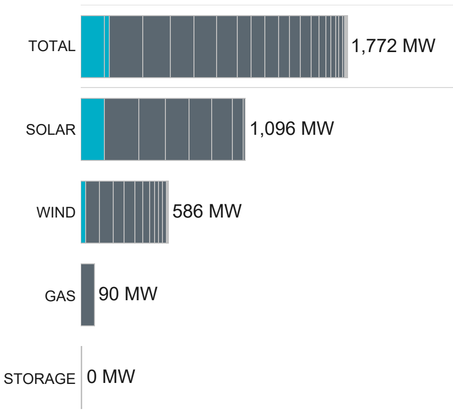
Summer 2020 Planned Project Forecast Review

A visualization looking at the success rates of planned projects forecasted to be available for summer 2020 in recent CDR and SARA reports.

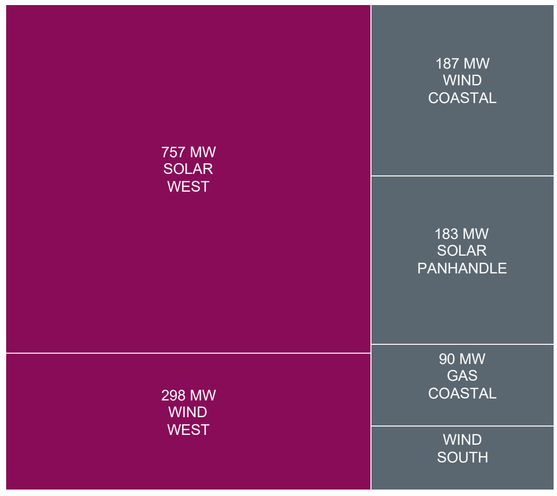
Note: The planned project forecasts in CDR and SARA reports represent the latest information from developers at the time of report creation. The Summer 2020 Final SARA and the May 2020 CDR report used RIOO information pulled on 5/1/2020.

Only **three** of the twenty-four planned projects (totaling **187 MW**) listed in the summer 2020 final SARA went commercial operational by June 1st, 2020.



MW totals based on Summer Peak Average Capacity Contribution.

67% of the 1,584 MW of delayed capacity was due to wind and solar projects located in the West CDR Zone.



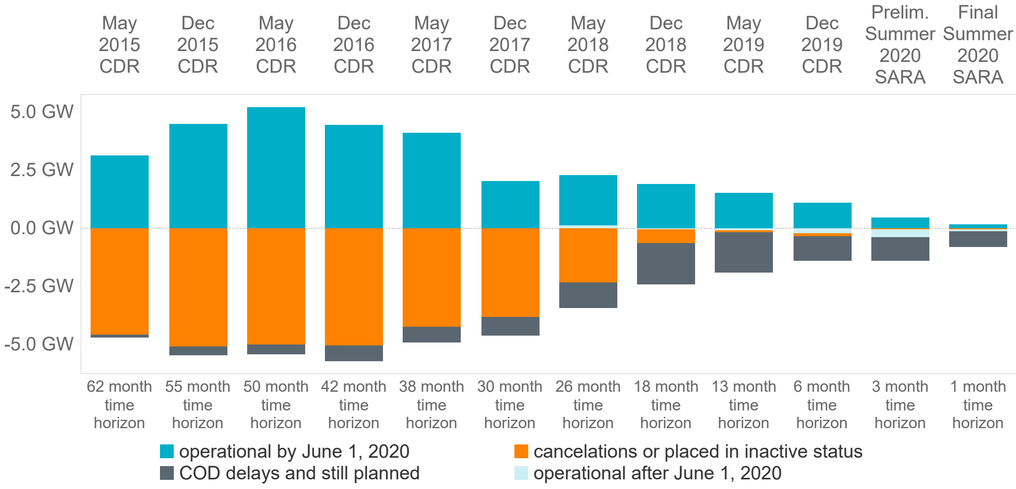
Although many projects listed in the Final Summer 2020 SARA did not reach commercial operations by the start of summer, several projects came online during the summer.

This type of behavior has occurred in recent summer seasons, as well.

A notable change is that the planned capacity listed in the final summer 2017 SARA was dominated by gas (88%), and the planned capacity listed in the 2020 report was dominated by solar (62%).

	Final Summer 2020 SARA	Final Summer 2019 SARA	Final Summer 2018 SARA	Final Summer 2017 SARA
Grand Total	1,772 MW	607 MW	728 MW	2,833 MW
operational by June 1st	**187 MW**		**215 MW**	**1,092 MW**
delayed but operational by July 1st	**399 MW**		**113 MW**	**1,112 MW**
delayed but operational by August 1st	**227 MW**		**226 MW**	
delayed but operational by Sep. 30th	**304 MW**	**437 MW**	**169 MW**	**623 MW**
delayed past Summer	**654 MW**	**170 MW**	**6 MW**	**6 MW**

Regarding project delays and project cancelations, the former occurred more frequently in short forecast time horizons (Final Summer 2020 SARA) and the latter more often in long forecast time horizons (May 2015 CDR).



Data Sources: CDR, SARA and GIS Reports, and GINR (RIOO-IS) data as of 1/1/2021

Design: ERCOT Resource Adequacy - Dan Mantena - dmantena@ercot.com

Planned Project Projected Commerical Operations Date (COD) Delays

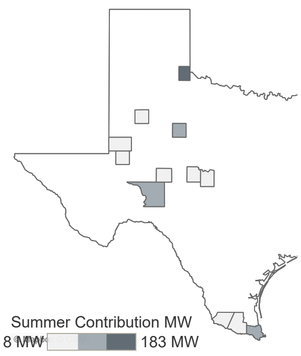
A visualization assessing the impact of COD delays in the Final Summer 2020 SARA report and the issues with trying to account for this behavior in future reports.

654 MW of 1,584 MW delayed capacity from the Final Summer SARA report was concentrated at wind and solar units located in West Texas and the Valley.

The 654 MW of delayed projects consisted of eleven wind units and two solar units, all of which seem to have had significant issues during the **generator commissioning process.**

These units have had difficulties completing the final step of the interconnection process—part 3 approval for commercial operations.

Part 3 approval consists of verifying various generator capabilities such as reactive capability, primary frequency response, and voltage control.

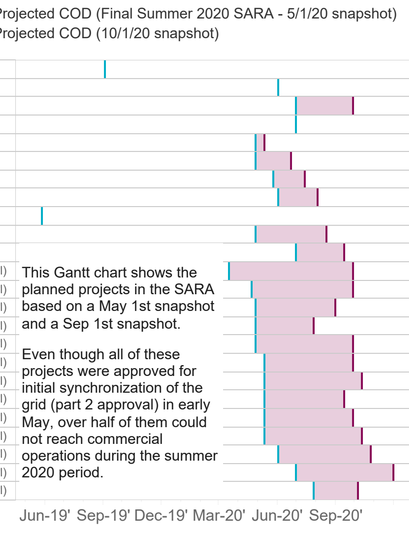


UNIT NAME	INR	INITIAL SYNC. TO GRID (PART 2)	DAYS SINCE PART 2 APPROVAL	COMMERCIAL OPERATIONS (PART 3)	SUMMER PEAK AVG. CAPACITY CONTRIBUTION MW
MISAE SOLAR	18INR0045	1/16/2020	**351**	N/A	183 MW
PALMAS ALTAS WIND	17INR0037	12/10/2019		11/12/2020	91 MW
HIGH LONESOME W	19INR0038	11/26/2019	**402**	N/A	72 MW
WHITEHORSE WIND	19INR0080	12/27/2019	**371**	N/A	67 MW
SAGE DRAW WIND	19INR0163	12/12/2019	**386**	N/A	54 MW
OVEJA WIND	18INR0033	4/5/2019	**637**	N/A	48 MW
MESTENO WIND	16INR0081	12/12/2019	**386**	N/A	32 MW
RTS 2 WIND	18INR0016	4/29/2020	**247**	N/A	29 MW
BARROW RANCH	18INR0038	2/26/2020	**310**	N/A	26 MW
CACTUS FLATS WIND	16INR0086	6/11/2018	**935**	N/A	24 MW
OXY SOLAR	19INR0184	7/31/2019	**520**	N/A	12 MW
HIDALGO II WIND	19INR0053	12/10/2019	**388**	N/A	8 MW
HIGH LONESOME WIND PHASE II	20INR0262	2/28/2020	**308**	N/A	8 MW

The major problem in forecasting delays for planned projects is that there seem to be no objective metrics that predict this behavior well.

Even the projects with part 2 approval suffered delays to their COD due to project-specific issues.

UNIT NAME	INITIAL SYNC. TO GRID (PART 2)	NOTES
FLAT TOP BATTERY	5/5/2020	operational by June 1st
HOLSTEIN SOLAR	1/16/2020	operational by June 1st
BLUE SUMMIT WIND 3	12/11/2019	operational by June 1st
PROSPERO SOLAR	4/24/2020	delayed but operational by July 1st
PEYTON CREEK WIND	11/14/2019	delayed but operational by July 1st
LAPETUS SOLAR	12/6/2019	delayed but operational by July 1st
OBERON SOLAR	4/8/2020	delayed but operational by August 1st
HUDSON (BRAZORIA ENERGY G)	8/16/2019	delayed but operational by August 1st
COMMERCE ST ESS	11/26/2019	delayed but operational by Sep. 30th
QUEEN SOLAR PHASE II	4/10/2020	delayed but operational by Sep. 30th
RAMBLER SOLAR	4/1/2020	delayed but operational by Sep. 30th
HIDALGO II WIND	12/10/2019	COD delays past Summer (reached part 2 approval)
PALMAS ALTAS WIND	12/10/2019	COD delays past Summer (reached part 2 approval)
OVEJA WIND	4/5/2019	COD delays past Summer (reached part 2 approval)
BARROW RANCH (JUMBO HILL WIND)	2/26/2020	COD delays past Summer (reached part 2 approval)
WHITEHORSE WIND	12/27/2019	COD delays past Summer (reached part 2 approval)
OXY SOLAR	7/31/2019	COD delays past Summer (reached part 2 approval)
HIGH LONESOME W	11/26/2019	COD delays past Summer (reached part 2 approval)
SAGE DRAW WIND	12/12/2019	COD delays past Summer (reached part 2 approval)
MISAE SOLAR	1/16/2020	COD delays past Summer (reached part 2 approval)
HIGH LONESOME WIND PHASE II	2/28/2020	COD delays past Summer (reached part 2 approval)
MESTENO WIND	12/12/2019	COD delays past Summer (reached part 2 approval)
CACTUS FLATS WIND	6/11/2018	COD delays past Summer (reached part 2 approval)
RTS 2 WIND (HEART OF TEXAS WIND)	4/29/2020	COD delays past Summer (reached part 2 approval)



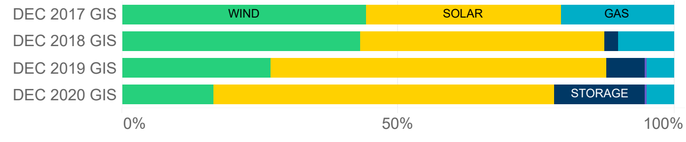
This Gantt chart shows the planned projects in the SARA based on a May 1st snapshot and a Sep 1st snapshot.

Even though all of these projects were approved for initial synchronization of the grid (part 2 approval) in early May, over half of them could not reach commercial operations during the summer 2020 period.

Other significant issues in trying to forecast planned project COD delays

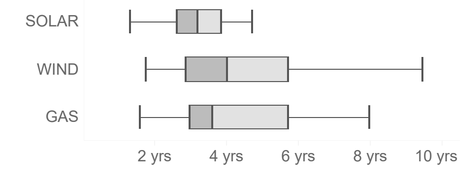
Categorizing and understanding common reasons for COD delays can't be an objective analysis due to potential disagreements between project developers and ercot on the reason for delay.

Trying to forecast future delays for solar and storage projects using historical queue information dominated by wind could cause a selection bias.



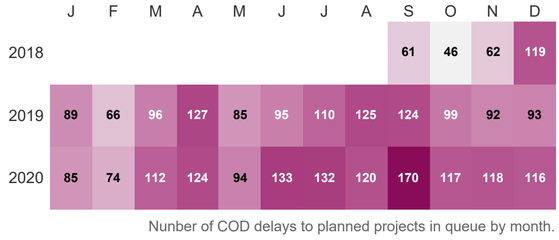
Based on summary tab information from recent December GIS reports.

The development cycle for solar is noticeably shorter compared to wind and gas projects.



The chart shows the distribution of project lifespan in the queue since 2013 by fuel type. Lifespan is defined as the length between request date and commercial operations approval.

Delays to projects are frequent and take several days to several weeks for developers to communicate with ERCOT.



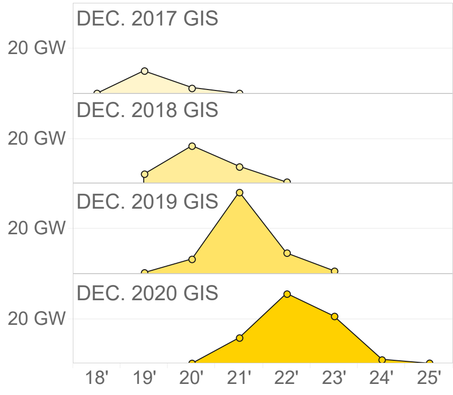
Nunber of COD delays to planned projects in queue by month.

Data Sources: CDR, SARA and GIS Reports, and GINR (RIOO-IS) data as of 1/1/2021
Design: ERCOT Resource Adequacy - Dan Mantena - dmantena@ercot.com

Notable Queue Trends during 2020

A visualization highlighting the recent Investment Tax Credit (ITC) extension, canceled projects trends in the queue, and location movement of new solar projects.

The projected CODs of planned solar projects in the queue highlights the quick development cycle of these resources.



Based on Project Details tab from recent December GIS reports.

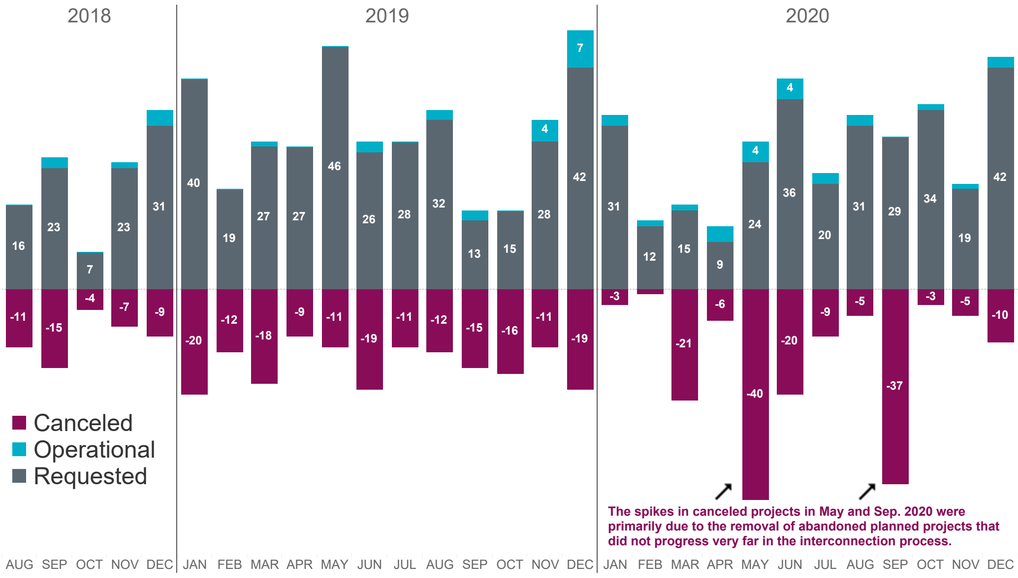
The December 2020 COVID-19 relief bill provided a **2-year extension** to the Investment Tax Credit (ITC) phase-out schedule, allowing solar and co-located solar/battery energy storage projects more headroom to qualify for the 26% ITC value.

Year	ITC value before December bill	ITC value after December bill
2019	30%	
2020	26%	26%
2021	22%	26%
2022	10%	26%
2023	10%	22%
2024	10%	10%

Wind and Solar Tax Credits Extended — powermag.com

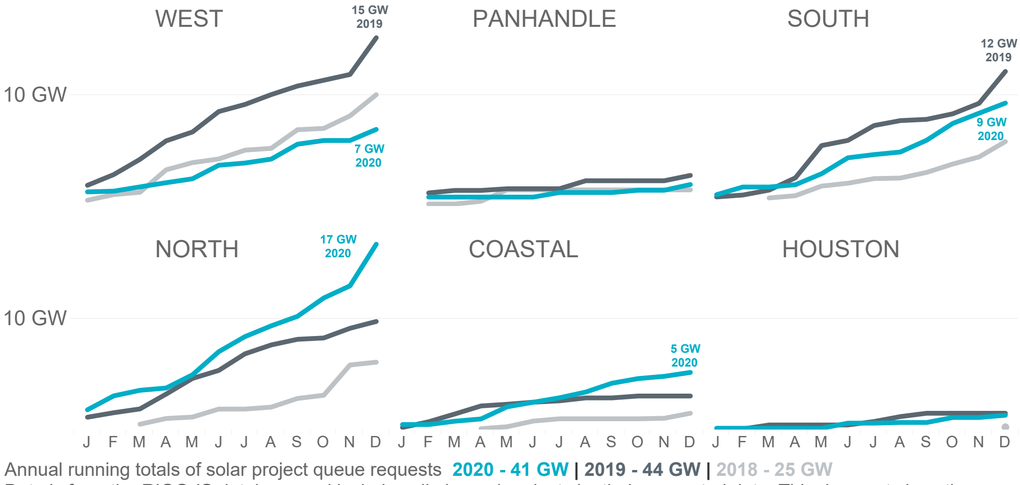
Cancelation Trends in ERCOT Queue since August 2018

Confounding factors associated with project cancelations make it hard to find any meaningful high-level trends.



data from recent GIS reports.

In 2020, solar developers increasingly sought projects outside of the West CDR zone



Annual running totals of solar project queue requests **2020 - 41 GW | 2019 - 44 GW |** 2018 - 25 GW
Data is from the RIOO-IS database and includes all planned projects by their requested date. This does not show the current status of these projects in the queue.

Data Sources: CDR, SARA and GIS Reports, and RIOO-IS data as of 1/1/2021.
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