



Virtual Energy Committee Meeting Minutes Tuesday, March 9, 2021

Energy Committee Chairman: TBD

Fred Fendt, The Dow Chemical Company (Interim)

Vice Chair: Robin Ridgway, Purdue University

I. The Drive to a Hydrogen Economy – **Anne Hampson, DOE**

Anne is the manager of the Technical Partnerships program at the Advanced Management Office at DOE. The AMO has about 70 staff devoted to 3 major programs. The Technical Partnerships program is divided into 5 major programs: Better Plants, CHP, Industrial Assessment, 50001 Ready, and Supplier Energy Performance. All of these programs provide assistance to manufacturers to save energy.

The Biden administration has set a goal of a carbon free in the power sector by 2035 and a carbon free economy by 2050. For the Technical Partnerships, job creation and “Energy Justice” are important considerations. Supply chains, energy storage, agile manufacturing, water, and education are all part of these programs. Industrial decarbonization is a major effort. Energy efficiency alone will not be sufficient to achieve zero carbon goals. Electrification and low carbon fuels, as well as carbon capture and storage are needed. Four of the programs have some activity.

The Better Plants program is looking for a low carbon pilot. The CHP program is planning for a CHP plant fueled by renewable natural gas or hydrogen. The industrial assessment center has issued recommendations for carbon reductions during energy assessments. The ISO 50001 program is looking at how to include carbon issues in the 50001 certification. The CHP program is looking at flexible CHP systems, for both fuel flexibility and production flexibility. CHP can improve overall energy efficiency when both thermal energy and electricity are required.

Lifetime carbon savings are location dependent. There are also resilience issues that CHP can address. For long term decarbonization, CHP can help in those areas that are difficult to electrify. CHPs can extend the level of renewable or low carbon fuels. Renewable natural gas can be generated by anaerobic digestion, gasification of biomass, and renewable energy.

Some programs are looking at blending hydrogen into natural gas. Hydrogen is a small molecule that leaks out of many materials. New, or different, materials are needed for holding and transporting hydrogen. The heating value of hydrogen is 1/3 that of natural gas on a volume basis. That means storage and transportation equipment will have to be 3 times larger. Combustion of hydrogen produces substantial NOx. All of these

considerations will have to be dealt with.

Some case studies are underway to look at some of these issues. Fuel cells can use hydrogen directly. DOE has a program for H2@Scale. The fuel cell program is headquartered in that program. There is a hydrogen and fuel cell technologies office. DOE awarded 18 projects in July to support the hydrogen program. In December an additional program was announced. The AMO is looking at work force training, tools and resources, low carbon/waste reduction, and external partnerships.

II. The Sustainability Fact Book- **Ruth McCormick**, Business Council for Sustainable Energy

Ruth has 6 additional speakers from the gas industry to cover natural gas issues. The Fact Book is a compilation of data aimed at policy makers to provide them with up to date information on what is happening in the energy sector. The link is [BSCE.org/Factbook](https://www.bsce.org/factbook). The past year has been a year of records and resilience. The economy contracted due to the pandemic. Some of the areas impacted include oil prices, EV sales, transportation industry (particularly airlines).

Energy productivity rose last year, but not necessarily for the right reasons. Energy use declined 7.8% in 2020. Renewables (including wood and hydro) and nuclear produced 40% of the electricity. Gas produced 41%, while coal fell to 19%. Renewables increased. Jobs have been lost, particularly in the energy efficiency sector, as workers could not enter homes and buildings due to the pandemic. The cost of energy as a share of personal consumption expenditures continued to decline, but not all segments of the population did well.

Power emissions of GHGs are down. EV sales stayed flat, while conventional vehicle sales dropped. Total new clean energy investment is expected to grow. Governments around the world included decarbonization funding. In the US, these funds were directed towards RD&D and tax credits.

Dan LeFevers, of the Gas Technology Institute, pointed out that natural gas pricing has remained historically low. While alternative fuels may be low carbon, they are not low necessarily low in cost. Over the last 10 years, the use of natural gas has increased nearly every year. Power generation and industrial use have both increased. Natural gas plays a very big role in the economy. Industrial use of gas varies by region, with the heaviest use in those applications require high temperature levels. Industrial on site power generation is mostly powered by natural gas.

Sapna Gheewala of the American Gas Association pointed out that resilience has become a significant concern for the US infrastructure and energy. Energy storage options are part of the solution. Micro grids are also being evaluated and the combination of the two can go a long way towards “hardening” the energy system. CHP represent about 8% of the US capacity and generate 12% of the electricity. Total capacity is 81 Gw. Natural gas fuels about 70% of the CHP systems. The resilience benefits of CHP depend upon the resilience of the fuel source. Upgrades to the gas transportation system continued in spite of the pandemic. Investment in the transmission and distribution of natural gas increased by 50% since 2010.

Stuart Saulters, of the American Public Gas Association, noted that residential consumption is decreasing, while demand is increasing. End users are operating more efficiently. Individual consumption declines, but more entities are using natural gas. Natural gas fired heat pumps are one example.

Patrick Serfass, of the American Biogas Council, noted that the production of biogas from waste materials continues to increase. In 2020, biogas investment and production both increased. Last year, there was a big jump in investment (nearly double) as several polices provided incentives for investment. Renewable fuel

standards at the state and federal levels were largely responsible. In some cases, the natural gas that is produced can be low or no carbon fuel.

Jacob Peterson of the National Propane Association pointed out that propane provides 2% of the energy, but 1% of the GHG emissions in the US. This fuel is used in the residential sector. Most of the use is for heating, but emergency generation is becoming more important. More homes are installing back up propane generators to provide power when the grid goes down due to storms or other problems. There are also buses and other heavy vehicles that can run on propane. Renewable propane is produced from biodiesel. Propane can also be used to supplement natural gas in CHP systems.

III. A Guide to Reporting GHG Emissions – **Wendy Merz** and **Christi Wilson**, Trinity Consultants, Inc.

Wendy noted that in recent months there have been more requests for help on preparing reports for GHG and carbon footprint issues. The drivers include regulations, investors, and customers. There are requirements for GHG emissions reporting. Investment organizations are concerned about impacts on GHG requirements applied to investments of interest. Customers have concerns about carbon footprint and overall carbon life cycle. Overall, companies are being requested and required to disclose risks around climate threats and opportunities.

Climate legislation has been introduced in the House. Carbon pricing is anticipated. The social cost of carbon has already been increased. Clean energy economy investments are expected to increase. These activities have to be grounded in knowing the existing carbon footprint.

Christi provided information on establishing GHG emissions inventories. There is a GHG Protocol Reporting Standard. Accounting Attributes have to be relevant, complete, consistent, transparent, and accurate. There is a mandatory reporting rule for EPA. However, regulatory reporting was aimed at developing a cap and trade program, based on the experience with the EU cap and trade system. However, there are some limitations of the current reporting requirements based on size, industry sector, emissions factor, and accuracy.

The transportation sector is not included. There are also different calculation methodologies. These factors are driving companies to look at other approaches. There are organizational boundaries and operational boundaries. There are Scope 1, 2, and 3 categories. Most companies look a Scope 1 and 2. Scope 3 is optional. Under organizational control there is equity, financial, and operational control. For equity control, emissions from that entity are counted in proportion to the equity.

Scope 1 is basically direct emissions. Scope 2 involves supply chains, purchased materials, purchased energy, etc. Scope 3 includes end use emissions, as well as any indirect emissions upstream and downstream. Scope 3 reporting is complex. There are a number of categories to be evaluated. They have to be reviewed to see if they are both material and relevant.

As an example, a power generation involves getting fuel out of the ground and transporting it to the power station. The power station sells electricity to another company for distribution to end consumers. There are 4 entities involved. The first company has Scope 1 emissions, but not Scope 2 emissions unless it purchased electricity. There would be Scope 3 activities. The second company would have Scope 1 emissions, Scope 2 supply chain emissions, and Scope 3 in selling to the T&D Company. The end user has no Scope 1 emissions, but has Scope 2 and Scope 3 emissions. There is a serious danger of double counting. Documentation of assumptions and justifications is critical. A good, well established, well documented procedure needs to be established.

Fred Fendt, The Dow Chemical Company, noted that looking at the process like an accountant, as opposed to an engineer, helps provide some perspective on the process, especially for deciding which items are material or relevant. Product life cycle analysis can go hand in hand with Scope 3 estimates.

A baseline year has to be selected and justified. Mergers, acquisitions, and divestments will influence that selection. Changes, improvements, and accuracy impacts may also be important. A 10% change is considered material. Once the boundaries have been established, the actual emissions sources need to be identified. Then all the data has to be collected and rolled up. There may be a number of internal requirements that require the results to be broken down in various ways. That part will be time consuming. Finally, performance will need to be tracked over time.

Bench marking can also be an issue, particularly if other companies are not using the same calculation methods. Transparency in individual reports and disclosures also fluctuate wildly. The next step is target setting.

With the return to the Paris Accords, the goal was set to try to get down to zero carbon emissions by 2050 (1.5 C scenario). This has prompted some companies to announce their own targets. These also vary considerably. Net zero at the corporate level might mean reducing Scope 1 emissions while offsetting other emissions or from the atmosphere. Companies then have to set up mitigation strategies. This might include abatement, neutralization, and compensation.

Abatement is straight reduction. Neutralization is action to reduce other emissions or CO₂ from the atmosphere. Compensation is essentially buying offsets that someone else creates. Target types, target boundaries, base year, and target year all have to be established. Mitigation strategies have to be identified. Some may be commercially available and some may take some development.

Mitigation strategies then need to be ranked to try to determine if the target year can be reached. Intermediate objectives can be selected. At this point, costs can be considered. Once targets and time frames have been established, a system for tracking the performance needs to be implemented. As time goes on, the mitigation strategies will likely have to be revisited to either take into account changes in available technology or failures of a promising technology to develop.

There are several target setting approaches, including absolute emissions reductions, sectoral emissions abatement, and intensity targets. Some companies are using an internal cost of carbon pricing. This price is used to make sure that projects take GHG emissions into account when making capital investment decisions. It is also used to drive efficiency projects. Prices have been variable across companies. Some are as high as \$100/metric ton. Recommendations are to set prices at \$40 - \$80/T in 2020, and increasing to \$100/T by 2030 to meet the Paris agreements.

Virtual Environmental Committee Meeting Minutes

Wednesday, March 10, 2021

Environmental Committee Chairman: Kristine Davies, Trinity Consultants, Inc.
Vice Chair: Thuy Mai, DuPont

I. 2021 Executive Orders – Joe Stanko, Hunton & Williams, LLP

Joe noted that he has had a long collaboration with CIBO. Executive Orders (EO) do not create any more legal authority to do things than the president already has. They are a statement as to the administration's policies, consistent with regulations that are already in place. For the Biden Administration, they recognize that they will not likely be able to get legislation such as the former Waxman/Marky bill, actually passed through both houses of Congress. That means that they will be pushing for any other leverage that they can get to try to make climate issues front and center.

EO's have been around for a long time. The recognition that, by the second year, it starts to get difficult to get reform legislation passed, the EO's have become the messaging very early in the start of an administration. Trump was very successful in this approach. The Democrats have learned from this and have pushed for as many as possible right away. The Democrats also learned from the Trump administration about getting people in place at the agencies. They have put people in positions down from the top that can readily be approved going forward.

The first two EO's claim to be restoring the “science” to policy making. The second one established the President's Council on Science and Technology. The next one called for protecting health and the environment and restoring science to tackle the climate “crisis”. This one has more moving parts. A lot of reviews were sent to the agencies. The agencies were to report back to OMB with their plans in February. None of these have been seen.

The Attorney General has been given authority to ask the Courts to pause on any suit addressing issues from the previous administration. The social cost of carbon was modified. The Obama Administration changed the calculation to give more value to future benefits by using a 3% discount rate. The Trump Administration changed that to 7%. The current move has gone back to use either 2, 2.5, or 3% for the discount rate. With a higher cost of carbon, regulations that have to evaluate actions using the social cost of carbon will be able to justify more carbon reductions.

The next EO was on modernizing regulatory review. OMB is to modernize its review process to include all of the social benefits (Environmental Justice, burdens on vulnerable or marginal communities, etc.). These are supposed to include considerations that are difficult to quantify. Environmental Justice will play a bigger role. An administrative tool is to be developed by May. Any environmental violations will see more severe penalties if they impact vulnerable or marginal communities.

John Kerry was appointed as the climate czar. He has to direct the agencies to take actions that will accomplish the Paris Climate goals. There is a memo from the acting attorney general to the Department of Justice concerning abeyance of cases involving EPA rules. Given that there is little likelihood of direct rules on carbon reductions, there will be a host of other actions that will show co-benefits for GHG reductions. The words to watch for are “cumulative impact analysis”. This could add more layers of challenges on plants and emission limits.

II. MIT CEEPR Review - **Carl Bozzuto**, CIBO Consultant

Carl reviewed some of the programs at MIT, noting that there are a couple of new ones. MIT announced the formation of the Climate and Sustainability Consortium. The Dow Chemical Company and Cargill Incorporated are members.

The Concrete Sustainability Hub recently issued a paper indicating that concrete roadways capture CO₂ in the atmosphere. When broken up, they capture more CO₂.

The MIT CEEPR program looks at policy actions and attempts to analyze their impacts going forward. Several past examples were cited. The Roosevelt project is being run under the CEEPR initiative. It is looking at the impacts of decarbonization on regional areas. Recent results were presented for Southwest Pennsylvania. It was noted that existing energy jobs are higher paying than jobs in the other sectors in that region across all pay and education scales. Loss of a good energy paying job will mean a cut in pay for these people. CCS is being anticipated, but there is no infrastructure for CCS and no CCS projects. Today's webinar was on storage. There is one coming up on climate initiatives in the Biden Administration.

III. Environmental Justice Primer – **Lisa Jaeger**, Bracewell LLP and **Jim Powell**, Mostardi Platt

Lisa pointed out that the EPA definition of Environmental Justice (EJ) is the fair treatment of all people regarding regulations and access to health impacts. This includes having input to the regulatory process. The concept began as part of the civil rights movement. There was a “sit in” in 1982 that prompted a GAO study that indicated that waste sites were typically located near African American Communities. Further studies and reports led to President Clinton to issue an Executive Order to establish an EJ work group to coordinate with each agency to review their programs and find the disproportionate impacts and interpretation. The EPA came up with a strategic plan for 2016 – 2020. One of the goals was to encourage innovative compliance measures including injunctions, mitigation, and supplemental environmental projects (SEPs).

The Trump administration objected to SEPs on the grounds that the government could impose no additional projects other than what was required by law. Activities were to be evaluated using EJSCREEN. Enforcement, communication, and data collection are being emphasized. Government wide investment is directed to target 40% of funds to addressing fixing these problems for low income and systemic race issues.

The White House has established an EJ Advisory Council. It has 18 new members. The EPA has an EJ Advisory group. There is a National Climate Council led by **Gina McCarthy**, former head of EPA. Climate and EJ are being combined. There will be heavy emphasis on data gathering. The regulatory review will look back at all 4 years of the Trump administration, rather than the most recent ones to determine whether or not any of these regulations put more burden on disadvantaged communities.

The proposed head of EPA has stated his support for climate action and EJ principles. Courts can use EJ as a basis for permit challenges. ESG will include climate and EJ issues. These can be expected to show up in the ESG scores that are given to companies by investment rating agencies. There will be a lot more uncertainty, as there are many new words (terms) that do not have an agreed upon definition to provide guidance to those that have to justify their projects and programs.

Jim Powell cited experience with EPA Region V concerning EJ. The region intends to work with communities and organizations in a variety of ways to address EJ issues. Illinois decided that EJSCREEN was insufficient and developed their own tool. With this tool, geographic areas have been identified that

have EJ issues. A permit modification was needed for an existing plant. An eNGO came up with local data to challenge the permit renewal. Although there were no immediate houses, etc., because air emissions were involved, additional analysis was required.

For a minor source, there was a fire which destroyed 3 units. In order to rebuild, additional EJ analysis was required, along with additional controls. These tools provide a map which depicts areas of disadvantaged communities. It is not a risk analysis. It just shows where these communities might exist. Data on demographics, air quality, traffic, and health issues is included with racial concentration. Data that is submitted to national databases is available to the public. These issues are a part of the permit process and must be addressed.

At one plant, there was a complaint from a neighbor. The state DEP came 3 times and did not find anything. The neighbor hired a lawyer that sued the DEP. The DEP came a fourth time. Unfortunately, there was a fire at the plant on that day. The DEP issued a cease and desist order on an EJ basis and told the plant that they had to make corrections and settle without due process.

IV. MOG Update – **Ann McIver**, Citizens Thermal

Ann noted that MOG had their winter meeting in February. The former decision not to change the NAAQS will be reviewed by the new administration.

The CSAPR update rule is under a March 15 deadline to issue the updated rule. EPA is working towards that deadline. Non EGUs were not included in this rule. However, there were a lot of contents taken and some indicated that the rule did not go far enough.

There was also the issue of 2023 vs 2021 data being used to address the impacts on the need for additional reductions. Given the new administration, it would not be surprising if either something shows up in this update, or there will be another update

V. Environmental Committee Purpose, Objectives, & Activities, **Kristine Davies**, Trinity Consultants, Inc.

The purpose and objectives were briefly discussed. These will be sent out to the full committee for comments. It was also noted that a Coordinating Committee on Sustainability was also suggested, with members from both the Energy and Environmental Committees. Any suggestions on that approach would be appreciated.