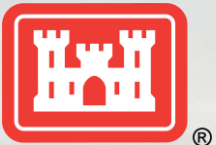


FEDERAL BEACHES 101

A Primer on Coastal Storm Risk Management Projects

1. History, Feasibility, and Authorization
- 2. Economic Considerations**
3. Design and Implementation
4. Sediments
5. Environmental Considerations

U.S. Army Corps of Engineers
Jacksonville District
September 2020





PRESENTATION OUTLINE



BUILDING STRONG

- Importance of Economics in the USACE Civil Works Project Delivery Processes
- Benefit-Cost Ratio (BCR) and Net Benefits in a CSRM Feasibility Study
- BCR Calculation Considerations
- Risk and Uncertainty in Economic Analysis
- Budgeting Considerations through project life cycle
- Future Directions in the CSRM Planning and Economics





ECONOMICS IN THE FEASIBILITY STUDY



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$$\text{BCR} = \frac{\text{Benefits}}{\text{Costs}} > 1$$

Net Benefits = Benefits - Costs

**Feasibility Study analysis seeks to reasonably maximize net benefits. The plan that maximizes net benefits may not be the plan with the highest BCR.*

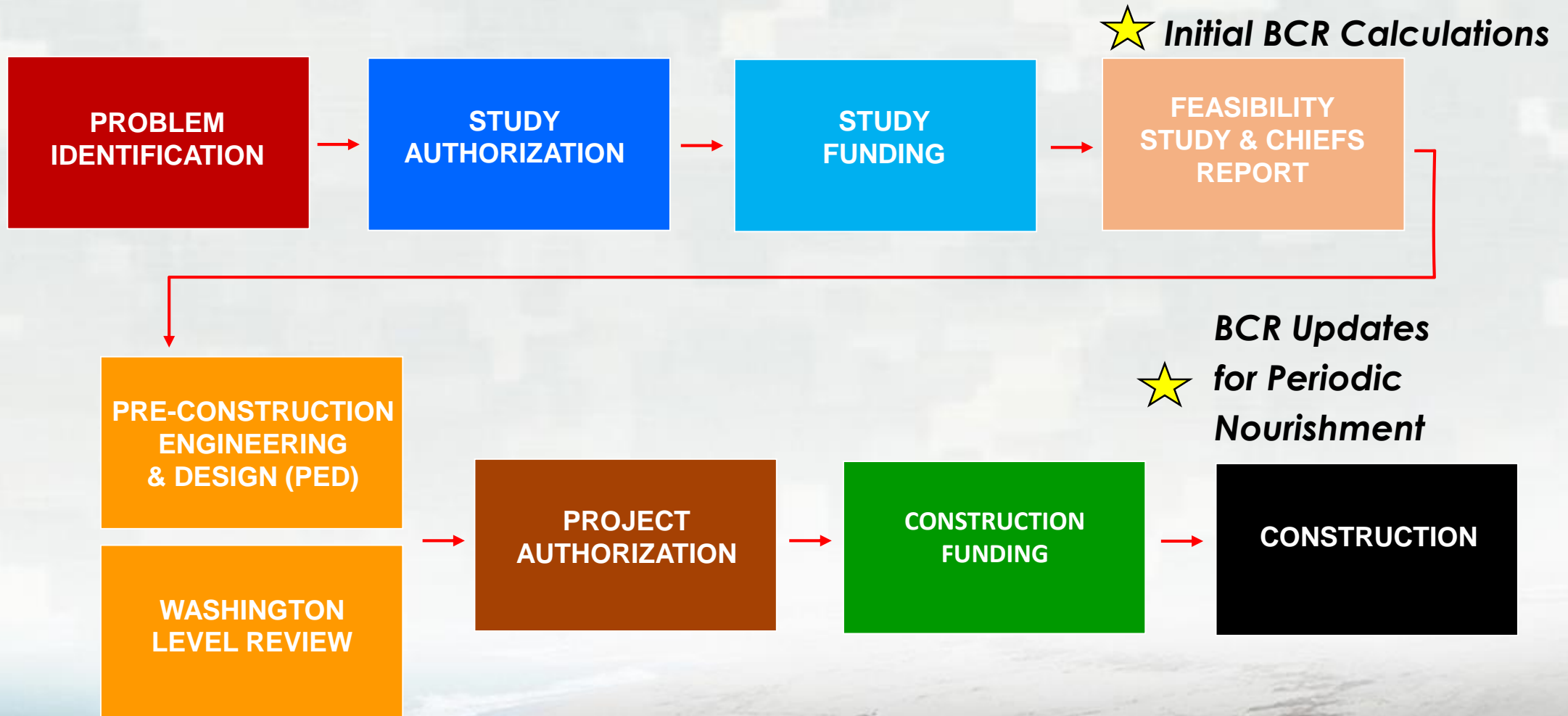




THE BCR IN THE USACE PROJECT DELIVERY PROCESS



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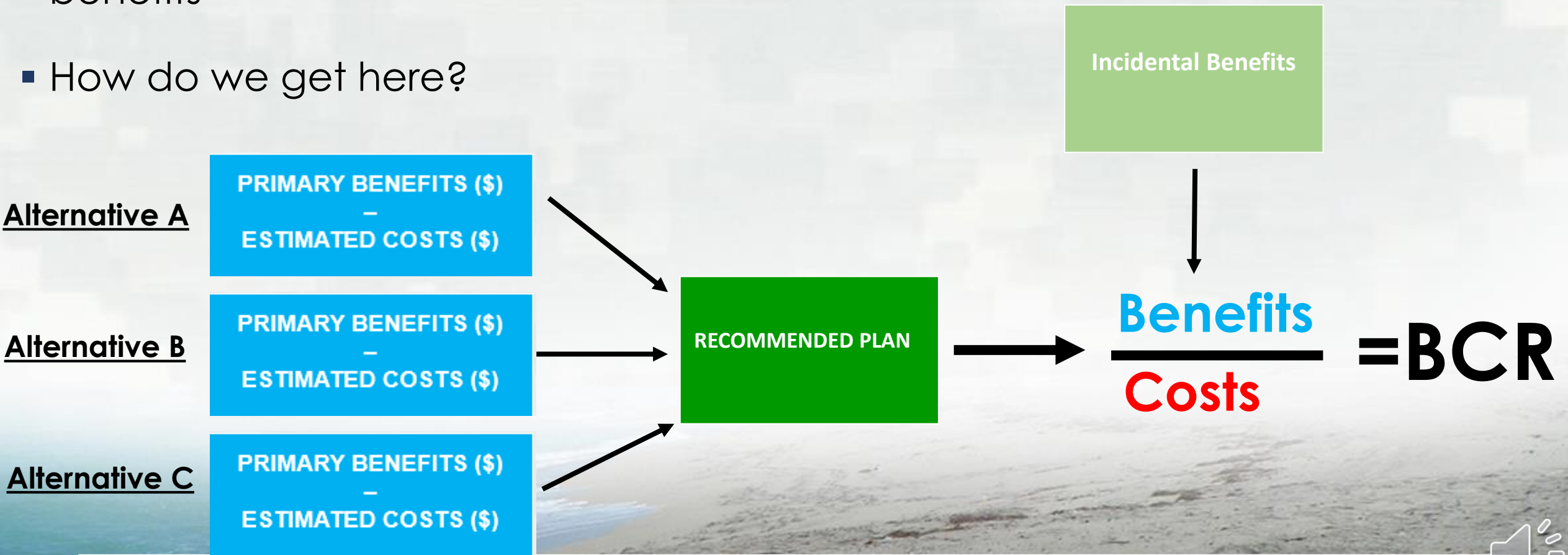


ECONOMICS IN THE FEASIBILITY STUDY



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- USACE Planning Guidance Notebook (ER-1105-2-100) defines the “National Economic Development Plan” (NED Plan) as the plan that maximizes net benefits
- How do we get here?





ECONOMIC BENEFITS IN THE FEASIBILITY STUDY



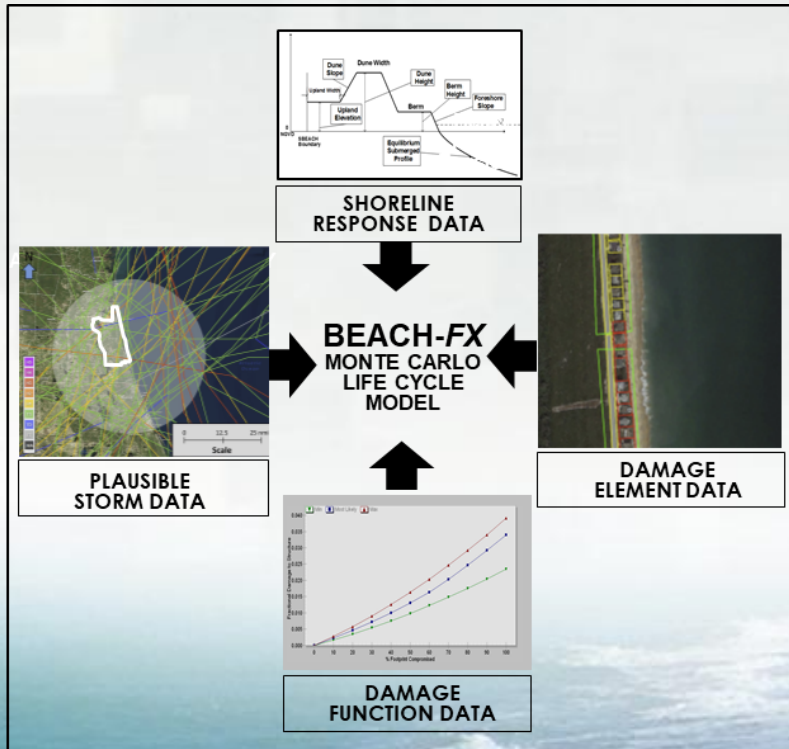
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Benefits aka National Economic Development (NED) Benefits or Primary Benefits

= reduction of damages to existing structures

= Future Without Project (FWOP) Damages - Future With Project (FWP) Damages

* *FWOP and FWP Damages are calculated using Beach-fx, typically for a 50 year life cycle.*



- Erosion, wave attack, and flood damages can be prevented.
- In addition to structural damage prevention benefits, NED benefits can also include: contents damage, loss of land, reduced emergency costs, reduced maintenance of existing structures, armor cost reduction, and vehicle damage
- Recreation benefits are considered incidental to plan formulation and may not be more than fifty percent of the total benefits required for justification.





ECONOMIC COSTS IN THE FEASIBILITY STUDY



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Costs aka Total Project Costs (TPC)

- = Life Cycle Construction Costs (dredging, mobilization, truck haul, dune plantings, etc...)
 - + Pre-construction Engineering, & Design (PED) Costs
 - + Construction Management Costs (Supervision & Administration, S&A)
 - + Real Estate Costs
 - + Monitoring Costs
 - + Contingency
-
- ER 1110-2-1302 provides policy, guidance, and procedures for cost engineering responsibilities for all Civil Works projects assigned to the U.S. Army Corps of Engineers (USACE).



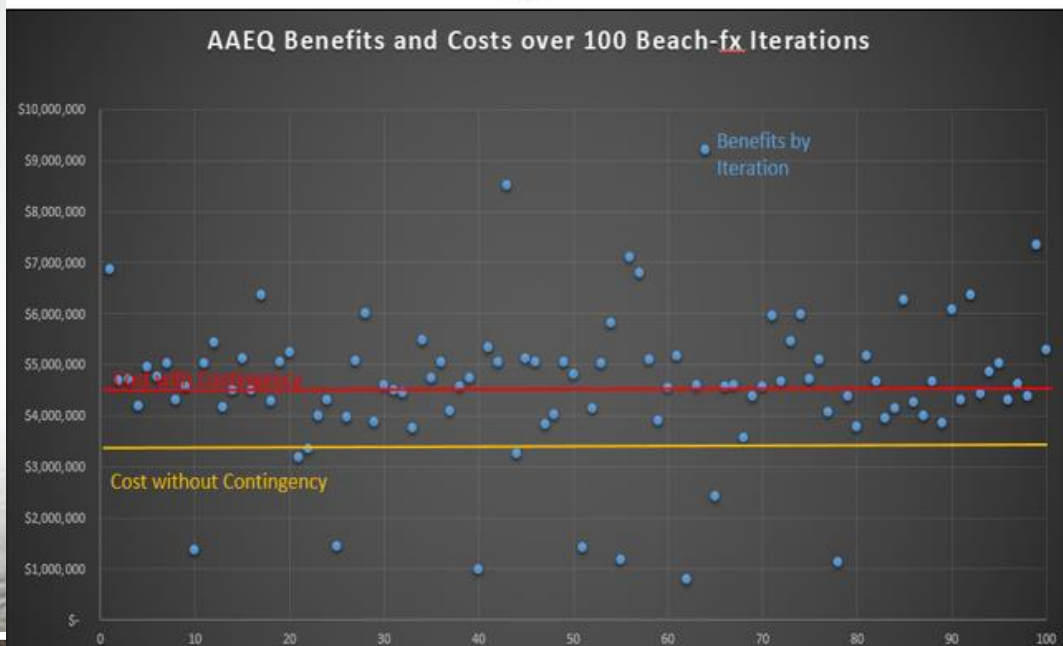
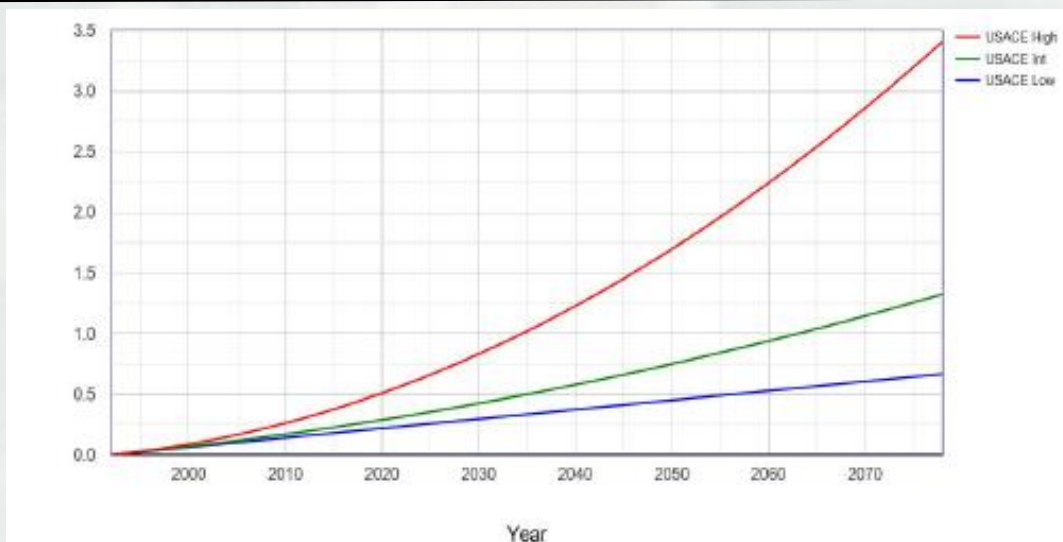


RISK AND UNCERTAINTY



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- Principles of Risk Informed Planning
- Sea Level Change (SLC)
- Cost and Schedule Risk Assessment (CSRA)
- Uncertainty in both Inputs and Outputs



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LIFE CYCLE BUDGETING CONSIDERATIONS



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The interest rate used in the analysis:

- Water Resources Discount rate (currently 2.75%)
- OMB Rate (7%)

Periodic Economic Updates:

- Level 1
- Level 2
- Level 3
- Level 4

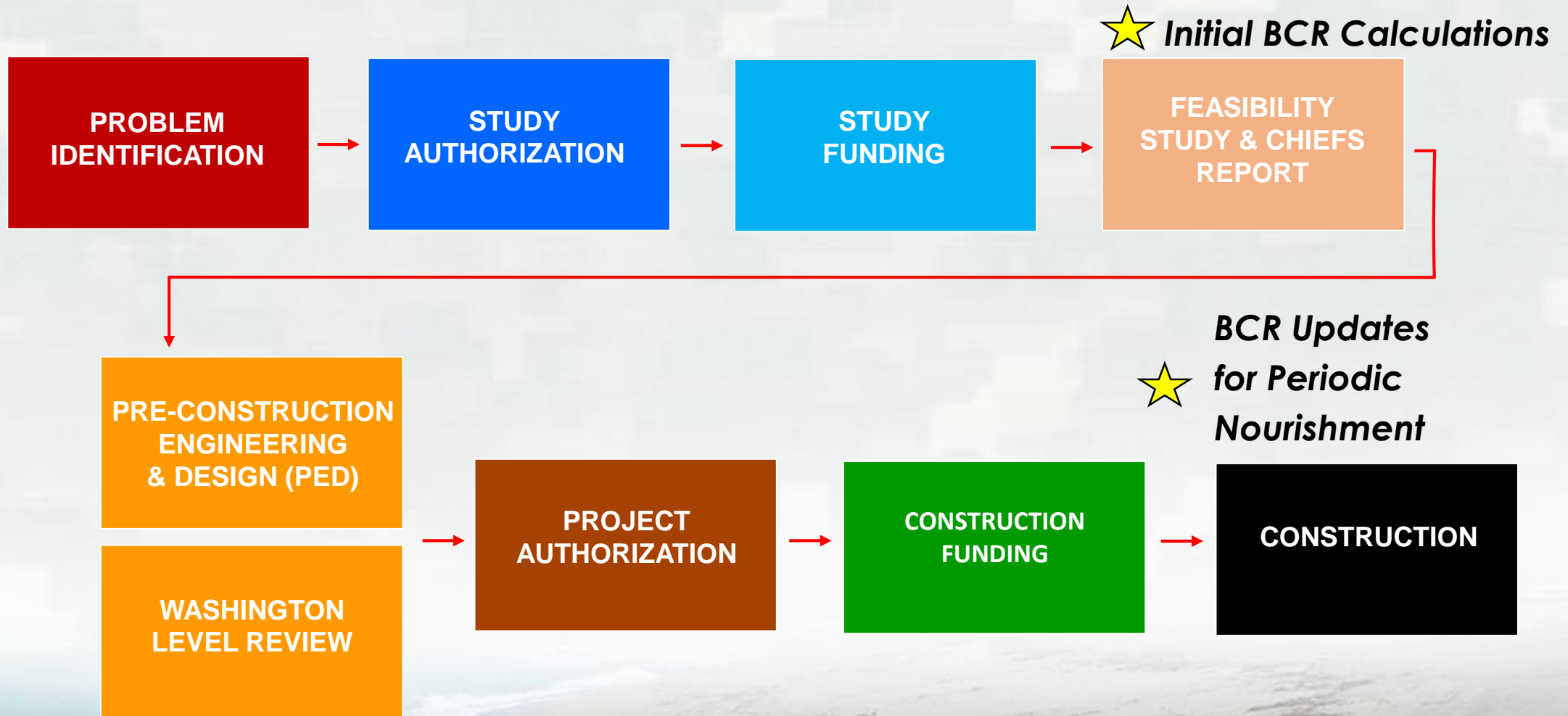




THE BCR IN THE USACE PROJECT DELIVERY PROCESS



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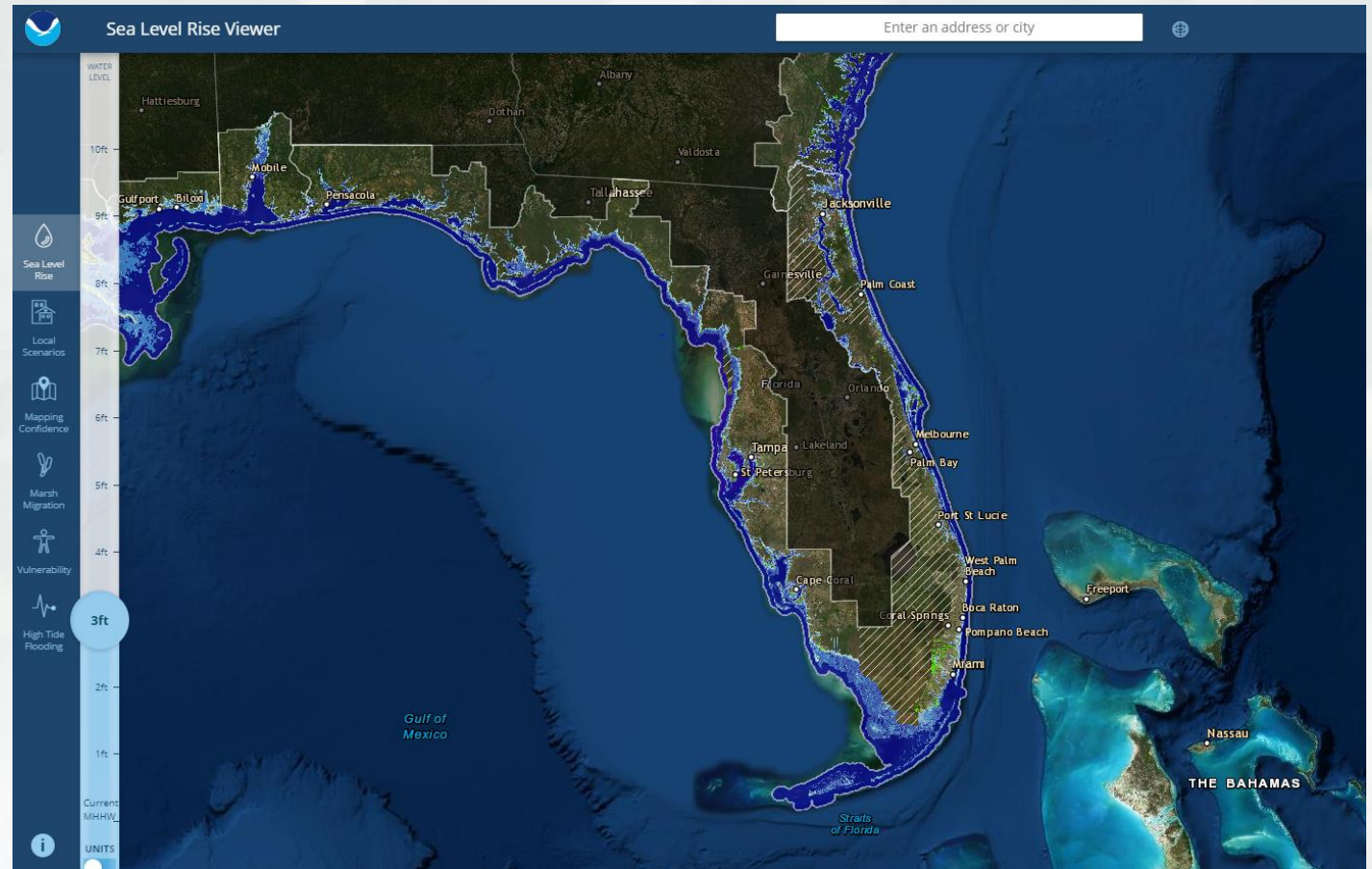


FUTURE DIRECTIONS IN CSRM ECONOMICS



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- Back Bay Flooding
- New Tools and Methods
- Other NED Benefit Categories (Income Loss, etc.)
- Non-NED Benefit categories (RED, OSE, etc.)



NOAA Sea Level Rise Viewer

