

Texas Commission on Environmental Quality (TCEQ)  
Office of Air  
Tax Relief for Pollution Control Property Advisory Committee  
December 2, 2019  
11:00 A.M. - 12:34 P.M.

## Minutes

### *Opening Remarks*

- a. Mr. Bob Adair called the meeting to order at 11:00 A.M.
- b. The following Committee members were present: Mr. Bob Adair, Mr. Charles Allred, Mr. Daryl Attaway, Mr. Roland Bieber, Mr. Paul Coon, Mr. Michael Ford, Mr. Lloyd Graham, Mr. Timothy Jones, Mr. Don Lee, Mr. Bill Longley, Mr. Gregory Maxim, Mr. Michael Nasi, and Dr. Cyrus Reed.
- c. Mr. Bob Adair re-stated the public comment policy. No action was taken.
- d. General comments from Committee members and the public were solicited. No comments were received.

### ***Consideration of and planned vote on advice regarding how to determine use percentages for future use determinations for applications that include heat recovery steam generators (HRSGs); specifically, advice in response to questions 1 and 2 of 3 to the July 19, 2019 letter requesting advice from the Committee.***

Documents listed and linked below were submitted by Committee members.

Dr. Cyrus Reed - [Potential Approaches Memo-Revised](#)

Dr. Cyrus Reed - [HRSG Analysis-Combined Cycle Comparison to Simple Cycle Cost Comparison 2019](#)

Dr. Cyrus Reed - [TCEO HRSG Environmental Use Analysis 2019-Revised](#)

Dr. Cyrus Reed - [HRSG Calculations](#)

Dr. Cyrus Reed - [Follow Up E-mail](#)

Mr. Adair started the meeting by stating he was aware of only one change since the last meeting, which came from Dr. Cyrus Reed. Dr. Reed said he and Mr. Charles Allred worked together, and Dr. Reed sent an updated email to the Committee asking the members to disregard the third calculation. This left two approaches: (1) a simplified cost analysis procedure (CAP), being the cost of new versus the cost of old, divided by the cost of new; and (2) looking at efficiency of both plants without considering electricity sales attributable to the combined cycle. Mr. Adair clarified that Dr. Reed did not provide a new percentage. Dr. Reed replied he is asking the Committee to not consider the third calculation.

Mr. Don Lee asked Dr. Reed to clarify that he had two approaches, and Dr. Reed replied that he had two different CAP approaches but presented three approaches in his memo. Dr. Reed added that one approach was the "Charles Allred approach" that compared production and pollution benefit, and the other two were CAP approaches.

Mr. Adair prepared pre-vote comments to lay out facts for the record to include the number of meetings the Committee has had on this topic. Mr. Adair asked for the Committee's preference regarding whether to discuss Mr. Adair's comments or the options next.

Mr. Michael Nasi responded that he thought it would be good to review the options first. Dr. Reed started with "Option A" by saying the work was Mr. Allred's and the option would average pollution control and production benefits of a HRSG versus a simple cycle. Dr. Reed said the

pollution control benefits were measured in pounds of nitrogen oxides (NO<sub>x</sub>) per megawatt-hour and by comparing later versions of a combined cycle plant with a HRSG and the later versions of a simple cycle plant. The result of that environmental benefit analysis was a little over 71%, he said.

Dr. Reed said that, using the table and information provided by *Gas Turbine World*, 2019 edition, they looked at production equipment and compared the increase in output from combined cycle plants to single cycle plants of the same capacity. Dr. Reed said the result of the production benefit analysis was roughly 50%. The two percentages were then averaged, and the result was 61%. Dr. Reed said small plants (less than 45 megawatts) were removed from the dataset since the smaller plants were likely for industrial use. Data for 50 hertz frequency were also removed since those plants would be more for European markets. Dr. Reed said it is a blended approach. Dr. Reed said he was aware that some members of the Committee do not like this approach because it equates use of the equipment with benefit.

Dr. Reed said the other approach is a CAP approach and rather than compare a HRSG with a boiler, this was a whole plant approach that compared the cost of the whole combined cycle plant minus the whole cost of a simple cycle plant for the same number of megawatts. The difference is divided by the cost of the combined cycle plant, and that percentage is applied to the HRSG. Dr. Reed said that from there, you could either take a simple approach and not include sales of electricity in the analysis or try to include the sales of electricity. Dr. Reed said depending on what cost numbers and sources are used; the percentage could be between 14% and 46%.

Dr. Reed said he thinks the CAP concept is good if looking at the plant and that a more complicated analysis would be to compare the efficiencies of the plants and account for electricity sales. Dr. Reed said he performed an example analysis looking at 2018 data for the cost of electricity, and the analysis could get more complicated.

Mr. Adair asked if Dr. Reed thought his approach would apply to individual applications or a calculation to put on the Tier I Table. Dr. Reed responded that that was up to the will of the Committee. He said that if a percentage for HRSGs is not put on the Tier I Table, an applicant could use a whole plant approach to the CAP on a Tier III application for a HRSG.

Mr. Lee asked if anyone did an analysis looking at just the old technology steam generation. Dr. Reed said he did not because he was having trouble finding cost data since no one is building standalone boilers except for industrial applications. Dr. Reed asked Mr. Allred if the sheet with data from *Gas Turbine World* broke out the cost of the steam separately, and Mr. Allred replied "no." Mr. Lee asked if Dr. Reed's analysis was for the same sized facilities, and Dr. Reed replied "yes." Dr. Reed added that in the second set of calculations, he multiplied each of the sizes by their efficiency factor. His formulas multiplied the cost of the combined cycle by 60%, and the cost of simple cycle by 40%.

Mr. Lee asked to present a third option to the Committee when the time was right.

Mr. Adair asked if anyone has been able to find cost information for a gas-fired boiler and if that might prevent such an analysis from being a viable option. Mr. Allred responded that he has not found cost data for standard gas-fired boilers with the output that the HRSGs have. Mr. Allred said he attempted to get a bid from a manufacturer but was unable to obtain one. Mr. Allred continued that he was able to find costs for small package boilers, but it would take approximately 48 small package boilers to equal the same output as one HRSG at an 800-megawatt combined cycle plant. Mr. Allred said that comparing the cost numbers, you come up with about 60%. He added that he did not think it was a fair comparison. Mr. Gregory Maxim asked Mr. Allred what the pollution benefit would be for the 48 small package boilers. Mr. Allred said he did not look at the pollution benefit and did not have those numbers.

Dr. Reed said that looking at the Electric Reliability Council of Texas (ERCOT) market, what is being built is faster turbines, reciprocating engines, or combined cycle facilities. Dr. Reed added

that no one is building steam boilers; steam for electricity production and steam boilers are being retired.

Mr. Daryl Attaway commented that he listened to the concerns and information about what is being built today and said that makes him think back to the original premise of this program. He said that the premise of the program is if facilities spend money to meet environmental guidelines, the additional funding they had to spend will be exempt. He continued that if facilities are not building steam boilers to make electricity and are only building combined cycle plants, then what additional monies are they being asked to spend? Dr. Reed clarified that the choice developers have today is between a simple cycle including reciprocating engines or a combined cycle, but no one is building a steam boiler by itself for electric production purposes. Mr. Mike Nasi added that ERCOT is a clear example where the development risk of building combined cycle is keeping them from being built and so combustion turbines and reciprocating engines are the more prevalent build. Mr. Nasi said that comparing simple cycle versus combined cycle is a good way to look at this problem since an environmental benefit is derived from the additional investment of combined cycle.

Mr. Adair asked Committee members if anyone had new data or analysis or a different take on what has been presented. No one responded.

Mr. Adair said the Committee should provide advice soon or is at risk of providing no advice, which he does not think is an option. Mr. Adair read through a history he prepared.

Heat recovery steam generator applications for partial use determinations were first filed with TCEQ over 10 years ago, ultimately elevating disputes between TCEQ and applicants to the Texas Supreme Court who rendered two opinions earlier this year and remanded these cases to the Commission for further proceedings consistent with its opinion. On July 19, 2019 Donna Huff, Director of TCEQ's Air Quality Division sent a letter to me, as Chair of this Committee, requesting advice from the Committee regarding future HRSG applications. Specifically requesting answers to three questions and we all have those three questions. On the same day, I forwarded the July 19, 2019 letter to all members of the Committee and commented that TCEQ informally requests the Committee provide advice before Thanksgiving. This preferred deadline was to allow TCEQ staff sufficient time to evaluate and propose revisions to applicable rules to include with other 2020 rulemaking. TCEQ staff recently extended this deadline to the first week of December, which of course is where we are now. So the Committee held public hearings regarding this matter on August 23<sup>rd</sup>, September 26<sup>th</sup>, October 17<sup>th</sup>, November 8<sup>th</sup>, November 19<sup>th</sup>, and today, December 2<sup>nd</sup>. All meetings were conducted in TCEQ Agenda Room with a call-in option indicated on agendas except November 19<sup>th</sup> was by conference call only. Meeting agendas were posted on TCEQ's website and e-alerts at least one week prior to each meeting and ample opportunity was given during each meeting for public input and input was encouraged privately to and between Committee members and the Committee sincerely appreciates all public input. After many hours working outside of Committee meetings, Committee members narrowed their focus on evaluating two possible options, which I think is where we are now, we're still at two. One is revise the current Tier III partial use calculation specifically for HRSGs; or two, add HRSGs to the Tier I Table with a partial use percentage supported by an evaluation of data from TCEQ which was provided by staff and the website, the *2019 Gas Turbine World Handbook*, and U.S. Energy Information Administration.

Mr. Adair stated in his opinion that the advice requested in the letter has been reasonably considered by the Committee and that the Committee is ready to vote. He went on to state that he is not sure the Committee is ready to vote. If there is any additional information, Mr. Adair said he is open to that and is not pushing for a vote at this time.

Mr. Adair reminded the Committee that whether a motion receives a vote of a Committee majority or not, he intends to comply with Article 5.4 of the Committee bylaws to encourage

the submission of minority reports for the Commissioners' consideration. Mr. Adair said if it comes to a majority and a minority report, he would submit them to the Committee again before submitting them formally to Donna Huff.

Mr. Lee agreed that the Committee is in a place to vote, but he thinks there are three options on the table. The options are to fix the CAP and have the Committee recommend fixing the CAP for HRSGs and for any other replacement technology, to adjust the production factor for production associated with the property, and to exclude the net present value of the marketable product. Mr. Lee said the extra capital cost generators are required to invest should represent the percentage of exemption. Mr. Lee said this option does not envision the Committee choosing data and sources to come up with the percentage. He said that as long as HRSGs are on the list at Texas Tax Code §11.31(k) (k-list), there needs to be a floor in case there are circumstances where the HRSGs are less expensive than the replacement technology, in which case there would be a 5% floor. He added that the advice would include a recommendation to the commission that if applications for HRSGs are consistently showing that HRSGs are less expensive than replacement technology, then that becomes compelling evidence of no environmental benefit. Mr. Lee said he does not believe that is the case and understands HRSGs cost more than the technology they are replacing.

Mr. Lee said from what he knows of the history of the HRSG applications, he thought the staff were telling the HRSG applicants to come up with a capital cost old, and the applicants did not. He said that he thought the Committee might not be working on this problem if the applicants had provided a capital cost old. He said he thought it is appropriate for the Committee and the commission to fix the net present value marketable product problems with the CAP, and we should do it for all similar situations, not just HRSGs. He said he thought this would address other Committee members' struggles with the CAP. Mr. Lee added that he thought the CAP got a little out of shape the last time it was reworked, especially with regards to replacement technology. Mr. Lee said he thought this option was different from Dr. Reed's plant-wide CAP approach. Mr. Lee called this new option he presented, the "fix the CAP approach," Option C; the "plant-wide CAP approach," proposed by Dr. Reed, Option B; and the approach that averages production gain and pollution benefit the "pollution control benefits approach," Option A.

Mr. Lee asked whether something that increased production by 200% would be ineligible for a pollution control exemption. Mr. Allred stated that was outside the capability of a HRSG and added that he liked that the Committee is looking at performance basis instead of financial basis because it speaks to what is going on with equipment from both a production and environmental standpoint.

Mr. Lee asked, if polluting equipment was replaced with a solar farm, would the solar farm be 100% exempt? Mr. Allred said no, because there is a production benefit. Dr. Reed said he does not think the solar farm would be exempt at all. Mr. Nasi said he does not see any difference between that example and hydrotreaters which the Committee determined to be a different method of production. Dr. Reed said the reason for comparing combined and single cycle is they are both electricity plants that use natural gas and there are certain permit limits associated with that. Dr. Reed said that adding a HRSG to a simple cycle provides both a pollution and production benefit, but that if a developer were to close the gas plants and build a solar farm, it is a totally different way of producing electricity and the solar farm would not be subject to the regulations since it does not produce any emissions.

Mr. Charles Allred said he was told by TCEQ that you cannot exceed a regulation you are not required to meet. Solar or wind facilities do not have to have an air permit and would not be subject to any air pollution requirements. Mr. Nasi agreed that combustion of natural gas is the trigger that requires EPA and TCEQ to regulate the emissions.

Mr. Nasi said that he appreciated the work that Mr. Allred, Mr. Coon, and Dr. Reed have put into crunching the numbers. Mr. Nasi said that what he likes about the nature of a committee and

compromise process is that the numbers could have been looked at differently. He said that functionally, the 9 parts per million (ppm) has been thrown out in order to avoid skewing the outcome. He added that specific to Option A, Dr. Reed asked for Mr. Allred to look at the numbers on an output basis as the measure of efficiency gain for productive benefit and the work that Mr. Coon did was for heat rate. Mr. Nasi said Mr. Allred suggested averaging numbers for output and heat rate improvements. Mr. Allred said that removing the additional power output and leaving in the heat rate comparison, the percentage would have been higher at 70%. Dr. Reed said that averaging the increased output and decreased emissions was a better approach. Mr. Nasi said this approach was not perfect as it factors in other aspects of the plant's performance when looking at output. Mr. Nasi said he sees a great deal of compromise with Option A. Dr. Reed said the output-based approach adjusted with the production benefit got at his concern that combined cycle plants might lead to an increase in total tons of emissions since they operate more than simple cycle plants. Mr. Nasi added that data analysis indicated that total emissions is not increased by adjusting the emission rate.

Mr. Nasi said that he would prefer those who did the most work to tee-up a motion. Mr. Allred said he motioned for the 65% that was presented and recalled there were some proposed language changes with the Tier I Table, including introductory language to allow for a partial use percentage on the Tier I, and he motioned for those changes as well. Mr. Coon seconded the motion.

Mr. Adair added a clarification that there was a description that was being suggested to add to the Tier I Table and that should be in the record. Mr. Nasi said he had that language. Mr. Nasi moved for an amendment to the motion to be more specific on what it would exactly say. Mr. Nasi said the listing in the Tier I Table would be item A-90 and it would be 65%. The description would be "a boiler designed to capture waste heat from the combustion turbine exhaust for the generation of steam while reducing unit output based emissions." Dr. Reed asked if a HRSG is really a boiler or if it is a heat exchanger. Mr. Allred said that technically a HRSG falls under the category of boiler.

Mr. Nasi offered language to update the introductory language for the Tier I Table to allow for partial use percentages. He referred to 30 Texas Administrative Code (TAC) §17.14(a) and suggested adding "unless otherwise designated with a partial use percentage in the Tier I Table" to the last sentence. Dr. Reed asked if this item would be the only partial. Mr. Nasi said yes, and stated there have been partials in the past, but they were removed.

Mr. Nasi said that language in the introductory paragraph of figure at 30 TAC §17.14(a) also needs to be dealt with. He suggested making this language more HRSG-specific. He suggested adding "except heat recovery steam generators listed as a partial use percentage" to the end of the first sentence of the paragraph.

Mr. Adair clarified that the motion is 65% with the description, as mentioned by Mr. Allred, with an amendment to include the two specific changes to the language. Mr. Nasi said he did not think Mr. Allred read a description in, so Mr. Nasi's amendment is to add the description that he read into the record and the two rule tweaks. Dr. Reed asked Mr. Nasi why the language changes were necessary in both places and why the second one was not adequate. Mr. Nasi said that subsection (a) of the rule appears independent of the graphic (Tier I Table).

Mr. Allred accepted the amendment and Mr. Coon seconded it.

Mr. Lee stated that it was important that the options are in the record and, at the appropriate time, he would like to make a substitute motion and asked Mr. Adair to tell him when the appropriate time was. Mr. Lee said he appreciated Mr. Nasi's work to make the motion clear.

Mr. Adair said there were two substitute motions allowed and that if a substitute fails, then the previous motion would remain. Mr. Adair also said if a substitute motion fails, the minority can file a report. Mr. Adair said that the time was appropriate to make a substitute motion.

Mr. Adair asked if TCEQ staff was aware of any other rule changes to allow for partial use percentages on the Tier I Table. Mr. Don Redmond of the TCEQ's General Law Division responded that the Committee's advice to the commission might result in the commission proposing a rule, so regardless of the sections the Committee identified, the commission would vet the recommendations further. Mr. Redmond stated that he thought the Committee identified the portions of the Tier I language that were previously amended, so the table only applies to 100% pollution control property. Mr. Redmond added that he did a review of current Tier III rule language where the k-list equipment is found. He is not sure if that language should be revised to direct HRSG applicants to the Tier I Table if the commission proposes a rulemaking reflecting the Committee's advice. Mr. Nasi stated the Committee makes recommendations and the TCEQ may want to add clarification in other aspects of the rule and that he thinks that is consistent with the intent of the motion. Mr. Nasi said he would not amend the motion further.

Mr. Lee asked to make a substitute motion. He stated that everyone knows he prefers a fix-the-CAP approach. In the spirit of compromise, he would like to make a motion to go with Dr. Reed's "B" option, which is the plant-wide approach. Mr. Lee said he was willing to go along with adding a HRSG at a fixed percentage on the Tier I Table using Dr. Reed's percentages and calculations. Mr. Lee moved that the Committee recommend Dr. Reed's plant-wide CAP approach with a 47% use determination percentage applied to the HRSG. Mr. Allred said that he was concerned that this approach using the total plant costs as a proxy for environmental benefit might lead to future litigation that asks if the cost difference is environmental benefit, why is the entire cost difference of a plant not exempt.

Mr. Adair and Mr. Lee clarified that the substitute motion is to utilize the CAP appropriately, not including net present value and equalizing for production sizes. Mr. Lee stated that the motion is the recommendation to staff, and if the calculation results in 47%, he is fine, and if the commission prefers to put that formula in place for the future, then that is fine. Mr. Lee suggested that that also be fine with the Committee and that the Committee's focus be on having a consistent approach that looks at the amount of capital being used for pollution control and to not confuse benefit with use. Mr. Lee said he is not sure how equating benefit and use comports with the statute.

Mr. Lee further clarified that the motion is, in the spirit of compromise, to add HRSGs to the Tier I Table at 47%. Mr. Lee said the percentages are not important to him. He is concerned with the consistency and integrity of the program. Mr. Lee added that his motion includes any other adjustments required to make the partial use work. Dr. Reed added that the 47% is very similar to production increase when comparing simple and combined cycle. Mr. Nasi clarified that the data source for the 47% was from *Gas Turbine World*.

Dr. Reed seconded Mr. Lee's substitute motion and the Committee voted on it. Mr. Adair called a vote on the substitute motion. The following Committee members voted for the substitute motion: Mr. Daryl Attaway, Mr. Roland Bieber, Mr. Lloyd Graham, Mr. Don Lee, Mr. Bill Longley, and Dr. Cyrus Reed. The following Committee members voted against the substitute motion: Mr. Bob Adair, Mr. Charles Allred, Mr. Paul Coon, Mr. Michael Ford, Mr. Timothy Jones, Mr. Greg Maxim, and Mr. Michael Nasi. The substitute motion failed by a vote of six to seven.

Mr. Adair called a vote on Mr. Nasi's amended motion to recommend the addition of HRSGs to the Tier I Table at 65% and the regulatory clarifications. The following Committee members voted for the motion: Mr. Bob Adair, Mr. Charles Allred, Mr. Paul Coon, Mr. Michael Ford, Mr. Timothy Jones, Mr. Greg Maxim, and Mr. Michael Nasi. The following Committee members voted against the motion: Mr. Daryl Attaway, Mr. Roland Bieber, Mr. Lloyd Graham, Mr. Don Lee, Mr. Bill Longley, and Dr. Cyrus Reed. The motion passed by a vote of seven to six.

Mr. Adair reminded the Committee that he previously distributed a draft letter that indicated his intent to include the majority and minority reports. He said he would recirculate the letter

to the Committee before sending the letter to the TCEQ. The Committee discussed the contents of the letter and possible inclusion of the majority and minority report in the letter.

Mr. Lee stated that any Committee member can file a minority report and other comments going forward. Mr. Nasi said he would work on a document and share it with other members of the majority that explains how the majority reached its recommendation.

Mr. Adair asked TCEQ staff for thoughts on the letter. Mr. Walker Williamson with the TCEQ said he thought the clearer the recommendation that goes to the commission, the better the outcome will be. He added that there would be an opportunity to provide comments if the commission proposes rulemaking.

Note: During the Committee's November 8, 2019 public meeting, the Committee voted "No" (without opposition) in response to the following question 3 in the above referenced letter:

*Should the Commission propose rulemaking to remove HRSGs from the Expedited Review List of Section 17.17(b)? If yes, what compelling evidence can the Committee provide that HRSGs do not provide pollution control benefits?*

On November 8, 2019, the Committee also approved the chair's draft letter of submittal with advice, subject to revisions to align with the Committee's pending vote(s) on additional advice and supporting report(s). The chair will submit all HRSG advice to TCEQ before Thanksgiving.

### ***Other***

#### ***a. Old business***

Mr. Adair recognized that Mr. Coon and Mr. Lee will not be on the Committee next year. Mr. Adair recognized their contributions and expressed sincere appreciation for their work on the Committee. Mr. Lee thanked the Committee members and TCEQ staff for all their work. Mr. Coon said it has been great to serve on the Committee and he has learned a lot. He also appreciated the staff.

Ms. Frances Nikki Clark with the TCEQ stated that the Commissioner's Agenda to consider recommendations on Committee member nominations will be December 18, 2019 and that the information is posted online.

Mr. Lee asked what happens after the Committee's recommendation on HRSG and any reports are received. Mr. Williamson said staff will receive what is submitted, develop a recommendation for review by the executive director and, if approved, it would go to the Commission at Agenda.

#### ***b. New business***

No new business

#### ***c. Other comments from the public***

Mr. John Kennedy with the Texas Taxpayers Association commented that he commended the Committee on their work and said he thinks the Committee reached a great result. Mr. Kennedy stated that it is very important to note that both motions included adding HRSGs to the Tier I Table at a designated percentage. Mr. Kennedy provided advice to the Committee about the contents of the letter and the possibility of any majority and minority reports.

Mr. Lee stated that some Committee members would have preferred to provide a formula and only suggested the Tier I partial use percentage in an attempt to gain additional votes.

### ***Action Items***

Mr. Adair will work on the advice letter and provide a draft to the Committee members.

Mr. Nasi will work on a document and share it with other members of the majority that explains how the majority reached its recommendation.

***Adjourn***

The meeting adjourned at 12:34 P.M.