85**	**3.28**	**2.38**	**2.48**	*2.93*	*3.28*	*2.36*	*2.49*	*2.98*	**2.75**	*2.76*	*2.78*
Vehicle Use	**0.13**	**0.10**	**0.13**	**0.13**	**0.14**	**0.15**	**0.15**	*0.15*	*0.16*	*0.16*	*0.16*	*0.16*	**0.13**	*0.15*	*0.16*
Total Consumption	**99.89**	**70.83**	**76.16**	**86.21**	**99.39**	**71.94**	**75.05**	*87.67*	*97.47*	*71.25*	*74.99*	*88.88*	**83.26**	*83.46*	*83.10*
End-of-period Inventories (billion cubic feet)															
Working Gas Inventory	**2,029**	**3,133**	**3,840**	**3,341**	**1,801**	**2,583**	**3,305**	*2,962*	*1,659*	*2,588*	*3,311*	*2,862*	**3,341**	*2,962*	*2,862*
East Region (d)	**385**	**655**	**890**	**763**	**313**	**515**	**804**	*709*	*265*	*508*	*716*	*517*	**763**	*709*	*517*
Midwest Region (d)	**471**	**747**	**1,053**	**918**	**395**	**630**	**966**	*830*	*346*	*578*	*918*	*804*	**918**	*830*	*804*
South Central Region (d)	**857**	**1,221**	**1,313**	**1,155**	**760**	**991**	**1,051**	*1,028*	*778*	*1,047*	*1,102*	*1,004*	**1,155**	*1,028*	*1,004*
Mountain Region (d)	**92**	**177**	**235**	**195**	**113**	**175**	**205**	*155*	*93*	*146*	*216*	*199*	**195**	*155*	*199*
Pacific Region (d)	**200**	**308**	**318**	**282**	**197**	**246**	**248**	*210*	*149*	*281*	*332*	*309*	**282**	*210*	*309*
Alaska	**23**	**25**	**31**	**28**	**23**	**27**	**30**	*29*	*29*	*29*	*29*	*29*	**28**	*29*	*29*

(a) Marketed production from U.S. Federal leases in the Gulf of Mexico.

(b) The balancing item represents the difference between the sum of the components of natural gas supply and the sum of components of natural gas demand.

(c) Natural gas used for electricity generation and (a limited amount of) useful thermal output by electric utilities and independent power producers.

(d) For a list of States in each inventory region refer to *Weekly Natural Gas Storage Report, Notes and Definitions (http://ir.eia.gov/ngs/notes.html)* .

- = no data available

LNG: liquefied natural gas.

Notes: EIA completed modeling and analysis for this report on December 2, 2021.

The approximate break between historical and forecast values is shown with historical data printed in bold; estimates and forecasts in italics.

Historical data: Latest data available from Energy Information Administration databases supporting the following reports: *Natural Gas Monthly* , DOE/EIA-0130; and *Electric Power Monthly* , Minor discrepancies with published historical data are due to independent rounding.

Forecasts: EIA Short-Term Integrated Forecasting System.

https://ventureglobalIng.com/press/venture-global-and-louisiana-governor-john-bel-edwards-announce-proposed-cp2-lng-export-facility/

Venture Global and Louisiana Governor John Bel Edwards Announce Proposed CP2 LNG Export Facility

December 2, 2021

Arlington, VA– Today, Venture Global LNG and Louisiana Governor John Bel Edwards announced the company will invest more than $10 billion to develop a fourth LNG export facility in the State of Louisiana. The new project, CP2 LNG ("CP2") will be located in Cameron Parish, adjacent to Venture Global's first facility, Calcasieu Pass. This announcement brings Venture Global's total planned capital investment in the State of Louisiana to more than $20 billion. CP2 will result in thousands of good paying jobs and an estimated $2 billion in new local revenue during the life of the project. The direct new jobs created by the project will have average annual salaries of $120,000 plus benefits.

"Venture Global is proud to continue our expansion in Louisiana with the launch of our next project, CP2 LNG. CP2 will be located in Cameron Parish, adjacent to our existing Calcasieu Pass terminal. These two projects, combined with our Plaquemines LNG facility now under construction, represent more than $20 billion of investment in the State of Louisiana and will create thousands of jobs—including both permanent and construction jobs," said **Venture Global CEO Mike Sabel.** "With two major LNG export projects currently under active construction, Venture Global is on a mission to produce the cleanest, low-cost LNG in North America. We are proud to partner with Louisiana in these efforts and in developing Carbon Capture and Sequestration (CCS) for our facilities. Under the leadership of Governor John Bel Edwards, Louisiana is enhancing its status as an international hub for innovation to tackle the energy and climate challenges of our time."

"Venture Global has invested significantly in Louisiana's economy, and I am proud to celebrate this exciting new project with them," said **Louisiana Governor John Bel Edwards**. "The CP2 facility in Cameron will create more than 1,000 new permanent jobs and thousands of construction jobs in the area, which will have a significant impact on our economy. And it is incorporating clean energy technology that reduces the amount of CO2 released into the atmosphere, which is significant for our environment. As Louisiana pursues a goal of net-zero emissions by 2050, projects that feature carbon capture and sequestration allow our state to sustain industry without sacrificing our long-term carbon-reduction goals."

Today, Venture Global also announced that it has submitted a formal application requesting authorization from the Federal Energy Regulatory Commission (FERC) to site, construct and operate the CP2 LNG facility and the CP express pipeline. CP2 LNG will build, own and operate a liquified natural gas (LNG) terminal with a nameplate liquification capacity of 20 million metric tonnes per annum (MTPA) of LNG. The CP Express pipeline will provide natural gas to the CP2 LNG facility.

About Venture Global LNG

Venture Global is a long-term, low-cost provider of U.S. LNG to be sourced from resource rich North American natural gas basins. Venture Global is currently constructing or developing 70 MTPA of production capacity in Louisiana to provide clean, affordable energy to the world.

PROJECT **SNAPSHOT**

CP2 LNG
CP EXPRESS

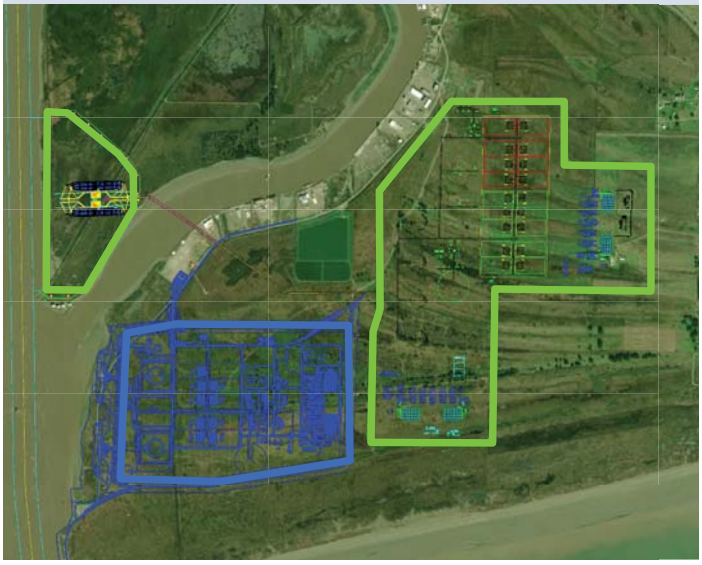
PROJECT OVERVIEW

Venture Global CP2 LNG, LLC (CP2 LNG) and Venture Global CP Express, LLC (CP Express), both wholly owned subsidiaries of Venture Global LNG, Inc. (Venture Global LNG), are proposing to build, own and operate the CP2 LNG and CP Express Project. The CP2 LNG liquefied natural gas (LNG) terminal will be located on an approximately 546-acre site in Cameron Parish, Louisiana. A connecting natural gas pipeline, the CP Express pipeline, is also being proposed from Jasper County, Texas to the proposed LNG facility in Cameron Parish.

The CP2 LNG facility will be a natural gas liquefaction export terminal with a nameplate export capacity of 20 million metric tonnes per annum (MTPA) of LNG and a peak capacity of approximately 24 MTPA. The facility will include 18 LNG blocks to liquefy domestically produced natural gas received from the new CP Express pipeline and four full containment LNG storage tanks to allow for the storage and delivery of LNG as needed to LNG carriers for export. There will be two marine loading docks for LNG carriers to berth at the facility and on-site power generation.

CP Express will consist of approximately 85.1 miles of new 48-inch-diameter natural gas pipeline and approximately 5.9 miles of new 24-inch-diameter lateral pipeline to connect the CP2 LNG terminal to the existing natural gas pipeline grid in east Texas and southwest Louisiana. One new compressor station is proposed to be constructed east of Vinton, Louisiana.

PROPOSED SITE LAYOUT



PROPOSED PIPELINE ROUTE

PROJECT BENEFITS

CP2 LNG will be the second LNG export project developed by Venture Global LNG in Cameron Parish, with the first being the Calcasieu Pass Project. Together they represent more than $10 billion USD of direct investment in the Parish. The CP2 LNG and CP Express Project will support the company's long-term development of clean and reliable North American energy supplies by providing additional markets for U.S. natural gas producers.

TERMINAL SITE AND ROUTE SELECTION

The site and route for the proposed CP2 LNG terminal site and CP Express natural gas pipeline were identified after careful analysis. Safety, environmental, land-use compatibility, constructability, environmental justice and cultural resources were all evaluated, and the Federal Energy Regulatory Commission (FERC) routing guidelines were applied when determining the proposed locations.

The CP2 LNG terminal facility will be located adjacent to Venture Global LNG's Calcasieu Pass LNG facility. The associated marine facility will be located on Monkey Island, between the Calcasieu Ship Channel and Calcasieu Pass. The proposed pipeline route will originate in Jasper County, Texas and pass through Newton County, Texas and Calcasieu Parish, Louisiana before it ends at the CP2 LNG terminal in Cameron Parish.

A number of additional efforts will take place, such as civil and environmental field surveys, site evaluations, and ongoing landowner and stakeholder consultations, to determine the final optimal pipeline route.

https://www.aramco.com/en/news-media/news/2021/aramco-announces-landmark-gas-pipeline-deal

Aramco announces $15.5 billion landmark gas pipeline deal with global consortium led by BlackRock Real Assets and Hassana Investment Company

DHAHRAN, December 06, 2021

- Transaction marks one of the world's largest energy infrastructure deals and Aramco's second major pipeline transaction of 2021
- $15.5 billion in sale proceeds to be generated for Aramco upon completion, marking significant progress in Aramco's portfolio optimization program
- Newly-formed Aramco Gas Pipelines Company to lease and leaseback usage rights of Aramco's gas pipeline network over 20-year period
- Transaction reinforces appeal of Aramco's energy infrastructure to global institutional investors

Saudi Arabian Oil Company ("Aramco") has signed a $15.5 billion lease and leaseback deal involving its gas pipeline network with a consortium led by BlackRock Real Assets ("BlackRock") and Hassana Investment Company ("Hassana"), the investment management arm of the General Organization for Social Insurance (GOSI) in Saudi Arabia, in one of the world's largest energy infrastructure deals.

This represents significant progress in Aramco's asset optimization program and is the second such infrastructure transaction by Aramco this year after the closing of the oil pipeline infrastructure deal earlier in June 2021.

Upon completion of the gas pipeline transaction, Aramco will receive upfront proceeds of $15.5 billion, further strengthening its balance sheet. The deal unlocks additional value from Aramco's diverse asset base and has attracted interest from a wide range of worldwide investors, highlighting the compelling investment opportunity.

As part of the transaction, a newly-formed subsidiary, Aramco Gas Pipelines Company, will lease usage rights in Aramco's gas pipelines network and lease them back to Aramco for a 20-year period. In return, Aramco Gas Pipelines Company will receive a tariff payable by Aramco for the gas products that will flow through the network, backed by minimum commitments on throughput. Aramco will hold a 51% majority stake in Aramco Gas Pipeline Company and sell a 49% stake to investors led by BlackRock and Hassana.

Aramco will continue to retain full ownership and operational control of its gas pipeline network and the transaction will not impose any restrictions on Aramco's production volumes. Aramco is fully committed to sustainable practices and is an industry leader in reducing greenhouse gas emissions, which are among the lowest in the sector.

Amin H. Nasser, Aramco President and CEO, said: "Today, we have reached yet another major milestone in our portfolio optimization program as we build towards a bigger and stronger gas business. It further underscores our commitment to long-term value creation for our shareholders,

while bringing in BlackRock and Hassana as partners demonstrates our unique value proposition and ability to attract leading global investors to Saudi Arabia. With gas expected to play a key role in the global transition to a more sustainable energy future, our partners will benefit from a deal tied to a world-class gas infrastructure asset."

The announcement follows a $12.4 billion lease and leaseback transaction concluded in June with a consortium led by EIG Global Energy Partners, which involved Aramco's stabilized crude oil pipeline network.

Abdulaziz M. Al Gudaimi, Aramco Senior Vice President of Corporate Development, said: "Our gas pipeline assets are critical and growing, and highly integrated with the rest of Aramco's oil and gas facilities. We are pleased that we are concluding the second transaction, seeking long term partners who understand and appreciate the industry. This transaction represents the largest energy infrastructure deal in the region to date and exemplifies Aramco's unique positioning as a partner for prominent global institutional investors."

Larry Fink, Chairman and CEO of BlackRock, said: "BlackRock is pleased to work with Saudi Aramco and Hassana on this landmark transaction for Saudi Arabia's infrastructure. Aramco and Saudi Arabia are taking meaningful, forward-looking steps to transition the Saudi economy toward renewables, clean hydrogen, and a net zero future. Responsibly-managed natural gas infrastructure has a meaningful role to play in this transition."

Saad Al-Fadly, CEO of Hassana Investment Company, added: "Hassana is delighted to be part of this landmark transaction and the associated world-class assets. We are particularly excited about this deal as it comes in line with Hassana's strategy to create enduring value for GOSI and further strengthen our long-lasting partnerships with strong and reputable players such as Aramco and BlackRock."

Mark Florian, Managing Director, BlackRock Real Assets, said: "We look forward to partnering with Aramco and leading the equity consortium in this deal involving Aramco's gas pipeline network. The strongly contracted nature of this investment is a core part of our investment philosophy and represents an attractive opportunity for our clients who are seeking portfolio diversification through infrastructure."

The gas pipeline transaction is expected to close as soon as practicable, subject to customary closing conditions, including any required merger control and related approvals.

Media contact information

All media enquiries are handled by Saudi Aramco's Corporate Communications Department, Dhahran, Saudi Arabia.

International: international.media@aramco.com

https://www.jera.co.jp/english/information/20211208_809

JERA to Invest in the Barossa Gas Field in Australia to Secure a Stable LNG Supply

2021/12/08

JERA Co., Inc. ("**JERA**") has decided to invest, through its subsidiary JERA Australia Pty Ltd., in the Barossa/Caldita gas field in Australia and has today concluded an equity purchase agreement with a subsidiary of Santos Ltd., a major resource development company in Australia, to acquire a 12.5% stake in the gas field. The acquisition is expected to be finalized after the necessary approval and authorization procedures.
As a result of this acquisition, JERA will participate in the project to develop a successor gas field for the Darwin LNG project in Australia (the "**Project**").

JERA participated in the Darwin LNG project in 2003. That project has produced LNG at the Darwin liquefaction plant using natural gas supplied from the Bayu-Undan gas field, located in waters off Timor-Leste, and contributed to the stable supply of LNG for approximately 15 years since production began in 2006.
Production at the Bayu-Undan gas field is expected to end within a few years. Development of the Barossa gas field as a successor to supply feed gas to the Darwin LNG liquefaction plant is now underway.

The Barossa gas field is located in Australian waters off the Northern Territory of Australia. The Project will develop the Barossa gas field and link it by pipeline to the Darwin liquefaction plant for LNG production, which is expected to start around 2025. JERA will receive about 0.425mtpa of LNG from the Project which is equivalent to its equity stake in the Barossa gas field.

In Asia, there is demand both for decarbonization and for a stable energy supply to support economic growth. Gas-fired power generation—which emits less CO_2 than power generation using other fossil fuels—can be a flexible supplement to intermittent renewable energy, and demand for it as an energy source indispensable to promoting the energy transition is expected to continue to grow. Securing a stable supply of competitive LNG, therefore, is becoming increasingly important.

Because the Barossa gas field is medium-sized, and existing facilities such as the Darwin LNG project's liquefaction plant, an LNG storage tank, and jetty can be utilized, the Project enables JERA to secure highly competitive LNG with extremely low development risk. By leveraging the knowledge and expertise it has accumulated through its global LNG value chain business, JERA will work together with its partners to develop the Project and ensure a stable supply of LNG to the global market, including to Japan and to gas-to-power projects in Asia.
In addition, JERA will also work with its partners to study the development of zero-emission projects and to evaluate CCS projects. Through these initiatives, JERA will evaluate opportunities for the reduction of CO_2 emissions from the Project with the partners.

Under its "JERA Zero CO_2 Emissions 2050" objective, JERA has been working to reduce CO_2 emissions from its domestic and overseas businesses to zero by 2050, to promote the adoption of greener fuels, and to pursue thermal power that does not emit CO_2 during power generation. JERA also plans to establish decarbonization roadmaps optimized for each country and region and to promote zero-emission initiatives that follow these roadmaps.
Leveraging its long experience in the LNG value chain businesses, JERA will follow the decarbonization roadmaps it is drawing up for each country and region as it strives to expand the adoption of LNG—a transitional fuel indispensable for achieving decarbonization—and to contribute to global decarbonization and energy solutions.

https://www.qatarenergy.qa/en/MediaCenter/Pages/newsdetails.aspx?ItemId=3693

QATARENERGY ANNOUNCES LONG-TERM LNG SUPPLY AGREEMENT WITH CHINA'S GUANGDONG ENERGY GROUP -

DOHA, Qatar • 06 December 2021 – QatarEnergy announced today that its LNG producing affiliate, Ras Laffan Liquefied Natural Gas Company Limited, entered into a long-term Sale and Purchase Agreement (SPA) with Guangdong Energy Group Natural Gas Co., Ltd. (GEG) for the supply of one million tons per annum of LNG to China over a 10-year period starting in 2024.

Commenting on the occasion, His Excellency Mr. Saad Sherida Al-Kaabi, the Minister of State for Energy Affairs, the President and CEO of QatarEnergy said, "We are pleased to enter into this long-term supply agreement with Guangdong Energy Group and look forward to establishing a successful and mutually rewarding relationship. This agreement further demonstrates our commitment to continue to be a trusted and reliable energy partner for the People's Republic of China."

His Excellency expressed his thanks to Sheikh Khalid bin Khalifa Al Thani, the CEO of Qatargas, and the working teams from both sides for the successful conclusion of this new long-term LNG supply agreement.

Deliveries of LNG under the SPA will utilize Qatar's fleet of conventional, Q-Flex and Q-Max LNG vessels, allowing GEG to receive LNG primarily at the Dapeng and Zhuhai LNG Receiving Terminals.

https://www.qatarenergy.qa/en/MediaCenter/Pages/newsdetails.aspx?ItemId=3694

QATARENERGY ANNOUNCES LONG-TERM LNG SUPPLY AGREEMENT WITH CHINA'S S&T INTERNATIONAL -

DOHA, Qatar • 8 December 2021 – QatarEnergy announced today that its LNG producing affiliate, Qatar Liquified Gas Company Limited (2), entered into a long-term Sale and Purchase Agreement (SPA) with S&T International Natural Gas Trading Company Limited (S&T) for the supply of one million tons per annum of LNG to China over a 15-year period starting in late 2022.

Commenting on this occasion, His Excellency Mr. Saad Sherida Al-Kaabi, the Minister of State for Energy Affairs, the President and CEO of QatarEnergy said, "We are pleased to welcome S&T into our family of long-term LNG customers and we are excited to work with them to help fulfil their long-term LNG requirements. This agreement marks further expansion of our customer base in the People's Republic of China, which can count on Qatar as a trusted and reliable energy partner."

His Excellency expressed his thanks to Sheikh Khalid bin Khalifa Al Thani, the CEO of Qatargas, and the working teams from both sides for the successful conclusion of this new agreement.

LNG deliveries under the SPA will utilize Qatar's fleet of conventional, Q-Flex and Q-Max LNG vessels allowing S&T to receive the LNG quantities primarily at the Tangshan LNG Receiving Terminal.

Asian LNG Buyers Abruptly Change and Lock in Long Term Supply – Validates Supply Gap, Provides Support For Brownfield LNG FIDs

Posted 11am on July 14, 2021

The last 7 days has shown there is a sea change as Asian LNG buyers have made an abrupt change in their LNG contracting and are moving to lock in long term LNG supply. This is the complete opposite of what they were doing pre-Covid when they were trying to renegotiate Qatar LNG long term deals lower and moving away from long term deals to spot/short term sales. Why? We think they did the same math we did in our April 28 blog "*Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?*" and saw a much bigger and sooner LNG supply gap driven by the delay of 5 bcf/d of Mozambique LNG that was built into most, if not all LNG supply forecasts. Asian LNG buyers are committing real dollars to long term LNG deals, which we believe is the best validation for the LNG supply gap. Another validation, Shell, Total and others are aggressively competing to invest long term capital to partner in Qatar Petroleum's massive 4.3 bcf/d LNG expansion despite plans to reduce fossil fuels production in the 2020s. And even more importantly to LNG suppliers, the return to long term LNG contracts provides the financing capacity to commit to brownfield LNG FIDs. The abrupt change by Asian LNG buyers to long term contracts is a game changer for LNG markets and sets the stage for brownfield LNG FIDs likely as soon as before year end 2021. It has to be brownfield LNG FIDs if the gap is coming bigger and sooner. And we return to our April 28 blog point, if brownfield LNG is needed, what about Shell looking at 1.8 bcf/d brownfield LNG Canada Phase 2? LNG Canada Phase 1 at 1.8 bcf/d capacity is already a material positive for Cdn natural gas producers. A FID on LNG Canada Phase 2 would be huge, meaning 3.6 bcf/d of Cdn natural gas will be tied to Asian LNG markets and not competing in the US against Henry Hub. And with a much shorter distance to Asian LNG markets. This is why we focus on global LNG markets for our views on the future value of Canadian natural gas.

Sea change in Asian LNG buyers is also the best validation of the LNG supply gap and big to LNG supply FIDs. Has the data changed or have the market participants changed in how they react to the data? We can't recall exactly who said that on CNBC on July 12, it's a question we always ask ourselves. In the LNG case, the data has changed with Mozambique LNG delays and that has directly resulted in market participants changing and entering into long term contracts. We can't stress enough how important it is to see Asian LNG buyers move to long term LNG deals. (i) Validates the sooner and bigger LNG supply gap. We believe LNG markets should look at the last two weeks of new long term deals for Asian LNG buyers as being the validation of the LNG supply gap that clearly emerged post Total declaring force majeure on its 1.7 bcf/d Mozambique LNG Phase 1 that was under construction and on track for first LNG delivery in 2024. Since then, markets have started to realize the Mozambique delays are much more than 1.7 bcf/d. They have seen major LNG suppliers change their outlook to a more bullish LNG outlook and, most importantly, are now seeing Asian LNG buyers changing from trying to renegotiate long term LNG deals lower to entering into long term LNG deals to have security of supply. Asian LNG buyers are cozying up to Qatar in a prelude to the next wave of Asian buyer long term deals. What better validation is there than companies/countries putting their money where their mouth is. (ii) Provides financial commitment to help push LNG suppliers to FID. We believe these Asian LNG buyers are doing much more than validating a LNG supply gap to markets. The big LNG suppliers can move to FID based on adding more LNG supply to their portfolio, but having more long term deals provides the financial anchor/visibility to long term capital commitment from the buyers. Long term contracts will only help LNG suppliers get to FID.

It was always clear that the Mozambique LNG supply delay was 5.0 bcf/d, not just 1.7 bcf/d from Total Phase 1. LNG markets didn't really react to Total's April 26 declaration of force majeure on its 1.7 bcf/d Mozambique LNG Phase 1. This was an under construction project that was on time to deliver first LNG in 2024. It was in all LNG supply forecasts. There was no timeline given but, on the Apr 29 Q1 call, Total said that it expected any restart decision would be least a year away. If so, we believe that puts any actual construction at least 18 months away. There will be work to do just to get back to where they were when they were forced to stop development work on Phase 1. Surprisingly, markets didn't look the broader implications, which is why we posted our 7-pg Apr 28 blog "*Multiple Brownfield LNG FIDs Now Needed To Fill New LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2?*" [LINK] We highlighted that Mozambique LNG delays were actually 5 bcf/d, not 1.7 bcf/d. And this 5 bcf/d of Mozambique LNG supply was built into most, if not all, LNG supply forecasts. The delay in Total Phase 1 would lead to a commensurate delay in its Mozambique LNG Phase 2 of 1.3 bcf/d. Total Phase 2 was to add 1.3 bcf/d. There was no firm in service date, but it was expected to

follow closely behind Phase 1 to maintain services. That would have put it originally in the 2026/2027 period. But if Phase 1 is pushed back at least 2 years, so will the follow on Phase 2, so more likely, it will be at least 2028/2029. The assumption for most, if not all, LNG forecasts was that Phase 2 would follow Phase 1. Exxon Rozuma Phase 1 of 2.0 bcf/d continues to be pushed back in timeline especially following Total Phase 1. Exxon's Mozambique Rozuma Phase 1 LNG will add 2.0 bcf/d and, pre-Covid, was originally expected to be in service in 2025. The project was being delayed and Total's force majeure has added to the delays. Rozuma onshore LNG facilities are right by Total. On June 20, we tweeted [LINK] on the Reuters report "*Exclusive: Galp says it won't invest in Rovuma until Mozambique ensures security*" [LINK]. Galp is one of Exxon's partners in Rozuma. Reuters reported that Galp said they won't invest in Exxon's Rozuma LNG project until the government ensures security, that this may take a while, they won't be considering the project until after Total has reliably resumed work on its Phase 1, which likely puts any Rozuma decision until at least end of 2022 at the earliest. Galp has taken any Rozuma Phase 1 capex out of their new capex plans thru 2025 and will have to take out projects in their capex plan if Rozuma does come back to work. This puts Rozuma more likely 2028 at the earliest as opposed to before the original expectations of before 2025. Pre-pandemic, Exxon's March 6, 2019 Investor Day noted their operated Mozambique Rovuma LNG Phase 1 was to be 2 trains each with 1.0 bcf/d capacity for total initial capacity of 2.0 bf/d with FID expected in 2019 and first LNG deliveries sometime before 2025. LNG forecasts had been assuming Exxon Rozuma would be onstream around 2025. The 2019 FID expectation was later pushed to be expected just before the March 2020 investor day. But the pandemic hit, and on March 21, 2020, we tweeted [LINK] on the Reuters story "*Exclusive: Coronavirus, gas slump put brakes on Exxon's giant Mozambique LNG plan"* [LINK] that noted Exxon was expected to delay the Rovuma FID. There was no timeline, but now, any FID is not expected until late 2022 at the earliest, that would push first LNG likely to at least 2028. What this means is that the Mozambique LNG delays are not 1.7 bcf/d but 5.0 bcf/d of projects that were in all, if not most, LNG supply forecasts. There is much more in our 7-pg blog. But Mozambique is what is driving a much bigger and sooner LNG supply gap starting ~2025 and stronger outlook for LNG prices

<u>One of the reasons why it went under the radar is that major LNG suppliers played stupid on the Mozambique impact.</u> It makes it harder for markets to see a big deal when the major LNG suppliers weren't making a big deal of Mozambique or playing stupid in the case of Cheniere in their May 4 Q1 call. In our May 9, 2021 Energy Tidbits memo, we said we had to chuckle when we saw Cheniere's response in the Q&A to its Q1 call on May 4 that they only know what we know from reading the Total releases on Mozambique and its impact on LNG markets. It's why we tweeted [LINK] "*Hmm! $LNG says only know what we read on #LNG market impact from $TOT $XOM MZ LNG delays. Surely #TohokuElectric & other offtake buyers are reaching out to #Cheniere. MZ LNG delays is a game changer to LNG in 2020s, see SAF Group blog. Thx @olympe_mattei @TheTerminal #NatGas".* How could they not be talking to LNG buyers for Total and /or Exxon Mozambique LNG projects. In the Q1 Q&A, mgmt was asked about Mozambique and didn't know any more than what you or I have read. Surely, they were speaking to Asian LNG buyers who had planned to get LNG supply from Total Mozambique or Exxon Rozuma Mozambique or both. Mgmt is asked "*wanted to just kind of touch on the color use talking about for these supply curve. And are you able to kind of provide any thoughts on the Mozambique and a deferral with the project of that size on 13 and TPA being deferred by we see you have you noticed any impact to the market has is there any impact for stage 3 with that capacity? Thanks*." Mgmt replies "*No. Look, I only know about the Mozambique delay with what I read as well as what you read that from total and an Exxon. And it's a sad situation and I hope everybody is safe and healthy that were there to experience that unrest but no I don't think it's, again it's a different business paradigm than what we offer. So, we offer a full value product, the customer doesn't have to invest in equity, customer doesn't have to worry about the E&P side of the business because, we've been able to both the by at our peak almost 7 Dee's a day of US NAT gas from almost a 100 different producers on 26 different pipelines and deliver it to our to facilities. So we take care of a lot of what the customer needs".*

<u>There are other LNG supply delays/interruptions beyond Mozambique.</u> There have been a number of other smaller LNG delay or existing supply interruptions that add to Asian LNG buyers feeling less secure about the reliability of mid to long term LNG supply. Here are just a few examples. (i) Total Papua LNG 0.74 bcf/d. On June 8, we tweeted [LINK] *"Timing update Papua #LNG project. $OSH June 8 update "2022 FEED, 2023 FID targeting 2027 first gas". $TOT May 5 update didn't forecast 1st gas date. Papua is 2 trains w/ total capacity 0.74 bcf/d."* We followed the tweet saying [LINK] *"Bigger #LNG supply gap being created >2025. Papua #LNG originally expected FID in 2020 so 1st LNG is 2 years delayed.*

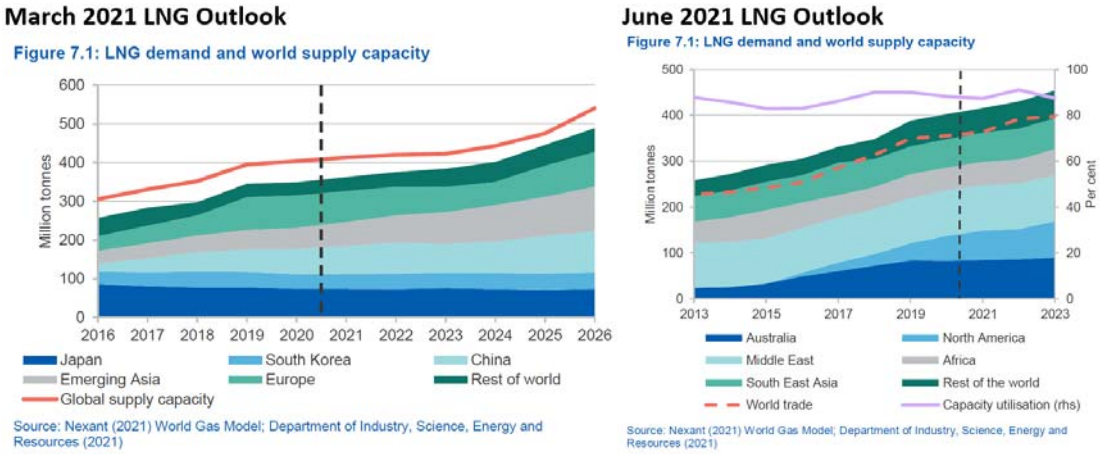
Common theme - new LNG supply is being delayed ie. [Total] Mozambique. Don't forget need capacity>demand due to normal maintenance, etc. Positive for LNG." (ii) Chevron's Gorgon. A big LNG story in H2/20 was the emergence of weld quality issues in the propane heat exchangers at Train 2, which required additional downtime for repair. Train 2 was shut on May 23 with an original restart of July 11, but the repairs to the weld quality issues meant it didn't restart until late Nov. The same issue was found in Train 1 but repairs were completed. However extended downtime for the trains led to lower LNG volumes. Gorgon produced ~2.3 bcf/d in 2019 but was down to 2.0 bcf/d in 2020. (iii) Equinor's Melkoeya 0.63 bcf/d shut down for 18 months due to a fire. A massive fire led to the Sept 28, 2020 shutdown of the 0.63 bcf/d Melkoeya LNG facility in Norway. On April 26, Equinor released "*Revised start-up date for Hammerfest LNG*" [LINK] with regard to the 0.63 bcf/d Melkoeya LNG facility. The original restart date was Oct 1, 2021 (ie. a 12 month shut down), but Equinor said "*Due to the comprehensive scope of work and Covid-19 restrictions, the revised estimated start-up date is set to 31 March 2022".* When we read the release, it seemed like Equinor was almost setting the stage for another potential delay in the restart date. Equinor had two qualifiers to this March 31, 2022 restart date. Equinor said "*there is still some uncertainty related to the scope of the work*" and "*Operational measures to handle the Covid-19 situation have affected the follow-up progress after the fire. The project for planning and carrying out repairs of the Hammerfest LNG plant must always comply with applicable guidelines for handling the infection situation in society. The project has already introduced several measures that allow us to have fewer workers on site at the same time than previously expected. There is still uncertainty related to how the Covid-19 development will impact the project progress."*

Cheniere stopped the game playing the game on June 30. Our July 4, 2021 Energy Tidbits memo noted that it looks like Cheniere has stopped playing stupid with respect to the strengthening LNG market in 2021. We can't believe they thought they were fooling anyone, especially their competitors. Bu that week, they came out talking about how commercial discussions have picked up in 2021 and it's boosted their hope for a Texas (Corpus Christi) LNG expansion. On Wednesday, Platts reported "*Pickup in commercial talks boosts Cheniere's hopes on mid-scale LNG project*" [LINK] Platts wrote "*Cheniere Energy expects to make a "substantial dent" by the end of 2022 in building sufficient buyer support for a proposed mid-scale expansion at the site of its Texas liquefaction facility, Chief Commercial Officer Anatol Feygin said June 30 in an interview." " As a result, he said, " The commercial engagement, I think it is very fair to say, has really picked up steam, and we are quite optimistic over the coming 12-18 months to make a substantial dent in that Stage 3 commercialization."* Platts also reported that Cheniere noted this has been a tightening market all year (ie would have been known by the May 4 Q1 call). Platts wrote "*We obviously find ourselves at the beginning of this year and throughout in a very tight market where prices today into Asia and into Europe are at levels that we frankly haven't seen in a decade-plus," Feygin said. "We've surpassed the economics that the industry saw post the Fukushima tragedy in March 2011, and that's happened in the shoulder period."* It's a public stance as to a more bullish LNG outlook

But we still see major LNG suppliers like Australia hinting but not outright saying that LNG supply gap is coming sooner. We have to believe Australia will be unveiling a sooner LNG supply gap in their September forecast. On June 28, we tweeted [LINK] on Australia's Resources and Energy Quarterly released on Monday [LINK] because there was a major change to their LNG outlook versus their March forecast. We tweeted "*#LNGSupplyGap. AU June fcast now sees #LNG mkt tighten post 2023 vs Mar fcast excess supply thru 2026. Why? $TOT Mozambique delays. See below SAF Apr 28 blog. Means brownfield LNG FID needed ie. like #LNGCanada Phase 2. #OOTT #NatGas".* Australia no longer sees supply exceeding demand thru 2026. In their March forecast, Australia said "*Nonetheless, given the large scale expansion of global LNG capacity in recent years, demand is expected to remain short of total supply throughout the projection period."* Note this is thru 2026 ie. a LNG supply surplus thru 2026. But on June 28, Australia changed that LNG outlook and now says the LNG market may tighten beyond 2023. Interestingly, the June forecast only goes to 2023 and not to 2026 as in March. Hmmm! On Monday, they said "*Given the large scale expansion of global LNG capacity in recent years, import demand is expected to remain short of export capacity throughout the outlook period. Beyond 2023, the global LNG market may tighten, due to the April 2021 decision to indefinitely suspend the Mozambique LNG project, in response to rising security issues. This project has an annual nameplate capacity of 13 million tonnes, and was previously expected to start exporting LNG in 2024*." 13 million tonnes is 1.7 bcf/d so they are only referring to Total Mozambique LNG Phase 1. So no surprise the change is Mozambique LNG driven but we have to believe the reason why they cut their forecast off this time at 2023 is that they are looking at trying to figure out what to forecast beyond 2023 in addition to Total Phase 1. And, importantly, we believe they will be changing their LNG forecast for more than Mozambique ie. India

demand that we highlight later in the blog. They didn't say anything else specific on Mozambique but, surely they have to also be delaying the follow on Total Phase 2 of 1.3 bcf/d and Exxon Rozuma Phase 1 of 2.0 bcf/d.

Australia's LNG Outlook: March 2021 vs June 2021 Forecasts

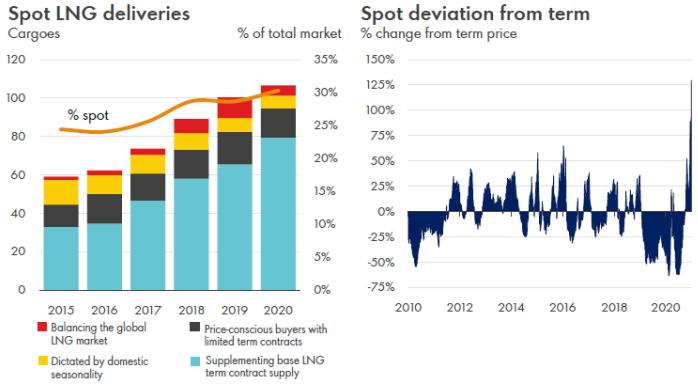


Source: Australia Resources and Energy Quarterly

Clearly Asian LNG buyers did the math, saw the new LNG supply gap and were working the phones in March/April/May trying to lock up long term supply. We wrote extensively on the Total Mozambique LNG situation before the April 26 force majeure as it was obvious that delays were coming to a project counted on for first LNG in 2024. Total had shut down Phase 1 development in December for 3 months due to the violence and security risks. It restarted development on Wed March 24, violence/attacks immediately resumed for 3 consecutive days, and then Total suspended development on Sat March 27. That's why no one should have been surprised by the April 26 force majeure. Asian LNG buyers were also seeing this and could easily do the same math we were doing and saw a bigger and sooner LNG supply gap. They were clearly working the phones with a new priority to lock up long term LNG supply. Major long term deals don't happen overnight, so it makes sense that we started to see these new Asian long term LNG deals start at the end of June.

A big pivot from trying to renegotiate down long term LNG deals or being happy to let long term contracts expire and replace with spot/short term LNG deals. This is a major pivot or abrupt turn on the Asian LNG buyers contracting strategy for the 2020s. There is the natural reduction of long term contracts as contracts reach their term. But with the weakness in LNG prices in 2019 and 2020, Asian LNG buyers weren't trying to extend long term contracts, rather, the push was to try to renegotiate down its long term LNG deals. The reason was clear, as spot prices for LNG were way less than long term contract prices. And this led to their LNG contracting strategy – move to increase the proportion of spot LNG deliveries out of total LNG deliveries. Shell's LNG Outlook 2021 was on Feb 25, 2021 and included the below graphs. The spot LNG price derivation from long term prices in 2019 and 2020 made sense for Asian LNG buyers to try to change their contract mix. Yesterday, Maeil Business News Korea reported on the new Qatar/Kogas long term LNG deal with its report "*Korea may face LNG supply cliff or pay hefty price after long-term supplies run out*" [LINK], which highlighted this very concept – Korea wasn't worried about trying to extend expiring long term LNG contracts. Maeil wrote "*Seoul in 2019 secured a long-term LNG supply contract with the U.S. for annual 15.8 million tons over a 15-year period. But even with the latest two LNG supply contracts, the Korean government needs extra 6 million tons or more of LNG supplies to keep up the current power pipeline. By 2024, Korea's long-term supply contracts for 9 million tons of LNG will expire - 4.92 million tons on contract with Qatar and 4.06 million tons from Oman, according to a government official who asked to be unnamed."*

Spot LNG deliveries and Spot deviation from term price



Source: Shell LNG Outlook 2021 on Feb 25, 2021

Asian LNG buyers moving to long term LNG deals provide financing capacity for brownfield LNG FIDs. We believe this abrupt change and return to long term LNG deals is even more important to LNG suppliers who want to FID new projects. The big LNG players like Shell can FID new LNG supply without new long term contracts as they can build into their supply options to fill their portfolio of LNG contracts. But that doesn't mean the big players don't want long term LNG supply deals, as having long term LNG contracts provide better financing capacity for any LNG supplier. It takes big capex for LNG supply and long term deals make the financing easier.

Four Asian buyer long term LNG deals in the last week. It was pretty hard to miss a busy week for reports of new Asian LNG buyer long term LNG deals. There were two deals from Qatar Petroleum, one from Petronas and one from BP. The timing fits, it's about 3 months after Total Mozambique LNG problems became crystal clear. And as noted later, there are indicators that more Asian buyer LNG deals are coming.

> Petronas/CNOOC is 10 yr supply deal for 0.3 bcf/d. On July 7, we tweeted [LINK] on the confirmation of a big positive to Cdn natural gas with the Petronas announcement [LINK] of a new 10 year LNG supply deal for 0.3 bcf/d with China's CNOOC. The deal also has special significance to Canada. (i) Petronas said "*This long-term supply agreement also includes supply from LNG Canada when the facility commences its operations by middle of the decade*". This is a reminder of the big positive to Cdn natural gas in the next 3 to 4 years – the start up of LNG Canada Phase 1 is ~1.8 bcf/d capacity. This is natural gas that will no longer be moving south to the US or east to eastern Canada, instead it will be going to Asia. This will provide a benefit for all Western Canada natural gas. (ii) First ever AECO linked LNG deal. It's a pretty significant event for a long term Asia LNG deal to now have an AECO link. Petronas wrote "*The deal is for 2.2 million tonnes per annum (MTPA) for a 10-year period, indexed to a combination of the Brent and Alberta Energy Company (AECO) indices. The term deal between PETRONAS and CNOOC is valued at approximately USD 7 billion over ten years.*" 2.2 MTPA is 0.3 bcf/d. (iii) Reminds of LNG Canada's competitive advantage for low greenhouse gas emissions. Petronas said "*Once ready for operations, the LNG Canada project paves the way for PETRONAS to supply low greenhouse gas (GHG) emission LNG to the key demand markets in Asia."*
>
> Qatar Petroleum/CPC (Taiwan) is 15 yr supply deal for 0.16 bcf/d. Pre Covid, Qatar was getting pressured to renegotiate lower its long term LNG contract prices. Now, it's signing a 15 year deal. On July 9, they entered in a new small long term LNG sales deal [LINK], a 15-yr LNG Sale and Purchase Agreement with CPC Corporation in Taiwan to supply it ~0.60 bcf/d of LNG. LNG deliveries are set to begin in January 2022. H.E. Minister for Energy Affairs & CEO of Qatar Petroleum Al-Kaabi said *"We are pleased to enter into this long term LNG SPA, which is another milestone in our relationship with CPC, which dates back to almost three decades. We look forward to commencing deliveries under this SPA and to continuing our supplies as a trusted and reliable global LNG provider."* The pricing was reported to be vs a basket of crudes.

BP/Guangzhou Gas, a 12-yr supply deal for 0.13 bcf/d. On July 9, there was a small long term LNG supply deal with BP and Guangzhou Gas (China). Argus reported [LINK] BP had signed a 12 year LNG supply deal with Guangzhou Gas (GG), a Chinese city's gas distributor, which starts in 2022. The contract prices are to be linked to an index of international crude prices. Although GG typically gets its LNG from the spot market, it used a tender in late April for ~0.13 bcf/d starting in 2022. BP's announcement looks to be for most of the tender, so it's a small deal. But it fit into the trend this week of seeing long term LNG supply deals to Asia. This was intended to secure deliveries to the firm's Xiaohudao import terminal which will become operational in August 2022.

Qatar/Korea Gas is a 20-yr deal to supply 0.25 bcf/d. On Monday, Reuters reported [LINK] "*South Korea's energy ministry said on Monday it had signed a 20-year liquefied natural gas (LNG) supply agreement with Qatar for the next 20 years starting in 2025. South Korea's state-run Korea Gas Corp (036460.KS) will buy 2 million tonnes of LNG annually from Qatar Petroleum".* There was no disclosure of pricing.

More Asian buyer long term LNG deals (ie. India) will be coming. There are going to be more Asian buyer long term LNG deals coming soon. Our July 11, 2021 Energy Tidbits highlighted how India's new petroleum minister Hardeep Singh Puri (appointed July 8) hit the ground running with what looks to be a priority to set the stage for more India long term LNG deals with Qatar. On July 10, we retweeted [LINK] "*New India Petroleum Minister hits ground running. What else w/ Qatar but #LNG. Must be #Puri setting stage for long term LNG supply deal(s). Fits sea change of buyers seeing #LNGSupplyGap (see SAF Apr 28 blog http://safgroup.ca) & wanting to tie up LNG supply. #OOTT".* It's hard to see any other conclusion after seeing what we call a sea change in LNG buyer mentality with a number of long term LNG deals this week. Puri tweeted [LINK] "*Discussed ways of further strengthening mutual cooperation between our two countries in the hydrocarbon sector during a warm courtesy call with Qatar's Minister of State for Energy Affairs who is also the President & CEO of @qatarpetroleum HE Saad Sherida Al-Kaabi".* As noted above, we believe there is a sea change in LNG markets that was driven by the delay in 5 bcf/d of LNG supply from Mozambique (Total Phase 1 & Phase 2, and Exxon Rozuma Phase 1) that was counted on all LNG supply projections for the 2020s. Puri's tweet seems to be him setting the stage for India long term LNG supply deals with Qatar.

Supermajors are aggressively competing to commit 30+ year capital to Qatar's LNG expansion despite stated goal to reduce fossil fuels production. It's not just Asian LNG buyers who are now once again committing long term capital to securing LNG supply, it's also supermajors all bidding to be able to commit big capex to part of Qatar Petroleum's 4.3 bcf/d LNG expansion. Qatar Petroleum received a lot of headlines following the their June 23 announcement on its LNG expansion [LINK] on how they received bids for double the equity being offered. And there were multiple reports that these are on much tougher terms for Qatar's partners. Qatar Petroleum CEO Saad Sherida Al-Kaabi specifically noted that, among the bidders, were Shell, Total and Exxon. Shell and Total have two of the most ambitious plans to reduce fossil fuels production in the 2020's, yet are competing to allocate long term capital to increase fossil fuels production. And Shell and Total are also two of the global LNG supply leaders. It has to be because they are seeing a bigger and sooner LNG supply gap.

Remember Qatar's has a massive expansion but India alone needs 3x the Qatar expansion LNG capacity. In addition to the competition to be Qatar Petroleum's partners, we remind that, while this is a massive 4.3 bcf/d LNG expansion, India alone sees its LNG import growing by ~13 bcf/d to 2030. The Qatar announcement reminded they see a LNG supply gap and continued high LNG prices. We had a 3 part tweet. (i) First, we highlighted [LINK] "*1/3. #LNGSupplyGap coming. big support for @qatarpetroleum expansion to add 4.3 bcf/d LNG. but also say "there is a lack of investments that could cause a significant shortage in gas between 2025-2030" #NatGas #LNG".* This is after QPC accounts for their big LNG expansion. The QPC release said "*However, His Excellency Al-Kaabi voiced concern that during the global discussion on energy transition, there is a lack of investment in oil and gas projects, which could drive energy prices higher by stating that "while gas and LNG are important for the energy transition, there is a lack of investments that could cause a significant shortage in gas between 2025-2030, which in turn could cause a spike in the gas market."* (ii) Second, this is a big 4.3 bcf/d expansion, but India alone has 3x the increase in LNG import demand. We tweeted [LINK] "*2/3. Adding 4.3 bcf/d is big, but dwarfed by items like India. #Petronet gave 1st specific forecast for what it means if #NatGas is to be 15%*

of energy mix by 2030 - India will need to increase #LNG imports by ~13 bcf/d. See SAF Group June 20 Energy Tidbits memo." (iii) Third, Qatar's supply gap warning is driven by the lack of investments in LNG supply. We agree, but note that the lack of investment is in great part due to the delays in both projects under construction and in FIDs that were supposed to be done in 2019. We tweeted [LINK] "3/*3. #LNGSupplyGap is delay driven. $TOT Mozambique Phase 1 delay has chain effect, backs up 5 bcf/d. See SAF Group Apr 28 blog Multiple Brownfield LNG FIDs Now Needed To Fill New #LNG Supply Gap From Mozambique Chaos? How About LNG Canada Phase 2? #NatGas*."

Seems like many missed India's first specific LNG forecast to 2030. Our June 20, 2021 Energy Tidbits memo highlighted the first India forecast that we have seen to estimate the required growth in natural gas consumption and LNG imports if India is to meet its target for natural gas to be 15% of its energy mix by 2030. India will need to increase LNG imports by ~13 bcf/d or 3 times the size of the Qatar LNG expansion. Our June 6, 2021 Energy Tidbits noted the June 4 tweet from India's Energy Minister Dharmendra Pradhan [LINK] reinforcing the 15% goal "*We are rapidly deploying natural gas in our energy mix with the aim to increase the share of natural gas from the current 6% to 15% by 2030."* But last week, Petronet CEO AK Singh gave a specific forecast. Reuters report "*LNG's share of Indian gas demand to rise to 70% by 2030: Petronet CEO"* [LINK] included Petronet's forecast if India is to hit its target for natural gas to be 15% of energy mix by 2030. Singh forecasts India's natural gas consumption would increase from current 5.5 bcf/d to 22.6 bcf/d in 2030. And LNG shares would increase from 50% to 70% of natural gas consumption ie. an increase in LNG imports of ~13 bcf/d from just under 3 bcf/d to 15.8 bcf/d in 2030. Singh did not specifically note his assumption for India's natural gas production, but we can back into the assumption that India natural gas production grows from just under 3 bcf/d to 6.8 bcf/d. It was good to finally see India come out with a specific forecast for 2030 natural gas consumption and LNG imports if India is to get natural gas to 15% of its energy mix in 2030. Petronet's Singh forecasts India natural gas consumption to increase from 5.5 bcf/d to 22.6 bcf/d in 2030. This forecast is pretty close to our forecast in our Oct 23, 2019 blog "*Finally, Some Visibility That India Is Moving Towards Its Target For Natural Gas To Be 15% Of Its Energy Mix By 2030*". Here part of what we wrote in Oct 2019. "*It's taken a year longer than we expected, but we are finally getting visibility that India is taking significant steps towards India's goal to have natural gas be 15% of its energy mix by 2030. On Wednesday, we posted a SAF blog [LINK] "Finally, Some Visibility That India Is Moving Towards Its Target For Natural Gas To Be 15% Of Its Energy Mix By 2030".* Our 2019 blog estimate was for India natural gas demand to be 24.0 bcf/d in 2030 (vs Singh's 22.6 bcf/d) and for LNG import growth of +18.4 bcf/d to 2030 (vs Singh's +13 bcf/d). The difference in LNG would be due to our Oct 2019 forecast higher natural gas consumption by 1.4 bcf/d plus Singh forecasting India natural gas production +4 bcf/d to 2030. Note India production peaked at 4.6 bcf/d in 2010.

Bigger, nearer LNG supply gap + Asian buyers moving to long term LNG deals = LNG players forced to at least look at what brownfield LNG projects they could advance and move to FID. All we have seen since our April 28 blog is more validation of the bigger, nearer LNG supply gap. And now market participants (Asian LNG buyers) are reacting to the new data by locking up long term supply. Cheniere noted how the pickup in commercial engagement means they "*are quite optimistic over the coming 12-18 months to make a substantial dent in that Stage 3 commercialization."* Cheniere can't be the only LNG supplier having new commercial discussions. It's why we believe the Mozambique delays + Asian LNG buyers moving to long term deals will effectively force major LNG players to look to see if there are brownfield LNG projects they should look to advance. Prior to March/April, no one would think Shell or other major LNG players would be considering any new LNG FIDs in 2021. Covid forced all the big companies into capital reduction mode and debt reduction mode. But Brent oil is now solidly over $70, and LNG prices are over $13 this summer and the world's economic and oil and gas demand outlook are increasing with vaccinations. And we are starting to see companies move to increasing capex with the higher cash flows. The theme in Q3 reporting is going to be record or near record oil and gas cash flows, reduced debt levels and increasing returns to shareholders. And unless new mutations prevent vaccinations from returning the world to normal, we suspect that major LNG players, like other oil and gas companies, will be looking to increase capex as they approve 2022 budgets. The outlook for the future has changed dramatically in the last 8 months. The question facing major LNG players like Shell is should they look to FID new LNG brownfield projects in the face of an increasing LNG supply gap that is going to hit faster and harder and Asian LNG buyers prepared to do long term deals. We expect these decisions to be looked at before the end of 2021 for 2022 capex budget/releases. One wildcard that could force these decisions sooner is the already stressed out global supply chain. We have to believe that discussion there will be pressure for more Asian LNG buyer long term deals sooner than later.

For Canada, does the increasing LNG supply gap provide the opportunity to at least consider a LNG Canada Phase 2 FID over the next 6 months? Our view on Shell and other LNG players is unchanged since our April 28 blog. Shell is no different than any other major LNG supplier in always knowing the market and that the oil and gas outlook is much stronger than 9 months ago. Even 3 months post our April 28 blog, we haven't heard any significant talks on how major LNG players will be looking at FID for new brownfield LNG projects. We don't have any inside contacts at Shell or LNG Canada, but that is no different than when we looked at the LNG markets in September 2017 and saw the potential for Shell to FID LNG Canada in 2018. We posted a September 20, 2017 blog *"China's Plan To Increase Natural Gas To 10% Of Its Energy Mix Is A Global Game Changer Including For BC LNG*" [LINK]. Last time, it was a demand driven supply gap, this time, it's a supply driven supply gap. We have to believe any major LNG player, including Shell, will be at least looking at their brownfield LNG project list and seeing if they should look to advance FID later in 2021. Shell has LNG Canada Phase 2, which would add 2 additional trains or approx. 1.8 bcf/d. And an advantage to an FID would be that Shell would be able to commit to its existing contractors and fabricators for a continuous construction cycle following on LNG Canada Phase 1 ie. to help keep a lid on capital costs. We believe maintaining a continuous construction cycle is even more important given the stressed global supply chain. No one is talking about the need for these new brownfield LNG projects, but, unless some major change in views happen, we believe its inevitable that these brownfield LNG FID internal discussions will be happening in H2/21. Especially since the oil and gas price outlook is much stronger than it was in the fall and companies will be looking to increase capex in 2022 budgets.

A LNG Canada Phase 2 would be a big plus to Cdn natural gas. LNG Canada Phase 1 is a material natural gas development as its 1.8 bcf/d capacity represents approx. 20 to 25% of Cdn gas export volumes to the US. The EIA data shows US pipeline imports of Cdn natural gas as 6.83 bcf/d in 2020, 7.36 bcf/d in 2019, 7.70 bcf/d in 2018, 8.89 bcf/d in 2017, 7.97 bcf/d in 2016, 7.19 bcf/d in 2015 and 7.22 bcf/d in 2014. A LNG Canada Phase 2 FID would be a huge plus for Cdn natural gas. It would allow another ~1.8 bcf/d of Cdn natural gas to be priced against pricing points other than Henry Hub. And it would provide demand offset versus Trudeau if he moves to make electricity "emissions free" and not his prior "net zero emissions". Mozambique has been a game changer to LNG outlook creating a bigger and sooner LNG supply gap. And with a stronger tone to oil and natural gas prices in 2021, the LNG supply gap will at least provide the opportunity for Shell to consider FID for its brownfield LNG Canada Phase 2 and provide big support to Cdn natural gas for the back half of the 2020s. And perhaps if LNG Canada is exporting 3.6 bcf/d from two phases, it could help flip Cdn natural gas to a premium vs US natural gas especially if Biden is successful in reducing US domestic natural gas consumption for electricity. The next six months will be very interesting to watch for LNG markets and Cdn natural gas valuations. Imagine the future value of Cdn natural gas is there was visibility for 3.6 bcf/d of Western Canada natural gas to be exported to Asia.

Google Translate of El Economista report https://www.eleconomista.com.mx/empresas/Mexico-mantendra-ante-OPEP-cuota-de-produccion-petrolera-en-2022-Rocio-Nahle-20211206-0094.html

Mexico will keep OPEC + oil production quota in 2022: Rocío Nahle

The Secretary of Energy, Rocío Nahle, told senators that a fundamental part of the policy of this administration is to rescue state companies since the energy sector is in the public interest and not in the private sector.

Karol Garcia December 06, 2021, 7:32 PM

By 2022, Mexico will maintain its oil production quota without cuts, with an extraction volume similar to that agreed to before the Organization of the Petroleum Exporting Countries and unaffiliated producers (OPEC +) for the end of the year: 1,753 million barrels newspapers, said the head of Energy, Rocío Nahle.

In his appearance before the Senate of the Republic , postponed twice until it was carried out this Monday, Nahle expressed that a fundamental part of the policy of this administration is to rescue state companies since the energy sector is of interest public and not private, "is the rule we rely on," he said.

In addition, he explained that as of November, whose indicator has not been released by the National Hydrocarbons Commission (CNH) and Petróleos Mexicanos (Pemex), the country produced 1,777 million barrels per day of crude oil and condensates, vs. 1,948 million barrels per day of the same month last year.

The Minister of Energy explained that regarding oil prices , she has participated in 11 ordinary meetings of the OPEC + group , where different adjustments to the production of the large oil extractors in the world have been negotiated while Mexico maintained its quota without cuts, decision that will not affect the international price.

“We received the support of OPEC + so that the quota would remain without cuts and an agreement will be established for 2022 with the condition that conditions, supply and demand are reviewed every month to take the actions that are appropriate to the market and, where appropriate, to each producing country, ”Nahle said.

Pemex Plans to Export Less Crude in 2022 to Meet Demand at Home
2021-12-09 16:33:36.33 GMT

By Lucia Kassai
(Bloomberg) -- Petroleos Mexicanos is said to be planning to trim its crude oil exports next year as it cranks up domestic fuelmaking to supply an economy bouncing back from the pandemic.
Pemex refineries in Mexico, which have been operating at less than 50% of capacity for seven straight months, plan to process an additional 200,000 to 300,000 barrels of crude a day starting in January, people with knowledge of the situation said.
That's oil that would have otherwise been exported, with Asian refineries expected to bear the brunt of the export cuts. Pemex could potentially also run more Mexican crude at the Houston-area Deer Park refinery once its deal to acquire Royal Dutch Shell Plc's stake is finalized.
Pemex didn't return a call and email seeking comment.
The decision by Mexico's state oil company to process more at home instead of sending it abroad will help the country reduce costly imports of refined products, like gasoline and diesel, as demand climbs. Nearly seven in every ten gallons of gasoline sold in Mexico today is imported, mostly from the U.S.
More domestic fuelmaking in Mexico will further squeeze the world's already tight physical crude market. It will especially impact Asia, which accounts for more than a quarter of Mexican oil exports. The reductions are expected to hit refiners in South Korea and India the hardest, with smaller cuts seen to buyers in the U.S. and Europe, as Pemex backtracks on earlier plans to diversify away from the U.S. market.
Pemex's trading arm, PMI, traditionally holds meetings with its clients in November and December to discuss its ability to supply crude for the coming year in 12-month contracts. While the bulk is sold under such agreements, Pemex also occasionally offers cargoes in the spot market when its oil-processing plans fall short.

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Venezuela Is Resurrecting Its Oil Fields With Backpacks of Cash
2021-12-08 13:00:19.995 GMT

By Fabiola Zerpa
(Bloomberg) -- Amid the rusted remnants of Venezuela's once-mighty oil industry, a motley crew of obscure drillers has achieved a feat few thought possible: It's more than doubled the country's crude production in the space of a year.
State-owned Petroleos de Venezuela SA has been pumping about 908,000 barrels a day in the past week, according to people familiar with the matter. With crude near $75 a barrel, it's a financial lifeline for a nation hobbled by U.S. sanctions and in the throes of a seven-year recession.
To reach that milestone, PDVSA has resorted to desperate measures. According to people with direct knowledge of the matter, it's handing out contracts to little-known local companies with the promise of payments in scrap metal, or in some cases, backpacks stuffed with U.S. dollars as sanctions limit Venezuela's access to banks. To cut its own payroll, it's pushing those contractors to hire PDVSA workers for short-term projects. PDVSA didn't respond to requests for comment about its production and how it's compensating contractors.
The recovery in production has put President Nicolas Maduro's goal of 1 million barrels a day within reach. For a country with the world's largest crude reserves, it's not much. But the output boost adds another unpredictable element to an oil market roiled by signs of a Covid-19 resurgence, and Venezuelan oil minister Tareck El Aissami, one of Maduro's chief lieutenants, is turning up the pressure to ensure the president's production target is met.
"PDVSA has built new partnerships allowing it to increase production," said Antero Alvarado, a managing partner at consulting firm Gas Energy Latin America. The cash-strapped company "is also paying service companies. All this amid high oil prices, sanctions and traditional partners unable to collect debts from PDVSA."
To the untrained eye, not much has changed in Venezuela's Orinoco Belt. The region is still a shadow of the once-thriving hub that turned this South American country into a global energy giant. Vehicles that used to carry heavy drilling equipment to rig areas have largely disappeared. Foreign-owned warehouses are barren and deteriorating. Big dump trucks rumble down rutted roads, carrying scrap metal by the ton -- dismantled pipelines to be sold abroad.
But in the short term, PDVSA's gambit to ramp up production appears to be working, if slowly. Venezuela's production of 908,000 barrels a day is close to that of Oman, a minor oil exporter among its peers in the Middle East. In the golden era of the 1990s, in comparison, Venezuela pumped more than triple that amount. Ship loadings of Venezuelan crude in November surpassed half a million barrels a day for the first time in a year. While it's not clear where the oil will be sent, millions

of barrels of the country's crude have surreptitiously landed in China using tactics including ship-to-ship transfers, shell companies and silenced satellite signals.

READ: Thieves Ransack Venezuela's Crumbling Oil Belt in Broad Daylight

Many of the firms drilling for PDVSA work on an irregular basis given their lack of financing muscle and the state-owned producer's late payments in cash, according to people familiar with the matter. The company remains hampered by years of mismanagement, scant investment from foreign partners and the weight of U.S. economic sanctions put in place under the Trump administration.

Still, the contractors have stayed on the ground. It's an improvement over the previous two years, when PDVSA offered to pay in crude or fuel despite the complications that sanctions created for such transactions. PDVSA is concentrating on oil fields that are in relatively good shape, many of which were built and financed by foreign partners that have since halted work because of the sanctions on Maduro's regime.

Oil minister El Aissami is turning up the pressure to ensure Maduro's production goals are met. He's a frequent visitor to PDVSA's Jose industrial complex in eastern Venezuela, which processes raw crude into supply that's ready for export. After years of decay, the complex has received a few recent cosmetic boosts: Resurfaced roads, refurbished tanks and the removal of weeds that had been engulfing some of the facilities.

Some observers question whether Venezuela can maintain the increase in oil output. Steady production of more than 750,000 barrels a day is "a challenge for PDVSA," Alvarado said, with frequent fires and other mishaps threatening to curtail supply. Regular supplies of Iranian condensate are also key. That light crude allows PDVSA to move the sludge-like petroleum that's pumped out of the Orinoco Belt to mixing plants near the coast, where it can be upgraded to a more commercial grade and shipped to markets. Three cargo ships containing 4.6 million barrels of Iranian condensate have arrived since July in Venezuela. PDVSA hasn't said whether more ships are coming, but according to Iran's semi-official Tasnim news agency, Tehran has urged more cooperation between the two countries on petrochemicals and refining.

While Venezuela focuses on oil fields that are in fairly good condition, dozens of other fields remain shut. PDVSA may still cannibalize those, breaking apart pipes, engines and other equipment it can sell to finance its operations. As long as that occurs, the country's reemergence as an oil superpower will remain a distant dream.

If PDVSA can get enough shipments of Iranian condensate, "there is a high probability that it can continue to hike crude output," said David Voght, managing director of consulting firm IPD Latin America. "However, the company could eventually become the victim of its own success when growing production meets certain infrastructure and operational limitations, potentially

impacting crude quality and, consequently, exportability."

--With assistance from Lucia Kassai.

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https://www.wsj.com/articles/saudi-arabia-pleads-for-missile-defense-resupply-as-its-arsenal-runs-low-11638878400?mod=hp_lead_pos11

- WSJ NEWS EXCLUSIVE
- MIDDLE EAST

Saudi Arabia Pleads for Missile-Defense Resupply as Its Arsenal Runs Low

Conflict pits $1 million Patriot interceptors against Houthi rebels' $10,000 'flying lawn mowers'

Officials say the kingdom's stock of Patriot interceptors is dangerously low; a Patriot antimissile battery at Prince Sultan Air Base in Saudi Arabia last year.
PHOTO: IMAN AL-DABBAGH FOR THE WALL STREET JOURNAL

By Gordon Lubold

Dec. 7, 2021 7:00 am ET

WASHINGTON—Saudi Arabia is running out of the ammunition it uses to defend against weekly drone and missile attacks on its kingdom and is urgently appealing to the U.S. and its Gulf and European allies for a resupply, U.S. and Saudi officials said.

Over the past several months, Saudi Arabia has been attacked by nearly a dozen ballistic missile and drone strikes launched each week by the Yemen-based Houthi rebels, U.S. and Saudi officials said. The Saudi military has successfully fended off most of the barrages with its Patriot surface-to-air missile system, but its arsenal of interceptors—missiles used to shoot down airborne weapons—has fallen dangerously low, these officials said.

Meanwhile, the U.S. military has redeployed much of the American weaponry that defended U.S. forces and lent security to Saudi Arabia, part of the Biden administration's turn away from the Middle East to confront China.

While U.S. officials appeared poised to formally approve the Saudi request, the situation has officials in Riyadh concerned that without a sufficient stock of Patriot interceptors, the sustained attacks could result in significant loss of life or damage to critical oil infrastructure. In January, the Houthis struck buildings belonging to the royal court, but no one was injured.

The Saudi government's appeal has tested the U.S. commitment to the Middle East and in particular to Riyadh, where the Biden administration has attempted to reshape the relationship over a range of issues including human rights, the Saudi-led war in Yemen and the October 2018 killing of journalist Jamal Khashoggi at the hands of Saudi operatives at the Saudi consulate in Istanbul.

In one indication of tension, Defense Secretary Lloyd Austin's planned visit to Riyadh in September was abruptly canceled. He later told reporters that the kingdom had canceled the visit because of scheduling issues. Mr. Austin returned to the region last month but didn't travel to Saudi Arabia.

The number of attacks against the kingdom has grown significantly, according to a Saudi government official. Drones struck Saudi territory 29 times last month and 25 times in October; the country was struck by 11 ballistic missile attacks last month and 10 in October. That is up significantly from February 2020, when Saudi Arabia was attacked six times, five by ballistic missiles and once by a drone, according to the official.

Timothy Lenderking, the U.S. special envoy for Yemen, said at a forum on Friday that the Houthis have conducted about 375 cross-border attacks into Saudi Arabia in 2021.

Saudi air defenses intercepted a ballistic missile above Riyadh on Monday. The Defense Ministry said it had produced shrapnel in several residential districts but caused no damage. Online videos showing a boom and flashes of light suggested a Patriot system had been engaged.

Despite their concerns about Saudi Arabia's human-rights record and other issues, U.S. officials believe they have an obligation to help the oil-rich kingdom in its own defense, especially as the U.S. grapples with rising oil prices. A sophisticated attack in 2019 hit state-owned Aramco Oil facilities, forcing the brief suspension of some production. The Houthis attacked a major Saudi oil port in March but caused no damage.

The Saudis have been mostly successful at defending themselves, U.S. and Saudi officials say, defeating almost nine out of 10 missile or drone attacks, according to U.S. officials.

More missile interceptors won't address the longer-term budget problem: The interceptors cost about $1 million a piece, but the drones, described by people familiar with them as "$10,000 flying lawn mowers," are small, simply made and relatively inexpensive, officials and analysts said.

"Attacks by armed drones launched by terrorist militias are a relatively new global security threat and the means for dealing with them are evolving," the Saudi official said.

Saudi concerns about its security situation and its request to the U.S. government haven't been previously reported.

The Saudi government is requesting that the U.S. provide it with hundreds more Patriot interceptors manufactured by Raytheon Technologies Corp., and it has also approached Gulf allies, including Qatar, and European countries. A direct sale of the interceptors to Saudi Arabia is under consideration by the State Department, according to two U.S. officials, and the department would also be required to sign off on any transfers from another government like Qatar.

"The United States is fully committed to supporting Saudi Arabia's territorial defense, including against missiles and drones launched by Iranian-backed Houthi militants in Yemen," said a senior administration official in a statement. "We are working closely with the Saudis and other partner countries to ensure there is no gap in coverage."

The State Department and Raytheon declined to comment.

In November, the State Department approved and Congress was notified of a sale for a system known as the Advanced Medium Range Air-to-Air Missiles system, for about $650 million. The Saudi government had requested to purchase 280 missiles and 596 missile-rail launchers to defend the kingdom against such attacks.

The Saudi-led conflict with the Houthi rebels in neighboring Yemen has been grinding on for seven years. The Houthis, who control much of Yemen, including its capital, are battling a Saudi-backed, internationally recognized Yemeni government and have so far rebuffed peace overtures from Riyadh and Washington.

The U.S. has pressed the Saudis to end the war in Yemen, but Rep. Adam Smith (D., Wash.), the chairman of the House Armed Services Committee, who supports the push, says the resupply of the Patriot interceptors must be viewed separately from concerns over Saudi Arabia's conduct in Yemen and other issues that put it at odds with Washington.

“How do we deal with that threat while also trying to make the autocrats in that part of the world move in a more progressive direction?” Mr. Smith said. “It’s not an easy formula.”

Even fully stocked with interceptors, Riyadh remains vulnerable, because the Patriot missile system is designed to counter ballistic missiles, not small drones. The Patriot batteries can’t swivel 360 degrees, for instance, limiting their effectiveness against the drones, which are sometimes launched from inside the kingdom, U.S. officials said. In at least one case, a drone flew into the rear of a Saudi Patriot missile battery, destroying it, officials said.

“The [Kingdom of Saudi Arabia] is dealing with different types of rockets, ballistic missiles and UAVs [unmanned aerial vehicles],” the Saudi official said in the statement. “The interception of each type requires different capabilities, and we are actively increasing and diversifying our systems so that we can counter these aerial projectiles.”

The U.S. has no formal program to counter drone attacks and won’t be able to transfer antidrone technology to the Saudi government any time soon, experts familiar with the development of counterdrone technology say.

—Warren P. Strobel and Stephen Kalin contributed to this article.

Write to Gordon Lubold at Gordon.Lubold@wsj.com

https://www.timesofisrael.com/gantz-i-told-the-us-ive-ordered-the-idf-to-prepare-a-strike-against-iran/

Gantz: I told the US I've ordered the IDF to prepare a strike against Iran

Defense minister says US still aligned with Israel, but has 'broader priorities' in region; senior defense official says attack on Iran will be hard without coordinating with US

By **JACOB MAGID** and **TAL SCHNEIDER**12 December 2021, 1:03 am

Defense Minister Benny Gantz (L) and US Defense Secretary Lloyd Austin meet at the Pentagon on December 9, 2021. (Defense Ministry)

HOLLYWOOD BEACH, Florida — Defense Minister Benny Gantz said Friday that he notified US officials during meetings this week in Washington that he had instructed the Israel Defense Forces to prepare for a strike against Iran.

In a briefing with reporters on the sidelines of the Israeli American Council's national summit in Florida, Gantz said the order he gave was to "prepare for the Iranian challenge at the operational level."

A senior defense official, speaking on condition of anonymity, indicated that Gantz had presented a timeline for when such an attack might take place during his meetings with US Defense Secretary Lloyd Austin and Secretary of State Antony Blinken, but the source did not specify further.

Gantz told reporters Friday that the US and European countries "are losing patience" and are realizing that Iran is trying to drag out the negotiations, despite "playing a bad hand."

He said no progress had been made in the recent round of negotiations in Vienna aimed at reviving the nuclear accord known as the Joint Comprehensive Plan of Action.

Gantz said he has urged the US to step up the pressure against Iran.

"There is room for international pressure — political, economic and also military — in order to convince Iran to stop its fantasies about a nuclear program," he said.

Gantz said the administration officials he met with were attentive to Israel's concerns, and that he emphasized that Iran is first and foremost a global problem, before it is an Israeli one.

He said he agreed during meetings with Austin and Blinken that the US and Israel would further develop their cooperation against Tehran.

The sides also discussed maintaining Israel's so-called qualitative military edge over other countries in the region, Gantz said. "There are many steps we discussed that will affect Israel's ability to be the strongest state in the region for many years to come."

Gantz acknowledged the Biden administration did not provide a deadline for when it will walk out of talks in Vienna if there is no progress, but he expressed confidence the US would begin considering a military option more seriously if there are no positive developments.

The senior defense official said Iran is close to enriching the amount of uranium necessary to assemble a nuclear bomb and that it will be easier to act against Tehran before it crosses that threshold.

The official acknowledged that American public opinion is not supportive of further military intervention in the Middle East, but said as Iran gets closer to a nuclear weapon, Americans will come around.

"The Americans are still with us, but at the same time, we as Israelis need to understand that the US has broader priorities," Gantz said separately.

US Secretary of State Antony Blinken (left) meets with Defense Minister Benny Gantz (right) in Washington, DC, on December 9, 2021. (Shmulik Almany/GPO)

“America is the strongest country in the world, and specifically because of that it does not rush to use force. It typically leaves it to later stages in the matter,” he said.

Gantz also justified the need for three separate Israeli officials — Bennett, Foreign Minister Yair Lapid and himself — to hold conversations with Blinken, even though they all discussed the same issue of Iran. Gantz said each of them placed an emphasis on different issues in their discussions, but they coordinated with one another, he said.

Hours later, a senior military official and a rumored candidate to serve as the next IDF chief of staff said Saturday that while Israel will act independently against Iran if it must, a strike against the Islamic Republic’s nuclear facilities would be difficult without coordinating with the US.

“The desire is always to coordinate with [the US] what we are doing, but at the end of the day Israel is responsible for its own fate and will protect the security of its citizens, Maj. Gen. Eyal Zamir said during a live interview on Saturday at the Israeli American Council conference.

Zamir is a former IDF deputy chief of staff currently serving as a research fellow at a think tank in Washington. He is a rumored dark horse candidate to head the IDF, though current deputy chief of staff Herzi Halevi is the assumed frontrunner.

Zamir acknowledged when pushed that “it would be a challenge to launch such an operation without coordinating with the Americans.”

He said that while Israel hopes the US will deter Iran, Israel will act if Washington fails to do so.

He clarified that military action would be a last result and would only be carried out if there is no diplomatic solution to the Iranian problem. He noted that the talks in Vienna are very “worrying” and that all options look very bad as far as Israel is concerned.

https://www.nytimes.com/2021/12/10/us/politics/iran-nuclear-us-israel-biden-bennett.html?smid=tw-share

Iran's Nuclear Program Ignites New Tension Between U.S. and Israel

Strains emerged during talks this week after a short period of strong relations between a new Israeli government and new American one.

By Julian E. Barnes, Ronen Bergman and David E. Sanger
Dec. 10, 2021

WASHINGTON — Long-running differences over how to deal with Iran's nuclear program have erupted into new tensions between the Biden administration and Israel, with two senior Israeli officials leaving Washington this week concerned that the Americans' commitment to restoring the 2015 nuclear deal will lead to a flawed agreement allowing Tehran to speed ahead with its nuclear enrichment program.

The strains were evident all week, as the Biden administration sought to bring the alliance with Israel into a united front about how to deal with Iran over the next year.

In an effort to close the gap, American officials let out word this week that two months ago, Mr. Biden asked his national security adviser, Jake Sullivan, to review the Pentagon's revised plan to take military action if the diplomatic effort collapsed. Administration officials also outlined new efforts to tighten, rather than loosen, sanctions on Iran.

Mr. Biden's focus on military options and sanctions was an effort to signal to Tehran that the United States was running out of patience with Iranian foot-dragging in the nuclear negotiations in Vienna, administration officials said. Secretary of State Antony J. Blinken said last week that the new Iranian government "does not seem to be serious about doing what's necessary to return to compliance" with the 2015 nuclear deal.

But the tougher line was also aimed at calming increasingly frustrated Israeli officials. Though they will not criticize the American president in public the way former Prime Minister Benjamin Netanyahu did during the Obama administration, Israeli officials in private argue that the Iranians are advancing their nuclear program while betting that the United States, eager to diminish American commitments in the Middle East, will not abandon the Vienna talks for more forceful action.

This article is based on discussions with more than a dozen American and Israeli officials who spoke on the condition they be granted anonymity to discuss both sensitive matters of diplomacy and classified intelligence assessments.

After a tense phone call with Mr. Blinken 10 days ago, the Israeli prime minister, Naftali Bennett, dispatched his defense minister, Benny Gantz, and the new head of the Mossad, David Barnea, to Washington this week armed with new intelligence about Iranians' uranium enrichment and the work of what Israel says is their weapons group. Despite the tougher American talk, Israeli officials left worried that the diplomatic outreach to Iran would continue.

The disagreement over Iran is just one of several issues troubling the Biden-Bennett relationship. The pair started off on a strong footing: Mr. Biden spoke with Mr. Bennett within hours after the Israeli leader took office in June — a signal of support given that Mr. Biden had taken weeks after his inauguration to speak directly with Mr. Bennett's predecessor, Mr. Netanyahu.

But the two governments have since clashed on whether the U.S. should reopen the American consulate to the Palestinians in Jerusalem, which was closed by President Donald J. Trump. Mr. Bennett says such a move would undermine Israel's sovereignty in its capital city.

There are also disagreements over Israeli plans to expand its settlements in the occupied West Bank, and over the Biden administration's decision to blacklist two Israeli spyware firms, NSO Group and Candiru, whose products, the U.S. alleges, have been used by authoritarian governments to hack the phones of dissidents and rights activists.

But at the heart of the tensions between Israel and the United States is the fundamental disagreement over how to stop the Iranian program. It is not a new argument: The two allies fought bitterly over the 2015 agreement, which Israel opposed and President Barack Obama signed.

More recently, they have disagreed about the wisdom of Israeli sabotage of Iranian facilities, which Mr. Bennett's government believes has set back the program, and which some in the United States argue only encourages the Iranians to build back the nuclear enrichment facilities with more efficient, up-to-date equipment.

Prime Minister Naftali Bennett of Israel has warned of the dangers of a nuclear Iran and is concerned that the U.S. will reach a deal with Tehran that the Israelis do not like.Credit...Pool photo by Gil Cohen-Magen

Israeli officials had been happy with the warm welcome the White House offered Mr. Bennett. The Biden administration had praised his government for being far more transparent with it than Mr. Netanyahu had been. Indeed, the Israelis consulted with the Americans before launching two covert strikes against Iran, one in September against a missile base and one in June against an Iranian factory building nuclear centrifuges, according to people briefed on the actions.

But the call between Mr. Bennett and Mr. Blinken last week was contentious, with the two sides embracing very different opinions about the value of a renewed agreement to check Tehran's nuclear ambitions. The call left officials in both countries frustrated, according to officials from both countries.

During the phone call, Mr. Bennett said that Iran was trying to blackmail the United States by increasing the enrichment percentage, according to an official familiar with details of the call. Mr. Bennett added that no official, American or Israeli, wants to be the one to report that Iran has reached bomb-grade enrichment, but fears of a nuclear-armed Iran should not lead to surrendering to Iranian demands or signing a reckless agreement.

Some American officials believe those concerns about concessions are misplaced. Israeli officials had complained that the United States was considering offering an interim deal with Tehran that would roll back some sanctions in return for a freeze on some of its nuclear activity. But American officials say such an offer is not actively being considered, at least for now, because of Iran's unwillingness to engage.

Israeli officials have not been reassured. They are increasingly concerned that the United States will eventually reach a deal with Tehran and then seek to block Israeli intelligence services from carrying out covert sabotage attacks. Israeli leaders say they want a guarantee from the Biden administration

that Washington will not seek to restrain their sabotage campaign, even if a renewed nuclear deal is reached.

Disagreements over intelligence assessments about the Iranian nuclear stockpile and bomb-making know-how remain relatively small, mostly focused on how long it would take Iranians to produce a weapon if they get enough bomb-grade nuclear fuel.

But the gulf about the meaning of those assessments is wide. American officials believe that so long as Iran has not moved to develop a bomb it does not have a nuclear military program, since it suspended the existing one after 2003. Israeli officials, on the other hand, believe that Iran has continued a clandestine effort to build a bomb since 2003.

Some Israeli officials believe that their sabotage campaign is having strategic effects and could be one of the reasons Iranians, however tentatively, have returned to Vienna. A senior Israeli intelligence official said the sabotage operations had created crippling paranoia at the top of the Iranian government. The operations, the official said, have caused Tehran to rethink whether it should accelerate the nuclear project.

But even American supporters of the Israeli approach say it is akin to "mowing the grass," a necessary step to keep Iran in check but not one that will ever fully halt Tehran's nuclear research. These American officials believe that the only durable way to prevent Iran from developing a weapon is to reach an agreement, like the one in 2015, that requires Iran to ship its nuclear fuel out of the country. And that would require significant sanctions relief in return.

In the meetings this week, Israeli officials tried to persuade Washington not to work toward a diplomatic agreement and to instead tighten sanctions. But Israeli officials say they fear that the U.S. is conducing secret back-channel communication with Iran, and that a new round of talks in Vienna will eventually lead to the signing of a deal.

The meetings came against the backdrop of a recent Iranian attack on American forces in Syria, a senior American official said. The Israelis, the official said, had an aggressive attitude on the Iranian threat, related to both the nuclear program and the risk of missile and other weapon proliferation.

But there is a growing American concern that it is just a matter of time before an American service member is killed or wounded by an Iranian proxy drone strike on Mr. Biden's watch. With Iran making clear it will retaliate against American personnel in Syria or Iraq if Israel strikes Iran or its proxies, it complicates strike planning.

In an appearance at The Wall Street Journal's CEO Council on Monday, William J. Burns, the C.I.A. director, raised concerns about the Iranian nuclear work. He said the Iranians were "dragging their feet" on negotiations as they were "making steady advances in their nuclear program, particularly enrichment to 60 percent now as well." That is the closest the Iranians have ever come to bomb-grade fuel, which is usually defined as 90 percent purity.

But, Mr. Burns added, the United States continues to believe that Iran has not made a decision to weaponize its nuclear program.

Patrick Kingsley contributed reporting from Jerusalem, and Eric Schmitt from Washington.

Exxon's Math Calls For Overall Global Oil Decline Rate of ~7%, A Very Bullish Argument For Post 2020 Oil Prices

Posted: Thursday June 20, 2019. 5:30pm Mountain

We believe Exxon presented a very bullish argument for oil prices beyond 2020 and that it has been overlooked because most readers only flip thru a slide deck and don't listen to or read transcripts of management's spoken words. Exxon's spoken words highlighted one of the forgotten (and perhaps most important) oil supply/demand concerns for post 2020 - the mid term challenge to replace increasing rate of overall global oil declines. And what is eye opening is Exxon's estimated overall global oil decline rate, which is way higher than any we can ever remember seeing. Its impossible to tell from the small oil supply/demand graph in the slide deck, but Exxon's spoken words says long term oil demand is 0.7% per year and then "*When you factor in depletion rates, the need for new oil grows at close to 8% per year and new gas at close to 6% per year*." Exxon may not specifically say what the global decline rate is, but their math is that the world needs new oil supply to grow annually at close to 8% to meet the 0.7% annual increase in oil demand and offset declines ie. an overall global decline rate of approx. 7%. This is an overall global oil decline rate for OPEC and non-OPEC. This compares to BP's estimate of overall global oil decline rate of 4.5% and we expect most are probably assuming something around 5%, certainly not above 6%. No one should be surprised by the increased decline rate given that high decline US shale and tight oil have increased by ~2.5 mmb/d in the last ~2 years. But an implied ~7% overall global oil decline rate is way higher than expectations. There is a big difference between needing to offset oil declines of ~7 mmb/d vs declines of ~4.5 mmb/d ie. an additional 2.5 mmb/d of new oil supply every year. Even if the implied difference was to 6%, it would still be an additional 1.5 mmb/d of new oil supply and that would also be very bullish for post 2020 oil. We recognize that the 2019/2020 oil supply demand story is the need for OPEC+ to keep cuts thru 2020, but Exxon's math implying ~7% overall global oil decline rate sets up a very bullish view for oil post 2020. We believe the reality to replace oil declines post 2020 is overlooked.

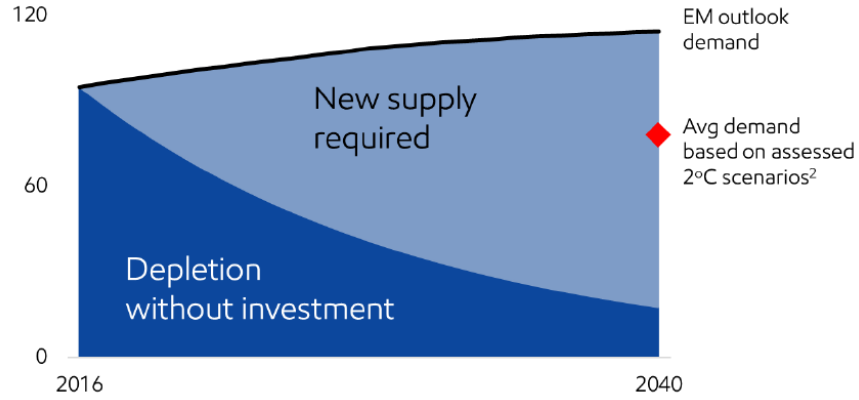
The 2019/2020 oil story - oil inventories still above the 5 yr ave and OPEC+ need to work together in 2020. There is increasing geopolitical risk to oil in a range of regions (Iran/Saudi Arabia, Libya, Venezuela, etc.) yet the prevailing tone to oil in the past month is negative with the concerns on trade wars/lower economic growth leading to weakness in oil demand. This was reinforced in the past week with the view that there is the need for OPEC+ to continue to work together in H2/19 and in 2020. Our SAF June 16, 2019 Energy Tidbits memo [LINK] reviewed the IEA's new monthly Oil Market Report [LINK], which included (i) "*OECD oil stocks remain at comfortable levels 16 mb above the five-year average"*, (ii) the EIA lowered its 2019 oil demand growth rate by 0.1 mmb/d to +1.2 mmb/d, and (iii) a negative first look at 2020 oil supply/demand. The EIA's first 2020 forecast puts more pressure on OPEC+ to continue with cuts through 2020. IEA says oil demand growth rate will grow from +1.2 mmb/d in 2019 to +1.4 mmb/d in 2020. This is a positive, however, it is more than offset as the IEA forecasts another year of big non-OPEC oil supply growth of +2.3 mmb/d in 2020. In theory a lesser call on OPEC of 0.9 mmb/d. The IEA writes "*A clear message from our first look at 2020 is that there is plenty of non-OPEC supply growth available to meet any likely level of demand, assuming no major geopolitical shock, and the OPEC countries are sitting on 3.2 mb/d of spare capacity".*

Exxon sees modest annual growth in oil demand, but peak oil demand sometime after 2040. Exxon presented at a US sellside energy conference on Tues. We expect a big reason why Exxon's oil outlook was ignored was that the presentation was almost all about providing a great detailed look at the Guyana oil play. Plus its headline annual growth rate for oil demand of 0.7% per year wouldn't have made anyone bullish, if anything maybe even more so so on oi. Exxon only provided some brief comments on their oil supply and demand outlook. Exxon said *"In this scenario, oil demand is expected to grow 0.7% per year, driven by commercial transportation and chemical"*. This compares to 2018 oi demand growth of 1.45% and even this year's lower oil demand growth rates of 1.15%. However, we recognize it is tough to get data from a small graph, but a positive tn the graph is that it seems to indicate that peak oil demand doesn't happen before 2040.

However, Exxon says new oil supply of 8% per year is needed to meet demand growth and offset decline rates. On one hand, we continue to be surprised that Exxon's view on new oil supply has received no attention. On the other, it makes sense because the vast majority of readers only flip thru a slide deck so will miss the spoken word that gives numbers and context to a slide. That was clearly the case with the Exxon presentation. If Exxon is anywhere near right, this is a hugely bullish view for mid/long term oil ie post 2020 oil. Exxon highlighted one of the forgotten oil supply/demand concerns is

the mid term challenge to replace global oil declines. And what is eye opening is Exxon's estimated decline rate, which is way higher than any we can ever remember seeing. Exxon says long term oil demand is 0.7% per year and then says "*When you factor in depletion rates, the need for new oil grows at close to 8% per year and new gas at close to 6% per year*." Exxon didn't specifically say that the overall global decline rate was ~7%, but the math looks straightforward. The world needs new oil supply to growth at close to 8% per year to meet 0.7% annual demand growth and to offset declines in global (OPEC and non-OPEC) oil production ie. the overall global oil decline rate is approx. 7%. This is an overall OPEC and non-OPEC global decline rate.

Oil Supply/Demand (moebd)

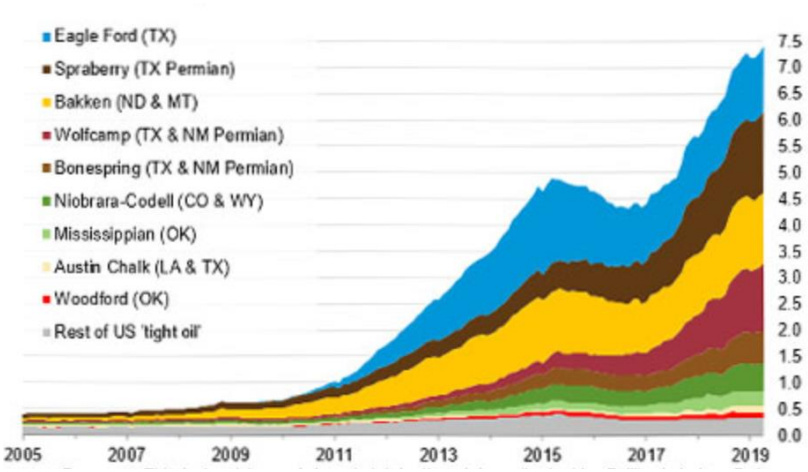


Source: Exxon US Sellside Conference Presentation June 18, 2019

Implies a huge overall global decline rate of ~7% - way higher than other estimates. It may well be the case that forecasters haven't updated their global oil decline models to reflect the impact of the US adding ~2.5 mmb/d of high decline shale and tight oil in the past two years. But we aren't aware of anyone who is using an overall global oil decline rate as high as 7%. We have seen estimates for 7% for decline rates for non-OPEC oil, but not for the decline rates overall for global oil. Rather, we expect that most have been assuming overall global oil decline rates of 4% to 5%. Later in the blog, we note our peak oil demand comment from Nov 6, 2017 (prior to the big ramp up in US shale and tight oil) that used Core Laboratories spring 2017 estimate for overall global oil decline of ~3.3%.

Exxon's global leadership position, especially in shale, is why we should pay attention to this view of significantly higher global oil decline rates. Everyone knows Exxon is the largest public international oil company and is in all major oil regions and all types of plays from conventional, oil sands, middle east, deepwater oil and shale oil, We believe that Exxon is viewed as the global leader in the Permian, and this shale oil leadership is critical to understand as we believe that the growth of US shale is the key reason for the increasing overall global oil decline rates. Exxon's shale oil leadership is why we should be paying attention to this estimate. The game changer to global oil decline rates has been the increasing oil production from high decline US shale and tight oil. The EIA estimates [LINK] that US shale and tight oil plays are up over 6 mmb/d this decade and ~2.5 mmb/d n the past two years alone.

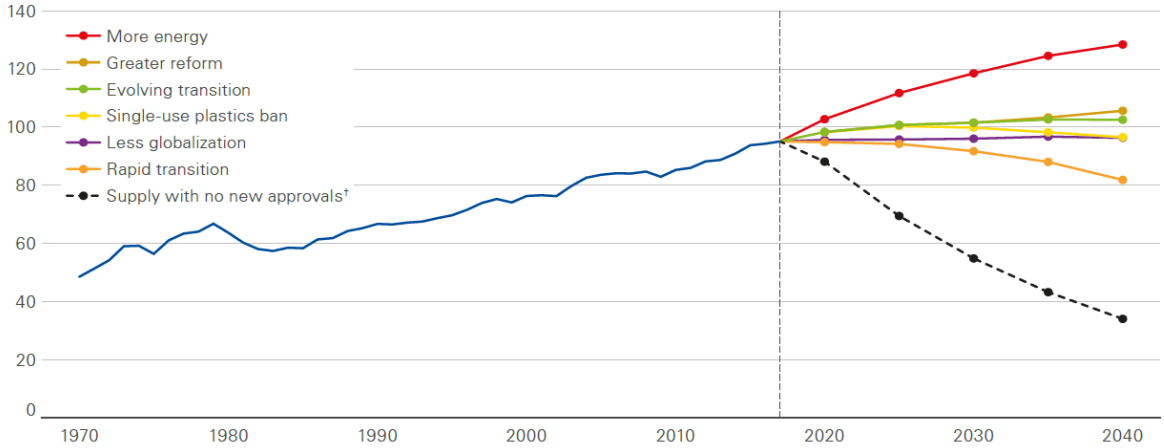
US Tight Oil Production – Selected Plays (Million barrels of oil per day)



Source: EIA

BPs recent forecast for overall global oil decline rate is 4.5% per year. BP's Energy Outlook 2019 Edition (Feb 14, 2019) [LINK] included their outlook for oil supply and demand and specifically on overall global oil decline rates. BP wrote "*Second, significant levels of investment are required for there to be sufficient supplies of oil to meet demand in 2040. If future investment was limited to developing existing fields and there was no investment in new production areas, global production would decline at an average rate of around 4.5% p.a. (based on IEA's estimates), implying global oil supply would be only around 35 Mb/d in 2040."* Below is the graph from their Energy Outlook 2019 Edition report.

Demand and Supply of Oil (Mbd)



Source: BP Energy Outlook 2019 Edition

If Exxon is anywhere close, this is a hugely bullish signal for mid/long term oil ie. post 2020 oil. We recognize that this significantly higher than expected overall global oil decline rate will take a year or two to work thru the current supply/demand fundamentals given where markets are today. However, over the mid term, the need to add ~7 mmb/d of new oil supply is a huge challenge for the world. The difference between an Exxon type view of ~7% declines vs BP's 4.5% declines is approx. 2.5 mmb/d of an additional new oil supply every year is needed to balance the markets. In reality, even if Exxon's implied overall global decline rate was ~6%, it would still be very bullish for mid/long term oil as this means an additional ~1.5 mmb/d of new global oil supply per year.

Its even more bullish for post 2020 oil than we thought in our Nov 6, 2017 peak oil demand blog. We have always been in the camp that believes peak oil demand is coming, but we have also been of the view that the post 2020 challenge to replace oil declines would be getting tougher. We believe Exxon's view of higher global oil decline rates is consistent with the ~2.5 mmb/d increase in US shale and tight oil in the past two years. And is way more bullish than we wrote in our Nov 6, 2017 blog "*Peak Oil Demand Is Coming, But >4 Mmb/d Of New Oil Supply Will Be Needed Every Year To Replace Declines To Get There*" [LINK], and "*We buy into the narrative of peak oil demand, believe it is inevitable, its visible and will happen before 2030. Peak oil demand will be from the cumulative impact of a number of factors including EVs, battery/storage, LNG for power, LNG for transportation, increased energy efficiency, etc. But the peak oil demand narrative forgets the most basic fundamentals of oil – industry has to add new oil supply every year to replace declines just to keep production flat. Even after today's big oil rally, long dated strips are still under $52 from 2020 thru 2025. We don't believe long dated 2020 thru 2025 strips are predictive of future prices or indicative of the marginal supply costs to add 4 to 5 million b/d every year in 2020 to 2025 or to add >3 million b/d every year once peak oil demand is reached and is in plateau. We believe these marginal supply costs are significantly higher and >$60. We believe oil can quickly move to a base of >$60 with this supply challenge and there will be longevity to this call as markets appreciate this challenge and that the marginal supply cost to add this much new oil production every year is well over $60. Peak oil demand won't take away from the challenge to add significant new oil production every year."* Note that our Nov 6, 2017 blog was based on the spring 2017 Core Laboratories estimate that the global world wide annual decline rate in oil was then 3.3%. But to Core Laboratories support, this estimate would have been before the ~2.5 mmb/d of added US shale and tight oil in the past two years.

Dec 08, 2021 07:40:43

OIL DEMAND MONITOR: European Air Travel Lags Further Behind 2019

- Flight numbers recovering in China while Austria nosedives
- Spanish toll road traffic 5% down from same week two years ago

By Stephen Voss

(Bloomberg) -- European air traffic has been falling further behind pre-pandemic levels in recent weeks and toll road data shows the same is happening with car journeys on the motorways of Italy, Spain and France.

The swoon in flights is most extreme in Austria, which went into a national lockdown on Nov. 22, just days before travelers became aware of the highly-transmissible omicron variant of coronavirus.

Larger airline markets on the continent, such as Germany, have also been in decline since early November, when compared against 2019 flight numbers, according to data from Eurocontrol, an intergovernmental agency involved in air-traffic management.

Omicron Impact

The current question oil analysts are all asking is how large an impact will omicron have, especially around the holiday season. Energy Aspects cut its jet fuel demand forecasts for December and January, anticipating travel restrictions and flight cancellations.

"The rapid spread of the omicron variant has already affected consumer behavior, and government reactions are likely to reduce mobility and deepen the demand disappointment in Q1," Standard Chartered Bank energy analysts including Paul Horsnell and Emily Ashford said in a research note on Tuesday.

Virus variants, milder winter weather and a slowing economic recovery are all part of the reason why the bank no longer expects global oil demand to return to 2019 levels by the end of this month, as it had previously predicted in April.

While new, tougher rules on international travel are curbing European activity, the global number of commercial flights, as measured by FlightRadar24, has been fairly steady over the past month, helped by buoyant markets in the U.S. and Mexico, and a partial recovery in China.

OAG Aviation said it has lowered its global forecast for the number of seats scheduled on airlines for December in the past week, though the 1.1% downward revision is relatively small.

"It does not appear that airlines have made large scale schedule changes in response to concerns about the new omicron variant of the Covid-19 virus," the consultant said in a weekly report. Nevertheless, it's also "too soon to say" how airlines might adapt schedules going forward.

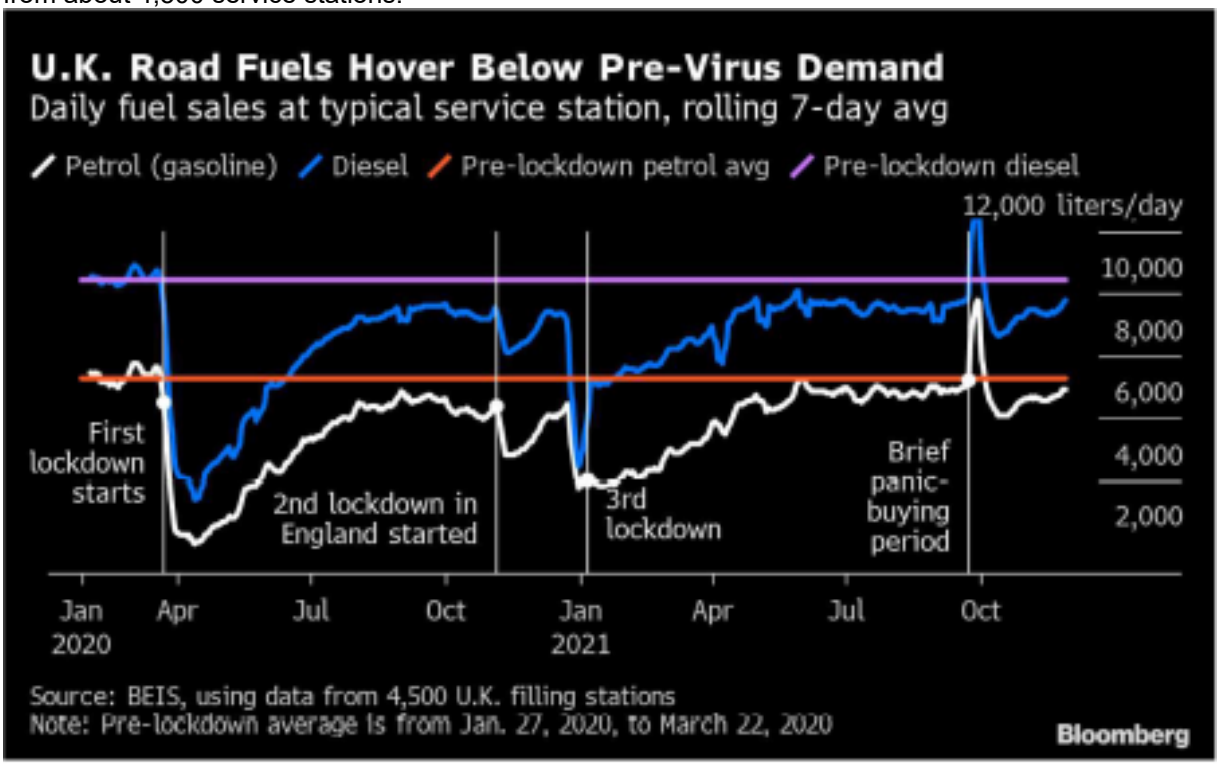
All of the world's biggest airline markets remain smaller than the same week of 2019 in terms of scheduled seat capacity. Mexico has the smallest deficit of 1.4%, followed by India, the U.S. and China at 11.4%, 12.4% and 13.9%, respectively.

Toll Roads

Motorway traffic data is hinting at weakness in Europe again. Toll road data from Atlantia Group showed the number of kilometers traveled on Italian, Spanish and French roads were all below 2019 levels in the week ended Nov. 28. That alignment has only happened twice since late July; the other time was the week through Oct. 24.

Monthly consumption data for Spain gives a useful snapshot on how different types of fuels are recovering. Pipeline company Exolum said November gasoline demand in Spain, as measured by deliveries from its network, was 3.8% more than the same month in 2019, while the country's more popular driving fuel, diesel, was down 1.8% and jet fuel was 29% lower.

In the U.K., demand for both gasoline and diesel continues to bob along a few percentage points below the average level from the eight weeks just before the country started its first coronavirus lockdown in March 2020. The daily data is gathered by the Department for Business, Energy and Industrial Strategy from about 4,500 service stations.



The Bloomberg weekly oil-demand monitor uses a range of high-frequency data to help identify trends that may become clearer later in more comprehensive monthly figures.
Following are the latest indicators. The first two tables show fuel demand and mobility, the next shows air travel globally and the fourth is refinery activity:

Demand Measure	Location	% y/y	% vs 2019	% m/m	Freq	Latest Date	Latest Value	Source
Gasoline	U.S.	+10	-2.6	-7.4	w	Nov. 26	8.8m b/d	EIA
Distillates	U.S.	+11	+18	+14	w	Nov. 26	4.21m b/d	EIA
Jet fuel	U.S.	+52	-12	+2.7	w	Nov. 26	1.73m b/d	EIA
Total oil products	U.S.	+9.5	-4.2	+1.1	w	Nov. 26	20.2m b/d	EIA
All vehicles miles traveled	U.S.		+2.4		w	Nov. 28	16.2b miles	DoT
Passenger car VMT	U.S.		+1.9		w	Nov. 28	n/a	DoT
Truck VMT	U.S.		+6		w	Nov. 28	n/a	DoT
All motor vehicle use index	U.K.	+15	-8	-4.2	d	Nov. 29	92	DfT
Car use	U.K.	+19	-13	-4.4	d	Nov. 29	87	DfT
Heavy goods vehicle use	U.K.	-3.7	+5	-3.7	d	Nov. 29	105	DfT
Gasoline (petrol) avg sales per filling station	U.K.	+32	-5	+6.2	w	Nov. 22-28	6,922 liters/d	BEIS

Demand Measure	Location	% y/y	% vs 2019	% m/m	Freq	Latest Date	Latest Value	Source
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Jet fuel	U.S.	+52	-12	+2.7	w	Nov. 26	1.73m b/d	EIA
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All vehicles miles traveled	U.S.		+2.4		w	Nov. 28	16.2b miles	DoT
Passenger car VMT	U.S.		+1.9		w	Nov. 28	n/a	DoT
Truck VMT	U.S.		+6		w	Nov. 28	n/a	DoT
All motor vehicle use index	U.K.	+15	-8	-4.2	d	Nov. 29	92	DfT
Car use	U.K.	+19	-13	-4.4	d	Nov. 29	87	DfT
Heavy goods vehicle use	U.K.	-3.7	+5	-3.7	d	Nov. 29	105	DfT
Gasoline (petrol) avg sales per filling station	U.K.	+32	-5	+6.2	w	Nov. 22-28	6,922 liters/d	BEIS
Diesel avg sales per station	U.K.	+14	-6.4	+5.8	w	Nov. 22-28	9,778 liters/d	BEIS
Total road fuels sales per station	U.K.	+21	-5.9	+6	w	Nov. 22-28	16,700 liters/d	BEIS
Gasoline	India	-0.9	+4	+1.6	2/m	Nov. 1-30	2.38m tons	Bberg
Diesel	India	-8.1	-14	+3.6	2/m	Nov. 1-30	5.74m tons	Bberg
LPG	India	+0.5	+5.1	-2.3	2/m	Nov. 1-30	2.37m tons	Bberg
Jet fuel	India	+29	-32	+8.4	2/m	Nov. 1-30	459k tons	Bberg
Total Products	India	+0.8	+3.1	+12	m	October	17.9m tons	PPAC
Toll roads volume	Italy	+59	-3.9		w	Nov. 22-28	n/a	Atlantia
Toll roads volume	Spain	+48	-5		w	Nov. 22-28	n/a	Atlantia
Toll roads volume	France	+53	-0.6		w	Nov. 22-28	n/a	Atlantia
Toll roads volume	Brazil	-0.8	+3.5		w	Nov. 22-28	n/a	Atlantia
Toll roads volume	Chile	+17	+40		w	Nov. 22-28	n/a	Atlantia
Toll roads volume	Mexico	+12	+9.2		w	Nov. 22-28	n/a	Atlantia

Note: Click here for a PDF with more information on sources, methods. The frequency column shows d for data updated daily, w for weekly, 2/m for twice a month and m for monthly.
* In Dfr U.K. data, the column showing versus 2019 is actually showing the change versus the first week of February 2020, to represent the pre-Covid era.
** In BEIS U.K. data, which is only released once per month, the column showing versus 2019 is actually showing the change versus the average of Jan. 27-March 22, 2020, to represent the pre-Covid era.

City congestion:

Measure	Location	% chg vs 2019	% chg m/m	Dec.6	Nov. 29	Nov. 22	Nov. 15	Nov. 8	Nov. 1	Oct. 25	Oct. 18	Oct. 11
		(Dec. 6)		Congestion minutes added to 1 hr trip at 8am local time								
Congestion	Tokyo	-11	-2	33	35	30	38	34	33	34	35	12
Congestion	Taipei	+15	n/a	41								
Congestion	Jakarta	-29	n/a	28								
Congestion	Mumbai	-84	+100	6	6	8	6	3	5	7	6	1
Congestion	New York	+4	-4	32	28	34	33	34	31	38	33	8
Congestion	Los Angeles	-17	-2	29	29	18	32	30	25	25	29	23
Congestion	London	+10	-4	41	43	43	46	43	39	19	34	44
Congestion	Rome	-5	+4	46	53	49	56	44	0	41	40	64
Congestion	Madrid	-100	-100	0	24	41	28	10	0	32	37	3
Congestion	Paris	+16	+4	52	46	53	51	50	3	42	47	49
Congestion	Berlin	-5	-7	32	31	32	31	34	34	35	19	20
Congestion	Mexico City	-32	unch	34	31	32	1	34	14	29	28	28
Congestion	Sao Paulo	-35	-11	28	29	27	3	32	13	27	35	10

Source: TomTom. Click here for a PDF with more information on sources, methods.
NOTE: m/m comparisons are Dec. 6 vs Nov. 8, and in some instances show very large gains due to very low congestion on Nov. 1 when several countries had public holidays. TomTom has been unable to provide Chinese data since late April. Taipei and Jakarta were added to the table this week.

Air Travel:

Measure	Location	% chg y/y	% chg vs 2019	% chg m/m	Freq.	Latest as of Date	Latest Value	Source
Airline passenger throughput	U.S.	+147	+9.1	-3.9	d	Dec. 5	2.07m	TSA
Commercial flights	Worldwide	+33	-18	+1.2	d	Dec. 6	93,121	FlightRadar24
Air traffic (flights)	Europe		-25	-8.3	d	Dec. 6	20,188	Eurocontrol
Seat capacity	Worldwide	+42	-27		w	Dec. 6	78.4m	OAG
Seat cap.	U.S.	+67	-12		w	Dec. 6	18.7m	OAG
Seat cap.	China	-11	-14		w	Dec. 6	13.6m	OAG
Seat cap.	India	+45	-11		w	Dec. 6	3.82m	OAG
Seat cap.	Japan	+11	-38		w	Dec. 6	2.51m	OAG
Seat cap.	Brazil	+42	-16		w	Dec. 6	2.30m	OAG
Seat cap.	Spain	+187	-17		w	Dec. 6	2.01m	OAG
Seat cap.	Mexico	+44	-1.4		w	Dec. 6	1.90m	OAG
Seat cap.	U.K.	+207	-39		w	Dec. 6	1.85m	OAG
Seat cap.	Germany	+233	-44		w	Dec. 6	1.52m	OAG
Seat cap.	France	+233	-29		w	Dec. 6	1.39m	OAG
Seat cap.	Australia	+6.9	-54		w	Dec. 6	964k	OAG
Seat cap.	S. Africa	+1.3	-42		w	Dec. 6	369k	OAG
Seat cap.	Singapore	+114	-74		w	Dec. 6	218k	OAG

NOTE: Comparisons versus 2019 are a better measure of a return to normal

Refineries:

Measure	Location/area	y/y chg	vs 2019 chg	m/m chg	Latest as of Date	Latest Value	Source
		Changes are in ppt unless noted					
Crude intake	U.S.	+12%	-6.9%	+4%	Nov. 26	15.6m b/d	EIA
Utilization	U.S.	+11	-3.1	+2.5	Nov. 26	88.8 %	EIA
Utilization	U.S. Gulf	+9.6	-4.9	+2.3	Nov. 26	89.4 %	EIA
Utilization	U.S. East	+25	+23	+14	Nov. 26	92.6 %	EIA
Utilization	U.S. Midwest	+7	-4.5	-0.1	Nov. 26	89.9 %	EIA
Apparent Oil Demand	China	+1.9%		+1.2%	October 2021	13.39m b/d	NBS
Indep. refs run rate	Shandong, China	-7.5	-1.6	-4.8	Dec. 3	67.7 %	SCI99
State refs run rate	East China	+1.2	+2.5	+2.5	Nov. 30	80.2 %	SCI99
State refs run rate	South China	-2	+5.4	+1.9	Nov. 30	82.6 %	SCI99

NOTE: All of the refinery data is weekly, except for S CI99 state refineries, which is twice per month, and the NBS apparent demand, which is usually monthly. Changes are shown in percentage points except for the rows on crude intake and apparent oil demand, which are shown as percent changes.

https://www.canada.ca/en/environment-climate-change/news/2021/12/canada-to-launch-consultations-on-new-climate-commitments-this-month-establish-emissions-reduction-plan-by-the-end-of-march-2022.html

Canada to launch consultations on new climate commitments this month, establish Emissions Reduction Plan by the end of March 2022

From: Environment and Climate Change Canada

News release

December 3, 2021 – Calgary, Alberta

Climate change is the biggest threat facing our generation, and ambitious action to fight it presents significant economic opportunities for Canadians in all parts of the country. Over the past five years, an intensive national effort was undertaken to develop and implement the measures needed to put Canada on a path to significantly reduce emissions. The latest science shows—and Canadians are demanding—that we must do even more to fight climate change, and on a faster timeline. That is why Canada increased its 2030 climate target to a 40 to 45 percent emissions reduction below 2005 levels earlier this year, and has worked with Canadians to develop and implement ambitious measures that put us on track to exceed our previous 2030 target of 30 percent.

Recognizing the urgency of the crisis and the need to involve all economic sectors and all regions of Canada, the Minister of Environment and Climate Change, the Honourable Steven Guilbeault, announced today that the Government is launching a series of early consultations on key, new emissions reductions measures before the end of the year.

The Minister also confirmed that he will table the 2030 Emissions Reduction Plan (ERP)—as required by the new *Canadian Net-Zero Emissions Accountability Act*—by the end of March 2022. The ERP will be informed by early consultations on these new commitments.

The *Canadian Net-Zero Emissions Accountability Act* requires the Minister of Environment and Climate Change, the Honourable Steven Guilbeault, to establish the 2030 Emissions Reduction Plan (ERP) within six months of royal assent, with the authority to extend this deadline by ninety days. Today, the Minister confirmed that the 2030 ERP would be established by the end of March 2022. This time will enable the Government to engage with provinces, territories, Indigenous Peoples, the Net-Zero Advisory Body, and interested Canadians on what is needed to reach Canada's climate objectives. Written submissions will be welcomed.

In addition, early consultations, supported by a series of discussion papers, will be launched before the end of 2021 on the following new commitments:

- Mandating the sale of zero-emission vehicles so that 100 percent of new light-duty vehicles (cars, pickups, etc.) sold in Canada are zero emission by 2035 and at least 50 percent by 2030;
- Developing emissions standards for heavy-duty vehicles that are aligned with the most ambitious standards in North America, and requiring that 100 percent of selected categories of medium- and heavy-duty vehicles be zero emission by 2040;
- Capping emissions from the oil and gas sector at current levels and requiring that they decline at the pace and scale needed to get to net zero by 2050;
- Developing a plan to reduce methane emissions across the broader Canadian economy in support of the Global Methane Pledge and the goals in Canada's climate plan, reducing oil and gas methane emissions by at least 75 percent below 2012 levels by 2030 through an approach that includes regulations, as well as regulating methane landfill emissions and reducing agricultural methane emissions;
- Transitioning to a net-zero emitting electricity grid by 2035.

The Government will work closely with provinces, territories, cities, Indigenous peoples, industry, and civil society on the design of these new commitments in order to ensure that relevant considerations are identified and joint priorities are addressed.

Canada's 2030 Emissions Reduction Plan is the first of many requirements under the *Canadian Net-Zero Emissions Accountability Act*. The Government of Canada is considering more formal, ongoing, and consistent engagement processes for the establishment of future emissions reduction targets, plans, and reports.

Climate change impacts Canadians in all parts of the country and the Government of Canada is committed to taking a whole-of-government, whole-of-society approach to address it. Full participation from Canadians in all parts of the country and all sectors of the economy is essential for building an effective path forward to achieve Canada's climate goals for 2030 and 2050 and a prosperous economy.

Quotes

"Through the efforts of millions of Canadians from coast to coast to coast, Canada has successfully flattened its emissions curve. But as we are seeing from the immediate, devastating impacts of a changing climate, we need to do more, on a faster timeline. The health of our citizens, the health of our economy, the safety of our communities, and the conservation of our natural world depends on us working together to reduce Canada's GHG emissions by 40 to 45 percent by 2030. The debate over whether we need to act is long over. Now we must determine how we can get where we need to go, together."
– The Honourable Steven Guilbeault, Minister of Environment and Climate Change

"Collaboration and consultation with our natural resource sectors is essential in establishing the ways in which we will achieve net-zero emissions by 2050, while promoting the development of good jobs and a prosperous clean economy. Our Government is committed to doing just that, in order to ensure we chart a pathway that works for every region across the country."
– The Honourable Jonathan Wilkinson, Minister of Natural Resources

"Our Government believes that only bold climate policies lead to bold results. With the sector representing a quarter of total greenhouse gas emissions, we recognize the urgency to eliminate pollution from transportation. That is why we launched the Incentives for Zero-Emission Vehicles program and will be implementing additional measures to accelerate the transition to 100 percent zero-emission vehicles sales. We will continue building a cleaner and more resilient economy, while also creating good jobs and opportunities for all Canadians."
– The Honourable Omar Alghabra, Minister of Transport

"We will continue to create economic opportunities in ways that will help us meet our ambitious climate targets. By turning climate action into economic opportunities for Canadian companies and workers, we will continue to grow Canada's competitive advantage in the low-carbon economy. This will mean good jobs for Canadian workers and real progress towards reducing emissions."
– The Honourable François-Philippe Champagne, Minister of Innovation, Science and Industry

Quick facts

- The Government of Canada is committed to achieving net-zero emissions no later than 2050. It developed and passed the Canadian Net-Zero Emissions Accountability Act earlier this year. This Act enshrines Canada's climate goals for 2030 and 2050 into law and requires the Government to establish an emissions reduction plan to achieve Canada's 2030 target. The 2030 plan will be the first emissions reduction plan established under the Act and is a key milestone on the pathway to net zero by 2050.
- Many of our cities and several provinces have also made their own net-zero commitments, including Quebec, Newfoundland and Labrador, Vancouver, Hamilton, Toronto, Montreal, Charlottetown, and Halifax.
- Many of Canada's oil and gas producers have made their own net-zero commitments. Canadian Natural Resources, Cenovus Energy, Imperial, MEG Energy, and Suncor Energy—collectively accounting for around 90 percent of Canada's oil sands production—have each committed to achieving net-zero emissions from their oil sands operations by 2050.

- Emissions from the transportation sector and oil and gas sector account for 25 and 26 percent of Canada's overall emissions respectively.
- In November 2021, the independent Net-Zero Advisory Body was asked by the Minister of Environment and Climate Change and the Minister of Natural Resources to provide advice on guiding principles to inform the development of quantitative five-year targets for caps on emissions from the oil and gas sector to support the achievement of the Government's commitment to capping and cutting emissions from the sector at the pace and scale needed to get to net zero by 2050.
- In October 2021, Minister Wilkinson announced Canada's support for the Global Methane Pledge, which aims to reduce methane emissions around the world by 30 percent below 2020 levels by 2030 and committed to reducing methane emissions across the broader Canadian economy for 2030, and to developing regulations to reduce oil and gas methane emissions by 75 percent below 2012 levels by 2030.
- At COP26 in Glasgow in November 2021, Prime Minister Trudeau announced on the world stage Canada's commitment to cap and cut emissions from the oil and gas sector and to achieve net-zero emitting electricity in Canada by 2035.
- In June 2021, the Government joined major economies by announcing its commitment to require that 100 percent of cars sold in Canada be zero emission by 2035.
- In December 2020's strengthened climate plan, the Government committed to aligning with the most ambitious fuel efficiency standards for light-duty vehicles in North America and to develop ambitious uel-efficiency standards for heavy-duty vehicles.

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Biden Official Heckled by Oil Group After Urging Shale Boost
2021-12-06 15:52:45.544 GMT

By Kevin Crowley
(Bloomberg) -- The Biden administration's No. 2 energy official was heckled at an international oil conference after admonishing U.S. drillers to step up production in the industry's de facto hometown.
Deputy Energy Secretary David Turk told shale explorers on Monday that the government already has done its part to lower fuel prices by offering up part of its strategic crude reserve.
"Now there's needed leadership by our domestic producers," Turk said in opening remarks at the World Petroleum Congress in Houston. "The reality is the Biden administration is not standing in the way of increasing domestic oil production to meet today's energy needs."
His remarks provoked a heckler in the audience: "Why don't you help us then?"
Turk, whose comments preceded presentations by the chief executives of Exxon Mobil Corp. and Chevron Corp. -- the nation's largest oil explorers -- came on the same morning that refiners' bids for crude from the strategic reserve were due.
"The top 54 publicly traded companies earned over $30 billion in the second quarter of this year, slightly more than just before the pandemic, and production has not yet recovered," Turk said.

--With assistance from Joe Carroll and Ari Natter.

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Macron warns of threat to global economy from energy crisis

French president urges world leaders to act on climate change with more financial pledges ahead of COP26 summit

Leila Abboud in Paris and Leslie Hook in London YESTERDAY

President Emmanuel Macron has warned that an energy crisis threatens the world's post-pandemic recovery, calling for leaders at a G20 summit in Rome this weekend to work together to stabilise supplies.

In an interview, the French president also urged bigger financial commitments towards the fight against global warming on the eve of the COP26 climate summit in Scotland, and for particular attention to be paid to a deal to phase out coal power.

The G20 needed to co-ordinate between energy producers and consuming countries to prevent a supply breakdown this winter, which risked "extreme tensions both economically and socially", Macron said.

"In the coming weeks and months, we need to get better visibility and stability on prices so tension on the energy prices doesn't generate uncertainties, and undermine the global economic recovery, " he told the Financial Times in the Elysée Palace. "What we expect is to have co-ordination to avoid soaring prices."

Global energy costs have surged this year, disrupting industry and hitting consumers with higher prices. Eurozone inflation surged in October to a 13-year-high of 4.1 per cent, according to a flash estimate published by the EU's statistics arm on Friday.

"I don't think we're going to be able to lower prices given tensions on the demand side," Macron said. "But what we need to avoid is to have a break in supply [and further] increases in prices, particularly as we're moving into the winter period for the northern hemisphere."

Emmanuel Macron: 'I don't think we're going to be able to lower [gas] prices given tensions on the demand side' © Magali Delporte/FT

Rapid economic recovery from the pandemic has pushed up energy prices "almost too rapidly" which risked "weighing on economic growth and putting a burden on households", Macron said.

France and a number of other EU governments have sought to protect consumers and businesses with billions in aid and price freezes.

Concerns have mounted that Russia's state-backed gas producer Gazprom has kept storage levels unusually low in western Europe, exacerbating fears over supplies and driving up prices.

Asked whether he blamed high European energy prices on Russia, Macron said: "I have no evidence that there's been manipulation of prices and I'm not accusing anybody. These are trading relations. They shouldn't be used for geopolitical reasons."

Asked about Gazprom's power over Europe, Macron said: "It's not a matter of whether we're too dependent on a company or not, it's how do we create alternatives. And the only alternatives are to have European renewables and of course, European nuclear."

France is the EU's biggest user of nuclear power, contrasting with a move away from atomic power by Germany and some other countries.

Macron called for Europe to develop a more diverse gas supply but also to speed up a transition away from fossil fuels, which will be necessary to slow rising temperatures and tame the climate disruptions caused by global warming.

“What is happening now is ironic, because we are building a system where in the medium and long term fossil energy will cost more and more, that’s what we want [to fight climate change],” he said. “The problem is that industries and households will need to be accompanied in this transition . . . or it won’t be sustainable.”

The French president, who is facing national elections in April, has been a vocal advocate of multilateralism. He has pushed for more co-operation globally and at EU level to reach deals on issues including international taxation and global warming.

“The first subject for the G20 is to accelerate the exit from coal power” Emmanuel Macron

Against a backdrop of global tensions, a supply chain crisis and the Covid-19 pandemic, Macron said the G20 had a responsibility to work together, especially to help low-income countries. He urged leaders at the Rome summit to agree a plan for faster vaccine delivery to developing countries.

“France has always stressed the importance of maintaining multilateralism, but we have to get concrete results from it,” he said.

The leaders of China, Russia and Japan will not attend the summit in Rome in person this weekend because of Covid-19 concerns and an election in Japan.

Macron said the G20 meeting, which is being hosted by Italian leader Mario Draghi on the eve of COP26, would also give countries a chance to hammer out more ambitious plans to fight climate change.

“When we’ll be meeting in Rome, the major challenge is to ensure that members of G20 can usefully contribute in Glasgow, to making this COP26 a success,” he said. “Nothing can be taken for granted before a COP,” he added.

“The first subject for the G20 is to accelerate the exit from coal power,” he said. G20 leaders expect a heated debate this weekend over including a pledge to end international coal financing.

“We need the G20 to go right through to the eradication of all international financing of coal-fired power plants,” Macron said.

Macron also called for rich countries, particularly the US, to commit more financially to help developing countries meet their climate goals. And he called on China to bring forward the date at which it will peak emissions, from 2030, to 2025.

“So as not to lose more time, we have to do as much as is absolutely possible in terms of financing, and encourage the US administration so that they can convince Congress to front-load its financing.”

Another issue will be to hold countries to their emissions targets for 2030 and 2050. “Our objective is to get maximum results from all countries,” he said. “This pathway is possible, even if it’s a challenge, especially for emerging countries which at the same time are trying to recover from the Covid crisis.”

Macron also urged the G20 leaders to do more to help vaccinate the world against Covid-19. The group should end vaccine export bans, increase its donations of vaccine doses, and support vaccine production in Africa, he said.

“Every French person has given one vaccine to somebody else in the world,” he said, referring to the roughly 60m doses that were on the way to Covax, the World Health Organisation’s procurement scheme for low-income countries. “If everybody in the G20 could do that we would get to the 20 per cent of the population vaccinated. This is vital,” he said.

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https://www.mofa.go.jp/press/release/press1e_000227.html

Video conference between Ms. Ono, Director General of Economic Affairs Bureau, Ministry of Foreign Affairs of Japan, and Dr. Birol, Executive Director of the International Energy Agency (IEA)

e-mail

November 9, 2021

Japanese

On November 9, Ms. ONO Hikariko, Director General of Economic Affairs Bureau, held a videoconference with Dr. Fatih Birol, Executive Director of the IEA.

1. At the outset, Ms. Ono expressed concern over the rapid surge in crude oil prices, which could hamper the global economic recovery from COVID-19. She stated that Japan is engaged in dialogues with oil-producing countries and would like to work closely with the IEA, which plays a central role in stabilizing the energy market.
2. In his response, Dr. Birol mentioned that he is closely watching the energy market including oil, and expressed the IEA's willingness to cooperate with member countries and oil-producing countries to work for stabilization of market. He also shared with Ms. Ono the IEA's analysis of the future energy market following the results of the OPEC Plus Ministerial Meeting held on November 4, 2021. He pointed out that the gap between supply and demand will continue to be tight in the short term, however, the supply and demand balance will improve around the turn of the year and the market will gradually regain stability.
   Furthermore, he underscored the need for additional investment to meet future demand, explaining that the demand for oil and natural gas will not drastically decrease even through our path towards transition to renewable energy. The two sides agreed to further strengthen cooperation to enhance energy security, including that of oil. Dr. Birol expressed his wish to visit Japan to exchange views with Japanese counterparts.
3. The two sides also exchanged views on acceleration of decarbonization efforts following COP26, and shared the importance on measures with pragmatic time frame based on individual circumstances that each countries face including its renewable energy potentials, while it is important to expand investment on renewable energy to achieve carbon neutral. In addition, the two sides frankly exchanged their views on Japan's funded initiative with the IEA for clean energy transition in resource producing countries, as well as on the Ministerial meeting scheduled to be held in February 2022.

https://www.aramco.com/en/news-media/speeches/2021/ceo-remarks-at-wpc-houston-2021

CEO remarks at World Petroleum Council Congress 2021

HOUSTON, December 06, 2021

Amin H. Nasser, Saudi Aramco President & CEO

Your Excellencies, Ladies and Gentlemen, good morning.

It feels very special to be back in Houston, in person, at last. And see partners and friends re-connecting, re-energizing, and re-examining the future of energy.

Before we look ahead, I would like to congratulate the WPC for recognizing the contributions of Dr. Dan Yergin with their highest honor – the Dewhurst Award.

And, if Dan will allow me, I would like to use the title of one of his books as the theme of my remarks today. Because, Ladies and Gentlemen, I believe our industry has a new quest before us.

Right now, the world is facing an ever more chaotic energy transition. Several highly unrealistic scenarios and assumptions about the future of energy are clouding the picture.

For example, it is increasingly assumed that the entire world can run on alternatives, and the vast global energy system can be totally transformed, virtually overnight.

Or that investments requiring roughly 115 trillion dollars will be made in less than 30 years. Most worrying of all is the assumption that the right transition strategy is in place.

It is not, it is deeply flawed.

Energy security, economic development, and affordability imperatives are clearly not receiving enough attention.

Until they are, and unless the glaring gaps in the transition strategy are fixed, the chaos will only intensify. So the urgent new quest for our industry is to chart a course that will continue to realistically meet the world's rising energy needs – reliably, affordably, and sustainably.

This is not about changing our climate goals.

I know that everyone in this room, at Aramco, and across our industry, is fully committed to a net-zero economy.

And everyone on the planet has a vested interest in the ultimate goal of limiting temperature rise to well below two degrees.

It is about how we get there. Because, as President John Adams famously said, "Facts are stubborn things."

There are several stubborn facts that need to be part of a credible transition strategy, and today I will share the top three.

The first is that alternatives are nowhere near ready to carry a big enough load, so new and existing energy sources will need to operate in parallel for a long time.

More than 99% of the world's vehicle fleet is still conventional.

Despite a lot of good work underway, there are still no truly viable alternatives to conventional fuels in aviation, shipping, and even trucking. When it comes to petrochemical feedstock and lubricants, even the most aggressive transition plans still offer few alternatives.

And the combined share of solar and wind in the world's primary energy mix is still less than 2%.

Do not mistake me – alternatives are making progress, and we welcome that. But their deployment at scale, across the world, will take a lot longer than is being assumed.

And it does not help when the pressure is mounting to stop all new investments in oil and gas. Across the industry, upstream capex fell by more than 50 percent between 2014 and last year, from 700 billion dollars to 300 billion.

Consequently, supplies have started to lag. This is also hurting spare oil production capacity, which is declining sharply. Yet this is happening against the backdrop of healthy demand growth.

Second, the rest of the world will not transition at the same speed as the developed world.

Because the developing world is where most of humanity lives, and most of the roughly 2 billion new energy consumers on the planet by 2050 will be living there too.

It is where more than 2.6 billion people still do not have access to clean cooking, and three quarters of a billion lack electricity. And it is where people aspire to ride on two wheels, not four.

So affordability is a real issue, and a one-size-fits-all strategy will not cut it in a multi-speed, multi-source transition.

Third, because oil and gas will be needed for decades to come, accelerating the reduction in their emissions is a strategic and urgent necessity for climate goals to be met.

We are not short of opportunities, such as:

producing lower carbon products like blue hydrogen and blue ammonia.

developing more efficient and lower emission internal combustion engines.

leveraging non-combustible uses of oil such as non-metallic materials for construction, housing, automotive, solar, and wind.

making the Circular Carbon Economy that G20 world leaders endorsed last year a reality.

And there is currently no credible course towards the climate goals that does not include Carbon Capture, Utilization, and Storage.

These are not empty words.

Some of the greatest climate protection can be added in these areas, in short order, without hurting those who can afford it least.

Our industry has not been waiting for the starting gun.

But we must spare no effort to accelerate delivery. That would be a powerful display of walking the talk.

We can be change makers at the transition strategy and planning table, not noise makers. And it would demonstrate our fundamental role in people's everyday lives for decades to come.
There is one more thing that can no longer remain unsaid.
A majority of key stakeholders agree with these realities as much as they believe in addressing climate change. We know this, because they say so in private.
They should say it publicly too. I understand their dilemma. Publicly admitting that oil and gas will play an essential and significant role, during the transition and beyond, will be hard for some.
But admitting this reality will be far easier than dealing with energy insecurity, rampant inflation, and social unrest if prices become intolerably high. And net-zero commitments by countries may start to unravel.
I do not have all the answers, no-one does. But I do know that stopping all new investments in oil and gas is not one of them.
I know that the world will only transition successfully if a stable, practical, and inclusive strategy is in place.
I know that we urgently need a process of genuinely global engagement that includes these stubborn facts in discussions, with all stakeholders playing their part.
And while there may be pushback on my remarks, I know that if we do not speak out as an industry, no-one else will on our behalf.
Ladies and Gentlemen, it is time for these stubborn facts to be heard loud and clear around the world before it is too late.
So let us embrace this urgent new quest as an industry, and accelerate our collective efforts in every domain.
For the sake of our planet, our economies, our investors, our shareholders, and billions of our consumers around the world.
Thank you.

Excerpt Hedges & Company “New Car Buyer Demographics 2022 (Updated)” [LINK]

New car & truck buyer demographics by income

Two household income groups account for most new vehicle purchases: Under $50,000 per year (mostly single-person households) and $100,000 per year and up (mostly families).

New SUV Buyers by Household Income

Under $50,000	31%
$50,000 to $74,999	19%
$75,000 to $99,000	10%
$100,000 and up	40%

New Sedan Buyers by Household Income

Under $50,000	39%
$50,000 to $74,999	18%
$75,000 to $99,000	9%
$100,000 and up	34%

New Truck Buyers by Household Income

Under $50,000	37%
$50,000 to $74,999	20%
$75,000 to $99,000	10%
$100,000 and up	33%

New Plug-In Hybrid Buyers by Household Income

Under $50,000	21%
$50,000 to $74,999	12%
$75,000 to $99,000	10%
$100,000 and up	57%

New Battery Electric (BEV) Buyers by Household Income

Under $50,000	20%
$50,000 to $74,999	16%
$75,000 to $99,000	4%
$100,000 and up	60%

The average buyer of a new car, according to the National Automobile Dealers Association (NADA) in 2015, earned about $80,000 per year.

A study by the University of California-Davis showed that in California, people with income over $150,000 per year purchase a third of electric vehicles (EVs) and plug-in hybrid electric vehicles (PHEVs). People with household income of $100,000 to $149,000 account for about 20% and people with household income of $50,000 to $99,999 per year account for about 27%

https://www.euractiv.com/section/energy/interview/greek-official-investing-in-natural-gas-is-both-rational-and-unavoidable/

Greek official: 'Investing in natural gas is both rational and unavoidable'

By Kira Taylor | EURACTIV.com

Dec 7, 2021 (updated: Dec 8, 2021)

"Investing in natural gas as a fuel that will cover baseload demand and will increase flexibility is both rational and unavoidable, at least for the medium term," said Alexandra Sdoukou, the Secretary General for Energy and Mineral Resources in Greece

Greece is transitioning away from coal, but investments in natural gas are "rational and unavoidable" because they are needed to support renewable energy, Alexandra Sdoukou told EURACTIV.

Alexandra Sdoukou is Secretary General for Energy at the Greek Ministry of Environment. She spoke to EURACTIV's Kira Taylor about the energy transition in Greece.

Greece is planning to phase out coal by 2028 at the latest – how much of that will be replaced by wind energy? Will it be offshore/onshore/floating? What is the timeline for that?

Indeed, Greece has announced and is already implementing an ambitious plan to move away from lignite coal. This plan consists of the decommissioning of all currently operating lignite-fired generation assets until 2023 and the phase-out of all lignite production by 2028.

To offset this extensive decommissioning of thermal capacity, we rely heavily upon new renewable energy source (RES) capacity additions in our generation mix. According to our National Energy and Climate Plan, Greece will double its wind and solar PV capacity until 2030, with RES contributing up to 64% to the country's electricity production.

Moreover, the European Commission approved a few days ago our new RES Auctions support scheme for 2021-2025. The scheme will provide incentives of approximately €2,27 billion for the addition of 4.2GW of new RES capacity.

The new capacity will be allocated through joint technology auctions, so there's no concrete administrative allocation between technologies. Be that as it may, it is foreseen that no technology will take up more than 70% of the total capacity auctioned, so at least 30% is guaranteed for each technology in order to avoid "technology monoculture" in our RES mix.

Moreover, an additional 2GW of offshore wind has been recently announced by the Prime Minister as a target for 2030; a discreet support scheme for this offshore wind capacity will be notified to the Commission in the first semester of 2022. Finally, significant interest has been shown in concluding merchant Power Purchase Agreements for new RES capacity, outside the aforementioned support schemes.

In light of the above, it is evident that Greece will continue to rely on wind power, both on- and offshore, as a key element, a cornerstone of its green transition strategy in the coming decade.

What challenges need to be overcome to allow the needed growth of wind power? Are there any issues with people's perception of wind turbines?

In Greece, as well as in most parts of the world where wind power has achieved a mainstream status in electricity production, awareness of this technology increases in the general public. And, as many more people become aware of the many positives of clean and cheap energy from the wind, we also see that "not-in-my-back-yard" concerns also increase.

As policymakers, we need to take these concerns into consideration and address them honestly, with fact-based analyses and scientific evidence. We also need to put in place a series of measures that instil trust and incentivize the local populations that are asked to "host" electricity production units.

In Greece, we have a very thorough licensing process that examines numerous environmental criteria and ensures respect for both natural and anthropogenic environment. Moreover, we are in the process of fully revising our spatial planning framework, to adapt to the current realities of new RES technologies.

Moreover, a system of financial benefits for municipalities and local populations is in place to ensure that they are compensated for the establishment of RES units in their territories; this system is, again, under reexamination and optimization to make sure that the financial benefits RES producers provide for local communities and residents are more visible and transparent. This combination of safeguards and incentives can help address most concerns, at least those that are offered in good faith.

At the end of the day, though, suitable sites for the development of wind power assets are limited on land. That is why we recently concluded (and will soon put up for public consultation) a comprehensive framework for the development of offshore wind power, with a controlled and planned deployment of offshore wind on carefully selected sea plots. Moreover, we are considering ways to increase the output of already selected onshore sites through the repowering of existing, older installations with new, more efficient turbines.

Those measures will decrease the pressure for the identification of new suitable sites without jeopardising Greece's ambitious plans for doubling its installed RES capacity by 2030.

What are the biggest challenges for Greece in the shift from fossil fuel to renewable energy?

Our plan to phase out lignite coal at such a rapid pace comes with a number of unique challenges, both technical and socioeconomic.

From the technical perspective, a complete rethinking of our energy sector is needed. Apart from plans to replace the obsolete lignite-fired units with new RES capacity, a need for flexibility arises.

This need is being addressed through a number of targeted measures to support the deployment of new natural gas assets, to promote storage, both in the form of batteries and of pumped hydro, and to increase demand-side response.

Apart from those measures, though, a broad programme to increase energy efficiency is underway, which includes focused sub-programs for residences, public buildings and commercial/industrial usage.

Energy efficiency is crucial in making a smooth transition to a sustainable energy mix, and we include it in our strategic priorities, as is evident both in our N.E.C.P. (which adopts targets for energy efficiency much higher than the average E.U. target) and in our Recovery and Resilience Plan (which allocates approximately 50% of our "Green Pillar" grants to energy efficiency Actions).

The challenges associated with de-lignitisation go beyond the technical. Regions in Western Macedonia as well as in Central Peloponnese have hosted lignite mining and electricity production activities for decades and rely heavily upon revenues associated with these operations.

The phase-out of lignite coal will drastically change the way of life in those regions; it is our job as policymakers to make sure that this change is for the better. That is why we have introduced a Just Transition Plan for the affected regions that will ensure jobs, rehabilitation of affected territories and new developmental opportunities for those regions and their residents.

Our goal is to turn this challenge into an opportunity and to make sure that, at the end of this process, the main beneficiaries of the energy transition are the populations of the areas in transition, with tangible positive effects in their income, their health, their prosperity and way of life.

How could Greece enable the import of renewable energy from places like Africa?

Greece stands at the crossroads of three continents and it is our vision to facilitate the transport of energy between these continents.

A dimension of this vision is a planned Subsea Cable Interconnection between Greece and Egypt. Recently, political endorsement to this ambitious project has been provided by the signing of a Memorandum of Agreement between the Minister of Environment and Energy of Greece, Kostas Skrekas, and the Egyptian Electricity Minister, Mohamed Shaker.

Of course, the technical challenges associated with such a demanding project are many. Despite that, we are confident in Greece's experience in subsea interconnections, which includes the already active interconnection between the Peloponnese and Crete (the longest AC interconnection in the world at 174km and 1000m depth) and the even longer- interconnection between Attika and Crete, which is currently being built.

This experience, along with the close cooperation and share of knowledge with our Egyptian counterparts, I think will be sufficient to ensure the project's technical viability.

Greece has been very active in the discussion about energy prices, what is the issue in Greece and how can it be solved?

The recent price spike experienced across Europe is the result of a "perfect storm". As such, it is far from a Greek issue; indeed, both the causes and the effects of this "perfect storm" are made evident across European energy markets, both for natural gas and for electricity.

In the short term, our priority regarding the energy price spike is to alleviate its results for the consumers. That is why we have introduced a very generous support program for end-users, particularly residential consumers and small businesses, in order to absorb most of the adverse effects of the increased prices.

In the long term though, we are confident that the prices of electricity will drop as the energy mix of our Continent moves towards renewable energy, what is today universally accepted as the cheapest form of energy available.

The process towards the energy transition will not be without challenges and obstacles and we will remain alert to address those when and as they arise, but we remain confident that once this process advances, we will become more resilient against imported fuels and price volatility and will enjoy clean, but also cheap and abundant, energy from the sun and the wind.

There has been some criticism that Greece is replacing its coal capacity with fossil gas, including investments in new fossil fuel infrastructure, what is your response to this?

We all know that an electricity system relying on high penetration of renewables requires stable baseload production as well as increased flexibility. Greece is currently implementing a widespread programme to procure significant amounts of storage, amounting to 1.4 GW, in the coming years and in the form both of batteries and of pumped hydropower.

This programme though still has some years until its full completion. Moreover, Greece has no serious alternative to add new dispatchable sources of generation to its production, such as nuclear power or major new hydroelectric generation.

To this effect, investing in natural gas as a fuel that will cover baseload demand and will increase flexibility is both rational and unavoidable, at least for the medium term.

Having said that, all new natural gas infrastructure to be constructed in Greece, including a much needed strategic gas storage facility, is designed to be hydrogen-ready and able to accommodate low carbon and renewable gases, in order to avoid.

https://blackout-news.de/aktuelles/griechenland-braunkohlekraftwerke-wieder-in-betrieb/

Greece: Lignite power plants back in operation

Published on December 4, 2021

Until the end of 2018, Greece was one of the largest operators of lignite power plants in Europe. With the change of government in 2019, Greece also initiated the energy transition. The new government has set itself the goal of shutting down all Greek coal-fired power plants by 2023. Greece is now putting lignite-fired power plants back into operation.

Only a single power plant, which is currently under construction, should be allowed to produce electricity until the end of 2024. That is why the conveyor belts in the Greek open-cast lignite mine have already been shut down and the huge shovel excavators dismantled into their individual parts.

Greek regulatory authority sees security of supply at risk

According to a current study by the Greek electricity regulator RAE, however, security of supply is now at risk in the cold winter months due to the dismantling of coal-fired power plants.


Greece: Lignite power plants back in operation. Due to high gas prices, already dismantled lignite production facilities were rebuilt

Greece Lignite power plants back in operation

With the rapid shutdown of coal-fired power plants, electricity generation by gas-fired power plants in Greece rose to a total of 42 percent. However, Greece does not have natural gas reserves and therefore has to import the gas at a high price, which means that the price of electricity is becoming more and more expensive and is becoming unaffordable for many Greeks.

Now the government is turning around and wants to put the already decommissioned lignite power plants back into operation. That is why she has the conveyor systems that have already been dismantled rebuilt .

Government promotes expansion of renewable energies

Now the Greek government also wants to accelerate the expansion of wind power and solar systems in order to become more independent of imported gas. Renewables currently only provide a third of Greece's current electricity needs. The capacity is now to increase to more than two thirds by 2030

through massive expansion. To this end, the government has already passed a new law that is supposed to reduce the approval of wind farms on the islands in the Aegean Sea to 150 days. Appropriate approval procedures usually take several years in Greece. Athens hopes with the new law to attract foreign investors to give the weak Greek economy a boost.

Environmentalists are critical of wind farms in the Aegean

Greenpeace Greece, however, is critical of the new law, because there is neither a plan for its implementation, nor are corresponding areas designated on which wind farms could be built. “We don't even know how Designated Zones are categorized. We have a completely chaotic situation in which it is not even clear what is allowed and where, ” says Takis Grigoriou, climate and energy activist at Greenpeace.

Greenpeace assumes that planned wind farms will never be built

According to the will of the government, with the expansion of renewable energies, the coal phase-out should finally be completed by the end of 2030 at the latest. However, Takis Grigoriou assumes that the planned facilities will never be built. Licenses for the construction of wind turbines on the island of Amorgos were granted as early as 2013. The systems have not yet been built. The potential investors have probably lost interest in it.

https://www.reuters.com/business/energy/sweden-starts-up-oil-fired-power-plant-alleviate-polish-crunch-2021-12-06/

December 6, 20211:18 AM MSTLast Updated 3 hours ago

Energy

Sweden starts up oil-fired power plant to alleviate Polish crunch

Reuters

1 minute read

OSLO, Dec 6 (Reuters) - Sweden has started up a back-up oil-fired power plant to help with a looming electricity shortage in neighbouring Poland, Swedish transmission system operator Svenska Kraftnaet (SvK) said on Monday.

Analysis has shown that Poland faces a power shortage of up to 1,700 megawatt (MW) on Monday and has requested help from its neighbours, SvK said in a statement.

"Therefore Sweden will make the capacity of the Karlshamnsverket power plant available on Poland's behalf," it added.

Although Sweden itself faces high demand on Monday, it will be able to support Poland "if nothing unforeseen happens", it added.

Karlshamnsverket, located in south-eastern Sweden, is operated by utility Uniper (UN01.DE) and has a capacity of 622 MW, of which 562 MW form Sweden's winter reserve every year between Nov. 16 and March 15, according to Uniper's website.

S&P Dow Jones Indices

A Division of S&P Global

PRESS RELEASE

S&P Dow Jones Indices Announces Changes to the S&P/TSX Composite Index

Toronto, Ontario, December 3, 2021 – As a result of the quarterly review, S&P Dow Jones Indices will make the following changes to the S&P/TSX Composite Index prior to the open of trading on Monday, December 20, 2021:

S&P/TSX COMPOSITE INDEX – December 20, 2021			
	COMPANY	GICS SECTOR	GICS SUB-INDUSTRY
ADDED	Advantage Energy Ltd. (TSX:AAV)	Energy	Oil & Gas Exploration & Production
ADDED	Baytex Energy Corp. (TSX:BTE)	Energy	Oil & Gas Exploration & Production
ADDED	Energy Fuels Inc. (TSX:EFR)	Energy	Coal & Consumable Fuels
ADDED	Freehold Royalties Ltd. (TSX:FRU)	Energy	Oil & Gas Exploration & Production
ADDED	Hut 8 Mining Corp. (TSX:HUT)	Information Technology	Application Software
ADDED	Lion Electric Company (TSX:LEV)	Industrial	Construction Machinery & Heavy Trucks
ADDED	Peyto Exploration & Development Corp. (TSX:PEY)	Energy	Oil & Gas Exploration & Production
ADDED	Park Lawn Corporation (TSX:PLC)	Consumer Discretionary	Specialized Consumer Services
ADDED	Paramount Resources Ltd (TSX:POU)	Energy	Oil & Gas Exploration & Production
ADDED	Secure Energy Services Inc (TSX:SES)	Energy	Oil & Gas Exploration & Production
ADDED	Topaz Energy Corp. (TSX:TPZ)	Energy	Integrated Oil & Gas
ADDED	Tamarack Valley Energy Ltd. (TSX:TVE)	Energy	Oil & Gas Exploration & Production
DELETED	OrganiGram Holdings Inc. (TSX:OGI)	Health Care	Pharmaceuticals
DELETED	Real Matters Inc. (TSX:REAL)	Real Estate	Real Estate Services
DELETED	SunOpta Inc (TSX:SOY)	Consumer Staples	Biotechnology
DELETED	Westport Fuel Systems Inc. (TSX:WPRT)	Industrials	Construction Machinery & Heavy Trucks

For more information about S&P Dow Jones Indices, please visit **www.spdji.com**

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EXECUTIVE SUMMARY

This is the 12th edition of Canada's Food Price Report, published annually by Dalhousie University and the University of Guelph. Last year, for the first time, Canada's Food Price Report welcomed the University of Saskatchewan and the University of British Columbia to the research team, strengthening both the national scope and regional expertise of the report. This year, the report continues to recognize and contend with the lingering challenges posed by COVID-19 as an unprecedented global crisis. Despite the Canadian food supply chain's resiliency and adaptability to the challenges posed by the virus, it remains unclear when the COVID-19 pandemic will end and what permanent changes to the Canadian food industry it will leave behind. Canada's Food Price Report 2022 focuses on COVID-19–related disruptions to the food supply chain while also attending to climate change and adverse weather effects, labour force challenges, high inflation and food transportation challenges.

> *"For a family of four, we missed our target by $106 this year."*

In last year's report, our models predicted an overall food price increase of 3% to 5% in 2021. Once again, our overall forecast for 2021 was accurate in predicting price increases. It was also accurate in several food categories including fruits, restaurants and seafood. However, for some food categories our predictions were either higher or lower than the observed price change in 2021.

In recognition of the increasing diversity of Canadian families, in the 2021 report we also estimated annual food expenditures for individual consumers based on their age and gender. This approach allowed readers to construct the household and corresponding predicted annual food expenditure that best reflected their reality. In 2021, for example, we predicted an annual food expenditure of up to $13,907 for a family of four including a man (age 31-50), woman (age 31-50), boy (age 14-18) and girl (age 9-13). In dollars, this was the highest predicted increase by Canada's Food Price Report. From what was observed in 2021, the total annual expenditure for a family with the same demographic makeup was $13,801, **meaning a difference of -$106 for the year**.

For 2022, the report uses the same food categories and makes the following predictions:

2022 FOOD PRICE FORECASTS

Food Categories	Anticipated Changes (%)
Bakery	5% to 7%
Dairy	6% to 8%
Fruits	3% to 5%
Meat	0% to 2%
Other	2% to 4%
Restaurants	6% to 8%
Seafood	0% to 2%
Vegetables	5% to 7%
Total Increase in Food Prices	**5% to 7%**

Over the last twelve years, this report has considered many market instruments and macroeconomic factors in its forecasts: financial indicators, recession signals, currencies and Canada-specific information. The 2022 report forecasts that overall food prices will increase by 5% to 7%. This report maintains the same approach as last year and shows predicted annual food expenditures by individual consumer based on their age and gender. This year we are adding two new consumer categories to the report: pregnant women and nursing women.

Our 2022 forecast predicts the highest increase in both percentage and dollars in 12 years.

This year we are predicting, for example, that a family of four, including a man (age 31-50), woman (age 31-50), boy (age 14-18) and girl (age 9-13) will have an annual food expenditure of up to $14,767, an increase of up to $966 from what was observed as the total annual cost in 2021.

In 2021, Canada's food supply chain experienced logistical disruptions due to the ongoing COVID-19 pandemic, as public health–mandated lockdowns and stay-at-home orders continued during the third and fourth waves of the virus—with some regions and provinces more deeply affected than others. In 2021, the general inflation rate was the highest since the early 2000s, driven by high oil costs, high housing costs and rising food prices. The food supply chain faced many challenges due to high transportation costs and reduced maritime transport capacity. Labour force challenges were experienced

throughout the food chain, but most notably in the food service sector. Drought conditions and wildfires throughout 2021 have also contributed to food price increases this year.

Consumers' food choices in 2021 were motivated by health and environmental sustainability—with a greater consumer desire for more transparency and ethical practices around food products. Consumers continued to support local food supply chains, and many plan to continue COVID-19 shopping habits in the future (e.g., online platforms). There is an indication that overall food literacy in the population has improved but many still struggle with healthy eating and meal management in the wake of COVID-related disruptions to everyday life.

In 2022, we expect to feel the continued effect of COVID-19, but to what extent is still uncertain as many Canadians are now fully vaccinated and we are gradually regaining a sense of normalcy. In 2022, food insecurity will be a big issue as Canadians' grapple with rising prices. Food programs may face increased demand along with higher costs for food, and food retailers may see increased rates of theft. We will continue to feel the growing impact of climate change and the continued effect of both transportation and labour market challenges.

FOOD PRICE FORECAST BY PROVINCE

Province	2021 Changes[1]	2022 Forecasts[2]
Alberta	⬆	⬆
British Columbia	⬇	⬆
Manitoba	⬆	⬇
New Brunswick	⬆	⬇
Newfoundland and Labrador	-	⬆
Nova Scotia	⬆	⬇
Ontario	-	⬆
Prince Edward Island	⬆	⬇
Saskatchewan	⬇	⬆
Quebec	⬆	⬇

1 (⬆) Expected above-average food price increase, (⬇) Expected below-average food price increase, (–) Expected average food price increase. Lower confidence intervals at the provincial level.

2 (⬆) Expected above-average food price increase, (⬇) Expected below-average food price increase, (–) Expected average food price increase. Lower confidence intervals at the provincial level.

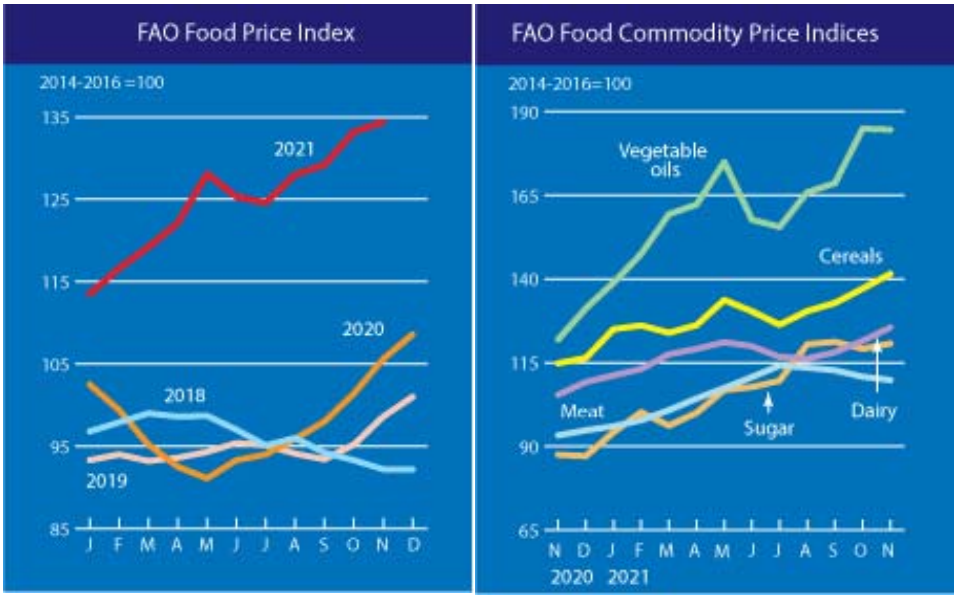
https://www.fao.org/worldfoodsituation/foodpricesindex/en/

FAO Food Price Index

The FAO Food Price Index (FFPI) is a measure of the monthly change in international prices of a basket of food commodities. It consists of the average of five commodity group price indices weighted by the average export shares of each of the groups over 2014-2016. A feature article published in the June 2020 edition of the Food Outlook presents the revision of the base period for the calculation of the FFPI and the expansion of its price coverage, to be introduced from July 2020. A November 2013 article contains technical background on the previous construction of the FFPI.

November marked a further increase in the value of the FAO Food Price Index

Release date: 02/12/2021



» The **FAO Food Price Index (FFPI)** averaged 134.4 points in November 2021, up 1.6 points (1.2 percent) from October and 28.8 points (27.3 percent) from November 2020. The latest increase marked the fourth consecutive monthly rise in the value of the FFPI, putting the index at its highest level since June 2011. Among the sub-indices, in November those for cereals and dairy rose most significantly, followed by sugar, while those for meat and vegetable oils were down, albeit slightly, from the previous month.

» The **FAO Cereal Price Index** averaged 141.5 points in November, up 4.3 points (3.1 percent) from October and 26.6 points (23.2 percent) above its level one year ago. Strong demand amid tight supplies, especially of higher quality wheat among major exporters, continued to lift wheat prices for a fifth consecutive month, to their highest level since May 2011. Potentially reduced quality of the ongoing harvest in Australia, following untimely rains, and uncertainty regarding potential changes to export measures in the Russian Federation also provided support. Among coarse grains, international barley prices continued to rise on tight supplies and spillovers from wheat markets. Maize export prices rose slightly in November, receiving support from strong pace in sales from Argentina, Brazil and Ukraine, while seasonal supply pressure capped export prices from the United States of America. By contrast, international rice prices remained broadly steady in November, reined in by harvest progress in various Asian suppliers and scattered import demand.

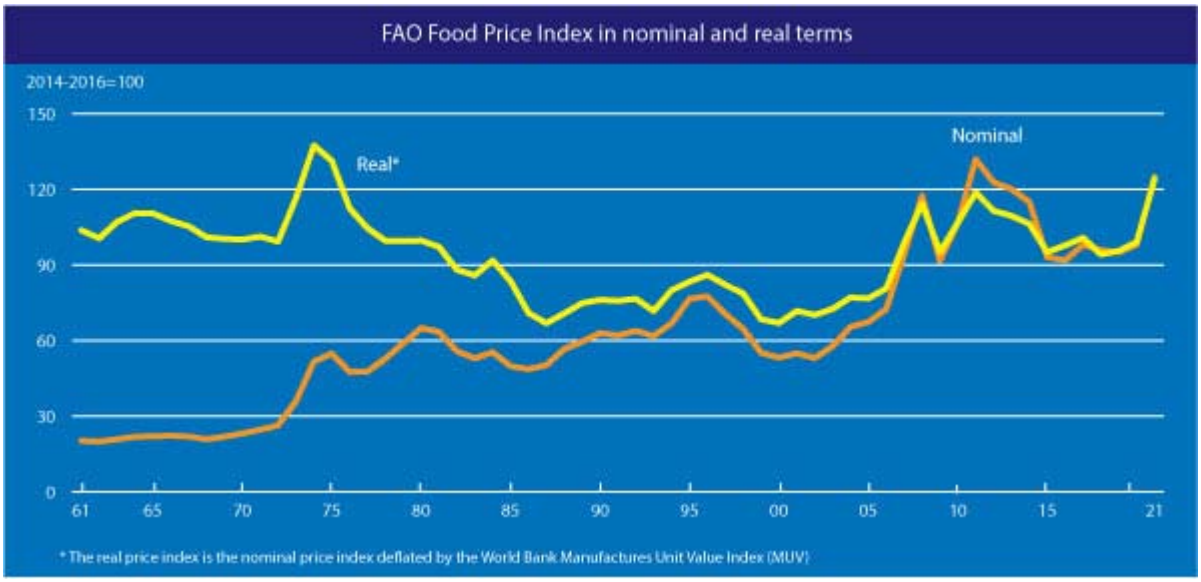
» The **FAO Vegetable Oil Price Index** averaged 184.6 points in November, down marginally (by 0.3 points or 0.2 percent) from the record high registered in the previous month. The slight decrease reflected somewhat lower values for soy and rapeseed oils, while quotations for palm oil remained virtually unchanged. International palm oil prices maintained their firmness in November, with the downward pressure linked to rising concerns over the impact of a resurgence in COVID-19 cases largely offset by the support stemming from the anticipation of production slowdowns in major producing countries. As for soy and rapeseed oils, world prices retreated moderately, broadly softened by demand rationing. Meanwhile, lower crude oil values also weighed on vegetable oil prices.

» The **FAO Dairy Price Index** averaged 125.5 points in November, up 4.1 points (3.4 percent) from October and 20.2 points (19.1 percent) above its level in the same month last year. In November, international price quotations for butter and milk powders rose sharply for the third consecutive month, driven by tight global export availabilities and depleted stocks, as deliveries declined in several large milk-producing countries in Western Europe, coinciding with lower-than-anticipated output in Oceania. Strong global import demand persisted amidst buyers' efforts to secure spot supplies in anticipation of tightening markets, adding further upward pressure on prices, notwithstanding market uncertainty over near-term demand caused by increasing COVID-19-related social restrictions. Cheese quotations rose slightly, reflecting increased demand and shipping delays that hindered sales from global suppliers.

» The **FAO Meat Price Index*** averaged 109.8 points in November, down 1.0 point (0.9 percent) from October, falling for the fourth consecutive month, though still 16.5 points (17.6 percent) above its value in the corresponding month a year ago. In November, international quotations for pig meat fell for the fifth consecutive month, underpinned by reduced purchases by China, especially from the European Union. Ovine price quotations also fell steeply on increased exportable supplies, mainly from Australia. Meanwhile, international bovine meat prices remained stable, as decreased quotations for Brazil's meat were offset by higher Australian export values, reflecting low cattle sales for slaughter amid high herd-rebuilding demand. Poultry meat prices were also largely stable, as global supplies seemed adequate to meet demand, despite supply-side constraints, especially shipping container shortages and avian flu in Europe and Asia.

» The **FAO Sugar Price Index** averaged 120.7 points in November, up by 1.6 points (1.4 percent) from October, reversing most of the previous month's decline and reaching levels nearly 40 percent above those registered in the same month last year. The November rebound in international sugar price quotations was mainly prompted by higher ethanol prices, which encouraged a greater use of sugarcane for ethanol production in Brazil, the world's largest sugar exporter. Further support to world sugar prices was provided by stronger global import demand, prompted by lower freight costs. Overall, however, the upward pressure on world sugar prices was limited by large shipments from India and the positive outlook for sugar exports by Thailand.

** Unlike for other commodity groups, most prices utilized in the calculation of the FAO Meat Price Index are not available when the FAO Food Price Index is computed and published; therefore, the value of the Meat Price Index for the most recent months is derived from a mixture of projected and observed prices. This can, at times, require significant revisions in the final value of the FAO Meat Price Index which could in turn influence the value of the FAO Food Price Index.*



FAO food price index

		Food Price Index [1]	Meat [2]	Dairy [3]	Cereals [4]	Vegetables Oils [5]	Sugar [6]
2003		**57.8**	**58.3**	**54.5**	**59.4**	**62.6**	43.9
2004		**65.6**	**67.6**	**69.8**	**64.0**	**69.6**	44.3
2005		**67.4**	**71.8**	**77.2**	**60.8**	**64.4**	61.2
2006		**72.6**	**70.5**	**73.1**	**71.2**	**70.5**	91.4
2007		**94.3**	**76.9**	**122.4**	**100.9**	**107.3**	62.4
2008		**117.5**	**90.2**	**132.3**	**137.6**	**141.1**	79.2
2009		**91.7**	**81.2**	**91.4**	**97.2**	**94.4**	112.2
2010		**106.7**	**91.0**	**111.9**	**107.5**	**122.0**	131.7
2011		**131.9**	**105.3**	**129.9**	**142.2**	**156.5**	160.9
2012		**122.8**	**105.0**	**111.7**	**137.4**	**138.3**	133.3
2013		**120.1**	**106.2**	**140.9**	**129.1**	**119.5**	109.5
2014		**115.0**	**112.2**	**130.2**	**115.8**	**110.6**	105.2
2015		**93.0**	**96.7**	**87.1**	**95.9**	**89.9**	83.2
2016		**91.9**	**91.0**	**82.6**	**88.3**	**99.4**	111.6
2017		**98.0**	**97.7**	**108.0**	**91.0**	**101.9**	99.1
2018		**95.9**	**94.9**	**107.3**	**100.8**	**87.8**	77.4
2019		**95.1**	**100.0**	**102.8**	**96.6**	**83.2**	78.6
2020		**98.1**	**95.5**	**101.8**	**103.1**	**99.4**	79.5
2020	November	**105.6**	93.3	105.4	114.8	121.9	87.5
	December	**108.6**	94.8	109.2	116.4	131.2	87.1
2021	January	**113.5**	96.0	111.2	125.0	138.9	94.2
	February	**116.6**	97.8	113.1	126.1	147.5	100.2
	March	**119.2**	100.8	117.5	123.9	159.3	96.2
	April	**122.1**	104.3	119.1	126.2	162.2	100.0
	May	**128.1**	107.4	121.1	133.7	174.9	106.8
	June	**125.3**	110.7	119.9	130.3	157.7	107.7
	July	**124.6**	114.1	116.7	126.3	155.5	109.6
	August	**128.0**	113.5	116.2	130.4	165.9	120.5
	September	**129.2**	112.7	118.1	132.8	168.6	121.2
	October	**132.8**	110.8	121.5	137.1	184.8	119.1
	November	**134.4**	109.8	125.5	141.5	184.6	120.7

1 Food Price Index: Consists of the average of 5 commodity group price indices mentioned above, weighted with the average export shares of each of the groups for 2014-2016: in total 95 price quotations considered by FAO commodity specialists as representing the international prices of the food commodities are included in the overall index. Each sub-index is a weighted average of the price relatives of the commodities included in the group, with the base period price consisting of the averages for the years 2014-2016.

2 Meat Price Index: Based on 35 average export unit values/market prices of four meat types (bovine, pig, poultry and ovine) from 10 representative markets. Within each meat type, export unit values/prices are weighted by the trade shares of their respective markets, while the meat types are weighted by their average global export trade shares for 2014-2016. Quotations for the two most recent months may consist of estimates and be subject to revision.

3 Dairy Price Index: Computed using 8 price quotations of four dairy products (butter, cheese, SMP and WMP) from two representative markets. Within each dairy product, prices are weighted by the trade shares of their respective markets, while the dairy products are weighted by their average export shares for 2014-2016.

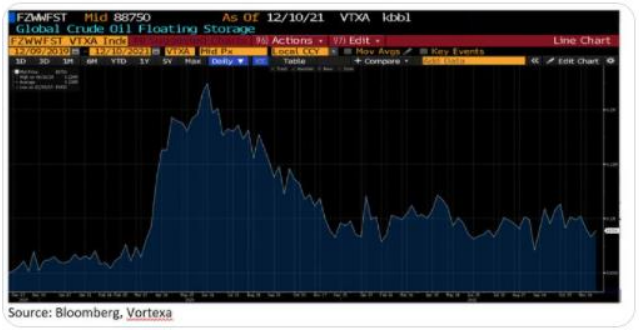
4 Cereals Price Index: Compiled using the International Grains Council (IGC) wheat price index (an average of 10 different wheat price quotations), the IGC maize price index (an average of 4 different maize price quotations), the IGC barley price index (an average of 5 different barley price quotations), 1 sorghum export quotation and the FAO All Rice Price Index. The FAO All Rice Price Index is based on 21 rice export quotations, combined into four groups consisting of Indica, Aromatic, Japonica and Glutinous rice varieties. Within each varietal group, a simple average of the relative prices of appropriate quotations is calculated; then the average relative prices of each of the four rice varieties are combined by weighting them with their (fixed) trade shares for 2014-2016. The Cereal Price Index combines the relative prices of sorghum, the IGC wheat, maize and barley price indices (re-based to 2014-2016) and the FAO All Rice Price Index by weighing each commodity with its average export trade share for 2014-2016.

5 Vegetable Oil Price Index: Consists of an average of 10 different oils weighted with average export trade shares of each oil product for 2014-2016.

6 Sugar Price Index: Index form of the International Sugar Agreement prices with 2014-2016 as base.

Dan Tsubouchi @Energy_Tidbits · 18h

#Vortexa crude #Oil floating storage for 12/10 est 88.75 mmb, +5.79 WoW vs revised up 12/03 82.97 mmb (was 73.08). 12/10 is roughly flat to end of June when #OPEC+ started production increases ie. #Oil is being absorbed. Thx @Vortexa @TheTerminal #OOTT

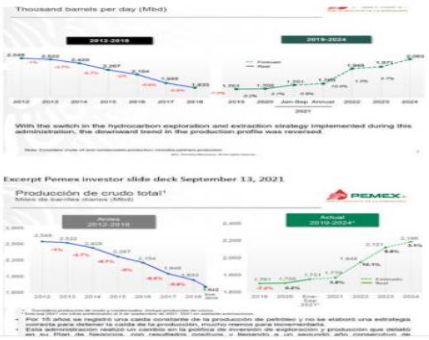


2 5

Dan Tsubouchi @Energy_Tidbits · Dec 10

No surprise, looks like #Pemex 2022 #Oil forecast of 1.948 mmbd is too high. @Karol_Garcia_Z reports "Mexico will keep OPEC + oil production quota in 2022: Rocío Nahle", which is 1.753 mmbd. Positive for Cdn heavy/medium #Oil. #OOTT
eleconomista.com.mx/empresas/Mexic...
opec.org/opec_web/stati...

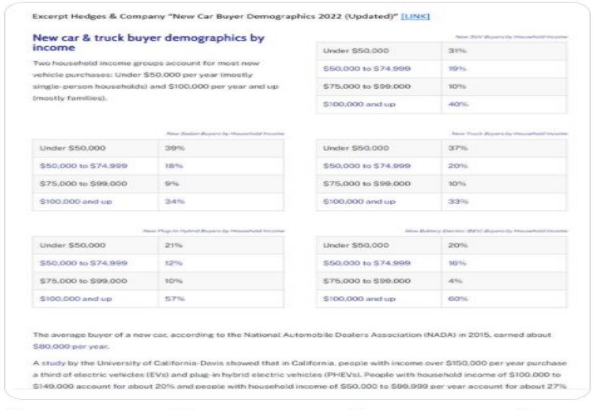
> **Dan Tsubouchi** @Energy_Tidbits · Oct 29
> forgot to include these graphs yesterday. #OOTT
> twitter.com/Energy_Tidbits...



6 7

Dan Tsubouchi @Energy_Tidbits · Dec 10

Would there be any new car #EV purchases by <$50k or <$75k income if there weren't purchase incentives? what will it take and how long will it take to get these groups to increase new EV purchases and not new ICE purchases and used car puchases? #OOTT



6 5 9

Dan Tsubouchi @Energy_Tidbits · Dec 10

Positive for Cdn heavy/med #Oil. Less #Pemex starting Jan as refining +200-300 kbpd. Bigger export hit in H2/22 w/ Dos Bocas 340 kbpd refinery start up. See SAF Group Oct 31, 2021 Energy Tidbits safgroup.ca/news-insights/ Thx kassai@bloomberg.net #OOTT

bloomberg.com/news/articles/...

4 6

Dan Tsubouchi @Energy_Tidbits · Dec 9

This will be what @BeckyQuick leads off the A block on tomorrow's @SquawkCNBC

> **Bleacher Report** @BleacherReport · Dec 9
>
> RUTGERS UPSETS NO. 1 PURDUE ON A HALF COURT BUZZER-BEATER 😱😱😱

1 1

Dan Tsubouchi @Energy_Tidbits · Dec 9

"we see [#Oil] demand recovery. We see the economies around the world recovering. And by the end of 2022, we think that demand will be back at 2019 levels" "..IOCs, they're retaining their capital discipline" @simonelli_l to @SullyCNBC. Positive for 2022 #Oil. #OOTT

SAF Group created transcript of CNBC Brian Sullivan interview with Baker Hughes CEO Lorenzo Simonelli on Dec 8, 2021
https://www.cnbc.com/video/2021/12/07/we-see-oil-demand-recovering-in-2022-says-baker-hughes-ceo.html

Items in "*italics*" are SAF Group created transcript

At 0:30 min mark. Simonelli "*I am optimistic and as we continue to look at 2022, we see demand recovery. We see the economies around the world recovering. And by the end of 2022, we think that demand will be back at 2019 levels. And with that also activity will pick up. so we're optimistic we've got tailwind within the oil and gas sector.*"

At 1:10 min mark. Sullivan "*is cap spending coming up enough?*" Simonelli "*we're seeing cap spending coming up, but we're also seeing a divergence. And I think as you've heard from some of the IOCs, they're retaining their capital discipline. They are increasing their spend but I heard you speak to Mike Wirth, and again the returning of cash to shareholders is important for the IOCs is important as well as the continued allocation to not just oil and gas, but also the energy transition. As we look to the privates and we look to some of the independents, you are seeing increased activity. But I'd go more international. When you look at the low cost basins, you look at the National Oil Companies, that's where we're seeing the capital spend. You've seen some of the announcements from Aramco, from ADNOC, also Petrobras with what they're doing. So we see the cost basins internationally seeing positive growth and an increase in capital spending going forward in the next few years.*"

Prepared by SAF Group https://safgroup.ca/news-insights/

3 5

Dan Tsubouchi @Energy_Tidbits · Dec 9

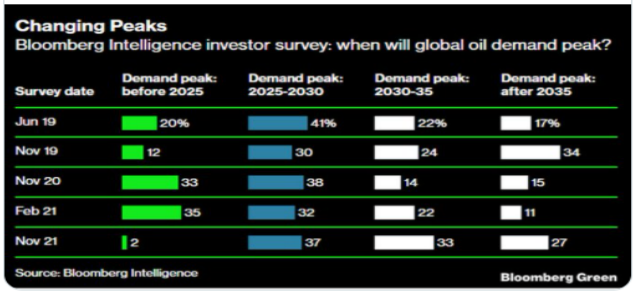
didn't pick up my phone quick enough to catch 20 or so coming in for a landing on the #Calgary Elbow River. but they are now starting to bob for breakfast

4

Dan Tsubouchi @Energy_Tidbits · Dec 9

#OOTT note most now expect peak #Oil demand is pst 2030. even more than thought so pre-Covid.

> **Nat Bullard** @NatBullard · Dec 9
> Latest oil investor survey from @barnettenergy @salihenergy @WillHares has a very St. Augustine feel to it: grant me peak oil demand, but not yet. bloomberg.com/news/articles/...



2 5

Dan Tsubouchi @Energy_Tidbits · Dec 9

Big shift, most (>preCovid) now see #PeakOilDemand is post 2030. If so, more will reach a #MacronMoment & realize a"transition" is needed ie. #Oil is needed for longer. Thx @NatBullard #OOTT In line with #2022Predictions tweet twitter.com/Energy_Tidbits...

> **Nat Bullard** @NatBullard · Dec 9
> Latest oil investor survey from @barnettenergy @salihenergy @WillHares has a very St. Augustine feel to it: grant me peak oil demand, but not yet. bloomberg.com/news/articles/...

1 1

Dan Tsubouchi @Energy_Tidbits · Dec 9

Time for #2022Predictions. My #1 is more #EnergyTransition #NetZero leaders come out of closet, have a #MacronMoment ie. have "transition" not self inflicted shortage so 2021 energy crisis isn't every year. A return to #EnergySecurity = #Oil #NatGas #LNG strong thru 2030. #OOTT

> **Dan Tsubouchi** @Energy_Tidbits · Dec 6
>
> #Oil values to soar when they come out of the closet. "one more thing that can no longer remain unsaid. A majority of key stakeholders agree with these realities as much as they believe in addressing climate change. We know this, because they say so in private" @Aramco CEO. #OOTT twitter.com/Energy_Tidbits...

CEO remarks at World Petroleum Council Congress 2021

4 20

Dan Tsubouchi @Energy_Tidbits · Dec 9

some #NatGas relief to Europe, Unplanned outage at @Equinor giant Troll natural gas field is being restored. outage was estimated at 1.9 bcf/d on Wed, now down to 0.3 bcf/d today. Thx @vanessadezem #OOTT #LNG

EUROPE GAS OUTAGES: Reduced Impact of Outage at Norway's Troll
2021-12-09 07:02:23.298 GMT

By Vanessa Dezem
(Bloomberg) -- The impact of an unplanned outage at the giant Troll field in Norway eased on Thursday, with the "restoring of linepack," according to network operator Gassco. The field had suffered process problems but capacity cuts are now forecast at 9 million cubic meters a day on Thursday compared with an estimated 53 million cubic meters on Wednesday. In the U.K., supplies at the Barrow North terminal are set to remain halted until 10am local time Thursday, according to operator Spirit Energy. The outage started on Monday due to an "offshore issue," and the restart was delayed several times this week.
Below is a table of the biggest outages affecting Europe's gas supply in the coming days. The impact is in mcm/day, unless otherwise stated. For more gas outages, see GASO.

Asset Name	Type of Asset	Notice Issuer	Outage Timeframe	Impact
Barrow North	Terminal	Spirit Energy	Dec. 6-9	7.7
Troll	Field	Gassco	Dec. 9-10 Dec. 10-12 Dec. 12-13	9.0 7.8 14.8

NOTE: Sometimes there are overlapping outage events at the same facility.

To contact the reporter on this story:
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To contact the editors responsible for this story:
Isis Almeida at ialmeida3@bloomberg.net
Lars Paulsson

To view this story in Bloomberg click here:
https://blinks.bloomberg.com/news/stories/R3U422T0AFB4

1 4

Dan Tsubouchi @Energy_Tidbits · Dec 8

No surprise, HH still stuck below $4 with continued near term weather forecasts for Dec to be warmer than normal. Would be a lot lower if not for feedgas start up in Sabine Pass 6 & Calcasieu Pass LNG. Thx @asoswx #OOTT #natgas
accuweather.com/en/winter-weat...

> **Unusual December warmup ahead for huge part of the US**
>
> By Alex Sosnowski, AccuWeather senior meteorologist
> Published Dec. 8, 2021 11:38 AM MST | Updated Dec. 8, 2021 1:09 PM MST
>
> 
>
>
> If autumn weather so far has led to whiplash for millions of Americans who live across the Central and Eastern states, it's no wonder. And AccuWeather forecasters say that a trend in the coming weeks may lead many to scratch their heads and wonder what season it is anyway. A developing weather pattern will favor well-above-average temperatures and most likely a lack of snow for much of the eastern two-thirds of the nation that could last until the official start of winter on Dec. 21 and beyond.

3 1

Dan Tsubouchi @Energy_Tidbits · Dec 8

don't forget @SullyCNBC will also have the insight from the off the camera chats. as @Aramco ceo nasser reminded people will say more in private than in public. and @SullyCNBC has #OPEC, US E&P and other key oil watchers in his contact circle. #OOTT

> **Brian Sullivan** @SullyCNBC · Dec 8
>
> Everyone we spoke with at the conference was bullish on global jet fuel demand next year. No one really talking about Covid. They see travel booming.
>
> (Side note: overall conference attendance ROSE in weeks leading up to event). twitter.com/energy_tidbits…

1 2

Dan Tsubouchi @Energy_Tidbits · Dec 8

#OOTT

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7

Dan Tsubouchi @Energy_Tidbits · Dec 8

For those not near their laptop, @EIAgov weekly #Crude #Gasoline #Distillates inventory data as at Dec 3 was just released. Prior to release, WTI was $72.07. #OOTT

ir.eia.gov/wpsr/overview.…

s Inventory Dec 3: EIA, Bloomberg Survey Expectations, A			
els)	EIA	Expectations	
	0.24	-1.52	
	3.88	2.00	
	2.73	1.00	
	6.85	1.48	

commercial so builds in impact of 1.7 mmb draw from SPR for D
ed in the data, Cushing had an injection of 2.37 mmb for Dec 3 v
Bloomberg
SAF Group

2

Dan Tsubouchi @Energy_Tidbits · Dec 8

"we see a pick up in jet fuel and others, there will not be any spare capacity & that will have a serious impact on the global economy and energy security", only 3-4 mmbd spare capacity & "jet fuel is down by around that" @Aramco CEO to @SullyCNBC. 2H22 #oil looks strong. #OOTT

AF Group created transcript of CNBC (Brian Sullivan) interview with Saudi Aramco CEO Amin Nasser on Dec 6, 2021
ttps://www.cnbc.com/2021/12/06/saudi-aramco-ceo-warns-of-unrest-if-fossil-fuel-investment-cut-too-fast.html

ems in "*italics*" are SAF Group created transcript

t 1:30 min mark. Nasser "*today if you look at spare capacity, you are talking about 3 to 4 million. Compared to pre-*
andemic levels, jet fuel is down by around that. So jet fuel picks up because we see pick up on gasoline, we see pick
n diesel compared to pre-pandemic levels. So we are exceeding these levels, pre-pandemic levels. However, the onl
npact is in jet fuel. Hopefully in 22 with better development of the economies and more pick up on travelling and all
hat. If jet fuel pick up, that will slightly impact the spare capacity that is currently available."

t 3:55 min mark. Nasser "*.. the industry in the US is picking up in terms of additional barrels that is coming from the*
nconventional oil and we are seeing that coming more and more. However, you need all energy services, conventio
nd new sources of energy, to meet the demand that we are talking about. Spare capacity, there is only 3 to 4 millio
he lack of investment is really impacting the market. As you said, pick up, we see a pick up in jet fuel and others, the
ill not be any spare capacity and that will have a serious impact on the global economy and energy security."

repared by SAF Group https://safgroup.ca/news-insights/

1 4 10

Dan Tsubouchi @Energy_Tidbits · Dec 8

Another Asian LNG Buyer rushing to lock up long term LNG security of supply. 12th Asian deal in H2/21, China's S&T 15-yr LNG supply with @qatar_energy for 2024-2037. #LNG #NatGas looks good thru 2030s. See SAF Group 07/14 blog. safgroup.ca/news-insights/ #OOTT


SUPPLY AGREEMENT WITH CHINA'S S&T INTERNATIONAL -

Blog Summary

Buyers Abruptly Change and Lock in Long Term Supp
upply Gap, Provides Support For Brownfield LNG FID

July 14, 2021 at 10:00 MT

For Details, Please See The 8 Page Blog
http://www.safgroup.ca/research/trends-in-the-market/

3

Dan Tsubouchi @Energy_Tidbits · Dec 7

"when you get all these things thrown at you [by #Biden adminstration], it just creates enough uncertainty that the investment is not going to be there" $COP CEO Lance to @GuyJohnsonTV. It's not just #Oil price, US E&P need stable, transparent system to crank up investment. #OOTT

SAF Group created transcript of Bloomberg Markets America (Alix Steel, Guy Johnson) interview with ConocoPhillips CEO Ryan Lance on December 7, 2021 https://www.bloomberg.com/news/videos/2021-12-07/conocophillips-announces-1-billion-variable-dividend-video

Items in "*italics*" are SAF Group created transcript

At 4:30 min mark, Johnson "*... yesterday, we saw the administration ask the room, ask the industry to pump more oil. the response was a little mixed in terms of how the industry thought about that request, what is your view of what the white house would like to happen here?*" Lance "*we set up a messy transition, Guy. in effect you know there's a view that demand is going to stagnate over time combined with maybe a lack of spare capacity sitting in the OPEC+ group, combined with the US E&P space having to focus on more returns of capital. So if you're growing at the expense of returns, that's not the right answer. so we are setting up a very messy transition. Nothing can be turned on very quickly is my message back to the secretary of the department of Interior. it takes 6 to 9 months, but we're getting all these pressures coming from the government, it's not one thing, it's the culmination of all these different things that is setting a bad tone and why it's landing with a thud here at the WPC in Houston when they speak in this way. There is no fast way to return supply. but if you get a stable, transparent system that we can think about and manage through the uncertainties. then we will invest to grow. Not at the expense of returns, but there is some growth that can come out of the US unconventionals here. So it is a tone thing. And when you are getting all these letters from Senators and these efforts and talking about cancelling exports of crude and gas. and you talk about permitting delays and regulatory overprint. When you get all these things thrown at you. it just creates enough uncertainty that the investment is not going to be there. and when the investment does come, which I think it will, over time, it's still going to be 6 to 9 months before that volume starts to show up in any material way in the global market.*"

Prepared by SAF Group https://safgroup.ca/news-insights/

2 3 10

Dan Tsubouchi @Energy_Tidbits · Dec 7

have to believe @MoEnergy_Saudi Minister Abdulaziz doesn't care if people think they gave in to #Biden. He is "The Man" for a reason, will give on Jan/Feb because Saudi wins thru 2030 with US oil growth being less than its potential. Kudos to The Man once again. #OOTT

> **Dan Tsubouchi** @Energy_Tidbits · Dec 7
>
> Did #Biden use Patriot missiles as a weapon to get Saudi to give on #OPEC+ Jan increases? Probably, but Saudi wins as bullish for #Oil in 2020s, reinforces Biden will do anything to avoid having to support or ask US oil sector to ramp up production. #OOTT wsj.com/articles/saudi ...

2 1

Dan Tsubouchi @Energy_Tidbits · Dec 7

Re @turkdm @22WPC2017 comments. @SullyCNBC "do you have an obligation to the public to pump more oil?" $PXD Sheffield "No. Obviously not, you saw where our President asked #OPEC to increase production. I never received a call from the Administration about adding more rigs" #OOTT

SAF Group created transcript of excerpts from CNBC Brian Sullivan interview with Pioneer Natural Resources CEO Scott Sheffield at World Petroleum Congress in Houston on Dec 7, 2021 https://www.cnbc.com/video/2021/12/07/pioneer-natural-resources-ceo-on-oil-prices-will-likely-exceed-100-a-barrel.html

Items in *"italics"* are SAF Group created transcript

At 0:20 min mark. Sheffield *"... we'll be back by the end of 22, to 100 to 101 million barrels per day. You heard amin Nasser speech yesterday. He said it about two weeks ago also, OPEC and OPEC+ will be out of supply, they'll be out of extra capacity. So things are going to get very tight, end of 22 going into 23."*

At 1:10 min mark. Sheffield *"I've been saying 80 to 100 bucks, but it will probably exceed 100."*

At 1:30 min mark. Sheffield *"Right now oil is cheap. I was surprised by the President with the SPR release. It was a bandaid approach. Oil is moving back up to $75, Brent is this morning, it will probably be back up to 80, 85 over the next few weeks as demand comes back"*

At 2:00 min mark. Sheffield. *"that's right. That's why you got to operate with a zero balance sheet. So for the first time in Pioneer's history, by the end of 22, we're essentially going to have zero debt".*

And from the Brian Sullivan tweet different interview excerpt
https://twitter.com/SquawkCNBC/status/1468210403469668361

Sullivan lead is on the Deputy Energy Secretary David Turk speech yesterday on the obligation for US shale oil to produce more, Sullivan asks *"do you have an obligation to the public to pump more oil?"*. Sheffield *"No. Obviously not, you saw where our President asked OPEC to increase production. I never received a call from the Administration about adding more rigs or adding more. We can't because we have an investor contract. We can't go back on our word. People have asked me at a $100 oil, $150 oil, are you going to grow more than 5% - the answer is No. We're just going to return more cash back to the investor. I just don't think we have an obligation to grow production."*

Prepared by SAF Group https://safgroup.ca/news-insights/

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2 7

Dan Tsubouchi @Energy_Tidbits · Dec 7

"oil might peak one day in 2030 & then decline" "If you don't continue to invest while the demand is growing then the price will adapt to demand to the supply" says @PPouyanne to @SullyCNBC. #Oil demand grows until >2030, supply being squeezed, #Oil looks strong for 2020s. #OOTT

SAF Group created transcript of excerpts from CNBC Brian Sullivan interview with TotalEnergies CEO Patrick Pouyanne at World Petroleum Congress in Houston on Dec 7, 2021 https://www.cnbc.com/video/2021/12/07/totalenergies-ceo-patrick-pouyann-global-energy-markets-are-more-and-more-interconnected.html?&qsearchterm=pouyanne

Items in *"italics"* are SAF Group created transcript

At 0:45 min mark. Pouyanne *"... why? Because the energy markets will change. We've seen that with climate change, the share of electricity in the mix will be much higher – this is a growing energy. While at the same time, yes, gas will continue to grow, oil might peak one day in 2030 and then decline".*

At 2:50 min mark. Pouyanne *"...in this transition, in fact fundamentally, the energy markets are becoming more complex, more interconnected. And also there is another message behind that which is supporting this price. There is also a lack of supply somewhere, you know. Supply of oil. Supply of gas. Why? Because you have a pressure on the oil and gas investments. The oil and gas investments have decreased between 2014 and this year, from $700 billion per year to $300. That has an impact. If you don't continue to invest while the demand is growing then the price will adapt to demand to the supply. "*

Prepared by SAF Group https://safgroup.ca/news-insights/

1 3 13

Dan Tsubouchi @Energy_Tidbits · Dec 7

"#OPEC and OPEC+ will be out of supply, they'll be out of extra capacity. So things are going to get very tight, end of 22 going into 23" says @PXDtweets CEO to @SullyCNBC. Keep up the great @23WPC2021 interviews. Squeezing supply but not demand, #Oil looks strong for 2020s #OOTT

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Prepared by SAF Group https://safgroup.ca/news-insights/

2 12 38

Dan Tsubouchi @Energy_Tidbits · Dec 7

Europe better hope this cold spell ends soon. Its only the 1st week of Dec, Europe #NatGas storage started winter low at 77.3% full & dropping fast. Good reminder table from @EdVanDerWalt. #OOTT

Burning Too Fast
European natural gas levels are falling faster than usual

Year	% Full on Nov. 1	...on Dec. 7	Drawdown
2021	77.3	66.5	-10.84ppts
2020	95.0	84.4	-10.65
2019	97.3	92.4	-4.90
2018	86.7	78.9	-7.80
2017	88.5	76.1	-12.45
2016	90.6	76.0	-14.53
2015	83.8	76.4	-7.38
2014	94.9	87.0	-7.96
2013	86.3	77.0	-9.38
2012	93.2	83.9	-9.24
2011	96.9	89.2	-7.78

Source: Bloomberg

1 3 3

Dan Tsubouchi @Energy_Tidbits · Dec 7

Did #Biden use Patriot missiles as a weapon to get Saudi to give on #OPEC+ Jan increases? Probably, but Saudi wins as bullish for #Oil in 2020s, reinforces Biden will do anything to avoid having to support or ask US oil sector to ramp up production. #OOTT wsj.com/articles/saudi...

> **Dan Tsubouchi** @Energy_Tidbits · Dec 6
>
> "The reality is the Biden administration is not standing in the way of increasing domestic oil production to meet today's energy needs" says @turkdm to @23WPC2021. True but trying to make it more difficult, costly, tougher to attract capital, etc to do so. Thx @CrowleyKev #OOTT
>
> By Kevin Crowley
> (Bloomberg) -- The Biden administration's No. 2 energy official was heckled at an international oil conference after admonishing U.S. drillers to step up production in the industry's de facto hometown.
> Deputy Energy Secretary David Turk told shale explorers on Monday that the government already has done its part to lower fuel prices by offering up part of its strategic crude reserve.
> "Now there's needed leadership by our domestic producers,"
> Turk said in opening remarks at the World Petroleum Congress in Houston. "The reality is the Biden administration is not standing in the way of increasing domestic oil production to meet today's energy needs."
> His remarks provoked a heckler in the audience: "Why don't you help us then?"
> Turk, whose comments preceded presentations by the chief executives of Exxon Mobil Corp. and Chevron Corp. -- the nation's largest oil explorers -- came on the same morning that refiners' bids for crude from the strategic reserve were due.
> "The top 54 publicly traded companies earned over $30 billion in the second quarter of this year, slightly more than just before the pandemic, and production has not yet recovered," Turk said.
>
> --With assistance from Joe Carroll and Ari Natter.
>
> To contact the reporter on this story:
> Kevin Crowley in Houston at kcrowley1@bloomberg.net
> To contact the editors responsible for this story:
> Simon Casey at scasey4@bloomberg.net

2 3

Dan Tsubouchi @Energy_Tidbits · Dec 7

looks like #DrFauci moved #Oil. #OOTT

> **Dan Tsubouchi** @Energy_Tidbits · Dec 5
>
> #DrFauci moves #oil markets, +$1.40 tonight. "though it's too early to really make any definitive statements about it, thus far, it does not look like there's a great degree of severity to it""But, thus far, the signals are a bit encouraging regarding the severity" #OOTT
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> Excerpt https://transcripts.cnn.com/show/sotu/date/2021-12-05/segment/01
>
> **State of the Union**
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> **Interview With Rep. Ilhan Omar (D-MN); Interview With Sen. Chris Murphy (D-CT); Interview With National Institute of Allergy and Infectious Diseases Director Dr. Anthony Fauci; Interview With Gov. Tate Reeves (R-MS). Aired 9-10a ET**
>
> Aired December 05, 2021 - 09:00 ET
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> FAUCI: Well, we're in really quite constant communication with our South African colleagues, Jake. They have really been very good about being transparent.
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> But, thus far, the signals are a bit encouraging regarding the severity. But, again, you got to hold judgment until we get more experience. But, clearly, it is becoming the dominant variant in South Africa.

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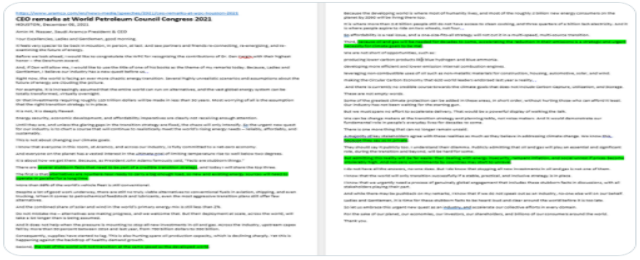
Dan Tsubouchi @Energy_Tidbits · Dec 6

#Oil values to soar when they come out of the closet. "one more thing that can no longer remain unsaid. A majority of key stakeholders agree with these realities as much as they believe in addressing climate change. We know this, because they say so in private" @Aramco CEO. #OOTT



> **Dan Tsubouchi** @Energy_Tidbits · Oct 30
>
> 
>
> Oops, #Macron on #EnergyTransition "ironic, because we are building a system where in the medium & long term fossil energy will cost more & more, that's what we want to [to fight climate change]". 2020s will be very good for #Oil #NatGas prices. Great report ...

1 7 14

Dan Tsubouchi @Energy_Tidbits · Dec 6

Good news for Cdn #Oil. @business @roberttuttle reports #TransMountain expects to "return to normal levels within a week, co. says in email. We expect to deliver more than 75% of normal volumes to our customers over the month of December". #OOTT

2 7

Dan Tsubouchi @Energy_Tidbits · Dec 6

always a great break in the day to look up from the screen and see some of the local #Canmore elk walk up the hill. good timing for the car to stop on three sisters lookout for a view of canmore only to see the elk about to cross the parkway

1 1 10

Dan Tsubouchi @Energy_Tidbits · Dec 6

"The reality is the Biden administration is not standing in the way of increasing domestic oil production to meet today's energy needs" says @turkdm to @23WPC2021. True but trying to make it more difficult, costly, tougher to attract capital, etc to do so. Thx @CrowleyKev #OOTT

By Kevin Crowley
(Bloomberg) -- The Biden administration's No. 2 energy official was heckled at an international oil conference after admonishing U.S. drillers to step up production in the industry's de facto hometown.
Deputy Energy Secretary David Turk told shale explorers on Monday that the government already has done its part to lower fuel prices by offering up part of its strategic crude reserve.
"Now there's needed leadership by our domestic producers," Turk said in opening remarks at the World Petroleum Congress in Houston. "The reality is the Biden administration is not standing in the way of increasing domestic oil production to meet today's energy needs."
His remarks provoked a heckler in the audience: "Why don't you help us then?"
Turk, whose comments preceded presentations by the chief executives of Exxon Mobil Corp. and Chevron Corp. -- the nation's largest oil explorers -- came on the same morning that refiners' bids for crude from the strategic reserve were due.
"The top 54 publicly traded companies earned over $30 billion in the second quarter of this year, slightly more than just before the pandemic, and production has not yet recovered," Turk said.

--With assistance from Joe Carroll and Ari Natter.

To contact the reporter on this story:
Kevin Crowley in Houston at kcrowley1@bloomberg.net
To contact the editors responsible for this story:
Simon Casey at scasey4@bloomberg.net

1 3 4

Dan Tsubouchi @Energy_Tidbits · Dec 6

"We are going to be heavily using LNG for the next 30 to 50 years""I'd love to see as much green energy as possible. but the amount of energy that is consumed in this world is so vast" says #FreeportLNG CEO to @GuyJohnsonTV. #LNG #NatGas looks good thru 2030. #OOTT

roup created transcript of excerpts from Alix Steel and Guy Johnson from Bloomberg Markets interview wit
ort LNG CEO Michael Smith on Dec 6, 2021. https://www.youtube.com/watch?v=YrMPZdXP_AI

in *"italics"* are SAF Group created transcript

0 min mark, Johnson asks if we are going to be still heavily using LNG in 20 years time. Smith *"We are going*
y using LNG for the next 30 to 50 years. The energy transition is important. I'd love to see as much green en
le. but the amount of energy that is consumed in this world is so vast, and there are so many developing co
wer a billion people that do not even have electricity yet. We need more clean energy, and I know that som
e do not think that natural gas is clean enough because it is a fossil fuel but it still cuts the CO2 emissions by
oal. And does not have any of the pollutants that coal has when it's burned. So there is no question, it mak
difference. And green energy, until we get different battery technology is intermittent. And natural gas is th
ource that can be turned on quick enough when the wind doesn't blow, or there are clouds or snow covering
panels"

red by SAF Group https://safgroup.ca/news-insights/

Dan Tsubouchi @Energy_Tidbits · Dec 6

Why #LNG FIDs are coming. LNG "market just flipped on a dime. And now customers are out looking for 20-yr [LNG] contracts instead of living on spot prices" says #FreeportLNG CEO to @adsteel. See SAF Group 07/14 blog safgroup.ca/news-insights/ #OOTT

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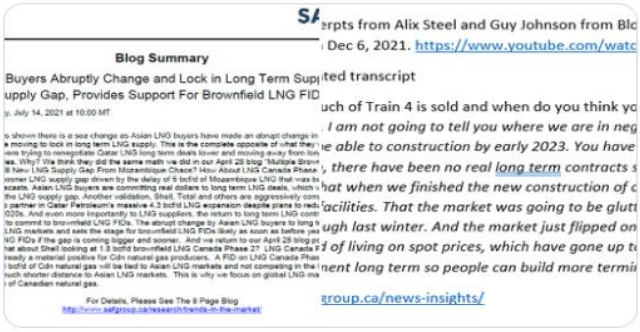

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Dan Tsubouchi @Energy_Tidbits · Dec 6

Gotta love @Lions owner Sheila Ford Hamp "that was un-fricken-believable" congratulating Coach Campbell. And how she was into his speech incl during the F bomb. Another reminder some good people in @NFL with their moral support to Oxford High School victims/families.

> **Detroit Lions** @Lions · Dec 5
> Go inside the #Lions locker room after the team's dramatic comeback win!
>
> #OnePride
>
> 
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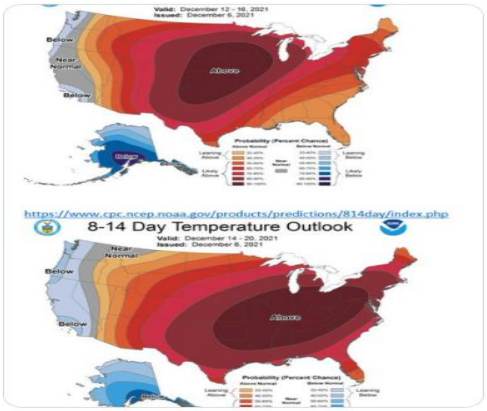
Dan Tsubouchi @Energy_Tidbits · Dec 6

An even uglier @NOAA near-term temperature probability forecast. Negative tone to #NatGas to continue thru year end if forecast is even close. #OOTT



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Dan Tsubouchi @Energy_Tidbits · Dec 6

More Asian LNG Buyers rushing to lock up long term LNG security of supply. 11th Asian deal in H2/21, China's Guangdong Energy 10-yr LNG supply with @qatar_energy for 2024-2034. #LNG #NatGas looks good thru 2030s. See SAF Group 07/14 blog. safgroup.ca/news-insights/ #OOTT

Deals Since July 1, 2021		
	Seller	Country
		Buyer / Seller
	Petronas	China / Canada
	Qatar Petroleum	Taiwan / Qatar
	BP	China / US
	Qatar Petroleum	Korea / Qatar
	Qatar Petroleum	China / Qatar
	Cheniere	China / US
	Venture Global LNG	China / US
	Venture Global LNG	China / US
	Cheniere	China / US
	Cheniere	China / US
rgy	Qatar Petroleum	China / US

Term Contracts Since Jul/21

Poland PGNiG 20-yr deal for 0.26 bcf/d w/ Venture Global
France Engie 11-yr deal for 0.16 bcf/d w/ Cheniere

ip.ca/news-insights/

Blog Summary

Asian LNG Buyers Abruptly Change and Lock in Long Term Supply – Validates Supply Gap, Provides Support For Brownfield LNG FIDs

3 1

Dan Tsubouchi @Energy_Tidbits · Dec 6

Reminds #Houthis have long range missile capacity. If can reach Riyadh, can hit any key #SaudiAramco oil facility. Good news, was intercepted so didn't hit Riyadh. #OOTT

> **Saudi Gazette** @Saudi_Gazette · Dec 6
>
> #BREAKING: The #Saudi-led coalition destroys, intercepts a ballistic missile fired toward #Riyadh

2

Dan Tsubouchi @Energy_Tidbits · Dec 5

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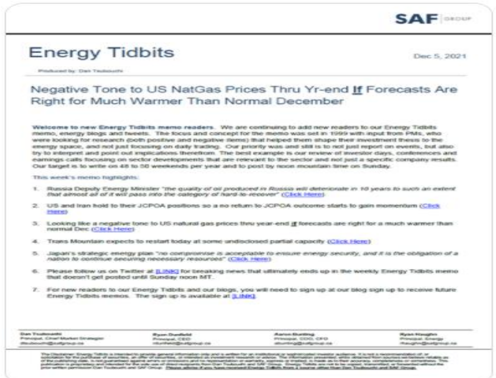
5 8

Dan Tsubouchi @Energy_Tidbits · Dec 5

Our weekly SAF Dec 5, 2021 Energy Tidbits memo is posted on our SAF Group website. This 46-pg energy research memo expands upon & covers more items than tweeted this week. See news/insights section of SAF website #Oil #OOTT #LNG #NatGas #EnergyTransition safgroup.ca/news-insights/



SAF GROUP

Energy Tidbits

Dec 5, 2021

Produced by: Dan Tsubouchi

Negative Tone to US NatGas Prices Thru Yr-end **If** Forecasts Are Right for Much Warmer Than Normal December

Welcome to new Energy Tidbits memo readers. We are continuing to add new readers to our Energy Tidbits memo, energy blogs and tweets. The focus and concept for the memo was set in 1999 with input from PMs, who were looking for research (both positive and negative items) that helped them shape their investment thesis to the energy space, and not just focusing on daily trading. Our priority was and still is to not just report on events, but also try to interpret and point out implications therefrom. The best example is our review of investor days, conferences and earnings calls focusing on sector developments that are relevant to the sector and not just a specific company results. Our target is to write on 48 to 50 weekends per year and to post by noon mountain time on Sunday.

This week's memo highlights:

1. Russia Deputy Energy Minister *"the quality of oil produced in Russia will deteriorate in 10 years to such an extent that almost all of it will pass into the category of hard-to-recover"* (Click Here)
2. US and Iran hold to their JCPOA positions so a no return to JCPOA outcome starts to gain momentum (Click Here)
3. Looking like a negative tone to US natural gas prices thru year-end **if** forecasts are right for a much warmer than normal Dec (Click Here)
4. Trans Mountain expects to restart today at some undisclosed partial capacity (Click Here)
5. Japan's strategic energy plan *"no compromise is acceptable to ensure energy security, and it is the obligation of a nation to continue securing necessary resources"* (Click Here)
6. Please follow us on Twitter at [LINK] for breaking news that ultimately ends up in the weekly Energy Tidbits memo that doesn't get posted until Sunday noon MT.
7. For new readers to our Energy Tidbits and our blogs, you will need to sign up at our blog sign up to receive future Energy Tidbits memos. The sign up is available at [LINK]

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