

# FLOOD RISK MANAGEMENT PLANNING CENTER OF EXPERTISE (FRM-PCX)

Michelle Kniep  
National Technical Specialist for Plan Formulation  
FRM-PCX



U.S. ARMY



US Army Corps  
of Engineers®

- VERY brief overview of Planning Centers of Expertise (PCX)  
(In case you missed the other webinars but not too much repetition if you didn't)
  - Previous webinars:
    - 25 Jan 24: [Meet Your Navigation Planning Centers of Expertise](#)
    - 8 Feb 24: [An Overview of our Ecosystem Restoration and Water Management and Reallocations Studies PCXs](#)
- Flood Risk Management (FRM) versus Coastal Storm Risk Management (CSR)
- FRM-PCX organization, including roles and responsibilities
- FRM-PCX support to studies



U.S. ARMY

# PLANNING CENTERS OF EXPERTISE (PCX)



SPD



SAD



MVD



POD



Small Boat Harbor Planning Sub-Center of Expertise



Hydropower  
Analysis Center  
NWD

NAD



SWD



LRD





U.S. ARMY

# PCX STRATEGIC MISSION



*To enhance the Corps of Engineers' planning capability...  
[and] strengthen planner core competencies by assisting  
Project Delivery Teams*

*Focus on technical evaluations and policy reviews  
associated with plan formulation during the preparation of  
decision documents*

Source: [2008 Memo from Mr. Stockton – PCX Missions, Roles and Responsibilities Statement](#)



# PCX ROLES & RESPONSIBILITIES



## Technical Services

Provide subject matter experts to PDTs  
Support HQUSACE and others on regional/nationwide planning issues

## Peer Review

Assist ATRs  
Function as the Review Management Organization

## Research & Development

Assist in identifying R&D priorities

## Training

Conduct training opportunities  
Develop training for the Planning Associates Program

## Model Certification

Certify or approve for use planning models

## Policy Development Support

Support HQUSACE with policy development or review draft policy  
Provide policy trainings to the field

## Process Improvement

Develop standard processes and procedures to support District execution

## Share Lessons Learned

Share lessons learned, tech transfers, and best practices through coordination with HQUSACE and MSC experts

# FLOOD RISK MANAGEMENT PLANNING CENTER OF EXPERTISE (FRM-PCX)



US Army Corps  
of Engineers®

U.S. ARMY



U.S. ARMY

# WHEN WAS THE LAST TIME YOU TALKED TO SOMEONE AT THE FRM-PCX?



**Never – who are they again?**

**I can't recall – maybe a year or more?**

**Pretty recently – in the last six months for sure.**

**They're at the top of my Teams chat list!**

**Click on the Annotation option  in the top right-hand corner of your screen (to the left of the participant list if open) and then use the Pencil Tool or checkmark to mark your response.**



# IS IT FLOOD RISK MANAGEMENT OR COSTAL STORM RISK MANAGEMENT?



Flood Risk Management Business Line =

Flood Risk Management (FRM) – flooding source is primarily riverine

Coastal Storm Risk Management (CSRSM) – flooding source is coastal waters (includes Great Lakes)

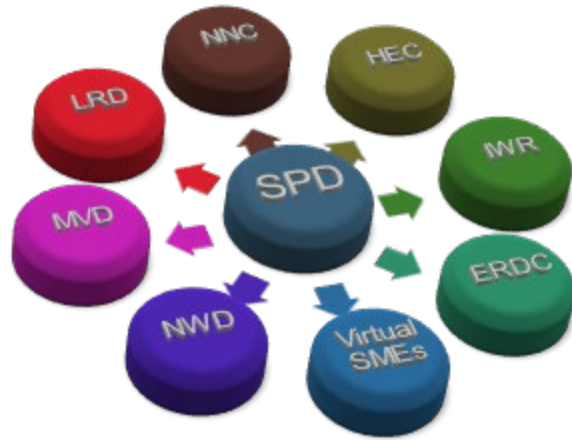


What if the flooding comes from both sources?

- Need to identify the area of overlap (compound flooding)
- Need to understand what the study authority allows or requires
- Need to understand both flood risks in order to address residual risk
- One PCX will be the official Review Management Organization (RMO)
- Need to coordinate with BOTH PCXs



# FRM-PCX ORGANIZATION

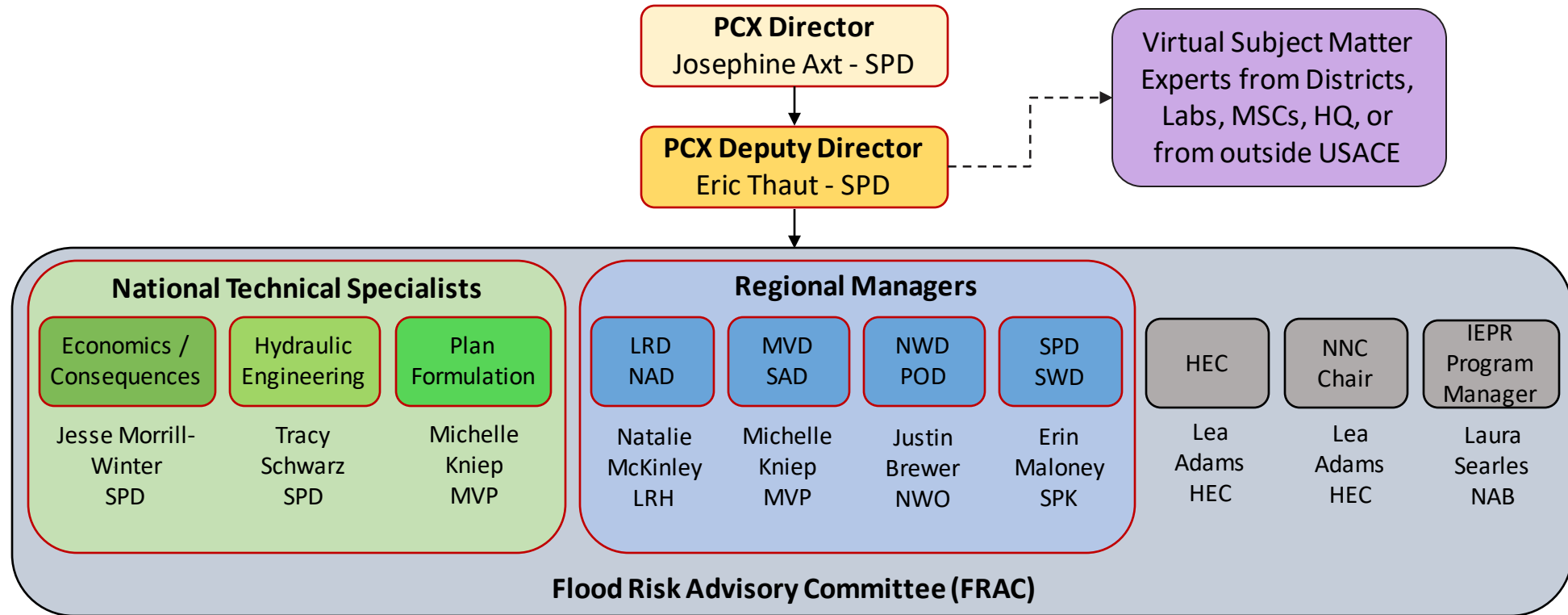


- The FRM-PCX is a National planning center of expertise

The PCX is organizationally part of SPD, which leads the PCX in partnership with:

- HEC, IWR, ERDC
  - NNC (National Nonstructural Committee)
  - LRD, MVD, NWD
- 
- The FRM-PCX is a virtual organization
    - The PCX relies heavily on field expertise to accomplish its mission; e.g., District, Division, & Lab staff with expertise in FRM
    - The PCX has 4 dedicated employees: Director, Deputy Director & 2 FRM National Technical Specialists

# FRM-PCX STRUCTURE AND PERSONNEL



<b>Position Type</b>	Permanent	Permanent	Permanent	Temporary Detail	Part-Time	Part-Time	Open-ended Partnerships	As required
<b>PCX Commitment (~% FTE)</b>	10%	100%	100%	100%	40%	10%	<5%	As required



# REGIONAL MANAGER ROLES



Within their assigned regions they are:

- The primary points of contact for PDTs
- The initial reviewers of Review Plans for endorsement
  - *Targeted Reviews per [15 Jun 22 CECW-P Memo: Technical Guide for DQC and ATR of Planning Studies](#)*
- Managers of Agency Technical Reviews (ATR)
  - Identify the Lead
  - Coordinate with the Lead on all aspects of the review
  - Provide initial reviews of work plans and summary reports
- Attendees at milestones and In-Progress Reviews (IPR)

They also:

- Advise on technical and policy questions, directing questions to FRM-PCX National Technical Specialists as needed
- Provide most support free of charge to the study but some activities require study funds (review plan reviews, participation in milestones/IPRs, ATR/IEPR coordination)



U.S. ARMY

# NATIONAL TECHNICAL SPECIALIST (NTS) ROLES

12

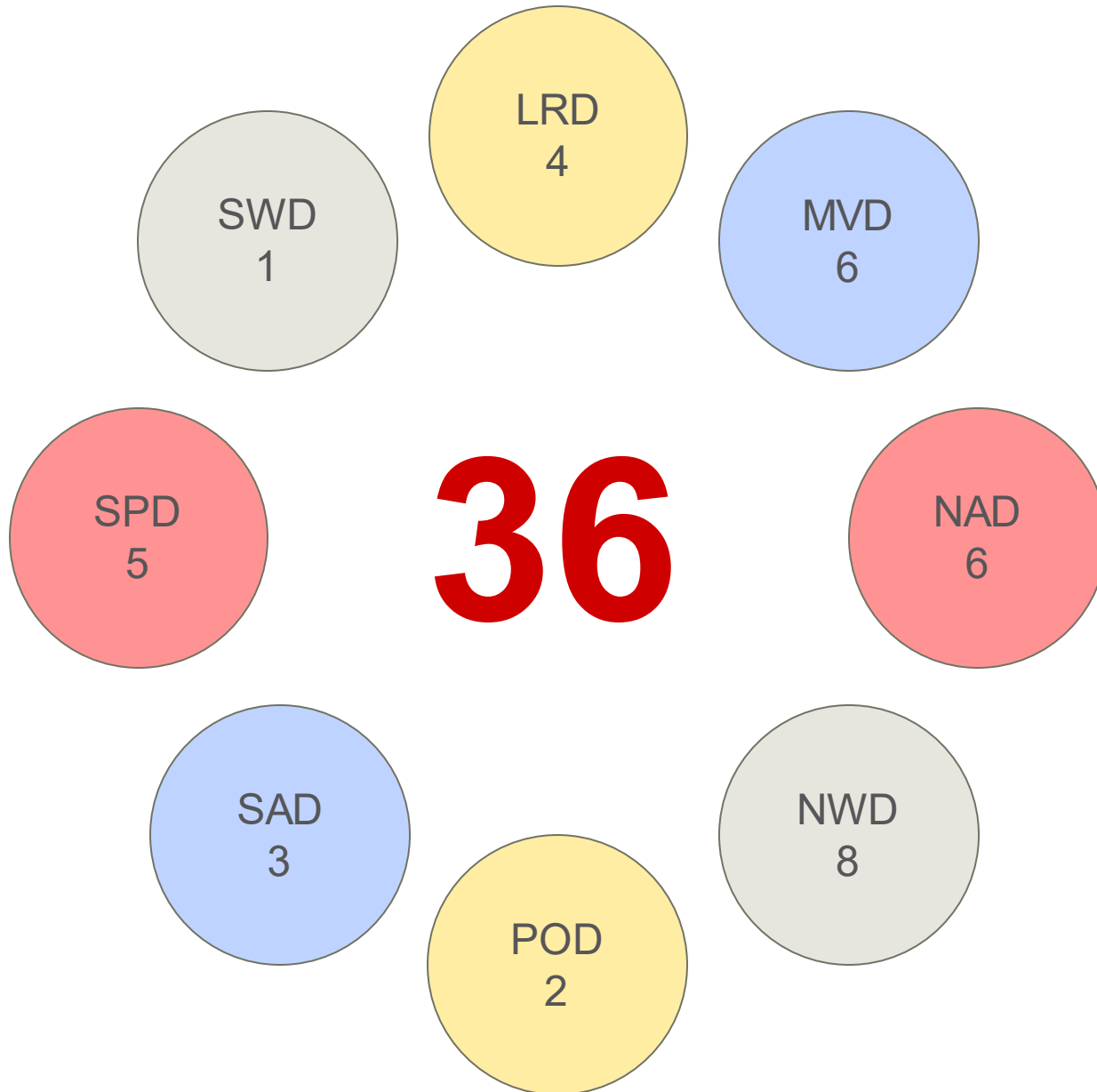


- Provide support and advice on technical and policy issues
- Provide feedback on Vertical Team Alignment Memo (VTAM) documents
  - *Review all documents and provide comments on scope and modeling*
  - *Advise the FRM-PCX Director and Deputy Director to support alignment or non-alignment*
- Attend milestones and In-Progress Reviews
- Develop tools and training
- Study funding is not required unless extensive support is needed



U.S. ARMY

# FRM-PCX PORTFOLIO OF ACTIVE STUDIES (RMO)



### Not RMO:

- Support to Comprehensive or Watershed Studies (2)
- Support to Continuing Authorities Program (1)
- Support to non-FRM Studies (4)



# FRM-PCX PARTICIPATION IN STUDIES



## When RMO (Required)

- Review Plan Endorsement
- **Agency Technical Review (Draft and Final)**
- Independent External Peer Review
- **Planning Model Certification/Approval\***
- Study Scoping (VTAM)\*
- Milestones and IPRs

## Available Support (Not Required)

- Technical
  - Participation in charettes
  - Review of read ahead materials
  - Study scoping (general)
  - Model selection and usage
  - Identification of expert resources
  - FRM planning fundamentals
  - Issue identification and resolution
- Targeted ATR
- Policy support
- Training / Lessons Learned

\*Potentially also required when FRM-PCX isn't RMO but the study involves significant FRM tasks or models.



U.S. ARMY

# AGENCY TECHNICAL REVIEW

15



- Regional Managers
  - Identify Leads
  - Review Work Plans and Summary Reports
  - Help resolve or elevate issues
- Targeted ATR for key interim products
  - Future Without Project modeling
    - Hydrology and Hydraulics
    - Economics
    - Life Risk
    - Climate Change
  - Others?
  - See [15 Jun 22 CECW-P Memo: Technical Guide for DQC Reviews and ATR of Planning Studies](#)





U.S. ARMY

# PLANNING MODEL REVIEW

16



FRM-PCX is responsible for review and certification or approval of FRM planning models.

- Review of national models: typically funded by the FRM-PCX.
- Review of study-specific planning models: typically study funded.

FRM-PCX POC for model reviews: Jesse Morrill-Winter

For more on model review requirements, see EC 1105-2-412, Assuring Quality of Planning Models



## Available Now

### Upon Request:

Welcome Packages (PDT, ATR)  
Econ ATR checklist (good for PDTs too)  
Life Risk Assessment Tips – 1<sup>st</sup> 90 days

### Planning Toolbox Webinars:

National Structure Inventory (Jan 23)  
Life Safety Risk Indicator (Oct 22)  
Aggregation in First 90 Days (Sep 22)  
Nonstructural Planning Strategies (Sep 22)  
FRM-PCX Webinar Series (2019)

## In Development

Plan Formulation ATR checklist  
FRM Review Plan Development Best  
Practice Guide  
FRM Procedures EP 1105-2-68  
FRM Key Word Index  
Updated Sharepoint Site





# POINTS OF CONTACT / MORE INFO

- **FRM-PCX Director:** Josephine Axt, PhD, CESPD
- **FRM-PCX Deputy Director:** Eric Thaut, CESPD
- **FRM-PCX National Technical Specialists (NTS)**
  - **Economic and Risk Analysis:** Jesse Morrill-Winter, CESPD
  - **Civil Engineering - Hydraulics:** Tracy Schwarz, CESPD
  - **Plan Formulation:** Michelle Kniep, CEMVP
- **FRM-PCX Regional Managers**
  - **LRD & NAD:** Natalie McKinley, CELRH
  - **NWD & POD:** Justin Brewer, CENWO
  - **MVD & SAD:** Michelle Kniep, CEMVP
  - **SPD & SWD:** Erin Maloney, CESPK



# USACE NATIONAL PLANNING CENTER OF EXPERTISE FOR COASTAL STORM RISK MANAGEMENT

## Briefing for Planning CoP Webinar

**Larry Cocchieri**

Deputy Director for National Operations, USACE National Planning Center of Expertise for Coastal Storm Risk Management  
North Atlantic Division

22 Feb 2024



U.S. ARMY



US Army Corps  
of Engineers®



U.S. ARMY

# HAVE YOU WORKED WITH US YET?

20



*Use the Annotation tool!*

**Yes**

**Not yet**





U.S. ARMY

# AGENDA

21



- **Mission and Functions**
- **Summary and Structure**
- **National Hurricane Program (NHP)**
- **Coastal Storm Risk Management (CSRM) Planning Models Procedures**
- **Planning Guidance Notebook CSRM Updates**
- **Coastal Hazards Analysis and Risk Toolkit (CHART) – Naomi Fraenkel, PCX-CSRM Economics Leader**





U.S. ARMY

# PCX-CSRMM MISSION

22



- Provide Corps leadership with a diverse set of multi-discipline services to address coastal storm risk management (CSRMM)
- Develop, maintain and apply the best national and regional expertise to the *planning (plan formulation, economics, environmental, cultural resources and engineering disciplines)* of CSRMM studies





U.S. ARMY



# PCX-CSRМ FUNCTIONS

- Strengthen core competencies by providing lessons learned and best practices to the larger Corps Planning Community of Practice.
- Provide consulting services for CSRМ Planning studies, including highly complex and/or controversial CSRМ studies. Seek to improve technical services and offer PCX resources to do so.
- Lead Agency Technical Reviews (ATRs), Independent External Peer Reviews (IEPRs) and Planning model certifications/approvals.
- Provide advice to Corps Headquarters (HQ) offices as needed, Corps labs and stakeholders.
- Assist in establishing R&D priorities.
- Be a proponent for training to sustain technical competencies.
- Policy development support.
- Process improvement.
- Manage the Corps role in the National Hurricane Program.
- Serve on steering committee for Corps Board on Coastal Engineering Research (BCER).





U.S. ARMY

# PCX-CSRSM SUMMARY

24



- **PCX Director reports to HQUSACE Chief, Planning & Policy Mr. Eric Bush (SES).**
- **Close coordination with the Flood Risk Management PCX.**
- **Virtual team roster of over 100 personnel, with Certified Planners available to support and lead Agency Technical Reviews (ATRs).**
- **Coastal Portfolio: More than 50 ongoing studies.**
- **Develops and administers Planning Associates (PA) Coastal Planning Training Class.**
- **Maintains strong relationships with national and international coastal communities, both internally (ERDC & IWR) and externally (ASBPA, Coastal States Organization, study sponsors, agencies, academia, etc.) including research & development and climate preparedness and resilience initiatives.**
- **Coastal Planning advisors to Board on Coastal Engineering Research (BCER), Flood Risk Management Business Line/Coordination Group, National Nonstructural Committee, and coastal R&D community.**
- **Available IDC contract with Taylor Engineering to support CSRSM Planning Studies Corpwide.**







# PCX-CSRМ STRUCTURE AND PERSONNEL

**PCX Director**  
**Joseph Vietri - NAD**

## PCX Leadership

**Deputy,  
National  
Operations**

Larry  
Cocchieri,  
NAD

**Deputy,  
Strategic  
Initiatives**

Roselle  
Stern,  
NAD

**Technical  
Director**

Donald  
Cresitello,  
NAD

**Economics  
Leader**

Naomi  
Fraenkel,  
NAD

**Technical  
Advisor**

Lynn  
Bocamazo,  
NAD

**DRSAA &  
BIL Lead**

Preston  
Oakley,  
NAD

**National  
Hurricane  
Program**

Tom Laczó,  
NAB

**IEPR  
Program  
Manager**

Laura  
Searles,  
NAB

**Planning  
Modeler**

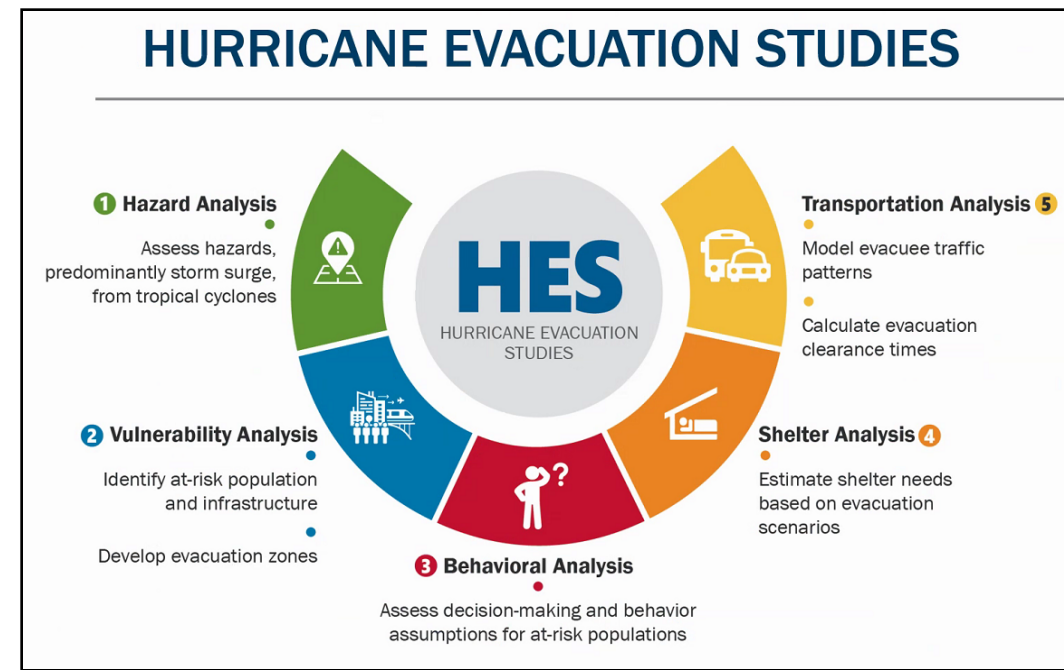
Idris Dobbs,  
NAN

**Virtual Roster:** Coastal expertise across the enterprise including the Coastal Working Group

# NATIONAL HURRICANE PROGRAM (NHP) U.S. ARMY OVERVIEW



- Multi-agency federal partnership between *FEMA, USACE, and NOAA-National Hurricane Center* started in 1985. FEMA leads the program, USACE and NOAA-National Hurricane Center are technical partners.
- The Program provides data, resources and technical assistance for hurricane evacuation planning and response for government emergency managers nationwide. Hurricane evacuation and response planning efforts span from steady-state deliberate planning to operational decision support and crisis planning when hurricanes threaten the United States.
- In addition to planning efforts, the NHP provides preparedness training, operational tools and risk information to emergency managers to support their hurricane evacuation and response decisions.
- State, Local, Tribal, and Territorial Emergency Managers are the Primary Customers.
- The Corps NHP team's primary responsibilities are to manage the execution of Hurricane Evacuation Studies (HES); operations, maintenance, development, and training of HURREVAC, a free web-based hurricane evacuation decision support tool for emergency managers; and interagency coordination efforts.





U.S. ARMY

# CSRM PLANNING MODELS PROCEDURES

27



- **Guidance: EC 1105-2-412 “Assuring Quality of Planning Models”.** Processing is done by the appropriate PCX.
- ***“planning models are defined as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives and to support decision-making.”***
- **For CSRM Studies, Planning models are primarily utilized to support the engineering and economic analyses. Other Planning models may be needed for the environmental analysis. Although not specifically Planning Models, the Engineering Models utilized for CSRM Planning Studies need to be identified in the Review Plan, including the Engineering Coastal Processes Models . The Study Review Plan identifies the models be applied to a study.**
- **Technical Quality, System Quality and Usability are the criteria used in Planning Model Approvals and Certifications.**





U.S. ARMY

# CSRM PLANNING MODELS PROCEDURES (CONT.)

28



- **SOP for ERDC Hydraulic, Hydrologic & Coastal (HH&C) Numerical Model Verification & Validation (V&V) and Certification of Coastal Engineering and Planning Models – Sept 2022.**
- **PCX-CSRM is currently assessing Beach-fx-CSHORE CSRM Planning model for certification forecast for FY24.**
- **Mr. Perez & Mr. Bush 28 Jul 2023 Memo on Model Coordination for CW Planning Studies: QC, QA & PCX.**
- **PCX-CSRM requires that model/model user questionnaires be filled for all models listed in the review plan, except cost engineering software, Unit Day Value for Recreation, IWR Planning Suite and ArcGIS. Planning models such as Beach-fx and G2CRM require separate questionnaires for both the engineer and the economist to establish that the users are qualified and have technical assistance if needed.**





# Update of CSRM Section of Appendix E of the Planning Guidance Notebook



- Planning Guidance Notebook, ER 1105-2-100 being updated in stages.
- Appendix E “Civil Works Missions and Evaluation Procedures”: Navigation, “Flood Damage Reduction”, [“Hurricane and Storm Damage Prevention”](#), Ecosystem Restoration, Hydroelectric Power, Recreation, Water Supply, Multi Purpose Projects and Major Rehabilitation Studies. Each section to be updated will become a separate Engineering Pamphlet (EP). The appropriate PCX is updating the major sections.
- PCX-CSRM is leading the update of what is expected to be: “EP 1105-2-69: Procedures for Conducting Civil Works Coastal Storm Risk Management Planning Studies”.
- **As ER 1165-2-130 “Federal Participation in Shore Protection” is being discontinued**, it is being incorporated into the updated PGN, with most of its guidance planned for the new CSRM EP.
- Draft CSRM EP is currently undergoing HQ review.
- In addition, PCX-CSRM is currently developing supplemental information to support scoping for CSRM studies, which would be added to the *Scoping Guide for Civil Works Planning Studies* dated October 2023.





U.S. ARMY

# Coastal Hazards Analysis and Risk Toolkit (CHART)



## SUMMARY

**Goal:** CHART links detailed information about the non-stationary hazards, system performance, and consequences across Monte Carlo lifecycle simulations to evaluate federal interest in Coastal Storm Risk Management (CSRM) feasibility studies (FS's). Existing tools are cumbersome and dated, and the modernization effort will allow for greater accuracy, enhanced user experience, and improved execution times, addressing SoN 1498.

**Impact to the Nation and USACE:** At successful conclusion, the nation's strategic and economic security is enhanced by / through:

- Providing **software to meet emerging requirements and reduce budget and schedule risk for CSRM feasibility studies.**
- Improved CSRM modeling to enable accurate determination of **federal interest for hundreds of millions of dollars of USACE investment.**

**FY24 Product:** CHART CSRM FS Scoping Tool. Software integration for emergent requirements delivered to district practitioners via interactive CWBI-hosted webpage to support FS scoping decisions.

**FY27 Product:** A scalable, cloud-based CSRM FS model toolkit with improved accuracy and workflows, allowing for simpler integration of future new models and delivered to district staff via web-based CWBI infrastructure with HH&C 'preferred model' and CSRM-PCX 'approved for use' designations.

## SCHEDULE AND FUNDING INFORMATION

Proponent	HH&C CoP																			
Category	FY23				FY24				FY25				FY26				FY27			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Effort</b>	<b>Coastal Hazard Analysis and Risk Toolkit</b>																			
<b>Task 1</b>					Feasibility Study Scoping Tool				Deliver											
<b>Task 2</b>					Replace G2CRM Functionality				Deliver											
<b>Task 3</b>									Replace Beach-fx Functionality				Deliver							
<b>CODS and F&amp;CS</b>	\$1.0M				\$1.7M				\$1.6M				\$1.0M				\$1.0M			
<b>Total Funding (FY24-FY27)= \$5.3M</b>																				

## TECHNICAL APPROACH

### How is it done today?

Existing HH&C models Beach-fx and 2<sup>nd</sup> Generation Coastal Risk Model (G2CRM) apply Monte Carlo methods on desktops to represent simplified physical processes. The models require extensive and cumbersome development of input and output data to adhere to USACE standards and regulations.

### What are the limitations/gaps?

Current models apply overly simplified conditions to estimate economic damages. Updating the physics in legacy models will allow for greater accuracy in the forecasting of future hazards and scenario analyses, including climate variability and social equity analyses. Additionally, current models do not exploit advances in cloud computing well-suited for Monte Carlo methods.

### What's new in your approach?

Cloud execution with improved model linkages and physics will allow teams to meet feasibility study timelines with increased accuracy. Merging multiple existing tools improves the user experience and reduces time spent on learning disparate applications.

**Location:** Application zones will include all US Coastlines. Work will be performed at ERDC-CHL, CRREL, HEC, and other partner facilities.

## PROGRESS

### What was accomplished in the last 12 months?

- Feasibility Study Scoping Tool (SCT) tool for calculation and display of expected annual damages and hazards developed.
- Additional SCT functionality in progress with collaborators.
- Extensive catalog of user stories defining tool functionality.
- Framework and infrastructure plan developed.

### Proposed FY24 Activities

- Finalize SCT to support Districts with Alternatives Milestone Meeting (AMM).
- Develop 1-d and 2-d workflows for upland inundation.
- Explore machine learning for metamodeling of coastal process models.
- Training materials/sessions will be developed/held for each Division in FY25 for scoping tool and FY27 (and beyond) for full release.
- Models will adhere to numerical model modernization standards to include- metadata, V&V datasets, version control, etc.
- **Partners:** CSRM-PCX, CPR COP, HH&C COP, FRM-PCX, Districts, HEC, MMC

# DISCUSSION

