Presentation to

MWRA Board of Directors

MWRA Energy Efforts & Savings
FY02 to FY11 Ten Year Summary Report

January 18, 2012
• Energy Savings and revenue total approximately $177M during FY02 – FY11

• Increase annual energy savings and revenue from $6M in FY02 to $24M in FY11

• Aggressive pursuit of rebates and grants – over $12M awarded to date

• About 45% of MWRA’s total energy cost profile derived from renewable sources

• Process optimization and implementation of energy audit recommendations projected to save almost $2M annually

• Recognition for energy program leadership and projection completion – MWRA awarded 8 regional and national awards (2005 – 2011)
• Cost Savings

• Operations
  – Equipment replacement

• Environmental agency
  – MWRA has been successfully meeting the goals established in Governor Patrick’s Executive Order 484 (April 2007)

  – Goals include:
    - Overall Reduction of Energy Consumption
    - Increase Renewable On-site Energy Production
    - Purchase of Renewable Energy
MWRA’s total demand - 210,800,000 kWh and 493,250 therms (electricity and natural gas only). Equivalent to 18,500 homes, similar to MWRA service area town the size of Arlington.

MWRA’s costs for natural gas, electricity and diesel fuel
- $15 M (8.4% of total direct expenses) in FY02
- $20 million (9.9% of budget) in FY11
• Price impacts in diesel fuel and electricity prices during FY06 due to Hurricane Katrina and CWTP start-up
• Increases in electricity prices in FY08-FY10 due to market
• Diesel fuel purchases increased in FY10 due to CTG use during spring storms
## MWRA’s Energy Initiatives - 10 Year CEB Impact

### Source (\$’s in Millions)  

<table>
<thead>
<tr>
<th>Source</th>
<th>FY02-FY11</th>
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<tbody>
<tr>
<td><strong>Savings and Avoided Costs:</strong></td>
<td></td>
</tr>
<tr>
<td>Avoided Fuel (DI Digas)</td>
<td>$82 million</td>
</tr>
<tr>
<td>Competitive Bidding vs Basic Service</td>
<td>$34</td>
</tr>
<tr>
<td>DI Steam Turbine Generator</td>
<td>$24</td>
</tr>
<tr>
<td>Audits/Efficiency</td>
<td>$6.5</td>
</tr>
<tr>
<td>Hydropower</td>
<td>$4.4</td>
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<tr>
<td>Wind</td>
<td>$0.4</td>
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<tr>
<td>Solar</td>
<td>$0.1</td>
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<tr>
<td>Avoided Capacity Charges</td>
<td>$2.5</td>
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<tr>
<td><strong>Total Savings/Avoided Costs</strong></td>
<td><strong>$154 million</strong></td>
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<tr>
<td><strong>Revenue:</strong></td>
<td></td>
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<tr>
<td>RPS Credits</td>
<td>$8.0 million</td>
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<tr>
<td>Load Reduction</td>
<td>$6.8</td>
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<tr>
<td>Generation Sales to Grid</td>
<td>$7.8</td>
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<tr>
<td>Utility Rebates/Other</td>
<td>$0.7</td>
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<tr>
<td><strong>Total Revenue</strong></td>
<td><strong>$23 million</strong></td>
</tr>
<tr>
<td><strong>TOTAL CEB IMPACT</strong></td>
<td><strong>$177 million</strong></td>
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Of MWRA’s total energy profile (in $), over 45% is derived from renewable sources.
Methane Utilization At Deer Island

- Deer Island utilizes 98% of the methane generated to power a steam turbine generator and backpressure turbine for plant heat and hot water
- Avoid purchase of about 5MG in fuel oil annually
- Approximately 33 MkWh/yr electricity production (projected FY13)
- Over $3.6M/yr electricity savings and revenue (projected FY13)
Hydroelectric Power

- Cosgrove, Oakdale, Loring Rd, Deer Island
- Over 8MW Capacity
- Approximately 23 MkWh/yr electricity production
- Over $1.8M/yr savings and revenue
Wind Power

- Deer Island, Charlestown (DeLauri Pump Station)
- 2.8 MW Capacity
- Over 5 MWh/yr electricity production
- Approximately $575,000/yr savings and revenue
Solar Power

- Deer Island, CWTP
- Over 1200 kW Capacity
- Over 1.4 MkWh/yr electricity production
- Approximately $242,000/yr savings and revenue
**MWRA Renewable Electricity Portfolio**

* FY08 – Additional purchase of National Green-e Power
Maximizing Grants and Rebates

• When the American Reinvestment and Recovery Act was announced, MWRA had a number projects “shovel ready”

• MWRA received $33M in ARRA funds for water and sewer projects of which nearly $10M for renewable energy projects

• Over $2.5M various state grants

• Approximately $680,000 energy efficiency project rebates to date
• Hydro – Continue to explore hydropower development potential

• Wind – Conducting feasibility study for 4th wind turbine at Deer Island

• Solar – Comprehensive solar assessment ongoing

• Demand Side Management – Continue energy audits, process control optimization, demand response, EMS installation

• Grants/Rebates – Seek funding assistance opportunities

• Other Sustainable Efforts – alternative fuel vehicles, green power purchase, energy efficient computing, recycling