Food Waste Program Update

Finance Committee

June 23, 2015
Presentation Outline

- Program Goals
- Key Initiatives
  - Oakland Food Waste/Waste Management Subcontract
  - Harvest Power Project
  - Recology Project
- Financial Overview
- Facility Operation
- CEQA Documentation
- Next Steps
Program Goals

• Grow Resource Recovery Program with a local and sustainable feedstock

• Provide multiple environmental benefits
  – Divert organic materials from landfills
  – Generate renewable energy
  – Produce a valuable end product for reuse

• Utilize wastewater infrastructure to generate revenue
  – Tipping fees, energy revenue from receipt of organics
  – Rate offset benefit for District customers
In September 2014, the City of Oakland (City) awarded a solid waste franchise to Waste Management of Alameda County (WMAC)

- City directed WMAC to subcontract with EBMUD for delivery of commercial food waste to MWWTP, which is estimated to reach 75-100 tons per day (tpd) during ten-year contract term

Staff has negotiated a subcontract with WMAC

- Includes required terms from City-WMAC contract (Feb 2015)
- Requires EBMUD to startup required receiving and preprocessing facilities by July 1, 2016 with allowance for District to seek a time extension in January 2016
- WMAC will manage material until EBMUD facilities are on-line
- Submitted to City for review and approval

Agendized for Board authorization at today’s meeting
Waste Management Subcontract

Key Terms and Conditions

- WMAC to deliver: 1) Unprocessed, 2) Preprocessed, and 3) “High Value” food waste
  - EBMUD receives first 50 tpd of Unprocessed material
  - WMAC option to “preprocess” material greater than 50 tpd
  - High Value food waste would be directly collected from food processors with no contamination

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Contamination Limit</th>
<th>Tons per Day</th>
<th>Tipping Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unprocessed food waste</td>
<td>10%</td>
<td>50-100</td>
<td>$96/ton</td>
</tr>
<tr>
<td>Preprocessed food waste</td>
<td>5%</td>
<td>0-50</td>
<td>$46/ton</td>
</tr>
<tr>
<td>High Value food waste</td>
<td>0%</td>
<td>TBD</td>
<td>$46/ton</td>
</tr>
</tbody>
</table>

- No digested residuals to landfills (including ADC)
- EBMUD to indemnify City-WMAC from claims or losses arising from EBMUD performance, compliance
Food Waste Processing
Harvest Power of California (HPC)

• In February 2015, District issued a request for proposals to provide food waste preprocessing and organics program development services

• In April 2015, staff selected HPC and is continuing contract negotiations to address a wide range of financial, deal structure, and technical issues

• Facilities will be sized to receive up to 190 tons per day of unprocessed material

• Staff is recommending execution of a memorandum of understanding (MOU) with HPC to serve as framework for continuing negotiations

• MOU is agendized for Board authorization today
Why Partner with HPC?

- HPC brings technical expertise with operational experience
- HPC assumes key technology risks
  - Equipment selection and performance guarantees
  - Troubleshooting and technology replacement, if needed
- HPC helps manage critical project schedule drivers
  - Requires timely equipment procurement
  - Integrated design/build schedule advantages
- Grant funding contribution to reduce initial capital requirements
  - HPC brings a $4.8 million CEC grant for this project
Harvest Power of California
Memorandum of Understanding

- HPC to design and construct processing facilities
  - Preprocessing (contaminant removal, size reduction)
  - Dedicated dewatering, compressed natural gas (CNG)
  - Meet EBMUD material quality specification
  - Assume technology risk by selecting equipment and guaranteeing performance

- Equal sharing of $4.8 million CEC grant funding

- Achieve an equitable distribution of capital costs, project revenues, operating costs, and project risks

- 20 to 25 year term

- HPC to use every effort to place facility on-line by July 1, 2016 (or extended date approved by City)

- Finalize contract by July 31, 2015
Harvest Power
Project Overview

Food Waste Collection at Local Restaurants (Commercial Source-separated Organics)

Food Waste Preprocessing Facility at EBMUD

Contaminant Removal and Size Reduction

Dedicated Digesters

Biogas

Dedicated Dewatering Facility

Organic Compost

Renewable Electricity

Renewable Compressed Natural Gas (CNG)
Harvest Power
Project Structure

• Energy Facility Financing Contract model
  – Public-private partnership for alternative energy supply projects (CA Government Code 4217.13)
  – Statute allows EBMUD to procure design-build-operate services under certain conditions
  – Projected energy revenues must offset EBMUD’s capital and operating expenses

• Both parties contribute capital and share revenue
  – Project elements are fully integrated
  – Tip fees, CNG sales and environmental attributes (LCFS/RINs) cover operating costs, payback capital, and provide net revenue to both parties
Harvest Power Project
Cash Flow Model

- Tipping Fee Revenues
- CEC Grant Funds
- CNG Revenue + Environmental Attributes

Harvest Capital

PROJECT

- Harvest O&M Costs
- EBMUD O&M Costs

Net Revenue Share

EBMUD Capital
Harvest Power

Contract Negotiation Status

- = start of negotiations
- = current status

### Harvest Benefits

- **Capital Contribution**: EBMUD $14.0M; HPC $7.2M
- **Tipping Fee Revenue Sharing**: EBMUD: 75% of net
- **CNG Revenue Sharing**: EBMUD: 17 → 13 years
- **Environmental Attribute Revenue Sharing**: EBMUD: $9M → $19M
- **Capital Payback Period**: EBMUD: 17 → 13 years
- **Net Present Value**: EBMUD: $9M → $19M
- **Technology Risk**: Harvest bears risk

### EBMUD Benefits

- **EBMUD**: $9M → $19M
### Harvest Power Project Financials (190 tpd)

<table>
<thead>
<tr>
<th>Capital Costs</th>
<th>EBMUD</th>
<th>Harvest</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Improvements</td>
<td>$3.4</td>
<td>$3.4</td>
<td>$3.4</td>
</tr>
<tr>
<td>Processing Facilities</td>
<td>$11.8</td>
<td>$9.6</td>
<td>$21.4</td>
</tr>
<tr>
<td>CEC Grant</td>
<td>-$2.4</td>
<td>-$2.4</td>
<td>-$4.8</td>
</tr>
<tr>
<td>Construction Management</td>
<td>$1.2</td>
<td></td>
<td>$1.2</td>
</tr>
<tr>
<td><strong>Total Capital Costs</strong></td>
<td><strong>$14.0</strong></td>
<td><strong>$7.2</strong></td>
<td><strong>$21.2</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Net Revenue</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tipping fees</td>
<td>$22.2</td>
<td>$6.6</td>
<td>$28.8</td>
</tr>
<tr>
<td>CNG fuel sales</td>
<td>$2.7</td>
<td>$8.4</td>
<td>$11.1</td>
</tr>
<tr>
<td>RINS/LCFS</td>
<td>$3.1</td>
<td>$4.5</td>
<td>$7.6</td>
</tr>
<tr>
<td><strong>Total Net Revenue</strong></td>
<td><strong>$28.0</strong></td>
<td><strong>$19.5</strong></td>
<td><strong>$47.5</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Net Present Value</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Present Value</td>
<td>$19.0</td>
<td>$12.3/$9.7</td>
<td>$31.3/$28.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Payback (discounted)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Payback</td>
<td>13</td>
<td>6</td>
<td>11</td>
</tr>
</tbody>
</table>

*Millions of dollars. Present values at 4% discount rate.*
Program Schedule

Sep 2014: City Contract Award to WMAC

Jun 2015: EBMUD-WMAC Subcontract Finalized

Jan 2016: EBMUD check-in w/City re: schedule extension

July 1, 2016: EBMUD food waste facility in-service date

2014

Apr 2015: EBMUD issued RFP for preprocessing services

2015

Facility Planning, Design, Constr’n

July 2015: EBMUD-Harvest Contract (to be finalized)

Contingent Upon City Approval of Schedule Extension Request

2016

Jun 2015: EBMUD-Harvest MOU Finalized
Recology Project

Overview

• In 2014, Recology was awarded a $3 million grant from CalRecycle for organics diversion and digestion at EBMUD

• Project would extract organics from San Francisco mixed solid waste (“urban organics”)
  – 70-100 tpd with significant potential for expansion

• Project utilizes a two-stage preprocessing approach
  – “Organics Extrusion Press” located at Recology facility in San Francisco
  – “Polisher” located at EBMUD MWWTP
Staff is currently negotiating a long-term contract with Recology with a near-term goal of executing an MOU by mid-July
- MOU is required to maintain CalRecycle grant award
- Negotiated tipping fee
- Material volume commitment
- Contract Term (minimum expected = 10 years)
Food Waste Program

Key Infrastructure Needs

• Identify available processing capacity and associated process upgrade needs

• Key Process Areas
  - Anaerobic Digestion: Sufficient existing capacity; utilize dedicated digestion to maximize value of digested material and meet project requirements
  - Solids Dewatering: Existing capacity and operational limitations; requires new dedicated dewatering capacity
  - Gas Management System: Limited capacity; requires CNG facility or expansion of District’s Power Generation Station

• Develop phased-implementation plan to manage capital investments relative to program growth
MWWTP Site Layout

Food Waste Program Improvements

- Solid-Liquid Waste Receiving Station Logistics/Upgrades
- Harvest Power Dedicated Dewatering Facility
- Site/Utility Improvements
- Harvest Power Preprocessing and CNG Facilities
- Dedicated Digestion Improvements
- Recology Polisher
Presentation Outline

• Program Goals
• Key Initiatives
  – Oakland Food Waste/Waste Management Subcontract
  – Harvest Power Project
  – Recology Project
• Financial Overview
• Facility Operation
• CEQA Documentation
• Next Steps
Oakland/Harvest Power Project

Financial Overview

- Total capital cost for food waste processing facilities = ~$20 million (EBMUD and HPC)

- Oakland Food Waste (assume 60 tpd, 10 years)
  - Projected Tipping Fee Revenue = $16 million
  - Projected Energy Sales Revenue = $8 million
  - Capital investment + operating costs are expected to exceed projected revenues with Oakland food waste alone

- Additional material is required to increase revenues and overall project financial viability
  - HPC facilities are designed to process 190 tpd with space allocated for future expansion
Program Growth
Key Opportunities

- EBMUD and HPC will combine efforts to secure additional long-term organic sources
- Based on state/county waste characterization studies, over 1,400 tpd of feedstock is available in five Bay Area counties
- Recology Contract
  - Negotiating a contract for 70-100 tpd of “urban organics”
- Recent discussions with key San Francisco staff regarding increased interest in sending commercial source-separated organics to EBMUD
- Continued state legislative and regulatory pressures to increase diversion of organics from landfills
Food Waste Program

Alternative Scenarios

- **Scenario 1 – Harvest Power Project (190 tpd)**
  - 150 tpd to one EBMUD digester
  - Includes 5-year ramp-up period
  - Includes currently contracted material volume of 90 tpd (Oakland, CCCSWA)

- **Scenario 2 – Expanded Food Waste Program (300 tpd)**
  - 225 tpd as-collected = 180 tpd to digesters
    - ($96/ton for WM, $75/ton for all other material)
  - 70 tpd Recology urban organics ($46/ton)
  - 50 tpd WM preprocessed material ($46/ton)
Scenario 1 – Harvest Power (190 tpd)

District Capital Costs

- Harvest Power Project (Oakland Food Waste)
  - District Contribution to Preprocessing Facility $11.8M
  - District share of $4.8M Harvest CEC Grant ($2.4M)
  - Site Improvements (Utilities, Access, Process Upgrades) $3.4M
  - Construction Management $1.2M

  **Total Capital Cost for 190 tpd Scenario = $14.0M**

*Note:* These are preliminary capital costs and subject to change based on continuing contract negotiations.
Scenario 2 – Expanded Program (300 tpd)
District Capital Costs

- Harvest Power Project (Oakland Food Waste)
  - District Contribution to Preprocessing Facility $11.8M
  - District share of $4.8M Harvest CEC Grant ($2.4M)
  - Site Improvements (Utilities, Access, Process Upgrades) $3.4M
  - Construction Management $1.2M

- Recology Project (Urban Organics)
  - Polishing Facility $4.2M
  - District share of $3M Recology CalRecycle Grant ($1.2M)
  - Dewatering Facility Expansion $3.4M
  - Construction Management $1.0M

Total Capital Cost for 300 tpd Scenario = $21.4M

Note: These are preliminary capital costs and subject to change based on continuing contract negotiations.
Alternative Scenarios

Financial Analysis Results

- Constructing the Harvest Power Facilities for Oakland and CCCSWA alone (90 tpd) **does not payback initial capital investment**
- Approximately **110 tpd is required to “break even”**
- If Harvest Power facility capacity is achieved (190 tpd), the project provides net value to EBMUD (**NPV = $19 million**)  
- If EBMUD successfully expands its food waste program (300 tpd), significant value is provided to District customers (**NPV = $46 million**)  

<table>
<thead>
<tr>
<th>Description</th>
<th>EBMUD Capital ($million)</th>
<th>EBMUD NPV ($million)</th>
<th>Capital Payback (yrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario 1: Harvest Power Facilities (190 tpd)</td>
<td>14.0</td>
<td>19</td>
<td>13</td>
</tr>
<tr>
<td>- Worst Case: WM, CCCSWD only (90 tpd)</td>
<td>14.0</td>
<td>-4.3</td>
<td>&gt;27</td>
</tr>
<tr>
<td>- “Break Even” Point (110 tpd)</td>
<td>14.0</td>
<td>0</td>
<td>27</td>
</tr>
<tr>
<td>Scenario 2: Expanded Program (300 tpd)</td>
<td>21.4</td>
<td>46</td>
<td>10</td>
</tr>
</tbody>
</table>
## Food Waste Program
### Residual Risks

<table>
<thead>
<tr>
<th>Residual Risk</th>
<th>Initial Risk Level</th>
<th>Mitigations</th>
<th>Residual Risk Level</th>
</tr>
</thead>
</table>
| District is unable to meet required facility startup date and City does not approve extended schedule | HIGH               | ▪ Contract with City has an allowance to request an extension of startup date  
▪ Include Harvest contract incentives                                          | HIGH                |
| Projected feedstock growth does not materialize                               | HIGH               | ▪ Execute long-term base contracts  
▪ District and Harvest to work together to secure additional material          | MEDIUM              |
| Capital investment is not recovered or longer than expected payback period    | HIGH               | ▪ Both parties share capital risk, grants  
▪ Implement project in phases  
▪ Require long-term contract obligations                                       | MEDIUM              |
| Poor quality material with unforeseen or greater than expected process impacts/costs | HIGH               | ▪ Require material quality specifications for WM, Harvest, Recology  
▪ Implement quality testing protocol  
▪ District to provide support for targeted customer education; review customer lists | MEDIUM              |
| Facility odors cause off-site impacts                                         | HIGH               | ▪ Require building enclosure, odor control systems, operational controls  
▪ Implement add’l odor controls, as needed                                     | MEDIUM              |
Facility Operation
Alternative Staffing Approaches

- Staff has engaged in ongoing discussions with Local 444 regarding operation of the food waste facilities

- Current staff approach for HPC facilities:
  - Preprocessing facility to be operated by HPC
  - CNG facility to be operated by EBMUD
  - Dedicated dewatering facility to be operated by HPC
  - Include review of operational responsibility in HPC contract at Years 5, 10, 15, and 20

- Staff recommends that the Recology polisher facility be operated by EBMUD

- WMAC contract does not address facility operation and the HPC MOU does not include assigned responsibilities
Facility Operation

Dedicated Dewatering Facility

- Technology risks
  - Equipment selection → operation → troubleshooting → replacement

- Operational risks
  - Lack of District experience with non-biosolids material dewatering
  - Impacts on material dryness – direct financial impacts on sludge hauling, polymer usage
  - Subject to material quality issues (contamination, grit)

- Benefits from integrated and direct responsibility
  - Avoids unclear responsibilities for ineffective performance and/or operation

- Ramp-up period (40 tpd → 190 tpd → 300 tpd)
Staffing Approach

Dedicated Dewatering Facility

- EBMUD Existing Dewatering Facility
  - 24/7 operation: ~4-6 FTEs

- Proposed Dedicated Dewatering Facility
  - Harvest approach: Use FTEs allocated to preprocessing facility, ~0.5 FTEs focused on dewatering operation
  - Under EBMUD operation:
    - Single-shift operation initially: 1 FTE
    - Possibly add 1 FTE to accommodate ramp-up
    - No additional FTEs added over time
Background

CEQA Documentation

• MWWTP Land Use Master Plan Final EIR (FEIR)
  – Certified by Board on June 28, 2011
  – Included a project-level analysis of a food waste preprocessing facility at the MWWTP site

• As required by CEQA, staff has reviewed the current “modified project” and analyzed associated impacts in an Addendum to the 2011 FEIR
  – Proposed WMAC subcontract for commercial organics
  – Construction and operation of required food waste processing facilities
• Current project purpose, material types, and sources are consistent with original project

• No change to maximum project throughput

• Similar preprocessing equipment and utilization of existing digesters

• Impacts Analysis
  – Truck miles are lower compared to 2011 FEIR
  – Air emissions during facility construction are lower

• Overall Conclusion
  – No new significant environmental effects
  – No increased significance of previously analyzed environmental impacts
Next Steps

1. Recommended Actions (6/23 Board Meeting)
   - Consider Addendum to MWWTP Land Uses Master Plan EIR; and Authorize a ten-year agreement with WMAC for delivery of food waste from commercial customers in the City of Oakland
   - Authorize an MOU with Harvest Power to guide contract negotiations

2. Finalize MOU with Recology by July 10, 2015 and continue negotiations

3. Continue negotiations and finalize contract with Harvest Power by July 31, 2015

4. Continue discussions with Local 444 regarding responsibility for facility operations