How Much is 50 Million Gallons?

• Over 1,000 Miles of 55-gal Drums Lying End-to-End

• Enough Water to Fill the Largest Oil Tankers that Can Go Through the Suez Canal

• The Combined Annual Wine Production of New York and Washington
The Opportunity

• The Powell St. Subway Station is 2 blocks from ECSF and disposes of 30 Mgal of groundwater intrusion per year.
• The San Francisco Public Utilities Commission is aggressively looking for large, water reuse projects and is offering up to $500k grants to bring them about.
• Is there a way to bring the needs of Public and Private entities together to create a solution that is a win for everyone?
The Execution - Pipeline

- ECSF Plant
- Subway Supply Water
- Station Entrance
The Execution - Plant

• All Piping & Structural Steel Work Done by Employees
• Water Treatment Plant Was Mostly Modular Construction
The Results

• Total Project Cost (Ground Water Only): $3.5M
• Total Annual Savings (Ground Water Only): $1M, 3.0 year payback
  – $800k Water Sewer, $200k Chemical Savings
• SFPUC Grant for $500k
• Enhanced Savings by Adding On-Site Well
  – Test Well Indicates Steady 200 gpm Available for an Incremental $250k
  – Improves Project Savings by Additional $800k per Year, 0.3 Year Payback
• Using a Combination of Ground Water and Well Water Will Allow ECSF to Market a New Product Called “Sustainable Steam”
  – Goal Would be to get USGBC LEED Points to Enhance Marketing of Steam in San Francisco
The Financial Results

### ECSF Projected Water Cost Improvement

**ECSF Projected Water Cost Improvement**

**W/ Ground and Well Water**

**2018-2024**

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual City Water/Sewer Cost ($ x 1000/yr)</th>
<th>Annual City Water Use (MMLB/yr)</th>
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<tr>
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<tr>
<td>2005</td>
<td>$2,500</td>
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</tbody>
</table>

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**12-Month Running Water/Sewer Cost ($ x 1000)**

- **2018-2024**: Continuous decrease from $2,500 to $0

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**12-Month Running Water Use (MMLB)**

- **2018-2024**: Continuous decrease from 1,200 MMLB to 0 MMLB

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**Source**: Clearway Energy Energy Center San Francisco
Lesson Learned: Not What We Expected in Subway Water
The Design

Ground Water Receiving Tank

Micro Filtration Module

Desalitech Reverse Osmosis Module

Treated Water Holding Tank
The Design