


Massachusetts Water Resources Authority

Presentation to Wastewater Advisory Committee

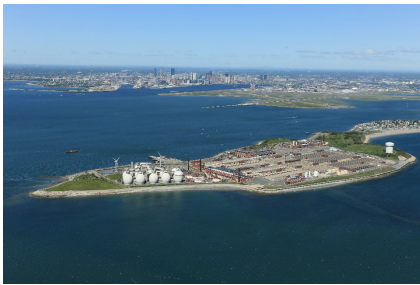
David F. Duest
Director, Deer Island Treatment Plant

October 3, 2025

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The Deer Island Treatment Plant

- The 15-year, \$3.8 billion Boston Harbor Project was completed in 2001
- About 360 million gallons of wastewater is treated at the Deer Island Treatment plant every day, with a peak capacity of 1.3 billion gallons per day
- Treated wastewater is discharged 9.5 miles out into the deeper waters (~110 ft) of Massachusetts Bay

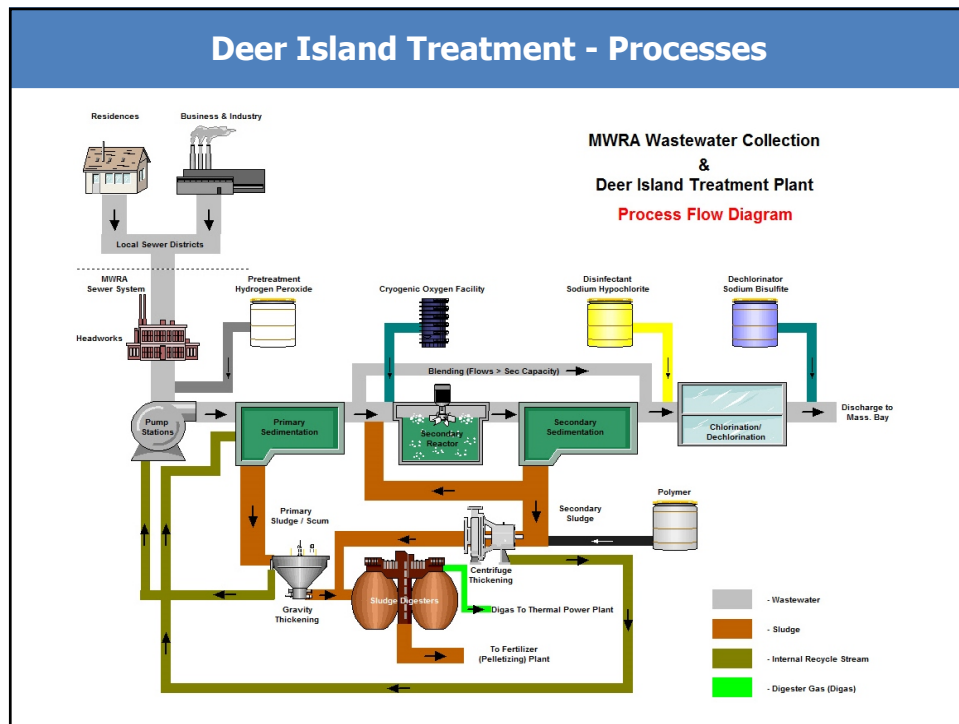



- 2nd Largest WWTP in US based on max capacity
- 4th Largest WWTP in US based on avg annual flow

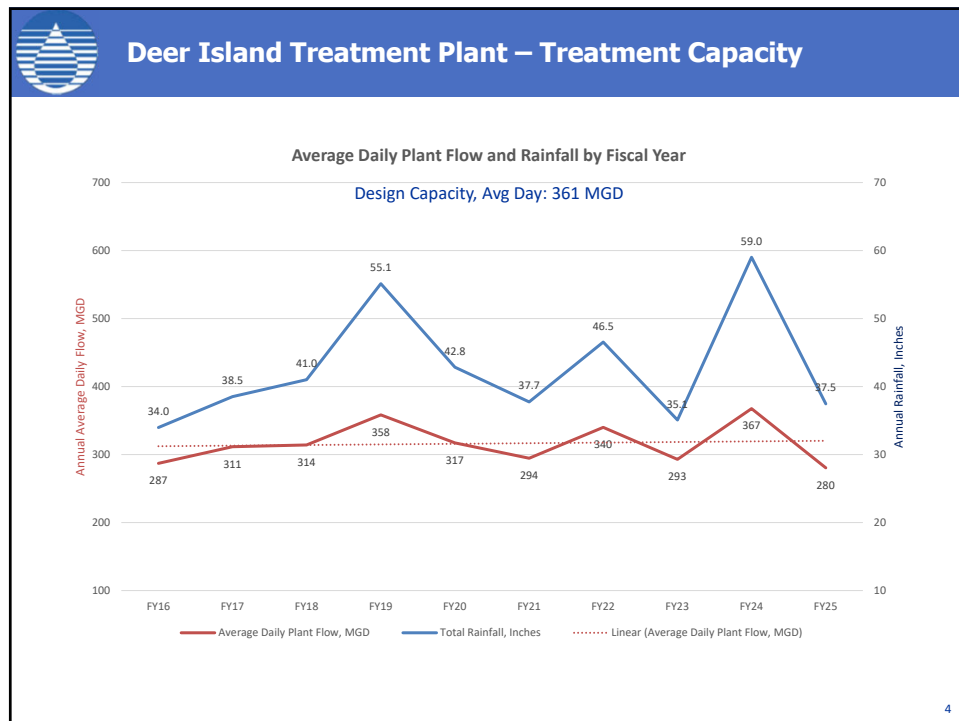
Detroit MWRA/DITP Stickney, Chicago, IL Blue Plains, DCWASA	671 MGD/1600 MGD 360 MGD / 1310 MGD 750 MGD/1200 MGD 370 MGD/1.076 BGD (advance/ nit/denit)
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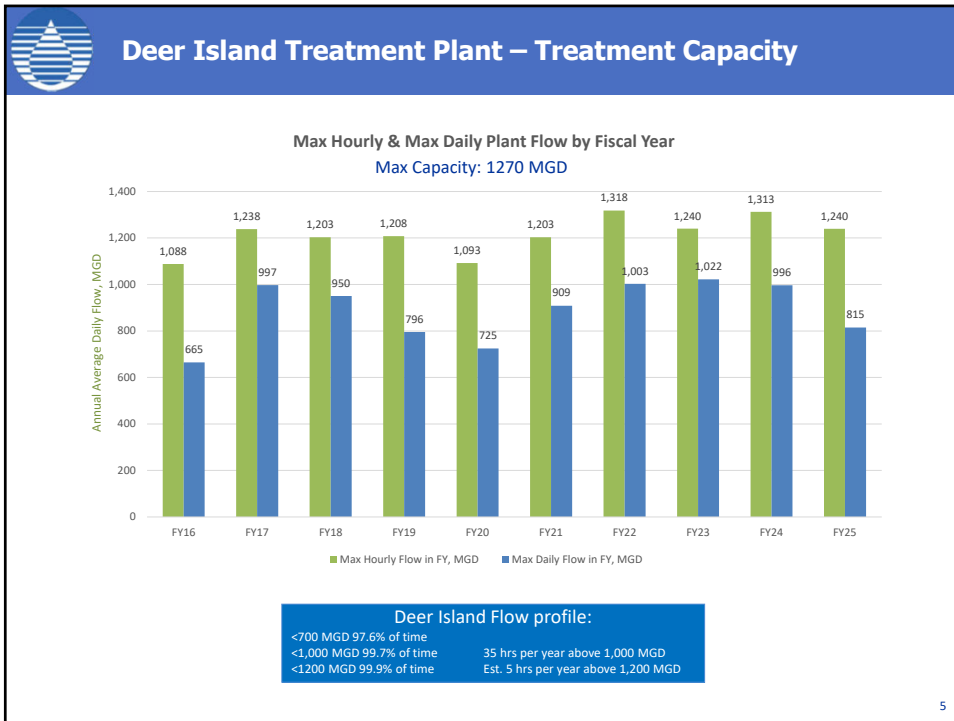
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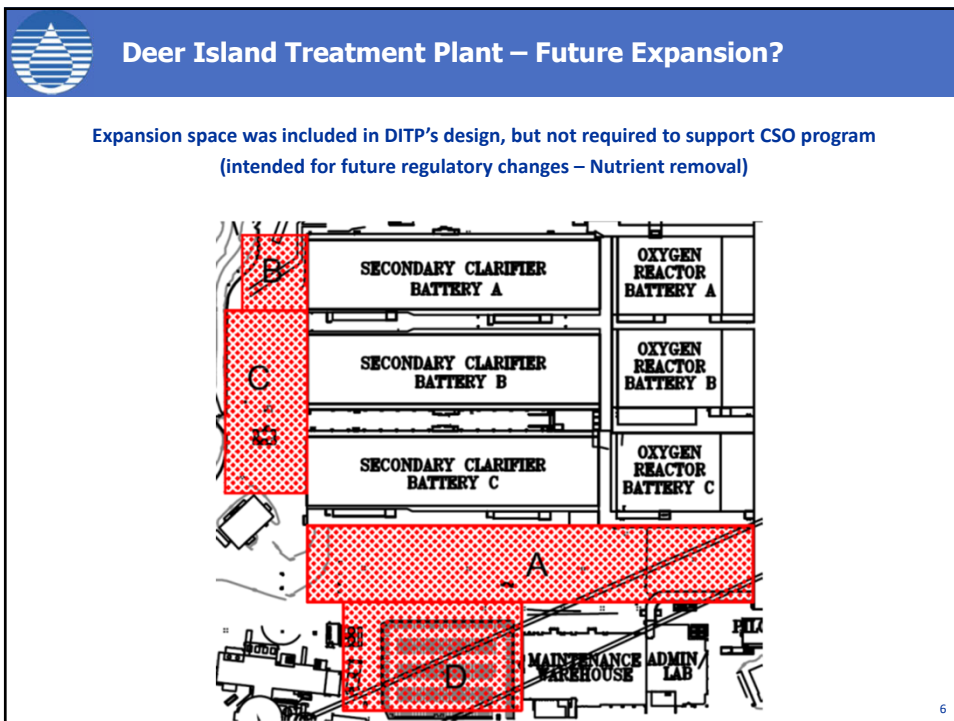
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Deer Island Treatment Plant

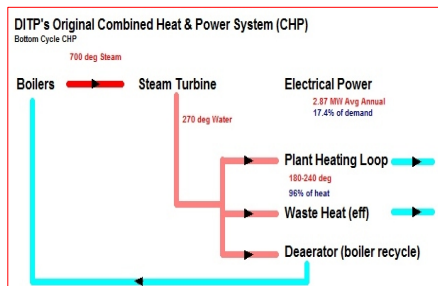
Combined Heat and Power Project Update

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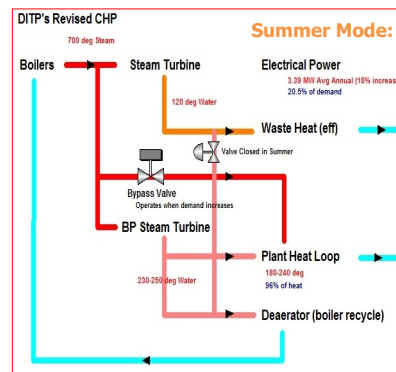


Combined Heat & Power Process – Currently Used by DITP



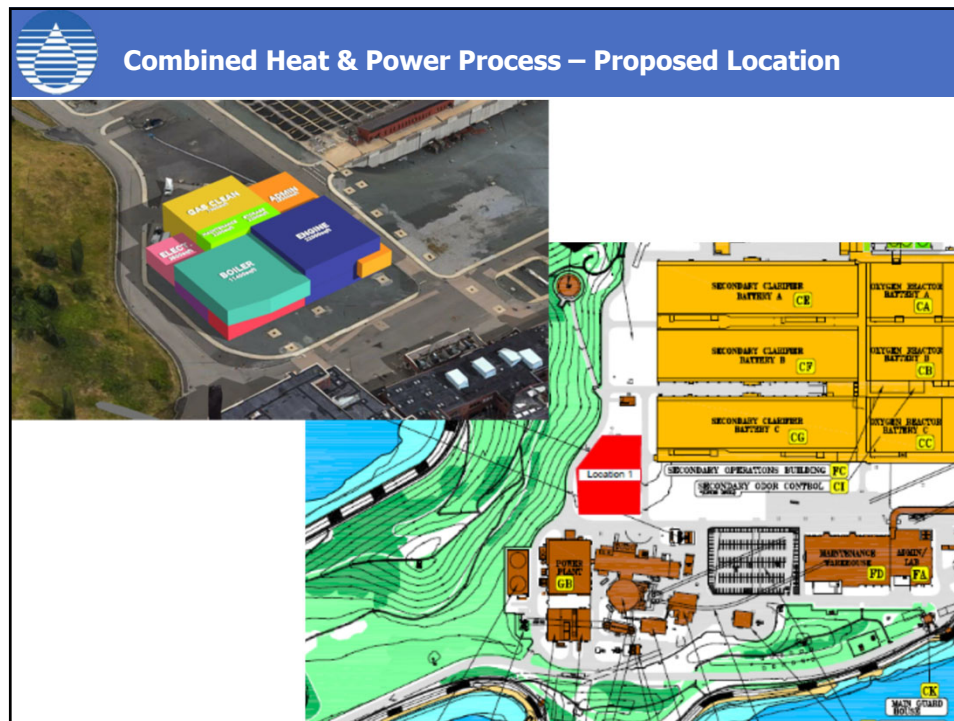
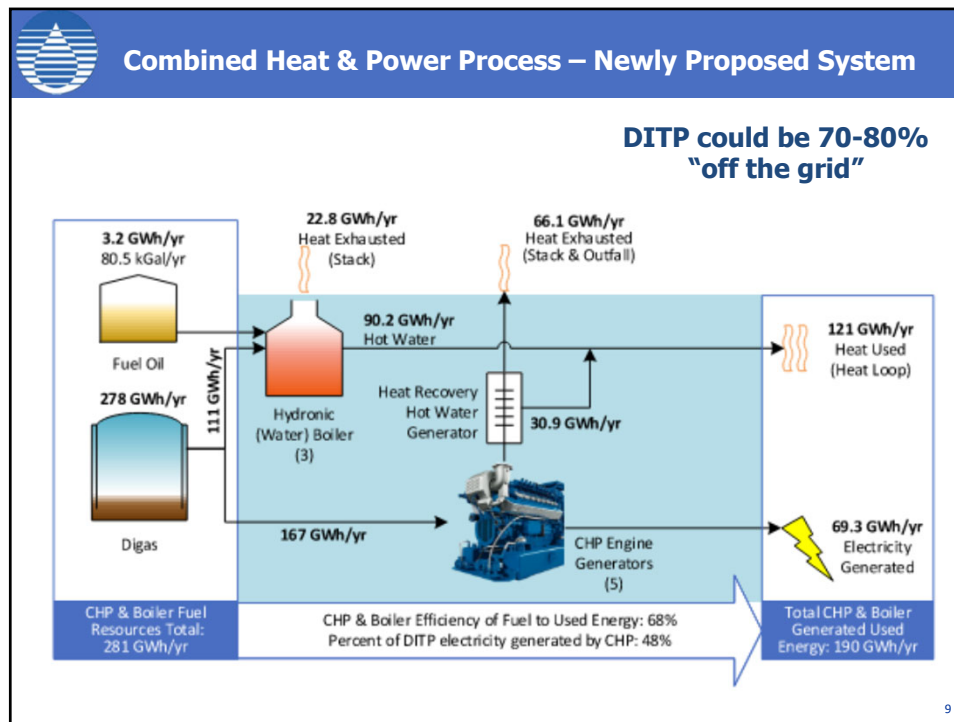
- **Bottom Cycle Generation**
 - Heat First – 60% efficient
 - Generate Steam then Hot Water
 - Power Second – 10.5% efficient in summer, 9% efficient other periods
 - Generate Electricity from Steam
- BPSTG / Steam Bypass Valve improves steam to electricity conversion process by extracting more heat per unit steam (\$3M cost, \$878k incentive (for anticipated 3.5 MWh, 5 MWh actual boost in generation from May-Oct, ~5 yr payback))

**DITP operates 60-65%
"off the grid" due to use
of biogas in its CHP**



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Deer Island Treatment Plant

Residuals Program Update

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MWRA Pellet Plant located in Quincy, MA

- **Located in Fore River Shipyard**
- **Designed, Constructed & Owned by MWRA**
 - **Total cost - \$133 M**
- **FY26 Budget - \$21 M (105 dtpd)**
 - Plus \$6 M contingency for landfilling
- **Contract Operation and Maintenance since startup**
 - Current contract S592:
 - 10 year contract (2024-2033)
 - Primary goal - beneficial use,
 - Alternate disposal provision if needed for landfilling

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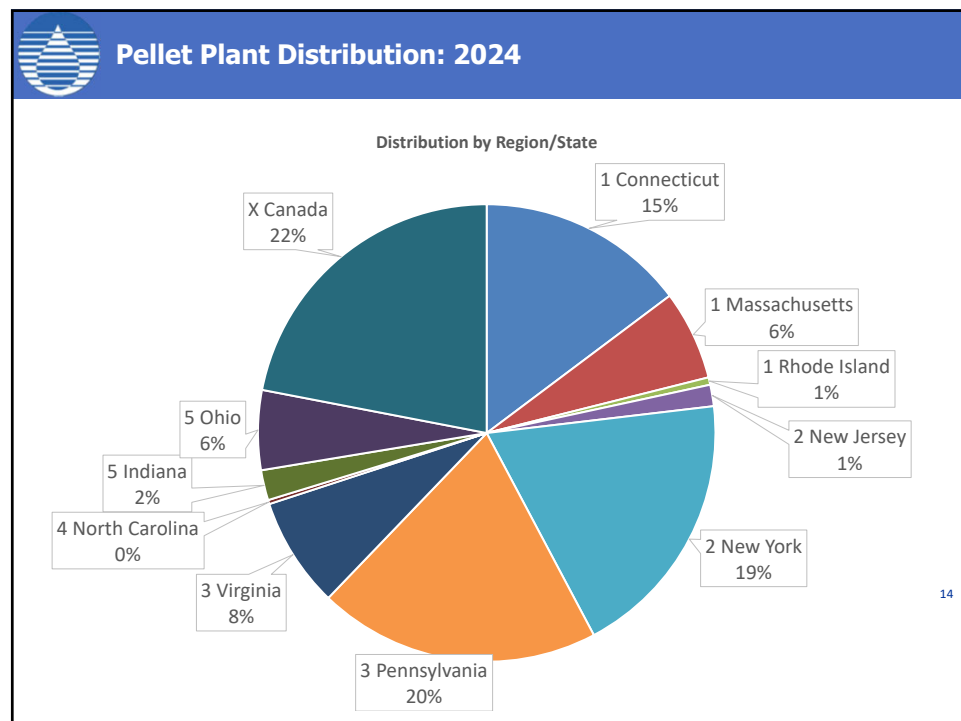
MWRA Pellet Plant: Contract operation since startup (1991)

- **Process liquid sludge from DITP**
 - Receives digested sludge
 - Dewateres with centrifuges
 - Dries with thermal dryers
 - Produces Class A EQ Fertilizer Pellet
- **Processes 105 dry tons sludge daily**
 - Contract has 95 dtpd base quantity
- **Contractor required to markets & distribute 28-34,000 tons fertilizer pellets annually**
- **Contract S592 includes Alternate Disposal to Landfill Provisions**






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Pellet Plant Distribution: Pressures by PFAS

- WAC updated on PFAS - Feb 2025
- PFAS Testing (Biosolids) since 2019
- EPA approved method 1633 (for biosolids) only approved in 2024
- PFAS threatens beneficial use
- No federal limits for PFAS in biosolids, EPA draft Risk Assessment Jan 2025
- States taking action due to lack of federal guidance
- Land applications ban current exist in Maine
- CT restrict land application if any PFAS in biosolids
- MA considering numerous legislation to limit or restrict land application ¹⁵

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PFAS Testing by Method 1633

MWRA has no PFAS in our drinking water. Deer Island Treatment Plant is a passive receiver of PFAS (PFAS is not added in the treatment process).

Sample Type Units = ppt	PFOA Average (range)	PFOS Average (range)	PFAS6 Average (range)	PFAS40 Average (range)
DITP Influent	8 (ND-12)	10 (ND-17)	24 (12.2-36.9)	105 (42-233)
DITP Effluent	8 (ND-10)	7 (5.3-12)	21 (10-30)	60 (25-87)
Residential	8 (1-85)	7 (ND-98)	30 (1-260)	55 (2-424)
Background	7 (2-36)	27 (ND-870)	62 (6.5-928)	75 (9-1435)
I&I	7 (ND-12)	8 (ND-19)	38 (ND-84)	52 (ND-181)

Sample Type Units = ppb	PFOA Average (range)	PFOS Average (range)	PFAS6 Average (range)	PFAS40 Average (range)
DITP Biosolids	ND (ND-ND)	12.26 (5.56-15.9)	12.26 (5.56-15.9)	17.10 (10.42-24.33)

ND=Non-Detect

Note: Biosolids are typically land applied at rates 2-5 ton/acre (500x-200x dilution)
12.26 ppb PFOS ~ 26 ppt added to top 6" of soil

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