

On October 1, 2020 the Wall Street Journal ran an article titled “Pandemic Pain Persists for Big Oil Companies.” The second paragraph mentions the damage oil companies are suffering from the drop in the consumption of jet fuel and gasoline as people drive and fly less. It continues, “That is combining with longer term concerns about future competition from renewable energy and electric vehicles to drag down the value of many oil-and-gas companies to decade lows.” And, “A stock index of U.S. oil-and-gas companies is down about 57% in 2020...”<sup>1</sup> One of these companies, BP, published its 2020 Energy Outlook in mid-September that paints an unflattering path for fossil fuels even after the health crisis ends.

Soon after the COVID-related lockdowns began in the U.S., articles appeared lauding the reductions in emissions due to the decrease in economic activity. An article in E&E News quoted a study that estimates emissions fell by 17% on April 7, 2020. A co-author of the study remarked on the magnitude of the temporary decline and the massive challenge for society to reduce emissions on an ongoing basis to correct the course of climate change. As we head into the fourth quarter, the environment remains at the forefront of issues discussed in both politics and policy as the world navigates the exit from the pandemic. In the European Union for example, pandemic stimulus is targeting green projects to simultaneously address the near-term need to boost the Union’s economies while promoting the longer-term move toward a net zero emissions society by 2050. China, which accounts for a third of global emissions, voiced its intention for the first time to “achieve carbon neutrality by 2060.” Given the juncture, it might be a good time to take stock of the progress we have made toward improving the environment and addressing climate change.

On December 12, 2015, countries that were members of the United Nations Framework Convention on Climate Change (UNFCCC) agreed on a framework to combat climate change. That became known as the Paris Agreement which was signed shortly thereafter by 55 countries and another 70 ratified it by early 2017. The Agreement’s key objectives were: the containment of temperature increases to 2 degrees Celsius above preindustrial levels, and pursuit of a limit of 1.5 degrees; achieving carbon neutrality and a near term peak in greenhouse gas emissions; pursuing mitigation efforts and funding new technologies; and commitment to various other actions to put the world on a sustainable path. Not surprisingly, one of the goals was establishing a progress measurement process intended to occur prior to 2020.

While the accord is comprehensive and well-intended, it does not directly address consumer preferences. We believe conscientiousness related to climate change exists in the U.S., western nations and most developing economies. For example, no significant infrastructure project proceeds today without an environmental impact analysis. However, expecting people with limited resources to pay more for electricity, transportation or food due to environmental impact becomes more challenging. Consumer preferences will change when price and personal benefit make the “green” choice relatively painless.

Technological advances play a critical role in altering choices and driving climate change mitigation. A key component of the evolution is cost which has seen significant progress in renewables. For example, the cost of solar panels has dropped 85% in the last decade, making new renewable plants cheaper than new coal plants almost anywhere in the world.<sup>2</sup> The next big technological advancement lies in cost effective battery storage, which will allow electric generation

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<sup>1</sup> Wall Street Journal, October 1, 2020.

<sup>2</sup> The Economist, September 17, 2020

from wind and solar to be stored for usage during peak electricity demand. As we look to the future, an ecosystem of technological developments in areas such as battery storage, hydrogen fuel storage, transmission grid enhancements, electric vehicle expansion and energy efficient building retrofits will all contribute to a multi-step decarbonization process.

Companies understand the technological evolution, the economics of their industries, trends in consumer behavior and projects to pursue for the benefit of their stakeholders. While some change is thrust upon the private sector by regulations, uneconomic edicts tend to pressure the price of companies' securities thereby increasing their funding costs and ultimately the price consumers must pay. Utilities operate in an extremely regulated industry, yet they tend to balance the economics of their business with the broader climate change challenges of their electricity generation reasonably well. The advent of green bonds and ESG mandates has encouraged utilities and other corporations to pursue renewable investments through lower cost of financing. Viewed from an emissions lens, the reduction in emissions over the last decade has been impressive, considering growth in electricity consumption.

<b>Electricity Generation and Emissions (US)</b>		
	<b>2010</b>	<b>2019</b>
Generation Source (thousand megawatt hours)		
Coal	1,847,290	966,148
Natural Gas	987,697	1,581,815
Renewables ex-hydro	167,173	446,728
Hydro	260,203	273,707
Emissions (million metric tons CO2)	2,270	1,619

Source: U.S. Energy Information Administration

An article in Deloitte Insights titled Utility Decarbonization Strategies argues utilities will lead the global decarbonization transition because, amongst others, the industry already possesses competitive non-carbon generation sources of production. The table nearby shows the remarkable progress the industry achieved since 2010 by altering its source mix and pushing for carbon emissions reduction. Admittedly, a key driver of the change was the abundant availability of low-priced natural gas, a more efficient and less polluting generation source. Still, driven by regulations, consumer preferences and improving costs, utilities meaningfully increased the use of renewables in their generation arsenal. In fact, this year renewables exceed coal as a generation source for the first time in the U.S.<sup>3</sup> Furthermore, forecasters expect renewables to make up a majority of electricity generation by 2050. The Energy Information Agency (EIA) expects renewables to generate over 2.0 billion kilowatt hours by 2050, representing about 38% of total generation. As part of an energy transition study, Deloitte and Wakefield Research surveyed senior executives of investor owned utilities. Many with responsibility for significant generation have committed to an aggressive transition away from carbon-emitting fuel sources to renewables. While the task will be daunting, respondents cite "...to an equal extent, consumer support for reducing emissions and new business models and value-creation opportunities" as key drivers of their push to "net-zero" or carbon free generation.<sup>4</sup>

<sup>3</sup> EIA, Today in Energy, May 28, 2020

<sup>4</sup> Deloitte Insights, Utility decarbonization strategies.



In its comprehensive 2020 Energy Outlook, BP, one of the world's largest oil producers, acknowledges the likely long-term reduction in carbon-emitting fuels as preeminent sources of energy for the global economy. Driven by shifts in consumer preferences and a conscientious global effort to address climate change, the analysis puts forward three scenarios that will likely drive oil consumption. Over the next 30 years, the scenarios estimate the pace of decarbonization, depending on "Rapid," "Net-Zero" and "Business-as-Usual" paths. Uniquely, early this year, the company committed to become a "net-zero" energy company by 2050 and to endeavor to help the world achieve that goal. In that context, we think the Energy Outlook delivers a few key messages, including:

- "Global energy demand continues to grow, at least for a period, driven by increased prosperity and living standards in the emerging world." BP's analysis has carbon emissions peaking by the mid-2020s and oil demand peaking by 2030. (Both Shell and the IEA also expect an oil demand peak by 2030.);
- "The structure of energy demand is likely to change over time: declining role of fossil fuels, offset by increasing share of renewable energy and a growing role for electricity."<sup>5</sup>
- The world energy system continues a transition to lower carbon emissions. The pace of the transition depends on various factors including the rate of economic growth, consumer acceptance, technological advancements and governmental directives.

A commonly accepted target to successfully combat climate change is achieving "net-zero" emissions by 2050. Net-zero is a state where any human generated green-house gas emissions are offset by carbon removal processes. From today's perspective, many radical changes must occur to achieve net-zero because success depends more on decarbonization in energy production than on subtraction associated with carbon removal. As noted above, technological advancement has played a huge role in limiting emissions and altering behavior. However, more is needed to get to net-zero. As examples, in the IEA's World Energy Outlook, the Agency believes net-zero will require 75% of global electricity to come from renewables over the next 10 years compared to 40% in 2019. Electric vehicles will have to make up 50% of autos sold from 2.5% in 2019 and other behavioral changes must fully endorse emissions reduction. Achieving those changes so quickly may be less a matter of will than further technological advancement and infrastructure availability. Considering autos, for example, battery technology is still not sophisticated enough to allow drivers to seamlessly travel long distances or recharge in the time it takes to refill a gasoline tank. Electric generation from wind and solar can still be intermittent and storage technology, while improving, is not yet ready to supplant fossil fuels to meet the challenge of peak usage.

The good news is that progress is happening, and most people support efforts to combat climate change. Evolving technology provides a vast opportunity for companies to add value while helping society. The IEA's projection of \$1 trillion in investment needed to meet climate goals seems like an insurmountable number until consideration is given to the global resolve to address this challenge. As with other technological transitions, the initial steps tend to be arduous and slow, but, once adopted, consumer take-up can be quick. Models forecasting change in emissions generally project modest reductions over time. If an analogy were made to wire-line and cellular telephones, the transition from fixed line to wireless happened at breakneck speed once the price and reliability of the new technology became accessible to

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<sup>5</sup> BP, 2020 Energy Outlook.



consumers. The vast improvement in convenience made the choice simple. That too would happen if, for example, you only had to charge your electric car once a month.

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