Best Practices Around the World – Water in Israel

Public Works Commission

1/13/2022
• Water Resource Needs in Israel
• Water Technologies in Use
• Parallel Practices in California
• Discussion
Arid Climate

- North: 20-30 inches annual precipitation
- South: < 1 inch annual precipitation
Growing Water Demand

Population
• Approx. 9.5 Million people today

Agriculture
• Self sufficient and major exporter of fresh produce even though half the land area is desert
Prioritizing Water Resources

Transfers
- Embarked on large infrastructure projects in the 1950s to deliver water south
- National Water Carrier

Regulation
- Water Law of 1959
- All water is publicly owned and managed by a unified, central authority
Phases of Development

1950-1970
- Conventional water resources (surface water, groundwater) developed but ultimately inadequate to meet need

1970-1990s
- Transitioned to water reuse of treated wastewater for indirect potable use via irrigation on farmland

2000s
- Seawater desalination
Sorek Desalination Plan

• Became operational in 2013, south of Tel Aviv
• Approx. 165 MGD – largest RO facility in the world
• $400 M
• **Sorek II** planned for northwest region = total of 6 plants in Israel
• Desalination to account for 100% of domestic supply by 2050
Shafdan Wastewater Treatment Plant

- Constructed in 1969 on the outskirts of Tel Aviv
- World’s largest plant treating effluent for use in agricultural irrigation
- More than 60% of agriculture in the Negev Region is irrigated by Shafdan water
- Nationwide, Israel reuses over 90% of its wastewater
Atmospheric Water Generator

• Extracts water from humid ambient air
• Two primary techniques are cooling and desiccants
• Large-scale use inhibited by energy costs and suboptimal environmental conditions (i.e., temp and humidity)

Proprietary technology - Watergen
In California

**Desalination**

- Currently 12 desalination plants in the state
- Carlsbad facility (2015) the largest in the Western Hemisphere
  - $1B, developed as public-private partnership (PPP)
  - 50 MGD
  - 12% of the water used in San Diego County
- Similar plant planned for Huntington Beach by same developer (Poseidon Water)
In California

Planned Potable Reuse Projects

Update – Jan 2022!
Next Steps for Beverly Hills

• DPR efforts by the City of Los Angeles and MWD may reduce future dependence on State Water Project and Colorado River systems.

• Beverly Hills as member agency have the potential opportunity to utilize DPR to:
  • Supplement local supply
  • Make directly available to Beverly Hills and surrounding cities
  • *Use wastewater flows as “credit” in future water/wastewater agreements with the City of Los Angeles and MWD*
<table>
<thead>
<tr>
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<th>Israel</th>
<th>California</th>
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<tbody>
<tr>
<td>Population</td>
<td>~ 9.5 million</td>
<td>~ 39 million</td>
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<tr>
<td>Land Area</td>
<td>10,733 square miles</td>
<td>163,696 square miles</td>
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<tr>
<td>Regulation direction</td>
<td>Top down from state</td>
<td>Increased local control resulting in diverse priorities &amp; outcomes</td>
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<tr>
<td>Water Ownership</td>
<td>Single water right - 100% publicly owned</td>
<td>Subject to multiple types of water rights</td>
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<tr>
<td>Distribution</td>
<td>National Water Company - Mekorot</td>
<td>Public water systems:</td>
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<tr>
<td></td>
<td></td>
<td>• Cities – 285 public systems</td>
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<td></td>
<td></td>
<td>• Counties -129</td>
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<td></td>
<td></td>
<td>• Special Districts – 537</td>
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<td></td>
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<td>• Public Utilities - 138</td>
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<td>Private systems:</td>
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<td></td>
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<td>• Mutual Water Companies – 1,200</td>
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Thank you!