Energy Tidbits

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Supplemental Documents

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Table 1. Summary of natural gas supply and disposition in the United States, 2016-2021

(billion cubic feet)

Year and Month	Gross Withdrawals	Marketed Production	NGPL Production[a]	Dry Gas Production[b]	Supplemental Gaseous Fuels[c]	Net Imports	Net Storage Withdrawals[d]	Balancing Item[e]	Consumption[f]
2016 Total	**32,592**	**28,400**	**1,808**	**26,592**	**57**	**671**	**340**	**-216**	**27,444**
2017 Total	**33,292**	**29,238**	**1,897**	**27,341**	**66**	**-121**	**254**	**-400**	**27,140**
2018 Total	**37,326**	**33,009**	**2,235**	**30,774**	**69**	**-719**	**314**	**-300**	**30,139**
2019									
January	3,385	2,981	208	2,773	5	-74	730	-25	3,409
February	3,067	2,709	189	2,520	5	-97	586	-4	3,010
March	3,396	3,019	211	2,809	5	-121	257	-43	2,907
April	3,329	2,934	205	2,729	5	-132	-401	4	2,205
May	3,432	3,055	213	2,842	5	-161	-494	-67	2,126
June	3,317	2,969	207	2,761	5	-159	-452	-36	2,119
July	3,412	3,084	215	2,869	5	-163	-270	-31	2,410
August	3,467	3,159	220	2,939	5	-165	-303	-35	2,441
September	3,399	3,054	213	2,841	5	-186	-440	-2	2,217
October	3,571	3,200	223	2,977	5	-215	-364	-75	2,328
November	3,496	3,120	218	2,902	5	-218	159	-70	2,779
December	3,621	3,232	226	3,007	5	-225	433	-73	3,148
Total	**40,892**	**36,515**	**2,548**	**33,968**	**62**	**-1,915**	**-558**	**-458**	**31,099**
2020									
January	E3,590	E3,182	234	E2,948	6	-248	571	20	3,296
February	E3,342	E2,959	212	E2,747	6	-216	535	-40	3,033
March	E3,561	E3,166	235	E2,931	6	-284	49	R6	2,708
April	E3,372	E3,002	214	E2,788	6	-231	-306	-12	2,245
May	E3,298	E2,934	212	E2,722	5	-209	-448	1	2,071
June	E3,225	E2,876	226	E2,651	5	-151	-358	R-11	2,135
July	E3,383	E3,023	241	E2,783	6	-139	-161	4	2,493
August	E3,388	E3,037	240	E2,797	4	-148	-227	-21	2,404
September	E3,273	E2,914	230	E2,684	4	-221	-323	30	2,174
October	E3,379	E2,996	238	E2,757	5	-282	-92	-64	2,323
November	E3,370	E2,990	231	E2,760	5	-315	-4	-6	2,440
December	E3,508	E3,094	225	E2,869	6	-285	587	-18	3,158
Total	**E40,690**	**E36,173**	**2,737**	**E33,436**	**64**	**R-2,730**	**-178**	**-110**	**30,482**
2021									
January	RE3,506	RE3,100	232	RE2,868	5	R-279	707	R-15	R3,287
February	RE2,934	E2,588	R170	E2,417	6	-155	781	R-12	3,037
March	E3,493	E3,092	229	E2,863	5	-356	59	37	2,608
2021 3-Month YTD	**E9,933**	**E8,779**	**632**	**E8,148**	**16**	**-790**	**1,547**	**11**	**8,932**
2020 3-Month YTD	**E10,493**	**E9,306**	**680**	**E8,626**	**18**	**-748**	**1,155**	**-13**	**9,037**
2019 3-Month YTD	**9,848**	**8,709**	**608**	**8,101**	**15**	**-291**	**1,573**	**-72**	**9,326**

[a] Monthly natural gas plant liquid (NGPL) production, gaseous equivalent, is derived from sample data reported by gas processing plants on Form EIA-816, *Monthly Natural Gas Liquids Report*, and Form EIA-64A, *Annual Report of the Origin of Natural Gas Liquids Production*.

[b] Equal to marketed production minus NGPL production.

[c] Supplemental gaseous fuels data are collected only on an annual basis except for the Dakota Gasification Co. coal gasification facility which provides data each month. The ratio of annual supplemental fuels (excluding Dakota Gasification Co.) to the sum of dry gas production, net imports, and net withdrawals from storage is calculated. This ratio is applied to the monthly sum of these three elements. The Dakota Gasification Co. monthly value is added to the result to produce the monthly supplemental fuels estimate.

[d] Monthly and annual data for 2016 through 2019 include underground storage and liquefied natural gas storage. Data for January 2020 forward include underground storage only. See Appendix A, Explanatory Note 5, for discussion of computation procedures.

[e] Represents quantities lost and imbalances in data due to differences among data sources. Net imports and balancing item excludes net intransit deliveries. These net intransit deliveries were (in billion cubic feet): 35 for 2019; -11 for 2018; 14 for 2017; and 70 for 2016. See Appendix A, Explanatory Note 7, for full discussion.

[f] Consists of pipeline fuel use, lease and plant fuel use, vehicle fuel, and deliveries to consuming sectors as shown in Table 2.

R Revised data.

E Estimated data.

RE Revised estimated data.

Notes: Data for 2016 through 2018 are final. All other data are preliminary unless otherwise indicated. Geographic coverage is the 50 states and the District of Columbia. Totals may not equal sum of components because of independent rounding.

Sources: 2016-2019: U.S. Energy Information Administration (EIA), *Natural Gas Annual 2019*. January 2020 through current month: Form EIA-914, *Monthly Crude Oil and Lease Condensate, and Natural Gas Production Report*; Form EIA-857, *Monthly Report of Natural Gas Purchases and Deliveries to Consumers*; Form EIA-191, *Monthly Underground Gas Storage Report*; EIA computations and estimates; and Office of Fossil Energy, *Natural Gas Imports and Exports*. See Table 7 for detailed source notes for Marketed Production. See Appendix A, Notes 3 and 4, for discussion of computation and estimation procedures and revision policies.

Table 5

Table 5. U.S. natural gas exports, 2019-2021

(volumes in million cubic feet; prices in dollars per thousand cubic feet)

	2021 3-Month YTD	2020 3-Month YTD	2019 3-Month YTD	2021 March	2021 February	2021 January	2020 Total
Exports							
Volume (million cubic feet)							
Pipeline							
Canada	252,916	263,164	272,011	90,629	R77,951	R84,335	R899,960
Mexico	493,792	478,497	435,572	183,051	R137,381	R173,360	1,990,809
Total Pipeline Exports	**746,707**	**741,661**	**707,583**	**273,680**	**R215,332**	**R257,696**	**R2,890,769**
LNG							
Exports							
By Vessel							
Argentina	2,238	0	0	2,238	0	0	R17,232
Bahamas	96	47	36	39	29	28	257
Bangladesh	6,713	3,640	0	3,566	0	3,148	10,660
Barbados	49	87	45	14	19	17	241
Belgium	3,484	20,356	3,390	3,484	0	0	R31,946
Brazil	56,227	25,762	6,517	21,977	13,118	21,132	111,908
Canada	0	0	0	0	0	0	0
Chile	37,629	20,034	12,938	21,320	6,524	9,784	80,615
China	70,832	17,699	6,851	28,476	3,415	38,940	214,401
Colombia	0	1,528	5,869	0	0	0	4,626
Croatia	7,367	0	0	7,367	0	0	3,275
Dominican Republic	18,161	2,872	2,942	5,577	5,689	6,895	26,050
Egypt	0	0	0	0	0	0	0
France	52,116	50,574	28,156	30,341	18,188	3,587	R90,237
Greece	7,405	20,168	3,394	6,805	0	600	48,403
Haiti	33	27	0	10	11	12	118
India	51,524	20,554	21,465	17,381	13,776	20,367	124,402
Israel	2,826	3,197	0	2,826	0	0	15,834
Italy	10,739	32,818	20,640	10,739	0	0	68,453
Jamaica	8,530	3,784	2,320	2,458	2,365	3,708	17,052
Japan	110,276	75,485	34,958	27,673	18,271	64,331	288,058
Jordan	0	0	3,695	0	0	0	6,872
Kuwait	3,821	0	0	3,821	0	0	17,293
Lithuania	10,079	0	0	3,228	6,851	0	28,879
Malaysia	0	0	0	0	0	0	0
Malta	0	2,648	0	0	0	0	2,648
Mexico	13,354	16,968	28,028	0	13,354	0	34,408
Netherlands	49,930	34,552	13,841	24,204	22,777	2,949	85,573
Pakistan	7,103	6,890	6,647	3,421	0	3,682	36,934
Panama	3,795	4,314	6,461	3,279	0	516	12,764
Poland	10,606	13,543	13,463	3,507	7,099	0	36,900
Portugal	3,360	6,187	14,009	0	3,360	0	36,922
Singapore	6,991	10,610	13,880	3,303	0	3,688	28,341
South Korea	106,233	83,790	52,744	32,203	18,094	55,936	316,613
Spain	25,011	68,309	24,056	13,900	3,733	7,377	R199,966
Taiwan	23,769	23,419	0	13,450	0	10,319	64,363
Thailand	0	7,218	0	0	0	0	32,622
Turkey	50,930	63,429	16,312	3,619	20,652	26,659	123,957
United Arab Emirates	0	0	0	0	0	0	10,110
United Kingdom	73,218	79,514	17,753	17,440	34,343	21,436	160,199
By Truck							
Canada	0	2	1	0	0	0	10
Mexico	157	332	224	11	63	83	822
Total LNG Exports	**834,605**	**720,360**	**360,637**	**317,678**	**211,730**	**305,196**	**R2,389,963**
CNG							
Canada	0	105	60	0	0	0	386
Total CNG Exports	**0**	**105**	**60**	**0**	**0**	**0**	**386**
Total Exports	**1,581,312**	**1,462,126**	**1,068,280**	**591,358**	**R427,062**	**R562,892**	**R5,281,118**

See footnotes at end of table.

Table 5. U.S. natural gas exports, 2019-2021

(volumes in million cubic feet; prices in dollars per thousand cubic feet) – continued

	2020						
	December	November	October	September	August	July	June
Exports							
Volume (million cubic feet)							
Pipeline							
Canada	R82,943	80,233	72,833	62,211	60,810	71,778	66,516
Mexico	164,577	166,135	185,799	182,068	185,867	181,152	162,927
Total Pipeline Exports	R**247,520**	**246,368**	**258,632**	**244,279**	**246,677**	**252,930**	**229,442**
LNG							
Exports							
By Vessel							
Argentina	0	0	0	0	4,413	2,218	2,229
Bahamas	36	31	25	20	21	15	18
Bangladesh	0	0	0	0	0	3,614	0
Barbados	25	15	17	14	14	15	20
Belgium	0	3,633	3,285	0	0	0	0
Brazil	29,927	30,191	22,508	0	3,520	0	0
Canada	0	0	0	0	0	0	0
Chile	9,793	3,252	6,836	3,277	7,428	1,515	3,313
China	45,525	45,083	35,115	11,245	13,699	10,358	0
Colombia	0	0	0	2,548	550	0	0
Croatia	3,275	0	0	0	0	0	0
Dominican Republic	5,000	5,106	5,909	0	2,772	0	0
Egypt	0	0	0	0	0	0	0
France	3,752	3,390	6,639	0	0	0	0
Greece	3,382	3,543	0	7,027	0	6,544	1,076
Haiti	17	11	9	8	11	8	7
India	10,241	10,299	17,762	10,514	10,319	7,404	10,100
Israel	0	0	0	3,041	3,001	3,317	3,277
Italy	0	3,083	0	0	6,734	3,232	12,998
Jamaica	2,374	0	2,514	2,610	0	0	0
Japan	54,004	32,967	31,636	6,855	22,541	10,618	21,836
Jordan	0	0	0	3,578	0	0	0
Kuwait	0	0	3,603	3,508	6,886	0	0
Lithuania	6,291	3,621	6,191	3,308	0	0	3,049
Malaysia	0	0	0	0	0	0	0
Malta	0	0	0	0	0	0	0
Mexico	0	3,056	7,398	3,285	3,701	0	0
Netherlands	3,316	6,684	3,603	6,671	0	6,746	6,870
Pakistan	0	3,436	10,009	9,853	3,412	0	0
Panama	271	1,448	433	3,228	0	0	0
Poland	7,033	0	3,157	0	0	0	3,385
Portugal	3,711	5,830	3,564	6,853	0	0	0
Singapore	0	7,658	3,416	0	2,967	3,690	0
South Korea	39,617	49,103	14,321	32,126	13,814	10,492	28,171
Spain	13,583	9,907	14,118	15,206	3,222	13,679	9,640
Taiwan	12,470	6,216	3,636	9,007	0	0	2,953
Thailand	0	3,705	0	0	0	3,254	0
Turkey	20,188	12,817	0	3,611	0	3,222	0
United Arab Emirates	0	0	0	0	3,359	3,277	0
United Kingdom	30,378	26,544	17,191	3,664	0	2,908	0
By Truck							
Canada	8	0	0	0	0	0	0
Mexico	46	52	68	73	78	72	61
Total LNG Exports	**304,263**	**280,682**	**222,963**	**151,128**	**112,462**	**96,200**	**109,002**
CNG							
Canada	29	35	26	17	20	37	43
Total CNG Exports	**29**	**35**	**26**	**17**	**20**	**37**	**43**
Total Exports	R**551,812**	**527,085**	**481,621**	**395,424**	**359,159**	**349,167**	**338,486**

See footnotes at end of table.

Table 5

Table 5. U.S. natural gas exports, 2019-2021

(volumes in million cubic feet; prices in dollars per thousand cubic feet) – continued

	2020						2019
	May	April	March	February	January	Total	December
Exports							
Volume (million cubic feet)							
Pipeline							
Canada	67,752	71,722	86,579	R77,354	R99,231	971,334	109,175
Mexico	145,242	138,544	166,550	151,071	160,875	1,865,329	151,308
Total Pipeline Exports	**212,994**	**210,266**	**253,130**	**R228,425**	**R260,106**	**2,836,662**	**260,483**
LNG							
Exports							
By Vessel							
Argentina	R8,372	0	0	0	0	39,293	0
Bahamas	20	23	20	13	15	156	11
Bangladesh	3,406	0	0	0	3,640	3,419	3,419
Barbados	20	15	28	26	33	211	20
Belgium	R1,348	3,324	3,724	9,872	6,761	23,897	10,407
Brazil	0	0	6,891	10,433	8,438	54,298	0
Canada	0	0	0	0	0	0	0
Chile	11,068	14,098	3,216	10,731	6,087	90,357	7,207
China	14,535	21,140	17,699	0	0	6,851	0
Colombia	0	0	0	1,003	525	6,518	0
Croatia	0	0	0	0	0	0	0
Dominican Republic	2,554	1,838	2,872	0	0	10,334	501
Egypt	0	0	0	0	0	0	0
France	R9,546	16,336	23,491	20,520	6,563	117,791	14,758
Greece	3,430	3,233	8,892	0	11,276	14,643	7,752
Haiti	10	8	9	11	7	42	12
India	10,534	16,674	17,245	0	3,309	91,481	7,090
Israel	0	0	3,197	0	0	0	0
Italy	6,452	3,135	9,895	16,616	6,308	68,655	12,764
Jamaica	0	5,770	1	2,914	869	13,892	2,435
Japan	13,729	18,387	21,845	21,360	32,280	201,085	21,226
Jordan	3,294	0	0	0	0	32,332	0
Kuwait	0	3,297	0	0	0	10,308	0
Lithuania	3,473	2,945	0	0	0	3,455	3,455
Malaysia	0	0	0	0	0	3,698	0
Malta	0	0	0	48	2,600	413	0
Mexico	0	0	7,037	3,167	6,764	143,371	9,696
Netherlands	6,826	10,305	13,772	14,099	6,681	81,361	13,405
Pakistan	0	3,334	0	3,567	3,323	26,787	3,253
Panama	3,070	0	906	3,408	0	10,221	0
Poland	6,258	3,523	3,583	6,677	3,282	38,042	7,013
Portugal	0	10,777	0	6,187	0	53,342	6,345
Singapore	0	0	10,610	0	0	31,440	3,375
South Korea	20,921	24,258	28,095	11,071	44,625	270,025	38,139
Spain	R29,360	22,943	23,657	20,240	24,412	166,684	13,874
Taiwan	6,662	0	6,987	7,115	9,317	27,397	3,658
Thailand	7,397	11,049	3,783	3,435	0	6,635	0
Turkey	6,661	14,030	6,489	24,303	32,637	30,611	536
United Arab Emirates	3,474	0	0	0	0	20,561	0
United Kingdom	0	0	20,202	28,884	30,428	118,662	30,054
By Truck							
Canada	0	0	0	0	2	25	0
Mexico	18	23	123	87	122	1,105	93
Total LNG Exports	**R182,438**	**210,466**	**244,269**	**225,786**	**250,305**	**1,819,399**	**220,498**
CNG							
Canada	39	35	38	34	33	263	25
Total CNG Exports	**39**	**35**	**38**	**34**	**33**	**263**	**25**
Total Exports	**R395,472**	**420,767**	**497,437**	**R454,245**	**R510,444**	**4,656,324**	**481,006**

See footnotes at end of table.

Table 5. U.S. natural gas exports, 2019-2021

(volumes in million cubic feet; prices in dollars per thousand cubic feet) – continued

	2019						
	November	October	September	August	July	June	May
Exports							
Volume (million cubic feet)							
Pipeline							
Canada	92,089	76,246	71,573	78,302	68,613	61,809	70,182
Mexico	158,633	171,535	162,649	168,089	167,902	156,440	153,452
Total Pipeline Exports	**250,722**	**247,781**	**234,222**	**246,391**	**236,515**	**218,249**	**223,633**
LNG							
Exports							
By Vessel							
Argentina	0	0	0	0	13,066	13,120	8,737
Bahamas	14	8	2	20	11	25	14
Bangladesh	0	0	0	0	0	0	0
Barbados	20	25	17	17	17	13	21
Belgium	3,293	3,402	3,404	0	0	0	0
Brazil	3,279	3,345	6,117	12,868	6,949	9,116	4,905
Canada	0	0	0	0	0	0	0
Chile	3,484	6,608	9,811	6,297	9,382	19,012	6,188
China	0	0	0	0	0	0	0
Colombia	0	0	0	649	0	0	0
Croatia	0	0	0	0	0	0	0
Dominican Republic	0	2,927	2,857	0	0	1,108	0
Egypt	0	0	0	0	0	0	0
France	26,946	14,228	6,740	3,249	0	0	6,621
Greece	0	0	0	0	0	0	3,497
Haiti	8	4	9	3	2	3	0
India	6,933	6,961	14,355	7,294	3,485	3,215	13,942
Israel	0	0	0	0	0	0	0
Italy	6,345	0	3,230	6,082	9,963	3,072	6,560
Jamaica	2,464	0	0	2,946	837	0	2,890
Japan	17,603	24,504	28,084	17,506	21,242	14,582	7,149
Jordan	0	0	3,616	3,277	3,449	7,342	7,332
Kuwait	0	0	0	3,401	3,405	0	3,502
Lithuania	0	0	0	0	0	0	0
Malaysia	3,698	0	0	0	0	0	0
Malta	0	0	0	0	0	0	0
Mexico	3,273	6,437	10,442	13,681	24,209	16,955	20,244
Netherlands	10,099	3,456	3,431	6,688	3,386	3,310	10,734
Pakistan	3,247	3,472	6,512	0	3,656	0	0
Panama	478	0	0	0	0	3,282	0
Poland	3,432	3,489	0	3,537	3,694	0	0
Portugal	0	6,621	2,924	6,051	6,994	6,908	0
Singapore	0	3,463	0	0	3,570	3,435	3,397
South Korea	24,962	42,233	10,818	16,995	32,663	20,402	18,069
Spain	19,985	13,704	37,938	15,861	3,297	13,506	14,325
Taiwan	3,736	3,138	0	7,207	0	0	3,309
Thailand	0	0	3,234	0	0	0	3,401
Turkey	7,266	3,528	0	0	0	0	0
United Arab Emirates	0	0	3,325	3,502	3,487	3,459	0
United Kingdom	39,957	26,260	3,303	1,335	0	0	0
By Truck							
Canada	1	14	9	0	0	0	0
Mexico	86	139	95	113	101	92	75
Total LNG Exports	**190,610**	**177,966**	**160,274**	**138,578**	**156,865**	**141,956**	**144,913**
CNG							
Canada	30	28	15	15	20	20	22
Total CNG Exports	**30**	**28**	**15**	**15**	**20**	**20**	**22**
Total Exports	**441,362**	**425,775**	**394,511**	**384,983**	**393,400**	**360,226**	**368,568**

See footnotes at end of table.

Table 5

Table 5. U.S. natural gas exports, 2019-2021

(volumes in million cubic feet; prices in dollars per thousand cubic feet) – continued

	2019			
	April	March	February	January
Exports				
Volume (million cubic feet)				
Pipeline				
Canada	71,333	93,182	91,561	87,269
Mexico	139,750	149,514	135,514	150,544
Total Pipeline Exports	**211,083**	**242,696**	**227,074**	**237,813**
LNG				
Exports				
By Vessel				
Argentina	4,369	0	0	0
Bahamas	14	11	14	11
Bangladesh	0	0	0	0
Barbados	17	14	14	17
Belgium	0	3,390	0	0
Brazil	1,201	3,283	3,234	0
Canada	0	0	0	0
Chile	9,429	10,005	2,933	0
China	0	0	3,464	3,387
Colombia	0	2,935	0	2,934
Croatia	0	0	0	0
Dominican Republic	0	0	2,942	0
Egypt	0	0	0	0
France	17,092	20,853	0	7,303
Greece	0	0	3,394	0
Haiti	2	0	0	0
India	6,742	7,446	6,989	7,030
Israel	0	0	0	0
Italy	0	6,684	3,454	10,502
Jamaica	0	2,320	0	0
Japan	14,231	7,143	10,320	17,495
Jordan	3,622	0	3,695	0
Kuwait	0	0	0	0
Lithuania	0	0	0	0
Malaysia	0	0	0	0
Malta	413	0	0	0
Mexico	10,406	7,038	6,681	14,310
Netherlands	13,010	10,452	3,390	0
Pakistan	0	3,282	3,365	0
Panama	0	3,191	3,269	0
Poland	3,414	3,701	0	9,762
Portugal	3,489	0	3,720	10,289
Singapore	320	6,631	7,249	0
South Korea	13,000	18,013	17,750	16,981
Spain	10,139	10,678	6,748	6,631
Taiwan	6,349	0	0	0
Thailand	0	0	0	0
Turkey	2,969	0	6,483	9,829
United Arab Emirates	6,787	0	0	0
United Kingdom	0	3,669	3,711	10,373
By Truck				
Canada	0	0	1	0
Mexico	87	73	48	104
Total LNG Exports	**127,102**	**130,814**	**102,866**	**126,957**
CNG				
Canada	28	29	15	16
Total CNG Exports	**28**	**29**	**15**	**16**
Total Exports	**338,213**	**373,539**	**329,954**	**364,787**

See footnotes at end of table.

Table 7

Table 7. Marketed production of natural gas in selected states and the Federal Gulf of Mexico, 2016-2021

(million cubic feet)

Year and Month	Alaska	Arkansas	California	Colorado	Kansas	Louisiana	Montana	New Mexico	North Dakota	Ohio
2016 Total	**332,749**	**823,196**	**205,025**	**1,685,755**	**244,795**	**1,784,396**	**47,921**	**1,229,647**	**531,997**	**1,437,285**
2017 Total	**344,385**	**694,676**	**212,458**	**1,706,364**	**219,639**	**2,139,830**	**46,311**	**1,299,732**	**593,998**	**1,791,359**
2018 Total	**341,315**	**589,985**	**202,617**	**1,847,402**	**201,391**	**2,832,404**	**43,530**	**1,493,082**	**706,552**	**2,403,382**
2019										
January	30,503	47,446	16,800	166,325	16,063	259,035	3,773	137,823	67,939	213,497
February	26,728	42,215	15,513	149,040	14,237	242,105	3,094	128,379	59,030	192,836
March	29,346	46,206	16,922	163,990	15,820	267,517	3,505	144,822	68,666	213,497
April	28,816	44,463	16,548	161,094	15,613	260,790	3,551	142,363	67,998	208,200
May	29,028	44,901	16,754	166,254	14,898	270,459	3,814	154,100	70,250	215,140
June	26,889	42,696	16,254	162,749	15,558	265,731	3,756	142,240	65,418	208,200
July	25,348	43,847	16,890	166,425	15,695	278,216	3,782	148,454	70,026	235,693
August	22,876	43,500	16,969	167,799	15,638	276,770	3,732	157,091	75,259	235,693
September	24,494	41,793	16,262	159,310	15,038	266,661	3,667	156,608	72,447	228,090
October	27,409	43,088	16,228	174,373	15,157	279,489	3,607	156,870	78,045	236,995
November	28,256	41,725	15,659	172,363	14,436	270,787	3,474	153,617	77,478	229,350
December	29,669	42,825	16,024	178,991	14,944	286,082	3,507	164,968	79,195	236,995
Total	**329,361**	**524,705**	**196,823**	**1,988,714**	**183,097**	**3,223,642**	**43,263**	**1,787,334**	**851,750**	**2,654,186**
2020										
January	30,018	E42,586	E15,661	E177,810	E13,349	E279,056	E3,580	E164,472	E74,489	E210,045
February	28,537	E39,455	E14,414	E165,333	E13,487	E251,755	E3,303	E158,434	E72,155	E179,594
March	29,219	E41,233	E15,135	E177,377	E14,598	E266,118	E3,587	E169,340	E78,018	E199,544
April	27,513	E40,141	E14,685	E171,025	E13,802	E262,712	E3,113	E159,064	E66,217	E193,938
May	27,076	E41,498	E14,944	E166,654	E13,796	E273,665	E2,616	E150,531	E48,821	E207,596
June	25,545	E39,113	E14,620	E161,714	E13,173	E263,819	E2,689	E152,401	E47,485	E198,554
July	26,779	E40,172	E14,826	E168,601	E13,465	E265,507	E3,144	E163,516	E57,433	E209,347
August	26,846	E41,148	E13,115	E168,528	E13,292	E257,893	E3,164	E168,443	E65,306	E207,182
September	26,978	E39,501	E12,635	E162,274	E12,745	E254,678	E3,035	E165,194	E67,978	E198,167
October	29,080	E41,014	E12,391	E165,226	E12,623	E263,309	E3,189	E179,908	E71,638	E200,302
November	29,575	E39,388	E12,034	E159,417	E10,865	E266,951	E3,059	E173,956	E69,830	E196,183
December	31,161	E40,183	E12,247	E161,889	E12,770	E276,772	E3,107	E172,786	E69,697	E207,905
Total	**338,329**	**E485,432**	**E166,709**	**E2,005,848**	**E157,963**	**E3,182,236**	**E37,587**	**E1,978,044**	**E789,065**	**E2,408,358**
2021										
January	31,632	RE39,964	RE12,033	RE159,724	RE12,578	RE271,669	RE3,168	RE176,770	RE69,019	E206,660
February	28,365	RE30,467	RE10,736	RE143,322	RE9,963	RE220,950	RE2,740	RE149,715	RE58,561	E170,657
March	31,481	E40,423	E12,034	E156,413	E12,352	E281,090	E3,090	E185,157	E69,003	E190,722
2021 3-Month YTD	**91,478**	**E110,854**	**E34,803**	**E459,459**	**E34,893**	**E773,709**	**E8,998**	**E511,642**	**E196,583**	**E568,039**
2020 3-Month YTD	**87,775**	**E123,274**	**E45,210**	**E520,520**	**E41,433**	**E796,929**	**E10,470**	**E492,246**	**E224,663**	**E589,183**
2019 3-Month YTD	**86,577**	**135,868**	**49,234**	**479,355**	**46,120**	**768,657**	**10,373**	**411,024**	**195,635**	**619,830**

See footnotes at end of table.

Table 7. Marketed production of natural gas in selected states and the Federal Gulf of Mexico, 2016-2021

(million cubic feet) – continued

Year and Month	Oklahoma	Pennsylvania	Texas	Utah	West Virginia	Wyoming	Other States	Federal Gulf of Mexico	U.S. Total
2016 Total	**2,468,312**	**5,210,209**	**7,225,472**	**365,268**	**1,384,458**	**1,662,909**	**559,985**	**1,200,669**	**28,400,049**
2017 Total	**2,513,897**	**5,453,638**	**7,223,841**	**315,211**	**1,514,278**	**1,590,059**	**517,698**	**1,060,452**	**29,237,825**
2018 Total	**2,875,787**	**6,264,832**	**8,041,010**	**295,826**	**1,771,698**	**1,637,517**	**485,675**	**974,863**	**33,008,867**
2019									
January	262,662	576,440	736,511	23,200	169,050	123,341	39,938	90,159	2,980,505
February	240,995	519,802	675,802	21,049	154,910	110,816	35,450	76,741	2,708,742
March	265,283	578,820	756,354	23,387	171,516	122,319	39,386	92,033	3,019,390
April	262,767	560,062	725,217	22,794	167,816	120,098	38,325	87,201	2,933,716
May	269,586	571,803	778,371	23,623	171,305	128,510	38,958	87,724	3,055,477
June	259,034	556,708	764,324	22,904	174,784	121,743	37,916	81,638	2,968,544
July	268,965	583,186	803,273	23,091	180,524	115,230	38,313	66,820	3,083,779
August	268,025	585,405	836,414	23,374	181,927	119,242	38,473	91,215	3,159,401
September	265,447	568,646	785,566	22,150	181,343	124,724	37,254	84,108	3,053,609
October	278,887	589,800	823,698	22,494	201,950	127,708	37,486	86,698	3,199,983
November	263,368	597,779	790,664	21,704	196,185	122,272	36,837	83,634	3,119,588
December	269,990	608,342	825,421	22,099	204,446	124,473	37,106	87,378	3,232,454
Total	**3,175,008**	**6,896,792**	**9,301,616**	**271,870**	**2,155,757**	**1,460,477**	**455,443**	**1,015,349**	**36,515,188**
2020									
January	E263,734	E607,697	E827,368	E21,856	E205,973	E122,406	E36,673	E84,739	E3,181,514
February	E243,139	E579,980	E771,344	E20,472	E197,173	E107,668	E34,050	E78,343	E2,958,634
March	E257,387	E616,101	E832,144	E21,805	E207,724	E116,328	E35,794	E84,669	E3,166,123
April	E235,642	E599,921	E772,841	E20,462	E202,046	E111,375	E29,768	E77,588	E3,001,855
May	E217,154	E598,263	E733,502	E19,555	E213,671	E106,760	E34,244	E63,304	E2,933,650
June	E222,324	E569,002	E733,102	E19,317	E215,274	E104,033	E33,369	E60,713	E2,876,248
July	E226,843	E614,943	E766,509	E20,241	E222,115	E108,027	E34,642	E67,343	E3,023,452
August	E226,344	E630,016	E788,459	E19,713	E224,409	E106,139	E33,367	E43,410	E3,036,773
September	E222,010	E582,197	E746,302	E19,027	E218,495	E103,457	E32,048	E47,449	E2,914,169
October	E219,403	E616,334	E760,569	E19,777	E225,807	E103,648	E34,202	E37,087	E2,995,509
November	E224,327	E619,815	E747,332	E18,991	E224,659	E103,334	E32,797	E57,936	E2,990,450
December	E228,057	E655,636	E763,930	E19,165	E237,246	E103,915	E33,648	E64,048	E3,094,164
Total	**E2,786,366**	**E7,289,906**	**E9,243,402**	**E240,382**	**E2,594,591**	**E1,297,092**	**E404,602**	**E766,630**	**E36,172,542**
2021									
January	RE221,544	RE657,704	RE775,706	RE19,235	RE234,432	RE105,897	E33,444	RE68,505	RE3,099,685
February	RE163,628	RE593,866	RE589,797	RE17,786	RE208,571	RE96,399	RE29,662	RE62,443	RE2,587,627
March	E219,534	E657,231	E773,522	E20,285	E227,218	E106,332	E33,265	E72,913	E3,092,064
2021 3-Month YTD	**E604,706**	**E1,908,801**	**E2,139,025**	**E57,306**	**E670,221**	**E308,627**	**E96,371**	**E203,861**	**E8,779,376**
2020 3-Month YTD	**E764,260**	**E1,803,779**	**E2,430,856**	**E64,134**	**E610,869**	**E346,403**	**E106,516**	**E247,751**	**E9,306,272**
2019 3-Month YTD	**768,940**	**1,675,061**	**2,168,667**	**67,636**	**495,476**	**356,476**	**114,774**	**258,933**	**8,708,637**

E Estimated data.

RE Revised estimated data.

Notes: For 2020 forward, state monthly marketed production is estimated from gross withdrawals using historical relationships between the two. Data for Arkansas, California, Colorado, Kansas, Louisiana, Montana, New Mexico, North Dakota, Ohio, Oklahoma, Pennsylvania, Texas, Utah, West Virginia, Wyoming, and Federal Offshore Gulf of Mexico are individually collected on the EIA-914 report. The "Other States" category comprises states/areas not individually collected on the EIA-914 report (Alabama, Arizona, Federal Offshore Pacific, Florida, Idaho, Illinois, Indiana, Kentucky, Maryland, Michigan, Mississippi, Missouri, Nebraska, Nevada, New York, Oregon, South Dakota, Tennessee, and Virginia). Before 2020, Federal Offshore Pacific is included in California. All data for Alaska are obtained directly from the state. Monthly preliminary state-level data for all states not collected individually on the EIA-914 report are available after the final annual reports for these series are collected and processed. Final annual data are generally available in the third quarter of the following year. The sum of individual states may not equal total U.S. volumes due to independent rounding.

Sources: 2016-2019: U.S. Energy Information Administration (EIA), *Natural Gas Annual 2019*, Bureau of Safety and Environmental Enforcement (BSEE), IHS Markit, Enverus DrillingInfo, and BENTEK Energy. January 2020 through current month: Form EIA-914, *Monthly Crude Oil and Lease Condensate, and Natural Gas Production Report*; and EIA computations.

Summary

Overview of Activity for March 2021

- **Top five countries of destination, representing 45.0% of total U.S. LNG exports in March 2021**
  - South Korea (32.2 Bcf), France (30.3 Bcf), China (28.5 Bcf), Japan (27.7 Bcf), and Netherlands (24.2 Bcf)
- **317.6 Bcf of exports in March 2021**
  - 50.1% increase over February 2021
  - 30.1% more than March 2020
- **96 cargos shipped in March 2021**
  - Sabine Pass (35), Corpus Christi (19), Freeport (19), Cameron (15), Cove Point (7), Elba Island (1)
  - 65 cargos in February 2021
  - 75 cargos in March 2020

1a. Table of Exports of Domestically-Produced LNG Delivered by Region (Cumulative from February 2016 through March 2021)

Region	Number of Countries Receiving Per Region	Volume Exported (Bcf)	Percentage Receipts of Total Volume Exported (%)	Number of Cargos*
East Asia and Pacific	7	2,634.7	37.6%	763
Europe and Central Asia	13	2,210.4	31.5%	684
Latin America and the Caribbean**	11	1,412.4	20.1%	478
Middle East and North Africa	5	282.9	4.0%	83
South Asia	3	470.8	6.7%	139
Sub-Saharan Africa	0	0.0	0.0%	0
Total LNG Exports	**39**	**7,011.1**	**100.0%**	**2,147**

*Split cargos counted as both individual cargos and countries

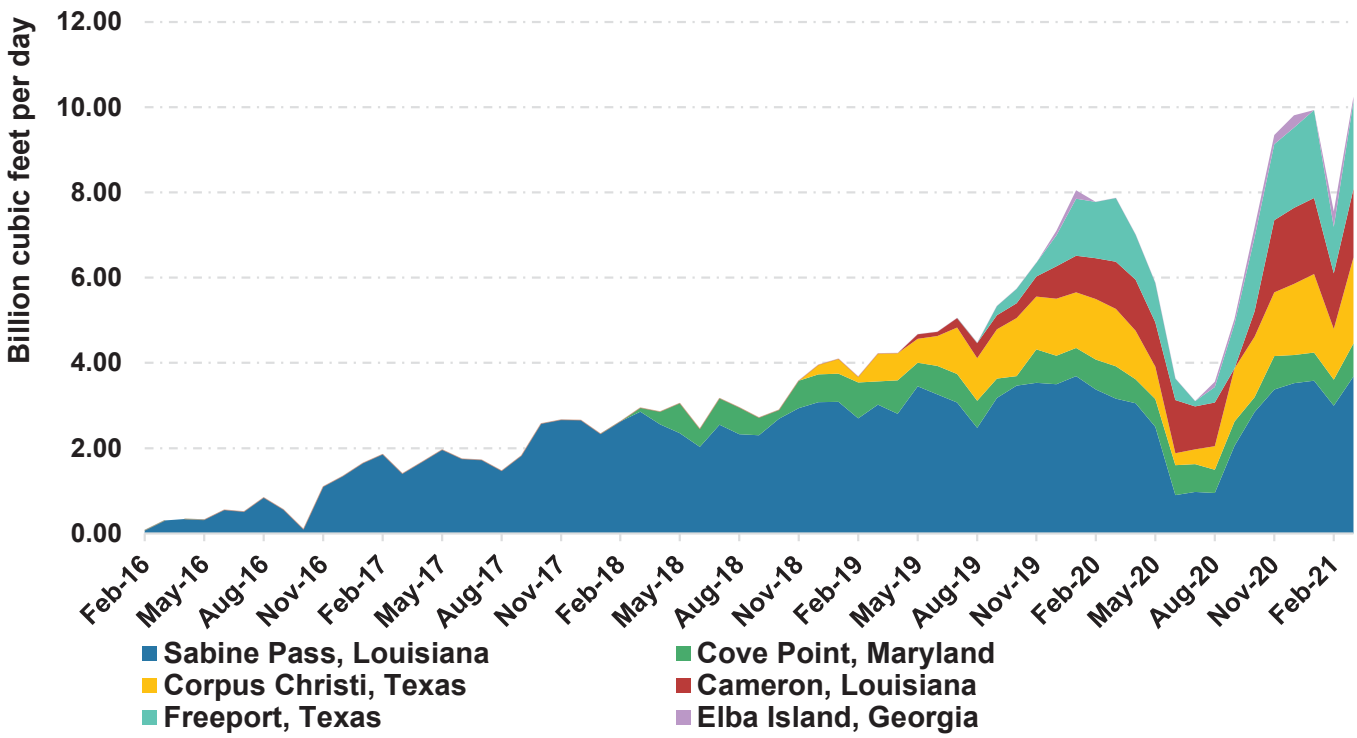
**Number of cargos does not include the shipments by ISO container

1b. Shipments of Domestically-Produced LNG Delivered – by Country
(Cumulative from February 2016 through March 2021)

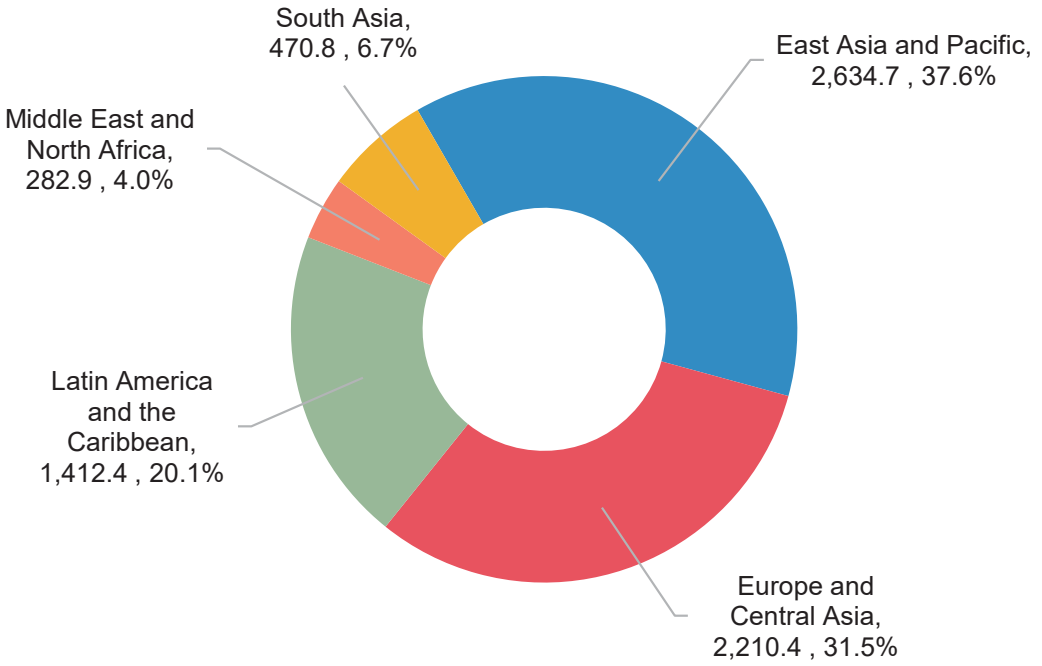
	Country of Destination	Region	Number of Cargos	Volume (Bcf of Natural Gas)	Percentage of Total U.S LNG Exports (%)
1.	South Korea*	East Asia and Pacific	311	1,085.1	15.5%
2.	Japan*	East Asia and Pacific	227	788.7	11.2%
3.	Mexico*	Latin America and the Caribbean	160	541.2	7.7%
4.	China	East Asia and Pacific	146	503.2	7.2%
5.	Spain*	Europe and Central Asia	136	434.2	6.2%
6.	United Kingdom	Europe and Central Asia	122	406.5	5.8%
7.	India*	South Asia	106	362.9	5.2%
8.	Chile*	Latin America and the Caribbean	96	304.9	4.3%
9.	Brazil*	Latin America and the Caribbean	97	284.8	4.1%
10.	France*	Europe and Central Asia	82	275.0	3.9%
11.	Turkey*	Europe and Central Asia	81	262.3	3.7%
12.	Netherlands*	Europe and Central Asia	71	232.1	3.3%
13.	Italy	Europe and Central Asia	54	175.1	2.5%
14.	Taiwan*	East Asia and Pacific	44	141.3	2.0%
15.	Portugal*	Europe and Central Asia	40	129.4	1.8%
16.	Jordan*	Middle East and North Africa	36	124.2	1.8%
17.	Argentina*	Latin America and the Caribbean	47	117.0	1.7%
18.	Poland	Europe and Central Asia	29	92.2	1.3%
19.	Pakistan	South Asia	27	87.1	1.2%
20.	Greece*	Europe and Central Asia	26	74.2	1.1%
21.	Dominican Republic*	Latin America and the Caribbean	32	72.0	1.0%
22.	Singapore*	East Asia and Pacific	22	70.5	1.0%
23.	Kuwait	Middle East and North Africa	20	68.7	1.0%
24.	Belgium	Europe and Central Asia	19	62.7	0.9%
25.	United Arab Emirates	Middle East and North Africa	15	51.1	0.7%
26.	Lithuania	Europe and Central Asia	15	49.3	0.7%
27.	Thailand	East Asia and Pacific	12	42.4	0.6%
28.	Jamaica*	Latin America and the Caribbean	18	40.8	0.6%
29.	Panama*	Latin America and the Caribbean	17	33.6	0.5%
30.	Israel	Middle East and North Africa	7	21.9	0.3%
31.	Bangladesh	South Asia	6	20.8	0.3%
32.	Egypt	Middle East and North Africa	5	16.9	0.2%
33.	Colombia*	Latin America and the Caribbean	11	16.2	0.2%
34.	Croatia	Europe and Central Asia	3	10.6	0.2%
35.	Malta*	Europe and Central Asia	6	6.9	0.1%
36.	Malaysia	East Asia and Pacific	1	3.7	0.1%
	Total Exports by Vessel		**2,147**	**7,009.3**	
37.	Barbados	Latin America and the Caribbean	249	1.0	0.0%
38.	Bahamas	Latin America and the Caribbean	330	0.6	0.0%
39.	Haiti	Latin America and the Caribbean	70	0.2	0.0%
	Jamaica	Latin America and the Caribbean	1	0.0	0.0%
	Total Exports by ISO		**650**	**1.8**	
	Total Exports by Vessel		**2,797**	**7,011.1**	

Note:
Volume and Number of Cargos are the cumulative totals of each individual Country of Destination by Region starting from February 2016.
Jamaica has received U.S. LNG exports by both vessel and ISO container. The volumes are totaled separately
* Split cargos counted as both individual cargos and countries.
Vessel = LNG Exports by Vessel and ISO container = LNG Exports by Vessel in ISO Containers.
Does not include re-exports of previously-imported LNG. See table 2c for re-exports data.
Totals may not equal sum of components because of independent rounding.

1c. Domestically-Produced LNG Exported by Terminal
(February 2016 through March 2021)



1d. Domestically-Produced LNG Exported by Region
(Cumulative from February 2016 through March 2021)
(Bcf, %)



https://rbnenergy.com/only-the-strong-survive-how-covid19-reshaped-the-future-of-north-american-lng-projects

Only The Strong Survive - How COVID-19 Reshaped The Future Of North American LNG Projects

Thursday, 05/27/2021
Published by: Lindsay Schneider

Over the past year, we have witnessed a sort of slow-motion meltdown among the second wave of North American LNG export projects. Appetite for new LNG expansions was already waning due to oversupply even before the pandemic affected demand, but COVID-19 brought project developments to a standstill. Offtake agreements have expired, final investment decisions (FIDs) delayed, and projects have lost funding or been officially put on hold or even cancelled. Just one project, Sempra's ECA LNG in Mexico, was able to reach an FID last year, and with the pandemic still raging, for a while it looked as if that would be the last project in North America to take FID in the foreseeable future. It's abundantly clear that many more of the remaining proposed projects will be postponed indefinitely, and probably never be built at all. However, the news isn't all bad. With the worst of COVID-19's impacts on international gas demand appearing to be over and the ongoing extended run of high global gas prices, all eyes are back on the second-wave projects that are in various stages of pre-FID development. The pandemic may have forced a culling of the proposed projects, but those near the top now have a clearer path ahead. In fact, several projects could realistically achieve FID in the next few years. Today, we begin a short series providing an update on the second-wave projects.

As we've discussed extensively in the LNG Voyager report and recent blogs, 2021 is shaping up to be a stellar year for U.S. LNG. Prolonged high global gas prices and strong margins for U.S. cargoes are creating stable demand for the existing terminals, allowing them to operate at fully contracted capacity whenever operationally possible. Some U.S. facilities are potentially even producing additional cargoes for the spot market. As a result, outside of short-term maintenance periods, domestic feedgas demand is expected to remain relatively steady at around 11 Bcf/d — the amount needed for full utilization at the terminals — and is poised to head even higher later this year as Calcasieu Pass and Sabine Pass Train 6 come online (see Such Great Heights Pt. 2 for more on the commissioning and timing of those projects).

The fundamentals remain incredibly bullish. High prices are likely to persist into at least this winter. Apart from being great for existing U.S. terminals, the wild swing of the market from the uncertainty and sense of doom last summer to sustained high prices now has shown that perhaps the global market was not as oversupplied as previously thought. This is the longest and strongest bull run the global gas market has seen since 2018, and at that point, only 25.25 MMtpa of LNG export capacity was online in the U.S., compared with 75 MMtpa now. The past year has shown how quickly the market can swing from being oversupplied to being undersupplied, and that is bringing renewed interest in offtake agreements.

Before we dive into the projects that are finding support in this bullish environment, let's quickly recap those that have fallen behind or otherwise been sidelined over the past year. In our LNG Voyager Quarterly supplement, we track the 10 LNG terminals that have already taken FID and over 25 different pre-FID projects (shown on the map in Figure 1). We categorize them into the following groups: operational (in green on the map), those that have already reached FID and are under construction (blue), those that are pre-FID but "probable" for reaching FID in the next year (dark orange), and ones that are "possible" but not likely to be greenlighted in the next year. Within the "possible" bucket, we further group them into Tier 1 (light orange), Tier 2 (dark yellow), and Tier 3 (cream), based on the likelihood that they will achieve FID in the next 1-3 years. While we never expected all two dozen or so projects to go ahead, they were all actively working toward an FID and making headlines as they secured regulatory permits and financing or commercial commitments. However, many have since simply faded from the news. Many of them, particularly those in the Tier 3 group, have not provided project status updates or had any mention in the press in the past year. In this case, no news is almost certainly not good news, and it's increasingly evident that most of the Tier 3 projects will probably never be built.

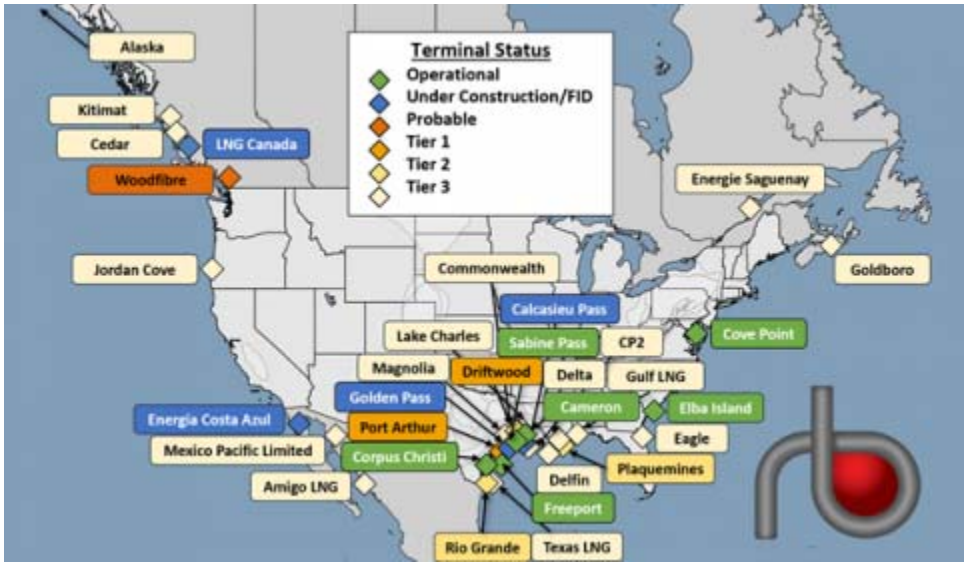


Figure 1. Map of proposed and operational LNG Terminals. Source: RBN LNG Voyager

That said, only one high-profile project has been officially canceled: Annova LNG. The Exelon-backed project was canceled in March 2021, with “changes in the global LNG market” cited as the reason. The project had its regulatory approvals voided as part of the cancellation — you can’t get more definitive than that. The next project that could be facing an official cancellation is Kitimat LNG in Canada. This project was being developed as a joint venture between Chevron and Woodside Petroleum. Chevron announced its intention to sell its half of the project back in 2019, but never found a buyer and officially stopped all funding related to the project in March. Then, just last week, Woodside announced that it would divest its stake in the project as well, leaving it without any developers.

One other project — Jordan Cove — was officially placed on hold in late April, with its developers citing regulatory hurdles. Due to its location in Oregon, it has long faced opposition from regulators, and, despite having all federal approvals, it has struggled to make headway in securing state-level approvals. While the global market downturn last year and COVID were not specifically the reasons given for this project being put on hold, they certainly didn’t help. The project will likely never be revived, and developer Pembina didn’t even mention the terminal on its last quarterly earnings call.

While the fate of these projects paints a grim picture for North American LNG development, things are actually better than they appear. With projects at the bottom of the pile being canceled or forgotten, the pool of prospective offtakers can coalesce around a few key projects, which, in turn, makes it more likely that they will be able to sign commercial agreements and secure enough funding to reach FID.

In the May 2021 LNG Voyager Quarterly, we identified two projects as “probable” (dark orange status in Figure 2), and both have the potential to achieve FID this year: Woodfibre LNG and Cameron Phase 2, which we will get to in more detail shortly. In addition, there are four projects in Tier 1 (yellow-orange) and two projects in Tier 2 (light yellow), all of which are being actively pursued by their developers, making progress towards FID, or seeing positive headlines in the news. All of the Tier 1 and 2 projects need to secure additional commercial support before achieving FID and are unlikely to garner enough support this year, but still look promising in the 1- to 3-year horizon. We will dive more deeply into those six projects in Part 2 of this series.

Project	Developer	Region	Location	Trains	MMtpa	Bcf/d	Tier Status
Woodfibre LNG	Pacific Oil and Gas	British Columbia	Squamish, BC	1	2.1	0.3	Probable
Cameron LNG T4-5	Sempra et al	Sabine River	Hackberry, LA	2	10.0	1.3	Probable
Corpus Christi Ph 3	Cheniere	Texas Gulf Coast	Corpus Christi, TX	7	9.5	1.3	Tier 1
Port Arthur LNG Ph 1	Sempra	Sabine River	Port Arthur, TX	2	11.0	1.4	Tier 1
Freeport LNG T4	Freeport LNG	Texas Gulf Coast	Freeport, TX	1	5.1	0.7	Tier 1
Driftwood LNG Ph1	Tellurian	Sabine River	Calcasieu Parish, LA	12	16.6	2.2	Tier 1
Plaquemines LNG Ph 1	Venture Global	Louisiana Gulf Coast	Plaquemines, LA	36	10	2.8	Tier 2
Rio Grande LNG	NextDecade	TX/Mexico Border	Brownsville, TX	5	22.5	3.0	Tier 2

Figure 2. North American Pre-FID LNG Projects. Source: RBN LNG Voyager

Woodfibre LNG

Woodfibre is a single-train, 2.1-MMtpa terminal located in British Columbia. The project signed a non-binding heads of agreement (HOA) with China National Offshore Oil Corporation (CNOOC) for 0.75 MMtpa in 2018 and then a binding sales and purchase (SPA) agreement with BP for 0.75 MMtpa in 2019. At that point, it looked like the project would likely convert the HOA into an SPA and reach FID soon, but that never materialized. Woodfibre dragged its heels on the project and then COVID hit. It had to request an extension of its environmental permits because of the pandemic and the project seemed to be at somewhat of a standstill. However, the project roared back to life last month with the announcement of a second deal with BP for an additional 0.75 MMtpa, taking BP's total secured volume from the terminal to 1.5 MMtpa. Woodfibre said it was targeting FID in the third quarter of this year, which is achievable. The project has all environmental permits and more than 70% of its offtake capacity secured under long-term SPAs and is the most likely to be the next LNG project in North America to reach FID.

Cameron Phase 2

The second project with the potential to achieve FID in the near-term is Cameron Phase 2, a two-train, 8-MMtpa expansion of Sempra's Cameron LNG terminal in Louisiana. Now that ECA LNG, which is also a Sempra project, has reached FID, the company is prioritizing its Cameron expansion project. The expansion has got all regulatory approvals, and while it doesn't have any binding SPAs, it has a non-binding memorandum of understanding (MOU) with Total, Mitsui, and Mitsubishi — the same offtakers as the existing terminal — for the full capacity of the project. Given the previous relationship between the offtakers and Cameron LNG, this puts the project in a strong position. We expect that the project's FID will likely come around the same time that these MOUs are converted to SPAs. Sempra is still targeting FID this year.

Both of these projects have their offtaker commitments mostly set at this point and could realistically reach FID in the next six months. Woodfibre has just 0.6 MMtpa left in available capacity, and could take FID without that small amount locked up, while Cameron has no capacity left to sell and just needs to convert its MOUs to official SPAs. That leaves the six Tier 1 and 2 projects that we believe are also currently frontrunners for reaching FID. These still have to compete with each other and with projects being developed in other countries as well, but that is a much smaller pool compared to the pre-pandemic period. With committed developers and a high global gas price environment, we're likely to see more activity on the commercial front, albeit likely still with shorter terms than the 20-year commitments we saw among the first-wave projects. (We discussed some of the financial reasons for this in Don't Fear the Reaper). In fact, just this week, Tellurian announced that it closed a 3-MMtpa, 10-year SPA with Swiss trading firm, Gunvor. But the longer global LNG prices stay high out on the futures curve, the more attractive long-term offtake agreements look. In Part 2, we will take a more detailed look at the six Tier 1 and 2 projects and discuss some of the underlying trends LNG developers are using to attract offtakers. While we don't know exactly how many North American projects will eventually get the green light or when the next FID will come, it's clear that we have not seen the last of the second wave of North American LNG developments.

"Only the Strong Survive" was written by Jerry Butler, Kenny Gamble, and Leon Huff. It was the third song on Butler's 11th studio album, *The Ice Man Cometh*. It was released as a single in March 1969 and went to #1 on the Hot R&B Singles chart and #4 on the Billboard Hot 100 Singles chart. It was the most successful single of Butler's career, and it has been certified Gold by the Recording Industry Association of America. Artists such as Elvis Presley, Skeeter Davis, Billy Paul, and The Trammps have covered the song. Personnel on the record were: Jerry Butler (lead vocals), Curtis Mayfield (lead guitar), Norman Harris, Bobby Eli (guitar), Ronnie Baker (bass), Earl Young (drums), Leon Huff (piano), and Vince Montana (vibes).

The Ice Man Cometh was recorded between September 1967 and September 1968 at Bell Sound Studio in New York City and Cameo-Parkway Studios and Sigma Sound Studio in Philadelphia. Kenny Gamble and Leon Huff produced the record. Released in November 1968, it went to #2 on the R&B Album chart and #29 on the Billboard Top 200 Albums chart. Three singles were released from the album.

Jerry Butler is an American soul singer, songwriter, record producer, musician, and retired politician. He was the original lead vocalist for The Impressions and was inducted with the R&B group into the Rock and Roll Hall of Fame in 1991. Since leaving the group in 1960 to pursue the career of a solo artist, Butler has had over 50 charting Billboard hits. He was inducted into the Rhythm and Blues Hall of Fame in 2015. From 1985 to 2018, he served as a commissioner for Cook County, Illinois. He has released 34 studio albums and 75 singles as a solo artist. Butler, 81, is now retired and lives in Chicago.

Bloomberg @TheTerminal
Europe-to-Asia LNG Competition to Strengthen in Winter: WoodMac
2021-05-27 09:13:38.473 GMT

By Anna Shiryaevskaya
(Bloomberg) -- Global LNG supply will remain tight through the rest of the year amid low storage levels in Europe and demand for gas-fired generation, Wood Mackenzie said in an emailed note.
* “Lower winter starting inventory in Europe, combined with high seasonal Asian demand, will result in increased competition for Atlantic LNG, including from the U.S., putting pressure on LNG prices,” Robert Sims, research director, LNG short term, said in the note
** “A repeat of last year’s extreme price crunch in Japan isn’t expected, but cannot be entirely ruled out”
* European carbon emission permit costs, up 60% ytd, are “the single biggest risk to prices”
* Europe is “turbo-charging” the LNG market, “making the region a battleground for global LNG price formation”
** Prices buoyed by post-pandemic demand recovery, Russian pipeline export caps and unseasonably cold weather in April
* LNG market set to soften in 2022:
** Asian LNG demand will only increase by 12 million tons in 2022 vs 19 million tons in 2021
** Global supply will rise by 18 million tons as Sabine Pass Train 6, Calcasieu Pass and Tangguh LNG Train 3 start
** Russian Nord Stream 2 gas pipeline’s potential start will push benchmark Dutch gas prices below $6.5/mmbtu next summer, ~30% lower than this summer
* Still, global LNG market will further tighten through 2025
** “The global gas/LNG oversupply that has affected the market since the end of 2018 has now come to an end”

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Shell: "Every LNG Cargo That Could Technically Be Produced In This World Has Been Produced And Has Found A Well Paying Customer"

Posted: September 20, 2017

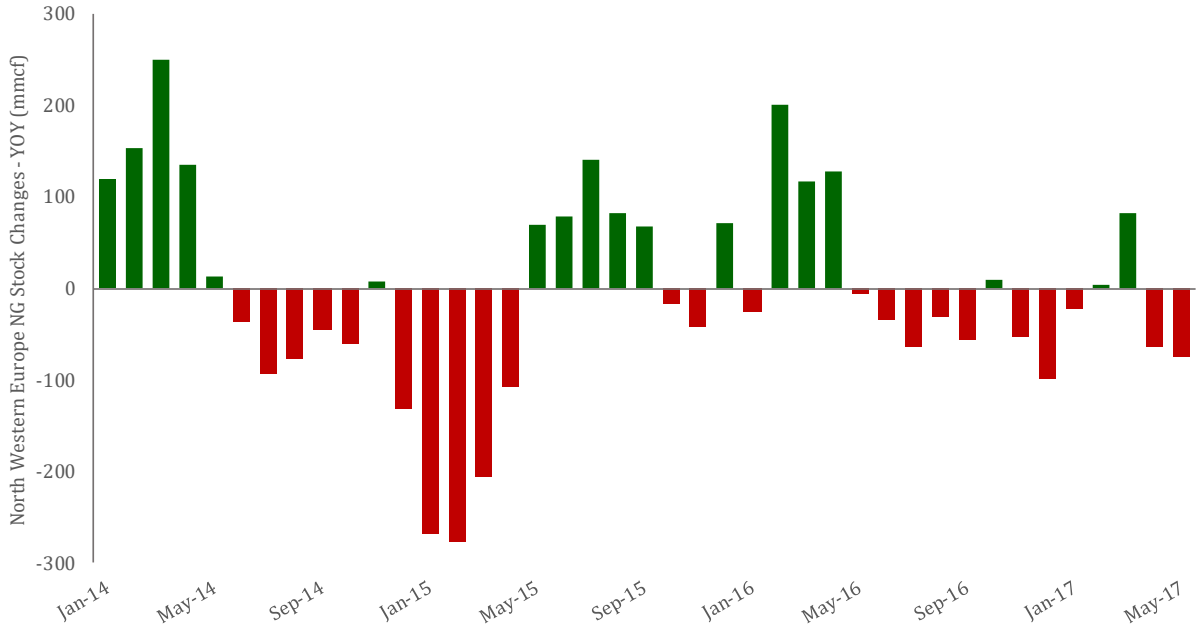
We will be presenting a very bullish outlook for natural gas later today in our webcast for Stream's 2018 Energy Outlook. The key to our call is that a massive natural gas demand surge has started and will lead to world LNG markets being corrected closer to 2020 than the current conventional wisdom of closer to 2025. One of the reasons we see this happening quickly is we share Shell's view that global LNG markets, as of mid 2017, are not in an oversupply situation and there is data support (Japan LNG spot prices, NW Europe storage) for this view. Two weeks ago, Shell said "*Actually, over the last 18 months, every LNG cargo that could technically be produced in this world has been produced and has found a well-paying customer".* Therefore, we have a different starting point than conventional wisdom that says LNG markets are oversupplied in 2017. And if you combine a different starting point with a different view on a massive surge in natural gas demand, then you end up with a much different view of when LNG markets will move to undersupply. We will be posting a blog post today's webcast on why we see a massive surge in natural gas demand.

A massive surge in natural gas demand has started. Long term readers of Energy Tidbits will likely be surprised by the very bullish natural gas call in this afternoon's webcast. I was very negative for years, but move to a positive stance a year ago driven by the themes of Floating Storage Gas Regasification Units (FSRUs) and increasing US exports of LNG and to Mexico via pipeline. Those themes are continuing and FSRUs are expanding in their scope. Natural gas has already been on a path of strong demand growth. That path is continuing. But later today, we will be highlighting other major new demand factors that will drive the massive surge in global natural gas demand. This isn't just an item for investors outside of Canada. Nor is it an item for a couple years down the road. We see these themes impacting Cdn natural gas in 2018. The 2018 Energy Outlook is at 2pm mountain today and can be accessed via[LINK].

Shell's LNG head Maarten Wetselaar says the LNG market is in balance and all LNG cargos have found well paying customers. Two weeks ago, Shell's LNG head, Maarten Wetselaar (Integrated Gas & New Energies Director) presented to the Australian financial community at Bloomberg's Sydney Australia office. The presentation and Q&A in particular was excellent, but the presentation was overlooked because it was only available over the Bloomberg terminal and Shell did not post Wetselaar's presentation. Bloomberg only posted a small portion of their interview with Wetselaar [LINK]. We prepared a transcript of Wetselaar's comment on the balanced LNG market. He said "*We have been very pleased to see very strong demand for LNG in the last two years from Asia, particularly from China, but also from new countries that demand LNG in order to make their energy mix go around. There is Pakistan, there is Egypt, and even this year, we see the demand response to the supply increase being very robust so this year we have not seen an oversupply in this product. Actually, over the last 18 months, every LNG cargo that could technically be produced in this world has been produced and has found a well-paying customer. So, this market is in more balance than people perhaps perceive*".

The key data support to Wetselaar is that NW Europe storage is not seeing surplus LNG cargos looking for a home. In the Q&A, Wetselaar said the data support for his comment that the market is absorbing all of the new LNG supply is to look at NW Europe storage. Wetselaar did not use the description dumping ground, but it is the right term. Webster's defines "dumping ground" as "*a place to which unwanted people or things are sent*". He noted that if LNG was in oversupply, there would be surplus LNG cargos looking for a home and these surplus LNG cargos would find their way to NW Europe storage. Shell is not seeing any YoY increase in NW Europe storage. Hence, he is firm in his view that demand was absorbing all the new LNG supply in 2017. We pasted the NW Europe storage data into the below graph and it shows exactly what Wetselaar said – the monthly YoY changes in storage do not show increases in the net storage withdraw/injections, which implies that there isn't any dumping of surplus LNG cargos in NW Europe storage. We have not been following NW Europe natural gas storage, but now have it on our regular data check list because of Wetselaar's comments.

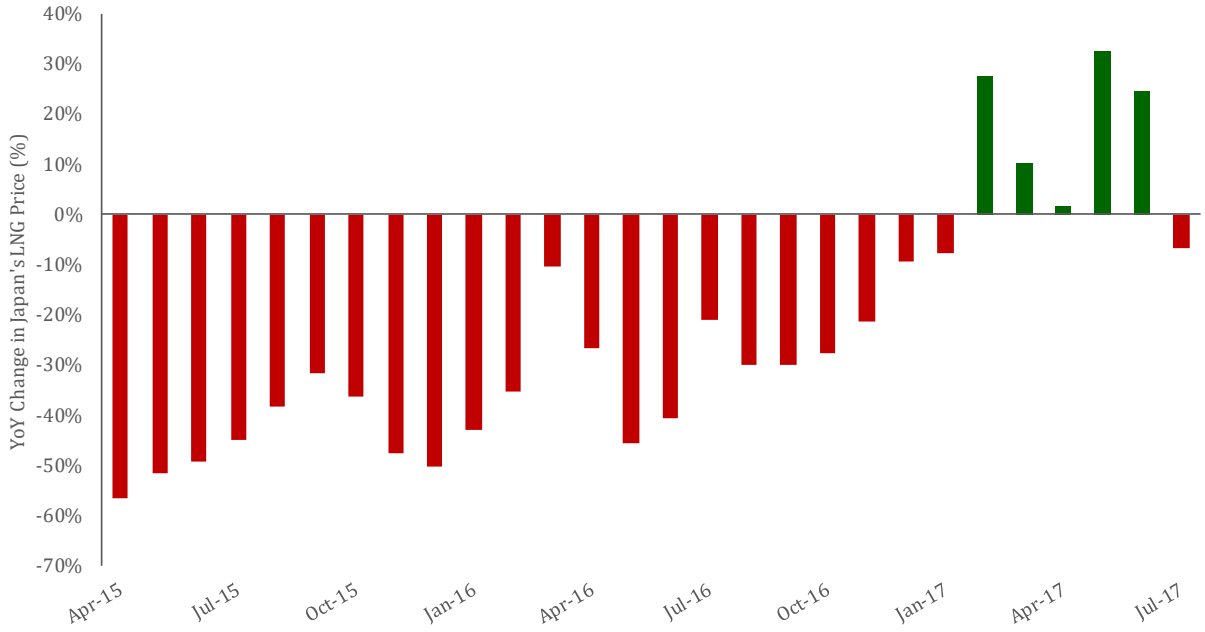
NW Europe YoY Changes In Monthly Storage Net Injections/Withdraw



Source: Bloomberg, Stream Asset Financial

We also believe Japan LNG spot price indicates that the market is absorbing all new LNG supply. We don't disagree that LNG was oversupplied in 2015 and 2016, but, in addition to the NW Europe storage data, we see other data suggesting that all of this new LNG supply is being absorbed by the market. We regularly track Japan LNG spot monthly prices as published by Japan's Ministry of Economy, Trade and Industry and include our graph below showing the YoY change in Japan monthly LNG spot prices. Japan LNG spot prices went down YoY in 2015 and 2016, which was a clear sign there that LNG supply was exceeding demand. But in H1/2017, the Japan LNG spot prices are higher YoY by about 20%. We look at this data and say it is reflective of a LNG market that is balance or at least where the market is absorbing LNG cargos. If LNG markets were still oversupplied like they were in 2015 and 2016, we wouldn't see Japan spot LNG prices up 20% this year?

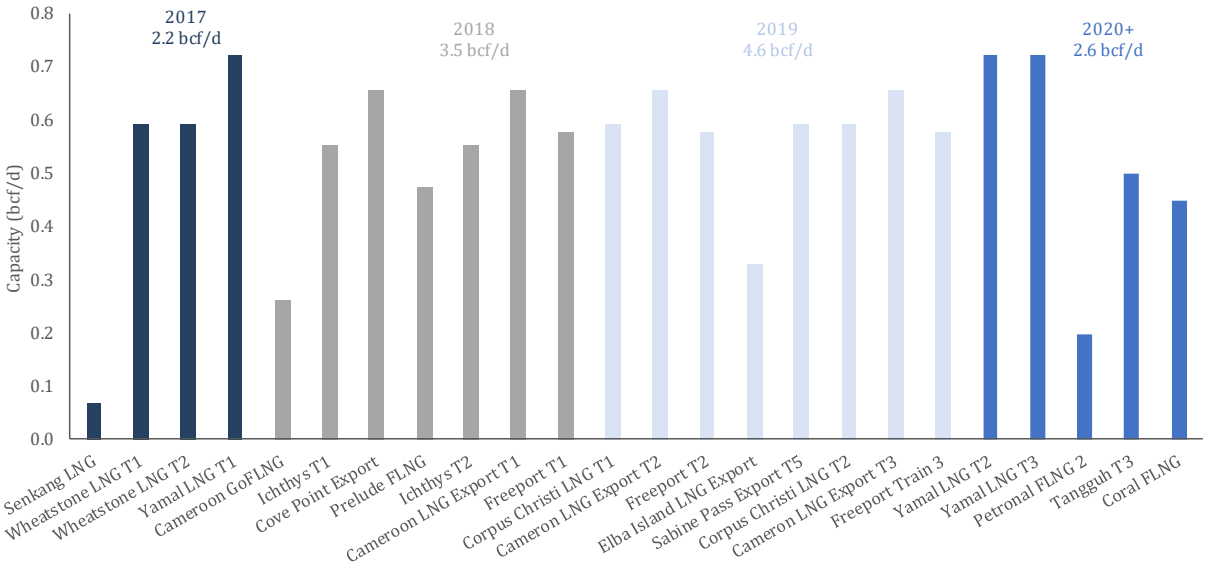
Japan Spot LNG Prices – YoY Monthly Change



Source: Japan Ministry of Economy, Trade and Industry, Stream Asset Financial

The big test is coming in 2018/2019 with 8.1 bcf/d of new LNG supply to come on stream. In our webcast, we will be reviewing factors that should lead to additional LNG demand of 3.5 to 4.5 bcf/d per year more than expected. This additional LNG demand may not all kick in right away but certainly in 2019 and 2020. Please note this is additional demand every year, not just a one-shot boost. Even still, this massive test of increasing demand will be tested in 2018 and 2019 with under construction LNG supply projects expected to add 3.5 bcf/d in 2018 and 4.6 bcf/d in 2019. Then new LNG supply goes down to 2.6 bcf/d in 2020. Inevitably there will be delays to the startup for some of these projects. But if not, it will be a big test. It may well be that the timing for the increased surge in natural gas demand may not line up exactly with the timing of the new LNG supply but it means that any oversupply should be temporary and quickly fixed. Below is our running table of the LNG liquefaction projects that are under construction.

Under Construction LNG Liquefaction Projects



Source: Company Reports, Stream Asset Financial

A better starting point moves LNG to undersupply quicker, especially if combined with a massive surge in natural gas demand. We are highlighting the starting point for LNG markets as it makes a big difference to looking ahead to when LNG moves to undersupply. Conventional wisdom is that LNG is oversupplied in 2017, but we are in the Shell camp that LNG is not oversupplied today because the market is absorbing the increasing LNG supply. We don't see the Japan LNG spot prices and NW Europe storage data suggesting a robust market, but supportive of Shell's view. If you combine a different starting point (LNG is not in oversupply right now) with a different view on a massive surge in natural gas demand, then you end up with a much different view of when LNG markets will move to undersupply. Later today, we will be presenting the reasons for why we see a massive surge in natural gas demand that should lead to increased LNG demand of 3.5 to 4.5 bcf/d per year. US HH gas prices continue to be increasingly linked to global gas prices and this will increase with the under construction 4.6 bcf/d of US LNG capacity to be added thru 2020. We see this as a game changer to natural gas prices in the mid term (2019 to 2024), and why HH gas prices could be ~40% above the post 2019 long dated strips. Cdn gas prices should be dragged up with HH but the tone and valuations to Cdn natural gas should reflect this massive global natural gas demand surge in 2018 and 2019.

https://www.abqjournal.com/2392350/81b-needed-to-remediate-clean-up-nm-wells.html

$8.1B needed to remediate, clean up NM wells

BY STEPHANIE GARCIA RICHARD / NM COMMISSIONER OF PUBLIC LANDS
Thursday, May 20th, 2021 at 12:05am

New Mexico's oil and gas industry is inadequately bonded to the tune of $8.1 billion. According to a study released today by the Center for Applied Research, $8.1 billion will be needed to fill the gaps where existing financial bonds won't cover the cost to fully clean up and remediate over 60,000 wells, 35,000 miles of pipeline, and other miscellaneous infrastructure. A little over a year ago I wrote an op-ed that was published in this paper, warning that New Mexico wasn't financially equipped to restore our lands when the oil and gas industry next faltered.

At that time, I was urging public support of House Memorial 29, which sought an in-depth study to determine the statewide inadequacies in our bonding requirements for the industry. We drastically needed this information. If the bottom fell out, like it has done before, and companies went bankrupt as a result, the responsibility to clean it up would fall on you, as taxpayers, and on the State Land Office that I oversee, an agency that exists to raise money to support our public schools. It is my belief, and I hope you share it, that neither you nor our schools should be on the hook to foot this massive bill. A month after I wrote that op-ed, the reality I warned of was on our doorstep with the onset of the COVID-19 pandemic. Oil and gas prices fell to negative numbers, demand evaporated overnight, and there was nowhere to store excess product.

Luckily for now, the industry has stabilized, but we still need answers to these long-term questions. With the support of a huge amount of data provided by my staff at the State Land Office, along with Gov. Michelle Lujan Grisham and her staff at the Oil Conservation Division and industry, the study we sought was independently commissioned by the Center for Applied Research.

The findings require our full attention, participation and action as a state. Enormous sums of taxpayer money, and the long-term health of our lands, are on the line. The study tells us what the reality could be, and we certainly aren't alone as the federal government and neighboring states like Colorado work to identify their own bonding inadequacies. We face an $8.1 billion bill we can't afford.

In addition to financial ramifications, we all have a responsibility to the land. When operators are done with their leases, we require that they plug wells so that gas and methane don't leak into our air. We require removal and cleanup of old infrastructure and remediating spills and contamination. And finally, we ask that they reseed the land to restore it to its original state. No one can afford these obligations if they have gone bankrupt, so we need companies to be adequately bonded on the front end.

I am committed to ensuring we get there, but how we do it depends on all of us. In order to get the full picture of how our decisions will impact the public, our working families and small businesses in our state, we will hold a significant number of public meetings, not only in impacted communities, but across the state. We hope you will join us, read the full report and follow along with our public engagement process at https://www.nmstatelands.org/bonding.

An Analysis of the Adequacy of Financial Assurance Requirements for Oil and Gas Infrastructure Located on State Trust and Private Lands in New Mexico

April 30, 2021

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EXECUTIVE SUMMARY

During 2020, nearly 370 million barrels of crude oil and 2 trillion cubic feet of natural gas were produced from approximately 60,000 wells (NMOCD, 2021) and transported by an estimated 35,000 miles of oil and gas pipeline throughout New Mexico (USDOT PHMSA, 2019). New Mexico state regulatory entities have jurisdiction over this infrastructure wherever it is located on private lands or state trust lands, and it is the role of these entities to ensure proactive measures are taken to minimize potential public, environmental, and fiscal liability risks created by infrastructure that is not operated or abandoned in compliance with state requirements. To this end, state regulatory entities may impose financial assurance requirements on oil and gas operations to reduce the public's liability posed by noncompliant infrastructure. The goal of this research effort was to generate an objective, data-driven analysis of the adequacy of current financial assurance requirements imposed by state regulatory entities to offset the potential public liability posed by wells, pipelines, and other oil and gas infrastructure located on private lands and state trust lands throughout New Mexico.

As presented in this report, the Center finds that financial assurance requirements do not exist for much of the oil and gas infrastructure explored in this study, and in some cases where such requirements are imposed, operators may have multiple ways of minimizing or avoiding those requirements. Further, the Center finds most of the current applicable financial assurance requirements are regressive in design, which means the largest users of private and state trust lands often carry the lowest marginal amounts of financial assurance coverage.

Overall, the Center finds that existing financial assurance requirements applicable to all infrastructure types are not sufficient to fully offset estimated closure and clean-up costs. As summarized in the table below, this study finds the total cost of closure and clean-up of the oil and gas infrastructure currently located on state trust and private lands to be approximately $8.38 billion. Whereas the total financial assurance coverage for this infrastructure accessible to state regulatory entities for the purpose of closure and clean-up efforts is estimated to be approximately $201.42 million, resulting in a total financial assurance gap of approximately $8.18 billion.

	Estimated Closure and Clean-up Costs *(millions)*		**Estimated Financial Assurance** *(millions)*		**Estimated Financial Assurance Gap** *(millions)*	
Infrastructure	**State Trust**	**Private**	**State Trust**	**Private**	**State Trust**	**Private**
Wells*	$3,316.40	$2,275.33	$136.11	$37.07	($3,180.29)	($2,238.26)
Pipelines†	$980.73	$929.57	$0.24	$0.00	($980.49)	($929.57)
Other	$876.38	*no data*	$28.00	$0.00	($848.38)	*no data*
Total	**$5,173.51**	**$3,204.90**	**$164.35**	**$37.07**	**($5,009.16)**	**($3,167.83)**
	$8,378.41		**$201.42**		**($8,176.99)**	

Notes: All figures presented in this table are reported in millions of USD.

*Cost figures reported in this table include well plugging and downhole abandonment, surface facility decommissioning, and wellsite surface reclamation.

† Cost figures reported in this table exclude produced water, freshwater, and most gathering pipelines used by oil and gas operators. Costs reported in this table assume buried pipelines are abandoned in-place rather than fully removed.

Table 23 – Estimated total financial assurance coverage on pipelines and other oil & gas infrastructure

	Surface Land Status		
	State Trust *(millions)*	**Private Fee** *(millions*	**State and Fee** *(millions)*
Total Coverage on Pipelines	**$0.24**	**$0.00**	**$0.24**
Total Coverage on Other O&G Infrastructure	**$28.00**	**no data**	**no data**
Compressor Station Sites	$0.00	*no data*	*no data*
Electrical Power Related Sites	$0.00	*no data*	*no data*
Freshwater Frac Ponds	$0.00	*no data*	*no data*
Landing Strips/Airports	$0.00	*no data*	*no data*
Maintenance and Metering Sites	$0.00	*no data*	*no data*
Private Mobile Radio Tower Sites	$0.00	*no data*	*no data*
Office Buildings/Maintenance Yards	$0.00	*no data*	*no data*
Processing and Dehydration Facilities	$0.00	*no data*	*no data*
Rule 34 Recycling Facilities	$25.00	*no data*	*no data*
Storage Sites	$0.00	*no data*	*no data*
Petroleum Storage Tanks	$3.00	*no data*	*no data*
Transfer Sites	$0.00	*no data*	*no data*
Telemetry Paging Sites	$0.00	*no data*	*no data*
Truck Stops	$0.00	*no data*	*no data*
Storage Facilities/Warehouses	$0.00	*no data*	*no data*
Other O&G Related Sites	$0.00	*no data*	*no data*

Notes: All figures presented in this table are reported in millions of USD. The estimates presented in this table do not include additional financial assurance coverage that may be available from NMSLO-required mega-bonds.

5 FINDINGS AND CONCLUSIONS

Based on the data available to the Center upon preparing this analysis and the assumptions presented in the above sections of this report, the Center's findings pertaining to the adequacy of the current financial assurance requirements for the various oil and gas related infrastructure explored as part of this study are presented below.

As discussed in Section 4.1, the primary function of much of the financial assurance coverage on oil, gas, and saltwater disposal wells throughout New Mexico is to ensure that basic plugging and abandonment costs are covered in the event an operator fails to abandon a well in a manner that is consistent with state standards. Well equipment decommissioning and wellsite surface reclamation are secondary objectives. Given this priority structure, Table 24 presents the adequacy of current financial assurance requirements as compared to basic plugging and abandonment costs, and Table 25 presents these same requirements as compared to the total estimated costs of well closure and clean-up.

As shown in Tables 24 and 25, on average, the applicable financial assurance requirements differ considerably depending on where a well is located (i.e., on state trust land or private fee land) and the primary use of that well (i.e., oil, gas, or saltwater disposal). Of the wells included in this study, only saltwater disposal wells located on state trust lands carry financial assurance

coverage at a level that meets or exceeds the full liability of well closure and clean-up. Excluding saltwater disposal wells on state trust lands, the estimated gap between base plugging and downhole abandonment costs and financial assurance coverage averages to approximately $86,100 per well. If estimated wellsite decommissioning and surface reclamation costs are included in this exercise, the Center estimates that the average financial assurance gap is approximately $182,600 per well (again if saltwater disposal wells on state trust lands are excluded from the average calculations).

Table 24 – Summary of per well financial assurance adequacy findings for O&G wells (P&A cost gap)

Land Status	Well Type	Financial Assurance	P&A Costs*	Assurance Gap
State Trust	Gas	$3,300	$90,500	($87,200)
State Trust	Oil	$3,500	$93,100	($89,600)
State Trust	SWD	$239,400	$89,800	$149,600
Private Fee	Gas	$2,300	$84,100	($81,800)
Private Fee	Oil	$3,400	$93,500	($90,100)
Private Fee	SWD	$8,600	$90,500	($81,900)
Weighted Average		**$6,129**	**$91,124**	**($85,006)**

Notes: All figures presented in this table are reported on a "per well" basis.
*Cost figures reported in this table are specific to well plugging and downhole abandonment efforts and do not include surface facility decommissioning or wellsite surface reclamation.

Table 25 – Summary of per well financial assurance adequacy findings for O&G wells (total cost gap)

Land Status	Well Type	Financial Assurance	Total Costs*	Assurance Gap
State Trust	Gas	$3,300	$168,900	($165,600)
State Trust	Oil	$3,500	$218,400	($214,900)
State Trust	SWD	$239,400	$175,900	$63,500
Private Fee	Gas	$2,300	$151,800	($149,500)
Private Fee	Oil	$3,400	$216,700	($213,300)
Private Fee	SWD	$8,600	$178,300	($169,700)
Weighted Average		**$6,129**	**$197,897**	**($191,779)**

Notes: All figures presented in this table are reported on a "per well" basis.
*Cost figures reported in this table include well plugging and downhole abandonment, surface facility decommissioning, and wellsite surface reclamation.

The current financial assurance requirements and the costs of closure for pipelines located on state trust and private fee lands in New Mexico are summarized in Table 26. As shown therein, the estimated average financial assurance coverage for pipelines on state trust lands is approximately $51 per mile, whereas the average decommissioning and surface reclamation cost is estimated to exceed $211,000 per mile. Based on the Center's research, currently there are no financial assurance requirements for pipelines located on private fee lands, therefore the financial assurance gap is equivalent to the total cost of decommissioning and reclamation.

Table 26 - Summary of per pipeline mile financial assurance adequacy findings for O&G pipelines

Land Status	Financial Assurance	Costs*	Assurance Gap
Standard Decommissioning Scenario			
State Trust	$51	$211,000	($210,949)
Private Fee	$0	$213,000	($213,000)
Weighted Average	**$26**	**$212,000**	**($212,000)**

Land Status	Financial Assurance	Costs*	Assurance Gap
Full Removal Scenario			
State Trust	$51	$1,341,000	($1,340,949)
Private Fee	$0	$1,264,000	($1,264,000)
Weighted Average	**$26**	**$1,304,000**	**($1,304,000)**

Notes: All figures presented in this table are reported on a "per mile" basis.
*Costs reported here are representative of the average per mile pipeline decommissioning and right-of-way reclamation costs presented in Table 11 weighted by the number of pipeline miles reported in Table 11.

The differences between current financial assurance requirements and the costs of closure for other midstream and oil and gas support infrastructure located on state trust lands in New Mexico are summarized in Table 27. Note that this portion of the Center's analysis does not include similar infrastructure located on private fee lands because such data could not be located for use in this analysis. Of the other oil and gas infrastructure types explored in this analysis, financial assurance requirements were only identified for rule 34 recycling and containment facilities and petroleum storage tanks. In both cases, the current level of financial assurance coverage required for these facilities is exceeded by the estimated facility decommissioning and surface reclamation cost.

Table 27 – Summary of per site financial assurance adequacy findings for other O&G infrastructure

	For Infrastructure on State Trust Lands		
Other O&G Infrastructure Type	**Financial Assurance**	**Closure Cost**	**Assurance Gap**
Compressor Station Sites	$0	$231,000	**($231,000)**
Electrical Power Related Sites	$0	$704,000	**($704,000)**
Freshwater Frac Ponds	$0	$335,000	**($335,000)**
Landing Strips/Airports	$0	$590,000	**($590,000)**
Maintenance and Metering Sites	$0	$147,000	**($147,000)**
Private Mobile Radio Tower Sites	$0	$277,000	**($277,000)**
Office Buildings/Maintenance Yards	$0	$609,000	**($609,000)**
Processing and Dehydration Facilities	$0	$618,000	**($618,000)**
Rule 34 Recycling Facilities	$1,000,000	$1,126,000	**($126,000)**
Storage Sites	$0	$778,000	**($778,000)**
Petroleum Storage Tanks	$54,545	$9,543,000	**($9,488,455)**
Transfer Sites	$0	$384,000	**($384,000)**
Telemetry Paging Sites	$0	$176,000	**($176,000)**
Truck Stops	$0	$795,000	**($795,000)**
Storage Facilities/Warehouses	$0	$579,000	**($579,000)**
Other O&G Related Sites	$0	$3,760,000	**($3,760,000)**

Notes: All figures presented in this table are reported on a "per site" basis in USD. Similar data for infrastructure located on private fee lands was not available for this analysis. The estimates presented in this table do not include additional financial assurance coverage that may be available from NMSLO-required mega-bonds held by the infrastructure owner.

Overall, the Center finds that existing financial assurance requirements applicable to all infrastructure types are not sufficient to fully offset estimated closure and clean-up costs. As summarized in the Table 28, this study finds the total cost of closure and clean-up of the oil and gas infrastructure currently located on state trust and private lands to be approximately $8.38 billion. Whereas the total financial assurance coverage for this infrastructure accessible

to state regulatory entities for the purpose of closure and clean-up efforts is estimated to be approximately $201.42 million, resulting in a total financial assurance gap of approximately $8.18 billion.

Table 28 – Summary of total financial assurance adequacy findings

	Estimated Closure and Clean-up Costs *(millions)*		Estimated Financial Assurance *(millions)*		Estimated Financial Assurance Gap *(millions)*	
Infrastructure	**State Trust**	**Private**	**State Trust**	**Private**	**State Trust**	**Private**
Wells*	$3,316.40	$2,275.33	$136.11	$37.07	($3,180.29)	($2,238.26)
Pipelines†	$980.73	$929.57	$0.24	$0.00	($980.49)	($929.57)
Other	$876.38	*no data*	$28.00	$0.00	($848.38)	*no data*
Total	**$5,173.51**	**$3,204.90**	**$164.35**	**$37.07**	**($5,009.16)**	**($3,167.83)**
	$8,378.41		**$201.42**		**($8,176.99)**	

Notes: All figures presented in this table are reported in millions of USD.

*Cost figures reported in this table include well plugging and downhole abandonment, surface facility decommissioning, and wellsite surface reclamation.

† Cost figures reported in this table exclude produced water and freshwater pipelines used by oil and gas operators. Costs reported in this table assume buried pipelines are abandoned in-place rather than removed.

https://rbnenergy.com/part-of-the-plan-crude-oil-industry-prepares-as-capline-pipeline-closes-in-on-flip-day

Part Of The Plan - Crude Oil Industry Prepares As Capline Pipeline Closes In On 'Flip Day'

Sunday, 05/23/2021
Published by: Housley Carr

Over the next few months, a variety of market players — crude oil producers, midstreamers, refiners, and exporters — will be making preparations for one of the most anticipated infrastructure additions in recent years. Actually, it's not technically new; it's the long-planned reversal of the 632-mile, 40-inch-diameter Capline, which for a half-century transported crude north from St. James, LA, to Patoka, IL. Line-filling will begin this fall and Capline will start flowing south from Patoka in January 2022, providing Western Canadian and other producers with new pipeline access to Gulf Coast markets. Upstream of Patoka, the impending reversal has been spurring the development of new pipeline capacity to supply the soon-to-be-southbound Capline, and in Louisiana, refiners and exporters have been making plans for the crude that will be flowing their way into St. James. Today, we discuss the broad impacts of the "new" Patoka-to-St.-James pipeline.

Big enough for a full-grown Great Dane to walk through without scraping his ears, Capline is the biggest-bore crude oil pipeline ever built in the Lower 48. Originally called the Cajun Pipeline (and subsequently shortened to Capline), the project was a genuine gamechanger in that it enabled large volumes of imported oil and offshore Gulf of Mexico production to be transported north to a slew of refineries in the Midwest, with the Patoka hub serving as a key distribution point at Capline's northern terminus. Construction of the large-bore pipeline started in July 1967; initial filling of the mainline began one year later, and by August 1968 the pipeline was flowing in earnest, with an initial capacity of 417 Mb/d. As shown by the time-faded 1988 map in Figure 1, a number of new pumping stations were added along the pipeline's route through the 1970s and early '80s, gradually increasing Capline's throughput to a staggering 1.2 MMb/d.

Figure 1. A 1988 Map of Capline and Its Pump-Station Additions. Source: Shell

The pipeline's capacity was highly utilized for many years. But as we first discussed in Draggin' the Capline and later in Livin' on the Edge, by the early 2010s the Midwest refineries connected to the Patoka hub by pipelines (gray lines in Figure 2) had gained access to the increasing volumes of crude available from Western Canada and the Bakken. As a result, they simply didn't need Capline's northbound flows as much as they used to, and volumes on the pipe slowed to less than half and then less than a third of its capacity. Another blow to flows on Capline (orange line) came in December 2017, when Plains All American and Valero Energy started up their 200-Mb/d Diamond Pipeline (light green line) from the Cushing hub to Valero's 195-Mb/d Memphis refinery — Diamond eliminated the need for crude to move north to the refinery from St. James (LA) via Capline and the Colliervillle Pipeline (pink line), a connecting pipe to the refinery (see our Memphis, Tennessee blog for more on that). Then, in 2018, MPLX expanded the capacity of its Ozark Pipeline (dark green line) and Wood River-to-Patoka Pipeline (a.k.a. Woodpat; medium green line), offering an incremental 130 Mb/d of capacity from the Cushing, OK, hub to the Midwest.

Throughout the 2010s, there was talk that Capline's flow direction might be reversed, thereby providing another way for crude oil from Western Canada, the Bakken, and even the Niobrara and SCOOP/STACK to reach export docks and refineries in Louisiana. Finally, in August 2019, Capline's current owners — Plains All American (with a ~54% ownership interest), Marathon Petroleum Corp. (MPC; ~33%) and BP (~13%) — announced that they had sanctioned the Capline reversal project, with plans to feed crude into the pipeline at two primary points: at the Patoka hub and in northern Mississippi, the latter at a proposed interconnection between Capline and an extension of the Diamond Pipeline. (More on that in a moment.)

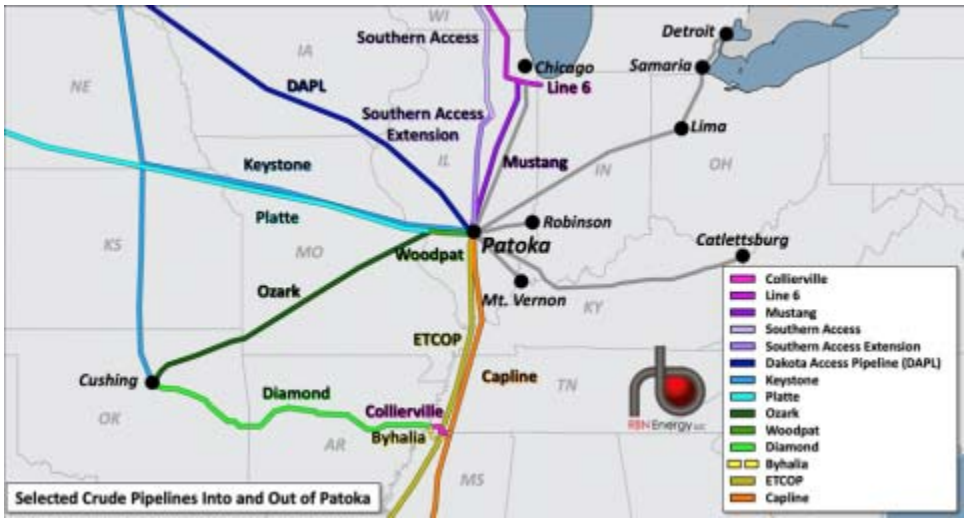


Figure 2. Capline and Other Crude Oil Pipelines Into and Out of Patoka. Source: RBN

We gave Patoka a long-overdue shout-out in our recent three-part blog series— see Don't You (Forget About Me) — where we reviewed the southern Illinois hub's history, 17 MMbbl of working storage capacity at seven terminals and plethora of inbound and outbound pipelines. Most important to our discussion today, there are five pipelines flowing into Patoka with a combined capacity of just over 2 MMb/d:

- MPLX's 454-Mb/d Woodpat Pipeline, which receives crude oil from two upstream pipelines — MPLX's 360-Mb/d Ozark Pipeline from Cushing and Enbridge's 145-Mb/d Platte Pipeline (aqua line) from Casper and Guernsey, WY. The Platte Pipeline transports heavy Western Canadian crude fed into it by the Express Pipeline as well as light crude produced in the Bakken, the Powder River Basin, and the Denver-Julesburg (DJ) Basin.
- TC Energy's 590-Mb/d Keystone Pipeline (light blue line) — not to be confused with the company's now-dead Keystone XL — which runs from Hardisty, AB, to Steele City, NE; from there, one spur of the pipeline heads east to Wood River and Patoka and the other heads to the Cushing hub, where it connects to TC Energy's Marketlink Pipeline to the Gulf Coast.
- The 570-Mb/d Dakota Access Pipeline (DAPL; dark blue line), which runs from the Bakken to Patoka and which is co-owned by Energy Transfer (with a ~36% share), Enbridge (with ~28%), Phillips 66 (with 25%), MPLX (with ~9%), and ExxonMobil (with ~2%). DAPL is part of the Bakken Pipeline System, which also includes the 742-mile Energy Transfer Crude Oil Pipeline (ETCOP; mustard line) from Patoka to Nederland, TX. (Our most recent review of DAPL was Don't Wanna Lose You in February.)

- Enbridge and MPLX's 300-Mb/d Southern Access Extension Pipeline (medium purple line), a 168-mile connector between Flanagan, IL, and Patoka that receives Western Canadian crude oil from Enbridge's 900-Mb/d Southern Access Pipeline (light purple line), which is part of Enbridge's 2.9-MMb/d Mainline system. (Enbridge holds a 65% ownership interest in Southern Access Extension and MPLX holds 35%.)
- ExxonMobil and Enbridge's 100-Mb/d Mustang Pipeline (dark purple line), which runs from Lockport, IL (a suburb of Chicago) to Patoka. (ExxonMobil has a 70% stake in Mustang and Enbridge has a 30% stake.)

Partly in anticipation of Capline's impending start-up as a southbound conduit, a number of these upstream pipelines have been planning capacity additions. The clearest example of this is on Enbridge's system. The company's Line 3 Replacement Project, which will increase the capacity of Line 3 from Hardisty to Superior to 760 Mb/d (from the current 390 Mb/d) is scheduled to be completed late this year, as is a 300-Mb/d expansion of Enbridge's 900-Mb/d Southern Access Pipeline from Superior, WI, to Flanagan. The third leg in that expansion effort is a planned 100-Mb/d expansion of Enbridge and MPLX's 300-Mb/d Southern Access Extension from Flanagan to Patoka, which will be achieved through use of drag reducing agents, or DRAs (see Kind of a Drag for more on DRAs).

These projects will enable increasing volumes of Western Canadian crude to flow south across the Enbridge-operated system to the Patoka hub, and from there on Capline to St. James. [Crude can also flow south from Enbridge's Flanagan hub to Cushing via the company's Spearhead and Flanagan South pipelines.] Further, Energy Transfer, Enbridge, and the other co-owners of DAPL are planning a 180-Mb/d expansion to that 570-Mb/d Bakken-to-Patoka pipeline, and TC Energy is planning a 50-Mb/d expansion to its 590-Mb/d Keystone Pipeline, which as we mentioned has a leg that runs from Steele City to Patoka.

At the Patoka hub, four of the seven terminals are owned either by Capline's three co-owners (Plains, MPLX, and BP) as a group or by one of the co-owners individually. The largest terminal there is Plains' 7.5-MMbbl facility (purple area in Figure 3), followed by MPLX's (red area) which has 5.6 MMbbl of existing storage capacity and another 700 Mbbl now under construction. The Capline terminal (green area) has 2.4 MMbbl and BP's Chicap Terminal (blue area) has 400 Mbbl.

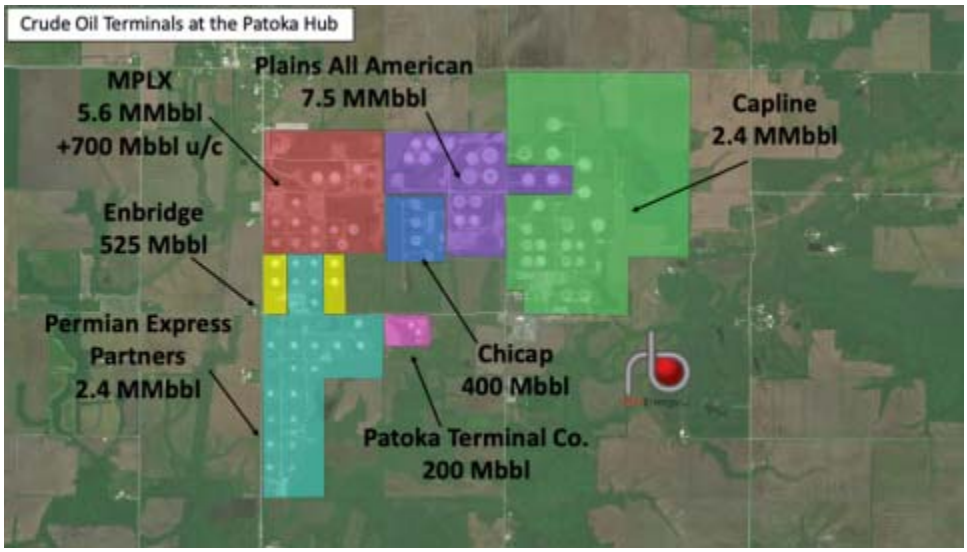


Figure 3. Crude Oil Terminals at the Patoka Hub. Source: RBN

The most important of the three other terminals at Patoka is Permian Express Partners' 2.4-MMbbl facility, whose ownership is an 85/15 split between Energy Transfer and Exxon Mobil, respectively. Its primary purposes are to receive the Bakken-sourced crude flowing into the hub on DAPL and to manage outbound flows on ETCOP (DAPL's sister pipeline) from Patoka to Nederland, TX. Some crude also flows from the Energy Transfer terminals to Midwest refineries via the pipelines we discussed in our Patoka hub blog series.

Capline's co-owners have indicated that the pipeline reversal project is supported by long-term capacity commitments from an unspecified number of shippers. They have not stated how much capacity on the southbound Capline is currently spoken for or how much the pipeline's capacity could be expanded to in the future as demand warrants. Given that, for the most part, we anticipate Capline will be transporting heavy (and therefore slower-moving) Western Canadian crude from Patoka, we estimate that it ultimately could move as much as 600 Mb/d — or about half its prior northbound capacity of 1.2 MMb/d. We understand that less than half of that 600 Mb/d of

prospective southbound capacity is currently spoken for, indicating that another 350 Mb/d to 400 Mb/d remains available. As we said in our introduction, the project to reverse the pipeline is nearing completion, with line-filling to begin in the fourth quarter of this year and southbound flows to start in January 2022.

The plan to feed light crude into Capline east Memphis, TN, is in limbo, however. Plains said during its May 4 earnings call that it still hopes to complete a 200-Mb/d expansion of Plains and Valero Energy's 200-Mb/d Diamond Pipeline (light green line in Figure 2) from Cushing to Valero's Memphis refinery and a planned extension of Diamond from the refinery to Capline by the end of 2021. But Plains acknowledged that the extension — also known as the Byhalia Connection (dashed yellow line) — has faced major opposition, and that the company has put the project on hold until July to study possible alternatives. Plains declined comment during the call on whether repurposing Valero's 52-mile, 10-and-20-inch Collierville Pipeline (pink line), which transported crude from a connection with Capline at Collierville, TN, to Valero's Memphis refinery, might be an option. In the past, Plains has indicated that the Collierville Pipeline was too small. The bottom line is that if Plains can't find a way to get a connection to Capline built, there would be no need to expand Diamond's capacity between Cushing and Memphis, and no way to add light crude to Capline east of Memphis.

In the next blog in this series, we'll look at the potential for increased crude oil flows from Western Canada, the Bakken, and other production areas to the Gulf Coast, as well as the storage, pipeline, refinery, and export infrastructure located in and near St. James — Capline's southern terminus when southbound flows on the pipeline begin.

"Part of the Plan" was written by Dan Fogelberg and appears as the first song on Fogelberg's second studio album, *Souvenirs.* Released as a single in early 1975, it went to #31 on the Billboard Hot 100 Singles chart, making it Fogelberg's first charting single. Personnel on the record were: Dan Fogelberg (lead vocals, acoustic, electric guitar, piano), Joe Walsh (acoustic guitar, electric 12-string guitar), Russ Kunkel (drums), Joe Lala (congas, timbales), Kenny Passarelli (bass), and Graham Nash, Randy Meisner (backing vocals).

Souvenir was recorded at The Record Plant and Elektra Sound Recorders in Los Angeles during the summer of 1974, with Joe Walsh producing. Released in October 1974, the album went to #17 on the Billboard Top 200 Albums chart. It has been certified 2x Platinum by the Recording Industry Association of America. Two singles were released from the LP.

Dan Fogelberg was an American singer, songwriter, and musician from Peoria, IL. He was discovered by Irving Azoff, who sent him to Nashville to hone his skills and record his debut album, which was released in 1972. Fogelberg released 16 studio albums, three live albums, seven compilation albums, and 21 singles. Garth Brooks has stated that "Fogelberg was an artist who changed my life, who made me change where I wanted to go, and the music I wanted to play." Fogelberg died at his home in Maine in December 2007.

https://www.dhs.gov/news/2021/05/27/dhs-announces-new-cybersecurity-requirements-critical-pipeline-owners-and-operators

DHS Announces New Cybersecurity Requirements for Critical Pipeline Owners and Operators

Release Date:
May 27, 2021

Today, the Department of Homeland Security's Transportation Security Administration (TSA) announced a Security Directive that will enable the Department to better identify, protect against, and respond to threats to critical companies in the pipeline sector.

"The cybersecurity landscape is constantly evolving and we must adapt to address new and emerging threats," said Secretary of Homeland Security Alejandro N. Mayorkas. "The recent ransomware attack on a major petroleum pipeline demonstrates that the cybersecurity of pipeline systems is critical to our homeland security. DHS will continue to work closely with our private sector partners to support their operations and increase the resilience of our nation's critical infrastructure."

The Security Directive will require critical pipeline owners and operators to report confirmed and potential cybersecurity incidents to the DHS Cybersecurity and Infrastructure Security Agency (CISA) and to designate a Cybersecurity Coordinator, to be available 24 hours a day, seven days a week. It will also require critical pipeline owners and operators to review their current practices as well as to identify any gaps and related remediation measures to address cyber-related risks and report the results to TSA and CISA within 30 days.

TSA is also considering follow-on mandatory measures that will further support the pipeline industry in enhancing its cybersecurity and that strengthen the public-private partnership so critical to the cybersecurity of our homeland.

Since 2001, TSA has worked closely with pipeline owners and operators as well as its partners across the federal government to enhance the physical security preparedness of U.S. hazardous liquid and natural gas pipeline systems. As the nation's lead agency for protecting critical infrastructure against cybersecurity threats, CISA provides cybersecurity resources to mitigate potential risks, including through a dedicated hub that disseminates information to organizations, communities, and individuals about how to better protect against ransomware attacks.

This new TSA Security Directive also highlights the critical role that CISA plays as the country's national cyber defense center**.** Last December, Congress, through the National Defense Authorization Act, empowered CISA to execute its mission to secure federal civilian government networks and our nation's critical infrastructure from physical and cyber threats.

https://www.kayrros.com/colonial-update-geospatial-data-track-the-market-response-to-the-pipeline-disruption-in-near-realtime/

COLONIAL UPDATE: Geospatial data track the market response to the pipeline disruption in near realtime

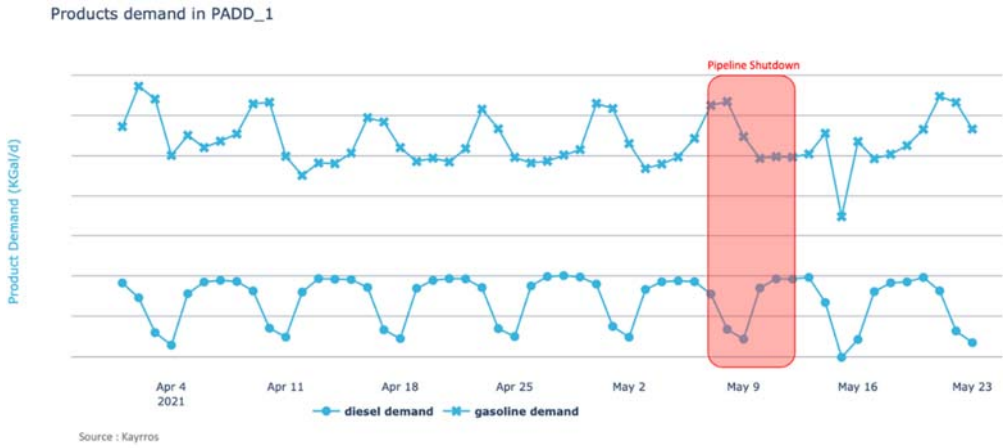
Colonial Pipeline, a top supplier of oil products in the US East Coast, the region known as PADD 1 in oil statistics, suffered an unprecedented cyber attack that brought it to a halt on May 7. The outage and resulting panic buying and oil price hike triggered an all-of-government response from Washington, but the way the various market stakeholders reacted was largely opaque at the time. Kayrros deployed satellite imagery, proprietary algorithms and anonymized geolocation data to assess the impact on consumer behavior, refinery operations and oil inventories.

The Colonial outage is exactly the type of incident that Kayrros Rapid Response had been designed for. Stretching 5,500 miles from Houston to New York Harbor, the pipeline is a 'vital artery for fuel' (The New York Times) that carries up to 2.7 million bpd of refined products from Gulf Coast refineries to large consumer markets on the South and mid-Atlantic Coast. Kayrros Rapid Response is a taskforce dedicated to monitoring supply-chain disruptions and other serious incidents around the world in near-realtime through our **Kayrros Platform** by combining and consolidating inputs from various breakthrough data technologies.

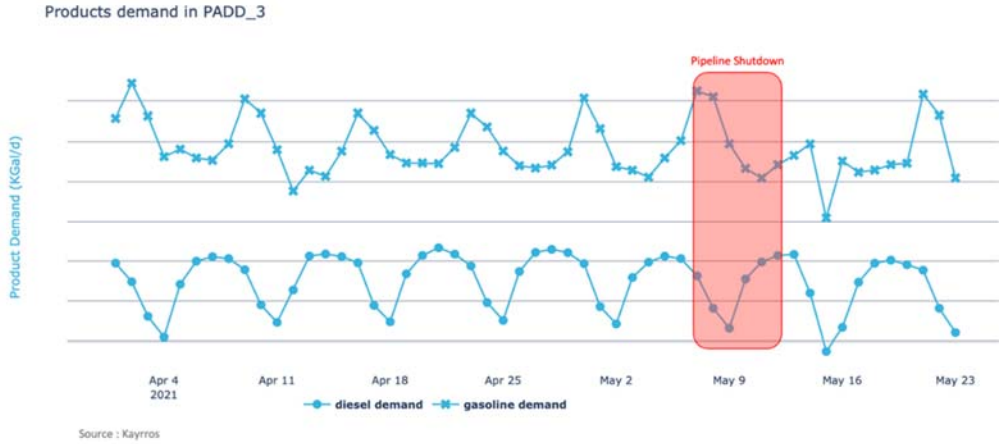
When disaster strikes — from methane leaks and attacks on key infrastructure to floods and forest fires – a high level of transparency is needed to help gauge the physical impact and optimize the critical decisions that may be required. But the more urgently information is needed, the harder it is to come by through traditional sources and collection methods. This is where Kayrros Rapid Response comes in.

Let's take a look at what we found.

On-Road Demand



Source: Kayrros



Source: Kayrros

On the road, driving demand from both passenger and commercial vehicles reacted strongly to the news of the May 7 outage and its aftermath. While panic buying sent gasoline prices up to six-year highs and caused many service stations in the Southeastern US to run dry, driving itself was actually significantly curtailed by the outage and concurrent price increases and remained severely depressed long after the pipeline resumed operations. At both ends of the pipeline, in PADD 1 and PADD 3 (the Gulf Coast), consumer driving fell after the cyclical weekly high on the weekend of the attack and failed to bounce back as usual in the runup to the following weekend of May 14-16. The following week, both consumer and commercial driving plunged to their lowest levels in weeks, likely in response to high prices, sporadic supply shortages and precautionary conservationist measures. The patterns were echoed across the US.

Product Stocks

(Source: Kayrros, contains modified Copernicus Sentinel data (2021))

Kayrros monitors product inventories held in floating roof tanks, which are a good proxy for overall product stocks. As could be anticipated, product inventories in PADD 1 and PADD 3 responded in diametrically opposite ways to the Colonial Pipeline outage, with East Coast stocks taking a nosedive when the pipeline went down while those in the Gulf Coast spiked up as access to their Atlantic Coast outlets was cut off. However, PADD 1 product stocks were much quicker to rebound from their plunge than might have been expected, likely in response to increased East Coast refinery activity. On the other hand, the rebound was limited. After the pipeline reopened, stocks were slow to rebuild to preexisting levels; this is likely because several days are needed to transport products from PADD 3 to PADD 1. PADD 3 stocks were still rising in late May, at the time of writing.

Refinery Crude Stocks

(Sources: Kayrros; contains modified Copernicus Sentinel data (2021); COSMO-Skymed Product © ASI (2021) – processed under license from ASI – Agenzia Spaziale Italiana. All rights reserved. Distributed by e-GEOS)

Refinery crude stocks held in floating roof tanks were a mirror image of product inventories. Crude inventories decreased sharply in PADD 1 as refineries cranked up their throughputs to compensate for missing product deliveries and seize the market opportunity provided by the product supply shortfall. On the other hand, PADD 3 refinery crude stocks have been on the rise, as diminished market outlets likely led refiners to slow down.

Kayrros will continue to monitor the Colonial Pipeline impact and will revert back with any additional updates. Rapid Response technology can be deployed to monitor other unexpected disruptions worldwide, from flooding and natural disasters to crude oil inventory disruptions. To learn more, feel free to get in touch with a member of our team.

May 27th, 2021|Demand, Refineries, Traders|Comments Off

May 28, 2021

COVID-19 UPDATE

State of Local Emergency (SOLE) declared in the RMWB.

On Monday, April 26, the Regional Municipality of Wood Buffalo declared a State of Local Emergency (SOLE) to help stop the continued spread of COVID-19 in the region, protect the local health care system and take action to address other local challenges and risks related to the on-going pandemic. The SOLE will remain in effect for 90-days or until terminated. At this time, no further public health measures have been made. Municipal information regarding the pandemic will continue to be updated and available at rmwb.ca/covid19.

RMWB Case Outcomes: 696 Active Cases 6066 Resolved Cases 9 Deceased Cases

- **Fort McMurray**
- 27 New cases
- 672 Active Cases (-58)
- 5794 Recoveries (+84)
- 846.1 per 100,000 pop

- **Rural RMWB**
- 3 New Cases
- 24 Active Cases (-5)
- 272 Recoveries (+8)
- 591.4 per 100,000 pop

- **Alberta**
- 512 New Cases
- 1245 New Recoveries
- 8760 Active Cases (-1257)

- **Canada**
  2886 New Cases
  40,654 Active Cases

- **Alberta Vaccines**
- 52,820 doses distributed in last 24 hours
- 2.66M first doses (51.4%) - Stage 1 of "Open for Summer" plan reached.
- 372K people are fully vaccinated
- Hospitalizations: 517 (-21)
- ICU: 147 (-3)
- "Rest of Alberta" R-Value: 0.71
- Data as of end of May 27th, compared to May 26th.

- **Get Vaccinated – Doses available**
- Everyone over age 12 can now book. Be patient, and **please cancel unwanted appointments**. The Rapid Flow Through Clinic at MacDonald Island is no longer offering Walk-In Appointments.
- **Book your appointment online here, or find a pharmacy offering vaccine here. Some pharmacies are offering walk-in appointments.**
- There are quarantine requirement changes for Close Contacts depending if you are fully or partially vaccinated.

Stage 1 - 50% Vaccinated, Under 800 Hospitalizations - June 1

- Places of Worship 15%
- Outdoor Social Gatherings up to 10 people
- Outdoor physical activity with restrictions
- Personal Wellness by appointment
- Restaurant Patios (Household Only - 4 per table)

Stage 2 - 60% Vaccinated, Under 500 Hospitalizations

- Outdoor gatherings up to 20 people
- Restaurants indoor/outdoor up to 6 people
- Indoor recreation, entertainment settings at 1/3 fire code
- Indoor Fitness - open for solo, class and drop-in activities
- Youth Camps, Youth and Adult Sports with restrictions

Stage 3 - 70% Vaccination

- All restrictions lifted, including ban on indoor social gatherings.
- Isolation requirements for confirmed cases of Covid-19 and some protective measures in continuing care settings remain.

"Open for Summer"

Alberta's plan to gradually remove restrictions due to Covid-19. Full details can be found here. Premier Kenney projected:

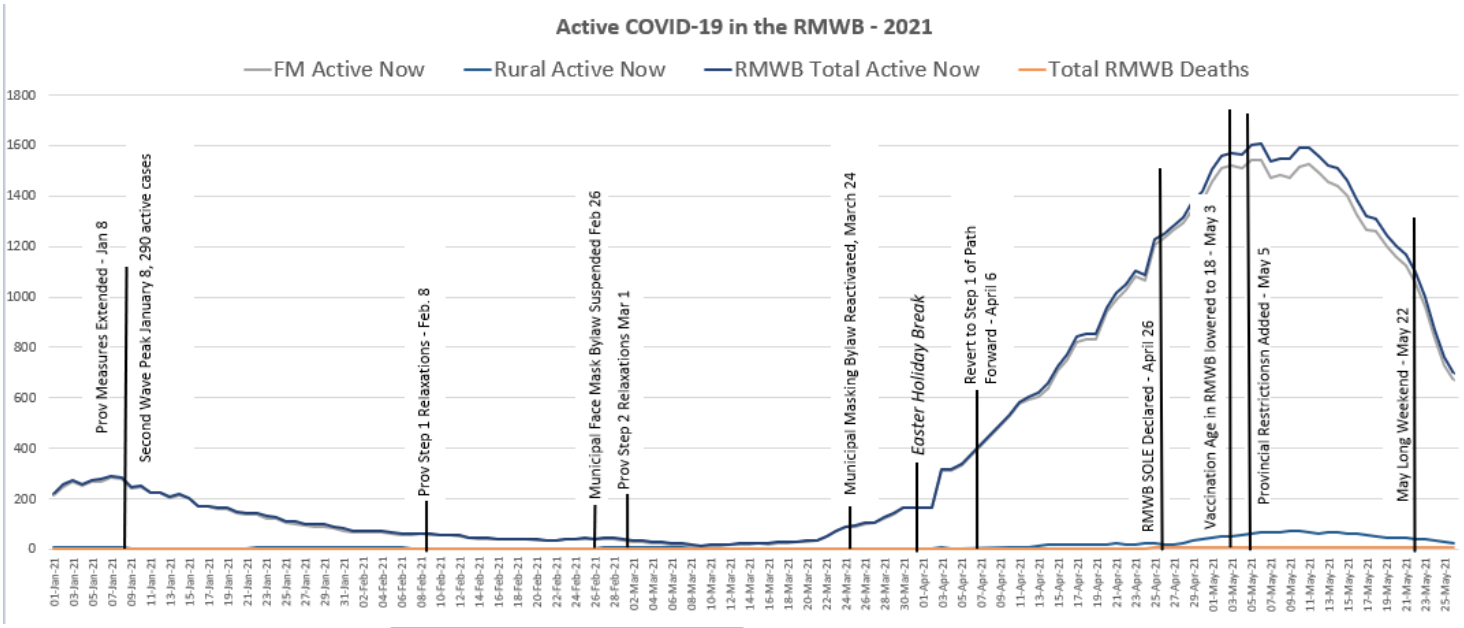
- **Stage 1: Begins June 1**
- **Stage 2: 2 weeks after target met**
  - **Could be as early as June 10 if hospitalizations under 500**
- **Stage 3: 2 weeks after target met**
  - **Could be as early as June 28**

May 28, 2021

COVID-19 UPDATE

State of Local Emergency (SOLE) declared in the RMWB.

On Monday, April 26, the Regional Municipality of Wood Buffalo declared a State of Local Emergency (SOLE) to help stop the continued spread of COVID-19 in the region, protect the local health care system and take action to address other local challenges and risks related to the on-going pandemic. The SOLE will remain in effect for 90-days or until terminated. At this time, no further public health measures have been made. Municipal information regarding the pandemic will continue to be updated and available at rmwb.ca/covid19.



Outbreaks in RMWB

Industrial:

MEG Energy
CNRL Horizon
CNRL Albian
CNRL Jackfish
Kearl Lake
Civeo Lynx Lodge
Civeo McClelland Lake
Wapasu Creek Lodge
Civeo Athabasca
Cenovus Sunrise Lodge
Suncor Base Plant
Suncor Firebag
Suncor Mackay River
Syncrude Mildred Lake
Syncrude Aurora
Suncor Fort Hills
CNOOC Long Lake
Oilsands Industrial Lodge - Fort McKay

Outbreaks in RMWB

Other:

Sunshine Community Dayhome
Chez Madamme Piccolo/Ecole Boreal
North Star Ford
Brandt Tractor
Joly's Your Independent Grocer
Salvation Army Shelter
Centre of Hope
Pastew Place Detox Centre
Birch Mountain Enterprises
Walmart
Safeway

Schools: Minister Lagrange announced that At-Home Learning will continue in the RMWB until at least May 31, while the rest of the Province returned to in-class learning, May 25.

Outbreak 10+ Cases:

Holy Trinity High School
Ecole Dickinsfield
Fort McMurray Comp.
Ecole Boreal
St. Martha
Ecole McTavish

Outbreak 5-9 Cases:

Fort McMurray Christian
St. Paul's Elementary
St. Kateri School
Dave McNeilly
Dr. Karl A Clark
Thickwood Heights
Sister Mary Phillps
Father J A Turcotte
Walter & Gladys Hill

Alert 2-4 Cases

Westview School
St. Gabriel
Hillcrest Montessori Academy

May 28, 2021

COVID-19 UPDATE

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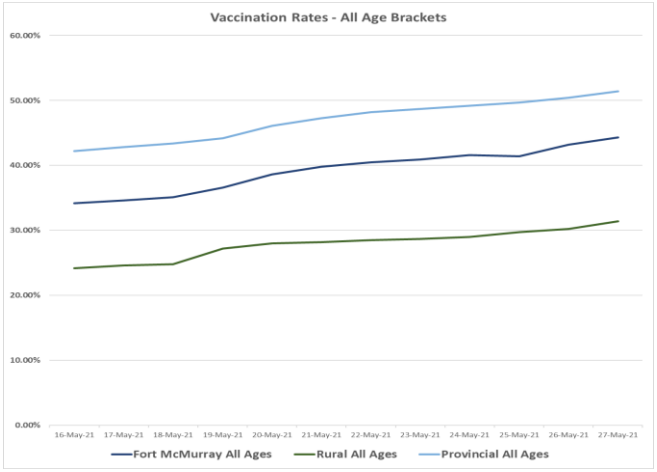
Local Vaccination Rates:

	Fort McMurray	Rural	Alberta
75+	67.9%	58.5%	86.1%
60-74	67.7%	54.6%	79.7%
40-59	63.0%	45.8%	64.4%
20-39	44.6%	26.2%	47.3%
12-19	44.7%	22.2%	39.1%
All Ages	44.3%	31.4%	51.4%

Local vaccination rates can be found here.



Do your part, even after your vaccination:

Until most Albertans are protected, fully vaccinated people must continue following all public health measures: no indoor social gatherings, keep 2 metres apart from others, wear a mask in public, wash your hands, and stay home when sick.

Once both doses take effect, you are less likely to become severely sick with COVID-19. But we don't yet know if the vaccine prevents vaccinated people from spreading the virus.

Second Dose:

Results show the first dose is at least 80% effective in preventing severe illness. The second dose ensures you're protected for as long as possible. The timing for getting your second dose depends on your health status.

Most Albertans are eligible for your second dose of:

- Pfizer or Moderna no later than 4 months after the first dose
- No later than 4 months and no earlier than 12 weeks after the first dose.

When to book:

- Bookings for second doses will begin when supply allows, after all Albertans 12 and over have been offered a first dose, likely in late June.
- Your pharmacy or AHS will contact you closer to your eligibility date to book your next appointment. Do not try booking in advance.

Variants Identified in the AHS North Zone

B.1.1.7 (UK)	**5480**
B.1.351 (SA)	**4**
B.1.1617 (India)	**0**
P.1 (Brazil)	**660**
Total:	**6144**

AHS NZ Recovered:	**5516**
AHS NZ Deceased:	**20**
AHZ NZ Active:	**608**

Google Translate of https://www.minenergia.gov.co/en/web/10180/1332?idNoticia=24290731

Gas production in Colombia registered a recovery of 27.8% during April 2021

Minenergy. Bogotá, DC, May 28, 2021. Commercialized gas production in Colombia was 1,057 million cubic feet per day (mcfd) in April 2021, which means a recovery of 27.8% compared to what was registered in the same month of 2020 (827 mpcpd). Compared to March 2021 (1,091 mpcpd), the production of this energy had a decrease of 3.1%.

This behavior in production during the month of April was due to a lower production in the Nelson (Pueblo Nuevo, Córdoba), Kananaskis (Tauramena, Casanare), Gibraltar (Toledo, Norte de Santander), Cusiana and Cupiagua Sur (Aguazul, Casanare), due to the behavior of gas demand in the month.

During the first four months of 2021, the average production of commercialized gas in Colombia registered an increase of 5.92%, reaching 1,097 million cubic feet per day (mpcpd) compared to the 1,035 mpcpd reported in the same period of 2020.

Regarding oil production, in the month of April 2021 it was 745,488 average barrels per day, a decrease of 6.3% compared to the data reported in April 2020 (796,164 bpd). With respect to production in March 2021 (745,427 bpd), there was no variation.

This stable behavior was due to the optimization and restoration of production after the impact of deferred in fields such as Rubiales (Puerto Gaitán, Meta), Acordionero (San Martín, Cesar), Capella (La Macarena, Meta) and Tigana (Tauramena , Casanare).

So far this year, the average oil production reached 745,522 barrels per day, which shows a reduction of 12.6% compared to the same period in 2020, when there was a production of 853,884 barrels per day.

Finally, during April 2021, the drilling of 2 exploratory wells and 38 development wells began in Colombia, for a total so far this year of 9 exploratory wells and 123 development wells. In addition, 302.5 kilometers of equivalent 2D seismic were acquired during this month, for a total of 592 kilometers in the year.

Bloomberg @TheTerminal
Big Oil Gives Second Look at Brazil Fields After 70% Price Cut
2021-05-28 10:00:00.1 GMT

By Peter Millard and Gerson Freitas Jr.
(Bloomberg) -- Big Oil is taking a second look at two Brazilian deep-water oil prospects they passed on in 2019 now that the government has slashed signing bonuses by 70%.
Major oil companies are seeking information about additional acreage that Brazil is offering in December for the Atapu and Sepia fields in the so-called pre-salt region, which holds the biggest group of offshore discoveries this century, Energy Minister Bento Albuquerque said in an interview.
Additional guidelines for the auction will be released in June and Albuquerque expects talks with foreign majors to "intensify."
Policy makers are hustling to get these massive deep-water projects up and running before the energy transition leaves the assets stranded in the middle of the South Atlantic, where it takes years just to start extracting discovered oil. Unlike two years ago when a more robust outlook for oil prices prompted Brazil to seek almost 37 billion reais ($7 billion) in signing bonuses for both blocks, the country is now asking for about 11 billion reais.
"We understand that the most important thing for Brazil in this moment, for this auction, is the investments that will be made and the return it will bring," Albuquerque said. "We're talking with everyone, and everyone is looking."

State-controlled oil giant Petrobras is already producing at the Atapu field and expects first oil at Sepia this year, reducing any exploration risk at the adjacent acreage Brazil will offer in December. Petrobras's current partners at Atapu are Galp Energia SGPS, Total SE and Royal Dutch Shell Plc. At Sepia, Galp is its only partner.
It makes sense to have the same groups on both sides of each field, and Petrobras could negotiate with its partners to bid above the minimum terms to deflect competition, said Marcelo de Assis, the head of Latin American upstream research at consultant Wood Mackenzie Ltd.
Brazil is also looking to do away with a more onerous profit-sharing model for future bidding rounds and go back to a more simple concession model that is more popular with oil producers, Albuquerque said. The government is pressing Congress to make these changes, which could still happen in the middle of this year, he said.
"We need a more accessible regime that brings more activity," he said. "Brazil is a developing country, it will return to economic growth, and its economy will be dynamic and will need this oil."

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https://blinks.bloomberg.com/news/stories/QTS1LJT1UM0Z

https://tass.ru/ekonomika/11476739
MAY 26, 02:40Updated by May 26, 03:42

Novak said that the oil deficit on the market is estimated at 1 million bpd

Also, according to the Deputy Prime Minister, the countries participating in the OPEC + oil production cut agreement take into account the possibility of Iranian oil returning to the world market.

Deputy Prime Minister of Russia Alexander Novak
© Anton Novoderezhkin / TASS

TORZHOK / Tver region /, May 26. / TASS /. Russia estimates the current deficit in the oil market at 1 million bpd, Deputy Prime Minister Alexander Novak told reporters.

"Now there is a deficit in the market of about 1 million barrels per day and we need to further understand how we can ensure the growth of demand," he said.

Recommendations to stop investments in oil and gas

According to him, the recommendations of the International Energy Agency to stop investments in oil and gas have not been calculated and are populist in nature.

“It seems to me that this is a more populist statement, a tribute to fashion, in my opinion, these are not calculated things, you need to consider very carefully. Even with the energy transition, the next decade hydrocarbons will occupy a dominant position in the energy balance, will ensure the security of the world and the need even for the same electricity, so all this must be clearly considered, "he continued.

“I think that other analytical judgments, analysts of other equally respected organizations will most likely appear,” Novak emphasized.

The International Energy Agency has previously proposed abandoning new mining projects to combat global warming. It has prepared a related plan to achieve carbon neutrality by 2050.

Return of Iranian oil to the market

The countries participating in the OPEC + oil production cut agreement are considering the possibility of Iranian oil returning to the world market, Novak added.

"Potentially, we mean that there will be such an opportunity. Iran has the potential for reconstruction. We have always advocated that the sanctions are discriminatory towards Iran," he said.

"Iran has potential, we must take this into account, based on real production volumes, everything needs to be calculated. The Iranians are already members of OPEC and OPEC + and together we will calculate the balance," Novak added.

According to him, the influence of this factor on the market still needs to be studied and calculated. This will be done by the technical committee at OPEC +, which monthly studies the situation and makes recommendations for the ministerial meeting of the countries participating in the agreement. "Therefore, we cannot speak in advance," Novak emphasized.

On the situation with Iran

Agency Bloomberg reported that Iran holds the preparatory work in order to rapidly increase the volume of oil production in the case of an agreement on the nuclear deal and lifting of US sanctions. According to the most optimistic forecasts, Iran will be able to return to the production level of 4 million barrels per day within three months.

Negotiations are currently underway in Vienna on the return of the United States and Iran to the Joint Comprehensive Plan of Action (JCPOA) on the Islamic Republic's nuclear program. Previous American President Donald Trump made the decision to withdraw from the JCPOA in 2018. This agreement was signed with Iran by the five permanent members of the UN Security Council and Germany in 2015 with the aim of resolving the crisis around the nuclear development of the Islamic republic.

The current President of the United States, Joe Biden, has repeatedly signaled his readiness to return the United States to the JCPOA. Iranian President Hassan Rouhani warned on March 2 in a telephone conversation with his French counterpart Emmanuel Macron that the only way to preserve the JCPOA is to lift Washington's sanctions against Tehran.

https://www.spglobal.com/platts/en/market-insights/videos/market-movers-europe/052421-iran-deal-russia-saudi-gas-ukraine-power-eurelectric-emissions-uk-steel-quotas

- OIL | PETROCHEMICALS | SHIPPING | ELECTRIC POWER
- 24 May 2021 | 17:33 UTC

Iran starts to store more barrels at sea ahead of potential sanctions relief

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-
- Author**Eklavya Gupte**
- Editor**Richard Rubin**
- Commodity**Oil**, **Petrochemicals**, **Shipping**, **Electric Power**
-
-
- Tags**Petroleum**, **Condensate**, **Wet freight**, **Nuclear power**
-

HIGHLIGHTS

Around 32 million barrels of Iranian oil on water

Floating oil volumes have more than doubled since January

Iran laying the ground for an export revival

Iran is starting to build its offshore oil storage as chances of a new nuclear deal grow higher, which will enable it to reclaim its lost oil market share, trading and shipping sources said May 24.

Iran is preparing for a quick ramp-up of its output and exports as the US, Iranian and European negotiators kick off the fifth round of indirect talks this week in Vienna over the deal, known as the Joint Comprehensive Plan of Action.

Iranian oil on floating storage has more than doubled since mid-January when Joe Biden became US president.

Iran's oil tankers were holding around 32 million barrels of crude and condensate at sea for the week beginning May 24, according to estimates from data intelligence firm Kpler. The amount was as high as 34 million barrels for the week beginning May 3, which at the time, was a 13-month high, according to Kpler data.

In mid-2019, Iran accumulated almost 60 million barrels of crude and condensates, according to S&P Global Platts and independent estimates as US sanctions and a lack of buyers squeezed the OPEC member's crude sales

This also comes as Iranian oil exports have rebounded in recent months, with China a particularly eager buyer at discounted prices, according to market sources.

The oil in floating storage is both crude and condensate, consisting of Iran's main exports grades such as Iran Light, Iran Heavy, Forozan Blend, Soroosh and South Pars condensate.

These volumes are scattered across the Middle East and Asia, with most of these tankers floating off the coast of Iran, Malaysia, China, Indonesia and the UAE.

Iran has been using ship-to-ship transfers to sell its oil at ports in the Persian Gulf and parts of Southeast Asia around Malaysia and Indonesia. Iranian crude is shipped to these regions using feeder ships and then transferred to smaller vessels that do not mention Iran as their point of origin.

Iran has always resorted to floating storage for its crude under the previous Western sanctions on its oil, which ran from 2011 to 2016 and then from 2018 onwards.

Representatives at state-owned National Iranian Oil Co. were unavailable for comment.

Export revival

On May, 20 Iranian President Hassan Rouhani said a "main agreement" to reinstate the nuclear deal, as the US has broadly committed to lifting its sanctions targeting Iran's oil, petrochemical and shipping sectors. But a final deal has yet to be struck, with discussions ongoing over various details.

Iranian crude and condensate exports will rise from 600,000 b/d in May to 1.5 million b/d by December after a framework deal by June outlines the terms for full sanctions relief by September, according to S&P Global Analytics.

"Interim oil sanctions waivers are also possible, as Iran progresses toward full nuclear compliance," it said in a recent note.

This comes amid a steady increase in Iranian oil exports this year, which have risen to over 1 million b/d in some months, with China a particularly eager buyer at discounted prices, according to market sources.

Iranian crude and condensate exports were averaging as high as 2.90 million b/d in early May 2018, when US under the Trump administration withdrew from the Iran nuclear deal.

Iran pumped 2.43 million b/d of crude oil in April, according to the monthly S&P Global Platts survey of OPEC output, a rise from about 2.0 million b/d at the end of 2020. Immediately prior to the US reimposing sanctions in 2018, Iran pumped at a peak of 3.8 million to 3.9 million b/d.

https://www.ndrc.gov.cn/xwdt/xwfb/202105/t20210524_1280583.html

The National Development and Reform Commission and other five departments jointly interviewed to remind key commodity companies

Release time: 2021/05/24

Source: Price Division

WeiboWechat

The Party Central Committee and the State Council attach great importance to the work of ensuring the supply and stabilization of bulk commodities. In order to implement the spirit of the executive meeting of the State Council, on the morning of May 23, five departments including the National Development and Reform Commission, the Ministry of Industry and Information Technology, the State-owned Assets Supervision and Administration Commission, the State Administration for Market Supervision, and the China Securities Regulatory Commission held a meeting to jointly talk about iron ore and steel. , Copper, aluminum and other key enterprises with strong market influence, iron and steel industry associations, non-ferrous metals associations participated.

The meeting pointed out that since the beginning of this year, the prices of some bulk commodities have continued to rise sharply, and the prices of some varieties have reached new highs, which has attracted widespread attention from all quarters. This round of price increases is the result of multiple factors, including international transmission factors, but also in many aspects that reflect excessive speculation, disrupting the normal production and sales cycle, and contributing to the price increase.

The meeting requested that relevant key enterprises should improve their positions, establish awareness of the overall situation, actively fulfill their social responsibilities, promote the coordinated development of upstream and downstream industries, and maintain a good industry ecology; strengthen legal awareness, operate in an orderly manner in accordance with laws and regulations, and take the lead in maintaining market prices for bulk commodities. Order, must not collude with each other to manipulate market prices, fabricate and spread information about price increases, and must not hoard odds and drive up prices. Relevant industry associations should correctly perform the functions of industry autonomous organizations from the perspective of conducive to the long-term and healthy development of the industry, give full play to the role of bridges, guide industry enterprises to strengthen self-discipline, and jointly maintain the normal market order of the industry.

The meeting made it clear that in the next step, relevant regulatory authorities will closely follow the trend of commodity prices, strengthen the joint supervision of commodity futures and the spot market, "zero tolerance" for illegal activities, continue to increase law enforcement inspections, and investigate abnormal transactions and malicious speculation. Resolutely investigate and punish violations of the law, such as reaching agreements to implement monopoly, spreading false information, driving up prices, hoarding and other illegal activities.

Participating companies and industry associations stated that they will seriously standardize production and operation behaviors in accordance with the reminder requirements of the interviews, earnestly perform social responsibilities, adhere to legal and compliance operations, and make positive contributions to creating a harmonious and stable market and price order.

https://www.ft.com/content/52645b30-c378-49e3-8609-4f537284889a

Hedge fund that beat ExxonMobil says it will have to cut oil output

Engine No 1 won at least two seats on supermajor's board while raising climate alarms

Derek Brower, US energy editor YESTERDAY

The activist investors who invoked the perils of climate change to win a stunning proxy battle against ExxonMobil this week said the supermajor would need to cut oil production, indicating they would keep pressing management to shift strategy in response to the shareholder vote.

"They need to position themselves for success," said Charlie Penner, who ran hedge fund Engine No 1's campaign against the company. "You would certainly believe that would mean less oil and gas production going forward."

Engine No 1, named after a firehouse sign in San Francisco, launched its audacious effort in December, nominating four directors to Exxon's board and warning of the "existential risk" posed by its commitment to fossil fuels.

The show of chutzpah pitted a hedge fund founded last year against the world's most famous oil company, with colossal geopolitical heft and financial clout.

One of Wall Street's most expensive proxy fights culminated in Wednesday's unusual annual meeting, when Exxon attempted what critics described as the company's version of a senatorial filibuster, delaying the closure of voting while it held an impromptu hour-long break before chief executive Darren Woods fielded questions about the company's strategy.

It was the first time Exxon had dealt with a contested shareholder vote of this nature.

"Like many things we've seen in this campaign, the way they operated the meeting was beneath such an iconic company," Chris James, Engine No 1's founder, said in an interview with the Financial Times.

"Watching that meeting yesterday was such a perfect example of how they don't realise the world has changed. It was all on display."

In the end, Exxon announced shareholders had elected two Engine No 1 nominees after a preliminary vote count. The fund expects a third to be announced when the official vote count is in, likely in the middle of next week.

Engine No 1 will keep a close eye on management's behaviour, Penner said. Some analysts have suggested Exxon's management could simply ignore the fund's new directors.

"I wouldn't recommend it," he said.

BlackRock and Vanguard, Exxon's two largest shareholders, both backed some of the directors nominated by Engine No 1 — a rebuke to the company's management that environmental campaigners said heralded a new era for Wall Street's approach to climate risk.

But Engine No 1 was clear that its campaign was as much about Exxon's financial underperformance in recent years as it was about climate.

"Exxon thought this was ideological," James said. But Engine No 1 was a "capitalist group, definitely not a non-profit", he added. "Our idea was that this was going to have a positive impact on the share price."

The hedge fund is not calling for Exxon to repeat the kind of move into renewable energy that BP has undertaken.

"BP spending a billion dollars to buy half of a wind farm that Equinor developed, that's not a great business model and it was punished by the market," said Penner, referring to the UK oil major's recent deal with the Norwegian company.

Penner said Engine No 1 would give Exxon time to develop a new strategy — but as the world moved to cut carbon emissions, the changes would still be profound. An energy transition happening faster than expected had undermined Exxon's assumptions about long-term demand for its oil, Penner said.

"What we're saying is: plan for a world where maybe the world doesn't need your [oil] barrels," he said.

It would be a sharp departure for a company currently producing oil and gas to the equivalent of almost 4m barrels a day, or more than 4 per cent of the world's total, and has made long-term plans for big new crude oil projects in the US and off the coast of Guyana.

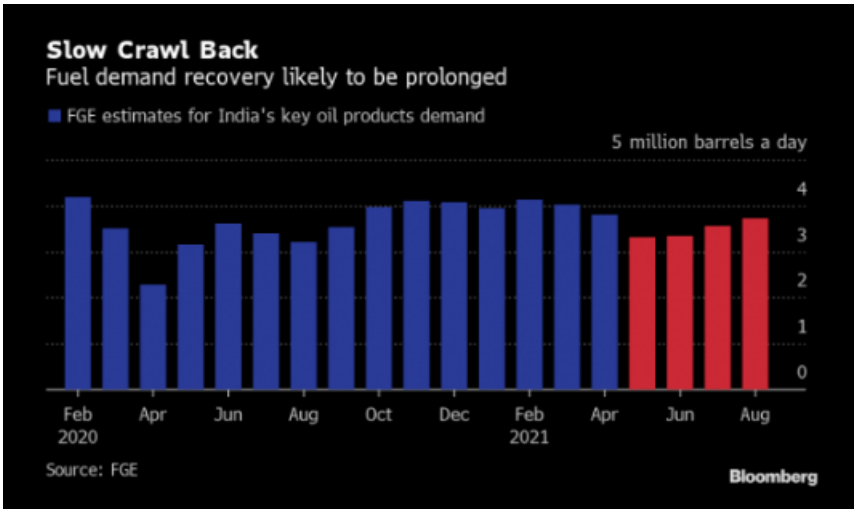
Exxon said it "welcomes the new directors" and would "share our plans in detail with them and listen to their perspectives".

Engine No 1's success has led to claims that a new age of shareholder activism may have begun. The fund holds a stake of just around $50m in a $250bn company that less than a decade ago was the world's largest by market capitalisation. Other companies are in its sights.

"Our ambitions are clearly broader than Exxon," James said.

Oil Demand Recovery in Virus-Ravaged India Tough to Predict (2)
2021-05-27 09:50:49.775 GMT

By Saket Sundria and Debjit Chakraborty
(Bloomberg) -- Indian energy demand is taking a big hit as Covid-19 runs rampant across the country. But uncertainty around when the virus wave will subside and the lack of a unified government response has left the oil industry in the dark as to how quickly consumption might pick up again.
The demand destruction over the last couple of months has been less severe than last year, when the government imposed the world's biggest national lockdown. However, the lack of a coordinated effort to shut down activity to halt the virus's spread will likely lead to a longer, although less pronounced, economic slump.
"When it will return to normalcy is a very difficult question to answer," said Shrikant Madhav Vaidya, chairman of Indian Oil Corp., the country's biggest refiner. "We can only hope and pray that with the vaccination drive underway, things will come out well. But when, I don't know."
Unlike last year, Prime Minister Narendra Modi hasn't imposed a countrywidelockdown. States have been left to fend for themselves, leading to a patchwork of curfews and restrictions that are being constantly extended as record infections and deaths overwhelm hospitals and crematoriums.
"We hope the situation will be clearer by the end of this month or the first week of June," said Mukesh Kumar Surana, chairman of Hindustan Petroleum Corp. Demand should be better in the quarter through September, he said.
Diesel and gasoline, which account for more than half of oil consumption in India, are bearing the brunt of localized lockdowns. Sales of the two fuels at the three biggest retailers are about a third lower so far in May compared with pre-virus levels two years earlier. That's not as bad as April 2020, however, when demand nearly halved. This time round, more factories have remained open and cargo movements between states haven't been as badly affected.



Even so, around 65% of India's truck fleet is idle due to weak demand and a shortage of drivers, according to Naveen Kumar Gupta, secretary general of All India Motor Transport Congress. Localized restrictions are creating hurdles to truck movement and the slow progress on vaccination of drivers and a reverse migration of labor back to rural areas is really hurting the industry, he said.

India's economic activity showed signs of cooling in April due to the state-wide lockdowns and data from this month confirmed the softening trend. A basket of high-frequency, alternative and market indicators such as retail activity and road congestion pointed to weakness in the week to May 16, Abhishek Gupta, India economist at Bloomberg Economics, said in a report.

Indian refiners were hoping to keep processing rates reasonably high this year, encouraged by low stockpiles and export opportunities, even as consumption dropped. May shipments of clean fuels like gasoline and diesel are set to be the highest since January 2020, according to oil analytics firm Vortexa.

However, a slowdown in construction and factory activity has led to a build-up of sulfur and bitumen stockpiles, making it more difficult to maintain operations. Crude processing fell to 4.86 million barrels per day in April, from 4.96 million in March, official data show. FGE sees run rates at 4.45 million this month, 4.6 million in June and then averaging 4.8 million over July and August.

Rising infections and limited public transport will affect diesel and gasoline demand in the June quarter, N. Vijayagopal, finance director at Bharat Petroleum Corp., said on an investor call Thursday. BPCL has reduced run rates to reflect that, and is operating its refineries at an average 86% of capacity in May.

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For more on Indian energy demand

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India's Oil Demand Spared 2020 Collapse Despite Covid CrisisOil Demand to Buckle in India as Covid Surge Wreaks HavocIndian Oil Cuts Refinery Run to 84% as Covid Hits Fuel Demand

*T

Demand for key oil products -- diesel, gasoline, LPG, naphtha, jet fuel and fuel oil -- is set to drop by about 730,000 barrels per day in May from 4 million in March, FGE said. June demand will be only around 30,000 barrels a day higher than this month, according to the industry consultant.

"The regional lockdowns and periodic announcements do make it difficult to predict," said Senthil Kumaran, head of south Asia oil at FGE, who has already revised Indian fuel demand estimates lower twice this year. "I strongly believe the impact will linger through the third quarter as well. It's going to be very difficult for Indian oil consumption to reach March levels

anytime this year."

--With assistance from Kevin Dharmawan.

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To view this story in Bloomberg click here:
https://blinks.bloomberg.com/news/stories/QTREYCT0G1LV

Crude Oil in Floating Storage Falls 9.4% in Past Week: Vortexa
2021-05-24 07:00:01.244 GMT

By Bloomberg Automation
(Bloomberg) -- The amount of crude oil held around the world on tankers that have been stationary for at least 7 days fell to 101.66m bbl as of May 21, Vortexa data show.
* That's down 9.4% from 112.17m bbl on May 14
* Asia Pacific down 20% w/w to 67.49m bbl
* Europe up 24% w/w to 7.60m bbl
* Middle East down 2.8% w/w to 7.35m bbl
* West Africa up 16% w/w to 4.57m bbl
* U.S. Gulf Coast up 580% w/w to 3.43m bbl
* North Sea up 27% w/w to 2.55m bbl
* Company Exposure:
** Asia: Cosco Shipping Energy Transportation Co., HMM Co. Ltd., Mitsui O.S.K. Lines Ltd., Nippon Yusen KK
** Europe: Euronav NV, Frontline, Vopak
** U.S.: DHT Holdings, International Seaways, Nordic American Tankers, Teekay Tankers, Tsakos Energy Navigation
* NOTE:
** Vortexa data exclude FPSO units, oil products and Iranian condensate
** Crude oil transferred by STS isn't included until that volume has been stationary on receiving vessel for 7 days
** Data don't include vessels booked for floating storage until they are actually stationary for the minimum period
** See VTXA or DATA FLOAT for more data, which is subject to revisions, and see NI TANTRA for all tanker-tracking stories
** See SPOT FREIGHT for freight rate assessments using shipbroker data

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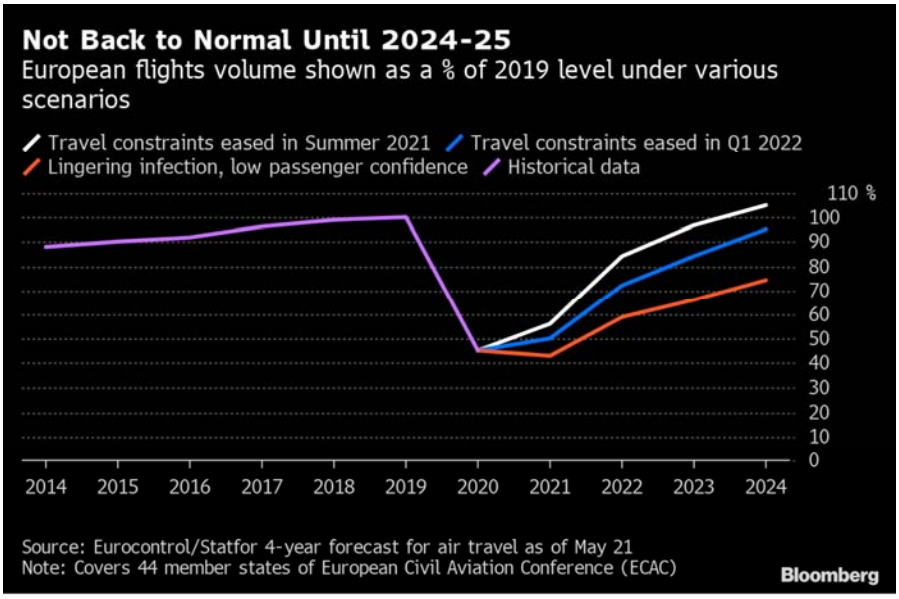
OIL DEMAND MONITOR: U.K. Airline Activity Grows; Toll Roads Busy
2021-05-26 09:11:14.437 GMT

By Stephen Voss -- (Bloomberg)

Airline seat capacity surged by a fifth in the U.K. in the past week while slumping 12% in India, highlighting how varying strategies for combating coronavirus are playing out in travel patterns and fuel consumption.

The U.K., where the government says about 70% of adults have had at least one dose of vaccine, is progressing toward its goal of ending social distancing measures in about a month's time and London is the only one of Europe's five biggest capital cities where road congestion on Monday morning was above the 2019 average. New York was down 35%, about the same as Madrid.

Air travel in the U.K. was particularly badly hit during the past year and is now catching up, as is Spain, according to weekly seat capacity estimates from OAG Aviation. Even so, traffic management agency Eurocontrol doesn't expect overall European flight numbers to return to the pre-pandemic normal until 2024 or 2025, and estimates that activity in the region is currently 60% lower than two years ago.



The infection rate in India is still massive, with 196,427 new cases recorded on Tuesday, though it is at least slowing down from more rampant levels in late April and early May. Numerous statewide lockdowns within India this month have cut into gasoline and diesel demand, and also crimped jet fuel consumption as shown by the weekly OAG data on plane occupancy.

Airline seat capacity in India was 57% below the equivalent week of 2019 on May 24, compared with deficits of only 50% and 29% on May 17 and April 26, respectively.

The declines in Indian airline activity and a smaller step back in China offset gains in Europe and the U.S., leaving global seat capacity near 64 million last week, or 43% behind the same week of 2019, according to OAG, which is the same percentage decline as at the start of May. A separate measure from FlightRadar24 shows the number of worldwide commercial flights on Tuesday was still down by one third from the level two years earlier.

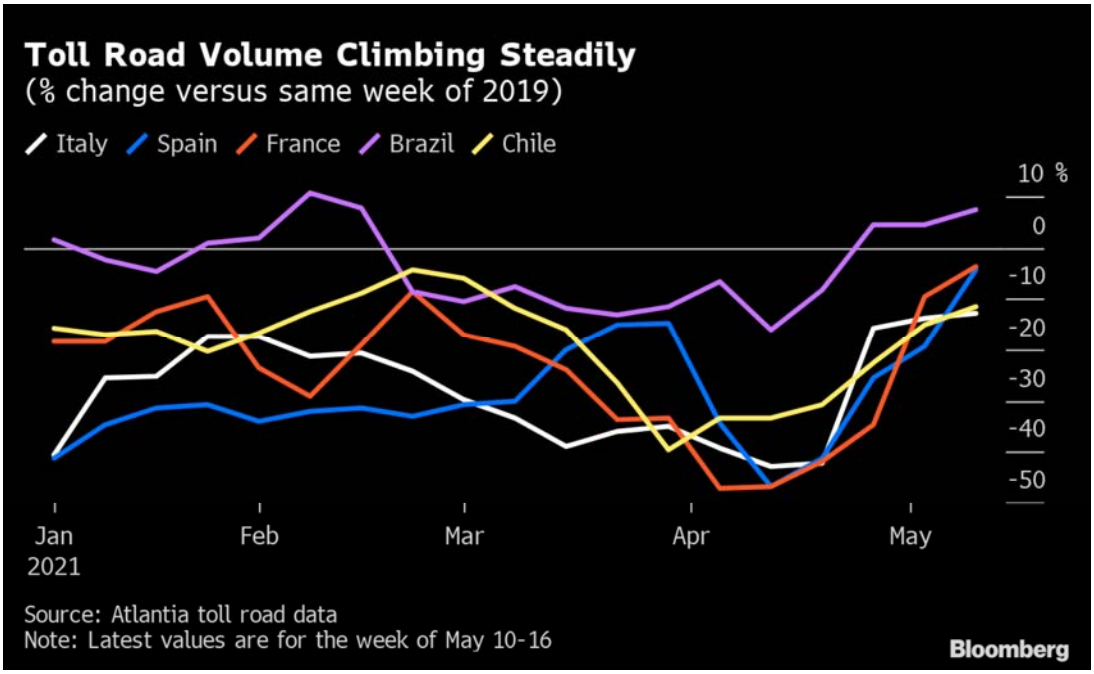
European travel remains precarious though. On Sunday, French Foreign Affairs Minister Jean-Yves Le Drian told RTL radio that the country was considering stricter measures for passengers arriving from the U.K. because of the spread of a coronavirus variant first identified in India.

Hit the Road

Roads are steadily getting busier in many countries.

Toll road traffic in France and Spain is now just a few percentage points away from matching 2019 levels, according to the latest weekly data from Atlantia Group, which manages about 13,000 kilometers (8,000 miles) of toll motorways worldwide.

Atlantia data for Brazil has been above 2019 for three weeks now. Separately, government data from Poland, the U.S. and U.K. show passenger car traffic levels for the latest weeks measured were down 2%, 5% and 9%, respectively, versus pre-pandemic times.



A permanent shift away from mass transit could help boost demand for oil-based fuels in a post-Covid scenario, BofA Global Research analysts including Francisco Blanch said in a report last week. Even if electric vehicles sales reach 34% by 2030, an acceleration in miles driven of 20% could push peak oil demand levels to 109 million barrels a day by 2027.

The Bloomberg weekly oil-demand monitor uses a range of high-frequency data series to help identify trends that may become clearer later in more comprehensive monthly figures.

Following are the latest indicators, in the four tables below. The first two show fuel demand and mobility, the next shows air travel globally and the last is refinery activity:

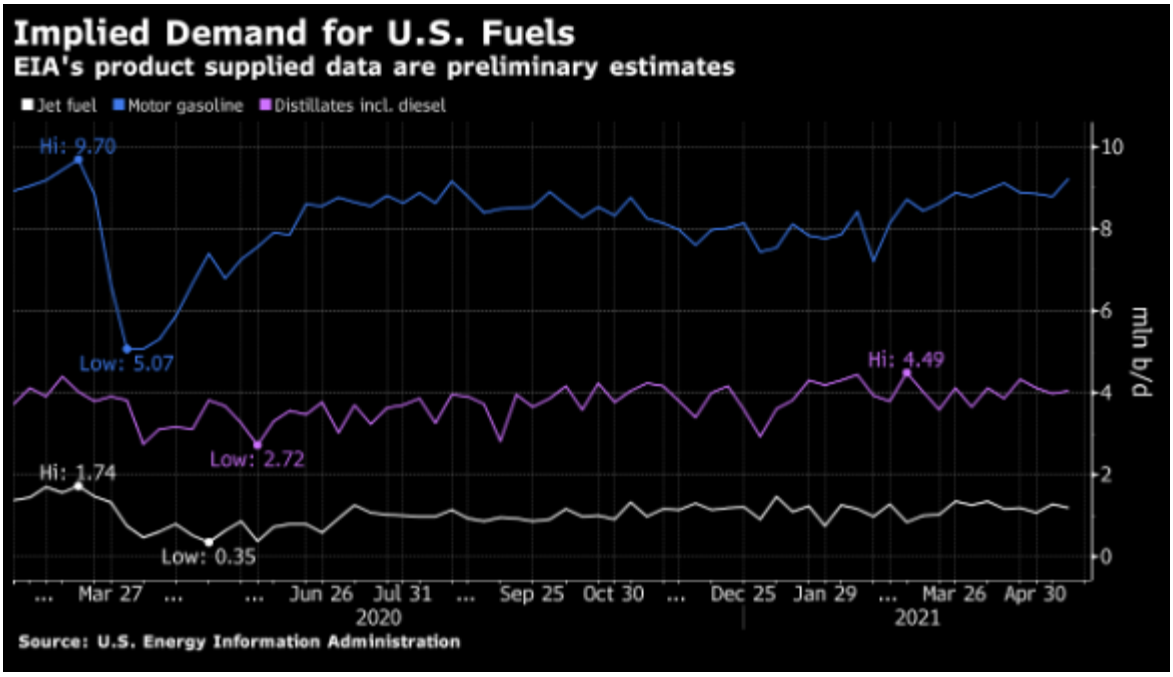
Measure	Location	% y/y	% vs 2019	% m/m	Freq.	Latest as of Date	Latest Value	Source
Gasoline demand	U.S.	+36	-2.2	+1.3	w	May 14	9.22m b/d	EIA
Distillates demand	U.S.	+11	+7.2	+5.3	w	May 14	4.06m b/d	EIA
Jet fuel demand	U.S.	+87	-23	+0.9	w	May 14	1.19m b/d	EIA
Total oil products demand	U.S.	+16	-1.9	+2.7	w	May 14	19.3m b/d	EIA
All vehicles miles traveled	U.S.		-3		w	May 16	16.1b miles	DoT
Passenger car VMT	U.S.		-5		w	May 16	n/a	DoT
Truck VMT	U.S.		+10		w	May 16	n/a	DoT
All motor vehicle use index	U.K.	+66	-4	+3.2	d	May 17	96	DfT
Car use	U.K.	+72	-9	+3.4	d	May 17	91	DfT
Heavy goods vehicle use	U.K.	+38	+9	+1.9	d	May 17	109	DfT
Gasoline (petrol) avg sales per filling station	U.K.	+80	-13	+2.8	w	May 16	6,291 liters/d	BEIS
Diesel avg sales per station	U.K.	+64	-8.5	+2.2	w	May 16	9,540 liters/d	BEIS
Total road fuels sales per station	U.K.	+70	-11	+2.4	w	May 16	15,830 liters/d	BEIS
Gasoline	India	+39	-27	-20	2/m	May 1-15	799k tons	Bberg
Diesel	India	+14	-29	-21	2/m	May 1-15	2.21m tons	Bberg
Jet fuel	India	+195	-60	-38	2/m	May 1-15	125k tons	Bberg
Total Products	India	+82	-7.2	-9.4	m	April 2021	17.01m tons	PPAC

Passenger car traffic	Poland	+21	-2	+14	w	May 23	21,930	GDDKiA
Heavy goods traffic	Poland	+19	+9	-1.7	w	May 23	4,771	GDDKiA
Toll roads volume	France	+91	-3.8		w	May 10-16	n/a	Atlantia
Toll roads volume	Italy	+101	-13		w	May 10-16	n/a	Atlantia
Toll roads volume	Spain	+172	-4.5		w	May 10-16	n/a	Atlantia
Toll roads volume	Brazil	+36	+7.4		w	May 10-16	n/a	Atlantia
Toll roads volume	Mexico	+52	+3.9		w	May 10-16	n/a	Atlantia
All vehicles traffic	Italy	+181		+1	m	April	n/a	Anas
Heavy vehicle traffic	Italy	+71		-6	m	April	n/a	Anas
Gasoline	Portugal	+112	-18	+16	m	April	75k tons	ENSE
Diesel	Portugal	+62	-10	+5.1	m	April	380k tons	ENSE
Jet fuel	Portugal	+301	-74	+43	m	April	33k tons	ENSE

The frequency column shows d for data updated daily, w for weekly, 2/m for twice a month and m for monthly.

* In DfT 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, 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.



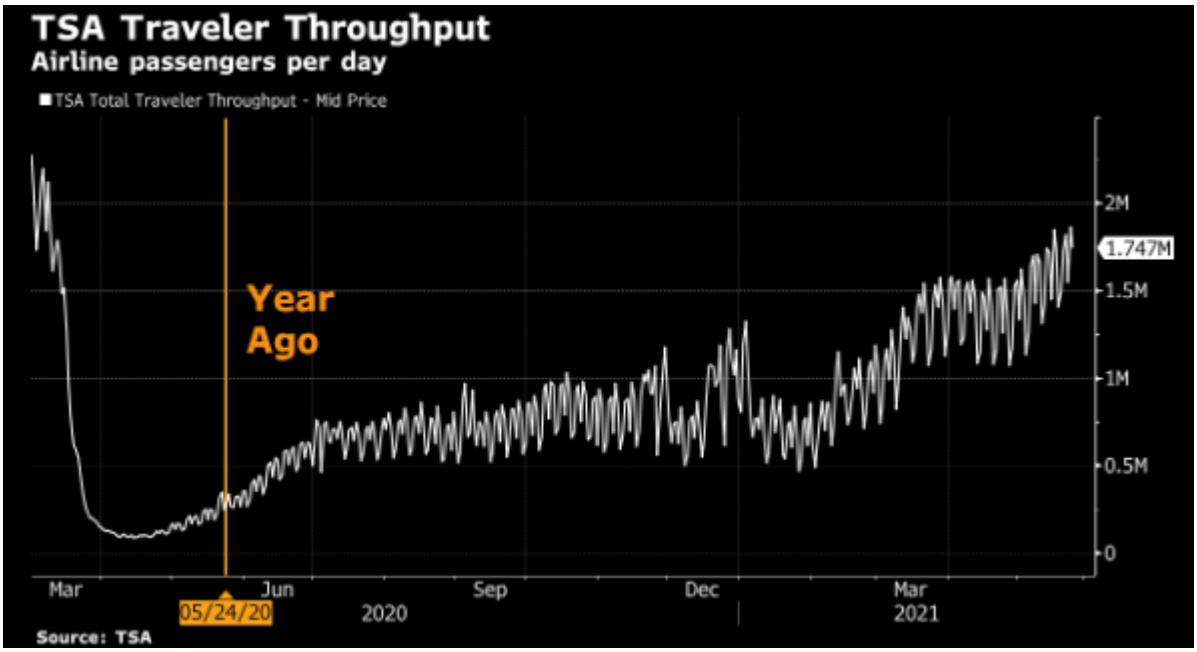
City Congestion:

Measure	Location	% chg vs 2019	% chg m/m	May 24	May 17	May 10	May 3	Apr. 26	Apr. 19	Apr. 12	Apr. 5	Mar. 29
		(May 24)		Minutes of congestion at 8am local time								
Congestion	Tokyo	-23	-9	29	31	28	7	32	30	28	25	31
Congestion	Mumbai	-95	-25	2	3	2	1	2	2	2	5	0
Congestion	New York	-35	unch	20	17	19	20	20	20	18	17	11
Congestion	Los Angeles	-41	+17	21	19	19	20	18	20	16	14	16
Congestion	London	+8	-7	41	40	41	2	44	38	25	2	30
Congestion	Rome	-22	+3	38	34	40	29	37	37	41	0	16
Congestion	Madrid	-36	-17	23	19	24	1	28	20	23	7	5
Congestion	Paris	-93	-87	3	32	31	29	23	13	19	1	22
Congestion	Berlin	-91	-89	3	25	24	23	28	26	23	3	16
Congestion	Mexico City	-54	unch	23	23	14	20	23	20	20	18	19
Congestion	Sao Paulo	-46	+8	23	22	22	24	22	22	19	17	10
Congestion	Shanghai	n/a	n/a	n/a	n/a	n/a	n/a	n/a	45	57	n/a	47
Congestion	Beijing	n/a	n/a	n/a	n/a	n/a	n/a	n/a	49	50	n/a	48

Source: TomTom. Note: m/m comparisons are May 24 vs April 26. TomTom is unable to provide Chinese data for April 5 or from April 26 onwards. The Pentecost Monday holiday on May 24 may have reduced traffic levels in Paris and Berlin.

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.	+413	-23	+28	d	May 24	1.75m people	TSA
Commercial flights	Worldwide	+121	-33	+2.3	d	May 25	78,026	FlightRadar24
Air traffic (flights)	Europe		-60	+22	d	May 25	12,409	Eurocontrol
Seat capacity	Worldwide	+84	-43		w	May 24	63.84m	OAG
Seat cap.	China	+50	+8.1		w	May 24	16.92m	OAG
Seat cap.	U.S.	+210	-26		w	May 24	16.59m	OAG
Seat cap.	India	+1.4	-57		w	May 24	1.72m	OAG
Seat cap.	Japan	-26	-64		w	May 24	1.48m	OAG
Seat cap.	Australia	+568	-29		w	May 24	1.39m	OAG
Seat cap.	Brazil	+435	-52		w	May 24	1.19m	OAG
Seat cap.	France	+171	-68		w	May 24	771k	OAG
Seat cap.	Germany	+68	-77		w	May 24	734k	OAG
Seat cap.	U.K.	-14	-79		w	May 24	793k	OAG



Refineries:

Measure	Location	chg	chg	of Date	Value	Source
Crude intake	U.S.	+17%	+2.4%	May 14	15.1m b/d	EIA
Utilization	U.S.	+17 ppt	+1.3 ppt	May 14	86.3 %	EIA
Utilization	Gulf Coast U.S.	+16 ppt	-0.3 ppt	May 14	88.0 %	EIA
Utilization	East Coast U.S.	+37 ppt	+18 ppt	May 14	87.2 %	EIA
Utilization	Midwest U.S.	+12 ppt	+1.6 ppt	May 14	84.8 %	EIA
Apparent Oil Demand	China	+9.7%	-0.5%	April 2021	12.958m b/d	NBS
Indep. refs run rate	Shandong, China	-9.4 ppt	-1.3 ppt	May 21	66.7 %	SCI99
State refs run rate	East China	+2.4 ppt	+5.5 ppt	May 14	75.2 %	SCI99
State refs run rate	South China	-0.4 ppt	+7.8 ppt	May 14	75.3 %	SCI99

NOTE: All of the refinery data is weekly, except for SCI99 state refineries, which is twice per month, and the NBS apparent demand, which is usually monthly.

https://newsroom.aaa.com/2021/05/memorial-day-holiday-travel-to-rebound-to-more-than-37-million/

Memorial Day Holiday Travel to Rebound to More Than 37 Million

The return of AAA's Memorial Day holiday travel forecast predicts 60% more travelers than last year, still nearly 6 million fewer than pre-pandemic

Julie Hall, APRManager, AAA Public Relations
JuHall@national.aaa.com407-444-8003
5/11/2021

ORLANDO, Fla. (May 11, 2021)—AAA Travel expects a significant rebound in the number of Americans planning to travel this Memorial Day holiday weekend. From May 27 through May 31, more than 37 million people are expected to travel 50 miles or more from home, an increase of 60% from last year when only 23 million traveled, the lowest on record since AAA began recording in 2000.

The expected strong increase in demand from last year's holiday, which fell during the early phase of the pandemic, still represents 13%—or nearly 6 million—fewer travelers than in 2019. AAA urges those who choose to travel this year to exercise caution and take measures to protect themselves and others as the pandemic continues.

"As more people get the COVID-19 vaccine and consumer confidence grows, Americans are demonstrating a strong desire to travel this Memorial Day," said Paula Twidale, senior vice president, AAA Travel. "This pent-up demand will result in a significant increase in Memorial Day travel, which is a strong indicator for summer, though we must all remember to continue taking important safety precautions."

AAA notes that the actual number of holiday travelers could fluctuate as we approach Memorial Day. If there is an increase in reported cases attributed to new COVID-19 variants, some people may decide to stay home, while others may note the strong progress in vaccinations and make last-minute decisions to travel. AAA recommends working with a travel agent, who can help if you need to make any last-minute changes to travel plans as well as explore travel insurance options and help you plan a vacation that meets your needs and comfort-level this summer.

Another factor contributing to the expected increase in travel this holiday is the Centers for Disease Control and Prevention's (CDC) recently updated guidance that fully vaccinated people can travel domestically at low risk to themselves, while taking proper precautions. It's important to keep in mind that some local and state travel restrictions may still remain in place, however. Travelers can refer to AAA's COVID-19 Travel Restrictions Map and TripTik.AAA.com for the latest information to help plan their trip.

For travelers who are not vaccinated but choose to travel, CDC recommends that you practice social distancing, wear a mask, wash your hands and get tested before and after travel. Whether you are vaccinated or not, remember masks are required on planes,

buses, trains, and other forms of public transportation traveling into, within, or out of the United States and in U.S. transportation hubs such as airports and stations.

AAA Travel has noted significant recent increases in online traffic and bookings on AAA.com, particularly for hotels and car rentals, heading into the summer travel season. AAA booking data reveal that domestic travel and road trips remain the biggest drivers of travel recovery in the near term. Orlando and Las Vegas are top Memorial Day destinations this year, both for AAA Travel bookings and TripTik road trip searches. Other top destinations include the following:

Road Trips:

1. Las Vegas, NV
2. Orlando, FL
3. Myrtle Beach, SC
4. Denver, CO
5. Nashville, TN

AAA Travel Bookings:

1. Orlando, FL
2. Las Vegas, NV
3. Honolulu, HI
4. Anchorage, AK
5. Colorado Springs, CO

When planning a trip, refer to the new AAA Digital TourBook guides, now available for destinations across the U.S., Canada, Mexico and the Caribbean at TourBook.AAA.com. Available on smartphone, tablet or desktop, the new interactive guides feature detailed destination information, must-see attractions, sample itineraries and more.

Huge Increase in Air Travel Expected, but Most Memorial Day Travelers to Take Road Trips

With 34 million Americans planning Memorial Day road trips, auto travel is expected to increase 52% compared to 2020. Nearly 12 million more Americans will travel by car this holiday than in 2020, though this is still 9% less than in 2019. More than 9 in 10 Memorial Day travelers will drive to their destinations, as many Americans continue to substitute road trips for travel via planes, trains and other modes of transportation.

After a historically low year of air travel in 2020, this Memorial Day will see nearly 2.5 million Americans boarding airplanes, nearly six times more than last year (+577%). Still, 750,000 fewer people will take to the skies this holiday compared to 2019. AAA reminds air travelers that masks are required in all airports and on flights.

Meanwhile, just 237,000 Americans are expected to travel by other modes, including bus and train, this Memorial Day. This is the second-lowest volume on record, higher only than

the 185,000 who traveled in 2020. In 2021, travel via these modes will be 88% below 2019 levels.

2021 Memorial Day Holiday Travelers

	Total	Automobile	Air	Other (Bus, Train, Cruise)
2021 (Forecast)	37.1M	34.4M	2.5M	237,000
2020 (Actual)*	23.1M	22.6M	363,000	185,000
2019 (Actual)	42.8M	37.6M	3.2M	1.9M
Change (2019 to 2021)	−13.3%	−8.7%	−23.4%	−87.5%
Change (2020 to 2021)	+60%	+52.4%	+577.5%	+28.0%

**AAA did not issue a Memorial Day holiday travel forecast in 2020 due to the COVID-19 pandemic. However, actual travel volumes were recorded after the holiday for comparison purposes this year.*

Drivers Beware: Worst Times to Hit the Road

INRIX predicts drivers will encounter the longest travel delays before the holiday weekend, particularly during the afternoons on Thursday, May 27 and Friday, May 28. Drivers in several major U.S. metros could experience double the travel times compared to a normal trip, while Atlanta, Houston and New York drivers could see more than three times the delay on the busiest corridors.

“Although vehicle trips are down as much as 40% in some metros, afternoon congestion is nearly back to pre-pandemic levels. With the increase of holiday travelers to the typical afternoon commute, drivers in the larger metros should expect longer delays heading into the holiday weekend,” said Bob Pishue, transportation analyst, INRIX. “Travelers should anticipate delays to start on Wednesday and continue through Memorial Day. Our advice to drivers is to avoid the evening commute times and plan alternate routes.”

Metro Area	Worst Corridor	Worst Day	Worst Time	Delay Multiplier
Atlanta	I-85 Clockwise; Hwy 81 to Augusta Rd	Thursday, May 27	3:30–5:30 PM	3.0x
Boston	I-95 South; MA-9 to Coney St	Thursday, May 27	3:00–5:00 PM	1.2x
Chicago	I-290 West; Morgan St to Wolf Rd	Thursday, May 27	2:45–4:45 PM	1.2x
Detroit	I-696 West; M-10 to US-94	Friday, May 28	2:00–4:00 PM	1.5x
Houston	I-69 East; I-610 to I-10	Friday, May 28	3:15–5:15 PM	3.0x
Los Angeles	I-5 South; Colorado St to Florence Ave	Friday, May 28	4:30–6:30 PM	2.0x

New York	I-95 West; US-130 to GW Bdg	Thursday, May 27	1:00–3:00 PM	5.4x
San Francisco	US-101 North; Golden Gate Bdg to I-580	Thursday, May 27	5:45–7:45 PM	1.8x
Seattle	I-5 South; WA-18 to WA-7	Thursday, May 27	5:30–7:30 PM	1.6x
Washington, D.C.	I-95 South; I-395 to VA-123	Thursday, May 27	3:30–5:30 PM	1.1x
			Source: INRIX	

Before Road Trips, Prep Your Car—And Your Wallet for Higher Gas Prices

For the 34 million Americans expected to travel by car this Memorial Day, they can expect gas prices to be the most expensive since 2014 with the national average possibly more expensive than $3/gallon.

“We don’t expect higher gas prices to deter motorists this holiday season as many Americans are eager to travel,” said Jeanette C. McGee, AAA spokesperson. “We typically find when pump prices increase, travelers look for more free activities or eat out less while on vacation, but still take their planned trips.”

Gas prices will be increasing in part due to higher demand. As demand increases, gas stations are working to adjust delivery schedules to keep pace. However, there have been instances where some stations are seeing low to no supply at pumps for a few days due to delayed deliveries. Over the holiday weekend, some gas stations in popular travel destinations—like beaches and mountain areas—may experience this situation.

Currently, the Colonial Pipeline, which delivers 45% of fuel to the East Coast is offline due to a cyberattack, which will contribute to price increases and limited fuel supply ahead of the holiday. This will affect areas from Mississippi to Tennessee and the east coast from Georgia into Delaware, but hopefully be resolved ahead of Memorial Day weekend.

Letting your vehicle’s fuel tank run dry is more than just an inconvenience, it could also lead to costly mechanical problems down the road. AAA advises to keep an eye on your fuel level and fill up before arriving to your final destination. The AAA app can provide insight on gas prices and you can always call ahead to a station to confirm they are open for business.

Before hitting the road, AAA reminds motorists to plan their route in advance and ensure their vehicle is ready, to help avoid a breakdown along the way. AAA expects to rescue more than 468,000 Americans at the roadside this Memorial Day weekend.

AAA makes it easy to request assistance—by phone or text (1-800-AAA-HELP), app or online—and members can track the service technician’s progress as they make their way to your vehicle. Also, don’t leave home without an emergency roadside kit and continue to pack extra snacks or meals as well as cleaning supplies, including disinfecting wipes.

Regardless of how you plan to get to your destination, AAA advises travelers to seek the advice of a knowledgeable travel agent to help plan their trips this Memorial Day. To get started and to learn more, visit AAA.com/Travel.

Methodology:

AAA's projections are based on economic forecasting and research by IHS Markit, a London-based business information provider. For the purposes of this forecast, the Memorial Day holiday travel period is defined as Thursday, May 27 through Monday, May 31. The five-day holiday period is consistent with previous Memorial Day holiday periods. This forecast was finalized during the week of April 12.

In cooperation with AAA, IHS Markit developed a unique methodology to forecast actual domestic travel volumes, using macroeconomic drivers such as employment, output, household net worth, asset prices including stock indices, interest rates, housing market indicators, and variables related to travel and tourism, including prices of gasoline, airline travel and hotel stays. For the 2021 Memorial Day holiday travel forecast, IHS Markit also examined changes in the IHS Markit containment index regarding COVID-19–related restrictions and activity.

About AAA:
AAA provides more than 62 million members with automotive, travel, insurance and financial services through its federation of 30 motor clubs and more than 1,000 branch offices across North America. Since 1902, the not-for-profit, fully tax-paying AAA has been a leader and advocate for safe mobility. Drivers can request roadside assistance, identify nearby gas prices, locate discounts, book a hotel or map a route via the AAA Mobile app. To join, visit AAA.com.

About INRIX:
INRIX is the global leader in connected car services and transportation analytics. Leveraging big data and the cloud, INRIX delivers comprehensive services and solutions to help move people, cities and businesses forward. Our partners are automakers, governments, mobile operators, developers, advertisers, as well as enterprises large and small.

About IHS Markit:
IHS Markit (NYSE: INFO) is a world leader in critical information, analytics and solutions for the major industries and markets that drive economies worldwide. The company delivers next-generation information, analytics and solutions to customers in business, finance and government, improving their operational efficiency and providing deep insights that lead to well-informed, confident decisions. IHS Markit has more than 50,000 business and government customers, including 80 percent of the Fortune Global 500 and the world's leading financial institutions. Headquartered in London, IHS Markit is committed to sustainable, profitable growth.

https://www.whitehouse.gov/briefing-room/statements-releases/2021/05/28/statement-by-press-secretary-jen-psaki-on-memorial-day-weekend-gas-prices/

Statement by Press Secretary Jen Psaki on Memorial Day Weekend Gas Prices

MAY 28, 2021 • STATEMENTS AND RELEASES

Across America, the pandemic is in retreat. As we continue to make progress, and our life returns to normal, Americans are eager to make up for lost time, and more people are traveling this Memorial Day weekend.

And as Americans are hitting the road, they are paying less in real terms for gas than they have on average over the last 15 years—and they're paying about the same as they did in May 2018 and May 2019.

The Administration's success in beating the pandemic and getting our economy back on track has led to increased demand for gas as the country re-opens. But, while prices have increased from the lows last year—as demand drastically dipped—prices at just about $3 per gallon are still well in-line with what they've been in recent decades.

And since last week, prices have already stabilized after a spike earlier this month, as the Colonial Pipeline is fully flowing, and the supply situation returns to normal. This is due in part to the administration's aggressive, whole-of-government response to the unprecedented shutdown of that pipeline.

While oil prices are shaped by global forces, the President knows that gas prices are a pain point for Americans—especially the middle-class families he's put at the center of his economic agenda. That's why President Biden is opposed any proposals to raise the gas tax. And it's why we will continue to monitor prices, and are glad that Americans can get on the road again.

https://www.whitehouse.gov/wp-content/uploads/2021/05/budget_fy22.pdf

Table S–6. Mandatory and Receipt Proposals—Continued

(Deficit increases (+) or decreases (–) in millions of dollars)

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Totals 2022–2026	Totals 2022–2031
Provide Comprehensive Supports for Dislocated Workers (CSDW)	.....	234	1,638	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	7,272	16,272
Target workforce development opportunities in underserved communities:													
Support subsidized jobs	.....	600	600	400	400	400	400	300	300	300	300	2,400	4,000
Support the phase out of 14(c)	.....	300	400	400	400	300	200	.....	.....	.....	.....	1,800	2,000
Expand reentry training and violence prevention efforts	.....	.....	45	70	85	100	100	100	100	100	100	300	800
Invest in community violence intervention	.....	.....	15	100	260	420	570	685	795	880	720	795	4,445
Community violence intervention–Department of Justice (non-add)	.....	.....	*8*	*50*	*130*	*210*	*285*	*343*	*398*	*440*	*360*	*398*	*2,223*
Community violence intervention–HHS (non-add)	.....	.....	*8*	*50*	*130*	*210*	*285*	*343*	*398*	*440*	*360*	*398*	*2,223*
Build the capacity of the existing workforce development and worker protection systems:													
Expand adult education	.....	5	70	95	100	100	100	100	100	100	100	370	870
Bolster Department of Labor enforcement	.....	.....	200	375	560	740	905	1,050	1,175	1,235	1,260	1,875	7,500
Bolster Equal Employment Opportunity Commission enforcement	.....	.....	46	67	92	117	133	175	237	296	337	322	1,500
Bolster National Labor Relations Board enforcement	.....	.....	36	43	60	76	93	114	157	193	228	215	1,000
Expand career pathways for middle and high school students	.....	50	700	950	1,000	1,000	1,000	1,000	1,000	1,000	1,000	3,700	8,700
Expand career services	.....	80	752	800	800	800	800	800	800	800	800	3,232	7,232
Fund community college training partnerships	.....	.....	70	280	510	780	850	950	1,010	1,060	1,050	1,640	6,560
Scale Registered Apprenticeship and pre-apprenticeship	.....	.....	112	716	972	1,014	1,086	1,100	1,100	1,086	1,014	2,814	8,200
Total, invest in workforce development	.....	1,269	4,880	7,384	8,983	9,847	10,409	10,574	10,974	11,250	11,109	32,363	86,679
Total, invest in R&D, revitalize manufacturing and small businesses, and train Americans for the jobs of the future	.....	33,772	66,382	100,575	97,100	95,290	68,953	44,182	28,669	16,579	14,017	393,119	565,519
Made in America Tax Plan:													
Prioritize clean energy:													
Eliminate fossil fuel tax preferences:													
Repeal enhanced oil recovery credit	.....	–158	–389	–599	–808	–951	–988	–980	–975	–974	–976	–2,905	–7,798
Repeal deduction for tertiary injectants	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Repeal credit for oil and gas produced from marginal wells	.....	–39	–100	–128	–116	–78	–38	–14	–3	.....	.....	–461	–516
Repeal expensing of intangible drilling costs	.....	–2,182	–1,954	–1,569	–1,174	–747	–562	–586	–591	–585	–536	–7,626	–10,486
Repeal exemption to passive loss limitation for working interests in oil and natural gas	.....	–10	–10	–9	–9	–9	–8	–8	–8	–8	–7	–47	–86
Repeal percentage depletion for oil and natural gas wells	.....	–678	–767	–794	–831	–890	–946	–996	–1,045	–1,093	–1,132	–3,960	–9,172
Repeal amortization of air pollution control equipment	.....	–16	–39	–60	–80	–99	–117	–134	–132	–119	–105	–294	–901

Table S–6. Mandatory and Receipt Proposals—Continued

(Deficit increases (+) or decreases (–) in millions of dollars)

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Totals 2022–2026	Totals 2022–2031
Increase geological and geophysical amortization period for independent producer	.....	–38	–139	–227	–247	–246	–242	–233	–217	–201	–195	–897	–1,985
Repeal expensing of exploration and development costs	.....	–190	–170	–136	–102	–65	–49	–51	–51	–51	–46	–663	–911
Repeal percentage depletion for hard mineral fossil fuels	.....	–97	–110	–114	–119	–127	–136	–142	–149	–156	–161	–567	–1,311
Repeal capital gains treatment for royalties	.....	–46	–47	–48	–49	–51	–52	–50	–44	–37	–31	–241	–455
Treat publicly traded partnerships as C corporations	.....	.....	.....	.....	.....	.....	–83	–169	–216	–259	–300	.....	–1,027
Excise tax exemption for crude oil derived from bitumen and kerogen-rich rock	.....	–31	–39	–39	–39	–39	–40	–41	–41	–42	–44	–187	–395
Total, eliminate fossil fuel tax preferences	.....	–3,485	–3,764	–3,723	–3,574	–3,302	–3,261	–3,404	–3,472	–3,525	–3,533	–17,848	–35,043
Extend and enhance renewable and alternative energy incentives:													
Extend and modify the Energy Investment Credit[1]	.....	1,397	5,767	26,324	30,423	31,149	35,455	26,833	23,061	18,540	11,642	95,060	210,591
Extend and modify the Renewable Energy Production Tax Credit[1]	.....	2,059	2,106	937	1,429	1,903	2,780	4,606	6,267	7,730	8,802	8,434	38,619
Extend and modify the Residential Efficient Property Credit	.....	290	480	1,594	2,256	2,538	2,846	2,425	1,933	1,342	392	7,158	16,096
Total, extend and enhance renewable and alternative energy incentives	.....	3,746	8,353	28,855	34,108	35,590	41,081	33,864	31,261	27,612	20,836	110,652	265,306
Provide tax credit for electricity transmission investments[1]	.....	187	250	1,746	2,280	2,863	3,118	3,239	3,246	3,420	3,447	7,326	23,796
Provide allocated credit for electricity generation from existing nuclear power facilities[1]	.....	750	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	4,750	9,750
Establish new tax credits for qualifying advanced energy manufacturing[1]	.....	425	1,102	1,492	988	824	940	1,396	576	58	131	4,831	7,932
Establish tax credits for heavy- and medium-duty zero emission vehicles[1]	.....	71	295	835	1,471	2,692	4,028	1,178	63	11	.....	5,364	10,644
Provide tax incentives for sustainable aviation fuel	.....	363	503	633	693	1,313	1,696	743	376	199	117	3,505	6,636
Provide a production tax credit for low-carbon hydrogen[1]	.....	14	53	156	358	548	979	1,570	445	5	.....	1,129	4,128
Extend and enhance energy efficiency and electrification incentives:													
Extend and modify the nonbusiness energy property credit	.....	532	1,806	2,460	1,940	1,056	634	.....	.....	.....	.....	7,794	8,428
Extend and increase the tax credit for manufacturing credit for new energy efficient new homes	.....	128	271	298	313	337	220	72	25	8	2	1,347	1,674
Extend and increase the commercial buildings deduction	.....	146	280	328	346	350	350	350	350	351	354	1,450	3,205
Provide tax credits for the installation of mechanical insulation	.....	317	606	736	867	1,007	737	454	344	229	110	3,533	5,407
Total, extend and enhance energy efficiency and electrification incentives	.....	1,123	2,963	3,822	3,466	2,750	1,941	876	719	588	466	14,124	18,714
Provide disaster mitigation tax credit	.....	391	411	415	415	415	415	415	415	415	332	2,047	4,039
Extend and enhance the Carbon Oxide Sequestration Credit[1]	.....	21	10	10	19	27	101	101	53	2,082	3,634	87	6,058

Table S–6. Mandatory and Receipt Proposals—Continued

(Deficit increases (+) or decreases (–) in millions of dollars)

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Totals 2022–2026	Totals 2022–2031
Extend and enhance the electric vehicle charging station credit[1]	.....	236	432	848	1,457	2,599	771	18	–26	–35	–33	5,572	6,267
Modify Oil Spill Liability Trust Fund financing	.....	–38	–51	–53	–53	–53	–53	–53	–53	–53	–53	–248	–513
Reinstate Superfund excise taxes	.....	–1,715	–2,340	–2,406	–2,455	–2,517	–2,560	–2,610	–2,670	–2,723	–2,787	–11,433	–24,783
Revenue effect of sparking widespread adoption of EVs	.....	10	32	66	113	178	267	409	647	1,022	1,584	399	4,328
Total, prioritize clean energy	.....	2,099	9,249	33,696	40,286	44,927	50,463	38,742	32,580	30,076	25,141	130,257	307,259
Reform corporate taxation:													
Increase the domestic corporate tax rate to 28 percent	.....	–51,127	–86,182	–88,059	–89,385	–91,784	–92,065	–90,730	–89,357	–88,798	–90,330	–406,537	–857,817
Revise the Global Minimum Tax regime, disallow deductions attributable to exempt income, and limit inversions	.....	–29,816	–51,386	–54,192	–57,030	–55,283	–54,699	–56,056	–56,988	–58,223	–59,830	–247,707	–533,503
Reform taxation of foreign fossil fuel income:													
Modify foreign oil and gas extraction income (FOGEI) and foreign oil related income (FORI) rules	.....	–4,178	–7,173	–7,468	–7,834	–8,393	–9,055	–9,633	–10,051	–10,358	–10,638	–35,046	–84,781
Modify tax rule for dual capacity taxpayers	.....	–48	–123	–128	–134	–143	–154	–165	–173	–178	–183	–576	–1,429
Total, reform taxation of foreign fossil fuel income	.....	–4,226	–7,296	–7,596	–7,968	–8,536	–9,209	–9,798	–10,224	–10,536	–10,821	–35,622	–86,210
Provide tax incentives for locating jobs and business activity in the United States and remove tax deductions for shipping jobs overseas:													
Provide tax credit for onshoring jobs to the United States	.....	6	10	10	11	11	12	12	13	13	14	48	112
Remove tax deductions for shipping jobs overseas	.....	–6	–10	–10	–11	–11	–12	–12	–13	–13	–14	–48	–112
Total, provide tax incentives for locating jobs and business activity in the United States and remove tax deductions for shipping jobs overseas	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Repeal deduction for Foreign Derived Intangible Income (FDII) and provide additional support for research and experimentation expenditures	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Replace the Base Erosion Anti-Abuse Tax (BEAT) with the Stopping Harmful Inversions and Ending Low-Tax Developments (SHIELD) Rule	.....	.....	–33,244	–53,796	–51,111	–47,655	–44,463	–41,914	–39,425	–38,990	–39,453	–185,806	–390,051
Limit foreign tax credits for sales of hybrid entities	.....	–23	–39	–41	–43	–45	–47	–48	–49	–50	–51	–191	–436
Restrict deductions of excessive interest of members of financial reporting groups for disproportionate borrowing in the United States	.....	–2,100	–2,334	–1,586	–1,638	–1,690	–1,743	–1,795	–1,846	–1,900	–1,956	–9,348	–18,588
Impose 15 percent minimum tax on book earnings of large corporations	.....	–10,736	–15,245	–14,588	–13,812	–14,561	–15,203	–16,049	–16,158	–15,775	–16,217	–68,942	–148,344
Total, reform corporate taxation	.....	–98,028	–195,726	–219,858	–220,987	–219,554	–217,429	–216,390	–214,047	–214,272	–218,658	–954,153	–2,034,949
Support housing and infrastructure:													
Expand Low-income Housing Tax Credit	.....	35	212	707	1,592	2,527	3,427	4,370	5,362	6,339	7,356	5,073	31,927
Provide Neighborhood Homes Investment Tax Credit	.....	10	99	398	944	1,512	1,889	2,063	2,083	2,035	2,001	2,963	13,034

https://www.epa.gov/newsreleases/epa-takes-action-bolster-state-and-tribal-authority-protect-water-resources-0

EPA Takes Action to Bolster State and Tribal Authority to Protect Water Resources

05/27/2021 Contact Information: EPA Press Office (press@epa.gov)

WASHINGTON – Today, the U.S. Environmental Protection Agency (EPA) announced its intent to revise the 2020 Clean Water Act (CWA) Section 401 Certification Rule after determining that it erodes state and Tribal authority. Through this process, EPA intends to strengthen the authority of states and Tribes to protect their vital water resources.

"We have serious water challenges to address as a nation and as EPA Administrator, I will not hesitate to correct decisions that weakened the authority of states and Tribes to protect their waters," **said EPA Administrator Michael S. Regan**. "We need all state, Tribal, local, and federal partners working in collaboration to protect clean water, which underpins sustainable economic development and vibrant communities. Today, we take an important step to realize this commitment and reaffirm the authority of states and Tribes."

"States and Tribes have relied on the Clean Water Act for almost 50 years to protect our waters and people, and EPA's action is essential to restoring that historic authority," **said Oregon Governor Kate Brown**. "The prior administration's rule was not only harmful to the environment, it was corrosive to state, federal, and Tribal partnerships. Communities rely on clean water, businesses rely on clean water, and our environment is dependent on clean water. We welcome this important step by the Biden-Harris Administration to restore a strong, collaborative approach to protecting one of America's most precious resources."

EPA intends to reconsider and revise the 2020 CWA Section 401 Certification Rule to restore the balance of state, Tribal, and federal authorities while retaining elements that support efficient and effective implementation of Section 401. Congress provided authority to states and Tribes under CWA Section 401 to protect the quality of their waters from adverse impacts resulting from federally licensed or permitted projects. Under Section 401, a federal agency may not issue a license or permit to conduct any activity that may result in any discharge into navigable waters unless the affected state or Tribe certifies that the discharge is in compliance with the Clean Water Act and state law, or waives certification.

The agency's process of reconsidering and revising the 2020 CWA Section 401 Certification Rule will provide opportunity for public and stakeholder input to inform the development of a proposed regulation, and will include sustained dialogue with state and Tribal co-regulator partners and local governments around these issues. EPA will begin a stakeholder engagement process in June to hear perspectives on this topic and how to move forward. More information will be available at: www.epa.gov/cwa-401.

While EPA engages with stakeholders and develops a revised rule, the 2020 rule will remain in place. The agency will continue listening to states and Tribes about their concerns with implementation of the 2020 rule to evaluate potential administrative approaches to help address these near-term challenges.

Background

Executive Order 13990 on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis directed EPA to review and, as appropriate and consistent with applicable law, take action to revise or replace the 2020 Section 401 Certification Rule. Prior to the 2020 rule, EPA promulgated implementing regulations for water quality certification before the 1972 amendments to the Federal Water Pollution Control Act (commonly known as the Clean Water Act), which created section 401.

Findings

NERC's annual SRA covers Summer 2021 (June–September). This assessment provides an evaluation of the resource and transmission system adequacy that is necessary to meet projected summer peak demands. In addition to assessing resource adequacy, the SRA monitors and identifies potential reliability issues of interest and regional topics of concern. The following key findings represent NERC's independent evaluation of electric generation and transmission capacity as well as potential operational concerns that may need to be addressed for the upcoming summer:

- Parts of North America are at elevated risk to energy emergencies (see **Figure 1**). Above-normal heat in summer can challenge grid operators by increasing demand from temperature-dependent loads (such as air-conditioning and refrigeration) and reducing electricity supplies as a result of lower-than-capacity resource output or increased outages. Wide-area heat events (such as the August 2020 heat wave that affected much of the Western United States and Mexico) are especially challenging as fewer resources are available for electricity transfers between areas because they are required to serve native load:
  - In **Texas RE**, on-peak Planning Reserve Margins have increased to 15.3% from 12.9% last summer with the addition of 7,858 MW wind, solar, and battery resources since 2020. However, extreme weather can affect both generation and demand and cause energy shortages that lead to energy emergencies in the Electric Reliability Council of Texas (ERCOT). Furthermore, with a significant portion of electricity supply coming from wind generation, operators must have sufficient flexible resources to cover periods of low-wind output.
  - Across most of **WECC**, resource and energy adequacy is a significant concern for the summer with overall capacity and demand projections for the area at similar levels to those seen in 2020 when a wide-area heat event caused energy emergencies and managed firm load loss. Though new flexible resources have been added in California, peak demand projections have also increased in many parts of the west, and overall resource capacity is lower compared to 2020. Increasing demand and lower resource capacity across WECC can mean the availability of surplus capacity for transfer into stressed areas is declining.
  - **MISO** and **NPCC-New England** have sufficient resources for periods of peak demand. However, the above-normal levels of demand in the 90/10 forecast are likely to exceed capacity resources and require additional non-firm transfers from surrounding areas.
  - All other areas have sufficient resources to manage normal summer peak demand and are at low risk of energy shortfalls from more extreme demand or generation outage conditions. Anticipated Reserve Margins meet or surpass the Reference Margin Level, indicating that planned resources in these areas are adequate to manage the risk of a capacity deficiency under normal conditions.[1] Furthermore, based on risk scenario analysis in these areas, resources and energy appear adequate.

Figure 1: Energy Emergency Risk Areas

- **WECC-California is at risk of energy emergencies during periods of normal peak summer demand and high risk when above-normal demand is widespread in the west.** Prior to summer, the planning reserve margin (which is based on existing and firm capacity) for the California-Mexico assessment area was below the 18.4% Reference Margin Level that WECC calculates is

[1] For more information, see the description of the "Reference Margin Level" in the **Data Concepts and Assumptions** section of this report or refer to NERC's *Long-term Reliability Assessment*: https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_LTRA_2020.pdf

needed for maintaining loss-of-load risk below a 1-day-in-10-year benchmark (a 400 MW shortfall at peak demand). Probabilistic studies indicate 10,185 MWh of energy in the area is expected to go unserved this summer. Over 3 GW of additional resources are expected for this summer with most coming in the form of new solar photovoltaic (PV) generation. These generation plants can provide energy to support peak demand; however, solar PV output falls off rapidly in late afternoon while high demand often remains.

Imports to the area are needed to maintain reliability when demand peaks in the afternoon and to ramp up even further for several hours as internal resources draw down. California will have 675 MW of new battery energy storage systems on-line at the start of the summer that can continue to supply stored energy for periods when needed. Reliance on non-firm imports to cover high demand or low resource output conditions heightens the risk that operators will need to use energy emergency alerts (EEA)—and trigger the shedding of firm load in above-normal heat conditions—to maintain a stable BPS at times. Planned resource additions of 1,300 MW over the summer, including 825 MW of new battery storage, are expected to help mitigate late-summer risks.

- **Protecting the critical electrical workforce from health risks during pandemic remains a priority.** Protocols put in place for reducing risks to personnel in control centers and on the front lines, including mutual assistance in hurricane-damaged areas, should be maintained as warranted by public health conditions. Also related to the coronavirus (COVID-19) pandemic, operators must continue to give attention to daily load shapes that can be sensitive to changing behaviors of the workforce and commercial loads. In 2021, there is remaining uncertainty in demand projections as governments adjust to changing public health guidelines and conditions and as the behavior of society adapts.
- **The Late-summer wildfire season in Western United States and Canada poses risk to BPS reliability.** Government agencies warn of the potential for above-normal wildfire risk beginning in July in parts of the Western United States as well as Central and Western Canada.[2,3] Operation of the BPS can be impacted in areas where wildfires are active as well as areas where there is heightened risk of wildfire ignition due to weather and ground conditions (see **Figure 3**).

Implications and Recommendations

The summer of 2021 is shaping up to be a challenge for electric system operators in many parts of North America, combining the resource situation described above with significant drought, fire, and high temperature risk assessments by independent agencies. In the near term, NERC recommends the following:

- Load-serving entities (LSE) and regulators work with their Balancing Authorities (BA) and Reliability Coordinators (RC) to ensure that clear lines of communication are open for coordination during periods of system stress. RC, BA, and Transmission Operators review outage schedules well in advance and coordinate across the RC area.
- BA and RC conduct drills on their alert programs to ensure that they are prepared to signal need for conservative operations, restrictive maintenance periods, etc. BA and Generator Operators verify protocols and operator training for communication and dispatch.
- LSE prepare for demand-side conservation measures and potentially condition customers to their need and efficacy.
- RC and BA maintain the highest vigilance during peak risk hours and forecasted high temperature periods.
- LSE review non-firm customer inventories and rolling black out procedures to ensure that no critical infrastructure loads (e.g., natural gas, telecommunications, etc.) would be affected.

Finally, the potential for these conditions to emerge were reflected in NERC's *2018* and *2020 Long-Term Reliability Assessments*; we recommend policy makers, system planners, LSE, and Generator Owners review these assessments and factor them into their integrated resource plans, and ISO/RTO factor them into their own generation queue management and long-range planning processes.[4]

[2] See North American Seasonal Fire Assessment and Outlook, April 2021: https://www.predictiveservices.nifc.gov/outlooks/NA_Outlook.pdf.
[3] See Natural Resources Canada seasonal wildland fire forecasts: https://cwfis.cfs.nrcan.gc.ca/maps/forecasts
[4] NERC's Reliability Assessments web page: https://www.nerc.com/pa/RAPA/ra/Pages/default.aspx

Summer Temperature and Drought Forecasts

Peak electricity demand in most areas is strongly influenced by temperature. Weather officials are expecting above normal temperatures for much of North America this summer (see **Figure 2**). Assessment area load forecasts account for many years of historical demand data, often up to 30 years, to predict summer peak demand and prepare for more extreme conditions. Above average seasonal temperatures can contribute to high peak demand as well as increases in forced outages for generation and some BPS equipment. Effective preseason maintenance and preparations are particularly important to BPS reliability in severe or prolonged periods of above-normal temperatures.

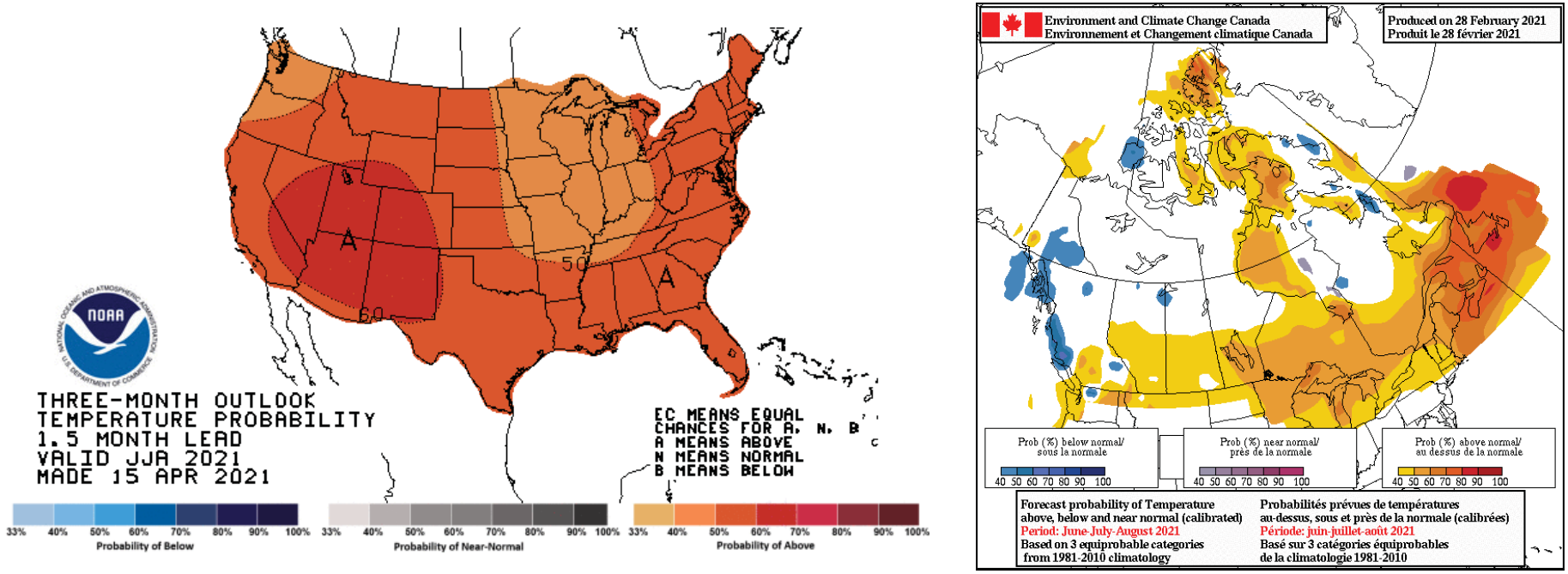


Figure 2: United States and Canada Summer Temperature Outlook[5]

[5] Seasonal forecasts obtained from U.S. National Weather Service and Natural Resources Canada: https://www.cpc.ncep.noaa.gov/products/predictions/long_range/ and https://weather.gc.ca/saisons/prob_e.html

Wildfire Risk Potential and BPS Impacts

Drought conditions extend over the western half of the United States and the middle-third of Canada. Above-normal fire risk at the beginning of the summer exists in the Southwest United States and over the middle-third of North America in the spring, setting the stage for an active fire season at the beginning of the summer (see **Figure 3**). Government agencies predict an active early fire season in the Southwest United States as well as above-normal risk in the lower half of central Canada (Southern Prairies, Boreal forest, grassland and parkland areas).[6] In late summer, hotter and drier conditions are expected to cause elevated fire risk in California and the United States West Coast. BPS operation can be impacted in areas where wildfires are active as well as areas where there is heightened risk of wildfire ignition due to weather and ground conditions (see **Finding: Risk Discussion**).

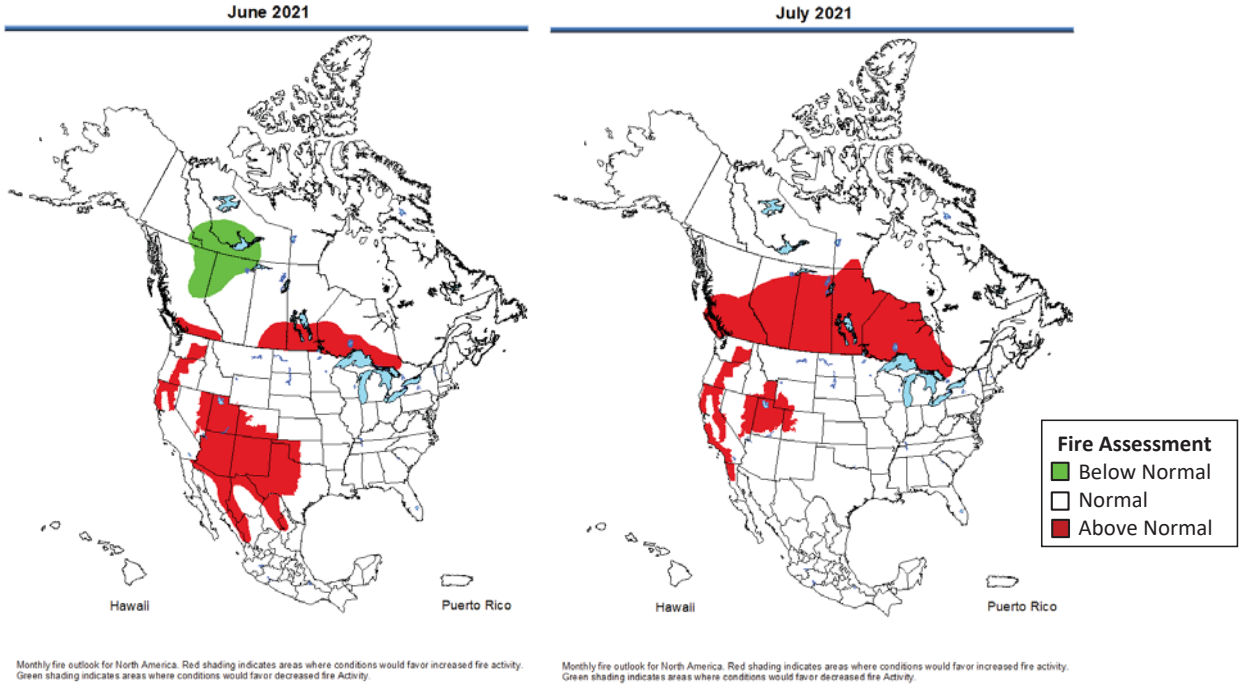


Figure 3: North American Seasonal Fire Assessment for June and July 2021

[6] See North American Seasonal Fire Assessment and Outlook, April 2021: https://www.predictiveservices.nifc.gov/outlooks/NA_Outlook.pdf

Finding: Risk Discussion

Texas RE: ERCOT Interconnection

With forecasted growth in peak demand and new generation resources primarily coming in the form of variable wind and solar generation, the risk of shortages that lead to energy emergencies in ERCOT continues for the upcoming summer. On-peak Planning Reserve Margins have increased to 15.3% from 12.9% last summer with the addition of 7,858 MW wind, solar, and battery resources since 2020; This exceeds the 13.75% Reference Margin Level established in ERCOT for reliably serving demand under normal summer peak conditions. However, extreme weather can affect both resource and demand and cause energy shortages that lead to energy emergencies in ERCOT. Furthermore, with a significant portion of electricity supply coming from wind generation, operators must have sufficient flexible resources to cover periods of low-wind output (see **Figure 4** for a risk scenario involving 90/10 low wind conditions and normal 50/50 peak demand). Operational mitigations may be needed in unexpected wind generation shortfalls to avoid energy emergencies.

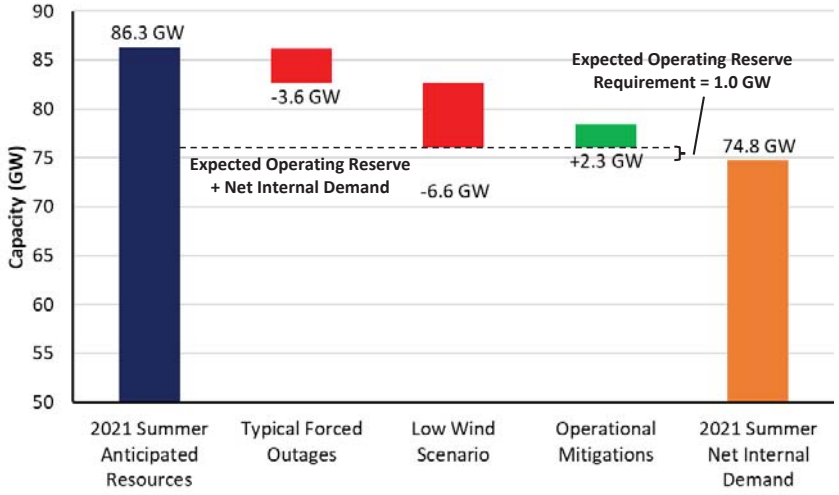


Figure 4: Combination of Low-Wind and Normal Generator Outages at Peak Demand in ERCOT

Weather conditions can create an elevated risk of operating emergencies in ERCOT in the event that higher demand or lower resource output diminishes the relatively low reserve margins that exist on the system. Shown in **Figure 5** are the 1-in-10 year high demand levels alongside an extreme low-resource scenario: 12.1% of expected thermal resources are unavailable as well as 76.8% reduced output of expected wind (this is 6.2% of the total installed nameplate wind capacity operating). Combinations of high peak demand and extreme low resource output are exceedingly rare; however, they are plausible and provide industry and stakeholders with insights into potential emergency conditions. The result of the described scenario is a 12.7 GW shortfall. In challenging conditions like those depicted, operators would resort to implementing rotating outages as a measure of preserving the BPS.

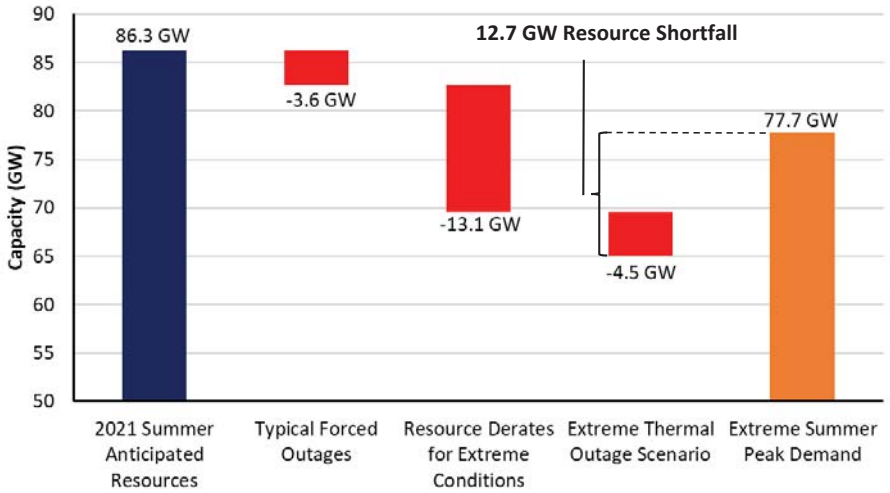


Figure 5: Impact of Extreme Demand and Resource Outages in ERCOT

In addition to the 1-in-10 year demand scenario above, ERCOT conducted an additional extreme demand scenario based on a wide-area heat event. In this scenario, peak demand increases by over 4,900 MW from a normal 50/50 demand forecast as all of ERCOT's eight weather zones show simultaneous high levels of demand from higher temperatures. Even with the normal resource performance and low outages typically seen in ERCOT, the electricity demand from a wide-area heat event would likely lead to operating emergencies and a potential for unserved load.[7]

Currently, much of Texas is experiencing a drought, and projections for below-normal rainfall are cause for concern for electric reliability.[8] If drought conditions continue to deteriorate, the likelihood of the actual summer peak demand exceeding the forecast and/or generation derates due to low cooling lake levels increases. Generator outages are expected to increase during severe and prolonged drought conditions due to cooling water supply and temperature issues. These issues can cause forced outages of the thermal and wind fleet.

Generator performance in ERCOT is optimized for summer conditions, supporting reliable system performance despite relatively lower reserve margins. The generation fleet in ERCOT is a diverse mix of fuel types, including natural gas, nuclear, on-shore and coastal wind, solar, and a small amount of coal-fired generation. Some design choices, such as open-air thermal plants, provide optimum summer efficiency but may contribute to operating stress at other times. The availability of reliable, flexible generation is important to balancing system needs with a high penetration of variable, weather-dependent generation from wind and solar.

[7] See ERCOT's *2021 Summer Seasonal Assessment of Resource Adequacy (SARA)*: http://www.ercot.com/content/wcm/lists/219840/SARA-FinalSummer2021.pdf
[8] https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?TX

WECC: Western Interconnection

Resource and energy adequacy is a significant concern for the summer across most of the Western Interconnection with overall capacity and demand projections for the area at similar levels to those seen in 2020 when a wide-area heat event caused energy emergencies and managed firm load loss. New flexible resources have been added in California and some plans for generation retirements have been put on hold to improve resource availability for periods of peak demand as well as for times when variable generation output falls off. However, peak demand projections have also increased in many parts of the Western United States, and overall resource capacity is lower compared to 2020 (see **Table 1**). Increased demand and lower resource capacity across the Western Interconnection can mean limited availability of surplus capacity for transfer into load centers for parts of California.

August 2020 Heatwave Event in the Western Interconnection

From August 14 through August 19, 2020, the Western United States suffered an intense and prolonged heatwave that affected many areas across the Western Interconnection.[9] Because of above-average temperatures, generation and transmission capacity struggled to keep up with increased electricity demand. Throughout many supply-constrained hours over this same period, generation resource output was below preseason peak forecasts for nearly all resource types, including natural gas, wind, solar, and hydro. During the event, 10 Western Interconnection BA issued 18 separate EEA. The impacts of the August heatwave struck the entirety of the Western Interconnection and caused a peak demand record of 162,017 MW on August 18, 2020, at 4:00 p.m. Mountain time. Although demand peaked on August 18, the most severe reliability consequence of the heatwave event occurred at the beginning, when 1,087 MW of firm load was shed on August 14 and 692 MW was shed on August 15 in California. An in-depth evaluation of the August 2020 Heatwave Event on BPS operations will be included in the 2021 State of Reliability report. The State of Reliability covers significant BPS events from the prior year and is typically published mid-year.

Table 1: Western Interconnection On-Peak Resource Adequacy

WECC - AB			
	2020 SRA	2021 SRA	2020 vs. 2021 SRA
Demand Projections	Megawatts (MW)	Megawatts (MW)	Net Change (%)
Total Internal Demand (50/50)	11,500	10,886	-5.3%
Net Internal Demand	11,500	10,886	-5.3%
Resource Projections	Megawatts (MW)	Megawatts (MW)	Net Change (%)
Existing-Certain Capacity	14,356	12,205	-15.0%
Anticipated Resources	14,356	13,928	-3.0%
Reserve Margins	Percent (%)	Percent (%)	Annual Difference
Anticipated Reserve Margin	24.8%	27.9%	3.1
Reference Margin Level	10.4%	9.7%	-0.7
WECC - BC			
Demand, Resource, and Reserve Margins	2020 SRA	2021 SRA	2020 vs. 2021 SRA
Demand Projections	Megawatts (MW)	Megawatts (MW)	Net Change (%)
Total Internal Demand (50/50)	8,278	8,264	-0.2%
Net Internal Demand	8,278	8,264	-0.2%
Resource Projections	Megawatts (MW)	Megawatts (MW)	Net Change (%)
Existing-Certain Capacity	11,471	11,178	-2.6%
Anticipated Resources	11,686	11,363	-2.8%
Reserve Margins	Percent (%)	Percent (%)	Annual Difference

[9] WECC August Heat Wave Event information provided by WECC's *August Heat Wave Analysis* Presentation

Table 1: Western Interconnection On-Peak Resource Adequacy			
Anticipated Reserve Margin	41.2%	37.5%	-3.7
Reference Margin Level	10.4%	9.7%	-0.7
WECC - CA/MX			
Demand, Resource, and Reserve Margins	2020 SRA	2021 SRA	2020 vs. 2021 SRA
Demand Projections	Megawatts (MW)	Megawatts (MW)	Net Change (%)
Total Internal Demand (50/50)	53,236	55,409	4.1%
Net Internal Demand	52,326	54,487	4.1%
Resource Projections	Megawatts (MW)	Megawatts (MW)	Net Change (%)
Existing-Certain Capacity	63,186	63,396	0.3%
Anticipated Resources	63,278	67,440	6.6%
Reserve Margins	Percent (%)	Percent (%)	Annual Difference
Anticipated Reserve Margin	20.9%	23.8%	2.9
Reference Margin Level	13.7%	18.4%	4.7
WECC - NWPP-US & RMRG			
Demand, Resource, and Reserve Margins	2020 SRA	2021 SRA	2020 vs. 2021 SRA
Demand Projections	Megawatts (MW)	Megawatts (MW)	Net Change (%)
Total Internal Demand (50/50)	66,532	67,117	0.9%
Net Internal Demand	65,664	66,030	0.6%
Resource Projections	Megawatts (MW)	Megawatts (MW)	Net Change (%)
Existing-Certain Capacity	78,839	70,069	-11.1%
Anticipated Resources	80,457	77,210	-4.0%
Reserve Margins	Percent (%)	Percent (%)	Annual Difference
Anticipated Reserve Margin	*	16.9%	*
Reference Margin Level	*	14.3%	*
WECC - SRSG			
Demand, Resource, and Reserve Margins	2020 SRA	2021 SRA	2020 vs. 2021 SRA
Demand Projections	Megawatts (MW)	Megawatts (MW)	Net Change (%)
Total Internal Demand (50/50)	25,145	24,751	-1.6%
Net Internal Demand	25,001	24,419	-2.3%
Resource Projections	Megawatts (MW)	Megawatts (MW)	Net Change (%)
Existing-Certain Capacity	29,440	26,850	-8.8%
Anticipated Resources	29,917	27,904	-6.7%
Reserve Margins	Percent (%)	Percent (%)	Annual Difference
Anticipated Reserve Margin	19.7%	14.3%	-5.4
Reference Margin Level	10.0%	9.8%	-0.2

Responding to supply shortages from August 2020 and a directive from the California Public Utilities Commission, utilities in California have been procuring additional generating capacity for Summer 2021.[10] Existing on-peak capacity for the California-Mexico (CAMX) assessment area is 63.4 GW, a slight increase from 2020. However, a total of 3.4 GW of new resources are in late-stage planning for addition this summer; without these resources, the CAMX area will have an on-peak planning reserve margin of 17.6%, just short of the 18.4% Reference Margin Level target set by WECC for the area.[11] See **Figure 6** for peak hour existing certain and anticipated resource reserve margins for the Western Interconnection assessment areas.

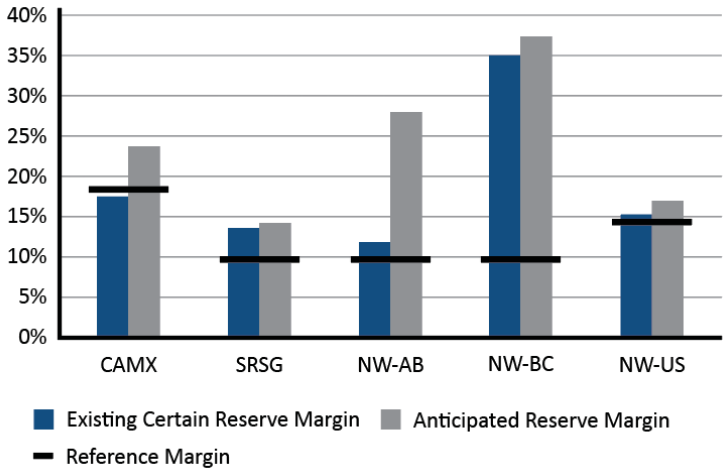


Figure 6: On-Peak Planning Reserve Margins in the Western Interconnection Assessment Areas

Most of the resource additions in California come in the form of new solar PV generation. These generation plants can provide energy to support peak demand; however, solar PV output falls off rapidly in late afternoon while summer demand often remains (see the discussion in the **Western Interconnection Risk Scenarios** section). Battery storage systems can supply energy to smooth the system ramping needs associated with high amounts of variable generation; by summer, nearly 600 MW of large-scale battery storage projects will have come on-line in California with an additional 800 MW expected by August 1.[12] The California Independent System Operator (CAISO) has performed significant work to support the integration of these new technologies into market and operating systems so that they will enhance grid reliability.

Throughout the Western Interconnection, BAs rely on flexible resources to support balancing the increasingly weather-dependent load with the variable generation within the resource mix. Dispatchable generation from hydroelectric and thermal plants internal to the BA's area as well as imports from surplus energy in another area are called upon by operators when area shortfalls are anticipated. Under normal

[10] See California Public Utilities Commission Emergency Reliability Rulemaking R.20-11-003

[11] WECC's Reference Margin Levels are based on a probabilistic approach for Loss-of-Load Probability (LOLP) less than or equal to 0.02% (approximately a 1-day-in-10-year loss of load). For more information see the *NERC 2020 Long-Term Reliability Assessment (LTRA)* Table 10: https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_LTRA_2020.pdf

[12] A summary of resource additions in the CAISO area is found in Table 10 of the *CAISO Summer Loads and Resources Assessment, May 2021*: http://www.caiso.com/Documents/2021-Summer-Loads-and-Resources-Assessment.pdf

conditions, there is sufficient energy and resource capacity and an adequate transmission network for transfers between areas to meet system ramping needs. However, conditions such as wide-area heat events can reduce the availability of resources for transfer as areas serve higher internal demands. Additionally, transmission networks can become stressed when events such as wildfires or wide-area heatwaves cause network congestion. The growing reliance on transfers within the Western Interconnection and falling resource capacity in many adjacent areas increases the risk that extreme events will lead to load interruption.

Western Interconnection Risk Scenarios

Probabilistic studies performed by WECC identified a continued risk of energy shortfalls. For the upcoming summer, the WECC-CAMX area has 10,180 MWh of expected unserved energy (EUE) and the Northwest Power Pool and the Rocky Mountain Reserve Sharing Group (WECC-NWPP & RMRG) has 3,442 MWh of EUE; all other WECC areas have negligible EUE. WECC examined risk across a wide probability spectrum of potential combinations of high loads and low generation levels, with and without dependency on neighboring BA areas, and how deviations from those expected means would affect reliability.[13] The risk analysis charts in the **Regional Assessments Dashboards** illustrate the potential for above-normal peak demand and resource outage scenarios, similar to those seen in 2020, to result in operating emergencies in all WECC assessment areas with the exception of the winter-peaking Canadian provinces. For example, **Figure 7** is for the WECC CAMX area. Wide-area heatwave events can heighten energy shortfall risks throughout the Western Interconnection by reducing the availability of surplus capacity for sharing or by loading the transmission network to the limits of its transfer capability.

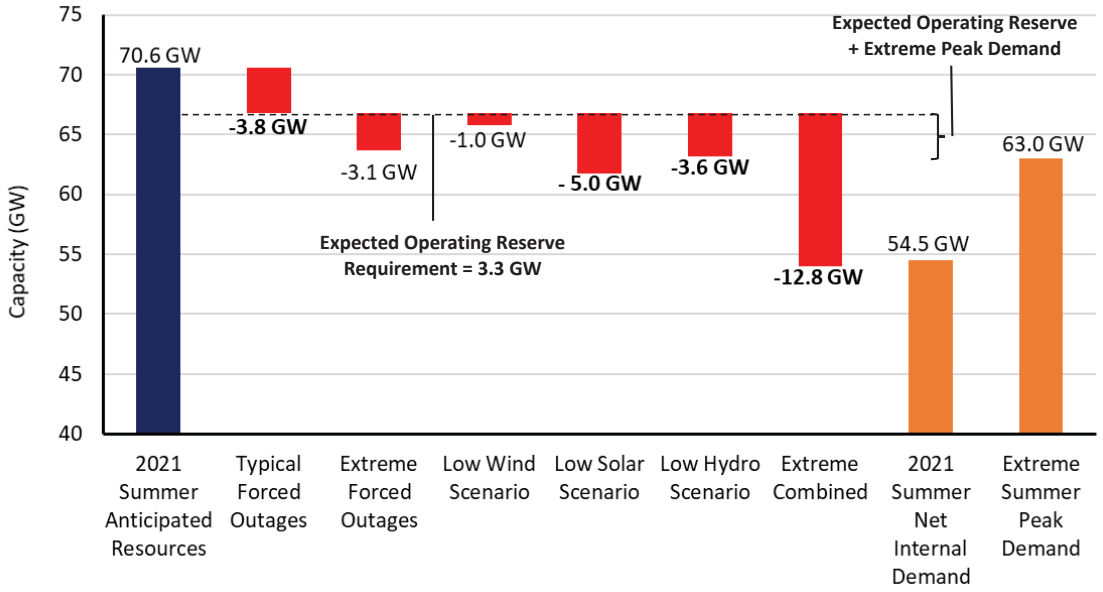


Figure 7: CAMX On-Peak Risk Scenario

[13] See *Western Assessment of Resource Adequacy Report*: Western Assessment of Resource Adequacy Report 12-18 (Final).pdf.pdf (wecc.org)

In summer, CAMX can be exposed to greater risk of resource shortfall for the hours that immediately follow the peak demand. The reason the risk is greater in these hours is that solar resource output is rapidly diminishing with the setting sun. Shown in the scenario depicted in Figure 8, anticipated resources are lower than on peak due to the reduced solar PV outputs. During periods of peak demand and normal forced outages, imports provide the needed energy to ensure demand and operating reserve requirements are met. Demand or resource derates from extreme conditions that cannot be satisfied with imports will result in energy emergencies and the potential for load shedding. Though trends for off-peak risk are increasing in other parts of the Western Interconnection, WECC's analysis indicates that greater risk exposure after the demand peak is only exhibited in CAMX.

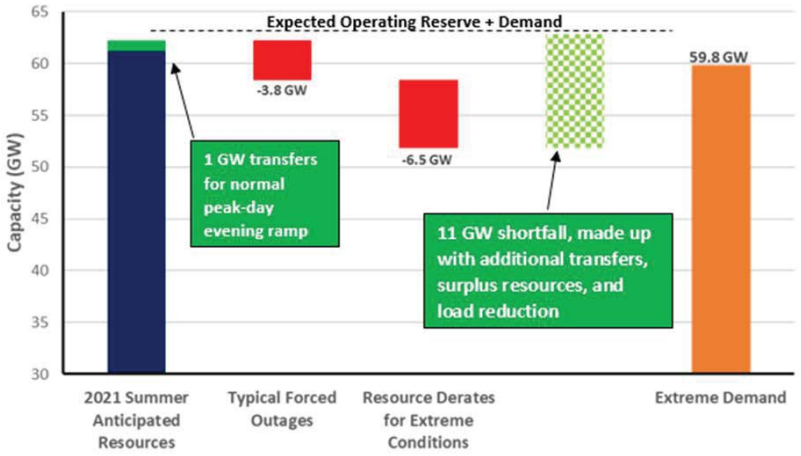


Figure 8: CAMX Highest Risk Hour Scenario (Hour Ending 7:00 p.m. Pacific Time)

Given that little has changed in the available electricity resources and the expected demand throughout the Western Interconnection, the summer-peaking areas remain at risk for localized shortfalls to exceed the availability of resource assistance and transmission deliverability during events like the 2020 August wide-area heat wave. Early generation and load forecasting based on long-term meteorological conditions will be important to maximize available generation and prepare load management plans for challenging weather. Enhancements to day-ahead markets and operational planning that were put in place and were effective in mitigating the impacts of the second, higher temperature heat wave that extended across the Western United States in September 2020 will need to be employed again to support BPS reliability in similar conditions.

Wildfire Impacts to the BPS in the Western Interconnections

Operation of the BPS can be impacted in areas where wildfires are active as well as areas where there is heightened risk of wildfire ignition due to weather and ground conditions. Wildfire prevention planning in California and other areas include power shut-off programs in high fire-risk areas. When conditions warrant implementing these plans, power lines (including transmission-level lines) may be preemptively de-energized in high fire-risk areas to prevent wildfire ignitions. Other wildfire risk mitigation activities include implementing enhanced vegetation management, equipment inspections, system hardening, and added

situational awareness measures. In January 2021, the Electric Reliability Organization published the *Wildfire Mitigation Reference Guide*[14] to promote preparedness within the North American electric power industry and share the experience and practices from utilities in the Western Interconnection.

On-Peak Planning Reserve Margins

The Anticipated Reserve Margin, which is based on available resource capacity, is a metric used to evaluate resource adequacy by comparing the projected capability of anticipated resources to serve forecasted peak demand.[15] Large year-to-year changes in anticipated resources or forecasted peak demand (net internal demand) can greatly impact Planning Reserve Margin calculations. All assessment areas have sufficient Anticipated Reserve Margins to meet or exceed their Reference Margin Level for Summer 2021 (see **Figure 9**). Variable energy resources, including wind, solar, and types of hydro generation, often contribute significantly less of their installed capability at the period of peak demand. Consequently, the capacity contribution of variable energy resources to an areas anticipated resources may be a fraction of the installed capacity (see **Variable Energy Resource Contributions**).

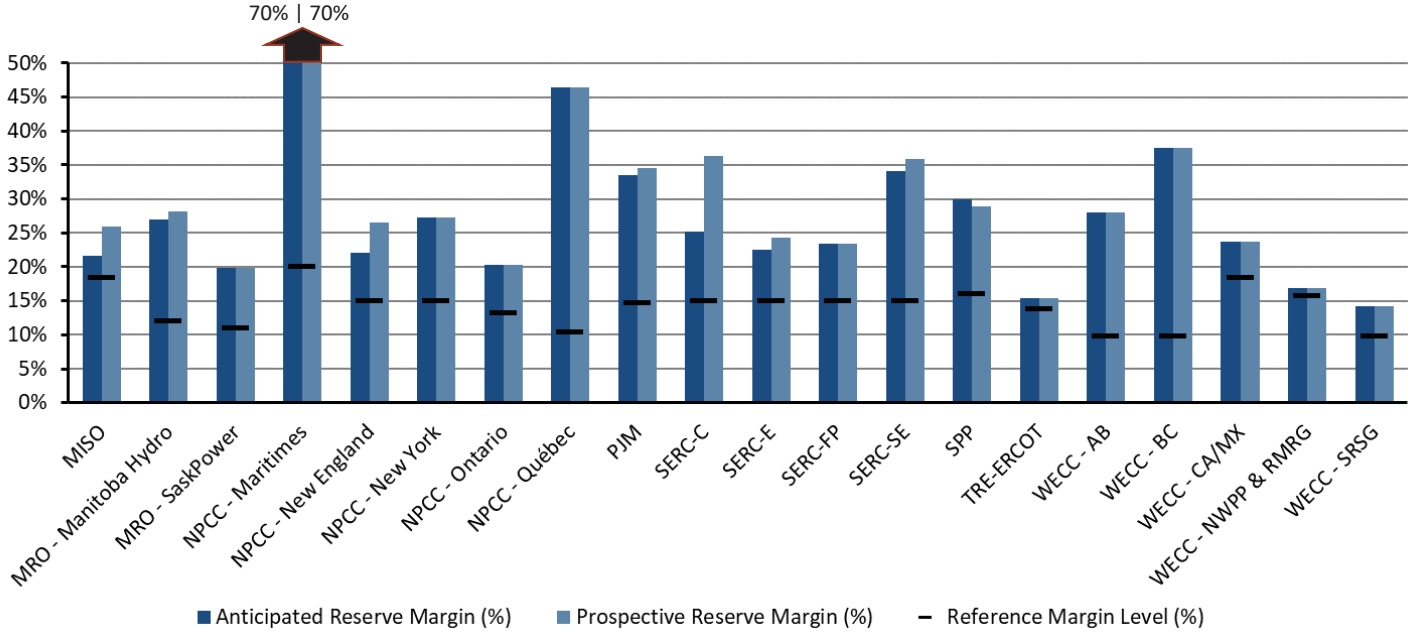


Figure 9: Summer 2021 Anticipated/Prospective Reserve Margins Compared to Reference Margin Level

[14] See the NERC Wildfire Mitigation Reference Guide, January 2021: https://nerc.com/comm/RSTC/Documents/Wildfire%20Mitigation%20Reference%20Guide_January_2021.pdf

[15] Generally, anticipated resources include generators and firm capacity transfers that are expected to be available to serve load during electrical peak loads for the season. Prospective Resources are those that could be available but do not meet criteria to be counted as Anticipated Resources. Refer to the **Data Concepts and Assumptions** section for additional information on Anticipated/Prospective Reserve Margins, Anticipated/Prospective Resources, and Reference Margin Levels.

Changes from Year-to-Year

Understanding the changes from year-to-year can give insights for the upcoming season. Figure 10 provides the relative change from the Summer 2020 to the Summer 2021 period. The assessment area tables in the Demand and Resource Tables section provide details of the demand and resource components that make up the Anticipated Reserve Margins for each assessment area. In the following areas, Anticipated Reserve Margin changed by more than five percentage points, and none of the changes result in a resource adequacy concern for the upcoming summer:

- **MRO-Manitoba Hydro:** New hydro generators begin operation in May and July.
- **NPCC-Maritimes:** A decrease in demand-side management availability accounts for the majority of Anticipated Reserve Margin loss for the Maritimes footprint.
- **NPCC-New England, Québec, and WECC-SRSG:** Resources have fallen year-on-year with generation retirements.

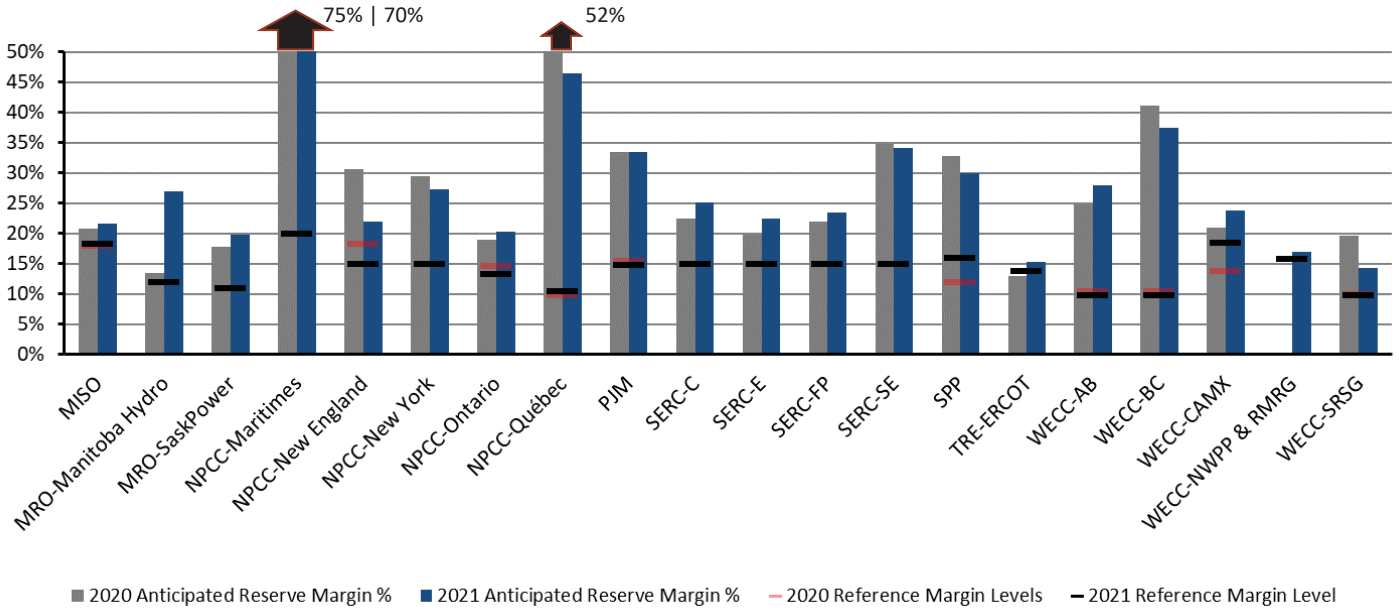


Figure 10: Summer 2020 to Summer 2021 Anticipated Reserve Margins Year-to-Year Change[16]

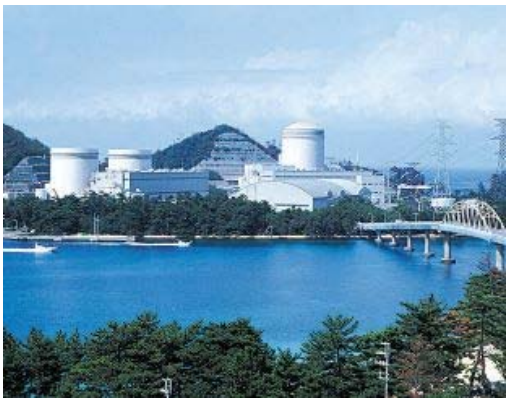
[16] WECC-NWPP and WECC-RMRG merged in 2020, so an Anticipated Reserve Margin or a Reference Margin Level was not produced for the 2020 assessment year for comparison.

https://www.jaif.or.jp/en/kansai-ep-reveals-policy-on-npps-set-to-operate-beyond-40-years-with-mihama-3-to-restart-in-late-june/

18 May, 2021 Kenta Nagai

Kansai EP Reveals Policy on NPPs Set to Operate Beyond 40 Years, with Mihama-3 to Restart in Late June

On May 12, the Kansai Electric Power Co. (Kansai EP) announced its plans regarding the restart of its Mihama-3 (PWR, 826MWe) and Takahama-1 and -2 (PWRs, 826MWe each) Nuclear Power Plants (NPPs).



In 2016, based on examinations by the Nuclear Regulation Authority of Japan (NRA) to confirm the compatibility of the three units with the new regulatory standards, the power utility was granted approval to make changes to the reactor installations (basic design approval) and to extend their operating lifetimes to sixty years.

Kansai EP has been carrying out activities to implement safety and disaster measures and to obtain local understanding. On April 28, the governor of Fukui Prefecture expressed his agreement to restarting the reactors.

At the Mihama-3, fuel will start being loaded on May 20, and the reactor will be restarted and will resume generation in late June. The following month, after a period of adjustment operations, Mihama-3 is expected to return to full service after a decade. It will be the first NPP in Japan to operate beyond forty years.

Thereafter, however, the operation of Mihama-3 will be suspended again before the expected restart, since the facilities have not been completed for responding to specific severe accidents—termed “specific safety facilities”—which are required under the new regulatory standards as anti-terrorism measures. The deadline for completing those facilities is October 25, and their design and (initial) work plans were only approved by the NRA in April.

Fuel began to be loaded at the Takahama-1 on May 14. During the loading, Kansai EP will conduct related inspections to confirm the soundness of facilities and equipment. The Takahama-2, meanwhile, is now undergoing work on safety improvement measures.

However, since the deadlines for the “specific safety facilities” are imminent for both units (namely, June 9), no times have been shown for their restart. They will only be restarted once the required work is completed.

https://www.cnn.com/2021/05/27/weather/lake-mead-colorado-river-shortage/index.html

First-ever Colorado River water shortage is now almost certain, new projections show

By Pedram Javaheri and Drew Kann, CNN
Updated 2:47 PM ET, Thu May 27, 2021

Lake Mead, the largest reservoir in the US and a critical water supply for millions across the Southwest, has declined about 140 feet since 2000 and now sits at just 37% of full capacity.

(CNN) Thousands of people will celebrate Memorial Day this weekend on the water of Lake Mead, just 24 miles east of Las Vegas on the border of Arizona and Nevada.

What they may not realize is that the oasis they're enjoying in the desert is entering uncharted territory, with significant ramifications for millions across the Southwest in the years to come.

As a megadrought persists, new projections show a key Colorado River reservoir could sink to a record low later this year

On Tuesday, the water level in Lake Mead -- the largest US reservoir, and fed by the Colorado River -- fell below the elevation of 1,075 feet. It has hit that mark only a handful of times since the Hoover Dam was finished in the 1930s, but it always recovered shortly after. It may not this time, at least not any time soon.

The US Bureau of Reclamation (USBR) forecasts the lake's levels to continue to decline, without any sign of recovery through at least the end of 2022. If the next major study in August from the USBR projects water levels in the lake will be below 1,075 feet on January 1, it would trigger the first-ever shortage declaration on the Colorado River, meaning some communities would begin to see their water deliveries cut significantly next year.

Lake Mead and nearby Lake Powell -- the two largest reservoirs on the Colorado River -- have drained at an alarming rate. Lake Mead has fallen more than 139 feet since January of 2000.

Lake Mead is currently 16 feet below where it was this time last year and the reservoir is only 37% full, while Lake Powell is down 35 feet from last year and sits at just 34% of the lake's total capacity.

The Colorado River, which supplies water to more than 40 million people and irrigates millions of acres of farmland, has seen its supply sapped by drought and climate change.

The significance of the dwindling supplies in both reservoirs cannot be overstated. Water flowing down the Colorado River fills the two reservoirs, which are part of a river system that supplies over 40 million people living across seven Western states and Mexico.

A drought that has persisted for two decades has left the much of the Western US parched.

In addition to dwindling snowpack, which provides most of the river's water supply, experts say dry, thirsty soils across the basin are soaking up meltwater, meaning that less makes it into the river system.

"It's a pretty awful year," said Ted Cooke, the general manager of the Central Arizona Project, a massive, 336-mile canal and pipeline system that carries Colorado River water to Phoenix, Tucson and farms and towns in between. "Last year wasn't so bad as far as the snowpack went, but with the higher temperatures and drier soils that we're still experiencing this year, we're seeing even less runoff that actually makes it into the waterways and in the reservoirs."

Climate change is also taking a toll on the river's water supply. A study by US Geological Survey scientists published in 2020 found that the Colorado River's flow has declined by about 20% over the last century, and over half of that decline can be attributed to warming temperatures across the basin.

Who would the shortage affect?

With the level of Lake Mead dipping below 1,075 feet on Tuesday and forecast to drop further, it is nearly certain that the Bureau of Reclamation will declare a Tier 1 shortage later this summer.

If a Tier 1 shortage is declared, Colorado River water deliveries would be reduced for Arizona and Nevada as soon as next year, based on the terms of the 2019 drought contingency plan signed by the lower Colorado River basin states.

The looming water cuts will have the greatest impact in Arizona.

The climate crisis is taking these farmers' most valuable resource 05:52

As part of the lower basin's drought contingency plan, the Central Arizona Project would see its water supply slashed by about one third in 2022 due to its junior rights to the river's water.

While Arizona's main population centers will be spared, the effects of those water cuts will be felt most acutely on farms in central Arizona, due to their lower priority status in a complex tier system used to determine who loses water first in the event of a shortage.

California's water deliveries would not be impacted in a Tier 1 shortage, according to the drought contingency plan.

Water officials in Arizona say that while the falling water levels and future projections are concerning, the state is prepared to absorb the cuts.

"We're concerned ... but we've allowed for something like this to happen, and as a matter of fact, keep on happening," Cooke said. "Hopefully it doesn't but if it does, we're prepared."

What happens if Lake Mead sinks further?

In the event of a Tier 2 shortage -- which the USBR projects could happen as soon as late 2022 -- the cuts would impact some cities and tribes in Arizona that receive water from the Central Arizona Project canal.

"I'm definitely concerned that the raw projections continue to go downward and that we are heading towards potentially a Tier 2 [shortage] in 2023," said Tom Buschatzke, director of the Arizona Department of Water Resources.

Bloomberg @TheTerminal
Germany's Looming Power Supply Gap Will Likely Be Filled by Gas
2021-05-27 09:17:41.149 GMT

By Jesper Starn
(Bloomberg) -- Germany's plans to phase out coal and nuclear power will leave a large gap in supplies of electricity that's likely to be filled by natural gas.
Germany will need to add about 18 gigawatts or 60% more gas-fired capacity to plug the hole left from shutting its six remaining nuclear reactors by the end of next year and plans to phase-out about half its coal and lignite fleet by 2030, according to report by consultant Enappsys Ltd.
New gas plants will be vital to provide backup to increasing amounts of solar and wind generation that will be needed to fill an ambitious climate target set earlier in May.
The new stations won't be running all the time and will have to vary output to match renewable generation which will cut profitability.
German Climate Goal Needs Negative Emissions Tech
"The state might struggle to find the necessary investment for the expansion of the gas capacity," Enappsys wrote in the report. "Such facilities will mostly generate income during the demand spikes where renewables fall short and in the balancing markets when opportunity arises."
One solution is for Germany to introduce a capacity market where power producers are paid to keep their plants available. The chief executive officer of Germany's biggest utility RWE AG, Rolf Martin Schmitz, said earlier this year that he thought it was inevitable that a capacity market would be introduced after the federal elections in September.
The tightening of supplies will push up power prices, according to Sabrina Kernbichler, European power analyst at S&P Global Platts.
"The continental market is becoming increasingly tight with capacity shutting," she said. "Germany will become one of the premium-priced markets by 2026."

--With assistance from Rachel Morison.

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https://caodc.ca/content.asp?contentid=462

CAODC ANNOUNCES HISTORIC NAME CHANGE AND NEW MANDATE.

For Immediate Release: May 27, 2021

CAODC Announces Historic Name Change and New Mandate.

After 72 years as the Canadian Association of Oilwell Drilling Contractors (CAODC), and after extensive member and industry consultation, the Association will become the Canadian Association of Energy Contractors (CAOEC) to reflect its expanded mandate and leading role in the oil and gas, hydrogen, helium, geothermal, and carbon capture, utilization and storage (CCUS) sectors.

“Today, governments and industry leaders from across the country, and around the world, have issued a challenge: to make energy development cleaner and even more sustainable to meet ambitious climate targets,” states CAOEC CEO Mark A. Scholz. “This goal is well within our grasp. For over 70 years, CAOEC members have proven to be capable of great things; it is what we do, it is who we are, and there is no challenge too large for our people to solve.”

“Our industry is comprised of leaders who have safely developed Canada’s natural resources to the benefit of each and every Canadian, building the industry into the world-class business we are known for today,” says Scholz. “Our new name represents a bright future for Canada’s energy services industry as we innovate to help lead one of the greatest energy transformations in over 150 years.”

The new CAOEC logo, with its bold colours and redesigned shield, symbolizes the history of an organization first formed in 1949 by ten drilling contractors, as well as the opportunity that exists in new markets for Canada’s best-in-class energy services sector. The CAOEC embraces its role in an evolving energy landscape, while recognizing all of the important work done on behalf of the Canadian drilling and service rig sector over many decades.

Moving forward, CAOEC represents Canadian energy service companies operating close to the wellhead, employing tens of thousands of energy workers. As hydrogen, helium, geothermal, and CCUS industries emerge, the CAOEC will continue expanding its membership base to include additional energy companies, ensuring a strong, resilient, respected, and influential energy services sector in Canada. “We will lead Canada’s energy industry, become a beacon of hope and direction, and build upon our legacy as we embark on a new and exciting journey together.”

Initial reaction to CAOEC’s name change and rebrand has been well received throughout the industry and government:

“Name changes seem small, but in this case it’s fundamental. The workers in this association helped build this country, and now you’re building our low-emissions energy future. You are leading the charge, using your skills and technical know-how in hydrogen, geothermal, and CCUS for a more prosperous future that leaves no one behind.”
— Hon. Seamus O’Regan, Federal Government, Minister of Natural Resources

“Congratulations, Canadian Association of Energy Contractors, on your new name and logo. With more than 20 of your member companies based in Saskatchewan, we recognize the significant contribution that CAOEC makes to our vital energy sector, which now includes emerging resources

such as geothermal, helium, hydrogen and lithium. Saskatchewan will continue to support an active drilling sector and wishes CAOEC members every success going forward."
— Hon. Bronwyn Eyre, Saskatchewan Government, Minister of Energy and Resources

"Becoming the Canadian Association of Energy Contractors is a reflection of the positive shift occurring in the energy sector, and the many new and exciting opportunities that come with it. Alberta looks forward to continuing to work with all of its industry partners – including the CAOEC – as it maintains its commitment to advocate for the energy industry and the hardworking people it employs."
— Hon. Sonya Savage, Alberta Government, Minister of Energy

"Energy service companies remain an important part of British Columbia's economy, creating good-paying jobs for British Columbians. Harnessing the power of innovative solutions like hydrogen, geothermal, and carbon capture will allow us to realize a low-carbon future."
— Hon. Bruce Ralston, B.C. Government, Minister of Energy, Mines and Petroleum Resources

The CAOEC's vision for the Canadian energy services sector is outlined in a newly released position paper – *Canada's Energy Services: Leading the Energy Evolution*.

Climate Ruling Could Force Big Change at Shell -- WSJ
2021-05-28 06:32:08.331 GMT

By Sarah McFarlane

(Dow Jones) -- This article is being republished as part of our daily reproduction of WSJ.com articles that also appeared in the U.S. print edition of The Wall Street Journal (May 28, 2021).

To comply with a Dutch court order to cut carbon emissions, Royal Dutch Shell PLC may have to overhaul its business and cut its oil output faster than it had planned, analysts and investors said.

Potential ways to curb emissions include selling assets, rethinking exploration spending and halting growth of its liquefied-natural gas operations, they said.

Shell faces the potential upheaval after the district court in The Hague on Wednesday ruled that the company is partially responsible for climate change and must reduce its carbon emissions by 45% by 2030, compared with 2019 levels.

That target, which was called for by the environmental groups that brought the case, is in line with United Nations guidance for member states aimed at preventing global temperatures rising more than 1.5 degrees Celsius above preindustrial levels.

Shell said it was disappointed and fully expected to appeal the decision, and that it is already investing billions of dollars in low-carbon energy, including electric-vehicle charging, biofuels and renewables.

"We are carefully reviewing the court's written judgment and the questions it raises," a Shell spokeswoman said.

If Shell pursues an appeal, the case would be referred to a court of appeal where it can take around one to two years to be heard, after which it can be further appealed in the Dutch supreme court. The court on Wednesday said its order would stand provisionally, despite acknowledging potentially far-reaching consequences for Shell that may be difficult to undo.

"If Shell are going to hit those 2030 targets that have been imposed on them, they need to start acting now," said Nick Stansbury, head of climate solutions at Legal & General Investment Management, the U.K.'s largest asset manager and a Shell shareholder.

"The range of things they could do is big," he said, suggesting options could include selling or spinning off assets.

Mr. Stansbury said that while Shell may be able to successfully appeal the Dutch ruling, the pressure to reduce emissions would remain and that he expected there to be other courts considering the same issue.

The number of climate-change court cases has been climbing, according to a

database project jointly run by the Sabin Center for Climate Change Law and law firm Arnold & Porter, estimating filed cases rose over 10% to 1,824 in the past six months. The majority of these cases are in the U.S.

Oil companies are facing rising scrutiny from activists, governments and investors to take greater action to mitigate their impact on the environment.

Elsewhere Wednesday, an activist investor won at least two seats on Exxon Mobil Corp.'s board, a historic defeat for the oil giant that will likely require it to alter its fossil-fuel focused strategy.

One way for Shell and other big oil companies to substantially reduce their emissions might be to sell assets, some analysts said.

"Divesting certain projects in the Middle East, Nigeria, Malaysia and few other countries would probably be the easiest way to comply with the court ruling if the company chooses or is forced to do so," Artem Abramov, an analyst at consulting firm Rystad Energy, said of the Dutch court's decision against Shell.

But he noted that asset sales might not benefit the climate. "Even if Shell divests high emission assets, they will just change hands, not be taken off the global energy map."

To meet the court's order, RBC Capital Markets said Shell could have to reduce its oil and natural gas production by around 3% a year, while holding its liquefied-natural gas production flat and also cutting oil product sales by around 30% from 2020 levels.

"It could force them to look at exploration where they're spending $1.5 billion per year, and ask whether that number should be lower," said Biraj Borkhataria, an analyst at RBC.

In its ruling Wednesday, the Dutch court acknowledged that Shell would need to change its policies, which could curb the company's potential growth. Still, it said the interest served by the more stringent emissions reductions outweighed Shell's commercial interests. The court didn't stipulate how the ordered reductions should be met, or how it might monitor or enforce its ruling.

Shell in February set out plans to reduce its oil output by 1%-2% a year, while expanding in lower-carbon energy. At that time it said its carbon emissions likely peaked in 2018, and that it planned to reduce the carbon intensity of the energy products it sells by 20% by 2030 and 100% by 2050.

Earlier this month, around 89% of Shell's shareholders supported the company's transition strategy when it was put to an industry-first vote.

A separate resolution calling for Shell to make more ambitious low-carbon investments and emissions reductions was supported by about 30% of shareholders.

Analysts said it was hard to quantify the risk posed to Shell and other energy

companies by the Dutch court ruling and the precedent it potentially sets. Shell's share price closed flat Wednesday and traded down about 1.5% Thursday.

"I think there's probably a general skepticism as to how enforceable this is and when the case actually concludes, assuming Shell appeals," said RBC's Mr. Borkhataria. "These companies are never going to be able to move fast enough for some people to be content."

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(END) Dow Jones Newswires

Solar Power's Decade of Falling Costs Is Thrown Into Reverse
2021-05-23 21:00:24.643 GMT

By Dan Murtaugh and Brian Eckhouse
(Bloomberg) -- A key selling point that made solar energy the fastest-growing power source in the world—rapidly decreasing costs—has hit a speed bump.
Solar module prices have risen 18% since the start of the year after falling by 90% over the previous decade. The reversal, fueled by a quadrupling in the cost of the key raw material polysilicon, threatens to delay projects and slow uptake of solar power just as several major governments are finally throwing their weight behind it in an effort to slow climate change.
“The disruption to solar hasn’t been this bad in more than a decade,” said Jenny Chase, lead solar analyst with clean energy research group BloombergNEF. “Developers and governments are going to have to stop expecting solar to get much cheaper quickly.” BNEF slightly lowered its forecast for solar buildout this year in a report last week, citing rising prices of materials including polysilicon as one reason.
Higher prices are affecting demand and may delay some large-scale projects, panel-maker Canadian Solar Inc. said on an earnings call on Thursday. In India, about 10 gigawatts of projects may be impacted, equivalent to more than a quarter of the country’s current capacity, Mint reported, citing unnamed developers. Large-scale projects in the U.S. could also get postponed, analysts at Cowen & Co. said.
Projects that haven’t signed price agreements with utilities that buy the power might get delayed unless the customer is willing to pay a higher rate for the electricity, according to Xiaojing Sun, an analyst at Wood Mackenzie Ltd.
For the solar industry, the timing couldn’t be worse. Renewable energy finally has a champion in the White House and ambitious climate goals have been announced across Europe and Asia.
At the center of the crisis is polysilicon, an ultra-refined form of silicon, one of the most abundant materials on Earth that’s commonly found in beach sand. As the solar industry geared up to meet an expected surge in demand for modules, makers of polysilicon were unable to keep up. Prices for the purified metalloid have touched $25.88 a kilogram, from $6.19 less than a year ago, according to PVInsights.
Polysilicon prices are expected to remain strong through the end of 2022, according to Roth Capital Partners analysts including Philip Shen.
And the problem isn’t limited to polysilicon. The solar industry is facing “pervasive upstream supply-chain cost challenges,” panel manufacturer Maxeon Solar Technologies Ltd. said in April.
Solar panels are made from sand that’s heated and purified to ingots of ultra-conductive polysilicon that are sliced into

razor-thin wafers, wired up into cells and then assembled into the panels that mount rooftops and cover vast fields.

Prices for steel, aluminum, and copper are also up, as are freight charges. Solar-microinverter supplier Enphase Energy Inc., said it expects its shipment volumes to be constrained by semiconductor-component availability.

“Downstream of polysilicon, it’s very painful,” Canadian Solar Vice President Xiong Haibo said at a conference in China, according to industry publication Solarbe. “At present, none of the downstream companies are profitable and all of them are reducing production.”

Still, the hiatus in the long-term downward trend in costs is partly offset by a continual improvement in the efficiency of solar panels, said Nitin Apte, chief executive officer of Vena Energy Pte., a leading independent renewable power operator in Asia-Pacific. The company isn’t planning any delays this year at its solar projects across Japan, Taiwan, Australia and India.

“I see this as a short term situation, and a few projects might see that eat into our contingencies,” Nitin said in an interview at his office in Singapore. “We’re not slowing down construction. We’re locking down orders at the best prices we can get.”

Longer-term, the shortages are spurring construction of new polysilicon factories, including an announcement this month of what would be the largest facility in the world in China.

“One would expect that any material that has the kind of growth that polysilicon has had will continue to have capacity injected into the system,” Vena’s Nitin said. “The challenge is timing that capacity perfectly to the growth.”

--With assistance from Rajesh Kumar Singh and Rachel Morison.

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https://www.g7uk.org/uk-secures-historic-g7-commitments-to-tackle-climate-change-and-halt-biodiversity-loss-by-2030/

UK secures historic G7 commitments to tackle climate change and halt biodiversity loss by 2030

Published 21 May 2021

- G7 Environment and Climate ministers commit to protect land and ocean to bend the curve of biodiversity loss by 2030.
- They also commit to phase out new direct government support for international fossil fuels
- Securing meaningful action from leading economies to tackle climate change is a priority for the UK's G7 presidency, ahead of COP26 in November

The Climate and Environment Ministers of the G7, under UK leadership, have today (Friday 21 May) secured historic commitments which will put climate, biodiversity and the environment at the heart of worldwide COVID-19 recovery.

COP26 President-Designate, Alok Sharma and Defra Secretary of State George Eustice, convened the Ministers ahead of the G7 leaders summit in June, including the guest countries of India, Australia, South Africa and South Korea.

All G7 members signed up to the global '30x30' initiative to conserve or protect at least 30 per cent of the world's land and at least 30 per cent of the world's ocean by 2030, and committed to '30x30' nationally.

This year is already the first ever 'net zero G7', with all countries committed to reaching net zero carbon emissions by 2050 at the latest, with deep emissions reduction targets in the 2020s.

Taking this further by supporting the transition to green energy overseas, the group also agreed to phase out government funding for fossil fuel projects internationally – following a leading commitment made by the UK in December.

As a first step the G7 countries will end all new finance for coal power by the end of 2021, matched by increased support for clean energy alternatives like solar and wind. It was also agreed to accelerate the transition away from unabated coal capacity and to an overwhelmingly decarbonised power system in the 2030s.

The G7 has agreed to increase the quantity of finance for climate action, including for nature, in order to meet the $100bn per annum target to support developing countries.

In addition to this, the G7 have committed to champion a range of ambitious and effective global biodiversity targets, including the agreement of an ambitious and effective global biodiversity framework at CBD COP15 later this year.

Measures to tackle global deforestation were also secured, with the G7 committing to increase support for sustainable supply chains that decouple agricultural production from deforestation and forest degradation, including production stemming from illegal land conversion.

In this crucial year for global action on the environment and climate, the UK has placed tackling climate change and biodiversity loss at the centre of its G7 agenda.

Speaking after the event the Environment Secretary George Eustice said:

For the first time, the G7 has committed to halting and reversing the loss of biodiversity by 2030.

"This is a major step forward before we host the G7 in Cornwall next month and is a sign of the dedication to accelerate action within the G7 - and beyond - to tackle the twin challenges of climate change and biodiversity loss.

"We have seen tremendous progress this week and it has been great to see countries working together to raise our ambition and lead by example, each playing our part."

COP26 President-Designate said:

We are the first net zero G7. Under the UK's Presidency, the G7 is showing great leadership in tackling climate change and making sure those who are worst affected by it are better protected.

"As we recover from the pandemic we are focused on building back greener - creating jobs and prosperity, without harming the planet.

"We know we need to consign coal to history and the G7 has taken a major step towards a decarbonised power system. We are acting abroad as we're doing at home by agreeing to phase out international fossil fuel finance, starting with coal - another key milestone in this crucial year for climate action.

"I look forward to continuing this work as we make progress ahead of COP26 in Glasgow later this year and keep 1.5 degrees within reach.

ENDS

· Please find a link to the Communique here: https://www.gov.uk/government/publications/g7-climate-and-environment-ministers-meeting-may-2021-communique

21/05/2021

https://www.g7uk.org/g7-climate-and-environment-ministers-communique/

G7 Climate and Environment: Ministers' Communiqué

Published 21 May 2021

Joint commitments

We, the G7 Ministers responsible for Climate and Environment, met virtually on 20 -21 May 2021.

As we continue to address the ongoing pandemic, we acknowledge with grave concern that the unprecedented and interdependent crises of climate change and biodiversity loss pose an existential threat to nature, people, prosperity and security. We recognise that some of the key drivers of global biodiversity loss and climate change are the same as those that increase the risk of zoonoses, which can lead to pandemics. We highlight that urgent and concrete action is needed to move towards global sustainability, further mitigate and adapt to climate change, as well as halt and reverse biodiversity loss and environmental degradation. We recognise that climate change and the health of the natural environment are intrinsically linked and will ensure that the actions we take maximise the opportunities to solve these crises in parallel.

We will do this by building back better from the pandemic, and we stress our determination to put climate, biodiversity, and the environment at the heart of our COVID-19 recovery strategies and investments. In doing so, we will transform our economies to promote sustainable development, deliver decent green jobs and build resilience. We will also accelerate the clean energy transition, improve resource efficiency, including by reducing food loss and waste and promoting a circular economic approach, transition to sustainable supply chains and mainstream nature, including biodiversity, and climate into economic decision-making. We will help set the world on a nature positive and climate-resilient pathway to bend the curve of biodiversity loss by 2030 and to keep a limit of 1.5°C temperature rise within reach by making our 2030 ambitions consistent with the aim of achieving net zero emissions as soon as possible and by 2050 at the latest.

We recognise these are global challenges which require urgent and ambitious global action at all levels. We reaffirm our commitment to international cooperation and multilateralism, and will work collectively to implement fully our national and international commitments. In this critical year of action we

recognise the need to increase global ambition and enhance collaboration, underpinned by the most ambitious sub-national, national and international action. We call on all countries to join us in action.

The COVID-19 crisis has reinforced the importance of science and evidence in government policies and decision-making. Recent assessments by the Intergovernmental Panel on Climate Change (IPCC), the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), the International Resource Panel (IRP), and the UN Environment Programme (UNEP) have documented that rapid and far-reaching transformations across all sectors of society and the economy are necessary to tackle climate change, environmental degradation and biodiversity loss. Recalling the outcomes of previous G7 meetings on Earth observation systems, we recognise the important role of research and systematic observation to provide information on the state of the planet and support and guide action to address climate change and conserve, protect and restore essential and biodiverse ecosystems. We will ensure our domestic action and international commitments are informed by the best available science and will support others wishing to enhance their evidence-based policy-making processes by sharing our experiences and best practices.

Tackling the twin crises of Climate Change and Biodiversity Loss

We recognise the critical role the ocean and seas play for biodiversity and in regulating the Earth's climate, absorbing over 90 percent of all excess heat in the Earth's system and between 20-30 percent of all anthropogenic carbon dioxide emissions since the 1980s, providing a home to up to 80 percent of all life on Earth, and a healthy ocean is central to the livelihoods of more than three billion people. We therefore commit to increase efforts at international, regional and national level, to conserve and sustainably use the ocean, thus increasing its resilience.

We recognise the critical role of our world's forests as home to most of the world's terrestrial biodiversity, reducing our vulnerability to climate change impacts, improving our adaptability and resilience, and acting as key carbon sinks with tropical forests capturing and storing up to 1.8 $GtCO_2$ from the atmosphere every year. We recognise deforestation and forest degradation as a significant cause of climate change. We commit to urgent action to conserve, protect and restore natural ecosystems including forests and habitat connectivity and promote sustainable forest management. We also commit to implement

decarbonisation pathways that do not cause further biodiversity loss or deforestation.

We recognise the crucial role of Nature-based Solutions in delivering significant multiple benefits for climate mitigation and adaptation, biodiversity, and people and thereby contributing to the achievement of various Sustainable Development Goals (SDGs). Such benefits include, among others, improving air quality, water quality and availability, soil health, storm and flood protection, disaster risk reduction, and alleviating and preventing land degradation. Nature-based Solutions can also provide sustainable livelihoods through protecting and supporting a wide range of ecosystem services on which the world's most vulnerable and poorest people disproportionately rely. We therefore commit to strengthen their deployment and implementation. We stress that Nature-based Solutions do not replace the necessity for urgent decarbonisation and reduction of emissions, but are needed alongside these efforts. In addition to action on the ocean and forests, we commit to take urgent action across ecosystems, including soils, grasslands, savannah, drylands, wetlands, coral reefs, rivers, lakes, coastal dunes, peatland, seagrass beds, mangroves and saltmarshes, whilst ensuring that relevant safeguards are in place.

We reiterate that achieving our collective ambitions will require all sources of finance: public and private, domestic and international, including innovative sources. We commit to using all relevant sources, tools and approaches, including Official Development Assistance and other sources of finance, to support and accelerate global action to tackle climate change and conserve, protect, restore and sustainably manage nature and the environment. We underscore the importance of a predictable investment environment and clear public policies and strategies in facilitating the alignment of global and national financial flows with these objectives, and as such, welcome the UK's incoming United Nations Framework Convention on Climate Change (UNFCCC) COP26 Presidency's ambitious efforts as they relate to mobilising private and public finance. We are each working intensively to increase the quantity of finance for climate mitigation and adaptation actions, including for Nature-based Solutions, and are committed to increasing its effectiveness, accessibility, and where possible its predictability, and call on others to join us in these efforts. In conjunction with these efforts, we are working intensively towards increasing the quantity of finance to nature and Nature-based Solutions. We reaffirm our commitment to the collective developed country climate finance goal to jointly mobilise US$100 billion annually by 2020 through to 2025 from a wide variety of

sources, and welcome the commitments already made by some of the G7 to increase climate finance and look forward to new commitments from others well ahead of COP26 in Glasgow. We will promote enabling environments to mobilise private finance towards these efforts while also enhancing action from the international community to support the poorest and those most vulnerable to climate change, biodiversity loss, and environmental degradation. We are committed to further enhance synergies between finance for climate and biodiversity and to promote funding that has co-benefits for climate and nature.

We call upon Multilateral Development Banks (MDBs), bilateral Development Finance Institutions (DFIs), multilateral funds, public banks, and export credit agencies to ensure that financial flows from these institutions are aligned with the goals of the Paris Agreement and support the objectives of international biodiversity conventions including the Convention on Biological Diversity (CBD) and the post-2020 global biodiversity framework, by increasing finance for nature and climate, and leveraging further private capital, in particular for developing countries and emerging markets. We call on MDBs, bilateral DFIs and other support providers to mobilise finance at scale by delivering on their climate finance objectives and targets, and nature finance objectives, making them more ambitious, and mainstreaming climate and nature into their analysis, policy advice, decision-making and financing. We further call on all MDBs to publish, before the UNFCCC COP26, a plan and date by which their operations will be aligned with and support the goals of the Paris Agreement, and encourage them to sign a joint statement committing them to mainstream nature across their operations as appropriate. We also urge the MDBs to commit their private sector arms to pilot and scale up private finance programmes for nature and climate, in particular in under-funded sectors like adaptation and resilience and Nature-based Solutions.

In the context of building back better and achieving a global green recovery from COVID-19, we acknowledge the particularly significant impacts faced by developing countries and that increasing debt burdens can constrain fiscal space and the ability to provide stimulus for a green recovery alongside other development objectives, including access to clean and sustainable energy for all. We recognise that macro and fiscal policies, a free, fair and rules-based multilateral trading system, international initiatives and domestic efforts to create an enabling environment to mobilise private finance, offer a powerful tool to both transforming and revitalising economies. We thank Professor Lord Stern for his work and note with interest his paper on “G7 Leadership for Sustainable,

Resilient and Inclusive Growth and Recovery" as commissioned by the UK G7 Presidency. We welcome the discussions of Finance Ministers on supporting a global recovery and their role in enabling a smooth transition to net zero, addressing biodiversity loss, and mobilising the private sector.

Leaving no-one behind

We recognise the disproportionate impacts of climate change, biodiversity loss, and environmental degradation on the most vulnerable communities, people living in poverty and those already facing intersecting inequalities and discrimination, including women and girls, Indigenous Peoples, people with disabilities and other marginalised groups. We will increase our efforts to address environmental justice issues in order to make their voices heard and support their full, equal and meaningful participation in decision-making, recognising their critical role as leaders and agents of change, and adapting new and existing policies to support social justice, economic empowerment and achieving gender equality. We further recognise the need to protect the rights of Indigenous Peoples, as acknowledged in national law and international instruments, and respect and value their knowledge and leadership in tackling climate change and biodiversity loss. We are steadfastly committed to addressing barriers to accessing finance for climate and nature faced by women, marginalised people, and underrepresented groups and increasing the gender-responsiveness and inclusivity of finance. We reaffirm our commitment to implementing the 2030 agenda for sustainable development and its associated SDGs and taking action in support of the UNFCCC, CBD and the UN Convention to Combat Desertification (UNCCD) Gender Action Plans.

We will ensure that the transition to a net zero emissions and nature positive economy happens in a fair and inclusive way. This transition must go hand in hand with policies and support for a just transition for affected workers, and sectors so that no person, group or geographic region is left behind.

Climate change

A G7 committed to accelerating progress under the Paris Agreement

We reaffirm our strong and steadfast commitment to strengthening implementation of the Paris Agreement and to unleashing its full potential. To this end we will make ambitious and accelerated efforts to reduce emissions to keep a limit of 1.5°C temperature rise within reach, strengthen adaptation to the impacts of climate change, scale-up finance and support, protect, restore and

sustainably manage nature, and enhance inclusive and gender-responsive action. We affirm our commitment to work with these objectives in mind towards a successful COP26 in Glasgow and beyond.

A net zero G7 leading a step change in mitigation

There is a global imperative to pursue efforts to limit the increase in the global average temperature to 1.5°C above pre-industrial levels, recognising that the avoided climate impacts are greater at 1.5°C than 2°C, as stated in the IPCC's 2018 Special Report on Global Warming of 1.5°C. This will require meaningful action by all countries, in particular the major emitting economies, pursuant to continuous improvement in climate and environmental action to align with a pathway that keeps 1.5°C within reach. We, G7 members, will lead by example and each commit to achieve net zero greenhouse gas (GHG) emissions as soon as possible and by 2050 at the latest.

We affirm the importance of taking domestic action to phase down hydrofluorocarbons (HFCs) and of pursuing further actions to enhance the benefits of the Montreal Protocol in ozone layer protection and tackling climate change, and call upon all countries who have not already done so to ratify the Kigali Amendment to the Montreal Protocol.

Short-term action – building back better and more resilient through a net zero pathway

Accelerating the transformation of the global economy towards a net zero pathway will depend upon securing a green, sustainable, resilient, inclusive and gender-responsive recovery from COVID-19 in a manner consistent with the 2030 Agenda for Sustainable Development, leaving no one behind. To accelerate progress towards achieving our Paris Agreement goals, we need to harness the significant opportunities for sustainable development – including green jobs and sustainable, resilient growth – by making investments in the recovery from COVID-19 that are aligned with pathways towards our respective enhanced Nationally Determined Contributions (NDCs) and 2050 net zero commitments, recognising the risk of stranded assets associated with high carbon investments.

Medium and long-term action – guided by net zero aligned NDCs and LTSs

We highlight with deep concern the findings from the IPCC Special Report 2018, and recognise the need to reduce the global level of annual GHG emissions to

25-30 Gt of carbon dioxide equivalent or lower by 2030 to put the world on track to limit global warming to 1.5°C above pre-industrial levels, in order to reduce the risk of catastrophic consequences of climate change. We commit to submitting long-term strategies (LTSs) that set out concrete pathways to net zero GHG emissions by 2050 as soon as possible, making utmost efforts to do so by COP26. We commit to updating them regularly, including to reflect on the latest science, as well as technological and market developments. We also note with concern the initial version of the NDC Synthesis Report prepared by the UNFCCC Secretariat which highlights that many parties are yet to submit new and updated NDCs. NDCs communicated by 2020 collectively fall far short of the ranges found in pathways identified by the IPCC, which limit global warming to 1.5°C or well below 2°C. We welcome the significantly enhanced ambition reflected in 2030 targets announced by all G7 members, which put us on clear and credible pathways towards our respective 2050 net zero GHG emission reduction targets. We note the important contribution these commitments make towards keeping 1.5°C within reach and in providing an unequivocal direction of travel for business, investors and society at large. Those of us who have not already done so commit to submitting our enhanced NDCs to the UNFCCC as soon as possible ahead of COP26.

The G7 members cannot tackle climate change alone. The G7 calls on all countries, in particular other major emitting economies, to join the growing numbers that have made 2050 net zero commitments, to present specific and credible strategies for achieving them – including LTSs – and to enhance their NDCs accordingly to keep 1.5°C within reach, highlighting the importance of parties who have not already done so submitting their increased ambition NDCs to the UNFCCC as soon as possible ahead of COP26.

We reaffirm our commitment that our successive NDCs will represent a progression and reflect the highest possible level of ambition, in alignment with the Paris Agreement. Both our NDCs and LTSs will remain informed by the global stocktake outcomes and the best available science – particularly IPCC reports (including the forthcoming 6th Assessment Report), as well as IPBES reports. In preparing and implementing our NDCs, we reaffirm our commitment to public participation. We highlight the important and active role of all levels of government as well as businesses, workers, local communities, non-governmental organisations (NGOs), academia, Indigenous Peoples, youth and other non-state actors in driving ambitious climate action, including in a gender-responsive manner. We call for an enhanced Marrakech Partnership for Global

Climate Action (MPGCA) to accelerate and broaden climate ambition and action in this regard, with improved tracking of its initiatives. We recognise the benefits of enhanced international collaboration in driving action in all sectors as part of an economy-wide effort.

More people protected from climate impacts

We acknowledge with grave concern the impacts of climate change already being experienced worldwide, particularly by those most vulnerable to them. We commit to enhance, accelerate and scale up adaptation actions, including Nature-based Solutions, and to support the most vulnerable to adapt to and cope with the impacts of climate change and biodiversity loss, identified by plans at local, national and sub-national levels, including ambitious National Adaptation Plans (NAPs). We reaffirm our commitment to Article 9.4 of the Paris Agreement, which calls for the provision of scaled-up financial resources to aim to achieve a balance between adaptation and mitigation, taking into account country-driven strategies. This includes continuing to scale-up finance contributing to adaptation action. We highlight the important role of businesses, workers, investors, cities, women, Indigenous Peoples and civil society in mobilising action to support vulnerable communities. Finally, we call on all states and non-state actors to cooperate to enhance adaptation and resilience, including through the Adaptation Action Coalition, InsuResilience Global Partnership, and National Adaptation Plans Global Network, and for non-state actors to join the Race to Resilience Campaign to strengthen the resilience of 4 billion people in vulnerable communities by 2030, and to participate in the adaptation activities undertaken within the Marrakech Partnership for Global Climate Action. Recognising the importance of adaptation in our own national planning, we G7 members commit to submitting Adaptation Communications as soon as possible, and if feasible by COP26. We further affirm our commitment to a diverse and inclusive, gender-responsive, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems in the delivery of adaptation policies, plans, strategies and actions. As Climate and Environment Ministers, we acknowledge and fully support the work of the Foreign and Development Ministers' track to increase action on adaptation and protect more people from climate impacts, including the commitment to continue scaling up finance contributing to adaptation action.

Mobilising and aligning finance to support the green recovery

We, the G7, reaffirm our commitment to the collective developed country goal of jointly mobilising US$100 billion annually through to 2025, from a wide variety of sources, public and private, bilateral and multilateral and in the context of meaningful mitigation actions and transparency on implementation. We welcome the commitments already made by some of the G7 to increase climate finance and look forward to new commitments from others well ahead of COP26 in Glasgow. We underline G7 commitments to further strengthen the Green Climate Fund (GCF) as an effective tool in implementing the Paris Agreement. Further, we highlight the Paris Agreement's recognition that mobilising finance requires a global effort. In this context, we encourage all potential contributors of official finance, including emerging economies, to join existing providers in supporting climate action in developing countries. We underline the urgent need to scale up efforts to mobilise the private sector if we are to achieve a global green recovery and net zero emissions by 2050, recognising the critical role that innovative financing vehicles, bilateral and multilateral finance institutions, blended finance, policies, risk pools and enabling environments play in this regard.

We affirm the crucial importance of making finance flows consistent with a pathway towards low GHG emissions and climate-resilient development, as reflected in Article 2.1.c of the Paris Agreement and in line with the SDGs. As part of our efforts towards this objective, we commit to making official finance flows consistent with the goals of the Paris Agreement and call on all countries, as well as MDBs, DFIs, multilateral funds, public banks and export credit agencies to join us in this effort. We emphasise the transformative role of the policies and actions of all governments, but also public and private stakeholders in creating the right enabling environments to support climate action and in integrating climate change into economic and financial decision-making processes. We also urge businesses and investors to join the Race to Zero, align their portfolios with the goals of the Paris Agreement and set science-based net zero targets of 2050 at the latest.

We recognise the potential of carbon markets and carbon pricing to foster cost-efficient reductions in emission levels, drive innovation and boost the breakthrough of technologies that enable a transformation to net zero. We affirm the fundamental importance of environmental integrity and sustainable development in the design of high integrity carbon market mechanisms, including those used for voluntary purposes, which should be based on robust rules and accounting that ensure avoidance of all forms of double counting. They should require the use of conservative emissions and emissions reductions estimations

and assumptions, as well as safeguards to mitigate carbon leakage risks, avoid negative social and biodiversity impacts, and to address potential reversals. We further note that such mechanisms can mobilise private finance and help to close the ambition gap for limiting global warming to 1.5°C.

Unleashing the full potential of the Paris Agreement

We are steadfast in our commitment to achieving an ambitious set of outcomes from COP26 in line with the objectives set out above. We emphasise the importance of finalising the outstanding mandates relating to the Paris Rulebook – including the adoption of common tables and formats for the enhanced transparency framework, decisions on cooperative approaches (Article 6), and common time frames for NDCs – in a manner that promotes transparency and accountability and ensures environmental integrity. We will address mandates and deliver on our commitments across the three pillars of the Paris Agreement – on mitigation, adaptation, and support – and enhance international collaboration to accelerate global implementation ahead of COP26 and beyond. We will have a continued focus on supporting those most vulnerable to the impacts of climate change and will continue to support developing country partners as they pursue green, sustainable, resilient, inclusive and gender-responsive recoveries from COVID-19. This includes providing support with the preparation and implementation of national plans and commitments (including NDCs, LTSs, NAPs and Adaptation Communications) bilaterally, through our contributions to multilateral funds and through the NDC Partnership and other such initiatives. We welcome the creation by the OECD of the 'International Programme for Action on Climate' as part of the 'Horizontal Project on Climate and Economic Resilience in the Transition to a Low Carbon Economy', and look forward to its possible contribution to climate action.

Supporting the transition to a net zero economy

We recognise that the transition to net zero will depend upon developing the skilled workforce necessary to deliver it, in a way that leaves no one behind, by building on the skills and knowledge in transitioning sectors, developing new labour markets for decent work and quality green jobs, as well as investing in pioneering clean and sustainable industries and technologies. We will address the challenges workers face by ensuring that they have the appropriate skills and training to build back greener, alongside a long-term plan for skills needed for a net zero economy, in a gender-responsive way. This will support the creation of green jobs, a diverse workforce, and will support workers in high carbon sectors

to gain skills and knowledge to implement more sustainable practices and green technologies. We reaffirm our commitment under the Equal by 30 Campaign to work towards equal pay, leadership and opportunities for women in the clean energy sector by 2030. We agree to deepen efforts to advance gender equality and diversity in the energy sector, including under the Equal by 30 Campaign by adopting a set of strengthened commitments. This will support our commitment to make diversity and gender equality central to the global energy sector's recovery efforts and help build a more inclusive and equitable energy future. We acknowledge the need for specific support for all workers as part of a clean energy transition.

We recognise that delivering and accelerating the transition to a net zero global economy will require scaled-up international collaboration. The institutional architecture to enable this should be structured and strengthened appropriately where needed, utilising synergies with existing initiatives to ensure net zero emissions are achieved on an economy-wide basis. We will convene to review the pace of the transition required in each sector to meet the Paris Agreement goals, and the international landscape of institutions and sectoral fora to decarbonise major emitting sectors, with a view to strengthening collaboration in key sectors up to COP26 and beyond.

We recognise the importance of working closely with city, state and regional governments in driving the transition to a net zero economy, and the vital role of national governments to support such actions. We highlight the role of cities in piloting a future with net zero emissions, through innovative and sustainable energy solutions. Local governments and sub-national actors, including businesses, workers, communities and civil society, are central to taking ambitious action on high-emitting sectors and should implement solutions that curb emissions while ensuring equitable and inclusive development for citizens and communities. We will implement a range of measures to encourage and empower citizens, business, communities and regions to decarbonise, including supporting the development of local strategies and plans, encouraging investments for the implementation of model projects for low carbon urban infrastructure, encouraging behavioural change, utilising information systems to promote the transparency of local actions and achievements, and disseminating good practices of concrete actions.

Net zero energy

We recognise the key contribution of energy efficiency as “the first fuel” to emissions reduction, energy security, economic growth, sustainable development, alleviating energy poverty, and job creation. We therefore note with concern the decline in the global rate of energy efficiency improvements and commit to strengthen our efforts to deliver improvements in buildings, industry and transport. We continue to emphasise the need for stronger international exchanges to learn about best practices in this policy space. We stress the importance of strengthening and coordinating international collaboration in developing policy frameworks for new business models and to ensure the necessary investments in energy efficiency measures in all sectors. We therefore welcome the establishment of the Energy Efficiency Hub, hosted at the International Energy Agency, as a key international forum for global collaboration on energy efficiency. We welcome the Super-Efficient Equipment and Appliance Deployment (SEAD) initiative. We further endorse its goal of doubling the efficiency of four key energy-using products sold globally by 2030: lighting, cooling, refrigeration, and motor systems, and will contribute to that end using the full policy toolkit at our disposal.

We affirm the fundamental role of renewable energy sources. We welcome the rapid growth, decreasing cost and increasing value of renewable energy technologies around the world. We stress the need for their further integration in the systems, and we recognise that renewables are a major driver of economic growth, jobs, and increased access to affordable energy. We recognise that the significant progress made in the development and deployment of renewable energy has been driven by a virtuous circle of technological development, a supportive regulatory and policy environment including innovative market designs, and industry-led cost reductions. We affirm our commitment to supporting the development and deployment of renewable energy globally, particularly for developing countries, as well as accelerating the development and deployment of renewable heating and cooling, where a step change in progress is urgently required. We recognise the importance of promoting clean energy transitions in islands, as well as in remote and rural communities, through innovative renewable energy solutions, fostering self-determination and community ownership of resources.

We recognise the role of energy storage as an enabling technology to support the transformation of the global economy towards a net zero pathway. We commit to drive energy storage technology innovation and accelerate its commercialisation and deployment by supporting the private sector in reducing

the cost and increasing the performance of energy storage technologies, through policies and tools supportive of energy storage market adoption, including regulatory frameworks and market structures.

Recognising that coal power generation is the single biggest cause of global temperature increases, we commit now to rapidly scale-up technologies and policies that further accelerate the transition away from unabated coal capacity and to an overwhelmingly decarbonised power system in the 2030s, consistent with our 2030 NDCs and net zero commitments. In doing so, we reaffirm the importance of national energy security and resilience and underscore the importance of providing support for affected workers, regions and communities. We welcome with appreciation the work of the Energy Transition Council in supporting the new economic opportunities and sustained quality job creation offered by a transition to clean energy in developing countries. We commit to exploring further ways that we can accelerate global progress towards net zero power, including leading by example as the G7, and working with collaborative initiatives and institutions. We note that several G7 members participate in the Powering Past Coal Alliance. We will convene by COP26 to lay the groundwork for further joint action by G7 members.

In line with Article 2.1.c of the Paris Agreement, we commit to aligning official international financing with the global achievement of net zero GHG emissions no later than 2050 and deep emissions reductions in the 2020s. We commit to promoting the increased international flow of public and private capital toward Paris Agreement-aligned investments and away from high-carbon power generation to support the clean energy transition in developing countries. In this context, we will phase out new direct government support for carbon intensive international fossil fuel energy, except in limited circumstances at the discretion of each country, in a manner that is consistent with an ambitious, clearly defined pathway towards climate neutrality in order to keep 1.5°C within reach, in line with the long-term objectives of the Paris Agreement and best available science. Consistent with this overall approach and recognising that continued global investment in unabated coal power generation is incompatible with keeping 1.5°C within reach, we stress that international investments in unabated coal must stop now and commit to take concrete steps towards an absolute end to new direct government support for unabated international thermal coal power generation by the end of 2021, including through Official Development Assistance, export finance, investment, and financial and trade promotion support. We commit to reviewing our official trade, export and development finance policies towards

these objectives. We further call on other major economies to adopt these commitments. We welcome the support provided and mobilised by DFIs and multilateral funds, including the GCF, to support the energy transition. In particular, we note the recent Climate Investment Funds board decision to launch new sector specific funds, including those to accelerate coal transitions, and support renewable energy deployment in emerging economies.

We reaffirm the need to take into account the imperative of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities, as reflected in the Paris Agreement. Recalling the SDGs, we commit ourselves to a people-centred transition, that will work to create decent employment in the low carbon economy while making energy more accessible, affordable, and cleaner for all communities. We support reskilling workers across industries and communities and developing the industries of the future, as the clean energy transition continues to gather momentum. We welcome the substantial economic opportunities inherent in a people-centred transition, including alleviating energy poverty for people and communities, removing barriers to employment, especially for marginalised populations, which will in turn lead to substantial and equitable economic growth and prosperity for all.

We recognise that inefficient fossil fuel subsidies encourage wasteful consumption, reduce energy security, impede investment in clean energy sources, and undermine efforts to deal with the threat of climate change. We reaffirm our commitment to the elimination of inefficient fossil fuel subsidies by 2025 and encourage all countries to adopt this commitment. We encourage greater international action to meet this commitment and we support calls for greater transparency.

We recognise the importance of ambitious and urgent action to reduce emissions and leakage of methane (fossil and biogenic) from the energy sector, as well as waste and agricultural sectors, and of other potent warming substances, such as black carbon, in order to slow global warming. This will require improved measurement and reporting to better locate and quantify these emissions.

We recognise the importance of maintaining energy security as we transform our energy systems and the need for energy markets that are open, flexible, transparent, competitive, stable, sustainable, reliable and resilient. We reaffirm the need for investment to ensure energy supply and demand remain balanced throughout energy transitions, recognising the need for energy demand to be met

by sources that align with our Paris Agreement and net zero objectives. We commit to developing strategies and actions that enhance our focus on the security of innovative, clean, safe, and sustainable energy technologies. This includes resilience in the face of cyber security threats, the system integration of variable renewable energy, energy storage, flexible power plants, hydrogen, as well as demand side management, smart grids, and related infrastructure including the accommodation of sustainable biofuels and hydrogen. We recognise the important role of electricity interconnection in market integration, flexibility and promoting decarbonisation, alongside supporting security of supply and system security. We recognise that natural gas may still be needed during the clean energy transition on a time-limited basis and we will work to abate related emissions towards overwhelmingly decarbonised power systems in the 2030s. We also note the importance of ensuring secure, safe and sustainable clean energy supply chains, including with regards to critical minerals and critical renewables components.

We affirm that access to secure affordable, reliable, sustainable, clean and modern energy is a key enabler of the SDGs. We welcome progress made to increase energy access and eradicate energy poverty worldwide, while noting that the world remains off-track to meet our SDG for access to energy. We note the essential role of gender equality in achieving sustainable energy access and welcome synergies with the work of the G7 Gender Equality Advisory Council. We stress the importance of achieving universal, equitable and sustainable access in driving forward a global and inclusive clean energy transition that addresses the disproportionate impact of energy poverty on vulnerable and marginalised populations, both in developing countries and in more mature economies. We welcome the UN commitment to address progress on SDG7 within the High-Level Energy Dialogue.

Those countries that opt to use it reaffirmed the role of nuclear energy in their energy mix. Those countries recognise its potential to provide affordable low carbon energy and contribute to the security of energy supply as a baseload energy source.

Net zero mobility

We stress the urgent need to promote sustainable mobility and reduce GHG emissions from the transport sector to help achieve net zero emissions by 2050. We recognise that this will require dramatically increasing the pace of the global decarbonisation of the road transport sector throughout the 2020s and beyond,

consistent with the goals of the Paris Agreement and our respective 2030 NDCs and net zero commitments. In this regard, and as part of this effort, we welcome and support the Zero Emission Vehicle Transition Council and will work with other global partners to accelerate the deployment of zero emission vehicles for passengers and freight, including exploring ways to support developing countries in making the transition. We further recognise the commitments of some states to the target of sales of passenger cars being zero emission by 2040 or earlier. Furthermore, we also need to promote decarbonising the entire life cycle of vehicles. We commit to support transitioning our industrial bases and providing ambitious investment to research, further develop, and scale up the technologies needed to support a rapidly growing global market for sustainable mobility. We will intensify our efforts in enhancing the offer of more sustainable transport modes in urban and rural areas, including public transport, shared mobility, cycling and walking, and supporting inter-modal transport with investment in rail and waterborne infrastructure.

We further recognise the urgent need for effective efforts to reduce emissions from the international aviation and maritime sectors to put both sectors on a pathway of emissions reduction consistent with the mitigation goals of the Paris Agreement. We commit to supporting the development and adoption of ambitious mid- and long-term measures at the International Maritime Organization (IMO) and to building a global consensus on strengthening the levels of ambition in the initial IMO strategy on reduction of GHG emissions from ships in the context of its forthcoming revision, with the aim of contributing to the Paris Agreement temperature goal. We will also support the development and adoption of an ambitious long-term global goal at the International Civil Aviation Organization in line with our vision for decarbonising the aviation sector.

Net zero innovation

We recognise clean energy innovation as a driver of sustainable and inclusive growth to create jobs, an enabler of a resilient economic recovery. We also recognise the need to accelerate innovation this decade to meet our net zero goal by 2050 or sooner. This includes scaling up demonstrations and the early deployment of zero and negative carbon technologies while ensuring negative impacts on the environment and human wellbeing are avoided. This must be enabled by mechanisms and clear signals, including an increased focus on ESG (environmental, social and governance) performance, that incentivise private sector investment to fast-track innovations to the market. To accelerate the pace of industry decarbonisation, we commit to launch the G7 Industrial

Decarbonisation Agenda to complement and support the activities of existing key initiatives and amplify ambition, while plugging critical gaps in the landscape wherever they exist.

For the G7, we commit to increasing clean energy innovation investments to a level in line with our net zero ambition. We support the launch of a second phase of Mission Innovation as a global platform to strengthen international cooperation that will continually promote increased clean energy innovation ambition and concrete actions for clean energy technical innovation. We support the commencement of Clean Energy Ministerial's third phase as a global platform to share experience, raise ambition, and implement cooperative action for clean energy deployment, including innovative policy, regulatory and market measures. We encourage closer alignment between Mission Innovation and the Clean Energy Ministerial to better coordinate efforts from innovation all the way through to the deployment of clean and sustainable energy technologies including through energy efficiency and from renewable energy sources. We will design appropriate pull mechanisms to accelerate the innovation and scaling up of clean energy and net zero technologies across G7 members and to support the green transition in developing countries. We also acknowledge that the successful deployment of clean energy technologies requires further investment in a skilled, technologically advanced and diverse workforce.

Innovation that supports net zero industries can help existing sectors through the transition, as well as creating additional value with the birth of new industries. We will work together in the lead up to COP26, building on existing initiatives to coordinate action on standards and public procurement in order to create globally competitive markets for green industrial products. In parallel, we will also work to reduce emissions from key industrial processes through enhanced energy efficiency, the development of circular economy and resource efficiency principles, electrification, comprehensive industrial heat utilisation and reduced waste in industry, fuel switching and carbon capture, usage and storage (CCUS). We recognise the importance of early action to decarbonise hard-to-abate industrial sectors such as iron and steel, cement, chemicals, and petrochemicals, to ensure that emissions across the entire economy reach net zero by 2050. For these hard to abate sectors to achieve this, we commit to targeting greater levels of innovation funding to lower the costs of industrial decarbonisation technologies, including the use of hydrogen, electrification, sustainable biomass, CCUS and synthetic fuels (including ammonia and fuels made from hydrogen). Acknowledging that achieving net zero industry will require enhanced global

efforts, we will support low and middle-income countries through financial and technical cooperation, as well as in multilateral fora. We will work together to accelerate the decarbonisation of industry, and welcome the development of the new Industrial Decarbonisation Innovation Mission and the launch of the Clean Energy Ministerial's Industrial Deep Decarbonisation Initiative, while supporting ongoing activities in the Leadership Group for Industry Transition.

We recognise the importance of renewable and low carbon hydrogen on the pathway to net zero. We will step up efforts to advance commercial scale hydrogen from low carbon and renewable sources across our economies, including support for fuel cell deployment globally. This will help realise the development of a future international hydrogen market that creates new jobs for current and future workers in the energy sector.

While the focus must remain on protecting and expanding our natural carbon sinks, we recognise that negative emissions technologies, such as Direct Air Capture, can also play a role in reaching net zero GHG emissions. Negative emissions will be required to offset residual emissions in sectors that are difficult to decarbonise completely. Technical solutions such as CCUS, and carbon recycling where appropriate, will also be important for some countries in meeting our goal of a net zero economy.

Environment

Resetting our relationship with nature

A healthy natural environment is critical to human health, wellbeing and prosperity globally and underpins sustainable development. Despite existing global agreements for the protection, conservation, sustainable use and restoration of biodiversity, global negative trends in biodiversity and ecosystem functions are projected to continue or worsen. We therefore confirm our strong determination to halt and reverse biodiversity loss by 2030, building on the G7 Metz Charter on Biodiversity and the Leaders' Pledge for Nature as appropriate.

We recall with deep concern the 2019 IPBES Global Assessment Report on Biodiversity and Ecosystem Services and the 2021 UNEP Making Peace with Nature report. We commit to take urgent action to address the five direct drivers of biodiversity loss, all a result of human activity: changes in land and sea use, direct exploitation of organisms, climate change, pollution and invasive alien species. We will also address overexploitation and illegal exploitation of resources as well as the indirect drivers identified, including those caused by

unsustainable methods and patterns of consumption and production. We stress that concerted and collaborative action is needed by all partners and stakeholders including governments, businesses, farmers, academia and scientists, NGOs, citizens, Indigenous Peoples, and local communities, and underline the importance of including these groups in co-design, decision-making and implementation.

We commit to raise ambition and accelerate and intensify action, including at CBD COP 15, UNFCCC COP 26, Ramsar COP 14, UNCCD COP 15, UN Environment Assembly (UNEA) 5, UN Food Systems Summit and the UN Ocean Conference, and in support of the UN Decades on Ecosystem Restoration and Ocean Science for Sustainable Development. We will also build on existing synergies, break down silos and support linkages at the domestic and institutional level across relevant Multilateral Environmental Agreements, as appropriate, including Regional Seas Conventions.

Highlighting the urgent need for transformative action, we will champion the agreement and successful implementation of an ambitious and effective post 2020 global biodiversity framework to be adopted by parties at CBD COP15 to protect, conserve and restore ecosystems, halt and reverse biodiversity loss, ensure the conservation and sustainable use of biodiversity, increase resilience to climate change and sustain healthy ecosystems on which our lives, well-being and economies depend. We commit to champion ambitious and effective global biodiversity targets, including conserving or protecting at least 30 percent of global land and at least 30 percent of the global ocean by 2030 to halt and reverse biodiversity loss by 2030 and address climate change, including through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures (OECMs) by 2030 (30by30), recognising that Indigenous Peoples, and local communities, are full partners in the implementation of this target. We will strive to ensure the effective and equitable management of protected areas and OECMs, and strive to improve their ecological connectivity, with a focus on areas that deliver the greatest benefits for global biodiversity, ecosystem services and climate protection. We underline the importance of a strong accountability framework that strengthens implementation and increases transparency of our actions to meet these targets, and will actively support the development of robust implementation, monitoring and review frameworks. We will enhance or put in place robust, science-based domestic implementation plans, strategies and policies to conserve, protect and restore terrestrial,

freshwater, marine and coastal ecosystems and play our part in successfully delivering these global goals and targets. We will work with the competent international and regional organisations, including Regional Seas programmes, Regional Seas Conventions and Regional Fisheries Management Organisations (RFMOs). We will contribute to 30by30 by conserving or protecting at least 30 percent of our own land, including terrestrial and inland waters, and coastal and marine areas by 2030 according to national circumstances and approaches.

Mainstreaming nature

According to the WEF “New Nature Economy Report 2020”, over half the world’s GDP in 2019, almost US$44 trillion, was generated from industries that depend on nature. Waldron et al in their report “Protecting 30% of the planet for nature: costs, benefits and economic implications” suggest that achieving 30 percent protection in two biomes alone could result in gross economic benefits of US$170 billion to US$530 billion per annum by 2050. The report also states that the global financial cost of adequately protecting 30 percent of all the earth’s land and ocean has been estimated to be between US$103 billion and US$177.5 billion per annum. It is clear therefore that the economic benefits of protecting and conserving the land and ocean far outweigh the financial costs of doing so.

We welcome the contribution of the Dasgupta Review on the Economics of Biodiversity, which builds on The Economics of Ecosystems and Biodiversity (TEEB) process among other initiatives. Its conclusion that a fundamental change is needed in how we think about and approach economics if we are to reverse biodiversity loss and protect and enhance our prosperity will inform our work. We will work collaboratively to build on the Dasgupta Review insights and those of other such reports, as appropriate, to support efforts for economic and financial decision-making to account for the goods and services we derive from, and the intrinsic value attributed to nature. We commit to take the urgent and transformative action required to ensure that a deep understanding of ecosystem processes, their interlinkages, and how they are affected by economic activity, is incorporated as part of economic and financial decision-making. To ensure appropriate management of environmental risks and reduce related transaction costs, we will also work with businesses and other stakeholders in developing standardised natural capital accounting practices. We welcome the work being done by the UN Statistical Commission to continue updating the SEEA ecosystem accounting system.

We commit to mainstream nature into all sectors and policies. We recognise the urgency and call for the integration of both climate and nature-related risks into organisational risk management architecture, and of investing in natural capital, which will enable finance to play a greater role by pivoting towards nature positive projects and investments. We recognise the importance of work on nature-related financial disclosure and note with interest the establishment of the Taskforce on Nature-related Financial Disclosures and its aims.

We note the analysis from the OECD, which provides policy recommendations based on the findings of the Dasgupta Review, among other reports. The G7 commits to review these recommendations in order to identify actions to mainstream nature into financial and economic decision-making. In particular we note the OECD's analysis and recognise the harmful effect of some subsidies on the environment and people's livelihoods. We therefore commit to lead by example by reviewing relevant policies with recognised harmful impacts on nature and will take action, as appropriate, to deliver nature positive outcomes.

Preventing and combatting zoonoses and antimicrobial resistance (AMR) using a One Health approach

The COVID-19 pandemic reminds us that human, plant, animal and environmental health are interdependent and we therefore stress the importance of a strengthened One Health approach. We welcome the contribution of the IPBES Workshop Report on Biodiversity and Pandemics to the debate and recognise with concern that increased contact between humans, wildlife and livestock, as a result of human activities including habitat loss, human encroachment into natural areas, land use change such as agricultural expansion, unsustainable food production systems, deforestation, climate change, the legal and illegal wildlife trade, unsustainable international trade and unsustainable consumption is increasing the risk of zoonotic disease emergence and spread. The COVID-19 pandemic has reinforced the importance of close international collaboration in preventing and combatting existing and emerging zoonotic threats. We call for further cross sector research and scientific analysis and evidence on the interactions between humans, wildlife, domesticated animals and the environment, the pathogens which exist in these populations, the risks arising from these interactions and the control and prevention of zoonoses. We call on all governments to ensure transparency and swift sharing of data and information on zoonoses.

As the G7, we will continue to strengthen global collaboration and work towards improving the resilience of our surveillance systems through sharing relevant information in a timely manner, implementing best practice, building capability and improving technology domestically and internationally, particularly with developing countries and countries with economies in transition.

We endorse the work of the One Health Working Group and will join, on a voluntary basis, the International Zoonoses Community of Experts (IZCE) established under the UK Presidency. The IZCE will bring together national points of contact with expertise and interest in zoonoses, their drivers, prevention and monitoring. Through sharing best practice and methodologies, knowledge will be increased across the community and will contribute to improve risk assessment, risk management and early warning capabilities at a global level. We recognise the need to ensure complementarity with such initiatives as the Tripartite Plus and the One Health High Level Expert Panel to avoid duplication. The IZCE will liaise with other relevant G7 working groups, for example the G7 Chief Veterinary Officers Group.

We recognise that better understanding and enhanced visibility, accessibility and interoperability of data is a crucial first step in delivering improved global surveillance and response to One Health threats and issues. We encourage climate, environment and health stakeholders to consider how best they can work together to support the Tripartite Plus in this crucial work.

We recognise that the release of antimicrobials into the environment can select for antimicrobial resistance (AMR) and have an impact on human, animal and environmental health. We also note that heavy metals and biocides potentially have an impact on AMR and human, animal and environmental health. We underline the importance of a One Health approach in tackling AMR and call on all governments to promptly implement measures for the sound management and reduction of inappropriate use of antimicrobials. In this context, we note the potential role that soil microorganisms may play in the fight against AMR. We call on UNEP, in collaboration with the Tripartite organisations, to strengthen the evidence base on the contamination, mechanisms, causes and impacts of AMR emerging and spreading in the environment as mandated at UNEA 3. We commit to work in close collaboration with governments and relevant parties such as, medicines regulators where independent of government agriculture, academia, industry, the Tripartite on AMR and UNEP to develop and implement long-term, sustainable solutions to this issue. We note with concern that there are currently no international standards on safe concentrations of antimicrobials released into

the environment from, inter alia, pharmaceutical manufacturing, healthcare facility effluent, agriculture and aquaculture. We also acknowledge the work of the AMR Industry Alliance in this regard. We commit to accumulate knowledge on AMR in the environment. We will work with our ministerial colleagues with responsibility for health, food, farming and medicines regulators where independent of government, as appropriate to develop and agree such standards.

Transition to sustainable and legal use of natural resources

Resource efficiency

Recalling the findings of the Global Resources Outlook 2019 of the International Resource Panel, we recognise that the continued degradation and loss of natural resources threatens our ability to meet our shared commitments to sustainable development, conservation and restoration, food security and combatting climate change. We underline the importance of increasing the resource efficiency and reducing the global environmental footprint of products and moving to more globally sustainable methods and patterns of consumption and production. We reaffirm our commitment to progress actions to increase resource efficiency and transition to a more circular economy, in line with the Bologna Roadmap, to reduce the pressure and adverse impacts on our natural environment, reduce resource use, maximise the value of materials through a life-cycle approach, curb biodiversity loss, and support climate mitigation and adaptation action and in doing so are determined to reduce pollution from all sources. We ask the G7 Alliance for Resource Efficiency to continue technical work on all aspects of the Bologna Roadmap and invite the next G7 Presidency to take stock of its implementation.

Deforestation

We recognise that deforestation, forest degradation and ecosystem conversion are global threats to our climate, biodiversity, food security and livelihoods and are driven by the expansion of agriculture, mining, logging and infrastructure projects. Agricultural expansion is the driver of around 80 percent of global deforestation. A significant proportion of this expansion is linked to the production of agricultural commodities, including particularly those traded internationally. We will increase our support for sustainable supply chains that decouple agricultural production from deforestation and forest degradation, including production stemming from illegal land conversion, and other negative impacts on

nature, in accordance with our national legislation, and commit to conserve, sustainably manage, restore and protect forests and other ecosystems. We will do this while promoting development and trade, including through participating in the dialogue between consumer and producer countries under the Forest, Agriculture and Commodity Trade (FACT) dialogue hosted by the UK as UNFCCC COP26 President, and through work by the International Tropical Timber Organisation. We will work with partners, including the private sector and producer countries, NGOs, as well as Indigenous Peoples, and local communities, to incentivise consumption of commodities that are not associated with deforestation and forest degradation. We will therefore enhance supply chain transparency and traceability, and if appropriate, develop regulatory frameworks or policies, which may include the introduction of due diligence requirements, to bring about trade that is environmentally, socially, and economically sustainable, and resilient, in order to achieve a successful green recovery. We look forward to discussions by G7 Trade Ministers on facilitating sustainable supply chains.

We reaffirm our commitment to the New York Declaration on Forests to end natural forest loss and, building on the Bonn Challenge, restore 350 million hectares of forest by 2030. We commit to support measures to strengthen forest governance, transparency, and the rule of law, while also empowering Indigenous Peoples as partners in decision-making as well as local communities. We also support measures that promote sustainable finance and tackle the drivers of forest loss and degradation, including efforts to enhance sustainable production and increasing the incentives for preventing deforestation, protecting intact forests and restoring degraded forests and lands. We recognise the need for enhanced monitoring of deforestation globally, regionally and nationally.

Illicit threats to nature

We recognise that the illegal wildlife trade (IWT), trafficking in timber and timber products, hazardous and other wastes, and precious metals, gemstones and other minerals, illegal logging and illegal, unreported and unregulated (IUU) fishing have a devastating impact on our natural environment and livelihoods, with an estimated full global economic value of over US$1 trillion to US$2 trillion per year. These activities drive biodiversity loss, corruption, money laundering, insecurity and other forms of organised criminal activities as well as undermining our efforts to tackle climate change and its impacts. We commit to continue our efforts to strengthen international and transboundary cooperation to tackle these crimes and harmful activities.

We acknowledge that wildlife trafficking is a serious crime, often carried out by transnational organised criminal networks linked to other forms of organised crimes and commit to take urgent and collective action to address this criminal activity in a way that reflects and acknowledges the serious nature of this crime. We remain robustly committed to delivering on our commitments within the 2018 London Declaration and will work to strengthen the capacity of law enforcement authorities and judiciaries in investigating, prosecuting and adjudicating wildlife-related offences where needed. We note proposals to discuss options inter alia to strengthen the international criminal legal framework to effectively combat such offences including prevention, while maintaining our focus on making the best possible use of existing international mechanisms, strengthening legislation, international cooperation, capacity building, criminal justice responses, and law enforcement efforts to strengthen our response. We commit to increase our efforts to reduce the demand for IWT products by developing targeted and evidence-based interventions in order to inform consumer behaviour and close markets where these illegal products are trafficked and sold. We will review our administrative, preventative and criminal justice responses to wildlife and forest crime using the International Consortium on Combatting Wildlife Crime's (ICCWC) Wildlife and Forest Crime Analytic Toolkit. We welcome the discussions by Finance Ministers on strengthening beneficial ownership transparency to better tackle the illicit financial flows stemming from IWT and other illicit threats to nature and welcome the work of the Financial Action Task Force and its recommended actions in this area.

We recognise that IUU fishing remains one of the most serious threats to a healthy ocean, depleting fish stocks, distorting competition, destroying marine habitats and jeopardising international efforts to promote better ocean governance and effectively and sustainably manage fisheries. We recognise the importance of concerted international action to deter IUU fishing, including through support for developing countries. Urgent efforts are needed to prohibit harmful fisheries subsidies that contribute to overfishing, overcapacity and IUU fishing. We commit to concluding the ongoing WTO negotiations as swiftly as possible in order to ensure that a meaningful agreement is reached that delivers effective disciplines.

Building on the outcomes of the Canadian G7 Presidency, we commit to ending IUU fishing by ensuring strong measures are effectively implemented and enforced, such as the Catch Documentation Schemes (CDS) to increase traceability, including those used by RFMOs and other relevant bodies for certain

species; a commitment to develop and enforce more robust Port State measures including by effectively implementing the UN Food and Agriculture Organization (FAO) Port State Measures Agreement (PSMA) and other relevant initiatives, as well as increasing Monitoring, Control and Surveillance (MCS) activities to help tackle IUU fishing. We highlight the importance of bilateral agreements that include mechanisms that effectively address IUU fishing, in particular through effective regulation and enhanced monitoring of fisheries activities, transhipments, landings, and trade in fish and fish products. We also commit to the enhanced sharing of information, intelligence, and best practice and expertise in tackling IUU fishing, acknowledging that international cooperation is the most effective way to tackle this issue.

Recognising that illicit threats to nature deprive some of the world's poorest communities of sustainable forms of living income, we commit to mobilise public and private support for sustainable livelihoods as an alternative to these activities. We recognise the importance of Indigenous Peoples, and local communities, in protecting forests and natural habitats and supporting sustainable land use. We further recognise the importance of securing the legal recognition of the right of Indigenous Peoples to the lands, territories and resources which they owned, occupied, or otherwise used or acquired as acknowledged in national law and international instruments. We also recognise the importance of securing applicable resource and legitimate tenure rights of persons belonging to local (or other) communities, women, and persons in marginalised groups as acknowledged in national law and international instruments. We underline the importance of engagement with these groups to co-develop solutions to these issues, including land tenure rights.

Ocean Action

We recognise that the health of our seas and ocean is critical to the economic, social and environmental well-being of people and the planet, and has a vital role in supporting biodiversity, providing ecosystem services including regulating our climate. Yet the ocean and seas are under significant threat from human actions. Overfishing, IUU fishing, overexploitation of marine habitats and resources, the introduction of invasive alien species, pollution, including marine litter, other anthropogenic pressures on ocean habitats, microplastics, underwater noise are major drivers of marine biodiversity loss. At the same time, climate change is leading to sea level rise, extreme weather events, ocean warming and influences stratification, reduced oxygen levels and shifts in marine resources, which also impact marine biodiversity. Increased carbon dioxide absorption is also leading to

increased ocean acidification. We acknowledge with concern the recent high-level findings from the IPCC Report on Climate Change on the Ocean and Cryosphere. Building on the outcomes of the Canadian and other G7 Presidencies, including the Charlevoix Blueprint for Healthy Oceans, Seas and Resilient Coastal Communities, we commit to support the UN Decade of Ocean Science for Sustainable Development (2021-2030) and work towards its goals, which include the global ocean being clean, healthy and resilient, productive, safe, predicted, accessible and inspiring and engaging. We recognise the value of robust and continuous scientific observation and cooperation to ensure a sustainable ocean for all and to support the science-based implementation of commitments under the 2030 Agenda, SDGs, the CBD, the Paris Agreement and within UNEA resolutions. We will continue our efforts to strengthen the conservation, protection and restoration of coral reefs, mangroves, seagrass beds, salt marshes, polar regions and other ecosystems and we recognise the value of blue carbon ecosystems, which can provide climate resilience benefits while also sequestering carbon. We recognise the importance of sustainable resilience for coastal communities and marine ecosystems and will strengthen our support for the Ocean Risk and Resilience Action Alliance (ORRAA).

We commit to upholding the UN Convention on the Law of the Sea (UNCLOS) which sets out the legal framework within which all activities in the ocean and seas must be carried out, including for the conservation and sustainable use of the ocean and seas. We will work to expeditiously conclude, if possible by the end of 2021, the negotiation of a new and ambitious international legally binding instrument under UNCLOS on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction which will include a clear obligation to conserve and sustainably use marine biodiversity and include a mechanism to establish Area-Based Management Tools (AMBTs), including Marine Protected Areas (MPAs) and will aid the implementation of intended new marine targets, recognising our commitment to support global 30by30 for the ocean.

As an example of the kind of action that needs to be taken to protect and conserve the ocean, we fully support the commitment by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) to develop a representative system of MPAs in the Convention Area. This should be based on the best available scientific evidence, the proposals to establish MPAs in East Antarctica, in the Weddell Sea and in the Antarctic Peninsula, and taking full consideration of the CCAMLR Convention.

Recognising that marine litter continues to pollute the ocean worldwide, has adverse impacts on marine life through ingestion and entanglement, as well as damaging habitats and people's livelihoods, and with possible impacts on food safety and human health, we are determined to accelerate action to tackle sources of marine litter, building on national, regional and global efforts, noting the example of the G7 Action Plan to Combat Marine Litter, the Osaka Blue Ocean Vision, and the G20 Implementation Framework for Actions on Marine Plastic Litter and the Ocean Plastics Charter as appropriate. We acknowledge that there are a number of key contributors to marine litter, including inadequate management of land-based sources, and abandoned, lost and otherwise discarded fishing gear, also known as Ghost Gear, which has a significant direct impact on marine life. Effective policies, practices and management measures to address these issues need to be taken nationally, regionally and internationally by all countries, in partnership with relevant stakeholders, including industry and NGOs. Concerning fishing gear loss and its retrieval, we commit to working through relevant international and regional frameworks to address Ghost Gear including by the FAO, IMO, RFMOs and the Regional Seas Conventions and will work with or support other initiatives such as the Global Ghost Gear Initiative (GGGI). We will collaborate through concrete actions such as gear marking and retrieval and will support and expand existing efforts to address ghost gear as appropriate, including through the implementation of the UN FAO voluntary guidelines on the marking of fishing gear. We note with interest the contribution to the debate of the OECD report Towards G7 Action to Combat Ghost Fishing Gear, and will carefully consider its recommendations.

Recognising the scale, urgency and transboundary nature of the global action needed to tackle marine plastic litter and microplastics, including by considering a life-cycle approach, we welcome the work of the ad hoc open-ended expert group (AHEG) established by UNEA resolution 3/7 and extended by UNEA resolution 4/6 towards UNEA 5.2, and will fully engage in discussions or negotiations on the options identified, with the aim of taking a step forward on that occasion on suggested options which include strengthening existing instruments, a potential new global instrument, and multi-stakeholder engagement. We look forward to the forthcoming OECD study on existing MDB resources that address marine litter, prepared in cooperation with the G7 Alliance for Resource Efficiency.

We welcome the discussions of the Expanded Future of the Seas and Oceans Working Group and endorse the G7 Ocean Decade Navigation Plan establishing

a framework for ambitious and collaborative action under the UN Ocean Decade. This framework will advance the ocean science needed to underpin ocean action, with direct reference to the UN Ocean Decade, its societal outcomes and other international agreements. We commit to work closely with international and regional partners and organisations, including the Intergovernmental Oceanographic Commission (IOC) of UNESCO, to support the UN Ocean Decade and its societal outcomes. We welcome the ongoing work of the G7 Future of the Seas and Oceans Initiative and will continue to support its programme of activities, including to share best practice, and advance scoping activities such as to develop a digital twin ocean, work towards net zero oceanographic capability, and evaluate global ocean indicator frameworks.

Food Loss and Waste

We recognise that one third of food produced for human consumption is lost or wasted globally, and that food grown but never eaten consumes an estimated 250 km3 of fresh water per year and requires an estimated 1.4 billion hectares land area. Furthermore, food loss and waste produces an estimated 8 percent of global GHGs. We note with concern the recent estimate within UNEP's Food Waste Index Report 2021 that 931 million tonnes of food waste was generated globally in 2019 at the level of retail, food service and households, which represents 17percent of food available for consumption. We acknowledge the importance of reducing food loss and waste in improving food security, particularly in the most vulnerable communities, mitigating climate change and land degradation and protecting biodiversity. We welcome the upcoming UN Food Systems Summit which will highlight the need to put sustainable food systems at the centre of efforts to meet the 2030 Agenda and its SDGs. We reaffirm our commitment to achieve SDG 12.3 and commit to utilise a "Target, Measure, Act" approach and establish national targets to reach that goal.

We further commit to measure food loss and waste in accordance with the transparent methodologies outlined in the Food Loss and Waste Accounting and Reporting Standard and consistent with the requirements of international reporting under SDG 12.3. We will establish national baselines and goals against which progress can be measured. We will implement actions to support food supply chains and households to reduce food loss and waste and promote the adoption of sustainable food consumption and production through circular economy and resource efficiency approaches. Our actions will include encouraging collaboration and cooperation between public, private and civil society actors, the adoption of innovative business models and technologies,

redistribution of surplus food, the promotion of youth and wider public education and behaviour change programmes across all sectors on food loss and waste prevention. Food no longer intended for human consumption should be prevented from becoming waste through use as animal feed or reprocessing into new products, whilst ensuring that all safety and related requirements are met. Recalling our commitments under the Bologna Roadmap, and recognising that approximately 60 percent of global food waste occurs in households, we welcome the discussions of the G7 Alliance for Resource Efficiency on key components that support action to reduce food waste at the household level, and the Presidency Summary of the discussion. We further welcome the G7 Alliance for Resource Efficiency document highlighting examples of best practice across the G7 to address this issue.

Conclusion

We express our appreciation to the Formal G7 Engagement Groups and other partners for their important contributions to the UK's G7 Presidency. We look forward to continuing our collaborative efforts on these and other issues under the German G7 Presidency in 2022.

21/05/2021

https://www.ofgem.gov.uk/publications-and-updates/ofgem-delivers-300-million-down-payment-rewire-britain

Ofgem delivers £300 million down payment to rewire Britain

Publication date

24th May 2021

Information types

- Press releases

Policy areas

- Electricity - distribution
- Electricity - transmission

- £300 million investment for over 200 low carbon projects to get Britain ready for more electric transport and heat.
- New infrastructure to support 1,800 new ultra-rapid charging points at motorway service areas.
- Part of a broader investment programme for safe, secure and clean energy, with £40 billion confirmed already and more to follow in 2022.

Ofgem is today powering the electric vehicle revolution, with motorway service areas and key trunk road locations across the country set to get the cabling they need to install 1,800 new ultra-rapid charge points, tripling the current network.

A further 1,750 charge points will be supported in towns and cities. As drivers make the switch from petrol and diesel to electric, Britain's cables, substations and other infrastructure need a massive upgrade to support this new demand for electricity.

The investment will be delivered in the next two years and is part of a much bigger plan to ensure Britain has the energy infrastructure it needs to support the move to low carbon transport and heating while maintaining secure supplies. The magnitude of this investment is expected to be in the order of over £40 billion through Ofgem's regulation of energy networks.

Every region in Britain will benefit from today's announcement, with 204 net zero projects worth £300.5 million across England, Scotland and Wales. These shovel-ready, low carbon projects start this year, supporting clean transport and heat, and opening up local electricity grids to take on more low carbon generation.

While electric car ownership is on the rise, Ofgem research has found that 36% of households that do not intend to get an electric vehicle are put off making the switch over

a lack of charging points near their home. An extensive motorway charging network and more charging points in cities and train stations will help address this ‘range anxiety’, so Ofgem is accelerating investment to boost charge point installation.

Cities like Glasgow, Kirkwall, Warrington, Llandudno, York and Truro will benefit from increased network capacity to support more ultra-rapid charge points, increased renewable electricity generation and the move to more electric heating for homes and businesses. Investment also covers more rural areas with charging points for commuters at train stations in North and Mid Wales and the electrification of the Windermere ferry.

Jonathan Brearley, chief executive of Ofgem said:

“This £300 million down payment is just the start of building back a greener energy network which will see well over £40 billion of investment in Britain’s energy networks in the next seven years.

“The payment will support the rapid take up of electric vehicles which will be vital if Britain is to hit its climate change targets. Drivers need to be confident that they can charge their car quickly when they need to. We’re paving the way for the installation of 1,800 ultra-rapid charge points, tripling the number of these public charge points. Drivers will have more charging options for longer journeys.

“In the year that Glasgow hosts the COP26 climate summit, the energy networks are rising to the challenge and working with us and partners to accelerate projects that can start now, benefiting consumers, boosting the economy and creating jobs.”

Rachel Maclean, Transport Minister said:

“I warmly welcome today’s news from Ofgem, which will greatly improve the resilience of our charging network as we build back greener.

“With more than 500,000 electric cars now on UK roads, this will help to increase this number even further as drivers continue to make the switch to cleaner, greener vehicles.”

David Smith, chief executive at ENA which represents the UK and Ireland’s energy networks businesses said:

“With just a few months left until COP26 we are delighted to have been able to bring forward such a crucial enabler of the Prime Minister’s green recovery ambitions. Delivering a green recovery for seas, skies and streets, over £300m of electricity distribution network investment will enable wide-ranging projects which help tackle some of our biggest Net Zero challenges, like electric vehicle range anxiety and the decarbonisation of heavier transport.

“This new funding shows the social, economic and environmental benefits that can be brought forward by industry working closely with a flexible regulator.”

Keith Bell, Member of the Climate Change Committee, said:

“This joint initiative by Ofgem and the electricity distribution network companies is a welcome development, showing flexibility in the regulatory arrangements in the long-term interests of energy users. On the journey to Net Zero, we need to make it as easy as possible for people to manage without their combustion engine cars. Electric vehicles are looking more and more attractive, but we need to make sure they can be charged easily, and that means having the right infrastructure – charge points and network capacity – in the right place at the right time.

“As well as enabling charging of electric vehicles and the electrification of heat, network investment will provide support for supply chains and, where projects require expansion of the workforce, the creation of new jobs. It will be an essential complement to a smarter power system where innovative information technology and attractive energy tariffs for consumers will ensure we make best use of our electricity system infrastructure.”

Ofgem, the Energy Networks Association and each of the Distribution Network Operators (DNOs) launched a call for evidence in February for energy networks to come forward with projects that could help Britain reach net zero emissions faster and support the economy as the country comes out of the pandemic.

Last year, Ofgem announced its greenest ever price control with billions invested into network companies and the system operator from April this year. The regulator has also indicated that it will allow billions more investment and better use of flexible technologies and innovations for the local electricity networks from 2023.

Notes for editors

1. This phase of Ofgem’s Green Recovery programme is focussed on the local electricity grids within the current price control. Ofgem is working with the transmission and gas distribution companies to develop further opportunities within their recently confirmed funding settlements.

2. More information about the projects being announced today can be found in our decision document. RIIO-ED1 Green Recovery Scheme

3. Today’s announcement is the outcome of February’s call for evidence from Ofgem, the Energy Networks Association and each of the Distribution Network Operators. Energy networks set to power up the Green Recovery – Energy Networks Association (ENA)

4. Ofgem announced a £40 billion investment programme in December. Ofgem gives go-ahead to a £40 billion+ investment programme for a stronger, greener and fairer GB energy system | Ofgem

5. There will be further investment from 2023 in Ofgem’s Electricity Distribution price control. Ofgem boosts investment for Britain’s electricity networks | Ofgem

6. Local electricity grids are run by Distribution Network Operators. DNOs across Britain are responsible for carrying electricity from the high voltage transmission grid to industrial, commercial, and domestic users. The 14 DNOs in Britain are each responsible for a regional distribution services area, and are owned by six different groups. These groups include:

- Electricity North West Limited (ENWL);
- Northern Powergrid (NPg);
- Scottish and Southern Energy Networks (SSEN);
- SP Energy Networks (SPEN);
- UK Power Networks (UKPN); and
- Western Power Distribution (WPD).

7. There are currently 918 ultra-rapid charge points in the UK. How many charge points are there in the UK 2021 (zap-map.com)

8. 39 motorway service areas will benefit from today's announcement

9. On Friday Ofgem published research that include barriers to consumers buying electric vehicles One in four consumers plan to buy an electric car in next five years according to Ofgem research | Ofgem

10. The UK Government's target is to have at least 6 high powered, open access charge points at motorway service areas in England, with more for larger sites Government vision for the rapid chargepoint network in England - GOV.UK (www.gov.uk)

For media, contact

Will Staynes: 07976534730

Department for Transport statistics
Vehicle Licensing Statistics (https://www.gov.uk/government/collections/vehicles-statistics)

Table VEH0101
Licensed vehicles at the end of the quarter by body type, Great Britain from 1994 Q1; also United Kingdom from 2014 Q3
United Kingdom Thousand / *Percentage*

			Goods vehicles						
Quarter	Cars	Motorcycles	Light Goods Vehicles	Heavy Goods Vehicles	Total	Buses and coaches	Other vehicles [1]	Total	Year-on-year change in total vehicles [2]
2014 Q3	30,871.1	1,368.2	3,612.0	502.3	4,114.3	172.2	737.6	37,263.5	.
2014 Q4	30,513.3	1,240.2	3,569.6	496.8	4,066.4	168.6	726.3	36,714.8	.
2015 Q1	30,671.8	1,228.2	3,607.2	495.7	4,102.9	168.3	725.0	36,896.2	.
2015 Q2	30,944.4	1,325.5	3,673.9	502.4	4,176.3	169.5	732.7	37,348.4	.
2015 Q3	31,154.3	1,340.7	3,726.0	506.8	4,232.8	169.9	738.0	37,635.8	*1.0*
2015 Q4	31,170.7	1,253.1	3,736.0	506.2	4,242.2	168.2	736.3	37,570.6	*2.3*
2016 Q1	31,388.7	1,251.1	3,778.5	505.6	4,284.1	167.6	738.9	37,830.5	*2.5*
2016 Q2	31,626.3	1,339.3	3,843.2	513.8	4,357.0	168.6	745.9	38,237.2	*2.4*
2016 Q3	31,813.9	1,355.6	3,893.6	517.9	4,411.5	169.0	754.1	38,504.1	*2.3*
2016 Q4	31,792.3	1,270.2	3,889.7	517.1	4,406.8	167.1	751.9	38,388.2	*2.2*
2017 Q1	32,023.8	1,269.1	3,929.6	515.4	4,445.0	166.6	756.2	38,660.7	*2.2*
2017 Q2	32,170.4	1,354.4	3,982.1	522.9	4,504.9	167.1	773.7	38,970.6	*1.9*
2017 Q3	32,302.8	1,354.1	4,025.8	525.7	4,551.5	166.7	780.4	39,155.5	*1.7*
2017 Q4	32,159.9	1,255.9	4,011.3	523.3	4,534.7	164.0	778.8	38,893.3	*1.3*
2018 Q1	32,313.9	1,241.2	4,045.3	520.7	4,566.0	163.1	773.8	39,058.0	*1.0*
2018 Q2	32,471.3	1,345.8	4,094.7	525.2	4,620.0	163.4	776.4	39,377.0	*1.0*
2018 Q3	32,578.2	1,361.5	4,132.8	526.7	4,659.6	162.9	790.0	39,552.2	*1.0*
2018 Q4	32,493.3	1,265.1	4,127.6	524.6	4,652.1	160.5	793.5	39,364.6	*1.2*
2019 Q1	32,670.0	1,279.8	4,171.6	522.7	4,694.3	159.3	791.6	39,594.8	*1.4*
2019 Q2	32,833.4	1,358.1	4,224.6	529.8	4,754.5	159.7	798.9	39,904.6	*1.3*
2019 Q3	32,973.2	1,369.0	4,260.0	528.3	4,788.3	159.1	803.9	40,093.5	*1.4*
2019 Q4	32,884.3	1,273.4	4,246.3	525.8	4,772.1	157.5	803.2	39,890.5	*1.3*
2020 Q1	32,653.8	1,253.2	4,201.7	492.8	4,694.4	130.5	800.9	39,532.8	*-0.2*
2020 Q2	32,608.7	1,330.1	4,220.8	489.6	4,710.4	128.0	780.1	39,557.2	*-0.9*
2020 Q3	32,869.9	1,384.3	4,342.5	507.9	4,850.5	144.4	806.3	40,055.4	*-0.1*
2020 Q4	32,697.4	1,297.8	4,348.4	510.1	4,858.5	141.5	805.7	39,800.9	*-0.2*

1. Includes rear diggers, lift trucks, rollers, ambulances, Hackney Carriages, three wheelers, tricycles and agricultural vehicles.
2. A comparison between the stock at the end of the quarter with the stock at the end of the same quarter of the previous year.

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Email: vehicles.stats@dft.gov.uk
Notes & definitions: https://www.gov.uk/government/publications/vehicles-statistics-guidance

Source: DVLA/DfT
Last updated: 13 May 2021
Next update: July 2021

Canada's top pension funds boost investments in high-carbon oil sands
2021-05-26 10:18:51.868 GMT

Canada's top pension funds boost investments in high-carbon oil sands

May 26 (National Post) -- TORONTO - Canada's biggest pension managers boosted their investments in the country's major oil sands companies in the first quarter of 2021, raising questions about the funds' recent commitments to greening their portfolios.

The cumulative investment by the country's top five pension funds into the U.S.-listed shares of Canada's top four oil sands producers jumped to $2.4 billion in the first quarter of 2021, up 147% from a year ago, a Reuters analysis of U.S. 13-F filings show. Much of that increase, which bucked a declining trend since 2018, came from rising prices of shares already owned, but the funds also purchased more shares.

The five funds, in order of size, are Canada Pension Plan Investment Board (CPPIB), Caisse de dépôt et placement du Québec (CDPQ), Ontario Teachers' Pension Plan (OTPP), British Columbia Investment Management Corp (BCI) and the Public Sector Pension Investment Board (PSP), which together manage more than C1.4 trillion ($1.2 trillion) in assets.

Governments, companies and investors around the world have stepped up pledges to drastically reduce climate-warming greenhouse gas emissions. Some large pension managers, including the New York State Pension Fund and Norway's largest pension fund KLP, have exited oil sands companies.

Canadian pensions face pressure to balance a mandate to be environmentally responsible with their fiduciary duty to maximize returns. Canada's oil sands are a high-carbon industry, yet their rising shares prices are tempting for investors.

Some Canadian pension funds say they favor continuing to invest in fossil fuel producers to help those firms transition toward producing cleaner energy.

"We have a big problem with pension funds saying we believe in engagement, not divestment, but there's no sign of this engagement," said Adam Smith, director of pension activist group Shift. "The very act of owning them (oil sands companies) implies the funds do not support transition."

While first-quarter exposures to oil sands firms have risen, annual reports show three of the five pension funds decreased their overall energy exposure in 2020 from 2019. But the 13-F filings present a more up-to-date picture.

For details on Canadian pensions exposure to top oil sands producers:

Compared with same period in 2018, the funds' investments in the four oil sands firms were down 0.9%.

While the Reuters analysis is restricted to four companies - Canadian Natural Resources Ltd, Suncor Energy, Cenovus Energy

and Imperial Oil - it provides a glimpse into the funds' investments in northern Alberta's oil sands, the source of the highest emissions-per-barrel oil on the planet, according to a 2020 report from consultancy Rystad Energy.

CDPQ, OTPP and PSP decreased their cumulative exposure to energy to C$22.2 billion in 2020, from $28.2 billion in 2019, according to annual reports.

But CPPIB, which manages C$497.2 billion in assets, saw exposure to fossil fuel producers rise 51.5% to C$17.6 billion at the end of March 2021, after falling for at least five years. The fund's investments in renewable energy producers rose 16% to C$7.7 billion over the last year by comparison.

CPPIB declined to comment on the 13-F holdings data.

BCI's annual reports do not break out energy investments as a percentage of overall holdings. Spokesman Ben O'Hara-Byrne said numerous factors affect changes in holdings, so percentages should not be used to derive assumptions about BCI's response to environmental, social and governance (ESG) "integration efforts."

A spokeswoman for PSP Investments said many of the investments were held in so-called "passive" portfolios containing a mix of assets based on a stock index designed to match overall market moves.

CDPQ did not comment specifically on its oil sands holdings, but a spokesman said fossil fuels represent a very small share of total assets owned by fund, which is targeting a carbon neutral portfolio by 2050.

OTPP has also committed to a net-zero portfolio by 2050 and will focus on climate-friendly investments that help shift away from fossil fuels, a spokesman said. ($1 = 1.2049 Canadian dollars)

(Reporting by Maiya Keidan and Nia Williams Editing by Denny Thomas and David Gregorio)

-0- May/26/2021 10:18 GMT

To view this story in Bloomberg click here:
https://blinks.bloomberg.com/news/stories/QTPLZF073NCW

Dan Tsubouchi @Energy_Tidbits · 2h

Expect increased financial capacity costs to NM #Oil co's for reclamation. @SGR4NM warns actions to come as "No one can afford these obligations if they have gone bankrupt, so we need companies to be adequately bonded on the front end." She also warns CO is also reviewing. #OOTT

https://www.abqjournal.com/2392350/81b-needed-to-remediate-clean-up-nm-wells.html

$8.1B needed to remediate, clean up NM wells

BY STEPHANIE GARCIA RICHARD / NM COMMISSIONER OF PUBLIC LANDS
Thursday, May 20th, 2021 at 12:05am

New Mexico's oil and gas industry is inadequately bonded to the tune of $8.1 billion. According to a study released today by the Center for Applied Research, $8.1 billion will be needed to fill the gaps where existing financial bonds won't cover the cost to fully clean up and remediate over 60,000 wells, 35,000 miles of pipeline, and other miscellaneous infrastructure. A little over a year ago I wrote an op-ed that was published in this paper, warning that New Mexico wasn't financially equipped to restore our lands when the oil and gas industry next faltered.

At that time, I was urging public support of House Memorial 29, which sought an in-depth study to determine the statewide inadequacies in our bonding requirements for the industry. We drastically needed this information. If the bottom fell out, like it has done before, and companies went bankrupt as a result, the responsibility to clean it up would fall on you, as taxpayers, and on the State Land Office that I oversee, an agency that exists to raise money to support our public schools. It is my belief, and I hope you share it, that neither you nor our schools should be on the hook to foot this massive bill. A month after I wrote that op-ed, the reality I warned of was on our doorstep with the onset of the COVID-19 pandemic. Oil and gas prices fell to negative numbers, demand evaporated overnight, and there was nowhere to store excess product.

Luckily for now, the industry has stabilized, but we still need answers to these long-term questions. With the support of a huge amount of data provided by my staff at the State Land Office, along with Gov. Michelle Lujan Grisham and her staff

> **Commissioner Stephanie Garcia Richard** @SGR4NM · May 20
>
> Read my op-ed in today's @ABQJournal about the #NMBondingStudy out today from the Center for Applied Research. In short, we face an over $8 billion bill for cleaning up our lands. That's more than our entire state budget for a year. #nmpol #nmleg
>
> ...

1 2

Dan Tsubouchi @Energy_Tidbits · 3h

Thurs @Amb-Ulyanov says advanced stage of elaboration. Now this should be final round. Infers US and Iran spent last 3 days on how to close critical remaining details. Based on this tweet, seems some sort of #JCPOA agreement in principle should be coming in coming days? #OOTT

> **Mikhail Ulyanov** @Amb_Ulyanov · 4h
>
> The fifth round of the Vienna talks on #JCPOA is under way. As of now, there are no plans for the sixth. The negotiators proceed from the understanding that the current round should be final.
> twitter.com/sanmantanas/st...

2

Dan Tsubouchi @Energy_Tidbits · May 29

one of the joys of living in the cdn rockies is that you see wildlife every day in town. in this case a bit group of white tailed deer along three sisters in #Canmore. could tell if any were the 2021 fawns

4

Dan Tsubouchi @Energy_Tidbits · May 29

Looks like @JustinTrudeau to remove hotel quarantine upon return to 🇨🇦. UK says "leaders looked forward to seeing each other in Cornwall in two weeks' time." why not say so, he isn't flying commercial and worried about not getting a seat.

PM call with Canadian Prime Minister Justin Trudeau: 28 May 2021

Prime Minister Boris Johnson spoke to Canadian Prime Minister Justin Trudeau this afternoon.

gov.uk

4

Dan Tsubouchi @Energy_Tidbits · May 29

Also hits all E&P that drive US #Oil #NatGas production growth. note #BidenBudget repeals expensing of intangible drilling costs. Positive for #Oil #NatGas as means less US drilling. #OOTT

whitehouse.gov/wp-content/upl...

> **Dan Tsubouchi** @Energy_Tidbits · May 29
>
> Huge hit to US #FossilFuels #Oil #Gas from #BidenBudget total $53b in 2022-26 & $120b in 2022-31. Hits everyone from small E&P (repeal marginal wells credit) to supermajors (taxation of foreign fossil fuel income).
> #OOTT
>
> whitehouse.gov/wp-content/upl...
>
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2 11 17

Dan Tsubouchi @Energy_Tidbits · May 29

Huge hit to US #FossilFuels #Oil #Gas from #BidenBudget total $53b in 2022-26 & $120b in 2022-31. Hits everyone from small E&P (repeal marginal wells credit) to supermajors (taxation of foreign fossil fuel income). #OOTT

whitehouse.gov/wp-content/upl...

6 24 30

Dan Tsubouchi @Energy_Tidbits · May 28

Positive for #Oil. Engine No 1, after winning 2, maybe 3 board seats, says to $XOM "what we're saying is plan for a world where maybe the world doesn't need your [oil] barrels" "less oil and gas production going forward". thx @derek_brower #OOTT

Hedge fund that beat ExxonMobil says it will have to cut oil output

Activist Engine No 1 won at least two seats on major's board while raising climate alarms

ft.com

1 1

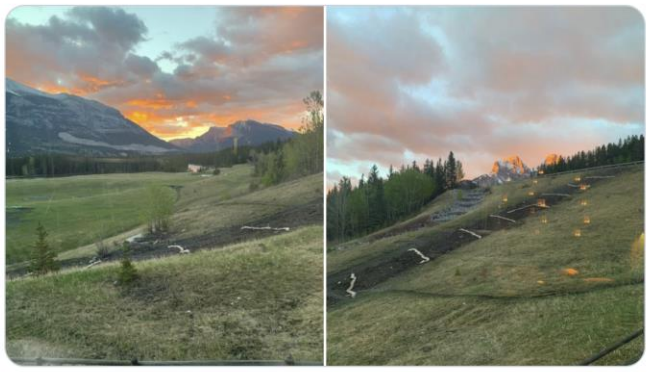
Dan Tsubouchi @Energy_Tidbits · May 28

"No, its not been cancelled altogether" says $TOT CEO Pouanne of its Mozambique #LNG when asked at AGM if the force majeure temp or has project been cancelled altogether. Didn't give an est for lifting force majeure.

2 3

Dan Tsubouchi @Energy_Tidbits · May 28

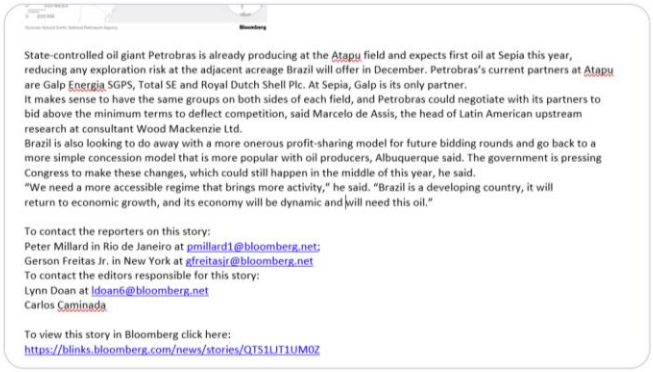
its clouded over now but a great sunrise earlier 5:30am in #Canmore in the Cdn Rockies looking over Bow River and towards two of the Three Sisters. But the elk are now out, still haven't seen the first sightings of 2021 elk calves yet.



4 13

Dan Tsubouchi @Energy_Tidbits · May 28

Big test for $TOT $RDSA $XOM in the face of climate challenges. Can they resist, Brazil to cut 2 deep water signing bonuses by 70%. Yes, if see #PeakOilDemand soon, but very tough to pass if they see increasing #PeakOilSupply gap. Thx @peterbmillard @gersonjr #OOTT



State-controlled oil giant Petrobras is already producing at the Atapu field and expects first oil at Sepia this year, reducing any exploration risk at the adjacent acreage Brazil will offer in December. Petrobras's current partners at Atapu are Galp Energia SGPS, Total SE and Royal Dutch Shell Plc. At Sepia, Galp is its only partner.
It makes sense to have the same groups on both sides of each field, and Petrobras could negotiate with its partners to bid above the minimum terms to deflect competition, said Marcelo de Assis, the head of Latin American upstream research at consultant Wood Mackenzie Ltd.
Brazil is also looking to do away with a more onerous profit-sharing model for future bidding rounds and go back to a more simple concession model that is more popular with oil producers, Albuquerque said. The government is pressing Congress to make these changes, which could still happen in the middle of this year, he said.
"We need a more accessible regime that brings more activity," he said. "Brazil is a developing country, it will return to economic growth, and its economy will be dynamic and will need this oil."

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To view this story in Bloomberg click here:
https://blinks.bloomberg.com/news/stories/QTS1LIT1UM0Z

1 1

Dan Tsubouchi @Energy_Tidbits · May 27

ICYMI. #Merkel didn't just raise disappointment so #Biden ok's #NordStream2 as "impose sanctions now I think is counterproductive to our European relations no matter how strongly I feel". He didn't feel nixing #KeystoneXL would be counterproductive to CAN relations? Hmm! #OOTT

SAF Group created transcript of President Biden's comments on White House lawn to Marek Walkuski, Polish White House Correspondent.

All items in "*italics*" are SAF Group created transcript.

Walkuski asked Biden *"Why are you letting Germany and Russia continue to build Nord Stream 2?"* Biden responded *"Because it's almost completely finished, number 1. It's not like I can allow Germany to do something or not. I have been opposed to Nord Stream 2 from the beginning but it was almost completed, by the time I took office. To go ahead and impose sanctions now I think is counterproductive to our European relations no matter how strongly I feel. I hope we can work on how they handle it from this point on".*

> **Dan Tsubouchi** @Energy_Tidbits · Jan 23
>
> 1/2. Big diff in political speak between raised vs discussed issues. @JustinTrudeau just "raised" disappointment in #KeystoneXL decision (@POTUS says i hear you). but "discussed" vaccines, sustainable recovery, diversity, working with indigenous parties ... #OOTT
>
> Show this thread

1 6 4

Dan Tsubouchi @Energy_Tidbits · May 27

#Biden to make it tougher on #Oil #Gas #Pipelines. #EPA "to restore" "bolster and tribal authority to protect water resources" ie. no fed permit unless state or Tribe signs off re Clean Water Act. Wonder if future ammo for MI to shut down #Line5? #OOTT
epa.gov/newsreleases/e...

EPA intends to reconsider and revise the 2020 CWA Section 401 Certification Rule to restore the balance of state, Tribal, and federal authorities while retaining elements that support efficient and effective implementation of Section 401. Congress provided authority to states and Tribes under CWA Section 401 to protect the quality of their waters from adverse impacts resulting from federally licensed or permitted projects. Under Section 401, a federal agency may not issue a license or permit to conduct any activity that may result in any discharge into navigable waters unless the affected state or Tribe certifies that the discharge is in compliance with the Clean Water Act and state law, or waives certification.

The agency's process of reconsidering and revising the 2020 CWA Section 401 Certification Rule will provide opportunity for public and stakeholder input to inform the development of a proposed regulation, and will include sustained dialogue with state and Tribal co-regulator partners and local governments around these issues. EPA will begin a stakeholder engagement process in June to hear perspectives on this topic and how to move forward. More information will be available at: www.epa.gov/cwa-401.

While EPA engages with stakeholders and develops a revised rule, the 2020 rule will remain in place. The agency will continue listening to states and Tribes about their concerns with implementation of the 2020 rule to evaluate potential administrative approaches to help address these near-term challenges.

Background

Executive Order 13990 on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis directed EPA to review and, as appropriate and consistent with applicable law, take action to revise or replace

3 2

Dan Tsubouchi @Energy_Tidbits · May 27

Yes DE is accelerating wind/solar but reliable power is why #Merkel wants #NordStream2. DE needs to add ~18 gigawatts or 60% more gas fired capacity to make up for shutting its 6 nukes and phase out of 1/2 coal by 2030. #NatGas provides reliability. Thx @JesperStarn @enappsys

The continental market is becoming increasingly tight with capacity shutting," she said. "Germany will become one of the premium-priced markets by 2026."

--With assistance from Rachel Morison.

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Helen Robertson

To view this story in Bloomberg click here:
https://blinks.bloomberg.com/news/stories/QTR776T0AFBB

1 2 1

Dan Tsubouchi @Energy_Tidbits · May 27

Just out, @DHSgov new cybersecurity requirements for critical pipeline owners & operators. must report "confirmed and potential cybersecurity incidents", 30 day period to review/identify gaps & remediation measures to address cyber risks. #OOTT #NatGas

dhs.gov/news/2021/05/2...

https://www.dhs.gov/news/2021/05/27/dhs-announces-new-cybersecurity-requirements-critical-pipeline-owners-and-operators

DHS Announces New Cybersecurity Requirements for Critical Pipeline Owners and Operators

Release Date:
May 27, 2021

Today, the Department of Homeland Security's Transportation Security Administration (TSA) announced a Security Directive that will enable the Department to better identify, protect against, and respond to threats to critical companies in the pipeline sector.

"The cybersecurity landscape is constantly evolving and we must adapt to address new and emerging threats," said Secretary of Homeland Security Alejandro N. Mayorkas. "The recent ransomware attack on a major petroleum pipeline demonstrates that the cybersecurity of pipeline systems is critical to our homeland security. DHS will continue to work closely with our private sector partners to support their operations and increase the resilience of our nation's critical infrastructure."

The Security Directive will require critical pipeline owners and operators to report confirmed and potential cybersecurity incidents to the DHS Cybersecurity and Infrastructure Security Agency (CISA) and to designate a Cybersecurity Coordinator, to be available 24 hours a day, seven days a week. It will also require critical pipeline owners and operators to review their current practices as well as to identify any gaps and related remediation measures to address cyber-related risks and report the results to TSA and CISA within 30 days.

TSA is also considering follow-on mandatory measures that will further support the pipeline industry in enhancing its cybersecurity and that strengthen the public-private partnership so critical to the cybersecurity of our homeland.

Since 2001, TSA has worked closely with pipeline owners and operators as well as its partners across the federal government to enhance the physical security preparedness of U.S. hazardous liquid and natural gas pipeline systems. As the nation's lead agency for protecting critical infrastructure against cybersecurity threats, CISA provides cybersecurity resources to mitigate potential risks, including through a dedicated hub that disseminates information to organizations, communities, and individuals about how to better protect against ransomware attacks. This new TSA Security Directive also highlights the critical role that CISA plays as the country's national cyber defense center. Last December, Congress, through the National Defense Authorization Act, empowered CISA to execute its mission to secure federal civilian government networks and our nation's critical infrastructure from physical and cyber threats.

1

Dan Tsubouchi @Energy_Tidbits · May 26

#JCPOA @LeviYonit asks @SecBlinken re Rouhani agreement in principle has been achieved. Blinken "i think that would be news to us" "remains an unanswered question whether Iran is actually prepared to do what it needs to do to come back into compliance." Thx @TheTerminal #OOTT

3 6

Dan Tsubouchi @Energy_Tidbits · May 26

Positive for #Oil. Hard not to see $XOM making some concessions, which can only lead to more capital reallocated from Oil & #NatGas to renewables & #EnergyTransition items. Hmm, investors are reshaping the strategy. #OOTT

Shareholder activism reaches milestone as Exxon board vote nears end

The showdown pitting Exxon Mobil Corp (XOM.N) against a tiny activist fund to determine the oil giant's board and future direction was too ...

reuters.com

3 1 4

Dan Tsubouchi @Energy_Tidbits · May 26

For those not near their laptop, EIA weekly #Oil #Gasoline #Distillates inventory data out. Prior to release, WTI was $65.58 #OOTT

ir.eia.gov/wpsr/overview....

Oil/Products Inventory May 21: EIA, Bloomberg Survey Expectations, API			
(million barrels)	EIA	Expectations	API
Oil	-1.66	-1.00	-0.44
Gasoline	-1.75	-1.10	-1.99
Distillates	-3.01	-2.00	-5.14
	-6.42	-4.10	-7.56
Note: SPR had 1.65mmb draw for May 21 week			
Note: Cushing had a 1.01 mmb draw for May 21 week			
Source EIA, Bloomberg			
Prepared by SAF Group			

2 7

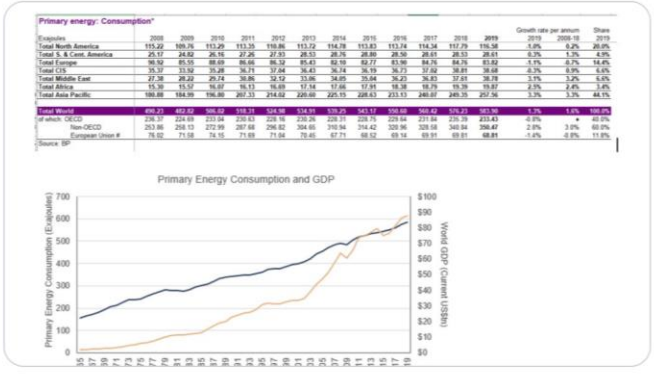
Dan Tsubouchi @Energy_Tidbits · May 26

Looks like #LunarEclipse is happening sooner than predicted time. it just started before 4am MT, this was #Calgary at 4am MT and 15 min later, it almost half covered. only issue is cloud cover has moved in so can only see some light thru the cloud

2 1

Dan Tsubouchi @Energy_Tidbits · May 25

Can the world incl Asia, Africa, etc, not just Europe pivot sharply to negative growth in total energy consumption but strong growth in GDP to hit IEA #NetZero? or will #EnergyTransition take longer, be a bumpy road and cost more ie. longer to demise of #Oil #NatGas. #OOTT



3 5 8

Dan Tsubouchi @Energy_Tidbits · May 25

Reminder we just moving into peak flood month of June along #Calgary Elbow River. covering a couple feet of neighbour's year but still at least several feet of river rise to go to June 19, 2013 big flood that brought a few feet of flooding on main floors on the other side.

2 1

Dan Tsubouchi @Energy_Tidbits · May 24

Speed bump or start of a bumpy road for next few years for continued higher #Solar #RenewableEnergy costs? Bad timing for big cost increases (ie. quadrupling of polysilicon) with solar deployment to accelerate for #NetZero. Thx @danmurtaugh @brianreports #EnergyTransition

2021-05-23 21:00:24.643 GMT

By Dan Murtaugh and Brian Eckhouse

(Bloomberg) -- A key selling point that made solar energy the fastest-growing power source in the world—rapidly decreasing costs—has hit a speed bump.

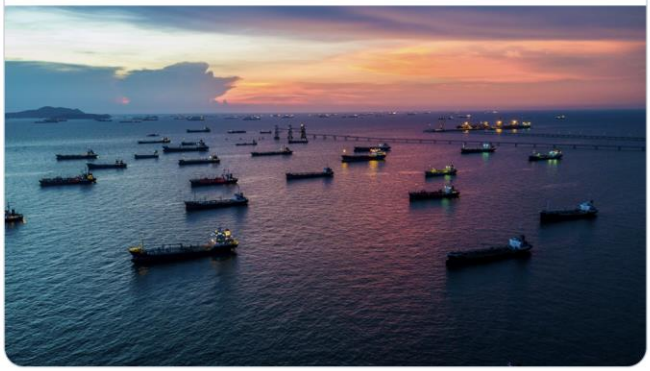
Solar module prices have risen 18% since the start of the year after falling by 90% over the previous decade. The reversal, fueled by a quadrupling in the cost of the key raw material polysilicon, threatens to delay projects and slow uptake of solar power just as several major governments are finally throwing their weight behind it in an effort to slow climate change.

4 9

Dan Tsubouchi @Energy_Tidbits · May 24

Less risk for massive Iran #oil to hit market post a return to #JCPOA. Yes, Iran floating oil & condensate is up in 2021 to 32 mmb, but about half of what it was in mid 2019. Reinforces Iran barrels are being absorbed and not sitting in tankers. Thx @Kpler @eklavyagupte #OOTT

> **Platts Oil** @PlattsOil · May 24
>
> Iran starts to store more barrels at sea ahead of potential sanctions relief | #crudeoil #JCPOA #OOTT
>
> * Around 32 million barrels of Iranian oil on water
> * Floating oil volumes have more than doubled since January
>
> @eklavyagupte story: plts.co/PxYG50EU6Yz

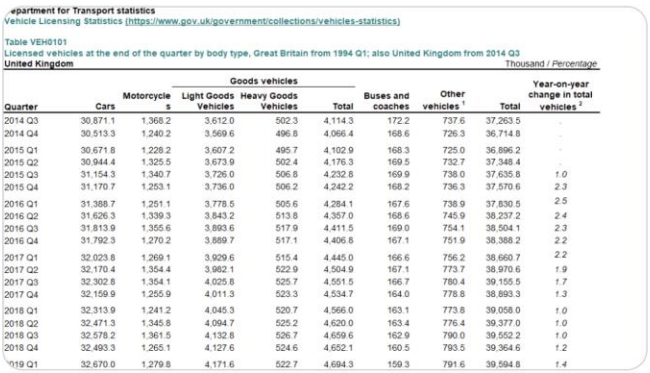


3 9

Dan Tsubouchi @Energy_Tidbits · May 24

#Ofgem adding cable (infra) to support 1,800 new ultra-rapid charging points at motorway service areas. Charging infra on the road and at home is big challenge, reminder 32.7 mm cars + 4.3 mm light duty vehicles in UK. #OOTT #EnergyTransition #EV

ofgem.gov.uk/publications-a...



epartment for Transport statistics
Vehicle Licensing Statistics (https://www.gov.uk/government/collections/vehicles-statistics)

Table VEH0101
Licensed vehicles at the end of the quarter by body type, Great Britain from 1994 Q1; also United Kingdom from 2014 Q3
United Kingdom — Thousand / Percentage

Quarter	Cars	Motorcycles	Goods vehicles: Light Goods Vehicles	Goods vehicles: Heavy Goods Vehicles	Goods vehicles: Total	Buses and coaches	Other vehicles [1]	Total	Year-on-year change in total vehicles [2]
2014 Q3	30,871.1	1,368.2	3,612.0	502.3	4,114.3	172.2	737.6	37,263.5	.
2014 Q4	30,513.3	1,240.2	3,569.6	496.8	4,066.4	168.6	726.3	36,714.8	.
2015 Q1	30,671.8	1,228.2	3,607.2	495.7	4,102.9	168.3	725.0	36,896.2	.
2015 Q2	30,944.4	1,325.5	3,673.9	502.4	4,176.3	169.5	732.7	37,348.4	.
2015 Q3	31,154.3	1,340.7	3,726.0	506.8	4,232.8	169.9	738.0	37,635.8	1.0
2015 Q4	31,170.7	1,253.1	3,736.0	506.2	4,242.2	168.2	736.3	37,570.6	2.3
2016 Q1	31,388.7	1,251.1	3,778.5	505.6	4,284.1	167.6	738.9	37,830.5	2.5
2016 Q2	31,626.3	1,339.3	3,843.2	513.8	4,357.0	168.6	745.9	38,237.2	2.4
2016 Q3	31,813.9	1,355.6	3,893.6	517.9	4,411.5	169.0	754.1	38,504.1	2.3
2016 Q4	31,792.3	1,270.2	3,889.7	517.1	4,406.8	167.1	751.9	38,388.2	2.2
2017 Q1	32,023.8	1,269.1	3,929.6	515.4	4,445.0	166.6	756.2	38,660.7	2.2
2017 Q2	32,170.4	1,354.4	3,982.1	522.9	4,504.9	167.1	773.7	38,970.6	1.9
2017 Q3	32,302.8	1,354.1	4,025.8	525.7	4,551.5	166.7	780.4	39,155.5	1.7
2017 Q4	32,159.9	1,255.9	4,011.3	523.3	4,534.7	164.0	778.8	38,893.3	1.3
2018 Q1	32,313.9	1,241.2	4,045.3	520.7	4,566.0	163.1	773.8	39,058.0	1.0
2018 Q2	32,471.3	1,345.8	4,094.7	525.2	4,620.0	163.4	776.4	39,377.0	1.0
2018 Q3	32,578.2	1,361.5	4,132.8	526.7	4,659.6	162.9	790.0	39,552.2	1.0
2018 Q4	32,493.3	1,265.1	4,127.6	524.6	4,652.1	160.5	793.5	39,364.6	1.2
2019 Q1	32,670.0	1,279.8	4,171.6	522.7	4,694.3	159.3	791.6	39,594.8	1.4

> **Dan Tsubouchi** @Energy_Tidbits · May 21
>
> Or 3 in 4 won't buy an #EV in next 5 yrs despite knowing only 8.5 yrs left until 2030 UK ICE sales ban. Need to get price down & eliminate driver linked concerns on battery life/ability to charge. #PeakOil demand and #EnergyTransition will just take longer to get here. #OOTT twitter.com/ofgem/status/1...

1 1

Dan Tsubouchi @Energy_Tidbits · May 24

Hmm! Be interesting how US investors respond to $COG $XEC merger of equals. Not the norm of consolidating within #Oil or #NatGas or a play. Rather combines #Marcellus gas & #Permian oil to create a diversified geographic, commodity, play company. #OOTT

Cabot Oil & Gas and Cimarex Energy to Combine i...
Creating a Premier, Diversified Energy Company with a Strong Free Cash Flow Profile; Positioned to Deliv...
cabotog.com

1 3

Dan Tsubouchi @Energy_Tidbits · May 23

Our weekly SAF May 23, 2021 Energy Tidbits memo was just posted to our SAF Group website. This 43-pg energy research piece expands upon and covers many more items than tweeted this week. See the research section of the SAF website. #Oil #OOTT #OPEC #LNG safgroup.ca/insights/trend...

Energy Tidbits

May 23, 2021

Produced by: Dan Tsubouchi

G7 Policymakers Make New Commitments On Energy Transition ie. Future Emissions Laws/Regulations That Are Coming

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:

3