

Subject: Fwd: Rex's inquiry about 2017 NPC topics

Date: Friday, August 26, 2016 at 7:22 AM

From: marshall <[REDACTED]@npc.org>

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Category: NPC Staff

FYI

Begin forwarded message:

From: "Amory B. Lovins" <[REDACTED]@rmi.org>
Date: August 25, 2016 at 5:25:09 PM EDT
To: Marshall Nichols <[REDACTED]@npc.org>
Cc: Ned Harvey <[REDACTED]@rmi.org>
Subject: Rex's inquiry about 2017 NPC topics

Dear Rex,

I think NPC could do a great service by integrating what's known, what's not, what needs to be found out and how, and what needs to be *done* to assess and abate the hydrocarbon industries' **methane leakage**. My colleague Ned Harvey leads RMI's collaboration with Environmental Defense Fund on this topic, so I'll copy him in case he has anything to add or correct. I'm not close to that work, but do have a few observations.

Scope. It would be especially valuable if Ernie asked that the group look also at *coal*-related methane emissions so the fully integrated picture emerges. My friend and neighbor Dr. Taku Ide <[REDACTED]@stanford.edu>, whose Stanford doctorate is in petroleum engineering is the world's leading practitioner of extinguishing coalbed fires, which turn out to be largely about methane, not coal. He told me two days ago about his and others' recent findings of methane plumes from outcrops, not just from developed coal resources (including abandoned mines). Although I know it's administratively convenient to stick to NPC's lane in oil and gas, it seems to me that with cooperation from independent coal experts and perhaps NCA, but with NPC as the overall convener under DOE's direction, it ought to be possible and would certainly be highly desirable to bring the split images of methane from oil-and-gas and methane from coal into sharp focus. Policymakers really need a combined effort covering methane from *all* fossil-fuel deposits and operations. Those could then be compared with other emissions, including those from non-fossil-fuel-related natural sources, as assessed by methane science outside the fossil fuel industries, so the whole spectrum of methane emissions and potential responses can be properly understood. I suspect Julio Friedmann at DOE would welcome this approach. Many monitoring/assessment options currently remain unused, like Livermore's airplane set up for remote sensing of methane, but the emerging data are troubling both for climate and for the industry's reputation and regulation.

Adoption paths. A methane-leakage study should pay special attention to implementation barriers. For example, I tried to get a local metallurgical coal mine that was emitting a great deal of methane from safety vents to flare it or, better, cogenerate to heat the underground workings, power operations, and sell surplus electricity. BLM couldn't figure out how to issue two permits (one for coal, the other for gas) on the same resource. After more than a decade, they figured it out and the mine now happily sells power for Aspen Skiing Company lifts, as well as, I believe, earning methane credits. However, another operation by bankrupt Arch Coal is so preoccupied with its debt service that it can't be bothered to consider, let alone accept, offers of free cashflow from a third-party investor willing to put ~\$1M into turning its major methane emissions into flares and earn methane credits. I suspect there's a lot of that going on amidst the coal industry's growing distress. Perhaps hydrocarbon companies' expertise might help to capture such opportunities. By coincidence, I'll be discussing this tomorrow with Wiley Rhodes, an Oklahoma City service company expert (CEO of Newpoint) in methane abatement and vapor recapture who's assembling an industry/environmental coalition called OneStepIn.

As you consider this potential topic, Rex, please bear in mind that with cheap sensors like FLIR cameras, the industry will be increasingly beset by citizen activists and citizen scientists combining their field observation of methane plumes into online databases and creating a groundswell for regulatory or legislative action. Best to get out ahead of that emerging movement and ensure that the granular and consolidated field data empower bounty-hunters to go fix the leaks. More broadly, as we've long advised our clients, best to adopt gold-standard practices (green well completions and everything else) and endorse them industrywide, before the sloppy operators further damage the good firms' reputation. For firms that already rigorously follow best practices, that's also smart strategy because it inconveniences their competitors more than themselves.

Best wishes — Amory