



Metro District Energy System Advisory Board
Regularly Scheduled Meeting of
November 17, 2016

Minutes of Meeting

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

Facilitators: Harry Ragsdale, DES Project Contract Administrator and Kevin Jacobs, Thermal Engineering Group

Board Members Present:

Brian Taylor
Alan Robertson
Tom Eddlemon (*on behalf of Talia Lomax-O'dneal*)
Jim Thiltgen (*on behalf of James E Harbison*)

Others Present:

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

Board Members not Present:

Freddie O'Connell
Yuri Cunza
Talia Lomax-O'dneal
James E Harbison
Tom Turner
Richard Fletcher
Nancy Whittemore

The meeting was called to order by the Vice Chair and began at 10:05 A.M.

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

Mr. Jacobs and Mr. Ragsdale reviewed the Customer Cost Comparison table for the previous twelve month period. On an aggregate basis for the previous twelve (12) months, the steam consumptions were down by about 10% and there was a slight increase in aggregate cooling consumption by about 8%; this was due to mild weather conditions this past winter.

Mr. Jacobs reviewed the aggregate averages of the Delta T for the chilled water system, as it pertains to Metro, private customers and the State. Mr. Jacobs explained that a higher Delta T means too much water is being pumped internally. A higher Delta T at the plant improves the efficiency of the chillers and requires less pumping at the plant. Mr. Jacobs noted that if the Delta T gets too high a building cannot be properly conditioned and air temperatures will be affected. Mr. Jacobs also noted that a good Delta T is about 12 degrees.

Mr. Jacobs and Mr. Ragsdale reviewed the system's Delta T for years 2013 through 2016 stating improvement for 2016 relative to the previous three years; however there is room for improvement. Mr. Ragsdale said there are still some buildings that are operating their systems at a constant flow all year round to attempt to maintain a building system pressure set point but the results are a lower Delta T. Constant flow is not the goal. The goal is to maximize Delta T. Customers contracts are arranged to have them return water at a certain temperature. Mr. Jacobs and Mr. Ragsdale discussed with the Board variable flows verses constant flows and ways to improve Delta T's of customers.

Mr. Jacobs and Mr. Ragsdale reviewed the DES Contractor Performance for the current fiscal year including efficiency performance tables for steam electric consumption, steam gas consumption, steam water consumption, chilled water (CHW) electric consumption, and CHW water consumption. The contractor's performance continues to remain good in all areas.



Mr. Jacobs and Mr. Ragsdale reviewed Water Treatment practices of the System Operator (SO). Biologicals previously found in the distribution piping appear to have been greatly reduced. The SO will continue to take samples and introduce chemicals as need to reduce the growth of these biologicals. The SO's performance in appropriately addressing water chemistry for the steam and condensate, condensing water and chilled water remains good with new no issues.

Mr. Jacobs and Mr. Ragsdale reviewed the EGF (Energy Generating Facility) walkthrough. The quarterly physical walkthrough of plant indicates it is very well maintained. The Energy Distribution System's Vaults and Tunnels are inspected once yearly by reviewing partial sections quarterly and those walked through in the most recent quarter look relatively good. There is some room for improvement by reducing the water infiltration and addressing the corrosion of metal components.

Mr. Jacobs and Mr. Ragsdale continued with a discussion of the Natural Gas Purchasing for FY17. Mr. Jacobs reviewed Gas Spending and Budget Comparison through the end of September 2016. Mr. Jacobs reviewed how the historic steam usage is used to establish the gas budget. Five year averages of usage for all customers are taken as a basis and then a contingency is added for weather and price. The 1st quarter gas consumption is slightly over budget due to customers using more steam than they had historically; however the usage to date in October and November appear to indicate that the second quarter steam usage will be under budget.

Mr. Jacobs and Mr. Ragsdale continued with a discussion of the Actual and Projected Gas Cost Comparison. Mr. Jacobs reviewed FY17 gas price projections and noted that the current consumption is consistent with the budget. There are price contingencies within the budget in case there are fluctuations in the market. Mr. Ragsdale said there is no current hedging on future gas purchases and there are no plans in the future to hedge but it remains an option. There is a monthly discussion with the natural gas consultants to address the gas cost projections and present any recommendations for hedging. Mr. Jacobs noted right now there are no benefits for hedging based on current market indicators.

Mr. Jacobs reviewed the FY17 Cost to Date report. All expenditures appear to be consistent with our expectations and within budget. The budgeted MFA represents a decrease of 4% relative to the FY16 budget. All of the invoices had not been paid by customers as of the time of the preparation of this report; therefore some of the revenues are not up to date. The water and the gas expenditures are at about 30% of the budget due to the quarter reflecting primarily the summer months and expenditures will even out though the year.

Mr. Jacobs continued with a review of the Capital Expenditure Update report; the R&I fund has a remaining balance of \$29,876 with about \$23,000 a month deposited in the account reflecting Initial System Customer contributions. The 49109-2010 Bond Fund has \$125,525 remaining and bond fund 49107 has \$1,692,516 remaining. Next quarter the amounts for project expenditures in these accounts will go up due to some of the late summer projects yet to be invoiced and paid. The bond fund 49116 for the DES CHP project is on hold. There is \$1,847,917 available for expenditure on distribution system related projects. The Vice Chair asked if there is any recent conversation about the 49116 cogeneration/flood water protection project. Mr. Lackey answered that he was not aware of any discussion about that project; however there may be a discussion about a county wide flood protection program. Mr. Ragsdale noted the cogeneration project as a "stand alone" project is not economically viable at present.

Mr. Jacobs and Mr. Ragsdale reviewed the Active Capital Projects Review report stating DES 061 - MH & Tunnel Steel Corrosion Repair & Prevention project ongoing. DES 111 - Cogeneration - Combined Heat Power is on hold. DES 119 - Chilled Water Systems Delta T is the hydro-flow device that was purchased to reduce biologicals in the chilled water system heat exchangers and it continues to be monitored. Mr. Ragsdale noted that the hydro-flow device is not working as promoted by the manufacturer and a reimbursement may be requested as negotiated in the purchase agreement. Mr. Jacobs continued by discussing projects DES 121, 122, 127, 128, 129, and 130 which are various Manhole repairs in various design or construction phases. Mr. Jacobs discussed DES 124 - CJC Redevelopment noting that the



demolition phase has been completed. Mr. Jacobs and Mr. Ragsdale continued with DES 134 identifying it as the 401 Union Street Service Reconnection in the design phase. DES 135 is a CHW leak under investigation.

Mr. Jacobs reviewed Capital Projects in Close-out/Closed. DES 104 – TOU Customer Billing Programing which enabled DES to invoice customers on a Time-of-Use rate. DES 123 - John Sevier Bldg. condensate return and DES 126 - Chilled Water leak projects are now closed. DES 131 - Wildhorse CHW Service Connection Mod is also closed.

Other Board Member Items

Mr. Lackey discussed the Third Party Review of Options for DES. Mr. Lackey recapped a previous Board meeting discussion with the Vice-Chair for the prospects of the District Energy System. Mr. Lackey stated much discussion and consideration has occurred and gave a report back to the Board of the outcome. Metro Finance plans to move forward and issue a RFP to pursue an independent third party to determine and evaluate all viable options for DES prospects and best interests. Mr. Lackey expects the third party to provide a comprehensive and comparative analysis to include a summary of other publicly owned district energy systems and an overview of similarities to Metro DES. Mr. Lackey will keep the Board advised of continuing progress.

Mr. Lackey proceeded to a discussion of Updated Contact Information. Mr. Lackey informed the Board there has been some changes to the DES website and an email would be sent out with a list of all contacts. Mr. Lackey requested that Board members and designees review the list to confirm that current information is correct and asked that any revisions be emailed back.

Mr. Lackey reviewed an additional item with the Board, the issue of not having quorums due to poor meeting attendance. Mr. Lackey asked for feedback and suggestions on possible solutions to improve participation and attendance at DES Board meetings. Mr. Lackey reviewed the Executive Order and noted it had gone unchanged since the establishment of the DES Board. Mr. Lackey will email a copy of the Executive Order to Board members and interested parties for review and suggested improvements. The Board discussed various suggestions on how to proceed. The Vice Chair will follow up with the Chair to discuss.

The Vice Chair deferred approval of minutes from May 19, 2016 and September 1, 2016 Board Meetings to next meeting.

Without further discussion, and upon a motion, the meeting was adjourned at 11:09 A.M.

The next Board Meeting will be held Thursday, February 16, 2017 at 10:00 A.M.

Prepared by: Jamie Hunter
Jamie Hunter, Board Recording Secretary

Date: 5-18-17

Approved: Freddie O'Connell
Freddie O'Connell, Chair, DES Advisory Board

Date: 18 May 2017

Approved: Bob Lackey
Bob Lackey, DES Liaison

Date: 5-18-17