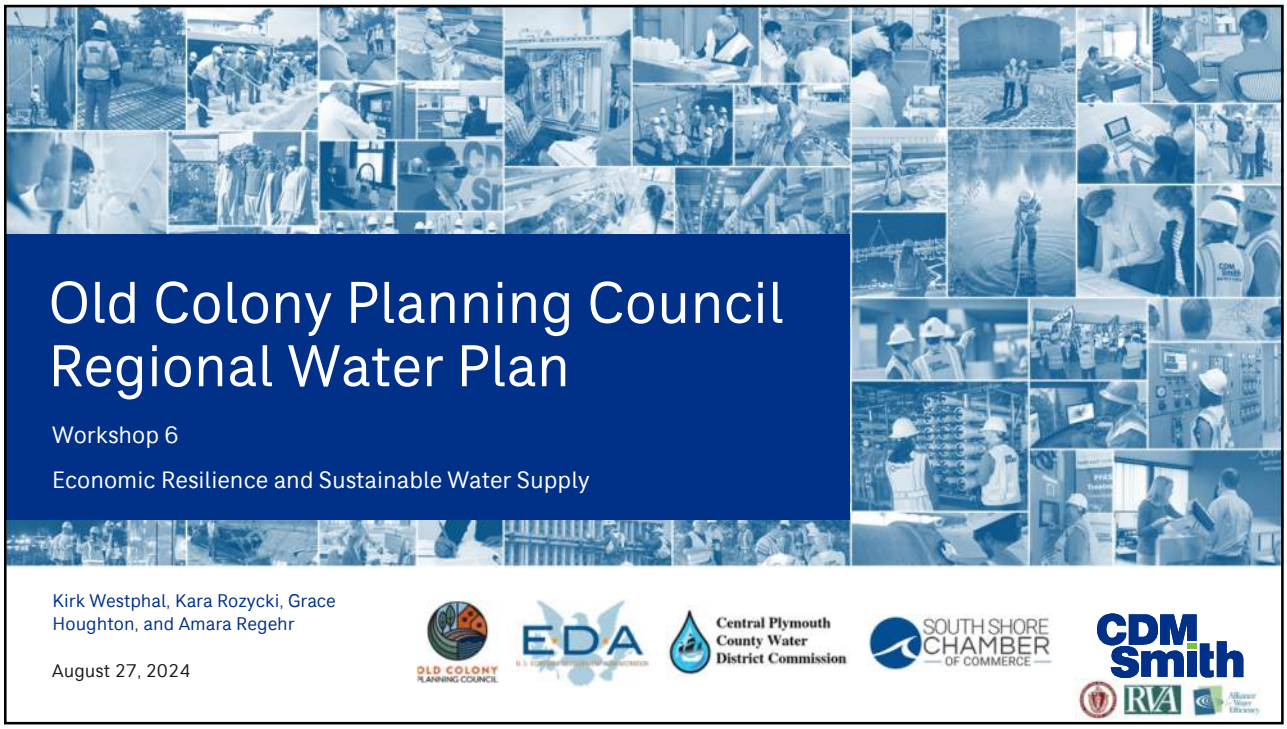
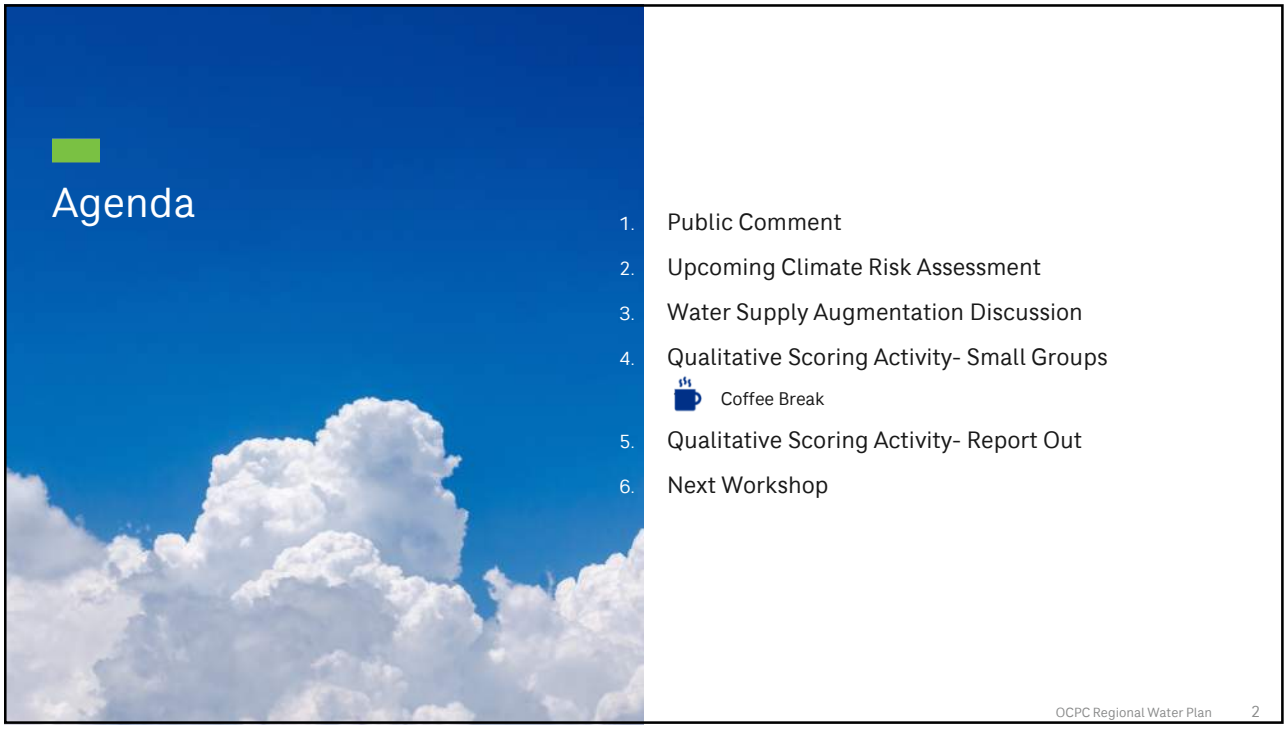

Old Colony Planning Council
Regional Water Plan
Workshop 6
Economic Resilience and Sustainable Water Supply
Kirk Westphal, Kara Rozycki, Grace Houghton, and Amara Regehr
August 27, 2024
OLD COLONY PLANNING COUNCIL
EDA
Central Plymouth County Water District Commission
SOUTH SHORE CHAMBER OF COMMERCE
CDM Smith
RVA

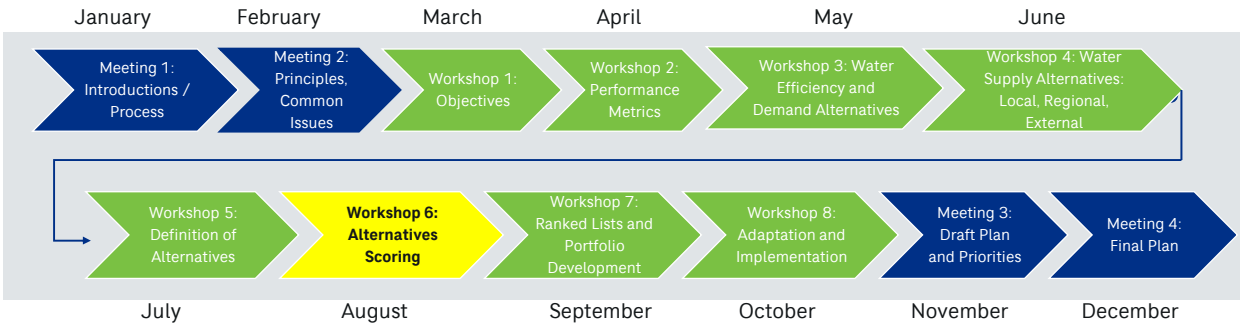
1


Agenda
1. Public Comment
2. Upcoming Climate Risk Assessment
3. Water Supply Augmentation Discussion
4. Qualitative Scoring Activity- Small Groups
Coffee Break
5. Qualitative Scoring Activity- Report Out
6. Next Workshop
OCPC Regional Water Plan
2

2

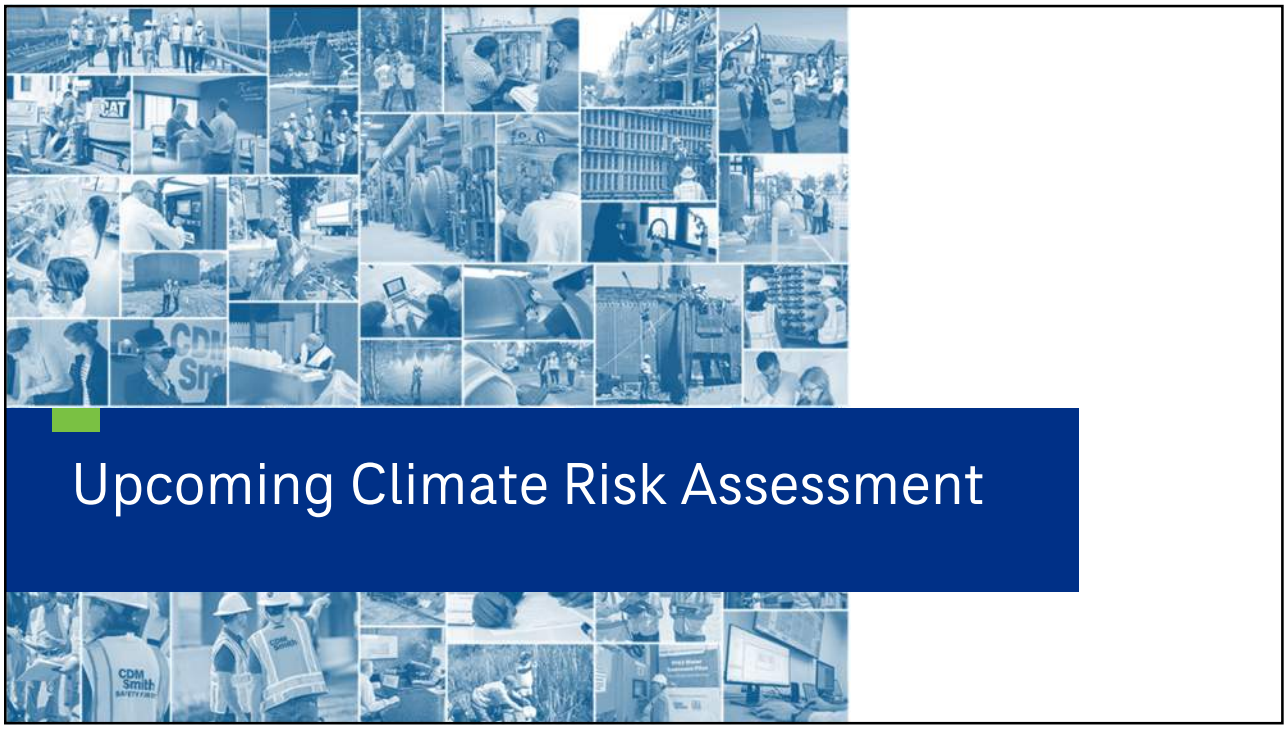
3

Overview of Regional Water Plan Process



OCPC Regional Water Plan 4

4



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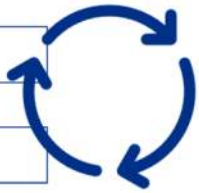
Incorporation of Future Climate into Regional Water Plan

- Demand Analysis
- Hydrologic Models
- CDM Smith Drought Tool
- Risk Assessment for Alternatives



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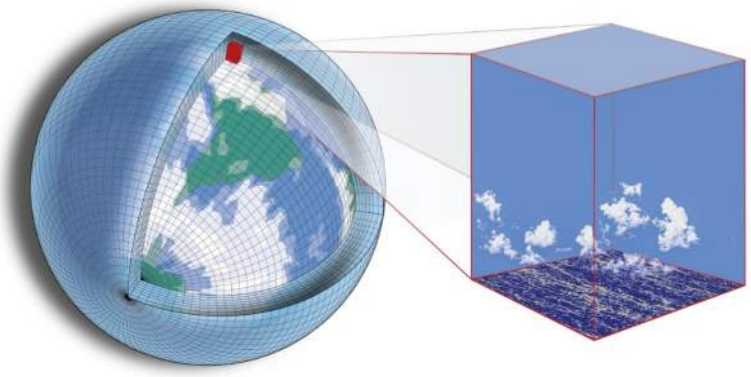
OCPC Regional Water Plan 6

6

Modeling Future Climate Conditions

- General Circulation Models (GCM)
  - 32 models with large grid sizes
  - Bias correction



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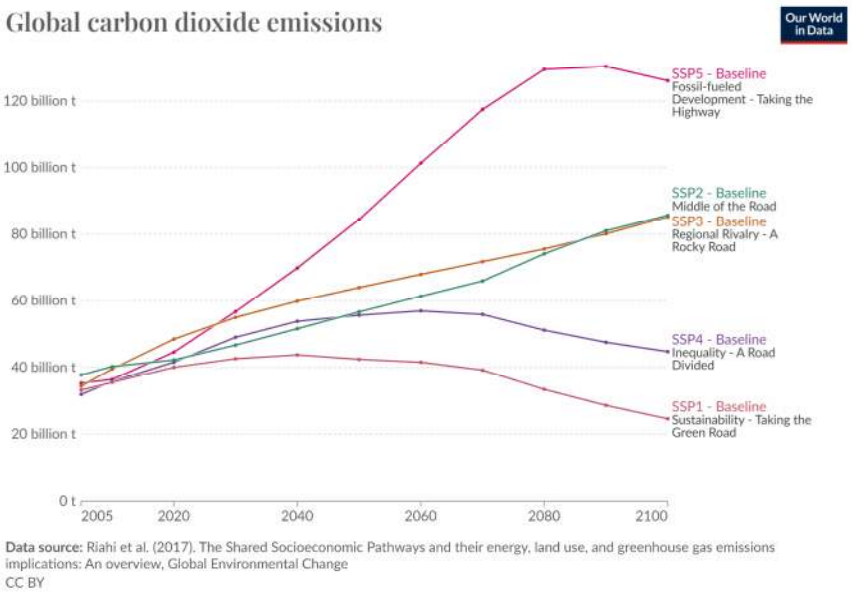
7

Modelling Future Climate Conditions- Emissions Scenarios



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Incorporation of Future Climate into Regional Water Plan

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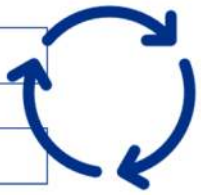

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Climate Hazards Identified in Municipal Vulnerability Plans

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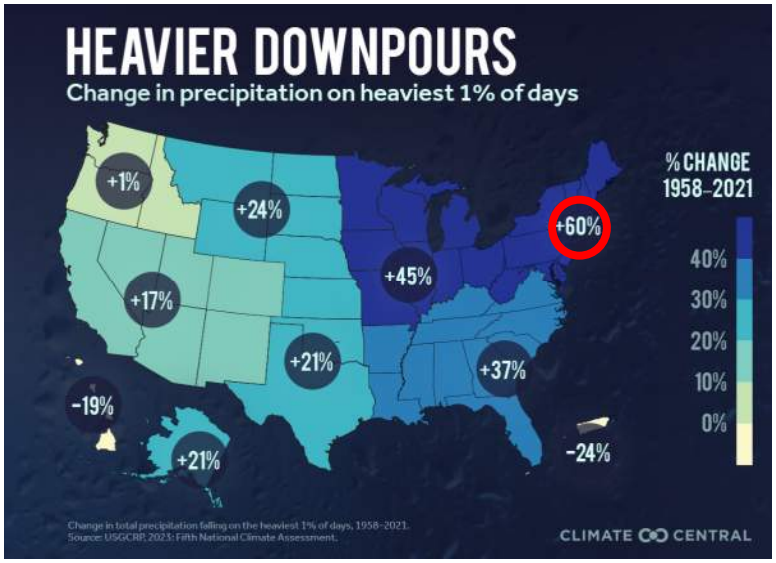
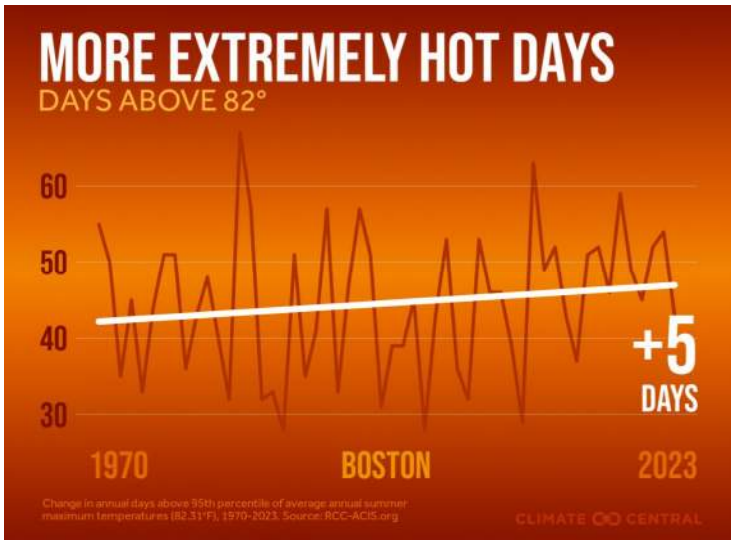
Extreme Rainfall in OCPC Region



*"The Northeast continues to be confronted with extreme weather, **most notably extreme precipitation**—which as caused problematic flooding across the region—and heatwaves (very likely, high confidence)."*

– Fifth National Climate Assessment

Extreme Heat in OCPC Region



*"The Northeast continues to be confronted with extreme weather, most notably extreme precipitation—which as caused problematic flooding across the region—**and heatwaves** (very likely, high confidence)."*

– Fifth National Climate Assessment

Relevant Interactions with Extreme Rainfall for Regional Water Plan

Extreme Rainfall

Interactions with Public Water Supply

- Stream Scour
- Flooding of water supply facilities
  - Water treatment facilities, pump stations, etc.
- Exposure of transmission mains that cross river/streams
  - Potential for damages including main breaks.
- Higher threat of power outages
- Degradation of water quality due to increased stormwater runoff
  - Increased turbidity, pathogens, TOC, bacteria, salt and nutrient concentrations, and algal blooms.

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Relevant Interactions with Extreme Heat for Regional Water Plan

Extreme Heat

Interactions with Public Water Supply

- Health & safety considerations for field staff
- Potential for mechanical failure of electrical equipment that is not protected from heat
- Increased evaporation from reservoirs
- Degradation of water quality
  - Decrease in dissolved oxygen concentrations, and increase in algal blooms
- Impacts to agricultural crops

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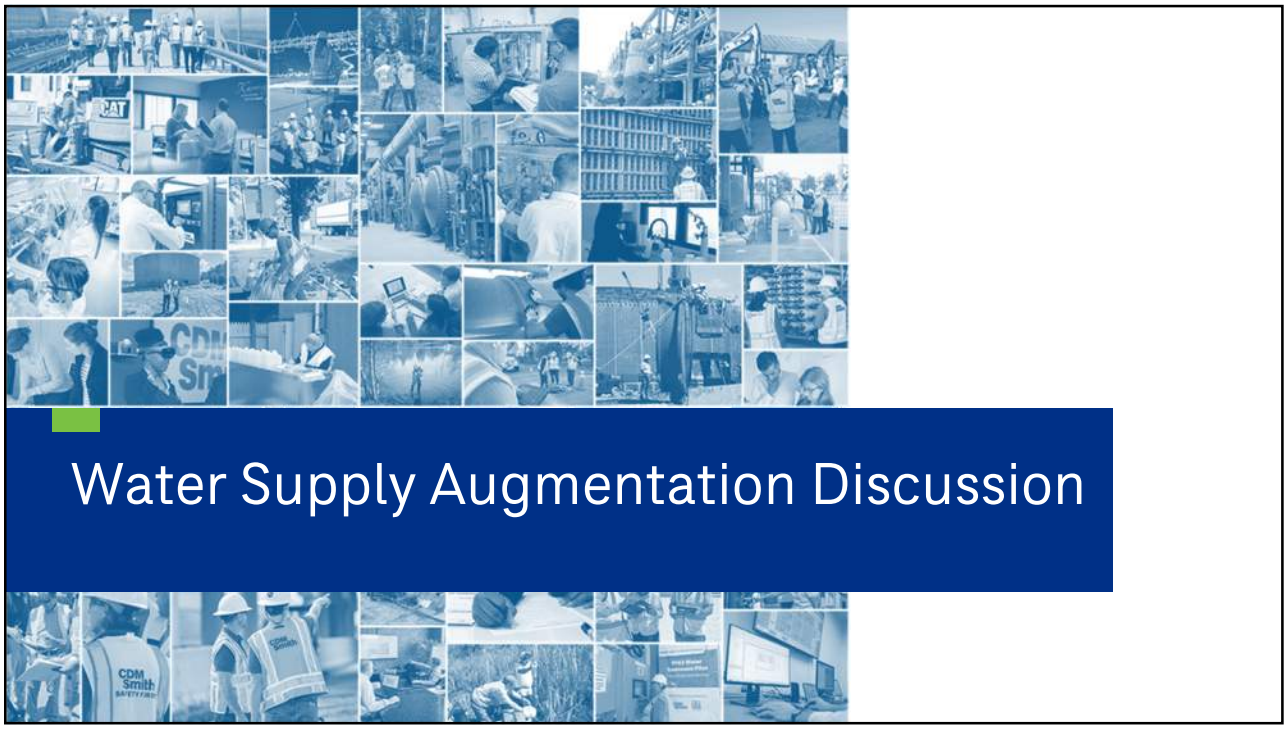

Water Supply Augmentation Discussion

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Water Supply Augmentation

- If you had access to new, compliant water, how much would you consider valuable for the following purposes?
  - Augment your supply
  - Provide redundancy
  - Reduce known or unknown future risks
  - Offset/avoid other capital needs
  - Other

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Qualitative Scoring Activity- Small Groups

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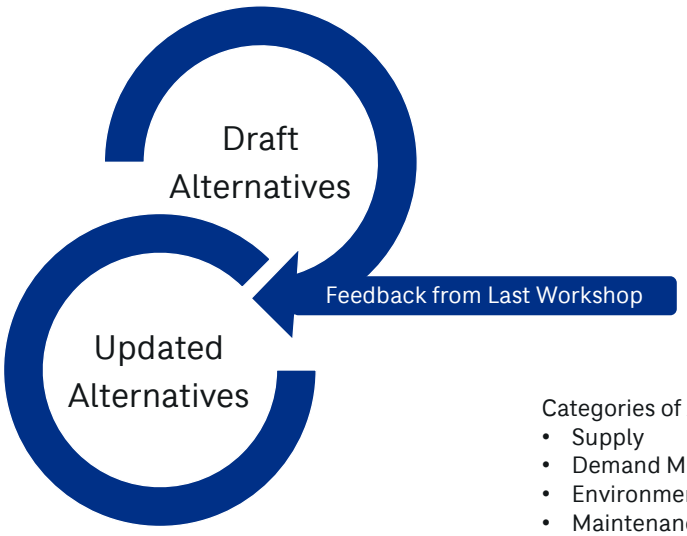
Alternatives



Categories of Alternatives:
- Supply
- Demand Management
- Environmental
- Maintenance

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Updates to Alternatives

Relevance to Framework	ID	Project - GENERALIZED DESCRIPTION	Communities/ Stakeholders to whom this could apply	Change from 7/31 Workshop
Long-Term Local Alternatives	LT-2	New Public Wells	Abington,Bridgewater, Brockton, Duxbury, East Bridgewater, Easton, Halifax, Hanover, Kingston, Pembroke, Plympton, Plymouth, West Bridgewater	Updated to include all communities except Avon, Stoughton, Whitman
Short Term Local Alternatives	ST-7	New Public Wells	Bridgewater, Pembroke, Plymouth, Kingston	Added Plymouth

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Updates to Alternatives

Relevance to Framework	ID	Project - GENERALIZED DESCRIPTION	Communities/ Stakeholders to whom this could apply	Change from 7/31 Workshop
Long-Term Regional Alternatives	LT-7	Aquaria Desalination Under Brockton Ownership For Communities Open To Considering	Abington, Avon, Bridgewater, Brockton, Easton,Hanson, Whitman, West Bridgewater	Added Hanson and Whitman
	LT-8	Aquaria Desalination Under Brockton Ownership For Communities with Existing Connections	Abington, Avon, Bridgewater, Brockton, East Bridgewater, Easton,Hanson, West Bridgewater, Whitman	Added Hanson, East Bridgewater, and Whitman
	LT-9	Aquaria Desalination Continues Under Private Ownership with Brockton Supplying Water For Communities Open To Considering	Abington, Avon, Bridgewater, Brockton, Easton, Hanson, West Bridgewater, Whitman	Added Hanson and Whitman
	LT-10	Aquaria Desalination Under Regional Ownership For Communities Open To Considering	Abington, Avon, Bridgewater, Brockton, Easton, Hanson, West Bridgewater, Whitman	Added Hanson and Whitman
	LT-11	Expand and/or Rehabilitate Interconnections with Inter-Municipal Agreements	Abington, Plympton, Easton, East Bridgewater, Bridgewater, West Bridgewater, Stoughton, Plymouth	Added Plymouth
	LT-12	Reclaimed Water for Non-Potable Uses	Bridgewater, Easton, Kingston, West Bridgewater, Plymouth, Agriculture Uses	Added Plymouth

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Updates to Alternatives

Projects to Include in Report but Remove from Scoring Framework
Native Landscaping
Private Well Use Restrictions
Conservation, Land, And Water Use Education Program
Regional Conservation Committee: Coordinate Protection of Shared Resources
Conservation Resource Center
Cybersecurity Improvements
Develop a Regional Plan for Stormwater Recharge

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Remaining Discussion Short-Term Regional Alternative

Relevance to Framework	ID	Project - GENERALIZED DESCRIPTION	Notes
Short-Term Regional Alternatives	ST-11	Ecosystem Evaluation And Ecological Flow Needs	Evaluate the adequacy of existing environmental flow targets to maintain healthy streams and wetlands. Could focus on site-specific ecology for water bodie(s) of interest in region.

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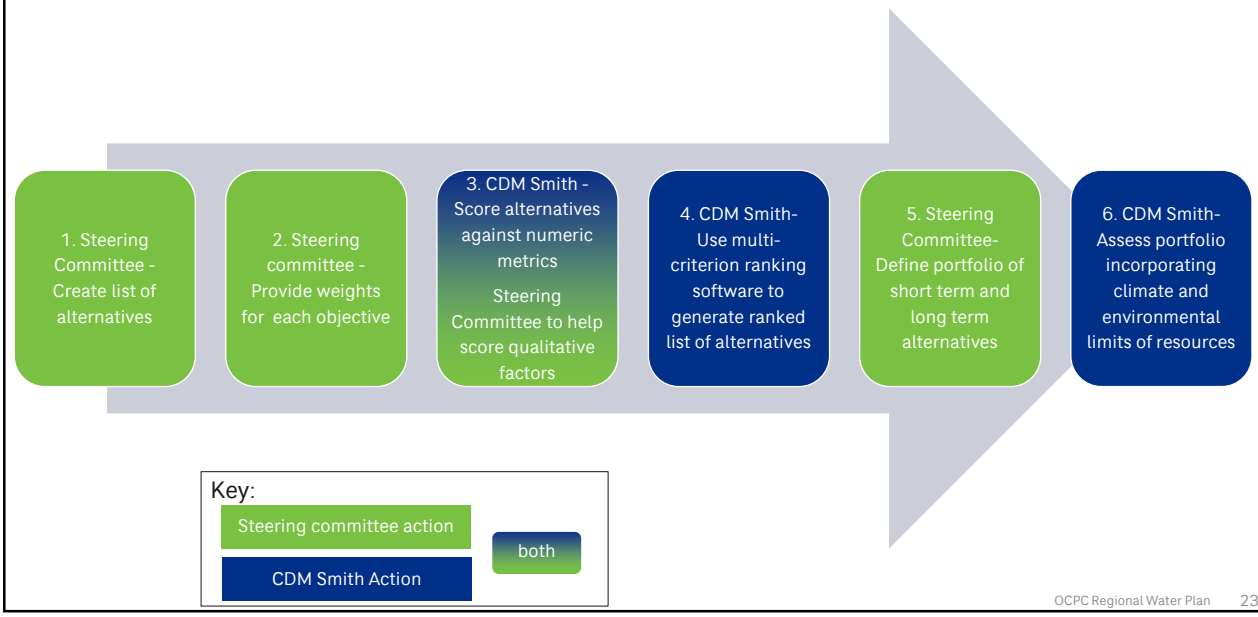
Upcoming steps for selection of alternatives



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Decision Framework

Objective	Theme
Meet all current and future peak water demands with climate resilient supply side and demand side strategies	Reliable Municipal Supply
Improve ecosystem health	Ecosystem Health
High Benefit: Cost value	Cost Effectiveness
Consider innovative and alternative solutions such as stormwater capture and wastewater reuse	Innovation
Promote environmental justice and equity between communities	Fairness
Meet current and future drinking water quality standards	Drinking Water Quality
Encourage sustainable water use to meet the needs for housing and economic prosperity	Efficiency & Adaptability

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Today: Evaluate Qualitative Metrics and Preliminary Risk Assessment

Objective	Theme
Meet all current and future peak water demands with climate resilient supply side and demand side strategies	Reliable Municipal Supply
Improve ecosystem health	Ecosystem Health
High Benefit: Cost value	Cost Effectiveness
Consider innovative and alternative solutions such as stormwater capture and wastewater reuse	Innovation
Promote environmental justice and equity between communities	Fairness
Meet current and future drinking water quality standards	Drinking Water Quality
Encourage sustainable water use to meet the needs for housing and economic prosperity	Efficiency & Adaptability

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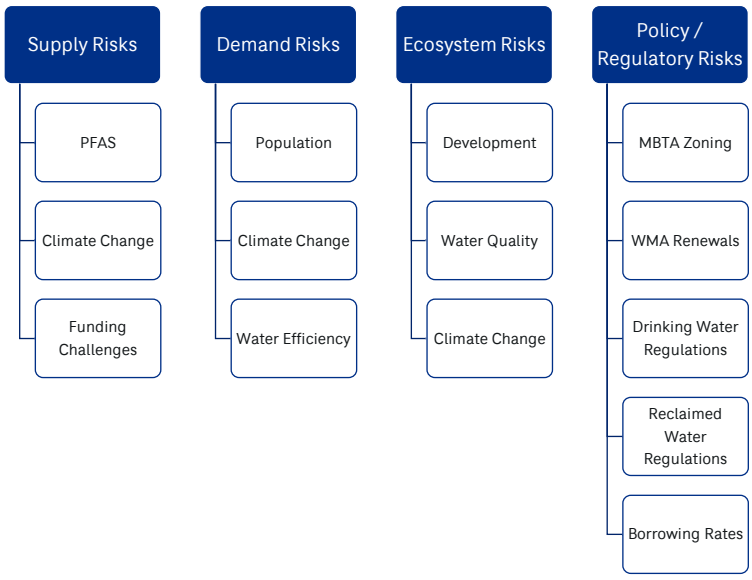
Risk and Uncertainty Analysis



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Today: Evaluate Qualitative Metrics and Preliminary Risk Assessment

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Example Qualitative Metric Scoring and Risk Assessment

Relevance to Framework	ID	Project - Generalized Description	Communities/ Stakeholders to whom this could apply	Supply / Demand / Environmental / Maintenance / Study
Short Term Local Alternatives	ST-1	Conduct, Validate, and Act on Annual AWWA Water Loss Audits	Abington, Avon, Bridgewater, Brockton, Duxbury, East Bridgewater, Easton, Halifax, Hanover, Hanson, Kingston, Pembroke, Plymouth, Stoughton, West Bridgewater, Whitman	Demand , Maintenance

Description:

- Perform comprehensive water loss audits using the AWWA M36 methodology and free water loss audit software,
- Have the results verified by trained third parties,
- Use results to establish clear performance metrics to effectively reduce actual water losses.
- AWWA reported that some states reduced real water losses by more than one-third using this alternative. The 2021 UAW data for the OCPC region indicates there could be approximately 1 million gallons per day for the region of savings (AWE Memorandum, 2024).

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Example Evaluation of Ecosystem Health Objective

Objective	Metric	Qualitative Scales				
		1	2	3	4	5
Improve ecosystem health	Connectivity of natural waters	Major detrimental impact to connectivity	Minor detrimental impact to connectivity	Neutral impact to connectivity	Minor positive impact to connectivity	Major positive impact to connectivity
	Quantity and/or quality of natural waters	Major detrimental impact to quantity and/or quality	Minor detrimental impact to quantity and/or quality	Neutral impact to quantity and/or quality	Minor positive impact to quantity and/or quality	Major positive impact to quantity and/or quality

Project - Generalized Description	Connectivity of natural waters score (1-5)	Quantity and/ or quality of natural waters score (1-5)
Conduct, Validate, and Act on Annual AWWA Water Loss Audits		

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Example Evaluation of Efficiency & Adaptability Objective

Objective	Metric	Qualitative Scales		
		1	2	3
Encourage sustainable water use to meet the needs for housing and economic prosperity	Flexibility in phasing and supply capacity	Low flexibility in time or volume	Moderate flexibility in time or volume	High flexibility in time or volume
	Implementation feasibility	High difficulty in implementation*	Moderate difficulty in implementation*	Low difficulty in implementation*

*Consider factors such as permitting, public /political opposition, and construction impacts

Project - Generalized Description	Flexibility in phasing and supply capacity score (1-3)	Implementation feasibility score(1-3)
Conduct, Validate, and Act on Annual AWWA Water Loss Audits		

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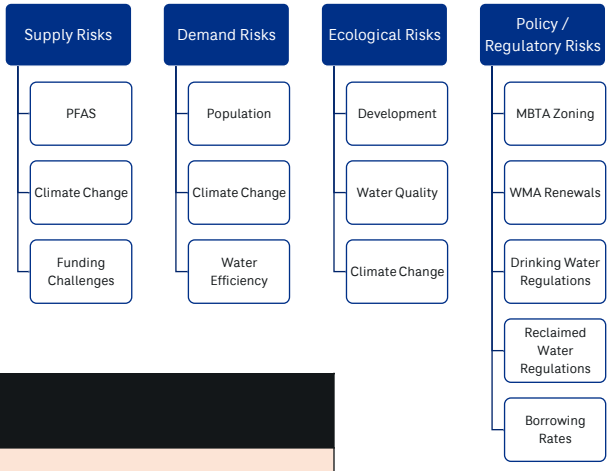
Example Risk Assessment

Project - Generalized Description

Conduct, Validate, and Act on Annual AWWA Water Loss Audits



Risks/Uncertainties for Alternative

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A	B	C
	Hybrid	
Ecosystem Health	**Efficiency & Adaptability**	**Risk Assessment**
Quantity/ quality of natural waters at the right time for ecological needs	Flexibility in phasing and supply capacity	Supply risks, demand risks, ecological risks, policy/regulatory risks
Net export of water from originating OCPC basins	Implementation feasibility	
People	**People**	**People**
	All online participants	
Amara	**Joanne and Kara**	**Kirk**

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Qualitative Scoring- Report Out

- Ecosystem Health

- Efficiency and Adaptability

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Qualitative Scoring- Report Out

- Risk Assessment

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Next Workshop

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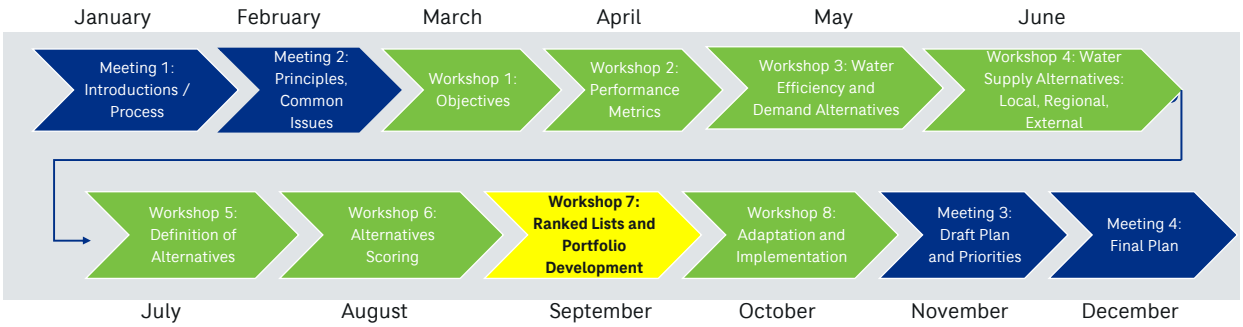
Overview of Regional Water Plan Process



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Upcoming Schedule

WHEN	DETAILS
Tuesday, September 24th 9:00 am – 12:00 pm	Workshop 7
Tuesday, October 29th 9:00 am – 12:00 pm	Meeting 3
Monday, November 18th 8:00 am – 12:00 pm	Meeting 4
Tuesday, December 10th 8:00 am – 12:00 pm	Meeting 5

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Steering Committee Homework

- Scoring objectives and updated metrics
  - Feedback due by 8/7 rozyckikm@cdmsmith.com
- Demand Projections and Capacity Memo (by municipality)
  - Will be sent via email by end of this week
  - Feedback due by 8/14 rozyckikm@cdmsmith.com
- Interviews
  - Email Kyle Olsen at RVA (kolsen@reginavilla.com) if you have not yet scheduled your interview.

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