Power sector talking points

- **Gas will be in the mix for decades. Even in high renewable penetration by 2035, we will need firm, dispatchable power.** Examples of clean firm power includes natural gas generators with CCS, among others (zero-carbon hydrogen, geothermal energy technologies, and nuclear energy.)

- **The technology is ready to deploy. It's been proven in certain, lower cost of deployment industrial sectors for now more than 50 years. We're talking now about deploying it broadly across nearly all emissions sources that will be more expensive, but we can do it.** Now, it's more about putting all these pieces together that increase project complexity – permitting, transport, storage.

- **This is the critical deployment decade. We need to see significant demonstration of these technologies in this decade so that we can begin driving down costs and more widely deploying them to reach 2050 goals** – now thanks to the IRA and the BIL, for the first time ever, we have the available, supportive policy portfolio for the deployment of the technology

- Yes, there are only two commercial-scale power plant projects (boundary dam & Petra Nova). It's important to understand the history of ARRA and how those demonstration dollars were largely targeted towards coal-fired power generation projects. Gov't "post-mortems" on ARRA point to the fact that the supportive policy environment – namely a price on carbon – did not come to fruition as expected.

- At existing nat gas facilities, I'm aware of 9 front-end engineering and design studies at natural gas combined cycle plants across the United States. That tally is pre-IRA, so I assume the number has increased since then. (BIL also provided additional monies for FEED studies, and several power sector FEED projects were just announced).

- Power sector is responsible for roughly a quarter of U.S. GHG, but natural gas generation is also important, responsible for 44% of power sector emissions. Natural gas is responsible for 37% of US electricity generation in 2021.

More background info from CATF:

NET Power -- This avoids the need for post-combustion carbon capture: the only products of combusting natural gas and oxygen are CO_2 and water, which can be readily separated. The NET Power design is capable of achieving nearly complete CO_2 capture, thereby avoiding all or nearly all CO_2 emissions. NET Power indicates that the capture rate is 97% or higher depending on whether CO_2 dissolved in the water discharge is also captured. Because no other pollutants are created during combustion, the process also has zero NOx or other conventional pollutants.

A robust mix of pragmatic strategies, including carbon management technologies, will be essential to decarbonizing our highest emitting sectors and put the U.S. squarely on the path to achieving net-zero emissions by midcentury, and eventually net-negative. Indeed, without widescale deployment of carbon management, meeting midcentury climate targets will be much more costly, according to several experts.

According to the International Energy Agency (IEA), carbon capture is important in the power sector for three primary reasons: 1) addressing emissions from existing power plants in the near- and medium-term, 2) providing resource flexibility in regions with growing shares of renewable generation and 3) providing a pathway for creating net-zero and net-negative emissions, primarily through bioenergy power generation.

The climate crisis is escalating, and the power sector is undergoing a necessary and significant transformation toward low- and zero-emitting generation. While forecasts anticipate substantial growth in wind, solar, and storage capacity, the amount is uncertain and will be influenced by several factors. Regardless of how much renewable capacity is built, new and existing gas will remain in the system through mid-century and play a role in balancing load

Credible pathways to 1.5 report - IEA

Even if clean technologies outside of carbon management are deployed aggressively, carbon management will be needed to meet climate goals. By 2030, about 1.2 Gt are captured annually across the energy system in the NZE Scenario. This represents almost a 30-fold increase on 2021 levels. Based on current project pipelines, annual carbon capture is projected to reach about 0.3 Gt by 2030. This implies that the current pipeline of projects would need to grow by four times to reach NZE levels by 2030. Of the 1.2 Gt of carbon management required in the NZE in 2030, about one-third is used to mitigate emissions from fossil fuel combustion in sectors like industry and electricity generation. However, renewables remain the main driver of emissions reductions in the power sector