CIBO Environmental Committee Meeting
December 7, 2021
Virtual

Environmental Committee Chairman
Robert (Bob) Morrow, Detroit Stoker Company

Alex Stoddard, CIBO, introduced **Bob Morrow, Detroit Stoker Company,** as the new Chair of the Environmental Committee. Alex noted that we have retired the Thorn in the Side Award in honor of **Bob Bessette**. A new award has been started, called the Flame Award, for those that support CIBO, particularly in a voluntary manner. This year, the first Flame Award will go to **Dan Todd, Alliance Technical Group** for his help, in spite of his retirement, as Treasurer, Executive Committee Member, and Associate Member.

Update on GHG Emissions and Sustainability Reporting
Wendy Mertz, Trinity Consultants, Inc. & **Fred Fendt, The Dow Chemical Company**

Wendy started off with a presentation on the reporting issues. There has been a fair amount of activity since the March Meeting. The drivers for ESG reporting include regulators, investors, and customers. In particular, investors are concerned about the impacts on businesses from various climate and ESG pressures. There are index funds that specialize in investment in ESG companies. Also, GHG reductions could have substantial impacts on those companies that rely heavily on fossil fuels. The TCFD has issued recommended disclosures for companies concerning climate risks, risk management, GHG targets, and plans to achieve those targets. Scope 3 targets are now being requested.

On the regulatory front, the new administration has set targets for decarbonizing the power industry and be net zero for the overall economy by 2050. The Paris goals are looking to keep the projected global temperature increase to less than 2 C and preferably 1.5 C. That would require the whole world to reach net zero for carbon emissions by 2050 and all GHGs by 260 – 2070. The administration has priorities decarbonizing electricity, electrifying end uses, cutting waste, beyond carbon reductions, and scaling up carbon removal sectors. The Executive Order issued in January cut across all agencies. As a result, the SEC is preparing Climate Disclosure Requirements. Comments thus far appear to support the requirements with respect to Scope 1 and Scope 2 emissions and consistent with SASB and TCFD recommendations. There are a number of alliances at the state level. Current members include 25 states. These states has established GHG targets and action plans.

Land sinks are being inventoried to evaluate how these sinks can be enhanced to help reduce GHG concentrations in the atmosphere. More states are using the social cost of carbon in their analyses. Business implications include potential regulations, mandatory reporting, carbon pricing, and increased risk. Customers are also making their considerations known. This is not just supply chain management, but also general consumers starting NGOs that target companies on GHG issues. Current trends in voluntary disclosures. There are companies that have established ESG ratings.

The Sustainability Accounting Standards Board (SASB) is directed toward investors. It employs the concept of materiality to investors (ie financial impacts). The Global Reporting Initiative (GRI) includes additional ESG performance factors. The Task Force on Climate Related Financial Disclosures (TCFD) has been a major reporting system that attempts to make standards for reporting.

The Climate Disclosure Project has a questionnaire that companies can respond to a subsequently get a score.

The SASB has a materiality map that gives some idea of which factors can be considered to be material to a given company. The TCFD has issued 2021 Guidance for implementing their recommendations that includes examples. Their approach includes 7 basic principles including transparency, timeliness, comparability, and impact. More details are being required. Reporting on an internal price for carbon and its application and enforcement is requested.

Scope 1, 2, and 3 questions are becoming more frequent. Scope 1 covers actual plant emissions. Scope 2 includes indirect emissions such as supplied energy, immediate supply emissions. Scope 3 includes upstream and downstream emissions including supply chain and transportation/distribution of product. For Scope 1, the source categories include combustion (stationary and mobile), process emissions, and fugitive emissions. Under Scope 2, accounting for biomass emissions are still subject to interpretation. Biomass CO2 emissions are reported separately and are typically considered to be zero emissions. However, there are studies underway that are looking at the overall biomass cycle in order to determine which biomass sources will be considered carbon neutral. Methane and N2O emissions are counted in the GHG emissions. SASB has identified biomass sources that can be considered carbon neutral. Scope 2 emissions are typically electricity use. Typically, an average grid based GHG emission factor is used for the location of a plant. These factors are updated annually. Market based factors can be used for onsite renewable generation or contracts for renewable power. Credits can be used, but there are requirements for the quality of the credits and offsets. The major question for Score 3 involve the need to include it. There are 15 different categories for Scope 3. Right now, Scope 3 reporting is voluntary, but the concept of relevance comes into play.

A coal company can reduce its site emissions, but the combustion of coal produces substantial CO2 emissions. Most of the guidelines consider this to be relevant and should be estimated an included in the company footprint. Product Life Cycle Accounting is being pushed. While there are some "soft" reasons for this request, the EU is looking at border adjustment tariffs for products that have different carbon footprints.

There are also state initiatives such as the "Buy Clean California Act". GHG Inventory Best Practices includes the development of a protocol document that shows all of the assumptions and baselines for all of the above reporting, including monitoring and verification of emissions. Such a document helps with any third party verification. There is also considerable variation in the targets set by companies. Variables include dates, levels of reductions, use of offsets. CO2 vs all GHGs, and sectors of companies. The Science Based Targets Initiative is trying to set standards for such target setting. In particular, offsets and credits are not counted. Verifiable actual reduction targets are required. Targets should be consistent with the 1.5 C goal. Net zero constitutes a balance between anthropogenic emissions and removals. The basic idea is to reduce what can be reduced and then capture and store the rest. Natural sinks can be utilized (ie planting trees, mineralization, etc.). However, emission reductions should be targeted at 95% of the footprint, while natural reductions should be no more than 5%. Near term targets (<5 yr) are also being required. SBTi Net Zero Pathways are under development. Right now, the power industry is nearly ready. Some industry groups have established ESG committees, as well as establishing pathways. Messaging on these issues is ramping up. Scope 4 is avoided emissions that is outside of the value chain. There has to be additionality to get credit.

Fred Fendt, The Dow Chemical Company, pointed out that he got "thrown into" the GHG reporting role at his company. Calculating emissions and energy consumption has always been a technical

exercise. However, financial perspectives do not always understand the differences between accounting practices and engineering practices. Significant figures do not have the same meaning to these groups. Financial figures can be accounted for fairly quickly. Estimating emissions from using electricity may take 6 weeks to get the bill and 18 months to update the emissions factors attributed to that particular grid. Public statements about GHG emissions are typically audited and approve by financial people. Their perception of what is verifiable will likely be different from what can be estimated. The amount of verification and validation steps are substantial. Invoices come in dollars, which have to be converted to kwhrs, which then have to be converted to CO2 emissions. All of these steps have to be verified and documented.

Update on EPA Air Regulations – **Tim Hunt, AF&PA & Skipp Kropp, Steptoe & Johnson**

Tim reported on air regulation prospects. Air regulations continue to be reviewed and revised. The new administration wants to include climate issues and EJ issues in all of their activities. On the NAAQS, EPA has move quickly on the particulate matter. A new science assessment have been done. A double blind study has not been done, but new tools are being used to estimate health effects, welfare, and visibility. Concentration response functions will be critical. The annual standard may go down from 12 micrograms/m3 down to 6. The daily standard may go down from 12 to 8 to 5. Wildfires and biomass emissions are also being looked at. AF&PA has filed comments recommending the retention of the existing standard as there are many confounding issues and uncertainties in the proposed impacts. The key studies still don't meet a full "Grade A" study on which to base these standards. Spatial and temporal impacts are also confounding factors that EPA needs to consider. Exposure and response issues have also been raised. A PM policy assessment has been issued by CASAC. There is support for the 8 – 10 level. Draft comments have been sent out to members for review. Comments are due December 14. A proposal is expected over the summer of 2022 with a final rule in the spring of 2013. It doesn't look like secondary standards will be the driver. The annual standard appears to be the main concern. There will be EJ elements considering disproportionately exposed groups.

The EPA has announced that they will reconsider the ozone standard as well. A final rule is expected by the end of 2023. No schedule has been issued. Climate issues may play a role in the justification for changing this standard. Some reviews on NOx, SO2, and ambient aerosols may also be forthcoming. For BoilerMACT, there are still a few issues left. CO as a surrogate and the 130 ppm cut off had to be addressed. However, this issue is not getting attention due to other priorities. There are likely to be some tougher limits for solid fuel boilers. The Risk and Technology Review (RTR) time frame of 8 years has passed. Also, if there are any new limits, they should not be applied to units built back in 2012/2013.

There was a court decision that EPA did not look at all of the HAP emissions they should have in the Pulp and Paper MACT. A wide variety of HAP are being pulled up in the next RTR for several industries. HAP testing will also be likely. Work practice standards will be more limited. Boilers may not have as many HAP gaps. Nonhazardous secondary materials (NHSM) are being reviewed. Rail ties may get excluded. There is a potential climate impact, as rail ties are biomass.

EPA is adjusting their modeling guidelines again. A new draft was released in September. Draft final guidance has gone to OMB. Release is anticipated next summer. More species are being considered, even some that are below the SIL.

The 2015 SIP call has been reinstated. This will cause states to review their SIP provisions. A lot of

discretionary positions could be eliminated. Expect a lot of court battles on this. NSR issues are being voluntarily reviewed. The pace of regulation is increasing. Next year will be critical in getting any rules settled as many will end up in court.

Skipp provided an overview on MOG work. EPA has usually deferred to the DC Circuit Court for their deadlines. However, there have been other courts that have imposed deadlines on EPA, which do not necessarily have jurisdiction. This has resulted in some shortcuts being taken as EPA has decided to try to meet those deadlines. On the CSAPR update, the briefing schedule has been issued. MOG contends EPA took a number of shortcuts for the remand response to the court. They did not consider existing projects that are on the books. They failed to conduct photochemical based modeling. Certain maintenance issues were ignored. Petitioners were denied an adequate comment period. EPA's action was inconsistent with the Wisconsin Remand. Some retired units were included. EPA is expected to respond in February.

The New York Consent Decree on the 2015 ozone SIP ignored the state's right to revise their SIP and went right to a FIP. The downwind states have the same problem.

Comments have been filed on EJ comments from an EPA stakeholder meeting. By law, the annual ambient standard provides an adequate protection of human health and welfare. That includes low income and other EJ communities. MOG has pointed out that mobile sources are the primary source of states not meeting the 2015 ozone standard. Point sources are at least 1/3 of the contributions .EPA is focusing on the power sector, which is now the wrong source. Upwind power sources are not the problem. Objections to trading programs on EJ grounds does not make sense under the law.

The Our Children's Earth consent decree would require EPA to meet RACT determinations and SIP revisions by 2024. EPA has missed a number of dates, but are now claiming the need to “do something”. The New York Simple Cycle Combustion Turbine controls requirements missed the 2021 requirement, but the final requirement is 2025. Good neighbor SIPs would be impacted. New York commented to EPA that mobile sources impact monitors in CT by 4 ppb. The CT monitors are within 2 ppb of meeting the standard. EPA proposed disapproval of the New York Good Neighbor SIP on the basis of harmonizing the dates. EPA cited the Wisconsin remand, but did not follow through with the NY ruling.

On international transport, the CAA allows such contributions to be subtracted from monitors that are impacted. Utah submitted a request to consider a problem with attainment from international contributions that were fairly consistent throughout the year. Usually, Border States are the ones that are allowed exemptions. Wildfire contributions are also being claimed. EPA denied an Illinois request. LADCO pointed out the EPA has ignored data submitted to justify the exemption.

MOG has produced maps for ozone concentrations that show the impact of various standards. The 70 ppb standard mostly impacts California. In the east, the I-95 corridor is mostly impacted. As the standard is dropped more counties are included. At 60 ppb many counties get included. For PM2.5, again most of the non-attainment is in the west. As the standard is reduced the midwest gets included. At a level of 4, nearly all areas get included. EPA has some data problems in the revised CSAPR decision. With corrected values, a fair number of areas show little or no contributions to downwind states. The EPA dismissed the NY and MD 126 petitions. The courts sent the petitions back to EPA to reconsider. So far, nothing has been reported.

On the modeling, numerous units that are not EGUs are reported in the inventory. EPA is now modeling 25 states, instead of 12. Florida, Georgia, South Carolina, and Rhode Island have been excluded with their SIPs having been improved.

Government Affairs Update – **Alex Stoddard, CIBO & Neil Naraine, International Paper**

Neil is the new Government Relations Chair for CIBO. The bipartisan infrastructure bill has been passed and signed into law. The continuing resolution has been extended to February 18, 2022. The debt ceiling is still an issue, but rumors are that it will be handled by next week. The Build Back Better Bill is still up in the air in the Senate. It is unlikely that there will be enough time to get that done this year. In the infrastructure bill, there is $7.5 billion for carbon capture and $9.5 billion for clean hydrogen. There will be a new department in DOE to handle some of these funds. For the BBB bill, there is currently a number of proposals for energy efficiency, electrification, and carbon capture. However, grants would be preferable to tax credits, but tax credits score better with the CBO.

There are more than $320 billion in tax credits earmarked for climate, renewable energy, energy efficiency, biofuels, carbon capture, and others. There are now union requirements in the bill. There are generally two rates of credit. If the project meets the union requirements, the higher tax credit will be offered. If the project does not meet the union requirements the amount is less. The 45Q credit was slated to go to $85/ton from $50/ton. However, if the project does not meet union requirements, the amount will only be $62/ton. CIBO should meet with the DOE offices to discuss what funds might be available. We will likely have to go back to the Hill for technical fixes to these bills. On PM, we will have to meet with EPA to discuss scientific uncertainties, modeling differences, and study qualify. PFAS issues will also require some discussion with EPA.

Update on PFAS – **Gary Merritt, Northern Star Generation Services, Co. LLC**

Gary provided some highlights and points going forward on PFAS/PFOS. The EPA has established the EPA Council on PFAS to develop a strategy for management of PFAS. In October, EPA releases its PFAS Strategic Road Map. At the end of October, EPA stated its intention to regulate under RCRA. EPA proposes to list PFOA, PFOS, PFBS, and GenX as hazardous constituents under RCRA. EPA has the authority under RCRA to investigate, cleanup, and remediate hazardous waste. A term "hazardous constituent" is an important step in declaring such materials as hazardous substances. If successful, industry will need to characterize and handle PFAS in compliance with RCRA. They may need to monitor input streams to make sure these substances are not concentrated in industrial processes. We can expect increases in waste management costs, more monitoring and reporting, and potentially more clean up systems. Residual contamination clean up could result. Even landfills that may have received materials that are now considered hazardous could results in a cleanup requirement. Due diligence and appropriate inquiries should be carried out to make sure that waste streams and products meet requirements. Typically, the current standard for PFAS in drinking water will be the starting point. Testing may be required to determine if there is a problem. Now PFAS will be a federal requirement, it will no longer be a state by state determination. Awareness is important. Checking on this aspect. We need to make sure to work with the National Chamber and the NAM on this topic. There are a lot of little things that could come up as a result of this determination. Gary noted that control measures include activated carbon and reuse in plastics.

Ann McIver, Citizens Thermal, pointed out that they are waiting for determination on the level required in their programs. They are looking at 28 compounds. However, there could be up to 5000 compounds altogether. She noted that if the material is separated from their waste water, it

automatically becomes a hazardous waste. Monitoring consists of sampling and sending to a lab. PFAS is in a lot of products including hand sanitizers and food packaging.

CIBO Energy/Sustainability Meeting
December 8, 2021
Virtual

Energy/Sustainability Committee Chairman
Robin Mills Ridgway, Purdue University

MIT Research Update, Roosevelt and CEEPR – **Carl Bozzuto, CIBO Consultant**

Carl reported on results presented by the MIT Roosevelt project and the MIT Center for Energy and Environmental Policy Research (CEEPR) in 2 virtual webinars last week. The MIT Roosevelt project is sponsored by the MIT CEEPR program and over 24 companies and organizations. The project is headed by former Secretary of Energy, Ernie Moniz. He noted that a deep decarbonization transition in the US will have unequally distributed effects across socio-economic groups, geographies, and economic sectors. The goal of the project is to provide an analytical basis for charting a path to a low carbon economy in a way that promotes high quality job growth, minimizes worker and community dislocation, and harnesses the benefits of energy technologies for regional economic development. The current project has 2 phases: a broad based analysis as a base line and 4 case studies. Industrial transitions have caused issues in the past as different industries rose up and then declined.

There are 4 general areas that encompass markers of community health: human capital, business landscape, policy environment, and social fabric. Each domain includes multiple societal attributes that affect community outcomes and each may drive success in a way that is distinct from others. In one example, the carbon footprint for each of the 75,000 census tracts in the US was examined. The heaviest carbon footprint was in the Midwest followed by the northeast. Clearly, an across the board carbon tax will impact those areas more strongly than the rest of the country. One example was the closure of a coal fired power plant in Ohio. In that case, the tax revenues from the plant made up 10% of the county budget. This caused problems in addition to the job losses. There were similar stories for Lake Cayuga in New York and Comanche in Colorado. Retraining programs have not been very successful in general.

In every case, in every geography, and every community size, retraining and community support was placed in the hands of corporations, which made the process opaque at best. Facilities with proximity to strong research hubs can lessen corporate reliance by partnering with universities to develop a more skilled manufacturing line. Policy packages are strongest when they acknowledge distinct regional social fabric and human capital. Knowledge of a community's skill set and an understanding of the geography is paramount to managing a transition.

Nearly every example of industrial transition investigated benefited from a robust structure of communication and trust between local players. Some economic studies were carried out. A baseline case was done to look at costs, jobs, industries, and social conditions. Current regulations and policies were assumed. There was some decarbonization, but the 2030 and 2050 goals were not achieved. A second case was done using an “unplanned” approach. Rules and limits were assumed, but no real planning for impacts was input. All regions showed a decline in GDP as a result. A third case was

done simulating “recommended” policies. These included recycling of carbon tax revenues to harder hit areas, job training and infrastructure improvements, border adjustment tariffs, and coordinated policy interventions across jurisdictional scales.

In the second phase, 4 regions were studied in more detail. The first region was southwestern Pennsylvania. This region went through a major transformation with the steel industry. There was a definite decline in the region, but there was a strong social fabric. The region recovered to a reasonable extent by rethinking and reinventing the region. Healthcare was identified as an area of focus. The region now specializes in healthcare research and services.

For decarbonization, another focus will be needed. Suggestions include environmental reclamation and remediation as well as carbon management. Regional CCS hubs were cited as a possibility. Small nuclear reactors were also suggested as there are still skilled workers in the region from the old Westinghouse facilities.

The next region was the industrial heartland, which included Michigan, Ohio, and Indiana. The main focus was the auto industry. In particular, the conversion from IC engines to EVs was studied. Manufacturing is still the largest source of jobs in the region and the auto industry is the largest manufacturer in the region. Historically, the region has experienced over 180 plant closures since 1980. Workers feel as though the conversion to EVs is better than nothing. However, there is still a lot of uncertainty and concern that this transition will be just as bad as past declines. In particular, parts manufacturing will suffer the most, as parts for IC engines are different from EV motors. There is also uncertainty over the “success” of EVs. The pay scale at plants in the region is still 40% higher than foreign based plants in other parts of the US. This leads to the suggestion of the need for higher paying union jobs.

The auto industry is not the only one to suffer. Incandescent light bulb plants have been closing. Appliance manufacturing has been moved offshore. Coal fired power plants are closing. Potentially 100,000 jobs are at risk. CCS will be needed due to the coal base in the region. Solutions can be identified, but implementation will be very difficult due to the different perceptions of all the parties involved. The third case study was the Gulf Coast Region. The major industry is the oil and gas industry. The energy transition will have a major sociological impact on this region. The community strongly identifies with the energy industry. Opportunities include industrial facilities, energy infrastructure, trained workforce, and port facilities. Many of the potential solutions need the same skills as the current industry (think CCS and blue or green hydrogen). Recognition of the problem without finger pointing can help to establish a path forward. Interviews were done with 75 leaders and stakeholders in the region. New social processes will be needed to help bring these people together. The region would be ideal for a CCS hub and a hydrogen hub. A Gulf Coast skills consortium has been suggested. The DOE needs to demonstrate more of the technologies that are applicable to the region. The fourth case study was New Mexico.

The state is a producer of both traditional and renewable energy. The energy transition is already underway in the state. However, fossil energy supplies roughly 50% of the GDP of the state. The state has espoused a goal of a 45% reduction in GHG emissions by 2030. Most of the reductions are planned for the utility industry. Transportation accounts for 34% of the state's emissions. Clearly the other sectors will need to reduce emissions as well. Rural and low income households spend a disproportionate share of their income on transportation. Due to the low population density, charging infrastructure is difficult to implement. CCS and hydrogen hubs can be implemented due to the amount of co-located assets.

Mining is another opportunity as many metals and materials will be needed in a low carbon future. Biogas and renewable gas can become net negative with the use of CCS. Geothermal resources are also available. There is a need for base load power to be combined with renewables. Distributed energy on public, private, and tribal lands can help renewables. Hydrogen and BECCS represent opportunities for the future. Fugitive methane emissions need to be reduced.

There are 2 national labs in the area that can be used for resources. Note that CCS was clearly identified in these case studies. Several presenters mentioned the funding that is in the infrastructure bill. According to the Global Carbon Capture and Storage Institute, there are currently 24 operating facilities in the US and another 50 projects planned for startup by 2025. Also, some of the ideas show up in the "Build Back Better" bill. Policy issues will be highlighted. More R&D is still needed. Additional studies need to be done on the rest of the regions in the country.

A means to sum up the results from all of these regional studies will need to be developed (i.e. a bigger model than the current ones). The MIT CEEPR program presented some results from some studies done on the steel industry. Cement, iron and steel, chemicals, non-ferrous metals, and refineries are being studied as the more difficult industries to decarbonize. Power, industry, transportation, and building all intersect with regard to carbon emissions.

One possible pathway is to make industrial processes more flexible so that they could better integrate with other sectors. In the steel industry, both blast furnace technology and direct reduced iron technology use coal to provide energy for steelmaking as well as the carbon for carbon steel. Pathways to lower carbon intensity include CCS, hydrogen, biomass, and natural gas. Increased utilization of scrap steel in electric arc furnaces can also help. MIT conducted studies on the two main technologies. The results have indicated that CCS is the most cost effective way to reduce GHG emissions. The use of hydrogen in the DRI process can become more competitive as the power grid becomes less carbon dependent.

For natural gas processing, ammonia production, and ethanol production, CCS costs are lower at about $50/ton. For other industries, the costs will be closer to $100/ton. The use of blue and green hydrogen in these industries can reduce GHG emissions. Questions remain about the production and transportation of large quantities of hydrogen. The Ceres Group is an NGO based in Boston. It was founded by a family grant after the Exxon Valdez incident. It is primarily funded by foundations, particularly those with an ESG lens. There are over 200 institutional investors with over $47 trillion in assets under management. There are 647 member companies. Ceres works with companies to improve their ESG commitments. The US steel industry is already the most carbon efficient steel industry in the world. This is primarily due to the use of electric arc furnaces. As the power grid moves toward more renewables, this situation will continue to improve. At this time, US steel producers have 2030 and 2050 reduction targets. There are 2 green hydrogen projects for steel underway in the US. The Ceres Clean Steel Program is pushing the industry to adopt medium term targets proposed by the Science Based Targets Initiative. They are also pushing for the industry to get to net zero by 2040. It was pointed out that the EU will be adopting product based GHG requirements that will involve border tax adjustments. It was also noted that without a carbon price, it will be difficult to make cost comparisons. Nearly all of these pathways cost money. It was also pointed out that when increased costs hit consumer pocketbooks, there will be a backlash to these increased costs.

In summary, costs are going up. Regional differences matter. Worker dislocations and community disruptions will need to be addressed. CCS and hydrogen appear to be the current technology approaches to something like near and medium term applications. There are going to be a lot more

commissions and councils appearing in the next few years. It looks like "hubs" will be the new buzzword. Only one of the four studies mentioned small nuclear reactors. Current nuclear plants are 1100 – 1300 Mwe. The DOE small reactor program is looking at 100 Mwe. By contrast, submarine and aircraft carrier reactors are around 25 – 30 Mwe. There are currently 70 advanced nuclear projects in North America. Further scale down to 10 Mwe or less is being considered for what is being called a nuclear battery. This system would have enough nuclear fuel for 10 years of operation without refueling. It would be portable so that it could be, essentially, "plug and play".

Environmental Justice Update – **Lisa Jaeger, Bracewell LLP**

Lisa noted that we have focused a lot on EJ issues lately. It is a relatively new approach to have every government agency have an EJ program. EPA has had such a program and has a definition. Fair treatment includes not just race based issues but also low income groups. The Biden administration has tied climate and EJ through an Executive Order. A National EJ Advisory Council has been in place since 1994. There are some screening tools in existence. A new tool for climate issues is supposed to be issued shortly. NEJAC has issued 6 working group reports. Justice40 looks to direct 40% of the benefits of federal programs to go to disadvantaged communities. Definitions of benefits and programs need to be carefully put forth. The infrastructure bill directs $60 billion for drinking water and wastewater systems to EPA. The EPA annual budget is only $15 billion. Most of the money will be dispersed via the states with EPA approval. The top priority is to target resources to disadvantaged communities.

EPA is working to shore up their enforcement authority. Nothing really works without the potential for realistic enforcement. The Department of Justice started looking at EJ issues in the Clinton administration. Title VI of the Civil Rights Act prohibits discrimination. Most agencies have regulations that prohibit the effects of indirect discrimination. An individual can file a suit in federal court. Also an individual can go to the agency and ask for redress. If a program had a discriminatory effect, the agency cannot be sued. The agency can defund a program if said program is deemed to have a discriminatory effect. Agencies cannot use practices that result in discriminatory impacts. This is an interpretation and not specifically mentioned in Title VI.

If EPA funds a project in Texas, a complainant in Texas would have to direct its complaint to the EPA and have EPA investigate the complaint. The top two goals in the current EPA strategic plan are climate and then EJ. Comments on the plan were due in November. Nearly 120 comments were received. EPA has added disability, age, and language difficulties to Civil Rights definitions. Income was not included.

For climate issues, EPA states that deep decarbonization will be needed in industry to address climate issues. EPA will work to strengthen civil rights enforcement in communities overburdened by pollution. Texas questioned EPA authority in some cases where the state has no control but might be cited by EPA. More definitions and guidance are needed. Definitions of "disproportionate impacts" will be needed. Permitting has not typically looked at impacted communities, as permitting is a function of EPA regulations. States have to have input to these rules, guidance, and definitions. In many cases, rules are needed and not guidance to provided consistency and force of law.

The DOJ has stated that there is no legal definition of EJ in any law right now. As long as there is no intentional discrimination, there is no illegal practice. This is a huge challenge for EJ enforcement. EPA is also looking to assure that air quality is not degraded by industrial sources. Risk assessment and

planning will get more scrutiny. They will review modifications under the CAA to include risk assessment and safety issues, particularly with respect to emergency spills and hazards. EJ concerns will be included. The agencies are being overwhelmed with EJ complaints for everything from highway expansions to water treatment plants. The NEPA review process will also come up against EJ concerns. Probably the biggest impact to CIBO members will be with respect to permitting.

The ACE rule was vacated and the CPP rule was essentially reinstated by the DC Circuit Court. The administration had asked that the CPP rule not be reinstated so that they can start with a clean slate. West Virginia sued. The Supreme Court granted cert and will hear the case. The issue will be whether or not EPA exceeded its authority under the Clean Air Act. The Supreme Court had granted a stay of the CCP. It is likely that the SC took the case to reiterate its judgment in granting the stay and to send a message to EPA that it does not have unlimited authority.

COP26 International Climate Change Meeting – **Dan Byers, US Chamber of Commerce**

The highest level of negotiation was one of ambition. The tension stems from the ideal goals and the reality on energy needs. The UN 2018 report stated that GHG emissions would have to be reduced by 20 Gt by 2030 to meet the 1.5 C target. Emissions growth continues at the rate of 1 – 2%/yr. That means more than 20 Gt/yr will be needed. At the end of the meeting, 190 countries signed off on a 10 page report. They did not get the commitments they desired. They declared that they will aim for increased commitments at the 2022 meeting in Cairo. The final chapter of the Paris Rule Book was agreed to. International trading was agreed to. Financing has fallen short of the $100 billion/yr for developing countries. It was agreed to get to the 100 billion/yr by next year and then increase that amount to $200 billion/yr.

The phase out of fossil fuels was changed to phase down in the language. Loss and damage funds were not agreed to. There were side agreements on methane, reforestation, transportation, and finance. Over 100 countries have committed to reduce methane emissions by 30% by 2030. Over 140 countries agreed to halt deforestation. Some countries announced a ban on IC engine vehicles by 2040. The US, EU, and Canada agreed not to finance fossil fuel projects. The EU has committed to a 55% reduction in GHG emissions by 2030. The plan is called “Fit for 55”. However, there is a energy shortage in the EU right now. Natural gas prices in the EU are over $30/MMBTU (under $5/MMBTU in the US). Domestic electric prices are up around 25 – 35 cents/Kwhr (12 cents/Kwhr in the US). The EU trading system now has allowance prices over $100/ton. There has been substantial push back across the EU. Many countries are saying that this is not the time to implement such a dramatic program like the “Fit for 55” plan. In the US, roughly an additional 2 Gt/yr will have to be reduced by 2030. Rules on HFCs, light duty vehicles, and methane will only get about 15% of that amount. Power and industry are only the real sources to get this type of reductions. In response to a question on the use of gas, it was noted that for the next 15 – 20 years the use of gas was absolutely essential.

CHP and Clean Energy Future – **Bob Gemmer, DOE & Lynn Kirshbaum, CHP Alliance**

For the Advanced Manufacturing Office, the goals include developing good paying jobs, assuring EJ considerations, and advancing manufacturing. CHP as a concept is basically fuel independent. With its higher efficiency, it can make use of scarce fuels such as biogas and, potentially, hydrogen. CHP already saves GHG emissions. Going forward, CHP can provide the reliable generation of heat and power that will be needed by industry.

The infrastructure bill has several sections that provides funds for CHP and advanced manufacturing.

Programs include clean CHP systems, efficient part load operation, and advanced power generation. Smaller CHP systems are being developed that could essentially be plug and play. These could be used in smaller industrial systems as well as micro grids and distributed power. Systems are typically less than 10 MW in scale. Utilities are becoming interested in CHP. A different business model would be put in place. The heat would be supplied to the industrial site while the power would go to the utility.

DOE has 10 regional application centers to provide assistance to those looking to deploy CHP. RD&D projects include power electronics, waste heat recovery, high heat to power CHP, flexible CHP, and renewables supplied CHP. At one demonstration project, heat is being recovered from a geothermal system. Developing a packaged approach can help to reduce costs.

Lynn Kirshbaum, CHP Alliance, pointed out that their mission is to educate all Americans about the potential benefits of CHP. NREL has a Readopt tool for evaluating CHP systems. The grid of the future will have more distributed resources and more renewable sources. CHP systems can use clean fuels efficiently. CHP can integrates with other resources. CHP can us low carbon fuels such as biogas and RNG. Hydrogen can also be used. Hydrogen fuel has lots of different uses. The DOE goals for hydrogen include reducing its cost to $1/Kg. CHP is generally resilient. As long as fuel supply is available, the CHP system can operate to run local critical equipment. Typically gas pipelines are underground and less impacted by weather. CHP is well suited for use in micro grids for that reason. Flexible CHP systems are becoming more useful to utility operations. This might well apply to ancillary services.

CIBO Policy Committees: Planning for 2022 – **Alex Stoddard, CIBO**

Alex noted that we have new chairs for our committees. **Robin Ridgway, Purdue University,** has Energy/Sustainability and **Bob Morrow, Detroit Stoker Company,** has Environmental. **Neil Narraine, International Paper,** has Government Affairs. **Elrie Bennett, The Dow Chemical Company,** is now the Technical Committee chair. **Mark Bitto, ABB, Inc.,** continues as membership chair. We will be setting up additional meetings soon to nail down the activities for next year.