Draft Alternative Scorecard

Relevance to Framework	ID	Project - GENERALIZED DESCRIPTION	Communities/ Stakeholders to whom this could apply	Meet Supply	Ecosystem Health			Cost	Innovation	Fairness		Water Quality	Flexibility and Feasibility	
				New Supply Added or Demand Reduced	Connectivity of natural waters	Quantity and/or quality of natural waters at the right time for ecological needs.	Reduction in net export of water from originating OCPC basins	Volume of supply gap reduced per unit cost	Volume supplied or demand reduced considered innovative	% of EJ census block groups served by alternative	% of EJ Census block groups impacted by construction	Volume of PFAS Impacted Supply Reduced	Flexibility in phasing and supply capacity	Implementation Feasibility
				MGD	Qual 1-5	Qual 1-5	Binary 0/1	$/1,000gal	MGD	%	%	MGD	Qual 1-3	Qual 1-3
Long-Term Local Alternatives	LT-1	Private Well Connection	All but Plympton	0.00	3	3	0	$0.0	0	100.00	0.00	0.00	3	1
	LT-2	Long Term Wells	Abington, Bridgewater, Brockton, Duxbury, East Bridgewater, Easton, Halifax, Hanover, Kingston, Pembroke, Plympton, Plymouth, West Bridgewater	17.77	2	2	0	$1.3	0	82.69	0.00	0.00	3	1
Long-Term Regional Alternatives	LT-3	MWRA for All - Permitted Amount	Abington, Avon, Bridgewater, Brockton, Duxbury, East Bridgewater, Easton, Halifax, Hanover, Hanson, Kingston, Pembroke, Plymouth, Stoughton, West Bridgewater, Whitman	41.87	5	5	1	$5.9	0	100.00	31.73	0.00	3	1
	LT-4	MWRA for All - Target Amount	Abington, Avon, Bridgewater, Brockton, Duxbury, East Bridgewater, Easton, Halifax, Hanover, Hanson, Kingston, Pembroke, Plymouth, Stoughton, West Bridgewater, Whitman	28.37	5	5	1	$4.4	0	100.00	48.08	0.00	3	1
	LT-5	MWRA for Open Communities	Abington, Avon, Bridgewater, Easton, Pembroke, Plympton, West Bridgewater	10.41	5	5	0	$4.5	0	6.73	52.88	0.00	3	1
	LT-6B	MWRA for Actively Pursuing Communities	Abington, Avon, Hanover	4.29	4	4	0	$4.0	0	0.00	62.50	0.00	3	1
	LT-7	MWRA for Bordering Communities	Avon, Easton	3.25	4	4	0	$3.9	0	3.85	82.69	0.00	3	2
	LT-10B	Desal 1 - Mix	Avon, Brockton, Easton, Hanson	5.00	4	4	1	$2.2	5	74.04	82.69	4.02	1	1
	LT-10C	Desal 2 - West	Avon, Brockton, Bridgewater, West Bridgewater	5.00	4	4	1	$2.1	5	76.92	86.54	5.00	3	1
	LT-10D	Desal 3 - East	Brockton, Duxbury, Halifax, Hanson, Pembroke	5.00	4	4	1	$2.0	5	71.15	89.42	4.67	3	1
	LT-12	Interconnections	Abington, Plympton, Easton, East Bridgewater, West Bridgewater, Stoughton, Plymouth	0.12	3	3	0	$19.6	0	21.15	0.00	0.00	1	2
	LT-14	Reclaimed Non-Potable Use	Bridgewater, Easton, Kingston, Plymouth, Agriculture Uses	1.10	3	3	0	$2.2	1.1	6.73	0.00	0.00	1	1

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				New Supply Added or Demand Reduced	Connectivity of natural waters	Quantity and/or quality of natural waters at the right time for ecological needs.	Reduction in net export of water from originating OCPC basins	Volume of supply gap reduced per unit cost	Volume supplied or demand reduced considered innovative	% of EJ census block groups served by alternative	% of EJ Census block groups impacted by construction	Volume of PFAS Impacted Supply Reduced	Flexibility in phasing and supply capacity	Implementation Feasibility
				MGD	Qual 1-5	Qual 1-5	Binary 0/1	$/1,000gal	MGD	%	%	MGD	Qual 1-3	Qual 1-3
Short Term Local Alternatives	ST-1	Water Loss Audit	Abington, Avon, Bridgewater, Brockton, Duxbury, East Bridgewater, Easton, Halifax, Hanover, Hanson, Kingston, Pembroke, Plymouth, Stoughton, West Bridgewater, Whitman	1.00	4	4	0	$1.3	1	100.00	0.00	0.00	3	2
	ST-2	Leka Detection Rebates	All but Plympton	3.00	4	4	0	$0.5	3	100.00	0.00	0.00	2	2
	ST-3	AMI	All but Plympton	1.50	4	4	0	$3.9	1.5	100.00	0.00	0.00	2	2
	ST-4	Billing Improvements	Abington, East Bridgewater, Halifax, Whitman	0.51	4	4	0	$0.0	0.51	100.00	0.00	0.00	3	3
	ST-5	Short Term Wells	Bridgewater, Pembroke, Plymouth, Kingston	4.13	2	2	0	$3.0	0	6.73	0.00	0.00	3	2
	ST-6	Brockton Desal Use	Brockton	1.00	4	4	1	$9.7	1	70.19	0.00	1.00	3	1

Handout on Objectives, Metrics and Details of Metric Calculation

Table 1: Objectives, themes and metrics used in the analysis of alternatives.

Objective	Theme	Metric	Units	Details on Metric Calculation
Meet all current and future peak water demands with climate resilient supply side and demand side strategies	**Reliable Municipal Supply**	New water supply added, or demand reduced	MGD	CDM Smith held individual conversations with communities and used requested volumes as the new target supply. The volume is the sum of annual average new supply for all participating communities[1].
Improve ecosystem health	**Ecological Health**	Connectivity of natural waters	Qualitative (see Table 2)	Evaluated by steering committee small group during 8/27 workshop. Scored 1-5.
		Quantity and/or quality of natural waters at the right time for ecological needs.	Qualitative (see Table 2)	Evaluated by steering committee small group during 8/27 workshop. Scored 1-5.
		Reduction in net export of water from originating OCPC basins	Binary 0/1	CDM Smith evaluated which alternatives would reduce inter-basin transfers of water for watersheds within the OCPC region.
High Benefit: Cost value	**Cost Effectiveness**	Volume of water supply added, or demand reduced divided by cost	$/1000 gal	CDM Smith calculated the benefit cost value by dividing the volume provided or demand reduced by the capital costs associated with each alternative.
Consider innovative and alternative solutions such as stormwater capture, wastewater reuse and water use efficiency	**Innovation**	Beneficial addition of water or reduction of demand that is considered innovative	MGD	CDM Smith calculated the volume provided by alternatives considered innovative, including those falling in the following categories: desalination water, reclaimed water, and demand side management strategies considered innovative
Promote environmental justice and equity between communities	**Fairness**	Percent of MA designated environmental justice block groups served by alternative	% of environmental justice block groups	CDM Smith used ArcGIS to evaluate the number of environmental justice block groups that could be served by each alternative.
		Percent of MA designated environmental justice block groups impacted by construction (higher score is less preferred)	% of environmental justice block groups	CDM Smith used ArcGIS to evaluate the number of environmental justice block groups that could be impacted by construction activities for each alternative.
Meet current and future drinking water quality standards	**Drinking Water Quality**	Volume of PFAS impacted supply reduced	MGD	CDM Smith calculated the volume of additional water supply that would be able to replace the portion of water at risk from water quality issues, on a community by community basis. Considers the requirement of meeting PFAS MCLs by 2029.
Encourage sustainable water use to meet the needs for housing and economic prosperity	**Efficiency & Adaptability**	Flexibility in phasing and supply capacity	Qualitative (see Table 3)	Evaluated by steering committee small group during 8/27 workshop. Scored 1-3.
		Implementation Feasibility	Qualitative (see Table 3)	Evaluated by steering committee small group during 8/27 workshop. Scored 1-3.

[1] Additional notes on volumes used for additional water supply requested by communities:

- LT-2 Long term well alternative supply based on half 2022 annual demand if no target supply provided by community.
- MWRA alternatives supplies based on 2022 annual demand if no target supply provided by community.
- Desalination alternatives supplies based on volume of supply at risk of PFAS if no target supply provided by community. Capped at 5 MGD total based on current capacity of Aquaria desalination plant.

Table 2: Qualitative scales for the "Improve ecosystem health" objective.

Objective	Metric	Units	Qualitative Scales				
			1	2	3	4	5
Improve Ecosystem Health	Connectivity of natural waters[1]	Qualitative	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 at the right time for ecological needs	Qualitative	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

Table 3: Qualitative scales for "Encourage sustainable water use..." objective.

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

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

[1]Data from https://streamcontinuity.org/naacc will be used to understand baseline conditions of connectivity of natural waters.

Water Supply Volumes for each Alternative per Community

New Supply Added	LT-1	LT-2	LT-3	LT-4	LT-5	LT-6B	LT-7	LT-10B	LT-10C	LT-10D	LT-12	ST-5	ST-6
	Private Well Connection	Long Term Wells	MWRA for All - Permitted Amount	MWRA for All - Target Amount	MWRA for Open Communities	MWRA for Actively Pursuing Communities	MWRA for Bordering Communities	Desal 1 - Mix	Desal 2 - West	Desal 3 - East	Interconnections	Short Term Wells	Brockton Desal Use
Abington	0	1.42	3.36	2.84	2.84	2.84	-	-	-	-	0.027	-	-
Avon	0	-	0.61	0.25	0.25	0.25	0.25	0.25	0.25	-	-	-	-
Bridgewater	0	3	1.98	3	3	-	-	-	2.75	-	-	0.56	-
Brockton	0	4.18	16.05	8.35	-	-	-	1	1	1.41	-	-	1
Duxbury	0	0.79	1.51	0.79	-	-	-	-	-	0.79	-	-	-
East Bridgewater	0	0.47	1.21	0.94	-	-	-	-	-	-	0.009	-	-
Easton	0	3	2.36	3	3	-	3	2.67	-	-	0.017	-	-
Halifax	0	0.72	0.68	0.72	-	-	-	-	-	0.72	-	-	-
Hanover	0	0.6	1.38	1.2	-	1.2	-	-	-	-	-	-	-
Hanson	0	-	0.78	0.59	-	-	-	1.08	-	1.08	-	0.43	-
Kingston	0	0.77	1.47	1.55	-	-	-	-	-	-	-	0.79	-
Pembroke	0	1	1.84	1	1	-	-	-	-	1	-	0.35	-
Plympton	-	-	-	-	-	-	-	-	-	-	-	-	-
Plymouth	0	1.5	5.32	1.5	-	-	-	-	-	-	0.039	2	-
Stoughton	0	-	2.48	1.89	-	-	-	-	-	-	0.018	-	-
West Bridgewater	0	0.32	0.84	0.32	0.32	-	-	-	1	-	0.006	-	-
Whitman	0	-	-	0.43	-	-	-	-	-	-	-	-	-
TOTAL (MGD):	**0**	**17.77**	**41.87**	**28.37**	**10.41**	**4.29**	**3.25**	**5**	**5**	**5**	**0.117**	**4.13**	**1**