Message

From: Francis, Thomas SHLOIL-ERM/S [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=77DD331DA7374F3094602E8572D8ADCB-USTFS0]
Sent: 9/30/2020 10:13:59 PM
To: Watkins, Gretchen H SERC-UP [redacted]@shell.com]; Conrad, Katy E SEPCO-UPU [redacted]@shell.com]
Subject: RE: CFR

Hi Gretchen, the sense I got from the call with Tracy, Alice and EDF is that you bring the industry perspective to the panel. And so while technology is certainly a part of that, any technology references you make will need to be comprehensible to an audience who may have never set foot on a well pad.

Way near the bottom of the briefing, I have a couple of paragraphs that offer a nice illustration of both the sophistication of drones for methane detection... and the cost-related obstacles to scaling these solutions up. Here are those bullets:

- I'll explain how it works: When a drone identifies emissions, we must estimate the duration of those emissions for annual reporting or revert back to using factors, so… we are working to improve mathematical models and develop site-based point sensors that would enhance our understanding of how long an emission occurred in-between surveys (i.e. duration).

- So all of this costs both time and money. You can get an airplane to cover one site for less than $200. But at Shell, we have a Control Framework, and to stay in compliance, the aircraft must use twin engines and have a co-pilot. Plus airplane surveys require emission confirmation using a secondary tool for emission localization and for discerning between planned and unplanned emissions as well as relying on wind speed data at ground level.

- Add up the costs of this equipment, the training, the wages of all the workers who must be dedicated to detection, analysis and repairs. It's very expensive, and those costs may be especially hard on some of the smaller operators. So we are doing our best to lower costs and improve access to methane detection technology so that it's not a financial hardship to the industry.

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You don't really need to say all of that, but it does demonstrate a level of technical sophistication... and it leads to an important point: The sheer expense of these leak detection technologies is an impediment to investment... which is why regulation has an important role to play. Regulation should favor the most ethical, responsible operators.

We can't say it so bluntly, but if you need to vent methane and routinely flare gas, then you don't really have a business model that works in a world striving to achieve the goals of the Paris Agreement. So those operators would do well to sell to others who *can* afford to be environmentally conscientious.

Given this audience is fairly new to the topic of methane, I would advise we don't go into too much depth on the technology. Especially with three other people on the call. Best to keep topics at a fairly high level.

Cheers,

Tom

-----Original Message-----
From: Watkins, Gretchen H SERC-UP [redacted]shell.com>
Sent: Wednesday, September 30, 2020 9:12 PM
To: Conrad, Katy E SEPCO-UPU [redacted]@shell.com>; Francis, Thomas SHLOIL-ERM/S [redacted]@shell.com>
Subject: CFR

Remember I'm the Technloogy person on this panel, not the policy expert. We can leave the policy details to EDF. I'd like some good tech stories. Thx.

Best Regards,

Gretchen