| Verification | Originator | Approved | Issued |
|---|---|---|---|
| Initials | TH | ST | ST |
| Date | 09262014 | 12/15/2014 | 12/15/2014 |

# Title: COFL-GTL -ED-4.3.3-4 Objectives, Targets and Programs Action Plan-Electricity Consumption

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| **Document Name**: | Improve Electrical Efficiency | **Facility Affected**: | George T. Lohmeyer Regional Wastewater Plant (GTL) |
| **Start Date**: | December 1, 2013 | **Relevant Process**: | Reduction of electrical consumption |
| **Date Fully Completed**: | June 7, 2020 | **Related Significant Aspect or Legal and Other Requirement**: | Electricity Consumption |

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| **1.0** | **Person Responsible for Overall Action Plan**: Regional Wastewater Facility Manager |
| **2.0** | **Goal Statement**: To reduce electrical consumption via energy conservation efforts and plans. |
| **3.0** | **Objective**: Reduce electrical consumption by 20% by 2020 as measured by reduction of Kilowatt Hours electrical consumption. |
| **4.0** | **Measurable Target and completion date**:<br>1. Effluent Pump Operation Strategy modification completed by December 2017.<br>2. Infiltration and Inflow (I&I) evaluation and reduction completed by June 07, 2020.<br>3. Installation of power conditioners on three motor control centers (MCC) by July 31, 2015.<br>4. Replace 1 Main Air Compressors at Cryogenic plant by August 2017.<br>5. Evaluation of VPSA (Vacuum Pressure Swing Adsorption) option to replace the current Cryogenic facility by December 2018. |

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| **5.0** | **Strategy**:<br>1. Identify and modify operational strategies that can help reduce electrical consumption.<br>2. Evaluation of VPSA to replace cryogenic facility.<br>3. Initiation and completion of projects to reduce Infiltration and Inflow.<br>4. Protect Variable Frequency Drives (VFD) and reduce electrical consumption.<br>5. Maintain capacity to Main Air Compressors until VPSA option has been implemented. |

**6.0 Program Plan**

| Task | Responsible Individual | Implementation Schedule | Date Task Completed | Comments |
|---|---|---|---|---|
| Target 1: Effluent Pump Operation Strategy | | | | |
| 1. Perform pre analysis of energy usage | Outside Contractor | 1/2/2015 – 3/31/2015 | 3/27/15 | Pending University of Miami agreement. As of 12/02/2014 process initiated. Monitors collected by UM on 1/27/15. BCI monitoring software installed 2/10/15 and in service 3/4/15. Received energy audit report from UM 3/27/15. |
| 2. Review Effluent Pump Operation Strategy | Chief Wastewater Operator | 4/1/2015-6/30/2015 | 3/4/15 | 3/4/15 Pumps placed in most efficient strategy matrix based on recommendations of BCI |

| Task | Responsible Individual | Implementation Schedule | Date Task Completed | Comments |
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| 3. Review efficiency of strategy | Regional Wastewater Facility Manager | 7/1/2015-9/30/2015 | 4/16/16 | The result of this event was an increase of the Peak Demand from 1480KW to 2156KW, which equates to an additional Peak Demand charge of $5,891. |
| 4. Improve operating strategy for pumps | Process Control Engineer | 10/1/2015-3/31/2016 | 4/16/16 | Completed |
| 5. Operate with new strategy | Chief Wastewater Operator | 10/2/2015-9/30/2016 | 4/16/16 | Completed |
| 6. Perform post analysis of energy usage | Outside Contractor | 10/1/2016-3/31/2017 | | |
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| Task | Responsible Individual | Implementation Schedule | Date Task Completed | Comments |
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| Target 3: Infiltration and Inflow reduction in Collection System | | | | |
| 1. Replacement or rehabilitation of leaking sewer lines<br>a. Conduct pre-analysis of I&I flow<br>b. Analyze condition of sewer lines in five basins<br>c. Review Report<br>d. Secure contractors for work.<br>e. Conduct post-analysis | Assistant Public Works Director-Utilities<br><br>Assistant Public Works Director-Engineering<br><br>Senior Project Manager Engineering<br><br>Distribution and Collection Manager | 10/1/2014 – 9/30/2018 | | **CCTV inspection and evaluation began 10/2014.**<br>$5 M of work has been completed TOs of $4.7 M issued for basins D40, A21,A18, D43, B1, A19 and A7.<br>99% of CCTV complete in D43, and A21. 100% of CCTV completed in A-18 and B-1. 100% of CCTV mainlines and 50% of laterals completed in A-19<br>42,141 LF lined<br>Project secifications are under review to bid a new contract for a program valued at approximately $25 M |
| 2. Grouting or sealing of sewer lines and manholes | | 10/1/2014 – 9/30/2018 | | 11 point repairs made<br>29 MH rehabbed |

| Task | Responsible Individual | Implementation Schedule | Date Task Completed | Comments |
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| a. Inspect existing manholes in five basins<br>b. Complete work | Senior Project Manager Engineering<br><br>Distribution and Collection Manager | | | 82 clean-outs installed<br>120 MH to be repaired.<br>:<br>131 Cleanouts installed<br>3609 LF of laterals lined |
| Target 4: Install six power conditioning devices at Motor Control Centers (MCC) | | | | |
| 1. Evaluate need for additional devices | Regional Wastewater Facility Manager | 10/01/2014 – 12/31/2014 | 11/30/14 | Two units to be installed on MCC 11.<br>Two units to be installed on MCC 12.<br>Two units to be installed on MCC 6. |
| 2. Procurement process | Regional Wastewater Facility Manager | 1/01/2015 – 03/31/2015 | 2/20/15 | Bid opened 2/10/15. PO paperwork submitted 2/12/15. |
| 3. Installation and testing of equipment | Regional Wastewater Facility Manager | 3/31/2015 - 7/31/2015 | 5/11/15 | Two units installed 3/4/15<br>Four additional units installed by 4/21/15.<br>Units performance tested 4/30/15 and report received 5/11/15. |

| Task | Responsible Individual | Implementation Schedule | Date Task Completed | Comments |
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| Target 5: Replace 1 Main Air Compressor at Cryogenic Plant | | | | |
| 1. Develop bid specifications | Regional Wastewater Facility Manager | 9/14/2015 – 12/31/2015 | 10/23/15 | Decision, because of cost and future recommendations of Master Plan, to replace MAC A only with new. |
| 2. Procurement process | Regional Wastewater Facility Manager | 1/01/2016 – 03/31/2016 | 2/4/16 | Bidding MAC 'A' to be replaced. |
| 3. Replacement of MAC A commences | Regional Wastewater Facility Manager | 4/1/2016 - 11/30/2016 | | |
| 4. | | | | |
| 5. Set up maintenance plan for compressors | Regional Chief Operator/Chief Mechanic | 1/1/17 – 1/31/17 | | |

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| **7.0** | **Monitoring and Measurement Activities and Frequency**: Analysis will be performed pre and post construction of projects to determine the effectiveness of the energy savings to obtain the 20% reduction. Annual monitoring of electricity consumption to be performed thereafter. |
| **8.0** | **Reference to Related Procedures/Work Instructions/Tracking Spreadsheets**: Facility SOP's. |
| **9.0** | **Training Needs**: SCADA training As identified in COFL-GTL-ED-4.4.2-3 Annual ESMS Training Plan Reduce Electrical Consumption Job-Specific Training. |
| **10.0** | **Environmental Policy Commitment**: Practice "Sustainable Triple Bottom Line" that considers the environment, economy and social equity in all aspects of City's decision-making plans. Educate our employees by empowering them through training to promote environmental stewardship and sustainability. |
| **11.0** | **Importance Relative to other Objective & Target Action Plans**: Reducing electrical consumption to help environment. |
| **12.0** | **Comments regarding current progress toward completion**: |
| **13.0** | **Management Review Dates**08/31/2015, 2/26/16. |
| **14.0** | **Has Senior Management approved the resources necessary to implement this Objective and Target Action Plan**? Yes |
| **15.0** | **Date of Senior Management approval**: 9/4/2014 |

**16.0 Revision Table**

| Rev. No. | Date | Revised by | Description |
|---|---|---|---|
| 001 | 3/16/15 | Pat Long | Updates |
| 002 | 4/3/15 | Pat Long | Revised measurement of savings parameter. Updated project comments. |
| 003 | 5/13/15 | Pat Long | Updates |
| 004 | 7/10/15 | Pat Long | Updates |

| Rev. No. | Date | Revised by | Description |
|---|---|---|---|
| 005 | 8/13/15 | Pat Long | Updates |
| 006 | 9/14/15 | Pat Long | Created target #5. Revised Management Review Date |