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INSIGHT

U.S. Electricity Sector: Summer 2022 Outlook

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Ahead of summer 2022, federal officials have released several warnings about anticipated reliability risks and higher electricity prices compared to 2021. This analysis summarizes these warnings and provides additional information, should Congress consider oversight or other actions in response to these warnings.

Demand for electricity peaks in much of the country during the summer, as air conditioning use increases. Losing access to electricity—either from power outages or affordability challenges—may be especially impactful (and potentially life threatening) during the hotter times of the year. In part, officials' warnings stem from ongoing trends, such as energy commodity price increases, retirement of coal-fired power plants, increased use of natural gas and renewable energy sources, and drought conditions in the West. Other contributing factors are relatively new, including Russia's war in Ukraine.

Electric reliability of the bulk power system (i.e., electric generators and high-voltage transmission lines) in the contiguous United States is primarily overseen by the Federal Energy Regulatory Commission (FERC) in conjunction with the North American Electric Reliability Corporation (NERC). On May 18, 2022, NERC released its 2022 Summer Reliability Assessment (SRA). The report identified high and elevated reliability risks for much of the country (see **Figure 1**). For the Midcontinent Independent System Operator (MISO) region, NERC warns that grid operators may struggle to meet electricity demand during normal conditions, and that "more extreme temperatures, higher generation outages, or low wind conditions" could result in higher risk of temporary (rolling) blackouts. NERC attributes the risk in MISO to a combination of multi-year trends of generator retirements (in excess of new additions) and increased electricity demand from 2021 levels as pandemic impacts lessen. MISO identifies "utility and state policies to reduce carbon emissions" as drivers for these multi-year trends.

For the regions viewed as at elevated risk, NERC attributes much of the risk to the ongoing drought in much of the Western United States. Drought increases reliability risks in multiple ways, including (1) reducing the availability of hydropower; (2) potentially limiting the use of thermal power plants that use river water for cooling; and (3) contributing to high temperatures which increase demand for electricity. High temperatures in mid-May in Texas prompted some to raise concerns about summer electric reliability there, in light of the February 2021 outages that affected much of the state. During the May high temperatures, some power plants shut down, but without widespread power outages.

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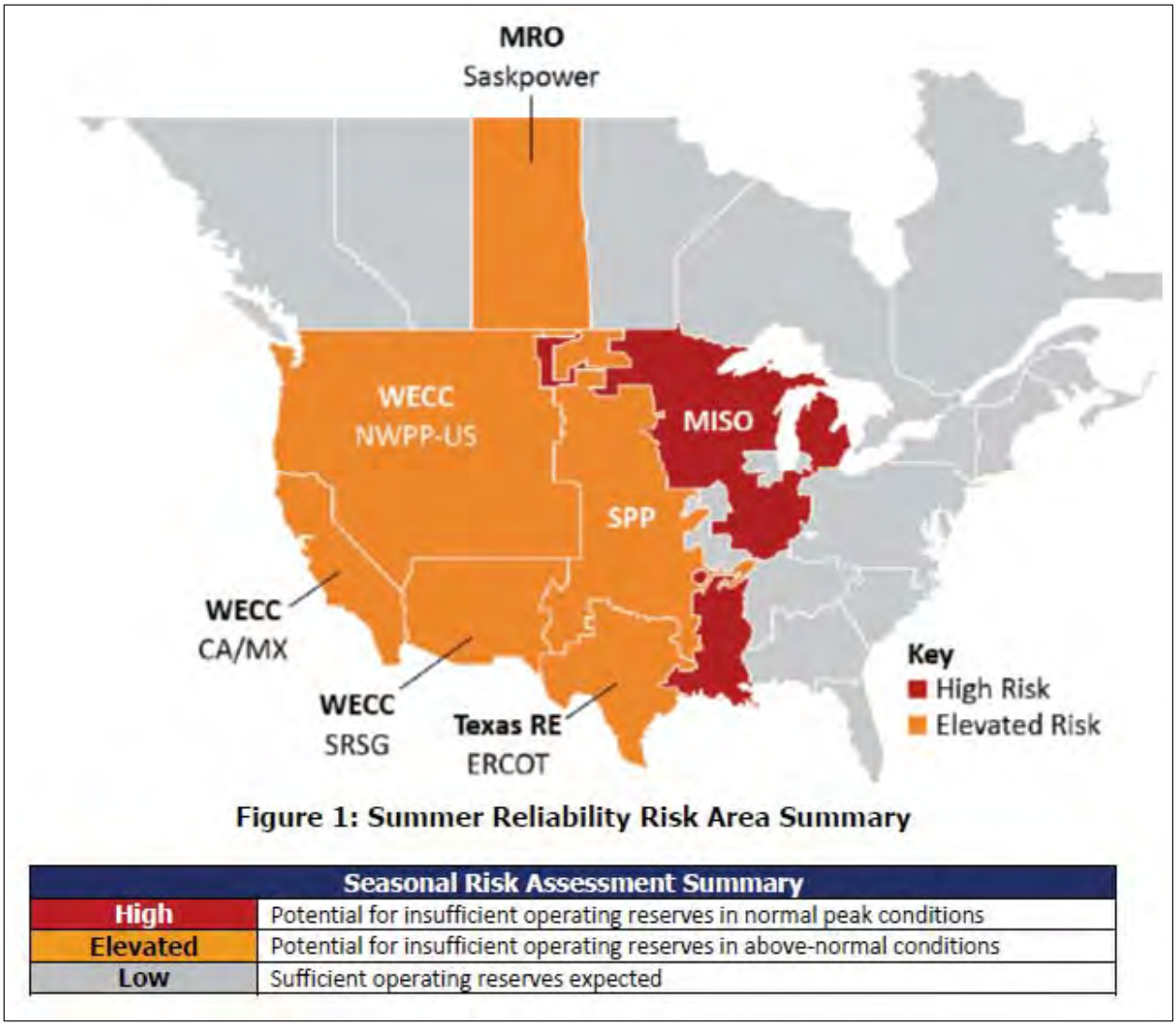
Figure 1. Summer 2022 Reliability Risk Summary



Source: North American Electric Reliability Corporation (NERC), *2022 Summary Reliability Assessment*, May 2022.

Notes: Map labels refer to the areas NERC uses to monitor and regulate reliability. CA/MX = California-Mexico; ERCOT = Electric Reliability Council of Texas; MISO = Midcontinent Independent System Operator; MRO = Midwest Reliability Organization; NWPP-US = Northwest Power Pool (U.S. portion only); SPP = Southwest Power Pool; SRSG = Southwest Reserve Sharing Group; Texas RE = Texas Reliability Entity; WECC = Western Electric Coordinating Council. In response to insufficient operating reserves, grid operators may take certain emergency measures to maintain reliability, including delaying planned power plant maintenance, increasing electricity imports from neighboring regions, and implementing temporary (rolling) blackouts. NERC does not have authority over reliability in Alaska and Hawaii, and does not conduct reliability assessments for those states.

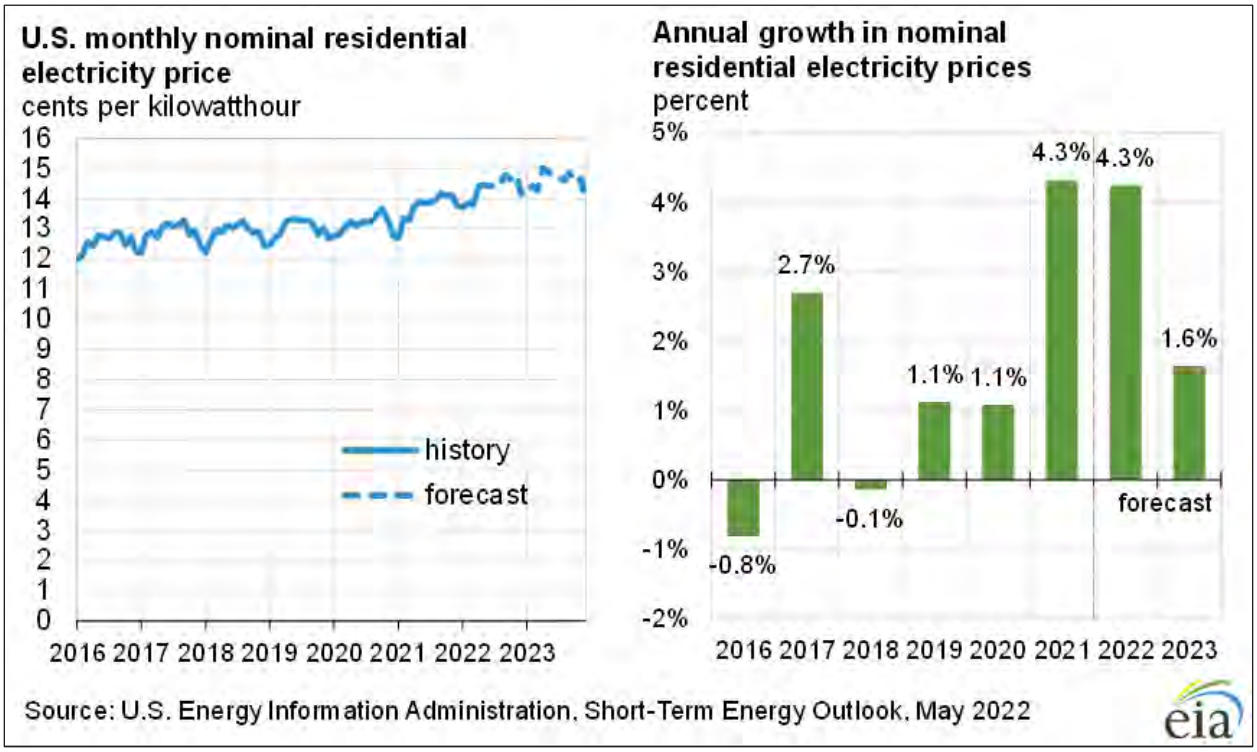
NERC also said that security threats continue to pose reliability risks, and that "Russian attackers may be planning or attempting malicious cyber activity to gain access and disrupt the electric grid in North American in retaliation for support to Ukraine." Various components of the U.S. electricity system are vulnerable to different kinds of cyber and physical attacks. Attacks could potentially result in prolonged, widespread power outages, though the likelihoods of attack and specific outcomes are difficult to assess. The electricity sector is one of several critical infrastructure sectors that potentially face heightened risk of cyber attacks following Russia's war on Ukraine.

Electricity prices are a separate area of congressional interest. Electricity prices (rates) that consumers pay (i.e., retail prices) are typically regulated at the state level. Rates are influenced by fuel costs, infrastructure costs (e.g., power line expansions), and other factors. In contrast to some retail energy prices that respond quickly to commodity market changes (e.g., gasoline), electricity prices for many customers tend to be less volatile, in part because of power supply contracts and retail rate regulation.

In May 2022, the U.S. Energy Information Administration (EIA) released its summer 2022 outlook for the electricity industry. EIA anticipates summer retail residential electricity prices will increase 3.9% compared to summer 2021, retail commercial prices will increase 4.5%, and retail industrial prices will increase 2.9%. Higher natural gas prices since 2021 are the primary reason for the expected increase. EIA anticipates residential electricity demand will be lower in 2022 compared to 2021, because of lower temperatures this summer compared to last. Depending on the extent of anticipated cooler temperatures, some households might see lower electricity bills compared to last year despite the higher rate (electricity bills reflect the combination of electricity usage and electricity rates).

On May 10, 2022, EIA forecast annual electricity prices to increase 4.3% this year compared to 2021 (see **Figure 2**).

Figure 2. Historic and Forecast Nominal Residential Electricity Prices and Changes

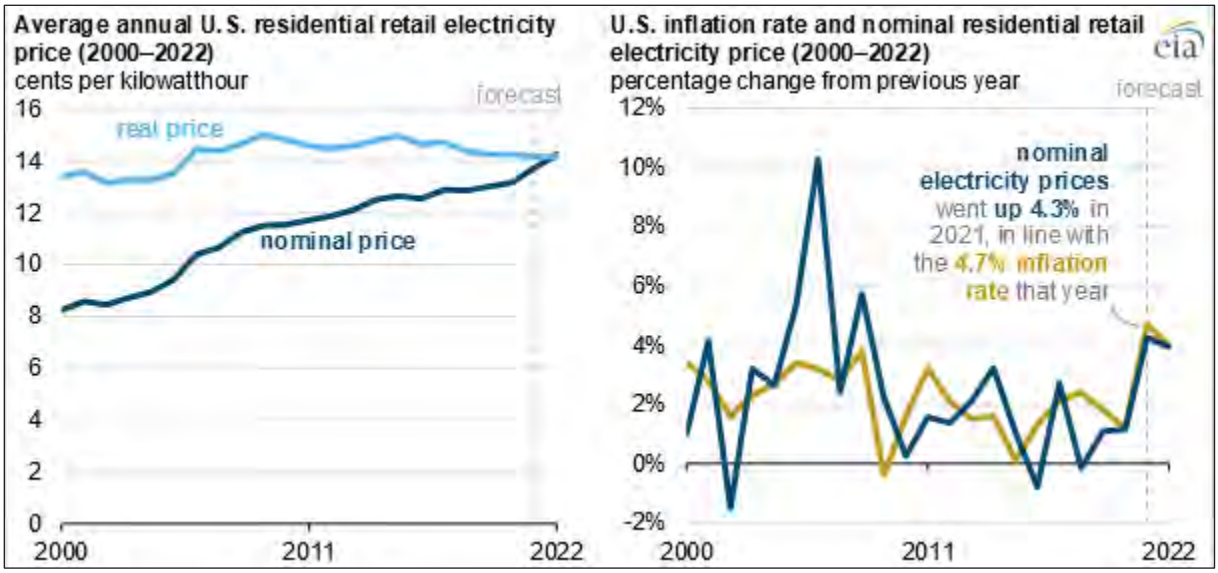


Source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, May 2022.

Notes: Prices are not adjusted for inflation.

The anticipated increase in retail electricity prices in summer 2022 would come on top of increases that occurred in 2021. According to EIA, U.S. retail electricity prices increased 4.3% from 2020 to 2021. In nominal terms, 2021 saw the highest retail electricity prices on record. In real terms though (i.e., after adjusting for inflation), electricity prices in 2021 continued their multi-year decline and were at their lowest level since just before 2006 (see **Figure 3**).

Figure 3. Historic U.S. Residential Retail Electricity Prices and Inflation Rate



Source: U.S. Energy Information Administration, "During 2021, U.S. Retail Electricity Prices Rose at Fastest Rate Since 2008," March 1, 2022

Notes: Real prices are adjusted for inflation, and nominal prices are not.

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