5

EVALUATING TRADE-OFFS

The SDM process allows for the transparent evaluation of alternatives based on how well each alternative meets the project objectives. For individual participants, each objective may hold a different weight or level of importance, which will impact their final decision or ranking of preferred alternatives. By laying out the objectives and alternatives clearly in the decision matrix, it allows for a visible way for these subjective values to be openly discussed and ranked. The consequence matrix can help stakeholders' focus on their interests and identify the various alternatives that can meet those interests rather than just focusing on the position. Given the complexity of many dam decisions and the number of competing objectives, the consequence matrix can make the decision visual which can help people keep track of the impact of the alternatives on the project objectives. Without this ability to organize and keep track of information, people can revert to their original positions or default to physiological shortcuts.

5.1

MAKING DECISION - EVALUATING TRADE-OFFS

DECISION MATRIX

WHO:
Steering Committee + General Public

TIME:
2-5 Hours

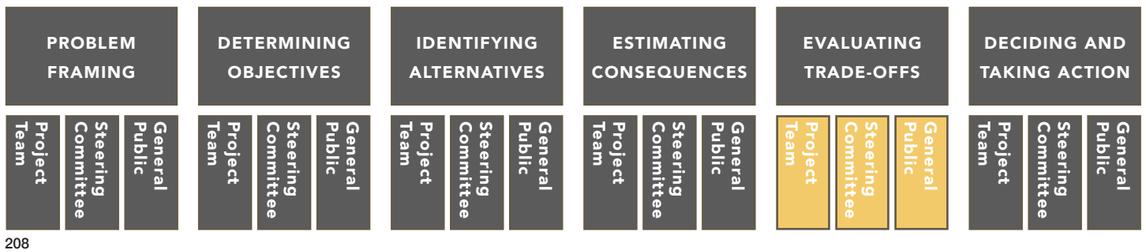
PURPOSE:
Gain understanding of how the alternatives meet the project objectives and indicate preferences

MATERIALS:
Printed Matrix, Red, green, and yellow stickers

OVERVIEW

A consequence table is a summary matrix illustrating the performance of each alternative on each objective. It concisely summarizes estimates of the predicted consequences of the alternatives, relative to the objectives and criteria. It exposes key trade-offs among objectives across the alternatives under consideration.

The Structured Decision Making process allows for the transparent evaluation of alternatives based on how well each alternative meets the project objectives. For individual participants, each objective may hold a different weight or level of importance, which will impact their final decision or ranking of preferred alternatives. By laying out the objectives and alternatives clearly in the decision matrix, it allows for a visible way for these subjective values to be openly discussed and ranked. The consequence matrix was a new tool for the participants, but proved to be effective in aiding stakeholders' understanding of their options and how their priorities shifted. It also allows for the participants to focus on their interests and identify the various alternatives that can meet those interests rather than just focusing on the position. Given the complexity of many dam decisions and the number of competing objectives, the consequence matrix can make the decision visual which can help people keep track of the impact of the alternatives on the project objectives. Without this ability to organize and keep track of information, people can revert to their original positions or default to the physiological shortcuts mentioned previously.



PRE-WORKSHOP PREPARATION:

Prior to the workshop, the organizers will need to make a decision matrix. To make the matrix, the alternatives should be listed along the top of the sheet and along the left side list out the trade-offs. Inside of the matrix, the impact of the alternative on the trade-off should be included. Depending on where the group is in the process the matrix can be filled in with general impacts or with more specific quantifiable impacts. To make the matrix table more visually accessible, an icon or text can be used to indicate the impact of the alternative on the attribute.

SETTING UP THE EXERCISE:

Ask participants to review the alternatives

RANKING:

Review the matrix and rank the alternatives on the matrix.
Give participants red, green, and yellow stickers and ask them to use the stickers at the bottom of the matrix to indicate the following:
GREEN = Preferred option = enthusiastic support –"this is a great solution"
YELLOW = Acceptable option = "Maybe it is not the best solution but it is one I could support.
RED = Oppose = no support "I cannot support this solution"

Participants are required to use at least one green and at least one yellow sticker. The yellow "acceptable alternative" sticker is intended to help participants find a space of negotiation.

Go around in the circle and ask participants to discuss their ranking and say the main reasons they support or the main reason they are against the different alternatives. As people are presenting, the note taker compiles the ranking in a master sheet indicating the number in prefe red, acceptable and oppositional votes for each alternative.

OPTIONAL: RE-RANKING

The goal of the 2nd round of ranking is to provide a chance for the participants to reflect on their choices after the discussion and to allow for participants to adjust their preferences based on the discussion.

After the first round, ask participants to re-rank the alternatives (everyone has to use one green, one red and 2 yellow, and one optional color)

Facilitators ask everyone to share their final ranking.

AS people are presenting, the facilitator compiles the ranking in a master sheet indicating the number in preferred, acceptable and oppositional votes for each alternative.

REFERENCES and ADDITIONAL RESOURCES

Gregory, R., Failing, L., Harstone, M., Long, G., McDaniels, T.L., & Ohlson, D.W. 2012. Structured Decision Making: A Practical Guide to Environmental Management Choices. Wiley-Blackwell, Chichester, U.K.

RIVER ALTERNATIVES SUMMARY TABLE

			No Action Alternative	Sediment Trap	Remove Wareham St Dam	Full River Restoration Remove Wareham St Dam Naturalized channel Widen 3 bridges
ECOLOGICAL OBJECTIVES	**Fish Passage up and downstream**		**NO CHANGE**	**MINOR IMPROVEMENT**	**IMPROVED**	**GREATLY IMPROVED**
	Improve Water quality + Habitat		— Disolved Oxygen — Water Temperature — Sediment Transport	— Disolved Oxygen — Water Temperature ↓ Sediment Transport	↑ Disolved Oxygen ↓ Water Temperature ↓ Sediment Transport	↑ Disolved Oxygen ↓ Water Temperature ↓ Sediment Transport
	Improve low-flow aquatic connectivity	Points along river where challenging for Herring to pass	**7** potential low points	**7** potential low points	**5** potential low points	**4** potential low points
INFRASTRUCTURAL AND OPERATIONAL OBJECTIVES	**Minimize flood damage to infrastructure and property downstream of APC.**	Flooded Area (100 Year storm)	**723** Acres	**723** Acres NO Reduction	**680** Acres 6% Reduction	**653** Acres 10% Reduction
		Impacted buildings	**27** Buildings	**27** Buildings	**23** Buildings	**19** Buildings
	Reduce ongoing maintenance by working with river morphology		**Works against river morphology**	**Works against river morphology. Requires ongoing maintenance**	**Works with river morphology**	**Works with river morphology**
	Permitting		**N/A**	**VERY CHALLENGING**	**CHALLENGING**	**CHALLENGING**
RECREATIONAL OBJECTIVES	**Maximize quality and quantity of recreation on the river**	Boating Opportunities	**FLAT WATER RIVER RECREATION** Maintains Existing "flat water" recreation on river + ease of round trips	**FLAT WATER RIVER RECREATION** Maintains Existing "flat water" recreation on river + ease of round trips	**FREE FLOWING RIVER RECREATION** No portage at Wareham st and fewer low flow areas	**FREE FLOWING RIVER RECREATION** No portage at Wareham st and fewer low flow areas
		Expanding fishery habitat diversity				
ECONOMIC OBJECTIVES		Cost	**N/A**	**$**	**$$**	**$$$**
		Availability of Funding	**N/A**	**UNLIKELY**	**LIKELY**	**LIKELY**

GREEN = Preferred
YELLOW = Acceptable
RED = Oppose
You must use at least one green and one yellow sticker


NOT LIKELY
LESS LIKELY
MORE LIKELY
ECONOMIC TRADE-OFFS
ECOLOGICAL TRADE-OFFS
CULTURAL AND AESTHETIC TRADE-OFFS
FISHWAY
LADDER
DAM