Electric Reliability Council of Texas

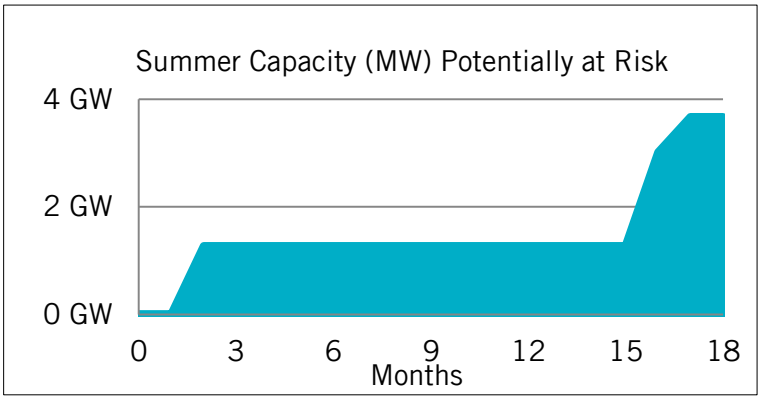
ERCOT Drought Risk Analysis: March 2021

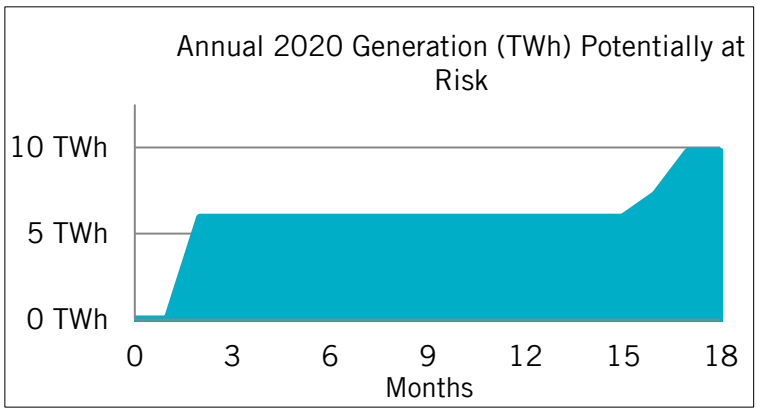
This report summarizes the results of ERCOT's drought risk prediction model for March 2021. This analysis identifies potential drought-related impacts on thermal generation availability in the region based on a current snapshot of system conditions.

ERCOT estimates the amount of capacity and generation potentially at risk of losing water supplies within the next 18 months based on current reservoir levels, historical withdrawals under drought conditions, and a three-month weather forecast.

Generation or capacity "at-risk" refers to generation resources with water supplies at or approaching low levels (i.e., level of intake).

The latest drought predictions indicate that 1,272 MW of capacity is expected to become at risk within the next two months, and 3,672 MW of capacity is expected to become at risk within the next eighteen months.

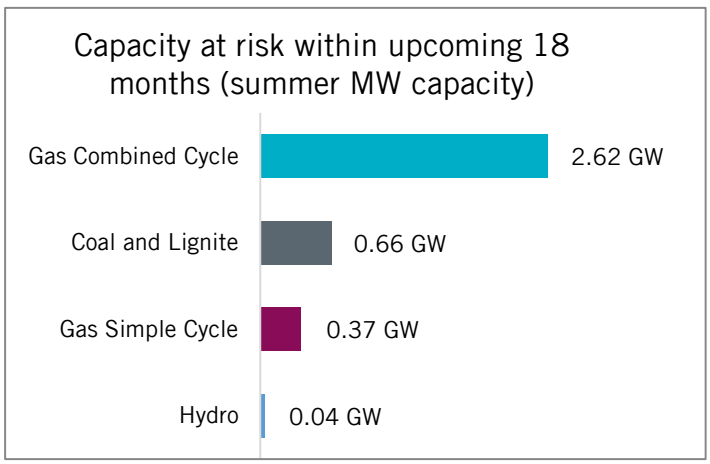


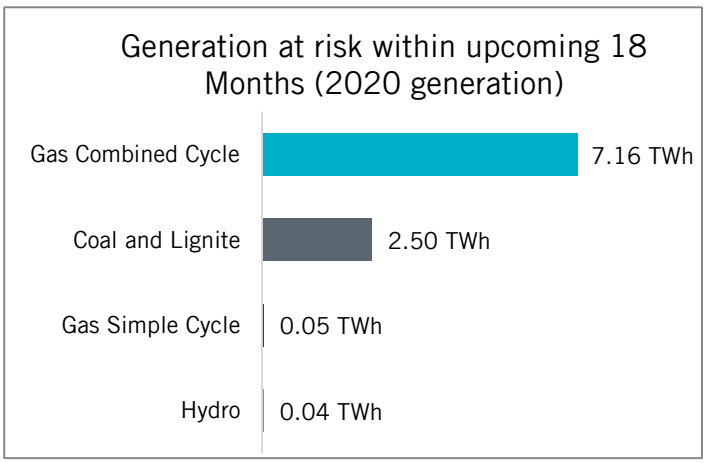


Footnotes:

-The prediction is based on reservoir water levels at the start of March and a Dry Conditions three-month weather outlook (provided by ERCOT's meteorologist).

-This report is (1) not intended to be an exact prediction of future generator outages, and (2) is used by ERCOT to initiate coordination with owners of potentially affected generation capacity.

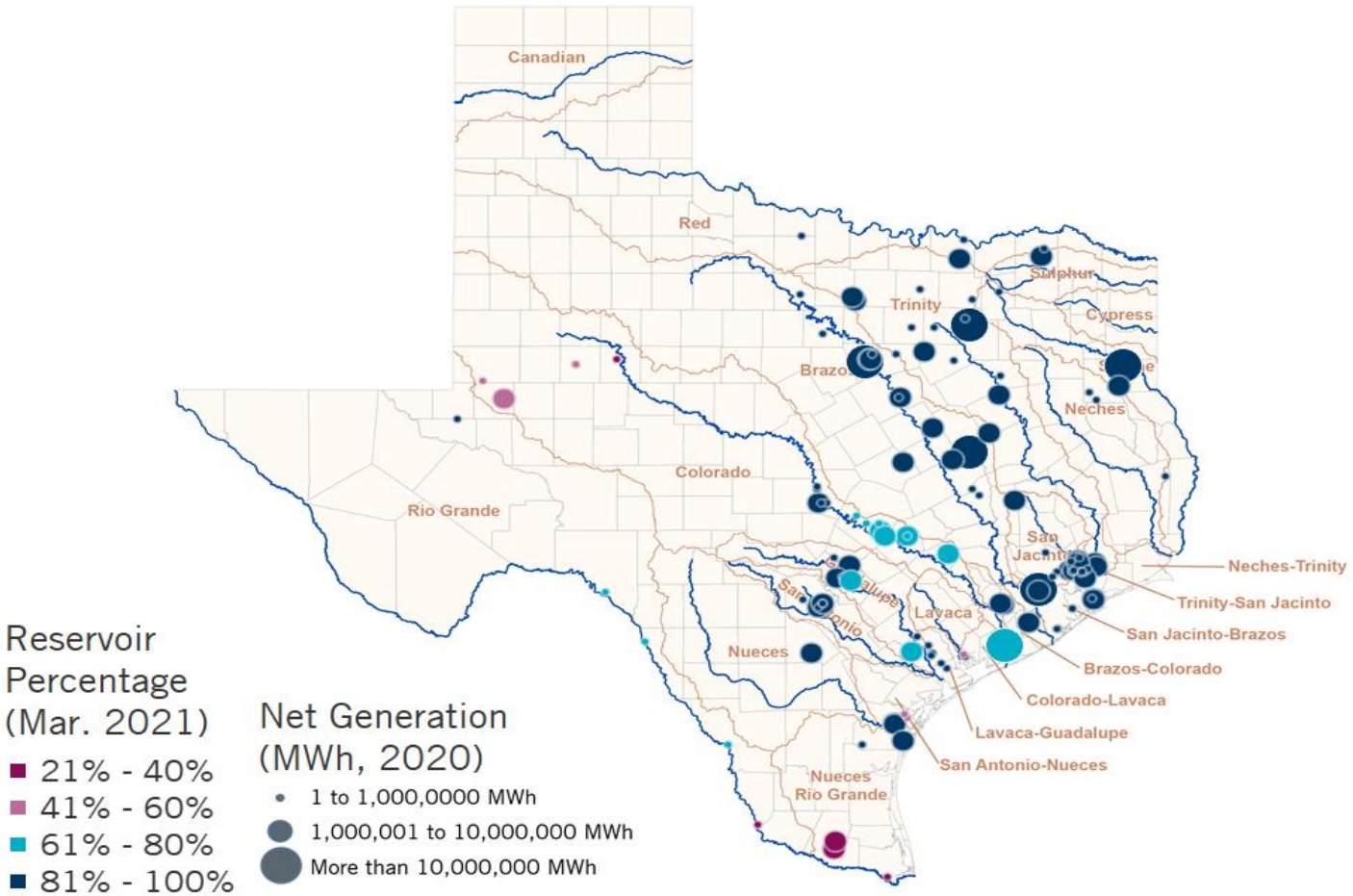




The map below shows the current reservoir or groundwater storage available in the primary reservoirs from which generating resources in the ERCOT region withdraw water.*

Each dot on the map corresponds to a generating site, sized according to the amount of energy (MWh) provided to the grid annually in 2020, and colored according to the amount of storage currently available in the reservoir or aquifer.

Reservoir Storage as of March 1, 2021



*Ocean water sources are assumed to be at 100% of available storage.

Additional information about ERCOT's drought risk analysis methodology and related reports can be found at
http://www.ercot.com/gridinfo/resource

Background

When the water supply becomes "severely at-risk" (at risk within six months), the generator can still withdraw water for cooling water and other purposes. However, this is a trigger point at which the owner of the resource should evaluate mitigation options. In some cases, mitigation is not possible due to customer demand, financial, or operational constraints. In these cases, a second trigger point would occur when the water supply reaches the intake level and becomes non-operational.

Generation technology type impacts the amount of water a unit uses in the generation process and for cooling. Simple cycle power generation units generally have a much lower water consumption compared to other technologies. These generation units are included in ERCOT's drought risk analysis because there is some risk of a drought-related outage. However, this risk is lower for simple cycle units than for other generating technologies. Depending on the unit configuration and operating characteristics, simple cycle units may continue to operate even once reservoirs or groundwater aquifers reach low water levels.

The drought model includes a weather forecast based on temperature and precipitation outlooks. The forecast (provided by the ERCOT Load Forecasting department) covers the upcoming three months and adjusts the water level drought probability curves in the drought tool.

The model also includes monitoring water discharge temperatures at coal and nuclear plants to project the risk of thermal generation outages due to high discharge temperatures in the 3 to 18-month horizon. Discharge temperatures from thermal plants that exceed TCEQ defined limits could force unit de-rates or shutdowns. Although temperature limits have not caused a generating facility's shutdown in the ERCOT region, generators filed TCEQ waivers to increase the temperature limits during the 2011-2014 drought.