Board of Directors Report

on

Key Indicators of MWRA Performance

for

Fourth Quarter FY2015

Frederick A. Laskey, Executive Director
Michael J. Hombrook, Chief Operating Officer
September 16, 2015
Deer Island Energy Use and Cost
20.5% Under Budget

Total Cost of Electricity

Electricity Purchased ($)

FY15 Total Energy Purchased
FY15 Energy Purchased Budget
Deer Island - Key Maintenance Metrics
Predicative and Preventive Maintenance

Preventive Maintenance

% of Work Orders Completed

FY05 FY06 FY07 FY08 FY09 FY10 FY11 FY12 FY13 FY14 FY15

Predictive Maintenance

% of PdM Work Orders

FY05 FY06 FY07 FY08 FY09 FY10 FY11 FY12 FY13 FY14 FY15

FY15 Target
Deer Island - Key Maintenance Metrics

Key Equipment Availability

![Diagram showing maintenance metrics and backlog hours over years from FY05 to FY15.](image-url)

- **Equipment Availability**
  - Backlog in Crew Hours
  - Industry Benchmark Between 8,730 hours to 17,460 hours

- **Backlog and Availability**
Wastewater Pipeline Inspections and Maintenance

**Manhole Rehabilitation**
- F&C Target = 9 monthly or 108 / 10% of the system annually

**YTD Actual**

**Inverted Siphon Cleaning**
- Target = 3 monthly or 36 / 33% of the system annually
- YTD Actual
FY15 Target for FTE's = 1164.8
FTE's as of June 2015 = 1151.3
Co-Digestion Update
Co-Digestion Status

- **Supply Contract with Waste Management**
  - Expired June 1, 2015
  - No food waste ever delivered to MWRA
  - Switch to Barging made project financially unsustainable under contract structure
Co-Digestion Status

Staff see value in program:
- Pilot: $2.1 M in energy value over 3 years
- Permanent: $2.3 M annually @ 70 dtpd Tipping fee + $2.7 M annually

Expected Capital Costs
- Pilot: $2.3 M receive by barge
- Permanent: $4.4 M
Where does MWRA go from here?

• **Issue RFI – specify:**
  – Pre-processed then Barge delivery
  – 5-yr non-exclusive contract + 5 yr extension
  – 3 yrs at 7-21 tpd, phased to 70 tpd
  – No tipping fee first 5 years, then set fee
  – MWRA would accept from all qualified vendors

• **If positive responses, issue RFQ**
  – Award Contract (s)
  – Construct Barge Offload Station
  – Continue funding assistance with MaDEP

• **If no responses, abandon program**

• **Market place would provide feedback on proposed program**
MaDEP Organics Ban Update

• **MaDEP Regulation:**
  – Promulgated in late 2012 – Goal – to reduce material going to landfills & incinerators, encourages organic to green fuel program

• **MaDEP Organics Metrics – is there adequate source material?**
  – State produces 1,000,000 wet tons annually of food waste 630 tpd
  – 100,000 wet tons diverted prior to ban – food pantries, compost operations 63 tpd
  – 250,000 wet tons GOAL to be diverted through ban 150 tpd
  – 650,000 wet tons still going to landfill annually 417 tpd

  – MWRA proposed program – up to... 70 tpd

• **MaDEP Organics Ban: effective October, 2014:**
  – Target commercial/industrial sources > 1 wet ton/week
  – Impacts 1,700 commercial/industrial generators
MaDEP Organics Ban Update

- “Most targeted sources have found a home for their waste”
  - Tipping Audit results:
    - No obvious violations at landfills
  - Food Banks & Composters report increased production
    - Only 2 composters within MWRA district, on fringe of district

- According to MaDEP, “lots of non-targeted organic material around”
  - 650 K to 900 K tons per year not subject to ban

- Banned generators could be enticed to use MWRA if economics are favorable
The Competition

- Any organics disposal alternatives in Massachusetts?
  - Food Banks
  - Composting operations
  - One active digestion project - Jordan Dairy Farm, MA (private digester)
  - Greater Lawrence Sanitary District – awarded contract with WM
  - 2 others pursuing digestion but not fully designed or permitted
    - Stop & Shop (Freetown), Food waste digester
    - Harvest Power (Bourne), Co-Digestion digester
Greater Lawrence Sanitary District – Co-Digestion Update

• Issued RFQ/P

• Bidders List
  – Casella Organics – non-bid, bid didn’t meet spec
  – Harvest Power – didn’t submit tipping fee with bid
  – Waste Management – complete bid, including $0.004/gal tipping fee,
    • using Charlestown Facility

• GLSD Signed contract with Waste Management
  – 5 yr contract + 2 x 5 yr extensions
  – Non exclusive contract
  – 3.5 tpd – 16.4 tpd Pilot (6 month)
  – Up to 53 tpd for permanent program
  – No tipping fee for pilot, $0.004/gal tipping fee for permanent program
Tipping Fee: Potential non-rate revenue

- Municipal Solid Waste Tipping Fee - $200 – $250 /dry ton
  - To remain competitive, all in costs should remain consistent with MSW tipping fee
    - [DITP fee + Barge Costs] + Vendor Fee
    - DITP + Barge costs should be 25% or less of MSW fee to remain competitive

- DITP Fee:
  - Original proposal: $0.062/gal ($2.7 M annually) - $106 / dt (42-53%)
  - Revised: $0.025/gal ($1.0 M income annually) - $51.4 / dt (22-27%)

- Barging Costs (DITP Specific costs) - $2.5 M (1 time + on-going)
  - 10 yr amortization - $13 / dt [5-6% MSW fee]
Massachusetts Water Resources Authority

Spot Pond Water Storage Facility
Design/Build Project
• MWRA Reconfigured Northern Low Service Area

• Tank 1 & All Piping Disinfected and Brought Into Service
  – 10 million gallons storage in service

• Commenced Pump Testing
  – Redundancy 1st Time for Gillis P.S.

• Outlet Pipe for Tank 2 Repair Needed
Spot Pond Water Storage Facility
Unified Northern Low Service Area

Unified Low Service Zone

Boston Low Service Zone
Sanitary Protections
• Disinfected per AWWA
• Barrier between Tanks during Construction
• Dust Filters on Vents
• Flap Gates/Insect Screens & Bar Racks at Overflow

Security Measures
• Access Hatches with Internal Security Plates
• Intrusion Alarms
• Security Fencing
Spot Pond Water Storage Facility
Tank 1 Disinfection & Activation
Spot Pond Water Storage Facility
Pump Station & Detention Pond
Spot Pond Water Storage Facility
Tank 2 Outlet Pipe Repair
Carbon Fiber Reinforced Polymer (CFRP) Repair
Carbon fibers and high strength epoxy resins will restore the pressure boundary of pipe. Four layers of DowAksa CarbonWrap installed by ConstrucXon Solutions, Inc. (CSI).
Spot Pond Water Storage Facility
Pump Testing

Northern High Pumps (HS.P-1 & P-2):
• 350 hp Motors with VFDs
• 13 MGD

Northern Intermediate High Pumps (NIH.P-4 & P-5):
• 450 hp Motors with VFDs
• 8 MGD

Swing Pump (HS.P-3):
• 600 hp Motors with VFD
• 15 MGD
Spot Pond Water Storage Facility
Standby Generator and HVAC System
Spot Pond Water Storage Facility

Remaining Site Activities

- Landscape Seeding
- Bioslope Plantings
- Site Drainage
- Detention Pond
- Remove Erosion Controls
- Fencing and Guardrails
- Final Paving
Spot Pond Water Storage Facility
Stockpile Removal

Up to **80,000 cubic yards** to be exported from the site

Starting September 28th

125 Trucks/Day

3,000 CY/day

4-5 Week Duration
• 10 mgd Storage Available for North Low Communities

• Testing Pumps – Redundancy for Gillis P.S.

• Tank 2 Outlet Repair

• Contractor behind Schedule - Working Toward Substantial Completion