

Structured Decision Making for Washington's Lower Columbia River Tributary Fisheries Management and Evaluation Plan (FMEP)

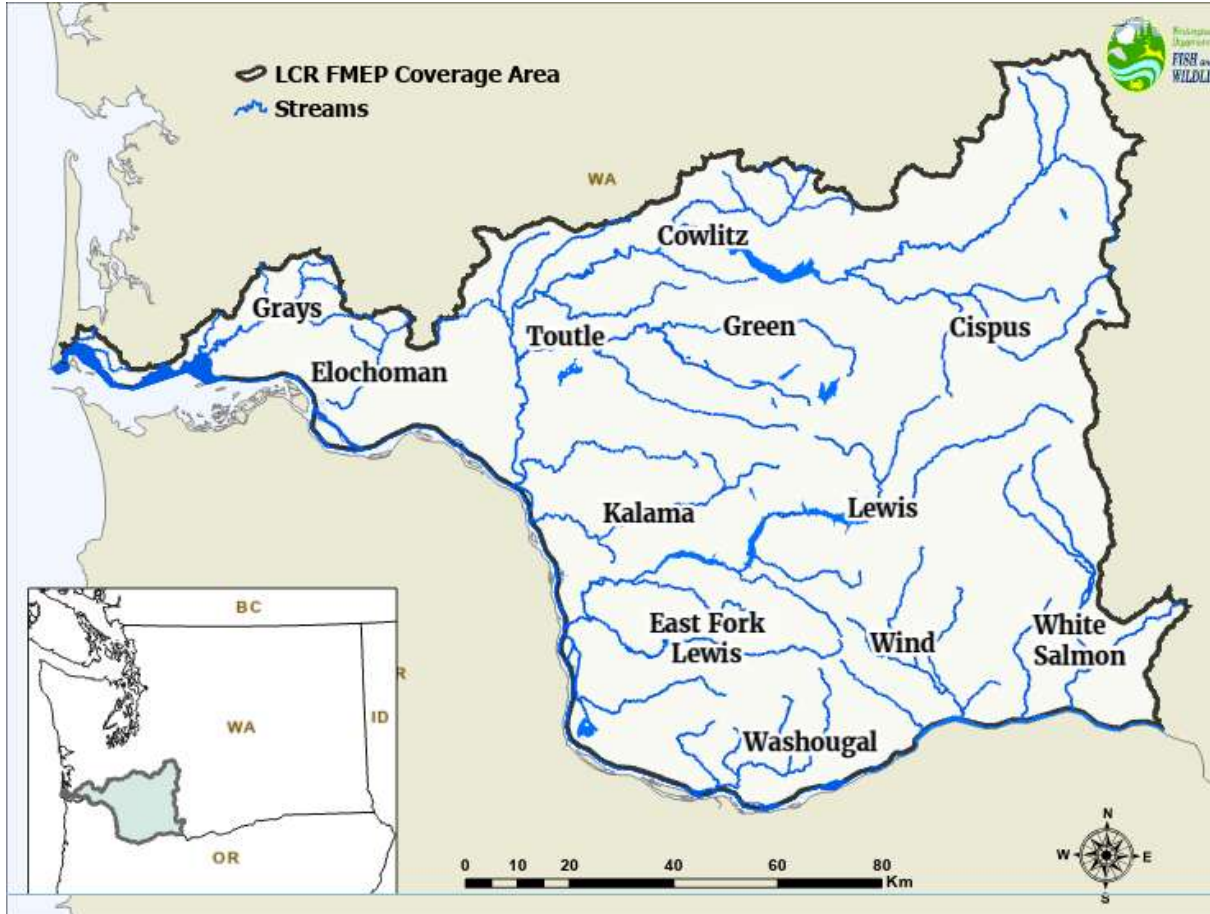
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LCR Tributary FMEP



- Four ESA listed species
 - Coho salmon, Chinook salmon, chum, steelhead
 - Fisheries require permits
- FMEPs establish allowable levels of fishing mortality
 - Harvest Control Rules (HCRs)
 - Not regulations
- WA's LCR Tributary FMEP first to be approved in Columbia Basin
- Last approved version 2003
 - Time for an update!



Approach: Structured Decision Making (SDM)

- Provides a framework for careful decision-making at the science-policy interface
- Series of steps designed to achieve objectives
- Deals explicitly with uncertainty
- Responds transparently to societal values

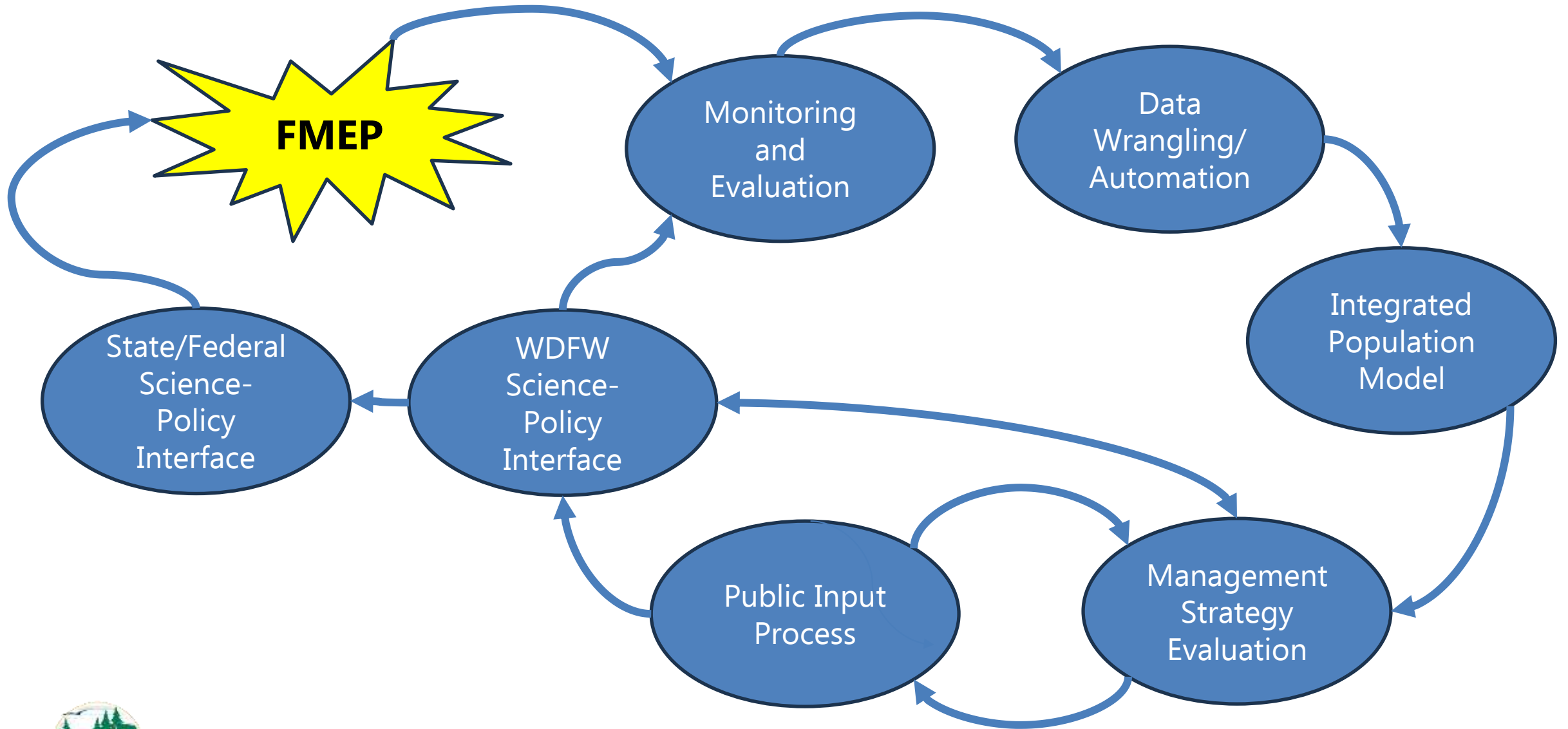


Objective

- Establish HCRs that allow for fishing opportunities without hindering recovery
- Utilize best available science
 - Integrated Populations Models
 - Management Strategy Evaluation
 - Public Input
- Create a streamlined and repeatable process for future updates

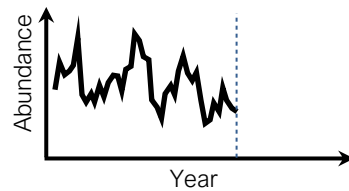


Structured Decision-Making Framework

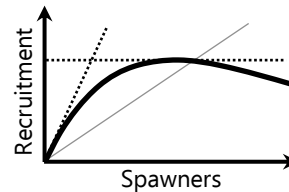


Initial SDM Steps

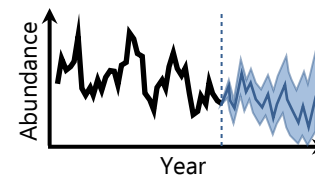
1. Gather data about fish (comes from monitoring programs)



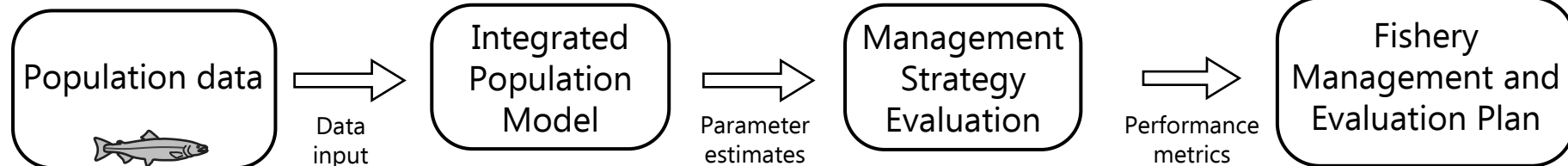
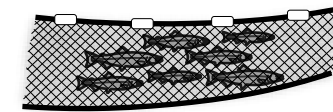
2. Fit a statistical population model based on the data



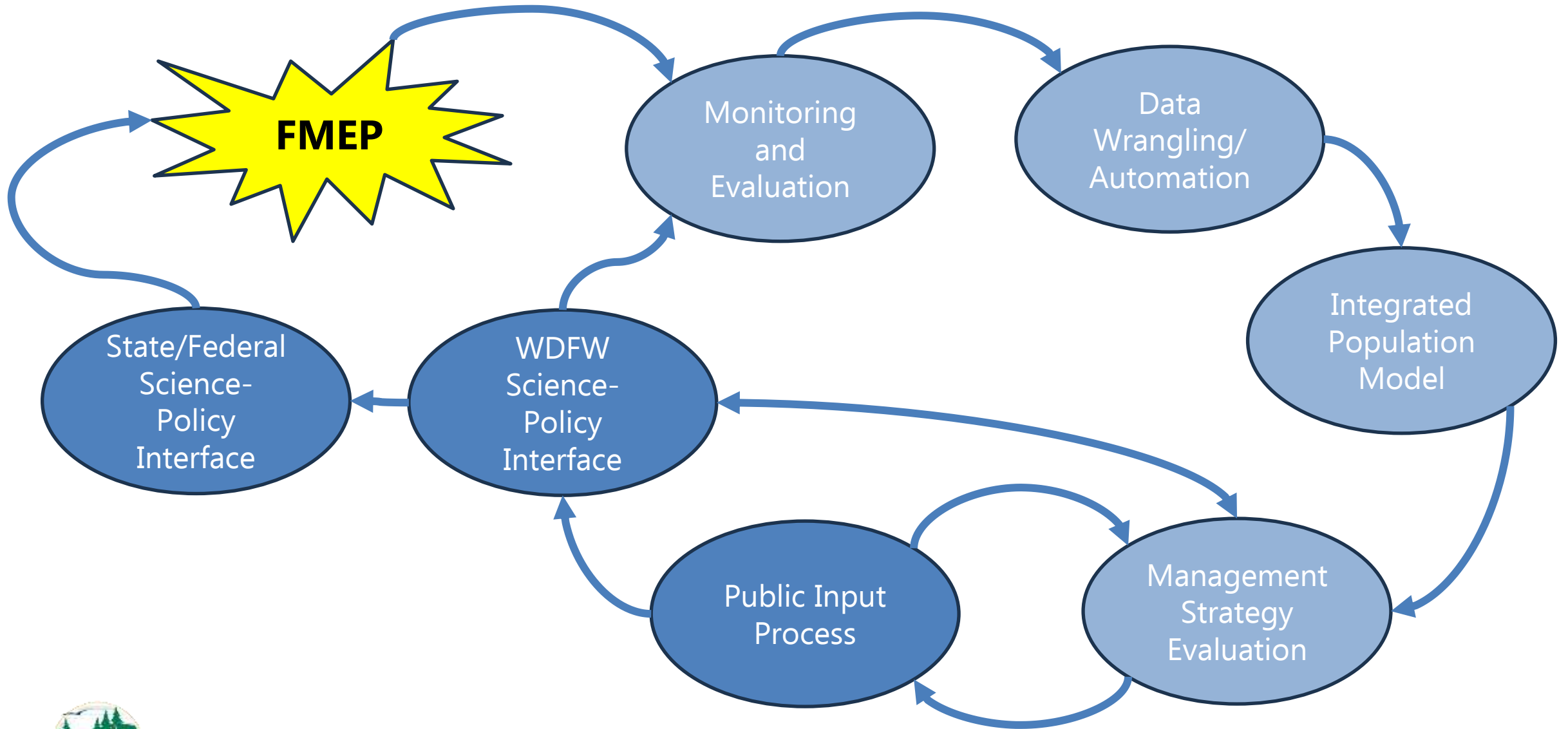
3. Simulate what will happen to fish populations given different HCRs



Assess the trade-offs associated with each HCR options



Structured Decision-Making Framework



Public Input Process



- Public engagement can reduce conflict and increase resource stewardship
- Structured, repeatable survey produces data
- How do values and preferences influence risk tolerance (selection of HCRs)?
- NOT a vote
- Policy and legal sideboards for HCRs
- Received 4,000 responses

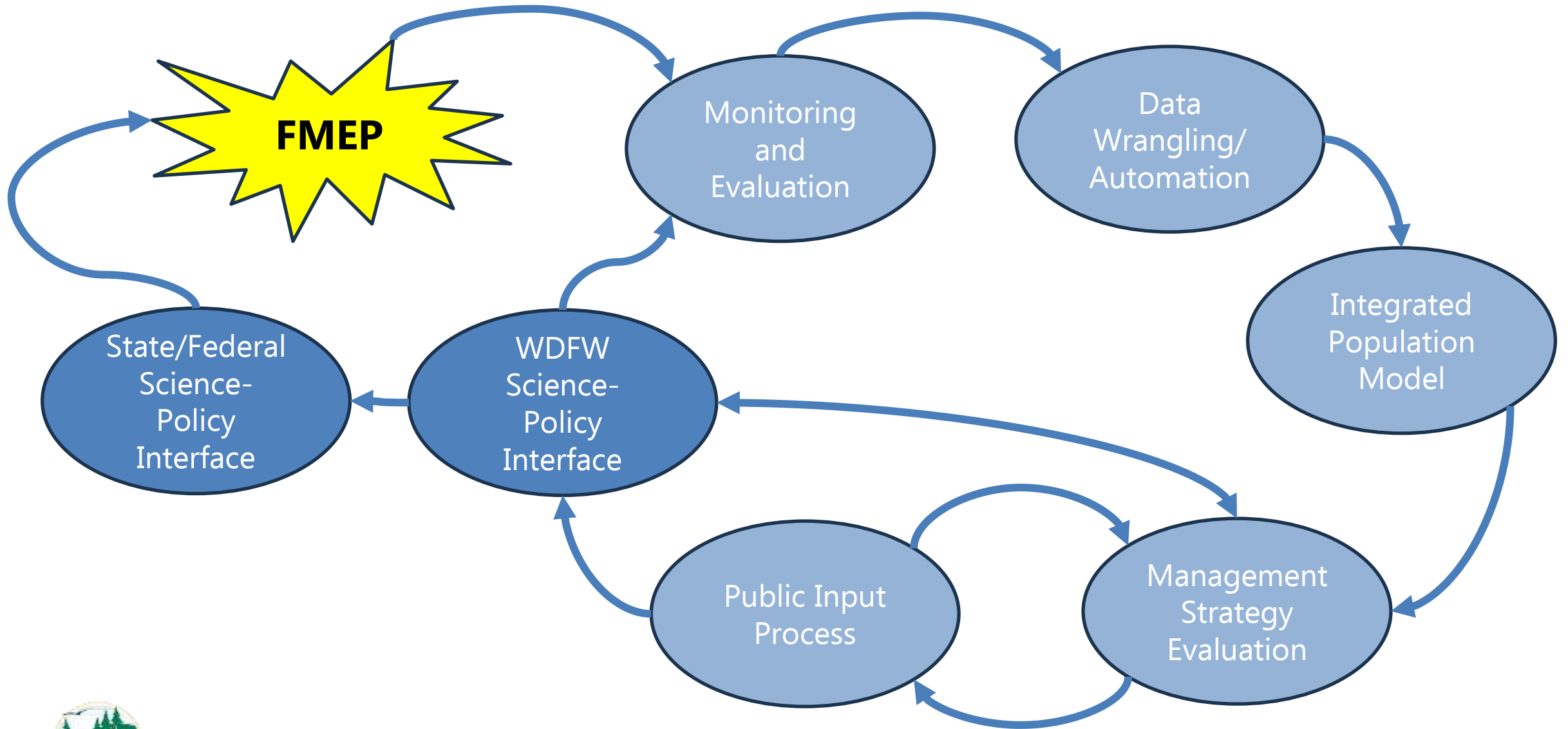


Public Input Survey – Analysis Ongoing

- Non-anglers more likely to support no-fishing scenario
- Anglers who preferred harvest fisheries were more likely to support liberal HCRs (higher impact rates)
- General preference for moderate HCRs across anglers and non-anglers across all species
- Differences in HCR preferences across anglers who targeted different species (ex. Steelhead catch and release anglers vs. coho harvest anglers)



Structured Decision-Making Framework



WDFW Science-Policy Interface

- Iterative process involving WDFW fisheries managers and scientists
- Tributary-specific total impact rates
 - Harvest, C&R mortality, hatchery removals
- Performance metrics in MSE model
 - Recruitment potential
 - Quasi-extinction risk
- Additional considerations
 - Mean harvest or C&R encounters
 - ESA delisting goals



WDFW Science-Policy Interface

- Risk tolerance strategy
- If quasi-extinction risk without tributary fisheries is >25%, propose 2.5% maximum non-target tributary impact rate
- Risk thresholds
 - 3% increase in quasi-extinction risk
 - 10% decrease in recruitment potential



Unmodeled Populations/Exceptions

- HCRs selected based on
 - Population recovery designations (primary, contributing, stabilizing)
 - Passage barriers
 - Hatchery mitigation programs
 - Listing status (i.e. SW Washington steelhead are not ESA listed)
 - Additional conservations considerations



Selected Total Impact Rates

- Population specific
- Chinook salmon: 2.5-15%
- Chum salmon: 2.5-10%
- Coho salmon: 5-15%
- Steelhead: 2.5-15%



Coho salmon

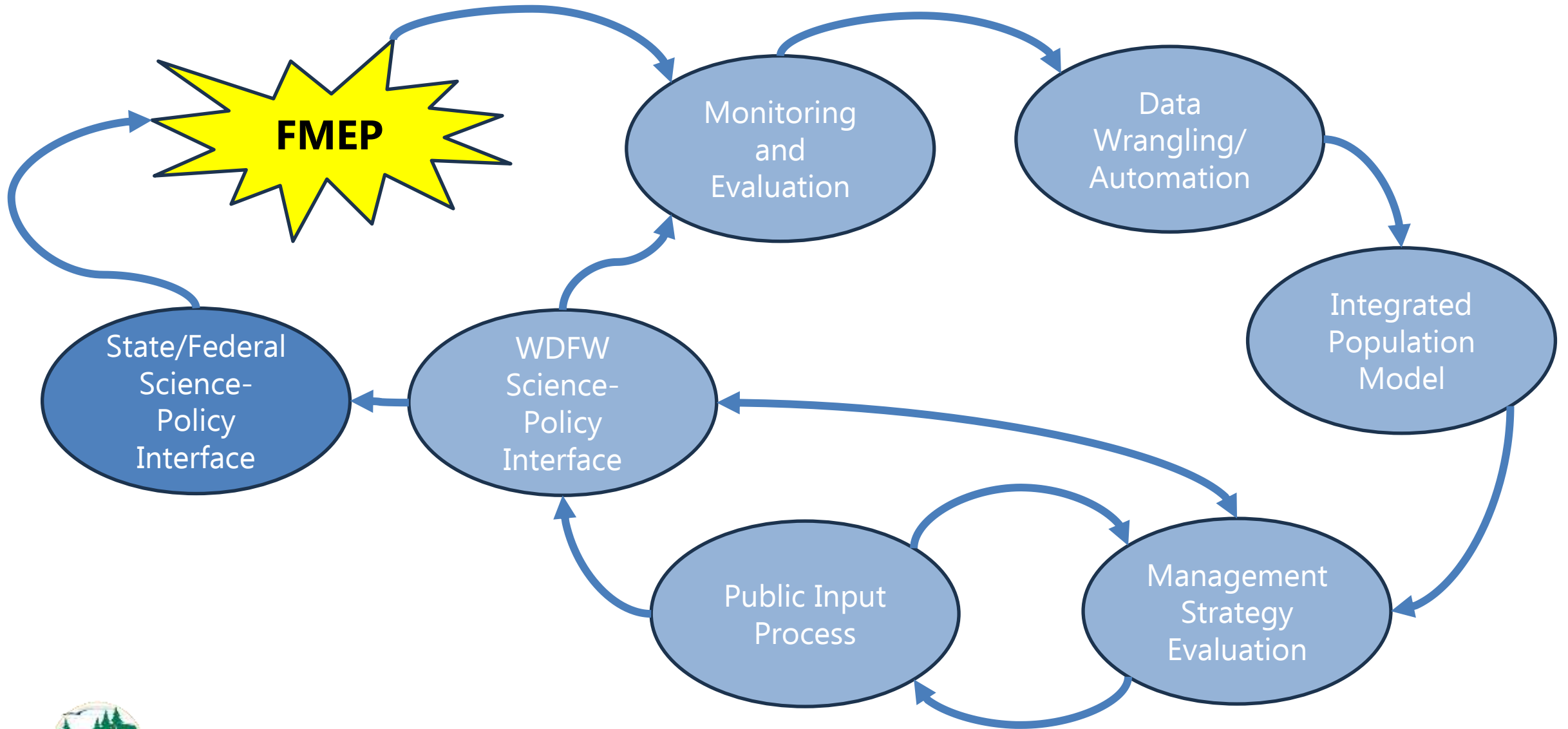
Increase in extinction risk due to ocean+mainstem vs tributary fisheries – NOT exploitation rates

Population	Percent increase in QET Risk		
	Ocean and mainstem	Tributaries (3% cap)	Total
Coweeman Coho	0.2%	0.6%	0.8%
East Fork Lewis Coho	0.0%	0.5%	0.5%
Elochoman-Skamokawa Coho	0.6%	0.7%	1.3%
Grays-Chinook Coho	1.2%	1.3%	2.5%
Kalama Coho	2.8%	2.6%	5.4%
Lower Cowlitz Coho	0.1%	0.4%	0.5%
Lower Gorge (Columbia) Coho	0.1%	0.2%	0.3%
Mill-Abernathy-Germany Creeks Coho	0.2%	0.2%	0.4%
North Fork Toutle Coho	0.4%	0.7%	1.1%
South Fork Toutle Coho	0.1%	0.4%	0.5%
Washougal Coho	1.3%	2.1%	3.4%

* Differences among impacts of less than 1% are considered comparable due to the finite number of stochastic simulations



Structured Decision-Making Framework



Next Steps

- Submit FMEP to NOAA for consultation and approval
- Adaptive management process
- Ongoing M&E to support reevaluation



Cyclical Adaptive Management Process

- 1—year cycle:
 - Produce tributary specific estimates of total impact rates for each population, report to NOAA
 - Evaluate success in meeting HCR targets, alter regulations as needed
- 5-10—year cycle:
 - Re-run MSE using updated data
 - Propose new HCRs as appropriate

Benefits of MSE-Based SDM Process

- Direct quantification of conservation and fishing opportunity implications of HCRs
- Transparent, repeatable, empirical
- Facilitates participation from scientists, managers, stakeholders, and the public
- Application of best available science

Acknowledgements

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Thanks to Lower Columbia Fish Recovery Board



A scenic landscape photograph showing a large, calm lake nestled in a valley. The lake is surrounded by lush green forests and rolling hills. In the foreground, a large, dark evergreen tree stands prominently on the right side, its branches reaching towards the top of the frame. The background features distant, hazy mountains under a sky filled with dramatic, grey clouds. The overall atmosphere is serene and majestic.

Questions?