Is There an Outside Force for the Unstoppable Natural Gas Juggernaut?

For calendar year 2019, 80% of electricity generation in the U.S. was derived from coal, nuclear or natural gas (baseload generation), while the remaining 20% was derived from solar, wind and hydro "renewables", which generally provide intermittent production. As we look forward, the Green New Deal and Joe Biden's climate change plan both tout a carbon-neutral future by expanding this 20% share of renewables to 100% no later than 2050. This is a laudable goal, however it is most likely not practicable and the reality of the current infrastructure trends in the electricity market shows we are not on a path for this to occur. We can celebrate the benefits of a continuing abandonment of coal generation (153 plants inactivated since the start of 2015), but the reality is that coal capacity is just being replaced with a different fossil fuel (natural gas). Perhaps worse, nuclear, which has been a reliable source of carbon free power in the U.S. for over 60 years, continues to see a net loss of plants over this period. Since the start of 2015 we have seen permanent shutdown of six operating nuclear plant units, while only a single new plant/unit (Watts Bar 2) started up. Watts Bar 2 was the first new nuclear plant in 20 years. The average monthly natural gas capacity addition over this same period was 848 MW (194 total units) totaling 57,633 MWs, which effectively is a one-for-one replacement of inactivated coal plants (58,337 MWs). Isaac Newton stated, "a body in motion tends to stay in motion until acted upon by an outside force." How and when (if ever) will renewables become a sufficient force to create a trajectory where fossil fuels are not maintaining or growing their dominant market share? With only 2,200 MWs of new nuclear (Vogtle Units 3 and 4) expected by 2030, but at least another 4,000 MWs (Indian Point 3, Diablo Canyon and Palisades) scheduled for inactivation, how and when can nuclear change its momentum and become a growing force to provide carbon-free power?

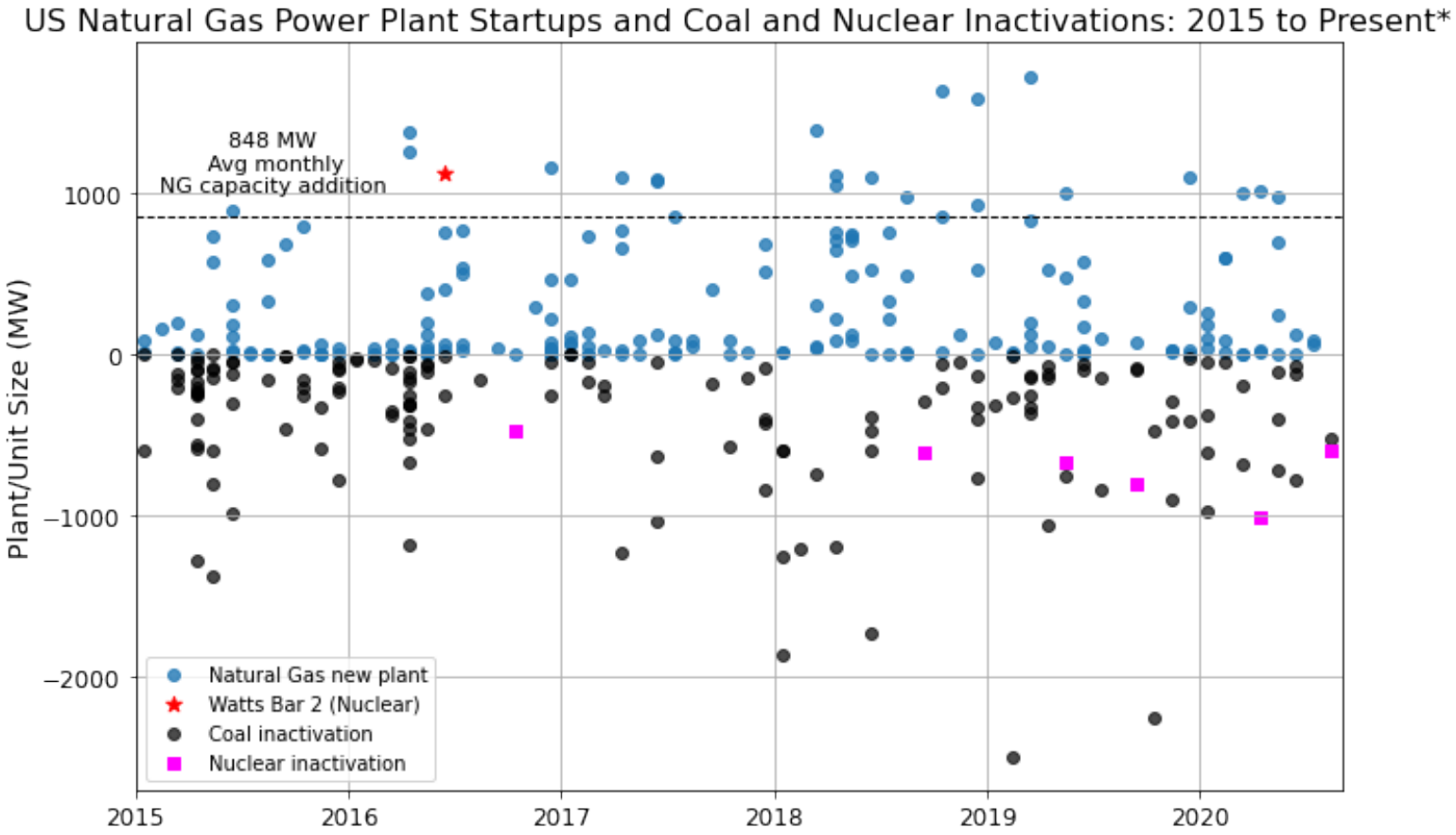

***Chart represents data reported to U.S. Energy Information Administration through August 2020**

Note: There are no zero values plotted; there are a significant number of small (<100 MW), industrial scale coal and natural gas plants

Analysis and visualizations in Jupyter Notebook using Python, available at: https://github.com/run2win2k/Energy-Infographics-in-Python

twitter@mallet_matt #Nuclear #Python #Greenewdeal #CleanEnergy #CarbonFree