FINAL MEETING SUMMARY
Community Environmental Working Group

"Striving for Continuous Environmental Improvements at Intel"

Date: January 19, 2022
Time: 5:15–7:00 p.m.
Location: Remote: By Zoom and Telephone

Members Attending

John Bartlit, NM Citizens for Clean Air & Water
Emily Schmick, Intel
Dennis O'Mara, Corrales resident, Clean Air for All Now (formerly Corrales Residents for Clean Air and Water)

Non-Members Attending

Erika Edgerly, Intel, Corrales resident
Sarah Chavez, Intel
Louis Scuderi, Corrales resident, UNM
Chuck Wiggins, UNM
Mingcheng Ren, NMED
Eric Peters, NMED
Liz Kuehn, NMED
Rhonda Romero, NMED
Sufi Mustafa, NMED
Sandra Ely, NMED

Jessie Lawrence, Facilitator
CJ Ondek, Recorder

HANDOUTS

- CEWG Draft Agenda
- December 15 Draft Meeting Summary
- January EHS Activity Report
- Action-Item Progress Report
- Draft New Member Process

PROPOSED AGENDA

- Welcome, Introductions, and Brief Items
- Standing Agenda Items
- New CEWG Member Recruitment, Nomination, and Approval
- Planned Intel Expansion and Permit Revision
- NM Cancer Concerns Work Group Assessment
- Regulatory Engineering in Emissions Monitoring Project
- Review Action Progress Report
- Adjourn

WELCOME, INTRODUCTIONS, ANNOUNCEMENTS, BRIEF ITEMS
Jessie Lawrence opened the monthly meeting by stating the CEWG mission, which was to advocate for continuous environmental improvements at Intel New Mexico, reduce chemical emissions at Intel New Mexico, and improve community dialogue. Introductions were made.

Agenda—Revisions and Approval
No comments.
Jessie Lawrence said Chuck Wiggins's agenda item would be moved to an earlier time slot, so he would present during the Standing Agenda items.

Meeting Summary—Revisions and Approval
No additional comments.

Other Announcements

- Jessie Lawrence said that a compliance manager at the Albuquerque Bernalillo County Water Utility Authority (ABCWUA) would be joining the February CEWG meeting.
- Jessie Lawrence said former long-time CEWG member Hugh Church recently passed away in January. Anyone wanting to read his obituary or any more information could contact her and she would be happy to share that information. John Bartlit added that Hugh Church was present at the very first CEWG meeting. Meeting attendees noted Mr. Church's impressive New Mexican family lineage. CJ Ondek said that his mother was the acclaimed New Mexican writer and poet Peggy Pond Church, and John Bartlit added that his father, Fermor Church was the first treasurer of NM Citizens for Clean Air and Water.
- Jessie Lawrence said Intel's Emily Schmick would be out on maternity leave until June. Sarah Chavez said she would be filling in for Ms. Schmick during that period.

Public Comment
None

STANDING AGENDA ITEMS
EHS Report
Intel's Emily Schmick gave the month's EHS report. She said there were no changes in production status. Intel held one regulatory meeting—the quarterly onsite meeting with Albuquerque Bernalillo County Water Utility Authority (ABCWUA) on December 17. Intel site events were crane activity to remove equipment from the north side of campus, with visible crane and potential noise, and soil sample boring. On information requested by regulatory authorities, Ms. Schmick said that Intel provided Air Quality Permit 325-M11-R10 Administrative Permit Revision to NMED; the H2 Semi-Annual Outfall Analytical Report to ABCWUA; and the Monthly Ammonia Discharge Report to ABCWUA. Ms. Schmick said on December 30 at midnight Intel received an e-mail from a community member in Zone 2 about

"noxious" odors on their premises. Intel called the neighbor on January 4 and again on January 5 but was not able to reach the neighbor.

- Dennis O'Mara asked what an outfall report was. Sarah Chavez said it was a report to the ABCWUA. Intel was required to test twice a year at the outfall, and this was the report on that testing.

- Dennis O'Mara asked what was involved with the soil sample boring and its purpose. Emily Schmick said Intel tested soil quality to ensure it was safe before construction activities.

- Louis Scuderi said he had asked in past meetings to see a map of the designated zones, yet he had yet to see that map. Sarah Chavez said the map was created a while ago and should be posted on the CEWG website, if it already wasn't.

  ACTION ITEM: Jessie Lawrence will check if the map is on the CEWG website, and if not, will work with Sarah Chavez to get it posted. She will inform Louis Scuderi when it becomes available.

Regulatory Engineering
See agenda item for information.

LEPC Update
Dennis O'Mara said the current quarterly meeting was supposed to be today, January 19, but was rescheduled for January 20. An issue that needed to be discussed was choosing a new chairperson, since the previous chairperson resigned due to COVID-related work demands. He assumed that the current vice chairperson would be voted in as the new chairperson but wasn't sure. That would be determined at the next meeting. He said he would give more of an update in February, after the LEPC January meeting.

Satellite Image Mapping of Vegetation Change Study
Louis Scuderi said to remove this item from the Standing Agenda items for the time being because he wanted to focus fully on the Intel permit issue. He would give an update in the future.

NM Cancer Concerns Work Group Assessment
Chuck Wiggins said he planned to submit a preliminary report to the Cancer Concerns Work Group on Friday, January 21, and he would have some results to show at the next CEWG meeting on February 16.

NEW CEWG MEMBER RECRUITMENT, NOMINATION, AND APPROVAL

John Bartlit said he had put together a few written thoughts about moving forward and read the following statement. It was about possible formats to inform the community about vital issues.

> "For 17 years, the CEWG's work and ideas have not been limited to EPA rules. Far from it. Instead, the CEWG has continually delved into two big subjects in search of the best answers---one is the prevalence of diseases near Intel, and the second is the use of better pollution controls. Much in each area has been learned that is useful and documented on our website. Yet by their nature, public issues always have further information that would help everyone if it were more clearly shown in the public forum. The whole story has hard questions from all sides. This history raises ideas for ways the CEWG might proceed, either in addition to or instead of naming new members.
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> **1) Prevalence of diseases**. As urged by concerned neighbors, the NM Department of Health and the federal Centers for Disease Control have spent man-years and over a hundred thousand dollars to study the prevalence of certain diseases in Corrales (namely, pulmonary fibrosis, Lou Gehrig's Disease, and various cancers), which have troubled local residents. None of these studies has found discernible disease clusters, using the standard "textbook" methods of epidemiology. Only by using "standard" methods can the local prevalence of a disease be compared with state and national averages. The CEWG has read the studies and pursued detailed questions with professionals in the field who are proposed by diverse interests. In the process, the CEWG has learned about statistical problems inherent in studies of small populations, such as Corrales. These statistical problems and their real-life implications could be presented in a public forum by a skilled epidemiologist and public communicator, such as Chuck Wiggins of UNM.
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> **2) "Best" air pollution controls**. Similarly, assessing the "best" air pollution controls for the Intel plant has an essential factor that is often omitted from community discourse. This factor is the effect that low inlet concentrations of pollutants have on the operating efficiency of air pollution controls. Again, someone skilled in pollution controls and communication could inform the public about these pivotal points. If no such skilled person can be agreed on, the same points could be brought out by a diverse panel of invited speakers.
>
> Locally, as in the nation, most interest groups frame issues by omitting key factors that weigh for the other side. So answers aren't seen. More informative ways are available to use here."

Jessie Lawrence added more background. She said she included a draft nomination and approval process for potential new CEWG members with the meeting materials. In addition to a nomination and approval process, she is also open to talking about something different in terms of what a process might look like if new members aren't recruited. John Bartlit's statement

hopefully inspired a few more thoughts. She asked existing CEWG members to give their ideas and thoughts on how to move forward.

- Dennis O'Mara said the CEWG needed more members and a broader range of expertise within the group, as Mr. Bartlit pointed out. He questioned whether a formal process was necessary. The way to go was to find people from nearby communities who had expertise and were interested in becoming members. He suggested locating these people, explaining what the CEWG did, and asking them if they were interested in becoming members.

- Jessie Lawrence said that she and Mr. Bartlit had wondered whether the people from nearby communities with expertise needed to be CEWG members or invited guests who could provide information, answer questions, and be part of the discussion. She asked to think about whether they should recruit new members or change the way CEWG meetings were held.

- John Bartlit added that the CEWG could make greater efforts to involve the press during panel discussions or special speaker events, and that he appreciated the recent experience involving the *Albuquerque Journal* and ABCWUA and a journalist who wrote an article about it. He mentioned the organization, Report for America (https://www.reportforamerica.org) a non-profit organization that placed talented emerging journalists in local newsrooms to report on under-covered issues and communities. It was a different process from normal reporting, Mr. Bartlit added.

- Dennis O'Mara said he spoke with the journalist the day after the article came out and went over the differences between her article and the *Albuquerque Journal* editorial. He said he encouraged her to participate in the February CEWG meeting with an ABCWUA representative present and possibly write a follow up article. He said she was open to doing that if there was more information to be gleaned. He promised to send her the agenda and meeting connection information. Mr. O'Mara said he also spoke with the person who managed the *Albuquerque Journal* editorial desk and asked her to publish a correction to the original editorial because it was wrong. Her response was vague, so he did not know if his suggestion would go anywhere.

- Jessie Lawrence asked if Mr. O'Mara had any thoughts around potential new CEWG members to recruit. Dennis O'Mara said he did not, but he hadn't given it a lot of thought yet either. He said that they needed both experts and a broad range of people from the community living nearby the Intel plant, including folks from Rio Rancho and North Albuquerque, as well as Corrales. In the past he had asked a few people in the community to come to meetings. Some came, saw, and left, and for whatever reasons, they didn't want to participate.

- John Bartlit suggested former members of the Corrales Village Council. Names he mentioned were former Mayor Gasteyer, John Alsobrook and Pat Clauser because they had invested time and energy in the past around crystal silica testing and stack heights. Dennis O'Mara said John Alsobrook had been off the Council for a while but was running again.

- John Bartlit said the CEWG never used a process for membership in the past. Names came up, the CEWG pursued them, and they said yes or no, and later dropped out. Dennis O'Mara said there were 55 houses on his street, and he could send a recruitment email to see if anyone was interested from the community perspective. He also suggested putting an ad in the *Corrales Comment* or other media outlets, and he would let LEPC meeting attendees know that the CEWG was looking for more members to see if anyone was interested. Most of these participants were emergency response personnel, he added.

- John Bartlit wondered if there was a connection between who volunteered and continued to come and how the CEWG operated. Bringing in guest speakers and panels to offer information and respond to questions might attract a different kind of person.

- Sarah Chavez noted that the CEWG hadn't had any formal recruitment process in the past, and suggested that having some kind of process would ensure consistency in how members were being recruited.

- Jessie Lawrence referred to the initial recruitment process draft. She verified her role as facilitator to the process, and said that CEWG members needed to provide potential names. Her role was to ensure that potential new members received consistent information and messaging, and that their questions were answered. She suggested taking time to reach out to people to see if they were interested and to work together from there to generate a list. Then she could reach out and exchange information. They could see what resulted and assess where to go next.

- John Bartlit suggested two nominees who had participated seriously: Louis Scuderi and Chuck Wiggins. Dennis O'Mara suggested putting together an information sheet to share with potential candidates for the sake of consistency. John Bartlit seconded that idea.

- Jessie Lawrence said there might already be resources available that can be reused or adapted for this purpose. She would check the CEWG website to see if anything was available to use or share. John Bartlit said if it was on the website then it was approved by consensus and therefore a good source of information. Ms. Lawrence said the website

was a starting point. She would share what she found for the group to then determine any revisions or adaptations and how to share information with candidates. The group agreed.

ACTION ITEM: Jessie Lawrence will look on the CEWG website for flyers containing information about the CEWG made in the past.

PLANNED INTEL EXPANSION AND PERMIT REVISION

Jessie Lawrence said first Intel would provide updates on the permit revision, then New Mexico Environmental Department (NMED) representatives would speak to the permit process and give background information from their perspective. Afterwards the floor would be open to questions.

- Sarah Chavez said Intel provided the CEWG with a letter they wrote to NMED that discussed updates to the model report; updates to a table requested by NMED; and the drawing that showed equipment location. She also sent to the CEWG Intel's response to Louis Scuderi's questions. On the model report, Intel updated 3 things: 1. An error in year used in land cover data; 2. Clarification on sensitive areas within a mile; and 3. Checked yes to the public hearing question. She asked if anyone had any questions.

- John Bartlit asked about the second to last paragraph in the letter to Louis Scuderi, which said: "Intel has also decided to add an additional thermal oxidizer to the site to further enhance site redundancy. That oxidizer has already been permitted, and the map has been updated to reflect the location of this additional oxidizer." He said this was the first he had heard about this and asked what was basis for this decision. Sarah Chavez responded that the additional unit was to maintain redundancy in the Fab 11X building. Because the way the project was changing, if Intel had to add more equipment to the Fab 11X building, they needed to have a certain amount of flow to maintain redundancy. To achieve redundancy, two to three units needed to be grouped together to handle airflow if one unit shut down. In this case, two units were added to Fab 11 X to maintain redundancy.

- John Bartlit asked what an additional thermal oxidizer cost. Erika Edgerly said between four to seven million dollars. Dennis O'Mara said that with the addition of one new thermal oxidizer, Intel would have a total of eight on-site. Sarah Chavez clarified after the meeting that eight thermal oxidizers are already operating and five new ones will be added for a total of 13.

- Dennis O'Mara had a comment related to the second paragraph in the letter addressed to Louis Scuderi, and specifically this line: "As a reminder, the administrative change to our permit will not result in an increase in the total allowable emissions." Mr. O'Mara said he had to point out that this was double-speak because the CEWG had already been told that

there would be an increase in emissions. He said the sentence referred to table 106B of Intel's permit that listed Intel's facility-wide allowable emissions. Intel's actual emissions were nowhere near the allowable limit, and he hoped that emissions would not approach those numbers, which did not seem to be real numbers. Mr. O'Mara said that to him, the sentence was saying that allowable emissions were not going to go past the limit but would be increasing. He asked how much emissions would be increasing. Sarah Chavez responded that she couldn't speak to how much emissions would go up, but he was correct in that these were the permitted numbers based on information and data from 1995 to 2000. Intel had been doing lots of work since then to stay well below the limits. Mr. O'Mara said that the numbers did not appear to be relevant any longer, and he objected to the sentence being included in the correspondence because it was misleading and wrong.

- NMED's Liz Kuehn said she would provide an overview on NMED's permitting process. She said a construction permit was a legal contract to operate and had to be issued prior to any construction at the source. The permit issued to Intel was a construction permit for minor source emissions. Once NMED issued a construction permit, Intel had to request approval prior to making any modifications or physical changes. Revisions that required a less onerous submission process were minor types of revisions such as small construction, administrative changes/revisions, or installation of equipment that was not regulated. The process for submitting information on these types of changes was limited in terms of what had to be provided to NMED. Typically the source company notified NMED when the modification would happen using a one page notification form. Relocating sources within the regulated facility qualified as an exemption from the typical revision process provided that impact from relocation would not cause an increase to national ambient air quality standards or an increase concentrations. Paperwork had to demonstrate what equipment was being relocated and include modeling that demonstrated impact. This type of administrative revision was effective upon receipt. It was not subject to public notice or public participation provisions. That's because administrative revisions were meant to cover small pieces of equipment exempt from regulation or minor typographical errors or those actions that did not impact emissions or air quality. Ms. Kuehn said that was the paperwork the CEWG had been reviewing.

- Liz Kuehn said the modeling report was developed for constructing new sources or making significant revisions and contained questions that were beyond the scope of the administrative revisions. Questions about proximity to sensitive areas was important to modeling but did not affect the administrative revision process. The regulations did not require NMED to reissue the permit so it would remain as written with no changes to emission limits and reporting requirements. The administrative revision was effective upon receipt.

- NMED's Eric Peters said he reviewed Intel's modeling report. The EPA required the use of AERMOD in the review. It was a probability density-function model that varied depending on the conditions and terrains surrounding the model. Cases where receptors were below the level of the facility did not trigger anything to be counted in model. This required Intel to model to lift the values to the level of the facility, which would increase the level of concentration. It included eddies around building and stack tips but did not include drops and valleys, because that was not the way the model was designed. The model's goal was to predict the maximum concentration anywhere. If the maximum concentrations were found at the fenceline, then that would indicate that the concentration would continue to decrease further away from the fenceline, therefore further terrain affects going down would not cause the model to show any higher concentrations. It was not possible for the air that's been dispersed to condense again once it had already dispersed, aside from other sources contributing to it. Mr. Peters said NMED required applicants to use a specific form (UA4) for their modeling report so all necessary questions would be answered. He said he reviewed Intel's modeling report and produced his own report that summarized his review conclusions. From his review he found that the maximum, highest concentrations were below national ambient air quality standards.

- John Bartlit asked Mr. Peters what he meant when he said he reviewed the modeling. Eric Peters said Intel's consultants provided the modeling files and report. He looked through the report and compared the inputs in the model with previous modeling and locations and reran some modeling scenarios on his computer to verify results. Intel provided information around stack parameters and emission rates.

- Dennis O'Mara asked Liz Kuehn why NMED allowed Intel's current permit to continue to include old numbers. Based on what he had seen on Intel's website, actual emissions were nowhere near to maximum levels allowed. Didn't it make sense to make maximum allowable missions levels closer to what was actually emitted? Mr. O'Mara said that Sarah Chavez had suggested that Intel's emissions could not increase substantially due to their keeping only a finite amount of chemical resources on site. From his perspective, there was nothing to keep Intel from quadrupling or multiplying their just-in-time inventories and substantially increasing emissions without any oversight. So why were the same maximum levels allowed to remain in the permit year after year. Mr. O'Mara said his question referred to all pollutants across the board—HAPs, VOCs, NOx, particulates, etc. The numbers in the permit were not realistic based on Intel's current emissions.

- Liz Kuehn responded that for criteria pollutants, NMED established hourly emission limits to provide compliance with ambient air quality standards (lb/hr). Each standard had

a different averaging period. Some were short term, some long term, but they will always use lb/hr rates. Levels were based on emission factors valid to the type of source and combustion process, so other information went into establishing the numbers. Other types of pollutants didn't have a short term average concentration and were regulated under a different part of the Clean Air Act.

- Jessie Lawrence clarified that Mr. O'Mara's concern was that the limits stated in Intel's existing permit were too high, and, Ms. Kuehn was saying that NMED relied on the limits in the Clean Air Act to determine the calculation of those numbers in the permit. Ms. Kuehn said this was correct, and that there were regulatory and statutory rules for different types of emission limits. Intel's limits were based on the best available data at the time, along with state and federal regulations. There was nothing in the regulations that required Intel to conduct research and update factors over time to see if there were better emission limits. She did not know how Intel developed emission limits for their other facilities.

- Dennis O'Mara asked NMED to please explain how one standard of pounds per hour related to 96.5 tons of VOCs. How did NMED get from one to the other. Liz Kuehn said Intel had to calculate emissions annually from all their sources and demonstrate they were below the annual limits. VOCs did not have an ambient air quality standard, so they typically did not establish a pound/hour rate and only had an annual limit in the permit. Mr. O'Mara cited current numbers from Intel's website and calculated that the emission limit in the permit was between 8 and 9 times higher than what Intel said it was currently emitting. The numbers in the permit were inappropriate. He said he did not get an answer to his question that made sense to him.

- Louis Scuderi said he had submitted 32 questions to Intel and they only "reservedly" responded to three of those questions. He still had a lot more unanswered questions. He heard NMED say that there was no independent verification of any numbers coming from Intel. He asked if NMED took it at face value that these numbers were correct. Was there any independent verification on the numbers Intel was providing? He said he had asked Intel and NMED for the modeling files to verify the numbers but had not yet received those files. The report specifically said that files were available All he received when he requested the modeling report was Eric Peters' evaluation. He wanted to verify independently whether the modeling was robust and appropriate. Mr. Scuderi said he had over 30 years of modeling experience and the expertise to analyze modeling. From what he was seeing in the modeling was a total failure to appreciate the complex terrain around the Intel plant, and he objected to Eric Peters statement about concentrations at the fenceline. What happened at the fenceline was different than what was happening at the surface. There were multiple reports from all over Corrales and Rio Rancho of chemical odors. Mr. Scuderi said that modeling for a flat terrain was inappropriate. Modeling that

did not include turbulent mixing was inappropriate, and therefore the modeling in question here was inappropriate and a false use of modeling to support this and other Intel emissions. He had a problem with that. He said he had not yet received the files from NMED and was told by Intel that they did not have this information. He said he was confused about what was going on here and wanted to evaluate the modeling using his own expertise.

- Liz Kuehn said NMED's Sufi Mustafa attempted to transfer the files more than a week ago using Kiteworks. Mr. Scuderi said he did not have the input or output files. Sufi Mustafa said he provided all the modeling files to Mr. Scuderi in an email that also included the modeling reports. He sent a second email with another file, which had Eric Peter's review report. It was in the archive modeling folder of that file. Mr. Scuderi said it would have been helpful to point out that these files were located in the archive folder.

- Louis Scuderi asked Eric Peters why he ran his own version of the modeling. Eric Peters said that the best way to verify was to look at all the inputs and rerun models. Mr. Scuderi asked if that included evaluating the input assumptions. Mr. Peters said yes, but they were limited to AERMOD. Louis Scuderi asked Mr. Peters if he was comfortable with the flat terrain. Mr. Peters said flat terrain would produce higher concentrations when dropping away from facility. Mr. Scuderi said he respectfully disagreed, since the model did not take into account gravity flows and down channels. Also, it was clear that there were major affects where air flow was concentrated. Mr. Peters said AERMOD did not have the ability to do the down valley flows. Mr. Scuderi said that was his point. AERMOD was an inappropriate model to model complex terrains and stack emissions, which had more turbulent mixing and lofting for considerable distances. These were the issues they were dealing with in Corrales. While AERMOD might be an EPA standard, it was inappropriate for this particular environmental condition. Also, it appeared that some maximum concentrations were observed outside the fenceline. Mr. Peters said he would have to look again at the modeling results to confirm that.

- Louis Scuderi said when he contacted NMED before Christmas, he received an email from Rhonda Romero, an out of office reply, and then contacted a second person who said his concerns would be dealt with. Subsequent to that he received an email from Sufi Mustafa saying that again his concerns would be addressed. The documents supplied with Mr. Peters' report were dated December 28, 2021, and yet he was told six days later that his concerns would be addressed. Obviously they were not addressed, Mr. Scuderi said.

- Louis Scuderi said that regardless of citizen concerns, the system was set up so that it was impossible to have any real objections to the process. There was no public review. No outside professional expertise. He said he just "throw my hands up and go what's the use of even trying" to contest when everything was stacked against any kind of review. He

said he realized NMED was under federal and state law and was seriously considering turning his files over to the state Attorney General for review.

- Sandra Ely said she heard Mr. Scuderi's frustration loud and clear. The way the process was set up for this type of permit, there wasn't an opportunity to have public comments or hearings. That's just the way it was. If he wanted to change the rules, he could go to the Environmental Improvement Board. And he could always go to the Attorney General. NMED was just following the established rules.

- Louis Scuderi said he felt frustrated that the process was dead-ended at every approach. There was zero ability to challenge Intel. He wanted the Attorney General to investigate how this process was taking place and the possible violation of federal and state law.

- Sandra Ely commented that they were doing their best to stay within federal and state law. She also wanted to comment on Intel's permit limits. When the permit was established over 20 years ago, one of the issues was if the applicant demonstrated that those permit limits did not exceed federal ambient air quality standards or any provision of the Clean Air Act, then there was not a lot they could do as an agency to deny those limits. So yes, Intel had a big spread between established and actuals limits, and they may have had good reason for it, but NMED couldn't do anything about it unless they had evidence of federal or state violations. And they didn't have that evidence.

- Louis Scuderi said the approach to pollutants and controls was inappropriate. They could not discount the many, many citizen reports of toxic odors. Even he experienced an inability to breathe and lungs hurting for three days just by sitting in his backyard. Bottom line was: The type of modeling was wrong and inappropriate for this situation.

- Dennis O'Mara said he would like to hear Intel's "legitimate" reasons for using those numbers. He believed it was because it gave them the freedom to do what they wanted around emitting toxic air pollutants. What it came down to for him was that EPA requirements were inadequate. He said he saw lots of articles on the ProPublica Website about this issue. It was clear that EPA requirements did not measure up and protect public health. Over 73,000 people live near Intel and most likely being exposed. He had similar experiences to Mr. Scuderi around toxic odors. Mr. O'Mara said Clean Air for All Now was making an effort to communicate and educate the public because most people do not understand what was going on.

- John Bartlit commented that the CEWG, since the beginning, had taken the stance that they would not be limited by the rules, important as it is to meet the rules. The CEWG had been working long and hard to push Intel to reduce emissions, with some success.

ADJOURN

NEXT MEETING: February 16, 2022