Presentation to the

MWRA Advisory Board
Water Supply Citizens Advisory Committee
Wastewater Advisory Committee

Priorities for FY2023

David W. Coppes
Chief Operating Officer

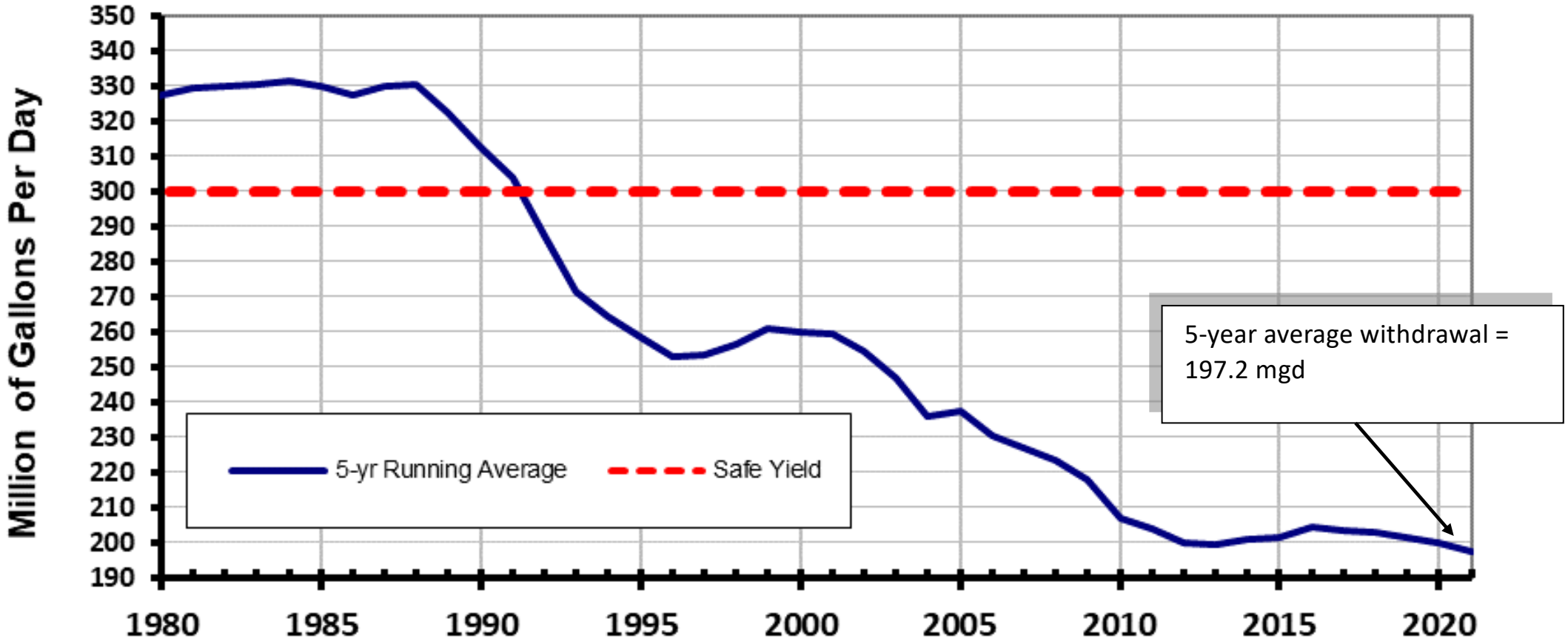
September 15, 2022

Water System Expansion/Entrance Fee Waiver

Waiver of Entrance Fee

- Yesterday, the MWRA Board of Directors approved the Advisory Board's recommendation to waive the entrance fee for communities that want to join the water system for a period of five years and a volume of up to 20 million gallons per day

Reservoir Withdrawals: Five-Year Running Average



The Water is Available: Safe Yield

Summary of Conservative Demand Projections

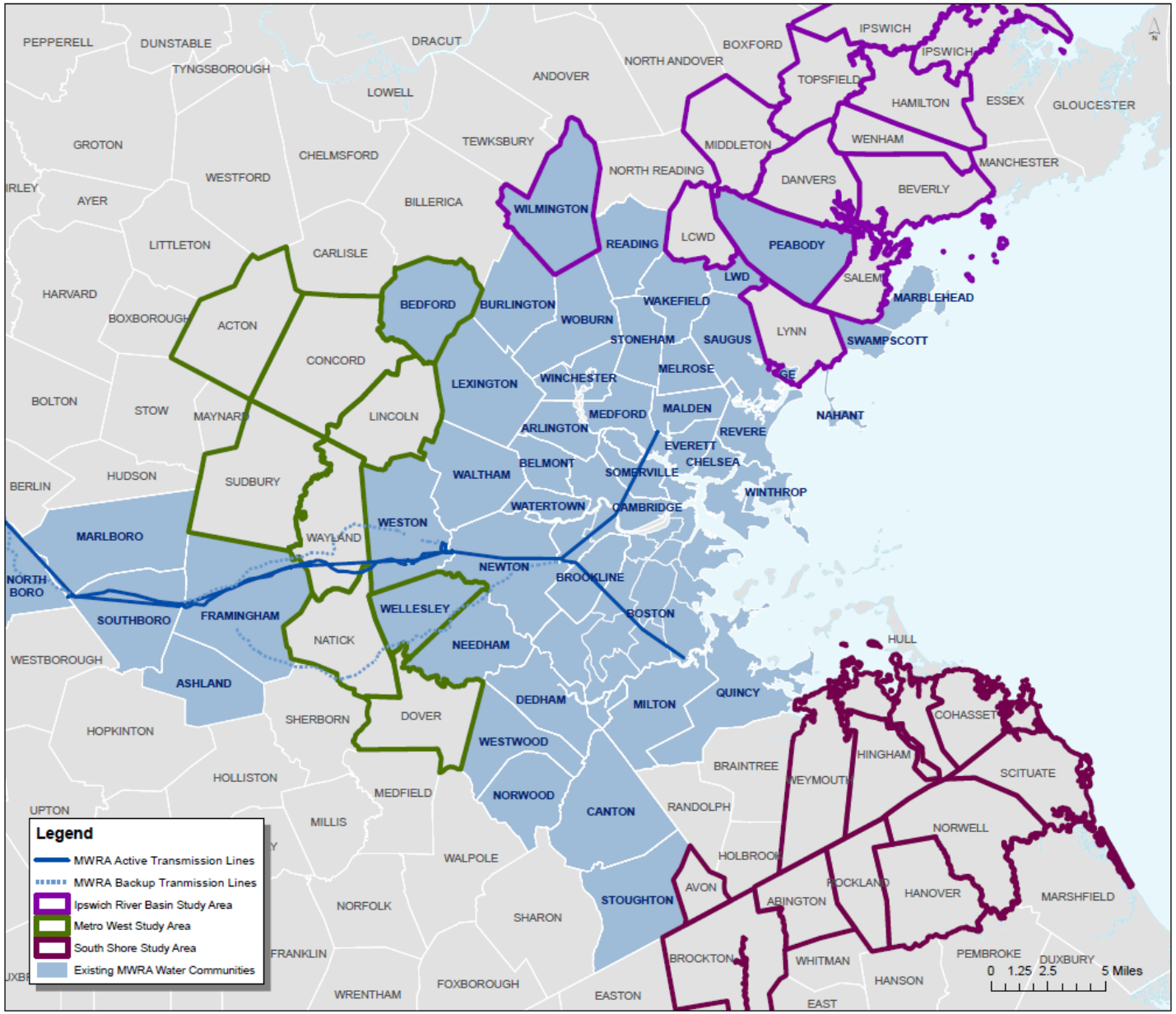
(from 2018 Water Master Plan)

Current demand within the service area (5-year average)	203 MGD
Potential growth due to increased population and employment	29 MGD
Contingency for potential increase in demand (partial user communities)	17 MGD
TOTAL PROJECTED DEMAND IN 2040	249 MGD
MWRA Supply System Safe Yield	300 MGD
AVAILABLE MARGIN	51 MGD

Costs and Revenue Implications

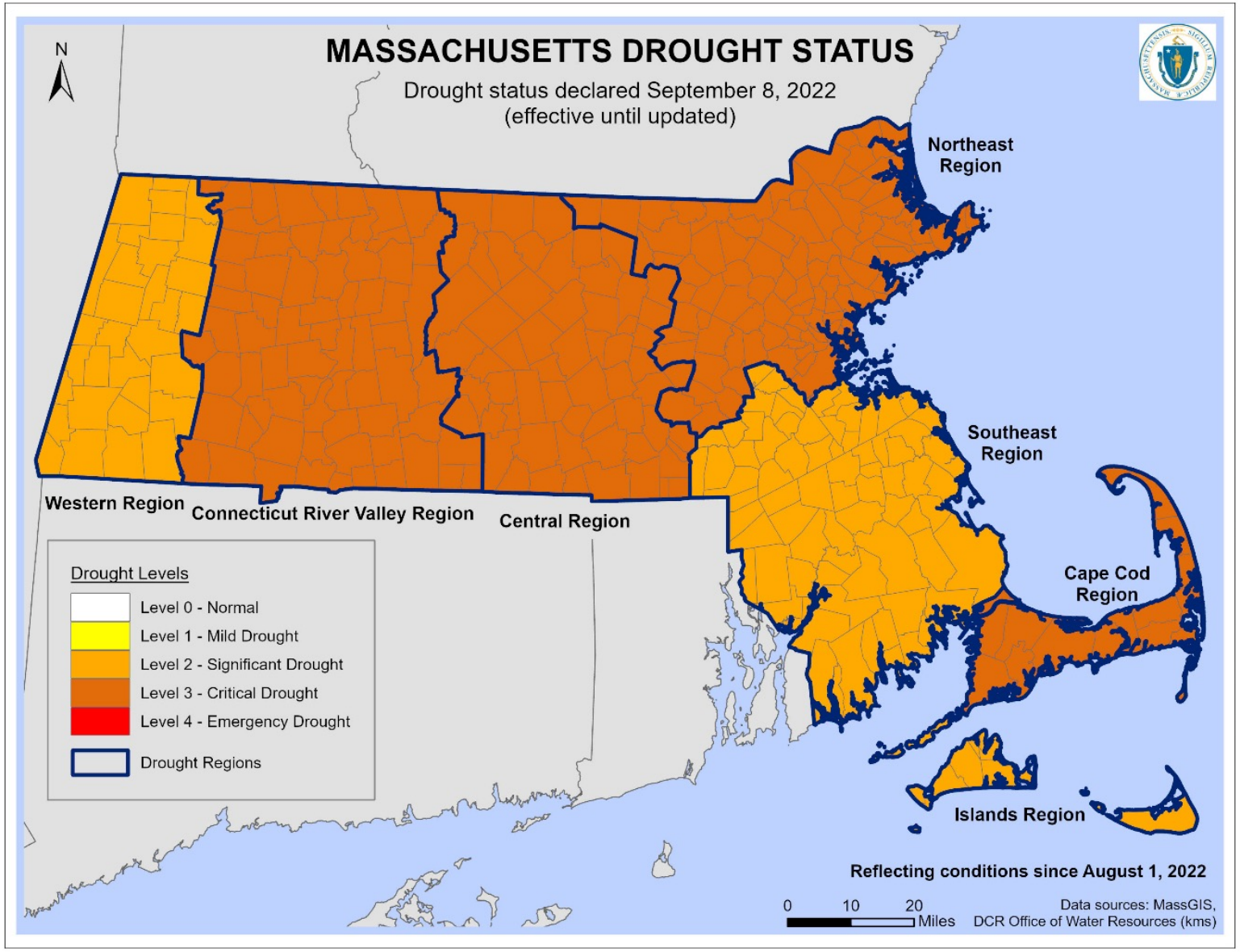
	Usage	FY23 System Share	Revenue Reallocated	Current Entrance Fee
1-Year	5 MGD	2.85%	$ 8,205,923	$ 961,045
	20 MGD	10.49%	$ 30,241,437	$ 3,581,053
25-Year	5 MGD	2.85%	$ 205,148,075	$ 21,142,990
	20 MGD	10.49%	$ 756,035,925	$ 78,783,166

System Expansion Study Areas

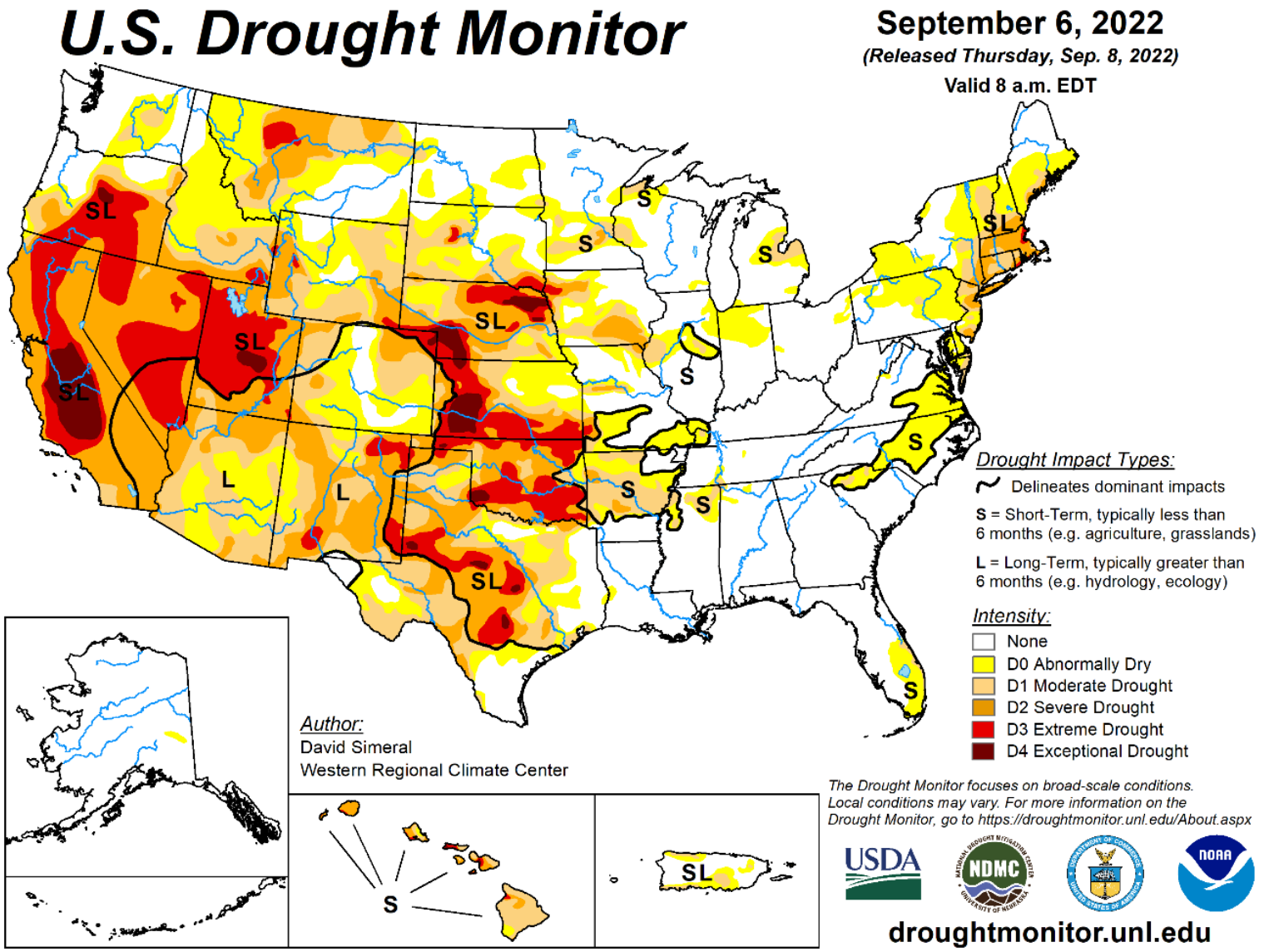


Quabbin Reservoir and Drought Status Update

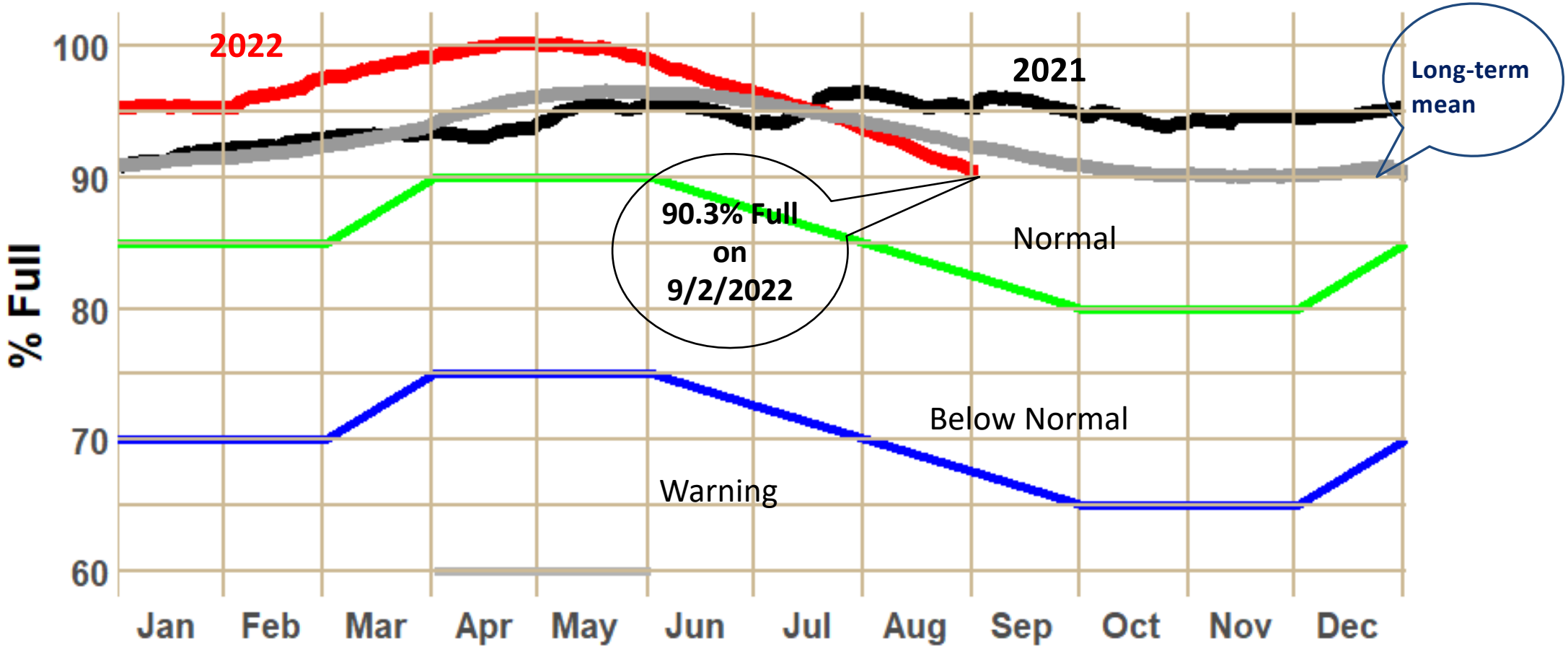
Massachusetts Drought Status Designations: September 8, 2022



National Drought Mitigation Center Intensity: September 6, 2022



Quabbin Reservoir Volume



Drought Messaging

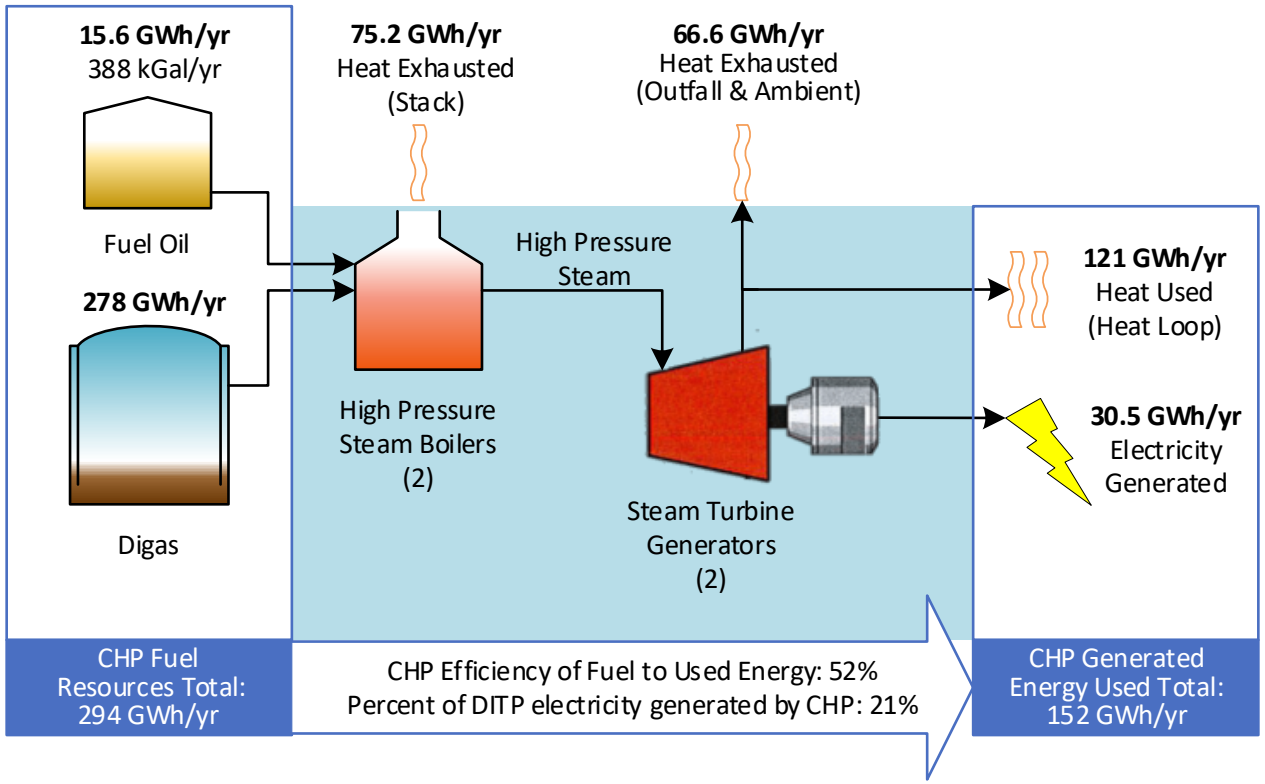
- Quabbin in Normal Operating Range

- No mandatory water use restrictions:
  Asking our customers to use water wisely and efficiently

- Even if drought extends several years:
  - Can supply all fully and partially supplied communities
  - Able to provide assistance to neighboring communities

Deer Island Combined Heat and Power

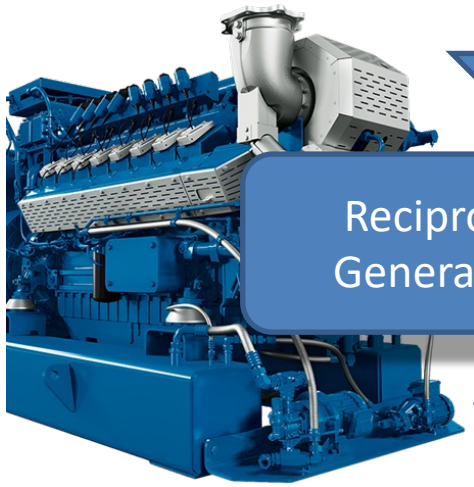
Existing CHP Schematic and Energy Flow



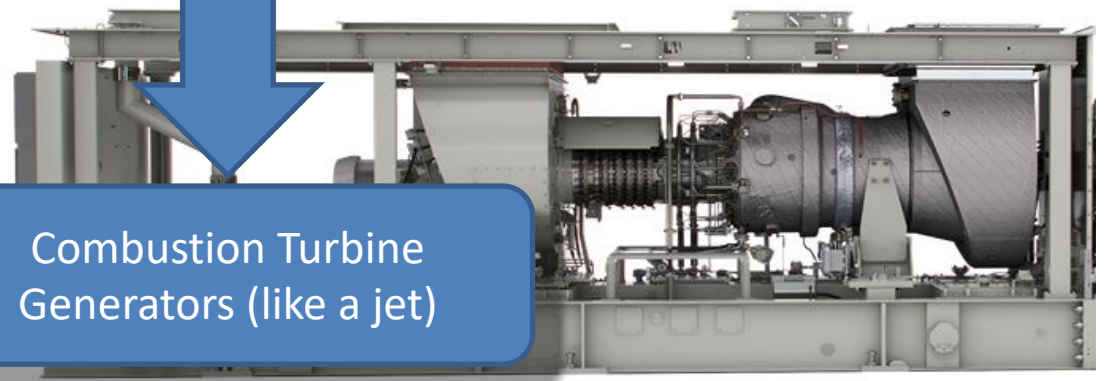
Total Energy Used at DITP (Thermal & Electrical)	Total Energy Generated from On-site Resources	Percent of Energy from On-site Resources
265 GWh/yr	152 GWh/yr	57% by Energy 65% by Cost

CHP Technology Evaluation

Several CHP technologies were evaluated
Two primary contenders



Reciprocating Engine Generators (like a car)



Combustion Turbine Generators (like a jet)

Chosen Technology
Better part load performance = More electricity generated

Results Summary

	Consultant NPV Results	Staff Preliminary NPV Results		
Alternative		**O&M**	**Discount Rate 4%**	**Boiler Replacement**
Existing CHP NPV	$ 214M	$ 233M	$ 290M	$ 328M
New CHP NPV	$ 227M	$ 239M	$ 284M	$ 284M
NPVΔ	**$ +13.1M**	**$ +5.8M** →	**$ -6.5M*** →	**$ -43.1M****

*Includes O&M

**Includes Discount rate and O&M

New CHP outperforms existing CHP

Beyond Net Present Value Considerations: Greenhouse Gas Emissions Reduction

Fuel Oil 300k Gal/yr

3,000 Metric Tons GHG

8M Car miles

+

Electricity 40 GWh/yr*

13,800 Metric Tons GHG**

34M Car Miles

→

16,800 Metric Tons GHG

42M Car Miles

Social Cost of Carbon: $775k/yr

*Does not include Renewable Energy Certificate (REC) Purchases/Sales

** Based on actual GHG profile provided from the electrical supplier

Beyond Net Present Value Considerations

- Increase on-site generation
  - From: 57% by Energy; 65% by Cost
  - To: 74% by Energy; 78% by Cost

- Eliminate 30 fuel oil truck deliveries per year
- Eliminate high pressure steam system hazards

Next Steps

New CHP appears to be economically viable

+

There are significant benefits beyond economics

=

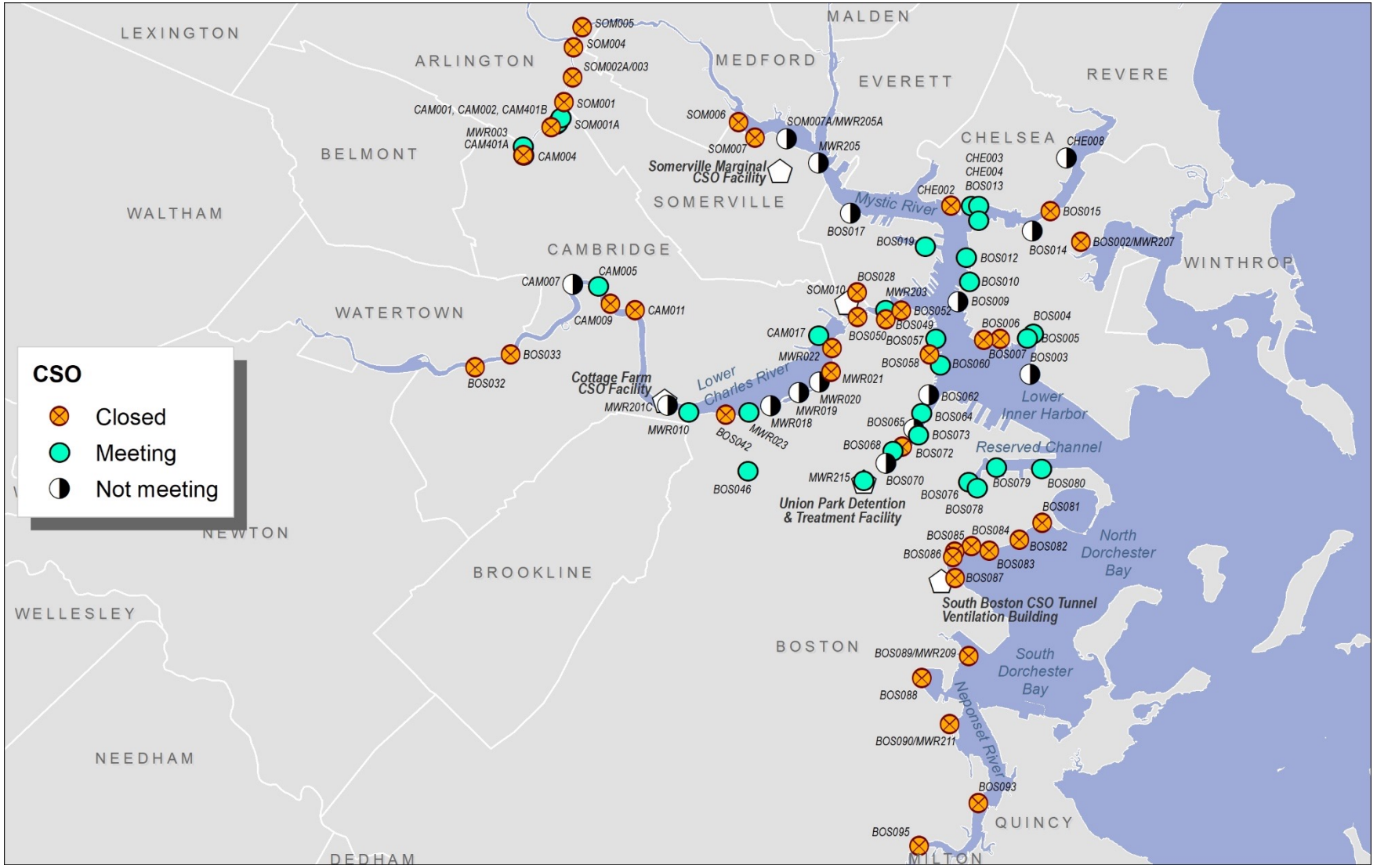
Staff recommend:
New CHP should move forward

Next Step:
Move forward with detailed design

- Include conceptual design phase to validate staff's preliminary results and to resolve questions such as:
  - Sizing of CHP array
  - Location of CHP

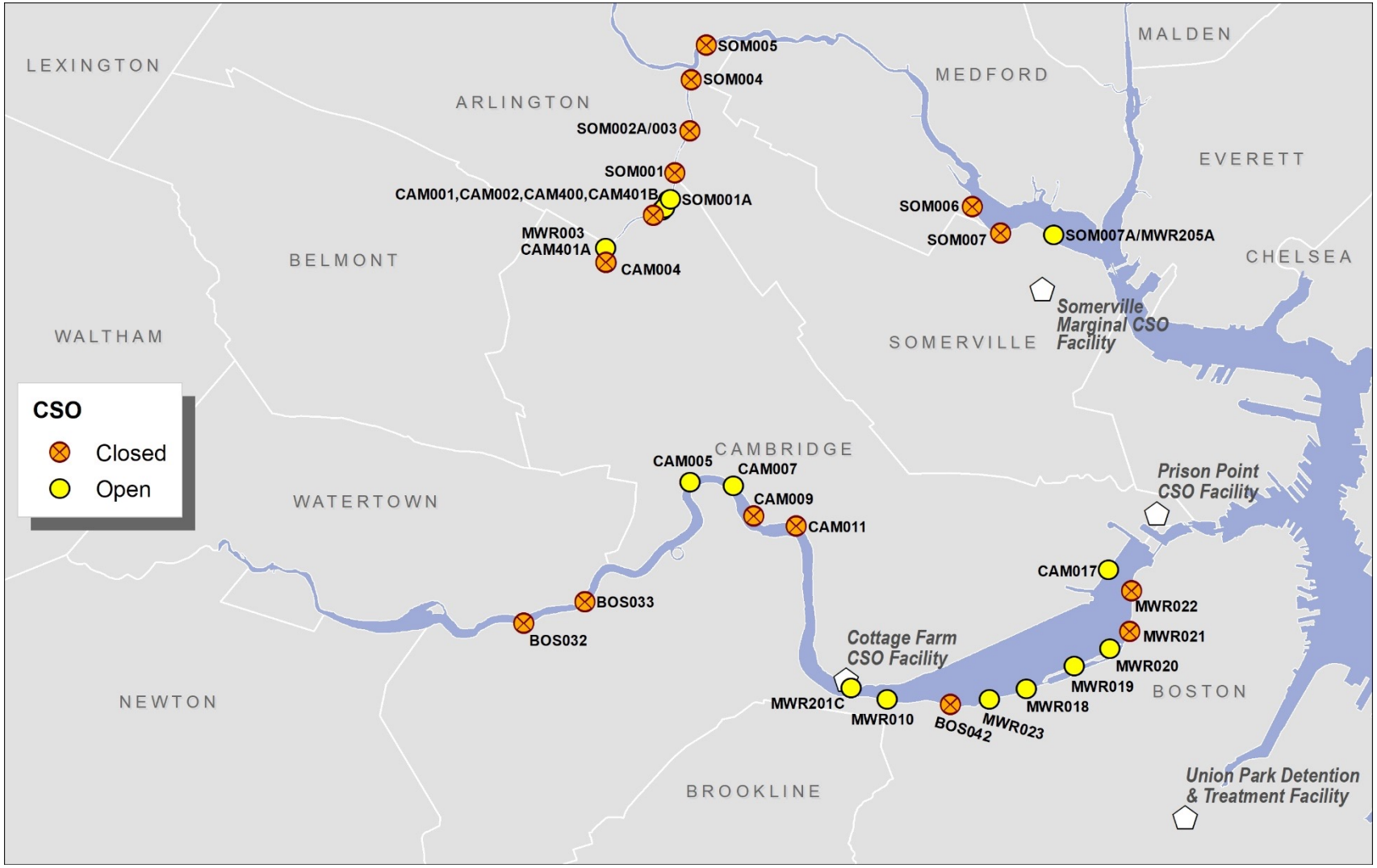
CSO Program: Request for Extension of Variances

CSO Performance Assessment Results for 86 Outfalls



- 35 Court Ordered Projects Completed
- $912 M spent to date
- 40 of 86 CSO outfalls closed
- 3.3 Billion Gallons of CSO reduced to 414 Million Gallons today (87% reduction)
- 93% of remaining CSO volume is treated

CSO Outfalls to Variance Waters



New Long Term Control Plans required for remaining CSO outfalls in Variance Waters:

- 6 CSO outfalls to Alewife Brook
- 1 CSO outfall (treated) to Upper Mystic River
- 9 CSOs outfalls (1 treated) to Charles River

Schedule Extension

MWRA, Cambridge and Somerville all required to submit Control Plans for their outfalls in accordance with schedules established in variances

Comments from EPA and MassDEP during approval of MWRA work plan require:

- Coordination of planning efforts
  - This increases time needed during alternatives development
  - This increases time needed for preparation of draft and final reports
- Update of rainfall ‘typical year’ to include climate change projections
- Emphasis on increased public participation process
  - This increases number of meetings
  - This increases time needed to coordinate/prepare for meetings

Recent meetings suggest MEPA process will take more time than anticipated

Metropolitan Water Tunnel Program

Program Update

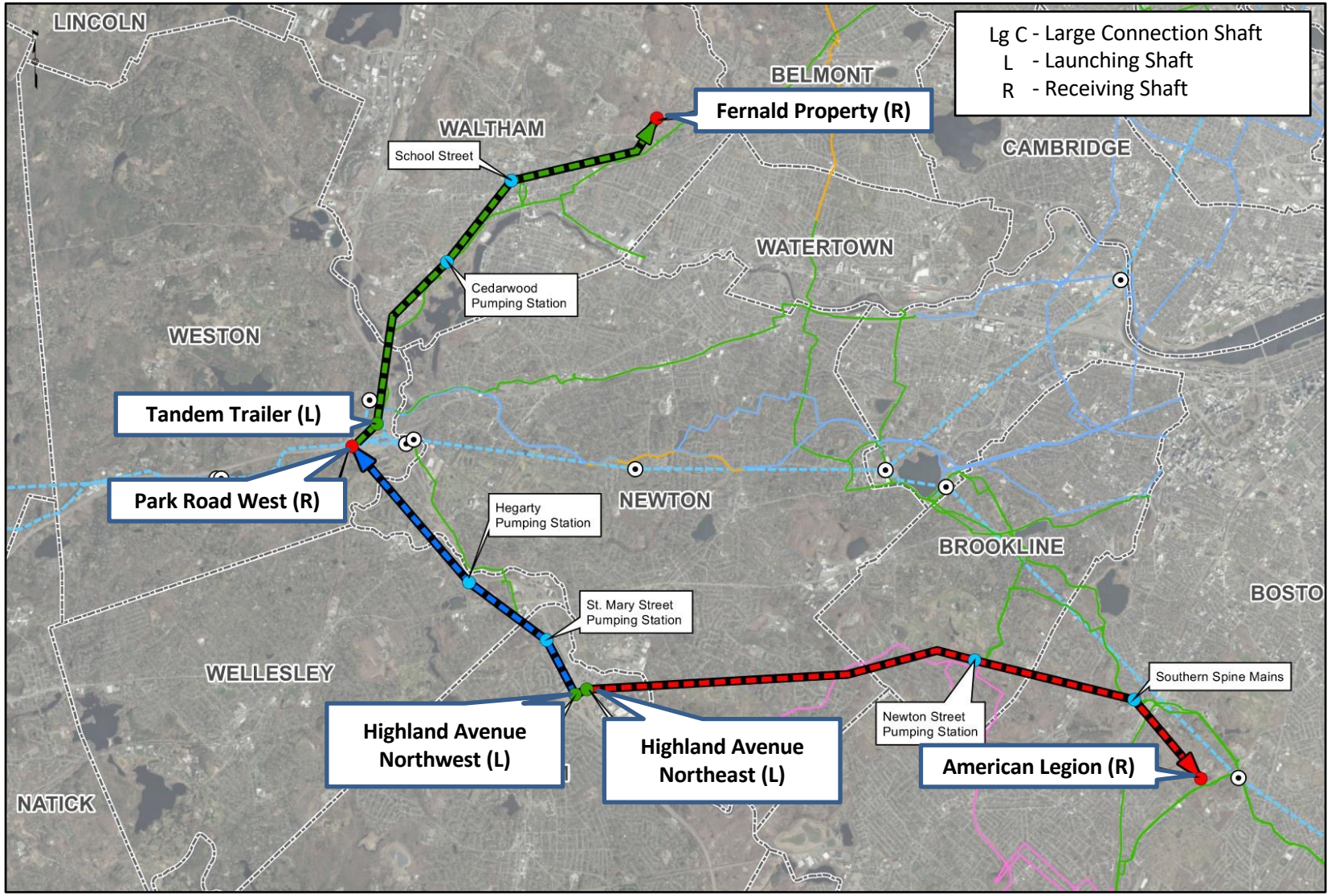
- Program Schedule:
  - Currently in preliminary design – through January 2024
  - DEIR filing (with draft Section 61 Findings) to the MEPA office in fall 2022
  - Final EIR in late summer 2023 addressing public comments received
  - Begin final design in 2024
  - Targeting first tunnel segment construction to start in 2027

Draft Environmental Impact Report

- DEIR evaluates the preferred and 2 backup alternatives equally
  - All 3 alternatives meet hydraulics, redundancy, and operational needs
  - Similar environmental impact for both the construction period and for the build condition
  - Key differences between alternatives are a few shaft sites, direction of tunneling, tunnel segment length, and schedule

- Environmental Justice community outreach planned
  - Program Website https://www.mwra.com/mwtp.html
  - Translate Outreach Materials (Fact Sheets, Newspaper Notices, Advanced Notification Form)
  - Email Advanced Notification form to Community Based Organizations
  - Public Information Sessions (translation services as requested)

Alternative 4 – Preferred



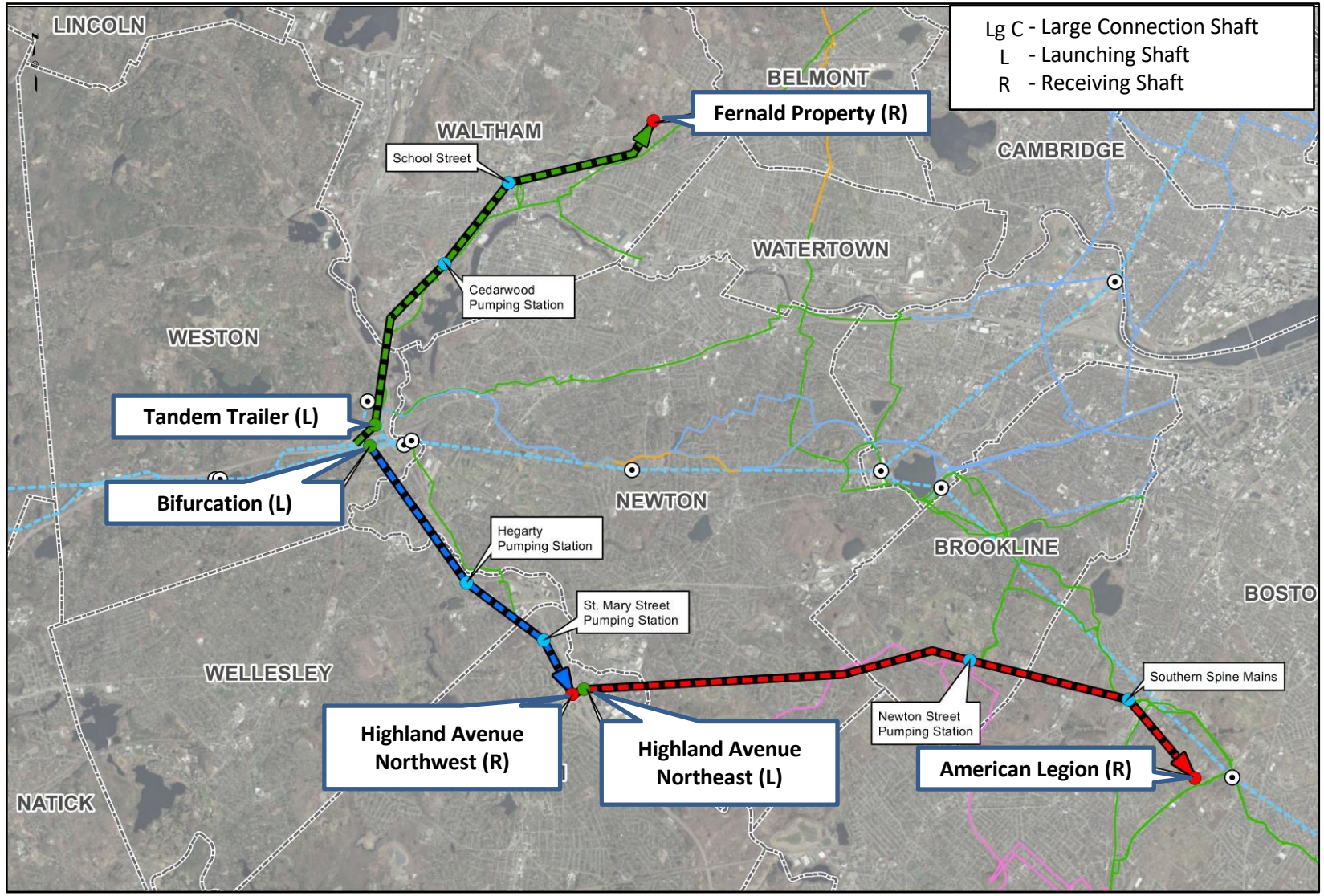
Key Challenges

- Use of Tandem Trailer Parcel after completion of future MassDOT bridge construction

Key Benefits

- Shares Tandem Trailer parcel
- Substantially mitigates impact from MassDOT bridge project
- Highland Ave splits southern tunnel into shorter tunnel segments
- Provides additional security by separating Hultman connections
- Contract packaging flexibility (2 or 3 packages)
- Earliest opportunity to put either north or south tunnel "in service"

Alternative 3 - Backup



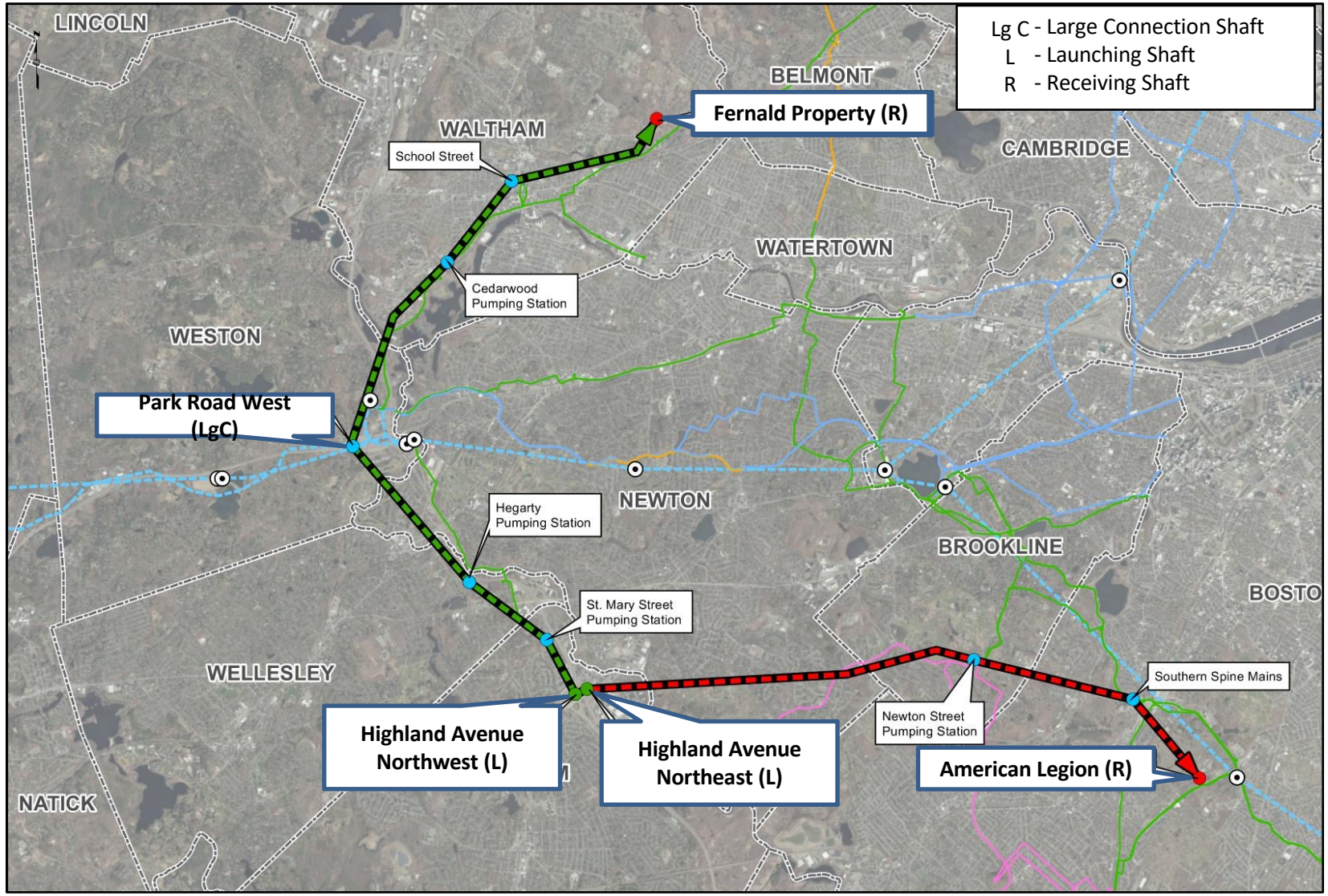
Key Challenges

- Use of Tandem Trailer Parcel after completion of future MassDOT bridge construction
- Heavily relies on MassDOT I-90/I-95 sites for two launching shaft sites
- Includes three launch sites, which complicates contract packaging

Key Benefits

- Shares Tandem Trailer parcel
- Highland Ave splits southern tunnel into shorter tunnel segments
- Provides additional security by separating Hultman connections
- Earliest opportunity to put either north or south tunnel “in service” (tied with Alt 4)

Alternative 10 - Backup



Key Challenges

- Latest “in service” of North or South Tunnel
- Long 8-mile long tunnel to construct
- Relies on completion of both contract packages for South Tunnel to be “in service”
- Two tunnel construction contracts. No option for 3 tunnel contract packages
- Provides least separation between Hultman connections

Key Benefits

- Does not need to share Tandem Trailer parcel
- Substantially mitigates impact from MassDOT bridge project
- Least reliance on MassDOT I-90/95 interchange property

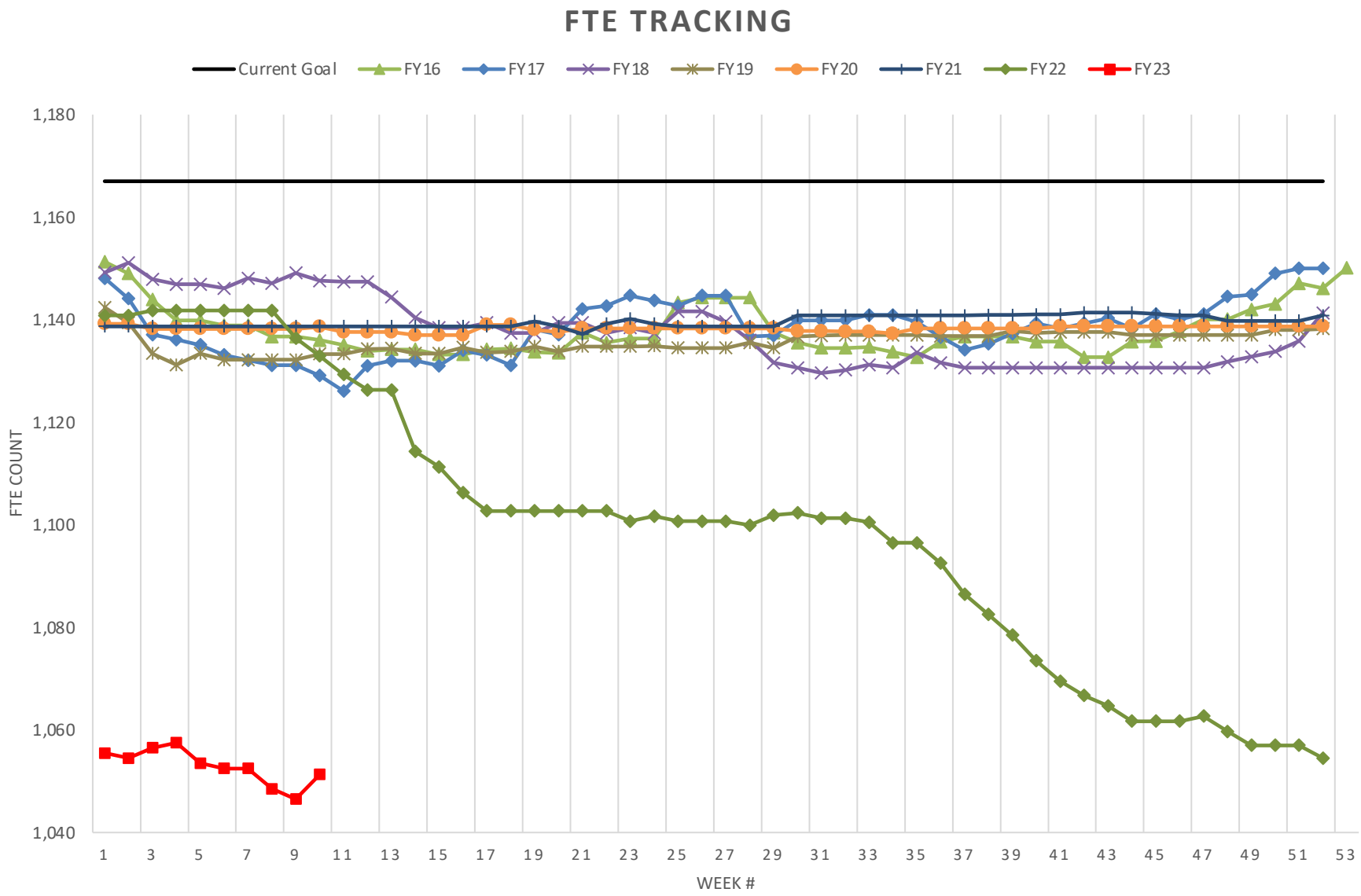
Preliminary Design

- Preliminary Design will be based on the prefered alternative only
  - Preliminary design report and drawings
  - Contract packaging, phasing, sequencing, etc.
  - Identify land acquisition needs
  - Updated Program cost estimates
  - Updated Program schedule

- Community and Stakeholder Outreach
  - Consultations held with MEPA, DEP, MHC, Communities, MassDOT, DCR, DPH
  - Working Group – representatives from all ten communities within the Program Study Area, MWRA Advisory Board, WSCAC, MAPC (met five times so far)
  - Additional meetings with community representatives of the seven communities in which the tunnel will be constructed

Staffing Recruitment and Retention

FTE Tracking



Multi-Pronged Strategy:
Immediate and Short-Term Recruitment Efforts

- "Recruit" licensed operators from within
- Targeted recruiting (e.g., direct mail solicitation for operators and area supervisors)
- Recruitment/retention rates for operators, area supervisors, OMC laborers

Multi-Pronged Strategy:
Ongoing and Recommended Tools and Strategies

- Increased use of social media, professional networks and virtual platforms
- Update job postings to highlight MWRA mission and commitment to DEI
- Ongoing review of job requirements
- Use of recruitment/retention rates for other hard to fill positions
- Advance the partnership with vocational technical schools
- Continued workforce development (mentoring program, leadership training)
- Development of career paths
- Shadow and on the job training programs for certain positions (e.g. operators, area supervisors)

Multi-Pronged Strategy:
Other Potential Short to Long-Term Strategies

- Creation of entry level positions (e.g. operator in training)
- Compensation study
- Review of overall benefits (e.g. tuition reimbursement, vacation time)
- Referral and signing bonuses