



**Metro District Energy System Advisory Board
Regularly Scheduled Meeting of**

November 16, 2017

Minutes of Meeting

The meeting was held at the Energy Generation Facility at 90 Peabody Street Nashville, TN 37210

Facilitators: Dan Coyle, DES Project Contract Administrator and Kevin Jacobs, Thermal Engineering Group (TEG)

Board Members Present:

Freddie O'Connell
Brian Taylor
Nicholas Woollen
Eric Swartz
Jim Thiltgen (*on behalf of James E Harbison*)
Tom Eddlemon (*on behalf of Talia Lomax-O'dneal*)
Alexandra Ewing (*on behalf of Nancy Whittemore*)

Others Present:

Tim Hestle, CNE
Dan Coyle, TEG
Kevin Jacobs, TEG
Bob Lackey, DES Liaison
Jamie Hunter, DES Advisory Board Secretary

The meeting was called to order by the Chair and began at 10:00 A.M.

With no additions, comments or edits to the previous meeting's minutes, a motion was made to approve the minutes and seconded. The Board voted and approved the minutes for the August 17, 2017 meeting.

At the request of the Chair, Mr. Jacobs proceeded with the presentation to the Board.

Mr. Jacobs reviewed the Customer Cost Comparison table for the previous twelve month period. On an aggregate basis for the previous twelve (12) months, the steam and chilled water total costs remained nearly constant between the two periods. The steam and chilled water consumptions were down over the periods. The past two years have been milder for both heating and cooling.

Mr. Jacobs provided an update on the customer chilled water delta T from the First Quarter FY17 presentation. This update was presented in the form of four graphs showing the customer chilled water delta T for each customer group and the aggregate. Mr. Jacobs explained that the Fairlane Hotel and St Mary's were excluded from all of the graphs; the Bobby Hotel and the CJC were excluded from the 2017 data only; Nashville Convention Center was no longer a customer after July 1, 2017 and the loads for July, August and September 2017 were included with Renaissance Hotel for the loads that remained at the site.

Mr. Jacobs continued with the Aggregate CHW Delta T for FY17. In general, the customers have greatly improved their delta T's. The history for the month of July shows a consistent pattern over the past few years due to the improvements customers have made in their operations. Larger customers with high loads may be skewing the data slightly by raising the aggregate delta T.



AA Birch and Metro Courthouse have made some control changes in the past year that have resulted in improved performance for these buildings. Due to changes and improvements made by the State, a few State buildings have improved performance. The Music City Center continues to have high loads with good Delta T's.

Mr. Jacobs and Mr. Coyle explained although there is not a way to measure the exact Delta T of each group of customers since there is not an actual measured point within the system for the customer groups, a weighted average of the delta T for each customer group is calculated and presented. Mr. Jacobs noted that the higher the delta T is, the better the chiller efficiency at the EGF. Mr. Jacobs continued by explaining that the Metro customer buildings have improved their delta T's over the past few years. The Private customers have also improved their delta T's with the exception of July. The State's Delta T's were better in 2013 and 2016, but the performance in 2014 and 2015 are consistent with the performance in 2017.

Mr. Jacobs reviewed the DES Contractor Performance for FY18, which included the efficiency and performance tables for steam electric consumption, steam gas consumption, steam water consumption, CHW electric consumption, and CHW water consumption. Constellation's performance continues to remain excellent in all areas.

Mr. Jacobs continued with Water Treatment. Mr. Jacobs explained a water leak still exists in the chilled water system and it is growing larger. Approximately 80% of the condensate is returned on average for the quarter. Mr. Jacobs explained the process for chemical treatment for the hardness and biologicals for the chilled water and the make-up water to the cooling towers. The bacteria previously noted to be within the Chilled Water system has been greatly reduced. CNE added a dispersant to help to keep the solids in suspension in the chilled water system. Mr. Hestle and Mr. Coyle explained the process and benefit of adding the dispersant to the system as a way to eliminate any bacterial residue. The benefits of a side-stream filter to help clean the chilled water were also discussed. Metro is awaiting a proposal from CNE to install a side-stream filter at the EGF.

Chair O'Connell asked, although there has been good progress, what remains to get the Chilled Water to a "green dot" for a well performing Chilled Water System. Mr. Jacobs answered, by the DES meeting next quarter the anticipation is for the system to update to "green dot" performance. (Green indicates excellent performance, yellow indicate satisfactory performance with some improvement may be necessary, and red is for poor performance.)

Mr. Jacobs reviewed the EGF (Energy Generating Facility) walkthrough and all areas are good. Mr. Coyle reviewed the EDS (Energy Distribution System) walkthroughs. The quarterly physical walkthrough of the plant indicates it is very well maintained. The Energy Distribution System's vaults and tunnels are inspected once yearly by reviewing partial sections quarterly. The areas reviewed in the most recent quarter looked relatively good. There is room for improvement by reducing water infiltration into the vaults and addressing the corrosion of metal components within the vaults. Board members and Mr. Coyle discussed options to mitigate water infiltration and the corrosion of metal components in the vaults and tunnels.

Mr. Jacobs continued with Natural Gas Purchasing review. FY18 Gas Spending & Budget was under budget not including contingency. Mr. Jacobs explained the five year averages of usage for all customers are taken as the basis for estimating the natural gas consumption for the budget and then a contingency is added for potential variations in weather and price. The price contingencies are included if there are any unanticipated fluctuations in the market. Chair O'Connell asked for clarification on the percentage of the total gas cost that was reflected at 11.5%. Mr. Jacobs will review and follow-up with the corrected amount at the next Board Meeting.

Mr. Jacobs continued with the Actual and Projected Gas Cost Comparison History. Mr. Jacobs explained the graph in the presentation included propane and transportation costs. The red line on the chart notes market



unit prices; the blue line notes actual unit costs in previous months and the expected unit costs in future months. The green line notes the budgeted unit costs without contingencies. Board members discussed hedging, gas prices and supply. The post-contingency cost in FY17 was approximately \$4.00 per mmBTU (million BTU's) and is approximately \$5.00 per mmBTU for FY18. Current prices are in the \$3.00 - \$3.50 range delivered and the expectation is to remain below budget for FY18.

Mr. Jacobs continued with FY18 Costs to Date report. All expenditures appear to be consistent with expectations and within budget. The Fixed Operating Costs (FOC) paid to Constellation was approximately 25% of the budget through the 1st quarter. The non-energy expenditure was approximately 17% of the budget. The water expenditure was approximately 44% of the budget. The natural gas base expenditure, including the FEA and gas consultant, was approximately 14% of the budget. None of the natural gas contingency budget has been used for 1st quarter FY18. The electric expenditure was approximately 33% of the budget. Total expenses were approximately 27% of the budget and total revenues were approximately 25% of the budget. The Metro funding amount was 25% and is an annual appropriation to DES that provides needed funds to pay debt service and operating expenses primarily resulting from unsold capacity.

Mr. Jacobs continued with the FY18 Budget discussion. The budget includes a cost escalator on various items at 3% since this is the maximum rate permitted by contract on a number of fixed costs. The FOC escalated 0.60%, an increase of 2.3% over FY17 actual cost. Total FY18 system expenses are budgeted to increase 2.56% over the FY17 budget. Total FY18 customer revenues are budgeted to increase 2.96% over the FY17 budget. The FY18 Metro Funding Amount is budgeted to decrease 1.83%. Mr. Lackey further explained the purpose of natural gas contingency. A full budget discussion continued, including total revenues, Metro funding impacts, and the various line items within the budget that contribute to the MFA.

Mr. Coyle continued with a discussion on project DES 139 DES Options Review for status quo, system expansion, privatization, or public/private partnerships. Mr. Coyle gave an update on FVB and Metro Finance review noting the draft report is in the process of being completed. Mr. Lackey further explained that a preliminary findings report had been received by the DES. FBV's process is to offer the preliminary findings first and then follow-up with recommendations and an executive summary. Mr. Lackey stated the contract with Constellation to operate the System ends in December 2018, thus the process to determine future options should proceed as quickly as possible. A discussion between those present was held regarding the steps necessary to implement each of the options.

Mr. Jacobs continued with the Capital Expenditure Update report; the R&I fund (as of 10/31/17) has a remaining balance of \$100,966. The 49109 (2010 Bond Fund) has \$58,691 remaining and bond fund 49107 has \$984,555 remaining. Bond fund 49116, with a balance of \$25,831,294 approved for the DES CHP project, is on hold and not available for expenditure. A total of \$1,144,212 remains available for distribution system related projects.

Mr. Jacobs and Mr. Coyle reviewed the Active Capital Projects Review report.

DES 111 - EFG Combined Heat Power project is on hold

DES 124 - CJC Redevelopment project is on hold while the building is under construction, but the AA Birch tunnel repairs will be needed. These repairs will be made once the building roof has been constructed on the new Criminal Justice Center building.

DES 124.4 - CJC Reconnection is in design phase. Project will bid and construction to occur in Q2FY18.

DES 130 - Manhole B3 Repair construction is completed, but DES is pursuing reimbursement from the contractor responsible for damage.

DES 133 - NCC Redevelopment project involves increased demands at the Renaissance Hotel. A new contract with the 5th and Broadway Development is currently being discussed but no agreement has been reached. There was additional discussion on options of tank operation and location.

DES 133.1 - The site is being excavated including blasting. Some fallen rock has occurred in the Broadway Tunnel. A steam division valve was added in the Broadway Tunnel to facilitate the isolation of the Renaissance Hotel from the affected tunnel section if any issues were to occur.



DES 133.2 – Secured rented chillers and boiler on-site at the Bridgestone Arena if any issues were to occur with reinforcement of the Broadway Tunnel.

DES 133.3 – Procuring pricing to reinforce sections of the Broadway Tunnel. Mr. Coyle discussed how the Tunnel will be reinforced.

DES135 - A leak is believed to exist at 5th Ave and Union (at JPK/ TPAC) but has not been found to date. CNE and TEG are continuing to monitor the area to determine the next action. A hold on excavation and testing in the area was made in May due to entering the peak cooling season. Once the cooling season is over, excavations will resume in the area until the leak is found.

DES 138 - Manhole D Repairs - work completed in Q1 FY2018; anticipated closure in Q2FY18.

DES 139 – DES Options Reviewed a Draft report was issued.

DES 140 - Manhole N2 Fence- Trash was cleaned up and manhole was fenced; work completed in Q1 FY2018; anticipated closure in Q2FY18.

DES 141 - EGF Security Cameras - CNE's proposal approved; System will be upgraded Q2FY18.

DES 142 – Bobby Hotel Steam Valve – Project completed Q1FY18, closed; waiting on the final invoicing from CNE.

Without further discussion, and upon a motion, the meeting was adjourned at 11:30 A.M.

The next Board Meeting will be held Thursday, February 15, 2018 at 10:00 A.M.

Prepared by: Jamie Hunter Approved: Freddie O'Connell
Jamie Hunter, Board Recording Secretary Freddie O'Connell, Chair, DES Advisory Board

Date: 15 Feb 2018 Date: 15 Feb 2018

Approved: Bob Lackey
Bob Lackey, DES Liaison

Date: 15 Feb 2018