

Canaport Community Environmental Liaison Committee (CCELC) – Communications Report - July-September 2020



1- CCELC Business

Update on Action Items Resulting from December's Meeting:

- (116-1) CCELC Annual Report 2019 – Please review report from 2019 and report back with any changes by September 1st, 2020. If no requests for changes are made, the report will be finalized.
 - Gordon Dalzell provided comments via email, which are included at the end of this Communications Report. No changes to the report were necessary.
- (116-2) Report back on “CCELC Communications Report” format and suggestions for improvements. For the foreseeable future, we will be issuing these on a quarterly basis.
 - Gordon Dalzell provided comments via email, which are included at the end of this Communications Report.

Other Business:

- **Action:** Position of CCELC co-chair has been vacant for some time. Please respond if there is an interest among the committee members in becoming co-chair.
- **Action:** Looking to finalize December's meeting minutes of last year. Please forward any changes for consideration by November 1st, 2020. If there is no feedback by November 1st, it will be assumed that the CCELC approves the minutes as is.
- **Note:** Any questions and comments submitted will be addressed, and the questions and answers will be captured on the next communications report for the benefit of all members. The next communications report will be issued in January, and will incorporate activities from October through to the end of December.



2- Terminal Update

- Monthly operation capacity from January to September is as follows: 27%, 20%, 6%, 1%, 1%, 1.5%, 34%, 18%, 11%.
- The Terminal has had much higher send out than usual for a Q3.
- As indicated in the previous report, all personnel are back working under a formal COVID-19 mitigation plan.
- A lot of maintenance activities were postponed due to the COVID-19 crisis combined with budget restraints.
- Canaport LNG completed their Marine Facility Security Plan exercise, combined with the full scale Environment Canada's E2 Regulations exercise in September.
 - This was done with the engagement of the Saint John Fire Department (SJFD). Stakeholders from Emera, New Brunswick Department of the Environment and Local Government, Environment Canada, Transport Canada, Port Saint John, and New Brunswick Emergency Measures Organization were also invited as observers.

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- The entire Emergency Operations Centre (EOC) portion was done virtually using Microsoft Teams and live video streaming from our security systems. Canaport LNG was one of the first to do this in Canada with great success.
- Industry Outlook: Similar to the past years, the terminal utilization is expected between 5% - 10%. The COVID-19 crisis will likely lower the worldwide energy demand significantly. The overarching outlook is that prices should strengthen by over \$1/mmbtu in 2021 vs. 2020 (with strength holding for the next 3 years or so). Refer to slide 2 on the North America Natural Gas Market Presentation for more details.
- All project work for power line 0042 was completed on Friday July 31. The line is back to normal configuration (through Courtenay Bay Substation) and the temporary transformer has been removed. NB Power presentation attached for more detail.



3- LNG Shipments

- There were two additional shipments of LNG shipment during the July to September period, for a total of 6 to date in 2020.



4- Community Involvement

Although it has been more quiet than usual, Canaport LNG has still maintained sponsorship activities, included supporting the following organizations and events, which were all virtual or a straight donation:

- Area 506
- Canadian Cancer Society Family Camp
- Seafarer's Mission
- United Way Campaign Kickoff
- Ronald McDonald House PJ Walk for Kids
- St. Joseph's Hospital Foundation

Canaport LNG also supported the following organizations where there was an actual event or activity:

- Saint John Sea Dogs
- Children's Wish Foundation Teddy Bear Picnic

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5- Water Monitoring

Quantity Background:

(1) Throughout the operation of the Submerged Combustion Vapourizers (SCV's), condensate water is produced, and is discharged to the Bay via the sedimentation basin onsite. As per the Approval to Operate (ATO), there are quantity limits of what can be discharged on a daily basis. The amount of condensate water produced is directly correlated to the natural gas send-out, so in winter months when more natural gas is being sent out, there is more condensate water produced.

(1) Measure daily for quantity of submerged combustion vapourizers (SCVs) water leaving the site via sedimentation basin.

- Limited to 1000m³ / day
- Average daily discharge ranges per month range from a minimum of 12.43 m³ / day to a maximum of 48 m³ / day for the July to September period

(2) To ensure groundwater resources in the area are protected, there is a limit in which groundwater can be withdrawn during the normal operation for the Terminal. Groundwater is used for kitchens, bathrooms, etc., as well as topping up fire water cushion tank as required.

- (2) Measure daily withdrawal of groundwater
 - Limited to 50 m³/day
 - Average daily usage ranges from a minimum of 8 m³ / day to a maximum of 17 m³ / day for the July to September period.

Quality Background: In addition to the condensate water, there are other sources of water that runs into the sedimentation basin prior to discharging into the Bay. Those sources include outdoor stormwater drains and surface water runoff. To ensure the quality of water discharging to the Bay has not become impacted by Terminal operations, routine monitoring is conducted on over 50 parameters.

- Measure weekly for pH
 - Limited to 6.0 to 9.5
 - All pH ranges for this period were within this range
- Measure monthly for general chemistry, trace metals, hydrocarbons, mercury, and sulphur
 - All are within their stipulated ranges for this period
- Measure bi-annually for BOD and fish toxicity
 - There were no samplings taken for BOD of fish toxicity during this time period (July – September 2020).

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6- Air Emissions

Atmospheric Monitoring Background: Air emissions result from the combustion of fuels, such as natural gas burned to run the SCVs, natural gas that is flared, and hydrocarbons used to operate the back-up generators.

- Air emissions monitoring consists of monitoring parameters such as Greenhouse Gases (Carbon Dioxide, Methane, Nitrous Oxide), and others emissions such as Sulphur Dioxides, Nitrogen Oxides, Particular Matters, Carbon Monoxides, etc.
 - There are annual limits for these emissions based on the Approval to Operate. All of the parameters are measuring well below their limits.
 - There are also reporting limits, in which if they are met, they must be reported to governing authorities. Government reporting is further described under section 8 below.



7- Incidents

- There have been no incidents within this time period



8- Government Reporting

This section describes any reporting to the provincial or federal governments during the July to September 2020 timeframe.

- E2 Reporting under the Environmental Emergencies Regulation
 - Emergency exercises are mandatory under this regulation, and reporting is required when exercises are completed.



9- Questions / Comments from CCELC

Questions/Comments Received on CCELC Annual Report

- 1 (GD) Overall the content and format is excellent apart from some need for updating to address what I have identified as needs for clarification , additional information etc. This includes: 1 Page i not titled but is titled in the Table of Contents under Summary ii.
 - Page i is titled “Summary”, and in the Table of Contents, it lists the Summary as being on page i.
- 2 (GD) Page 1 bottom reference to “Irving Oil representatives will attend meetings“. I cannot recall Irving Oil representatives attending meetings during the time frame of this Annual Report I understand Kate is associated with Canaport LNG not the Irving Oil Corporation? I would request the status of Irving Oil a partner with Repsol be clarified in respect to attendance and active involvement with the CCELC.

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- You are correct, IOL typically doesn't attend; however, at the end of the sentence, it indicates "as required". I think this sentence is okay for now, as it still stands true that Canaport LNG and IOL representatives will attend as required to fulfill the committee's mandate.
- 3 (GD) Page 2 Par 3 reference to this annual report being made public. I understand the minutes and this report are available on Fundy Engineering but are not on the Irving OIL main site considering that corporation is a partner. The public may not be available with Fundy Engineering as a gateway to access Is this report available on the main Canaport LNG web site? I would recommend that since Irving Oil is a partner then the Annual Report be made available on that site as well as the main Canaport site if not already posted there.
 - Minutes are only posted to the Canaport LNG website, which is consistent with previous year.
 - 4 (GD) Status of Co-Chair perhaps this should be finalized and discussed updated etc.
 - I will add this item in the next 'communications' report as an action
 - 5 (GD) Page 3 List of Members Should list of resource person be at bottom with status years serving
 - List of resources are not members, and most usually come as required. NBDELG and City of Saint John are the exception.
 - 6 (GD) Industry Outlook Details of presentation from Ms. Jones was informative but no indication or summary of what the outlook for LNG look like. Need for another update in light of Covid 19 market demand impacts on LNG from this facility. Could this be done and circulated for future communication?
 - Refer to Section 2, Terminal Update
 - 7 (GD) Page 6 Can the link be found on the main Canaport LNG site or is this a separate site that has to be accessed to get the Annual Report? Is [www.canaporting](http://www.canaporting.com) integrated into the main Canaport LNG or IOL main page web sites that the public are more likely to access?
 - The minutes are accessible under the "in our Community" tab, right off of the main page. The annual report will also be included.
 - 8 (GD) Page 7 should note how many meeting attended Section on environmental compliance officers good.
 - The purpose of this section is to highlight any and all resources that have attended at least one meeting for the duration of time in which the report represents.
 - 9 (GD) Needs to be specific reference to NB Air Quality Approval and officers rasp to oversee this important regulatory oversight. There should be a brief summary from the regulator as part of this Annual Report Reassures the public of that regulatory independence.
 - This report is designed to be a report on the CCELC activities, not Canaport LNG specifically.
 - 10 (GD) The Air Quality Approval should be attached with the link so the public can read it. The other report that should be included in the Annual Environmental report as it is a public condition of the approval.
 - This report is designed to be a report on the CCELC activities, not Canaport LNG specifically.
 - 11 (GD) Annual Report, Page 9, I would like to see the e link to this Greenhouse Gas Management Report.
 - The Greenhouse Gas (GHG) Management Plan is submitted annually to the Department of the environment pursuant to condition 67 of their Approval to Operate (ATO) I-10263 and aims to align itself with the New Brunswick Climate Change Action Plan 2014 – 2020 in effort to reduce GHGs. This plan reports on the GHG Emissions trends resulting from Terminal operations, in addition to reduction initiatives. Reduction initiatives that were included within the 2020 GHG Management Plan included the expansion of the leak detection and repair (LDAR) program to include the peripheral equipment of the flare. Canaport LNG continually look for ways to reduce their GHG footprint.

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Questions/Comments on the Communications Report

12 (GD) I really liked the content and format with headings I liked #6 and #8 but concerned that G H G were up to 14,000 tons but reporting limits at 10,000. Why is that considering facility not in strong capacity .

- If a facility emits greater than 10,000 tonnes of greenhouse gas (i.e., CO₂eq), they are required by law to report their emissions federally. This “reporting threshold” was recently changed from 50,000 tonnes to 10,000 tonnes in 2018 to capture and monitor additional facilities / operations that had lower greenhouse gas emissions. Because Canaport LNG emitted 14,000 tonnes of greenhouse gas, they were above the reporting threshold and had to report their emissions. Any facility/operation under 10,000 tonnes of greenhouse gas is not required to report.

13 (GD) Can we get an update on emergency exercise

- Refer to Section 2, Terminal Update

General Questions/Comments

14 (GD) I would like to get an update on NB Powers upgrade electrical transmission lines I see all the big poles on Bayside Drive were replaced. Has that job been completed is the risk of loss of power now been addressed or more work to follow? -

- Refer to Section 2, Terminal Update



10-Attachments

- NB Power Presentation
- North America Natural Gas Market Presentation



Line L042 Life Extension Project





Line L042 Life Extension Project Key Facts

- Line L0042 rebuild will include the replacement of all wood pole structures between structure 1 and Structure 31 with the exception of structure 30 which is complete.
- There are a total of 28 new structures for the rebuild on line L0042.
- There will be a two (2) pole bypass constructed on the line to facilitate the installation of the Mobile Transformer and an eleven (11) pole bypass constructed to facilitate continuous power to customers.
- No outages to the Canaport (Mispec) substation are required.



Line L042 Life Extension Project Key Facts

- One 14 hour outage to Wallboard and Saint John Energy's Bayside substation will be required for the following work:
 - Structure 1 – 6 will be done
 - Coating of Structure 1 & replacement of hardware & insulators
 - Replace structure 3,4 & 5
 - Replace Failed Metering Unit at Wallboard (Str.6A)
- Structures 7 – 28 will be done de-energized using the mobile to maintain supply to customers
- Structures 29 and 31 will be completed under energized conditions
- Structure 30 is complete



Line L042 Life Extension Project Key Facts

- The estimated duration for the project is 8 weeks. The mobile transformer is anticipated to be in service for 4 weeks. The anticipated start date is May 18, 2020. This date is subject to change based on the current environment.
- At the end of everyday or before a scheduled break **All** structures will be completed or in a state whereby they can be re-energized
- If a failure of the mobile or loss of the 138kV supply was to occur, restoration of line L0042 from the normal Courtenay Bay supply would be completed within six to eight hours



Line L0042 - Key Milestone Dates

Week 1:

Transmission Line Contractor (ECP) Mobilize on site

- Orientation
- Locates
- Pole Deliveries
- Material Pick-up
- Delivery of backfill

Week 2:

East Coast Power (ECP) starts to construct the by-passes

Mobile Transformer is delivered to site

TLM to start installation of the mobile transformer

ECP to complete structures 29 and 31 live line

Week 3:

ECP completes the by-passes

NBP energizes mobile transformer

ECP starts rebuild of L0042 – Structures 7 to 28

TLM to replace Switch 42-03

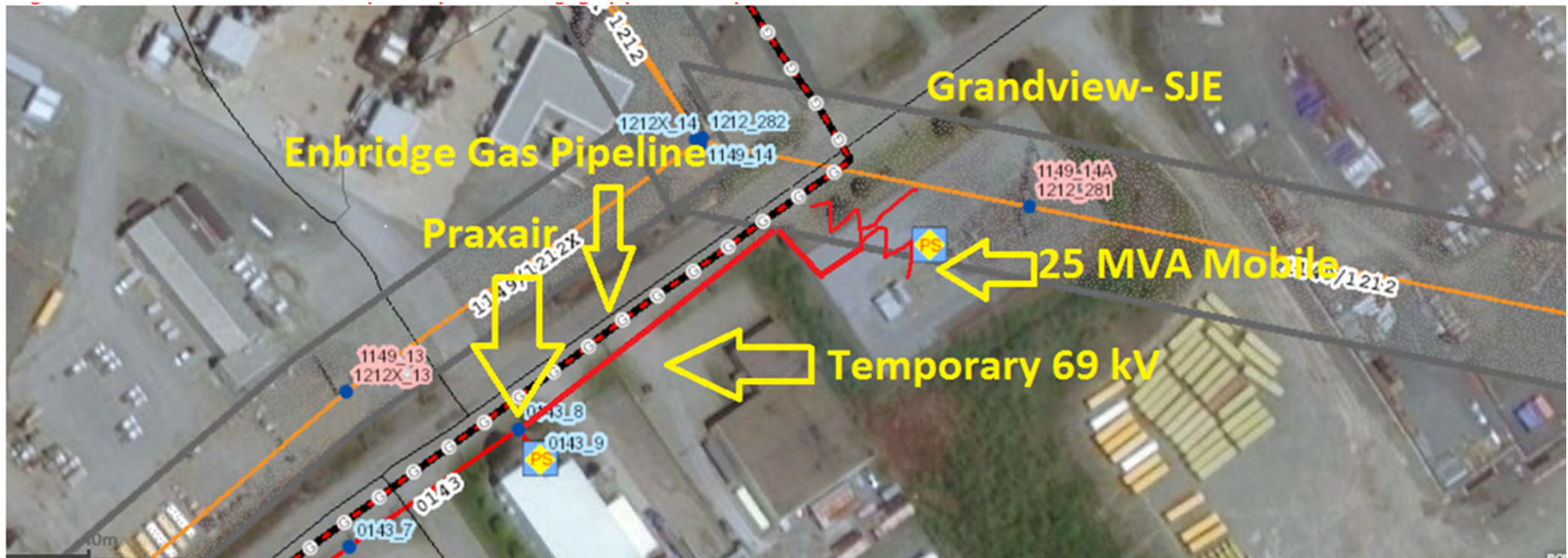


Line L0042 - Key Milestone Dates

- Week 4:** ECP continues to rebuild Line L0042
Start installation of foundations – six (6) in total
- Week 5:** ECP continues to rebuild Line L0042
Complete installation of foundations
- Week 6:** Complete rebuild of L0042
Take Work Permit on Structures 1-6
Return line to normal feed & remove mobile from service
- Week 7:** Remove the mobile from site
Dismantle the by-passes
- Week 8:** Complete environmental repairs if any
Demobilize

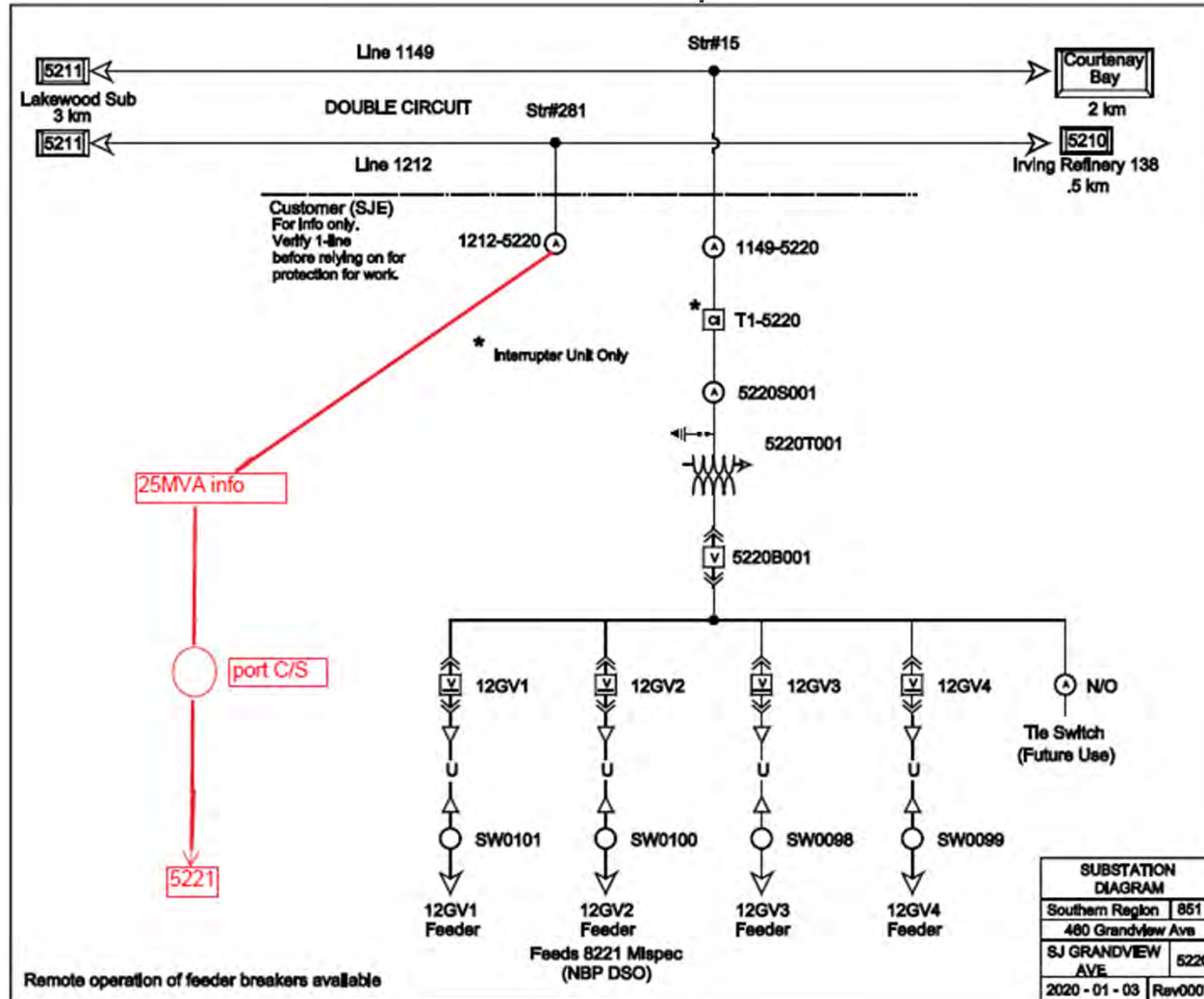


Line L0042 – Mobile Transformer Proposed Location



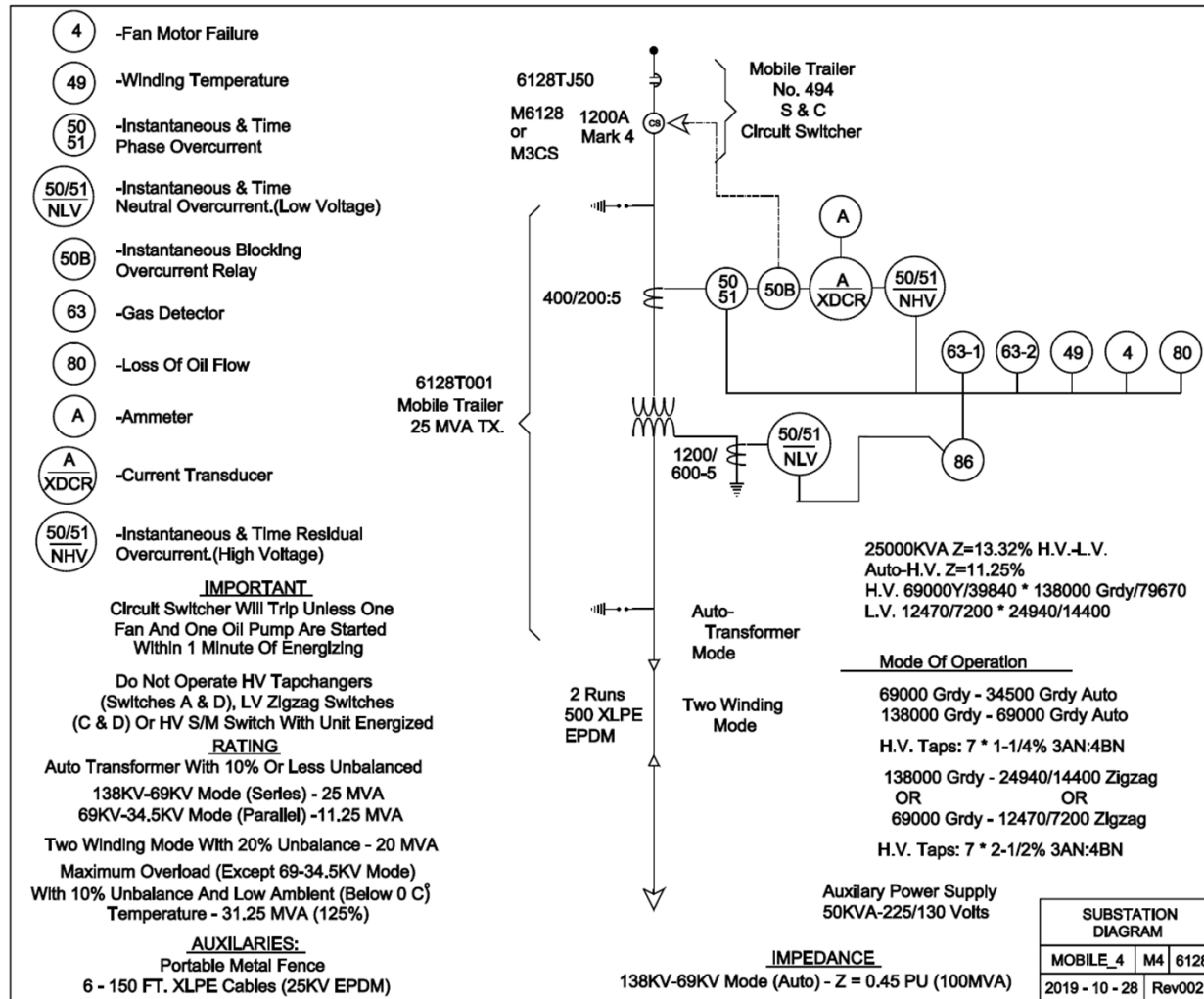


Line L0042 – Proposed One-Line





Line L0042 – One-Line for Mobile 4



North America Natural Gas Market

September 2020

Market & Competitor Studies – D. Planning & Studies E&P
D.E. Portfolio & Performance E&P



US - Natural Gas Market

Short-term outlook key messages



- **Henry Hub price outlook is \$1.93/MBtu in 2020 and \$3.21/MBtu in 2021 and averages about \$3.00/MBtu for 2022–23.**

Prices are down an estimated \$0.55/MBtu summer to summer, but record-high power sector loads can do only so much to stem this summer's supply excess, and IHS expect Henry Hub prices to drop below \$2/MMBtu for October, with prices potentially crashing next month if Gulf Coast storage inventories reach capacity. The inevitable supply response to lower oil and gas prices continues with production already down 7 Bcf/d since last December, and IHS expect Henry Hub prices to climb more than \$1/MBtu in 2021 as output continues to drop through next spring.

- **However, shale oil producers' supply response is uncertain and will critically influence 2021 natural gas prices.**

IHS believe that upstream oil and gas producers—under pressure from banks—will prioritize debt reduction and returns to shareholders in 2021, in contrast to the early years of shale gas development that prioritized growth and outspending cash flow. Based on this assumption, their current outlook foresees US annual average gas production dropping more than 3 Bcf/d in 2021, compounding the expected 2020 decline of nearly 2 Bcf/d.

IHS forecast a \$47/bbl 2021 WTI price. They assume that oil producers can hold production flat at a \$40/bbl WTI oil price, and with prices currently below this level, IHS believe that operators are unlikely to aggressively increase capex for next year given the pressure from banks and shareholders.

- **IHS do not expect production to resume material growth until summer 2021 or approach the November 2019 record of 95.4 Bcf/d until late 2023.**

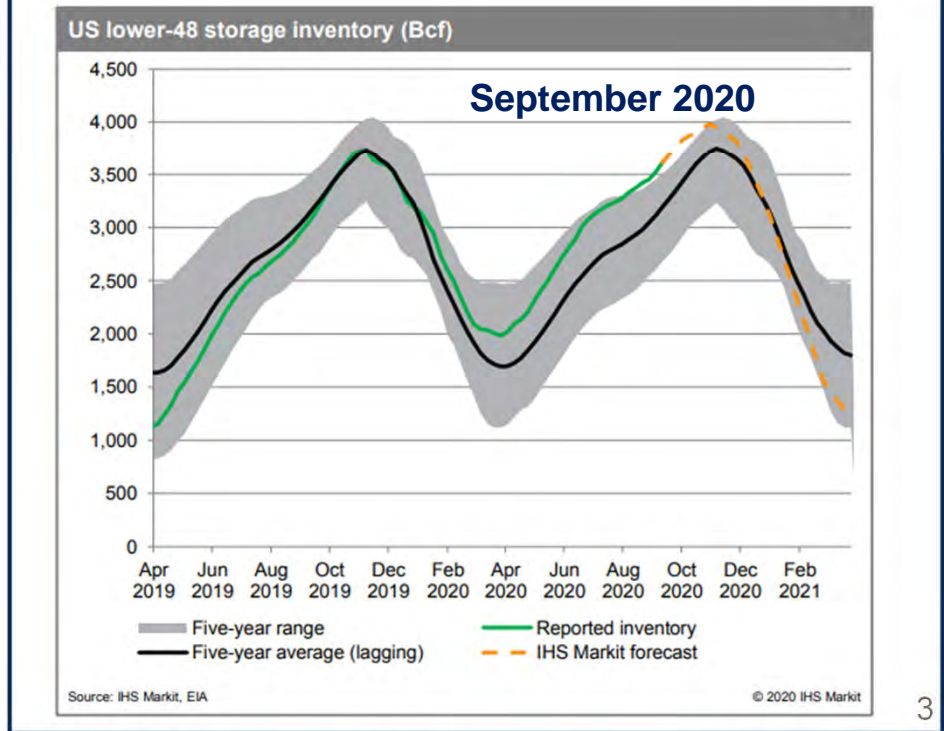
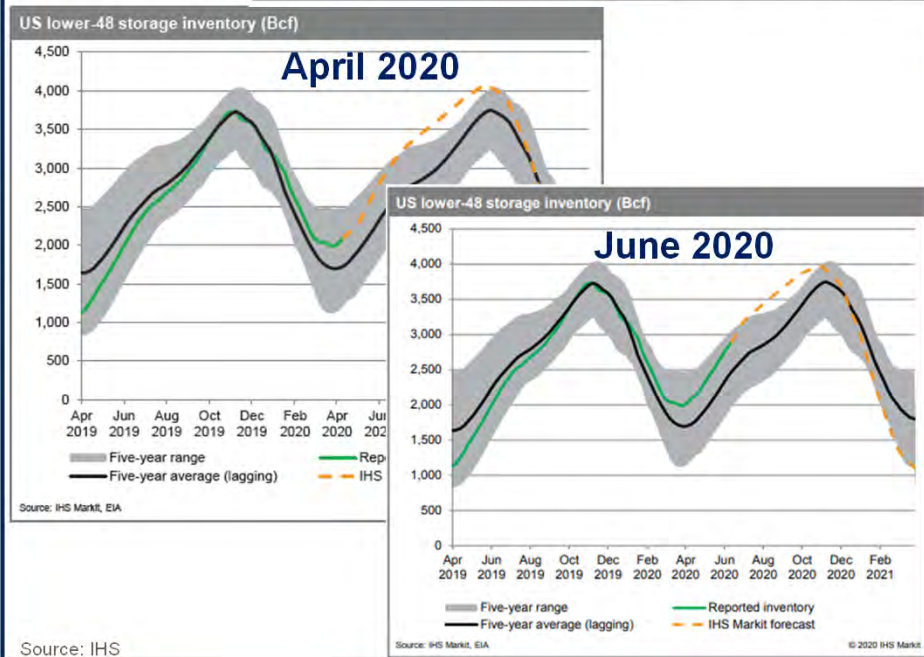
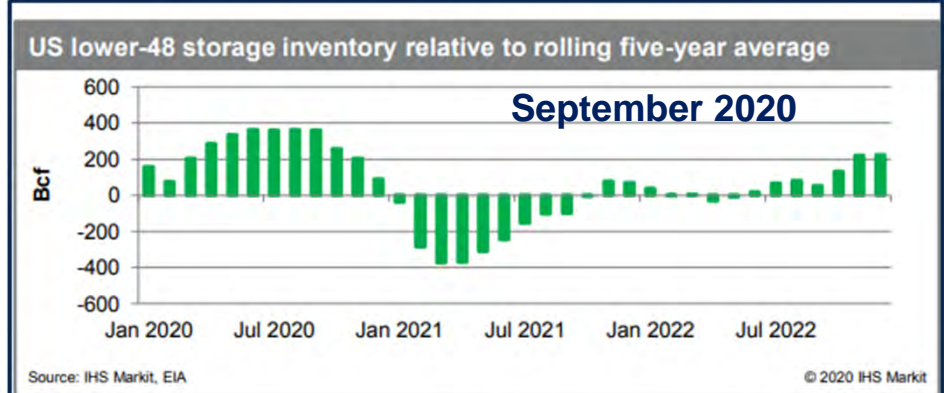
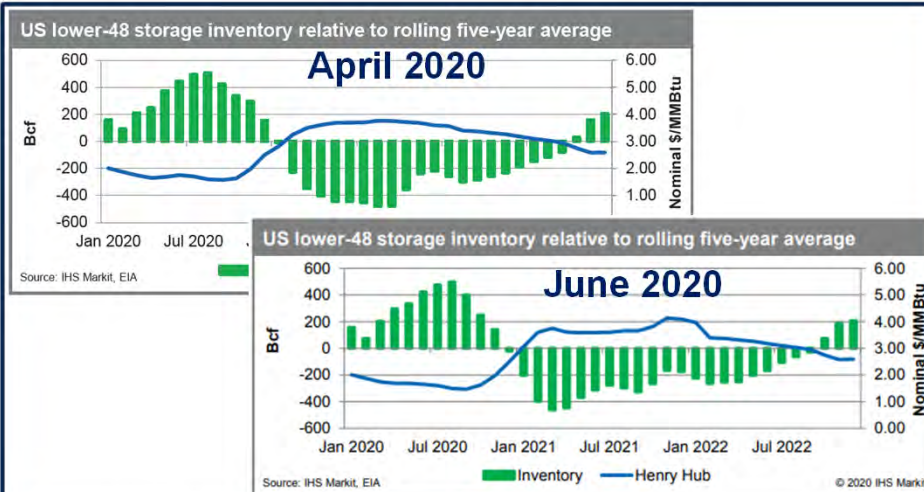
Higher gas and oil prices in 2021 should enable Haynesville growth and marginal Appalachian growth to emerge next spring, followed by stronger associated gas volumes during second half 2021. US production should continue to ramp up in 2022, helped by the start-up of the 2 Bcf/d Mountain Valley Pipeline (currently scheduled to enter service in spring 2021) and higher oil prices. However, Appalachian production growth eventually will again become a function of spare pipeline capacity, once the current available takeaway capacity is filled, making the US market ultimately more dependent on non-Appalachian supplies.

- **LNG exports will drive growth through 2023 as power sector demand falls because of higher prices and competition from renewables.**

IHS expect US LNG feed gas demand in 2023 to double from the 2019 level, to 12.0 Bcf/d, and more than offset a 2.6 Bcf/d decline in domestic demand. US power sector demand should reach a new record high in 2020 thanks to hot summer weather and low gas prices. However, we expect next year's decline of 2.2 Bcf/d to be twice this year's increase as prices rise. Thereafter, we expect barely any growth through 2023 in power sector gas burns given intensifying competition from renewable generation, with 2020–23 assumed wind and solar capacity additions of more than 66 GW and wind capacity additions of nearly 42 GW. Commercial loads should increase marginally in 2021–23, with industrial loads growing somewhat more strongly, following the expected 2020 drop stemming from COVID-19

US - Natural Gas Market

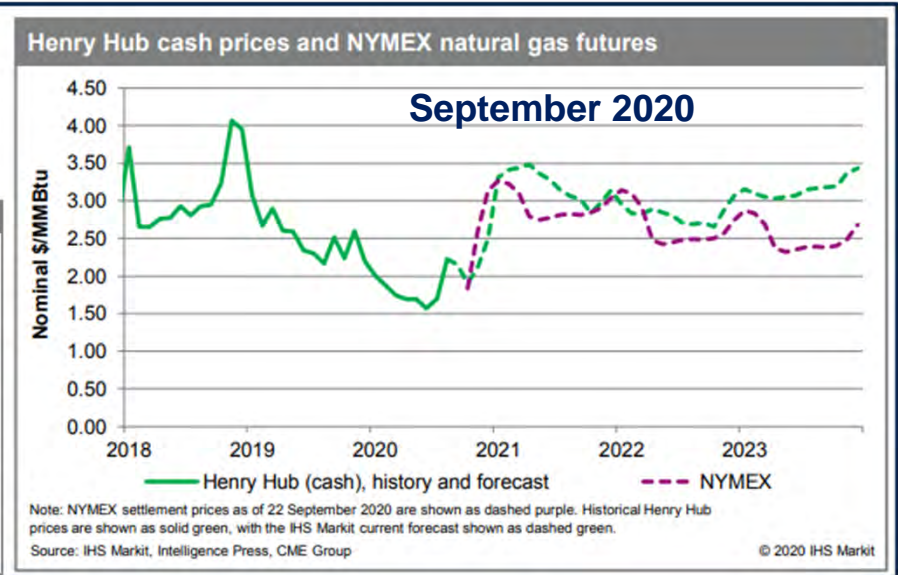
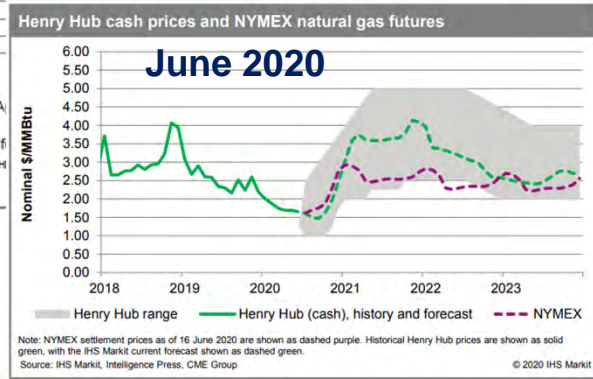
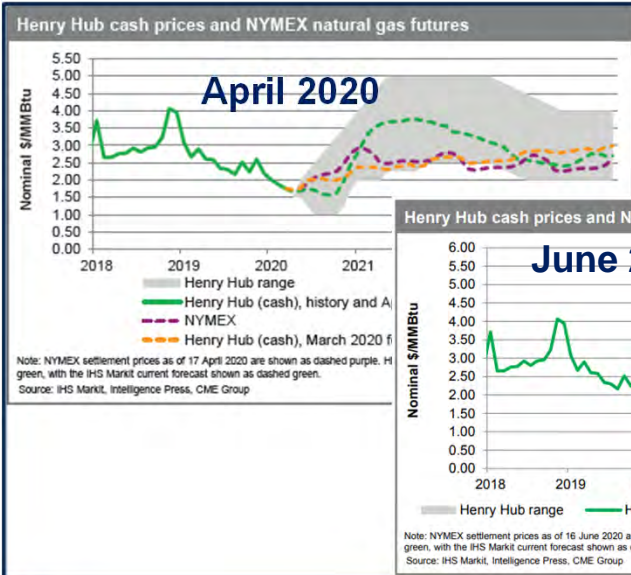
Storage & Prices



Source: IHS

US - Natural Gas Market

Storage & Prices



Benchmark natural gas price outlook (nominal \$/MMBtu)

	Mar-20	Apr-20	May-20	Summer 2019	Summer 2020	Summer 2021	Winter 2019/20	Winter 2020/21	Winter 2021/22	2019	2020	2021	2022	2023
Henry Hub	1.75	1.65	1.68	2.39	1.65	3.70	2.08	2.80	3.52	2.52	1.81	3.56	3.09	2.57
NYMEX	1.85	1.63	1.75	2.43	2.05	2.52	2.19	2.77	2.70	2.63	2.09	2.63	2.47	2.43

Source: IHS Markit, Intelligence Press (Henry Hub historical), NYMEX (history is monthly settlement and futures as of 17 April 2020)

April 2020

Benchmark natural gas price outlook (nominal \$/MMBtu)

	May-20	Jun-20	Jul-20	Summer 2019	Summer 2020	Summer 2021	Winter 2019/20	Winter 2020/21	Winter 2021/22	2019	2020	2021	2022	2023
Henry Hub	1.69	1.65	1.61	2.39	1.60	3.64	2.08	2.97	3.79	2.52	1.78	3.68	3.12	2.57
NYMEX	1.79	1.72	1.61	2.43	1.73	2.52	2.19	2.74	2.72	2.63	1.92	2.63	2.46	2.40

Source: IHS Markit, Intelligence Press (Henry Hub historical), NYMEX (history is monthly settlement and futures as of 16 June 2020)

June 2020

Benchmark natural gas price outlook (nominal \$/MMBtu)

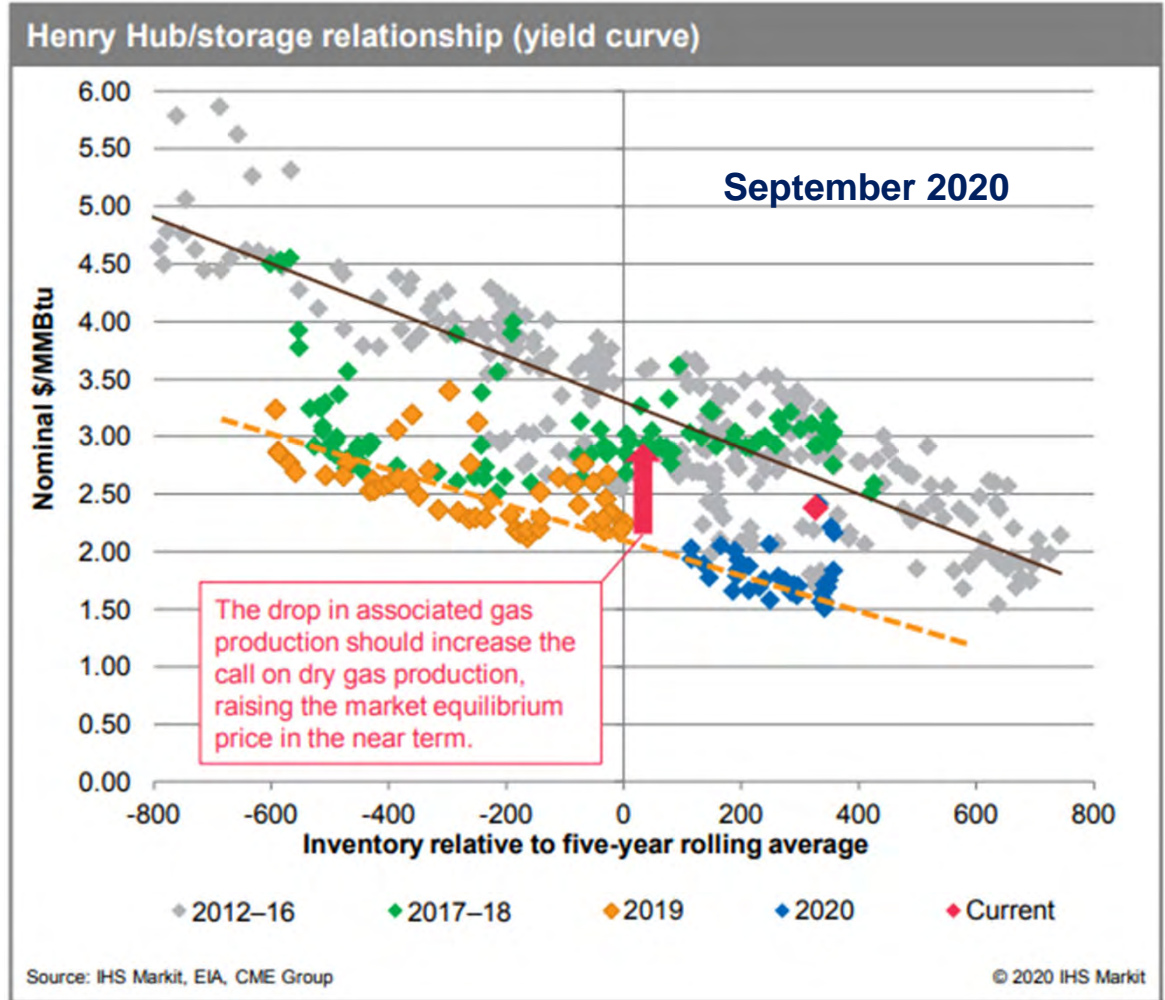
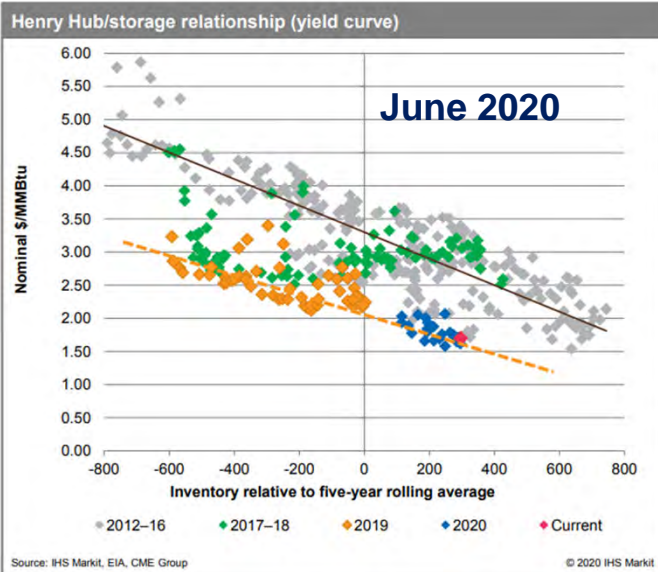
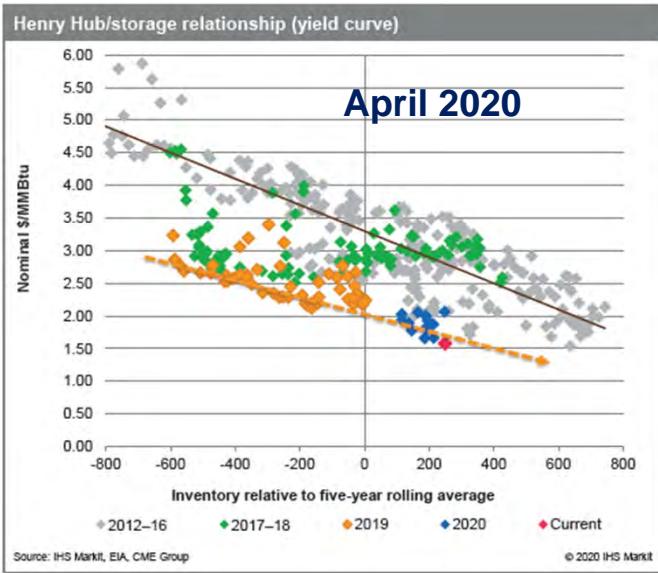
	Aug-20	Sep-20	Oct-20	Summer 2019	Summer 2020	Summer 2021	Winter 2019/20	Winter 2020/21	Winter 2021/22	2019	2020	2021	2022	2023
Henry Hub	2.22	2.15	1.90	2.39	1.84	3.17	2.08	2.96	2.95	2.52	1.93	3.21	2.82	3.16
NYMEX	1.85	2.58	1.83	2.43	1.84	2.80	2.19	3.06	3.02	2.63	2.04	2.93	2.65	2.51

Source: IHS Markit, Intelligence Press (Henry Hub historical), NYMEX (history is monthly settlement and futures as of 22 September 2020)

September 2020

US - Natural Gas Market

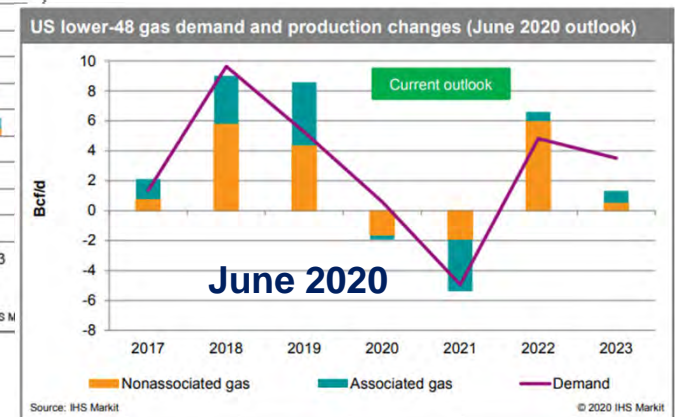
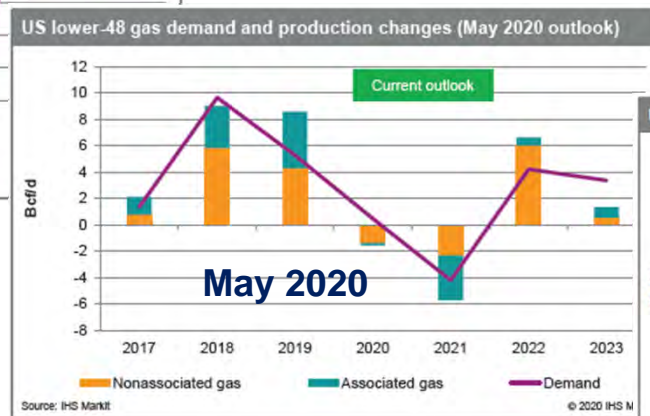
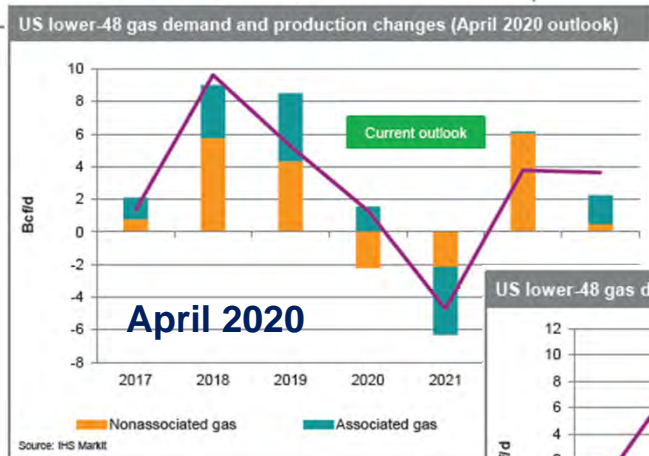
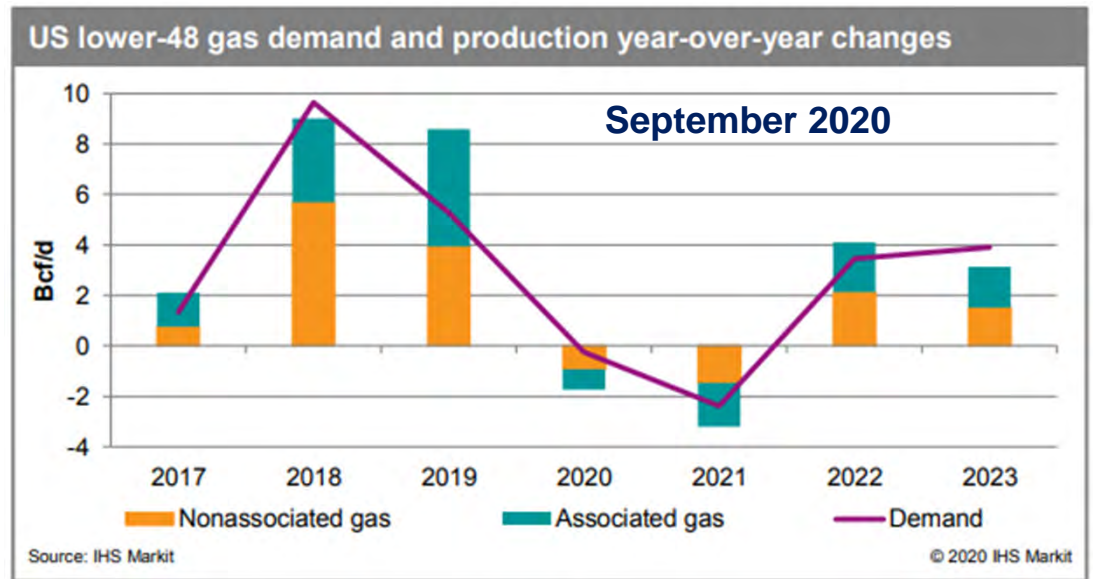
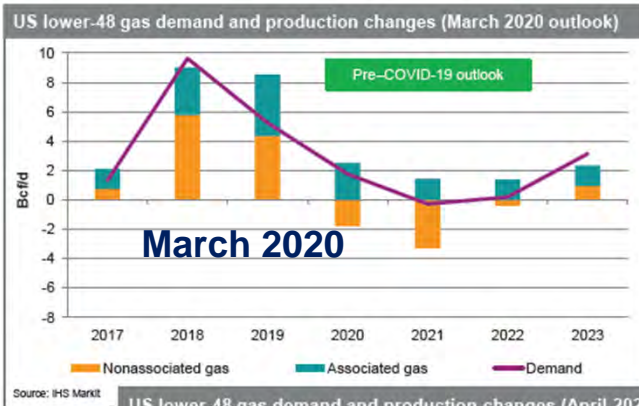
Storage & Prices



Source: IHS

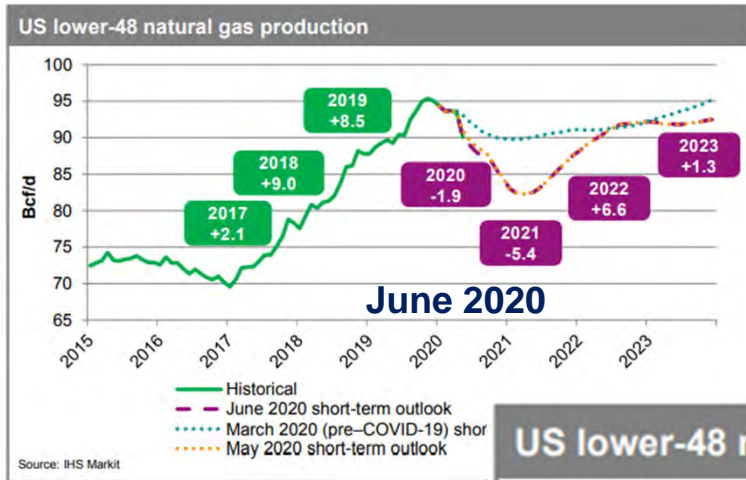
US - Natural Gas Market

L48 Gas Demand and Production

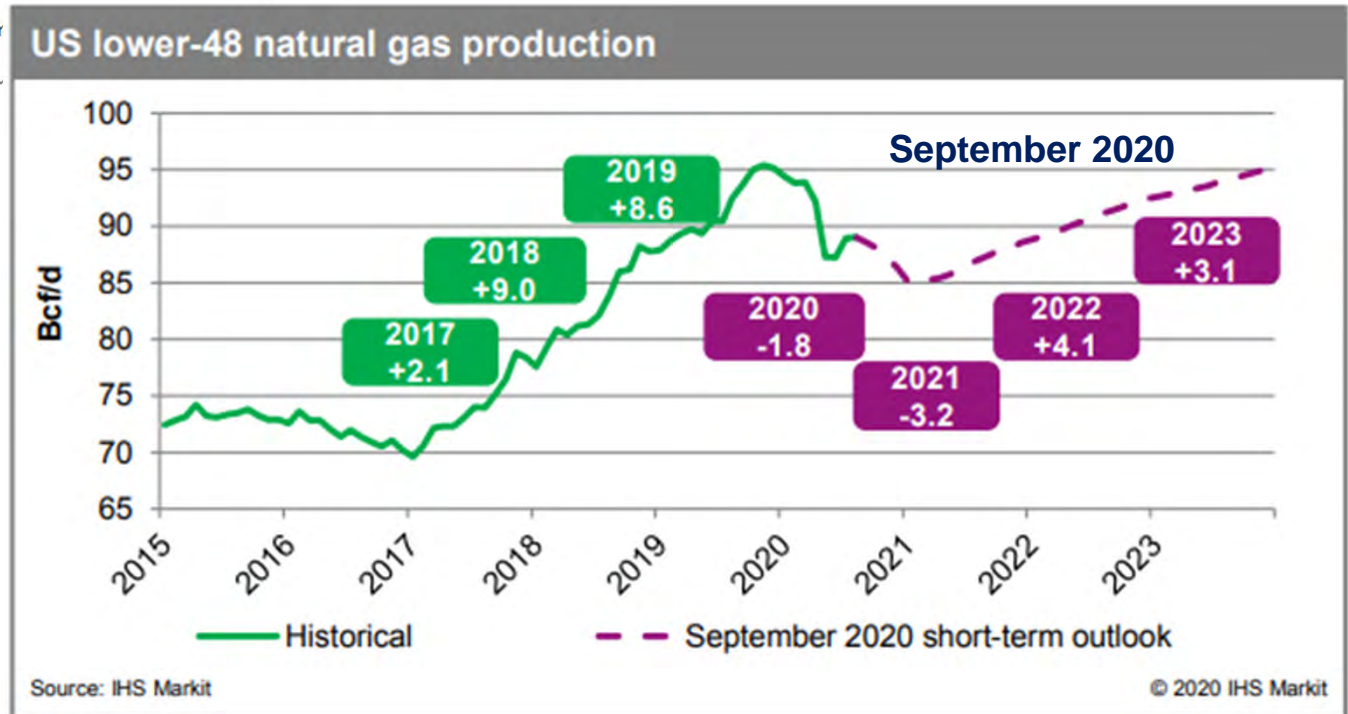


US - Natural Gas Market

L48 Gas Demand and Production



- The US market entered 2020 oversupplied, with an end-March inventory of more than 2 Tcf, after production growth outpaced demand growth by more than 3 Bcf/d in 2019, requiring production to fall this year to balance the market.
- **Weaker associated gas production will reduce US production by nearly 9 Bcf/d winter to winter**, while demand holds approximately stable, lowering end-of-winter storage inventories to more than 0.6 Tcf below the lagging five-year average and increasing the call on nonassociated gas production.
- **Associated gas growth in 2022–23 will not be enough to serve rapid, export-driven demand growth in that period**, creating the need to continue to increase nonassociated gas production.

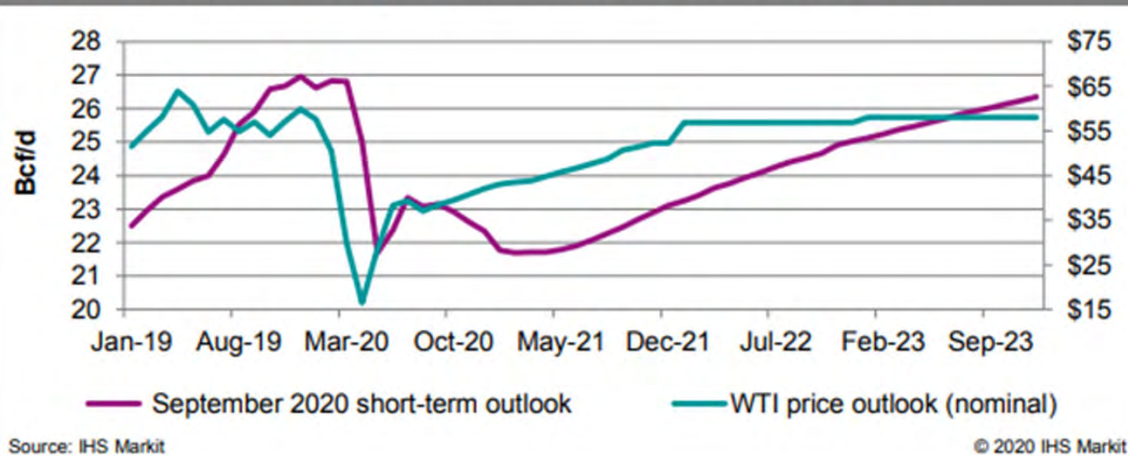


US - Natural Gas Market

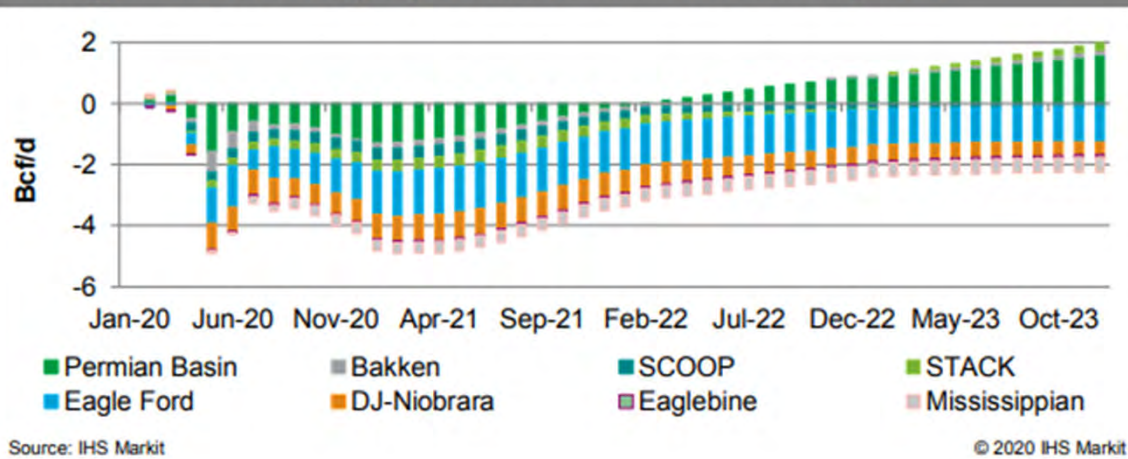
L48 Gas Demand and Production



US lower-48 associated gas production and WTI price outlook



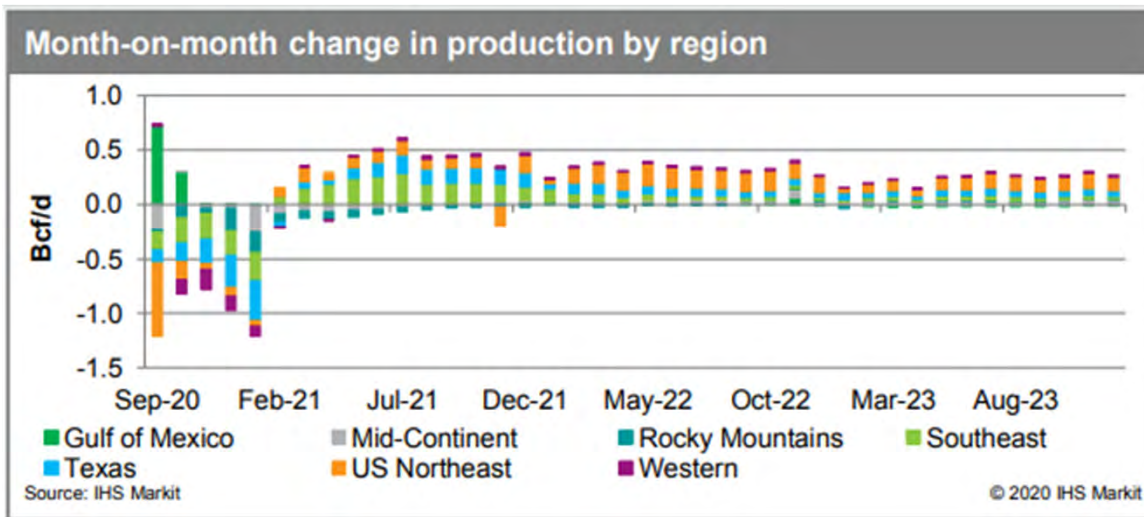
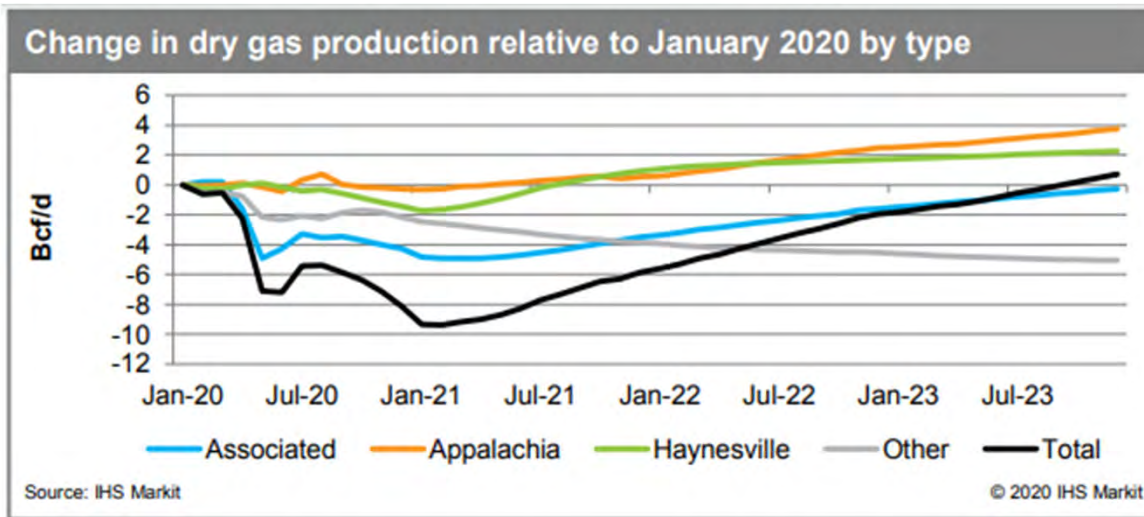
Change in associated gas production relative to January 2020



- US lower-48 associated gas production totaled 26.5 Bcf/d in January 2020, and IHS do not expect it to surpass this level during the forecast period (through 2023). As COVID-19 decimated global oil demand, prices, and production, US associated gas supply plummeted to 22 Bcf/d in June 2020. Although it has since recovered somewhat as most of the shut-in volumes have returned, IHS expect the impact of lower drilling activity to reduce associated gas even further, to an average of 21.7 Bcf/d for first quarter 2021, before higher oil prices raise drilling activity and lead to increased production.
- IHS expect associated gas to climb by 4.7 Bcf/d, or 21%, between May 2020 and December 2023, with Permian Basin output growing by 3.2 Bcf/d, or 29%, while SCOOP and STACK output, which has a comparatively minor accumulated decline curve to overcome, grows a combined 0.6 Bcf/d, or 51%. Higher-cost Eagle Ford output is expected to be relatively flat. Underpinning the growth in associated gas is an expectation of increasing oil prices, with expected annual average WTI prices rising from \$39.37/bbl in 2020 to just above \$58/bbl for 2023.

US - Natural Gas Market

L48 Gas Demand and Production

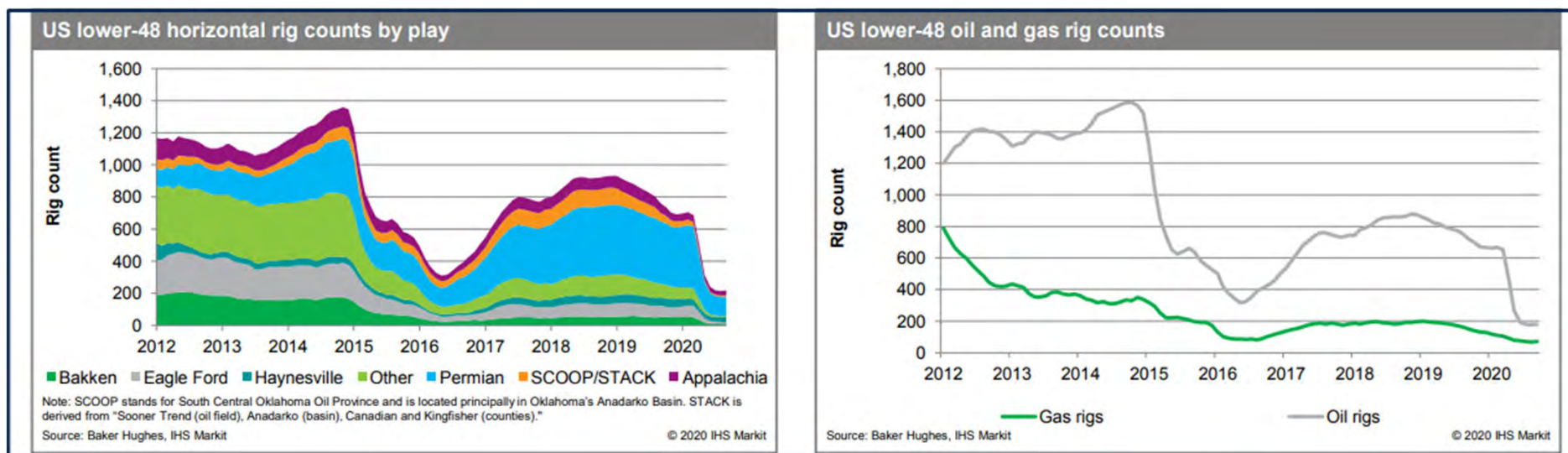


- The reduced US associated gas resulting from weaker oil production should send a **strong price signal to rapidly raise US production from predominantly dry gas areas during 2021–23**. IHS expect production to reach an **inflection point during the 2020/21 winter** as the market moves from **oversupplied to undersupplied**, creating a need to increase production. With limited growth coming from associated gas, a strong call on Appalachian and Haynesville production will emerge.
- IHS expect production to drop by **4.0 Bcf/d from August 2020 to February 2021**, with associated gas falling by 1.4 Bcf/d and nonassociated gas down 2.6 Bcf/d, owing to the momentum of reduced drilling activity resulting from the oversupplied 2020 market and reduced demand.
- **Between February 2021 and December 2021, production will increase by an estimated 3.5 Bcf/d**. With associated gas expected to contribute only 1.4 Bcf/d to growth during this period, there will be a strong call on nonassociated gas, with Haynesville output climbing 2.6 Bcf/d and Appalachian volumes growing 0.8 Bcf/d.
- Production then should continue to grow, climbing an estimated 6.6 Bcf/d between December 2021 and the end of the forecast period.

US - Natural Gas Market

Rig Count

September 2020



Baker Hughes US rig count was down by 13 w/w at 266 – UBS (22/06/2020)

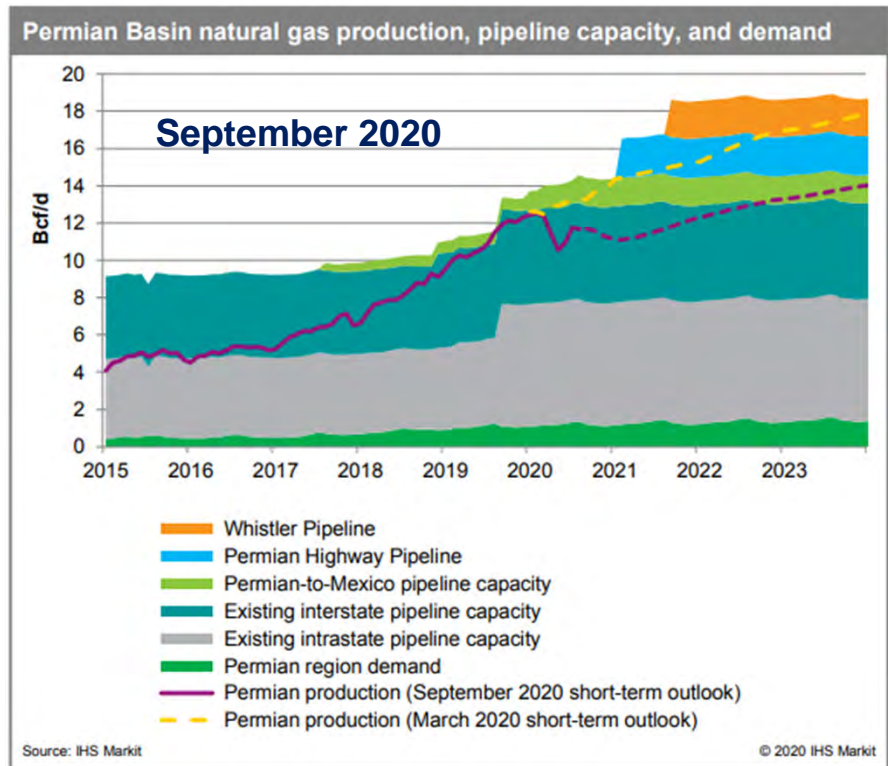
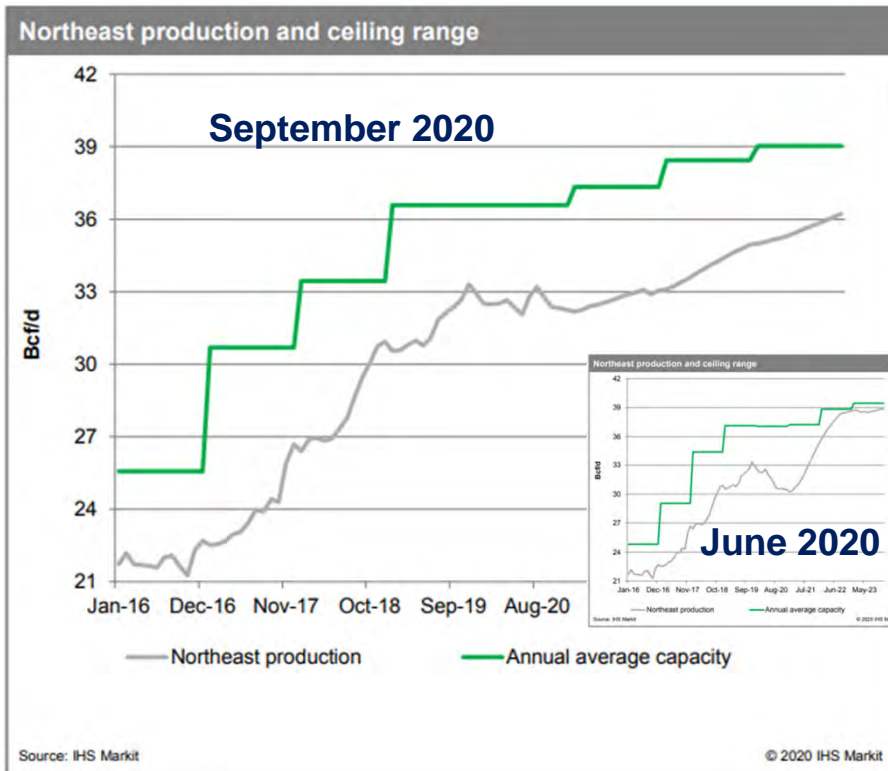
- Baker Hughes published its weekly North American rig count on Friday. The **total US rig count was down by 13 w/w at 266 (-701 y/y, -72% y/y)**. The US **oil rig count was down by 10 w/w to 189** primarily due to a decline at the Permian basin, which was down by 5 w/w to 132, while Eagle Ford was down by 2 w/w to 10. The **oil rig count is down around ~79%** from the recent peak of 888 in mid-November 2018. **US gas rig count was down by 3 w/w to 75 due to decline at Haynesville and Marcellus basins**, which were down 1 w/w each. Utica remained unchanged during the week. The US land count was down by 11 w/w to 255, while Gulf of Mexico was down by 2 w/w to 11. 2020 YTD average US total rig count is 601 (-41% y/y), of which gas is 98 (-49% y/y) and oil is 501 (-40% y/y). (Baker Hughes, UBS)

Baker Hughes US rig count up by 6 w/w to 261 – UBS (28/09/2020)

- Baker Hughes published its weekly North American rig count on Friday. The **total US rig count was up by 6 w/w to 261 (-599 y/y, -70% y/y)**. The US **oil rig count was up by 4 w/w to 183** primarily due to increase at Permian and Eagle Ford basins, which were up by 2 w/w each. **The oil rig count is down around ~79%** from the recent peak of 888 in mid-November 2018. **US gas rig count was up by 2 w/w to 75 due to increase at Eagle Ford, Utica and Marcellus basins (+1 w/w each)**. The US land count was up by 6 w/w to 247, while Gulf of Mexico was unchanged w/w at 14. 2020 YTD average US total rig count is 477 (-52% y/y), of which gas is 89 (-51% y/y) and oil is 386 (-52% y/y). (Baker Hughes, UBS)

US - Natural Gas Market

Gas Pipelines



- Low prices have reduced drilling activity and halted growth in Appalachian production. The financial positions of operators is expected to delay any significant growth in Appalachia until 2022, despite significantly increased prices in 2021.
- **Mountain Valley Pipeline** (2 Bcf/d, Pennsylvania to Virginia) is now scheduled to enter service in early 2021, delayed from EQT's prior estimate of December 2020, while the sponsors of **Atlantic Coast Pipeline** (1.5 Bcf/d, West Virginia to North Carolina) canceled the greenfield project on 5 July.

- Given current Permian Basin production outlook, the basin should be much less reliant on new pipeline takeaway infrastructure during the next few years.
- **Permian Highway Pipeline** (Kinder Morgan & EagleClaw). This 2.1 Bcf/d pipeline will transport gas from Waha to Katy, Texas. The project is now scheduled to start in Q1 2021 (delayed from Oct 2020).
- **Whistler Pipeline** (MPLX, WhiteWater Midstream, Stonepeak Infrastructure Partners, and West Texas Gas). This 2 Bcf/d pipeline will transport gas from the Waha area to Agua Dulce, Texas. The project is scheduled to start service in 3Q 2021.

US - Natural Gas Market

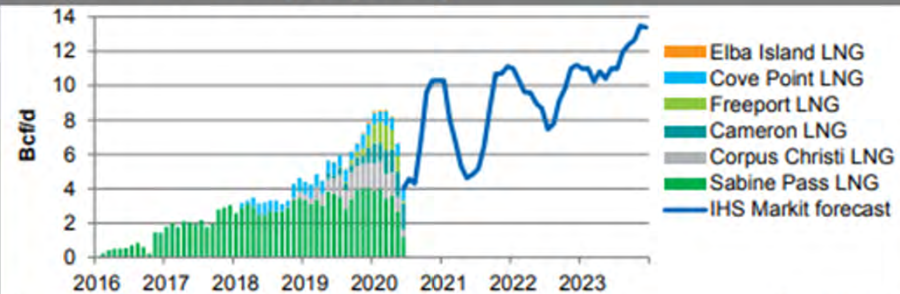
L48 LNG feed Gas



REPSOL

June 2020

US lower-48 LNG feed gas by facility

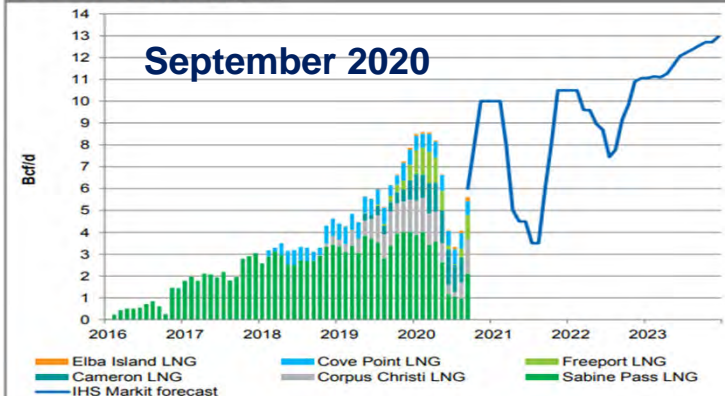


Source: IHS Markit, PointLogic

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US lower-48 LNG feed gas

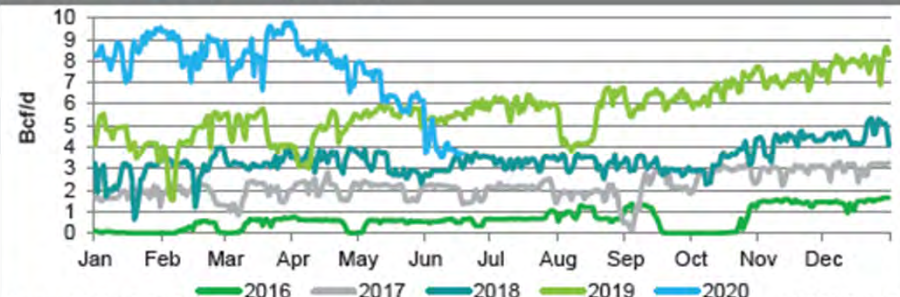
September 2020



Source: IHS Markit, PointLogic

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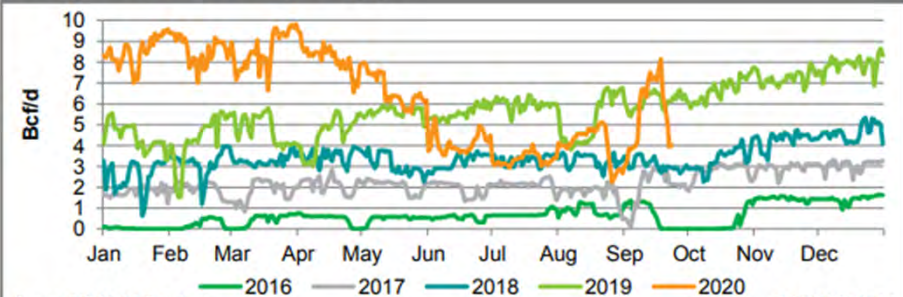
US lower-48 LNG feed gas by year



Source: IHS Markit, PointLogic

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US lower-48 LNG feed gas by year



Source: IHS Markit, PointLogic

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- US LNG feed gas demand should move above year-earlier levels from October 2020 onward, enabled by the significant liquefaction capacity additions of the past 12 months. IHS expect winter 2020/21 US feed gas demand to be up 1.4 Bcf/d from last winter's average, at 9.6 Bcf/d.
- All LNG export projects that form part of the North American first wave of buildout are now fully online. All of Elba Island LNG's trains, along with all other incremental capacity slated to come online this year (at Freeport LNG and Cameron LNG), have started service. There is also up to 4.5 Mtpa (about 0.7 Bcf/d) of debottlenecked capacity at Sabine Pass LNG and Corpus Christi LNG. Additionally, commissioning activities have begun at Corpus Christi LNG Train 3, which is part of the second wave of the US LNG export build-out.

US LNG

Current Situation (September 2020)



● **Rising Asian LNG prices to help more US loadings in November – Reuters (21/09/2020)**

Buyers of liquefied natural gas (LNG) from the United States are **expected to cancel no more than five cargoes for November** loading as winter demand in Asia has lifted prices, after dozens of cancellations earlier this year, several trade sources said on Monday.

Buyers usually have to notify some U.S. producers by the 20th of each month about cargo rejections for the month after the next one. It was not immediately clear if any cargoes have been cancelled for November.

Four sources said they expect a maximum of five cargoes to be cancelled, while three sources said they expect no cancellations at all.

This is in contrast to large-scale cancellations in previous months due to low demand and prices amid the coronavirus pandemic.

Up to 10 cargoes were likely cancelled for October loading, around 25 for September, 40 to 45 for July and August and around 20 for June.

Spot LNG prices in Asia have risen to multi-month highs in recent weeks supported by firmer demand and supply issues in Australia and the United States. "Given the (price) spread, I believe no cargo is cancelled," one of the sources said.

Another trader said the price arbitrage works for U.S. cargoes to be loaded in November as demand from China was strong and Indian demand was likely rising too.

Consultancy Energy Aspects said in a report last week that in case of cold weather in northeast Asia in winter, spot purchases from buyers in Japan and South Korea could also increase.

Asian spot prices for November delivery are at around **\$4.80 per million British thermal units (mmBtu)**, the highest since January. The December price for S&P Global Platts **Japan Korea Marker (JKM) LNG** is **over \$5.00 per mmBtu**. In Europe, the November contract at the **Dutch Title Transfer Facility (TTF)** gas hub traded at **around \$4.50 per mmBtu** on Monday.

"We expect that the demand boost from a cold start to winter across Northeast Asia would be enough to widen the JKM-TTF spreads for November and December contracts sufficiently for Northeast Asia to attract cargoes from U.S. export facilities," the report from Energy Aspects said.

US LNG

Current Situation (September 2020)



● US LNG utilization expected to rebound quickly after storm passes Gulf Coast – Platts (21/09/2020)

Feedgas deliveries to major US liquefaction facilities fell sharply Sept. 22 for the fourth day in a row as **pilot services in channels leading to several Gulf Coast terminals remained suspended or restricted due to high seas caused by Beta**. Meanwhile, **Sempra Energy's Cameron LNG remained offline from an earlier storm**, and along the East Coast Dominion Energy's **Cove Point terminal was undergoing annual maintenance**.

The disruptions have bolstered LNG spreads, with the netback from the Dutch TTF rising to a year to date high of \$1.34/MMBtu on Sept. 22. Relatively cheap feedgas and shipping costs also have contributed to positive market fundamentals that will likely incentivize a strong return to exports once Beta, which weakened from a tropical storm to a depression after coming ashore in Texas, passes the area. **Total US feedgas demand dropped to 3.9 Bcf/d** -- the lowest level since Sept. 2 -- from 5.1 Bcf/d the day before, S&P Global Platts Analytics data show. Flows had surged to 8.3 Bcf/d, even with Cameron offline, on Sept. 18, just as Beta was approaching the US coast.

The decline in flows Sept. 22 was largely driven by **lower utilization at Cheniere Energy's Sabine Pass terminal in southwest Louisiana and Freeport LNG**, south of Houston. Pilot services to the channel serving Sabine Pass remained suspended Sept. 22, while vessel traffic within the channel serving Freeport LNG was restricted, according to separate shipping advisories to customers. With Beta weakening as the day progressed, the restrictions were expected to ease.

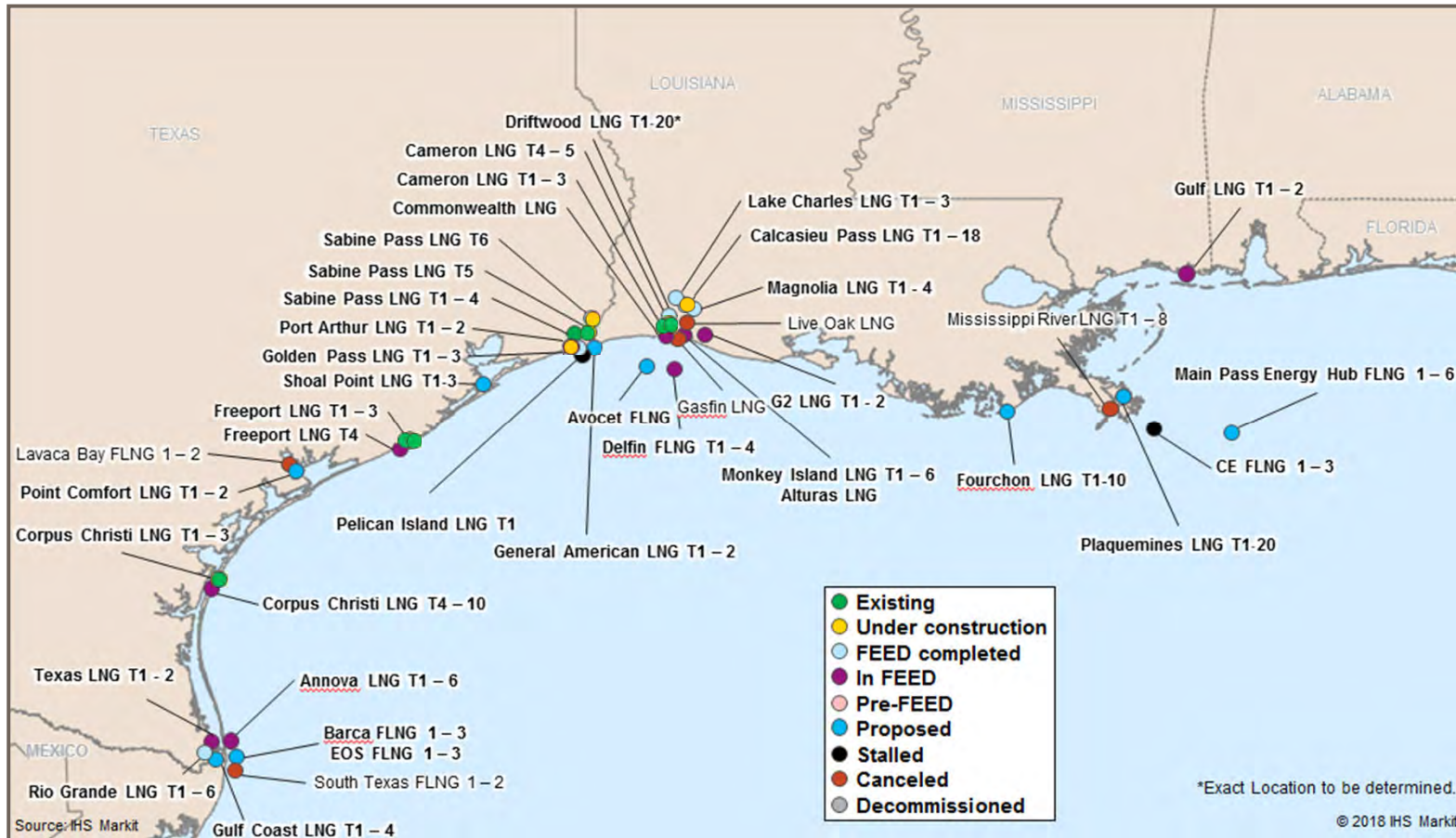
Cameron LNG's three trains remained offline for the 28th day in a row, after shutting down ahead of Hurricane Laura's landfall in Louisiana on Aug. 27 and staying down due to damage to power infrastructure in the area. As of Sept. 22, power had been restored to 99% of utility Entergy's affected customers. Partial power was restored to Cameron LNG. Still, the CEO of operator and majority owner Sempra said recently it could be as late as the end of October before the terminal was back to full operations. In Maryland, **Cove Point remained offline for the second day in a row as planned maintenance continued**. Dominion has declined to say how long the outage will last; the facility's annual maintenance in 2019 lasted 24 days.

The post-storm recovery in US LNG exports is set to continue in the lead up to winter. **Five or fewer cargoes scheduled to be loaded in November from US export terminals were said to have been canceled by customers**. That's the lowest number since May.

The international value of LNG has been recovering steadily since the middle of the year, when record lows for several Platts LNG markers were recorded. **The recovery of LNG prices in Asia and Europe**, the two main markets for US exports, has in turn increased the value of US-origin spot cargoes, which had been trending below the cost of domestic gas prices since the start of April. A recent fall in the value of US gas prices has also helped to bolster the viability of exports. 14

US LNG

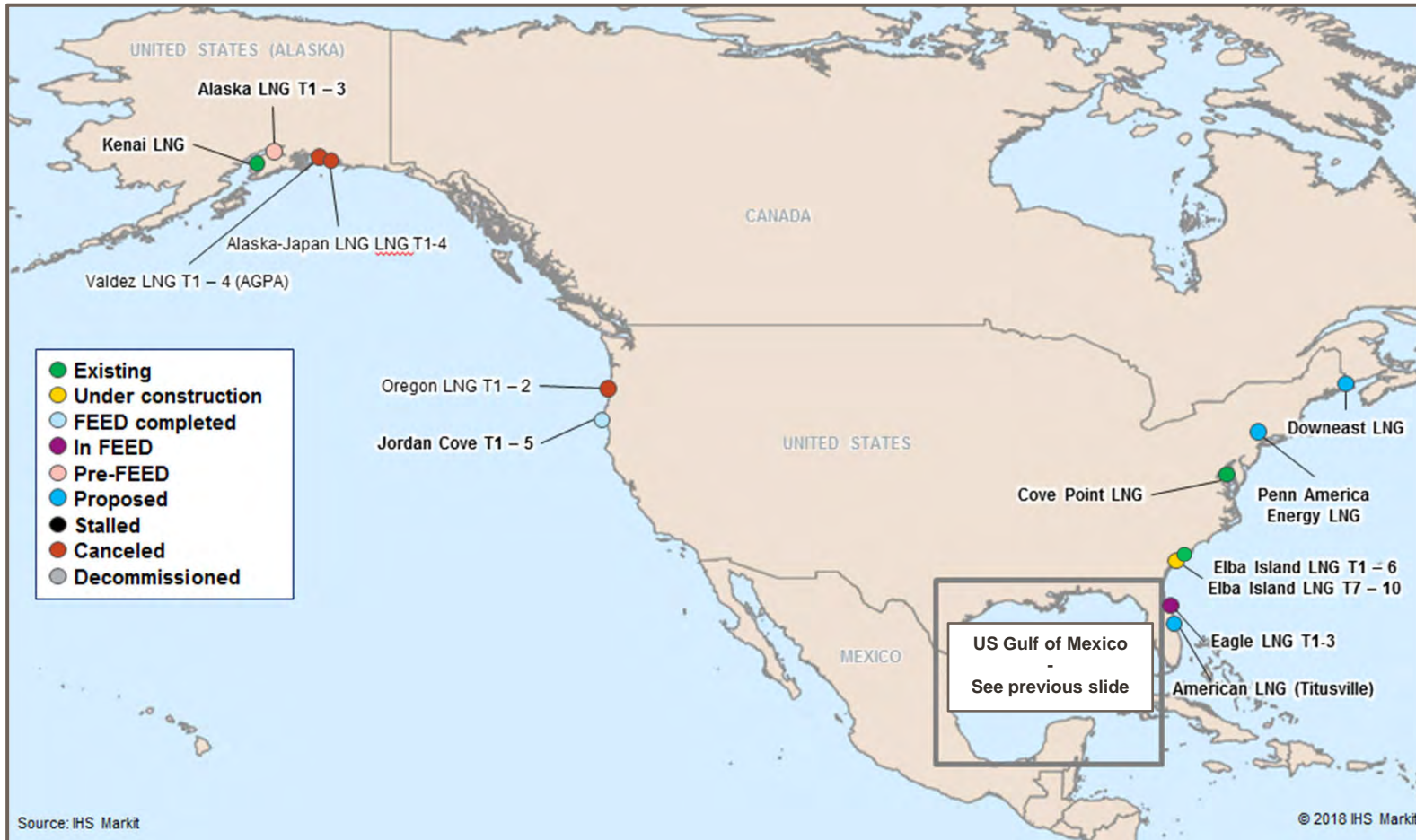
Proposed liquefaction facilities



- Existing capacity: The first wave of the US LNG buildout concluded in August 2020, bringing the country's liquefaction capacity to 71.6 Mtpa. Projects in commercial operations include Sabine Pass LNG T1-5 (25 Mtpa), Cove Point LNG (5.25 Mtpa), Corpus Christi LNG T1-2 (10 Mtpa), Cameron LNG T1-3 (13.5 Mtpa), Freeport LNG T1-3 (15.3 Mtpa), and Elba Island LNG (2.5 Mtpa).
- Nearly 21 Mtpa of capacity started commercial operations in 2020: Cameron LNG T2-3 (9 Mtpa), Freeport LNG T2-3 (10.2 Mtpa), and Elba Island LNG T2 and T5-10 (1.75 Mtpa). All of these projects except for Corpus Christi LNG were originally built as regasification terminals.

US LNG

Proposed liquefaction facilities

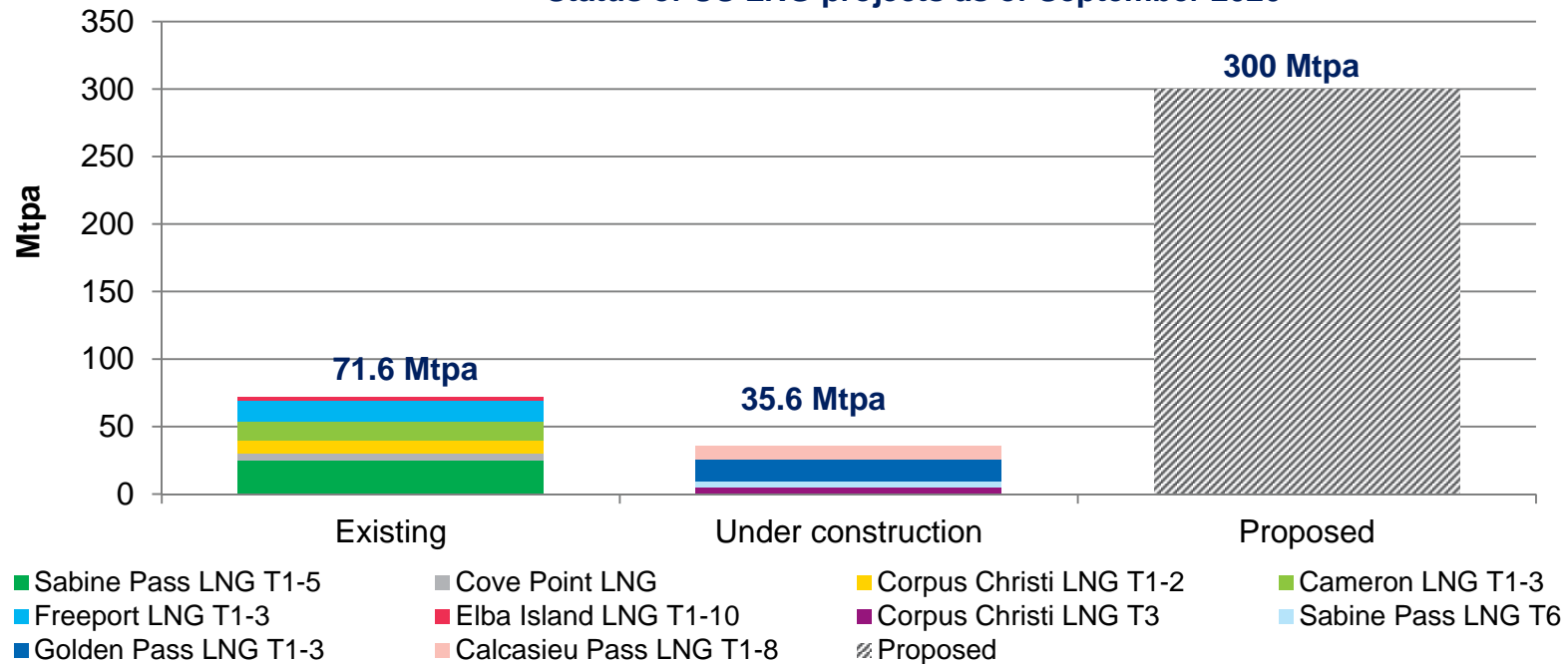


- **Under-construction capacity: 35.6 Mtpa** of capacity is under construction at **Corpus Christi LNG T3** (5 Mtpa), **Golden Pass LNG** (15.6 Mtpa), **Sabine Pass LNG T6** (5 Mtpa), and **Calcasieu Pass LNG** (10 Mtpa) as part of the **second wave** of US LNG set to start up in the early 2020s. A revival in contracting activity enabled many of these FIDs in 2018-2019, which helped to break a multi-year impasse in global liquefaction investment.

US LNG LNG Export Activity



Status of US LNG projects as of September 2020



Notes: Excludes stalled and canceled projects as well as Kenai LNG.

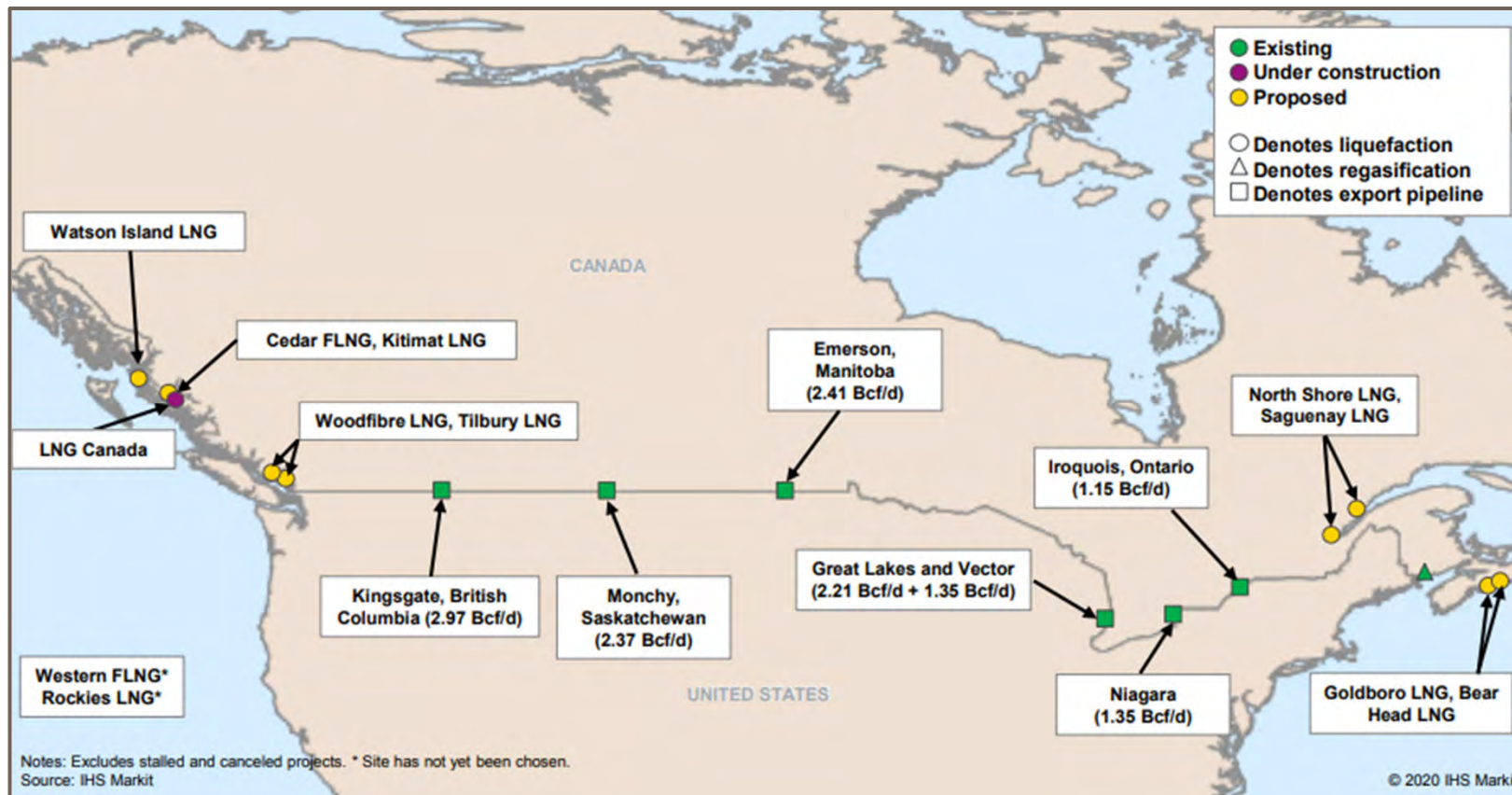
Source: IHS Markit

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- **Approximately 400 Mtpa of capacity across more than 30 projects (excluding stalled and cancelled projects) in the lower-48 is operational, under construction, or proposed.**
- **Proposed capacity:** Proposed liquefaction capacity in the lower-48 is nearly **300 Mtpa** (excluding stalled and cancelled projects). With competition amongst themselves as well as a variety of supply options globally, US liquefaction developers have focused on reducing costs and pursuing a wider variety of commercial strategies in order to attract customers. However, the prospects for **additional FIDs have dimmed significantly in the current market environment**, and IHS Markit does **not expect another US LNG FID for several years**. **Only one US LNG offtake agreement (Plaquemines LNG/EDF) has been signed so far in 2020**, and numerous projects have delayed FIDs.

Canada LNG

Status LNG projects



- Canada is **looking to export gas primarily from the West coast**. More than **20 liquefaction projects** have been proposed at various times in Canada, with 18 focusing on potential shale gas production in British Columbia and northwest Alberta. **LNG Canada (14 Mtpa)** achieved FID in October 2019, which marks the first liquefaction FID in Canada. Beyond LNG Canada, **Woodfibre LNG (2.1 Mtpa)** is the other most advanced project in Western Canada.
- There are also four currently proposed projects on Canada's East coast, totaling 34 Mtpa of capacity. The projects face considerable pipeline transportation and related gas supply challenges, though **Goldboro LNG** has made notable progress in the past year.