# WELCOME

Welcome to the first public meeting for Phase 2A of the Beach Boulevard Infrastructure Resiliency Project (BBIRP). Please sign in and visit our stations where you can explore our BBIRP displays and engage with members of the team.

## Meeting Purpose

- Provide project overview and recap of Phase 1.
- Introduce BBIRP Phase 2A, its Preliminary Design Process, and public engagement opportunities.
- Provide opportunities for the public to engage with City staff and consultant team.

## Meeting Format

| | |
|---|---|
| 6:00 – 6:30 p.m. | **Open House** |
| 6:30 – 7:00 p.m. | **Presentation** |
| 7:00 – 7:30 p.m. | **Open House** |
| 7:30 p.m. | **Next Steps and Adjourn** |

# PROJECT PURPOSE AND BENEFITS

## Purpose

The purpose of the BBIRP is to replace the current seawall and outdated infrastructure while building climate resilience into one of the most vulnerable segments of the City's shoreline.

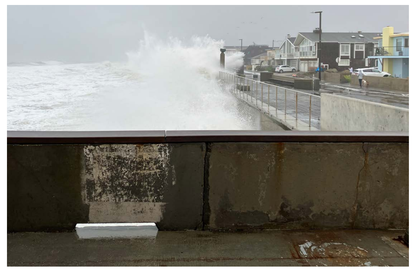

## Benefits

- Protection of West Sharp Park from wave overtopping, coastal erosion, and sea level rise.
- Secured public infrastructure of roads and underlying sewer mains, storm drains, and gas and electrical conduit.
- Improved public access to the beach.
- Protection of recreational use of the Promenade.

# JANUARY 2023 STORM EVENT CONDITIONS AND IMPACTS

## Summary

The storm event on January 5, 2023, was one of many events that reinforced the need for the BBIRP. A combination of high water levels and large, long period, waves produced extreme coastal flooding conditions. This resulted in impacts such as wave runup, overtopping of the seawall, and flooding of surrounding streets. Clean-up efforts were significant and included sand removal, replacing stationary trash cans, and repairing picnic tables and memorial benches. Public access was restricted for three weeks.

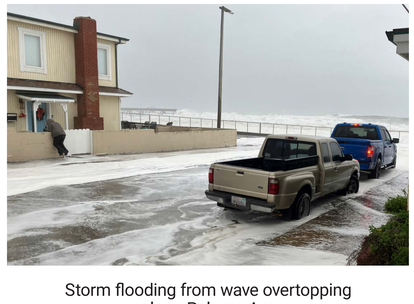


Wave runup and overtopping north of the Pacifica Municipal Fishing Pier

Waves over topping seawall south of the Pacifica Municipal Fishing Pier

Storm flooding from wave overtopping along southern Beach Blvd

Storm flooding from wave overtopping along side-streets off of Beach Blvd



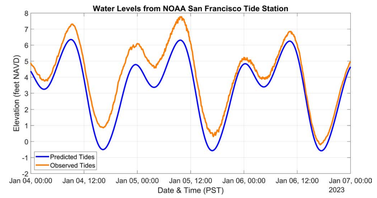
Storm flooding from wave overtopping along Paloma Ave

Clean up efforts along Clarendon Rd in the aftermath of the storm

## Storm Event Conditions

These graphs show wave height, tide levels, and wave energy during the storm. The combination of these elements caused the significant impacts the City faced during and after the storm.

### Water Level



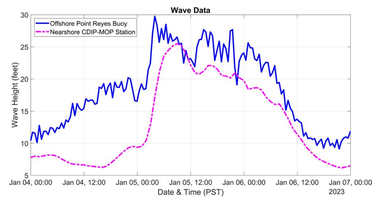

#### What this shows:

Observed (orange) and predicted (blue) tides at Golden Gate, San Francisco, indicate a storm surge of almost two feet.

#### Why this matters:

Peak wave conditions coincided with peak high tide, increasing overtopping magnitude.

### Wave Height



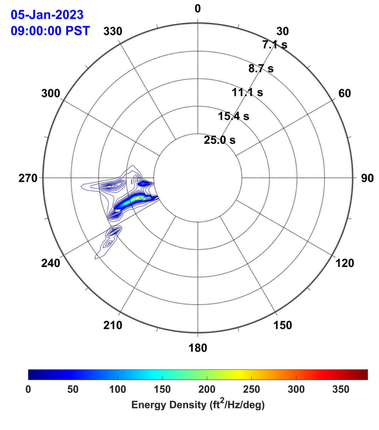

#### What this shows:

Wave height at offshore (blue) and nearshore (magenta) locations.

#### Why this matters:

According to the Coastal Data Information Program (CDIP) operated by Scripps Institute of Oceanography, the January 5, 2023, event was ranked among the top highest wave events observed since 2000. The top 20 wave events since 2010 had wave heights that ranged from 19 feet to almost 26 feet. The January 5, 2023, event was unique in that it wave height increased to over 25 feet at the onset of the storm with a sustained wave height greater than 20 feet, leading to greater impacts on the coast.

### Directional Wave Spectra




#### What this shows:

As waves propagate across the ocean and reach beaches, they transport energy. Wave energy for the January 2023 storm is illustrated here with wave direction and wave period.

#### Why this matters:

The storm generated relatively long period waves which means they travel faster and convey more energy than shorter period waves. This resulted in higher wave runup and overtopping than normal storm conditions.

# BBIRP PHASE 1 ALTERNATIVES IDENTIFIED AND SCORING CRITERIA

During Phase 1, the project team identified and evaluated multiple alternatives. These images represent the alternatives considered.

No project

Beach Nourishment

Seawall

Rock Revetment

Beach Nourishment with Sand Retention

Hybrid

## Multi-Criteria Analysis (MCA)

The project team conducted a multi-criteria analysis (MCA) to evaluate these alternatives and identify a preferred concept. This included:

- Establishing 13 criteria organized into three categories: technical performance, financial, and environmental.
- Weighting of the categories and criteria to align with project objectives and public feedback.

## Criteria and Relative Weighting

The table below demonstrates the 13 criteria utilized in the MCA and their relative weighting.

| Technical Performance (40%) | |
|---|---|
| Flood Protection | 20% |
| Erosion Protection | 20% |
| Reliability | 20% |
| Operability | 10% |
| Constructability | 10% |
| Sea Level Rise Adaptability | 20% |

| Financial (30%) | |
|---|---|
| Lifecycle costs | 70% |
| - Capital | |
| - Operations & Maintenance | |
| - Decommissioning | |
| - Mitigation | |
| Grant Funding Potential | 30% |

| Environmental (30%) | |
|---|---|
| Marine Bio Resources | 20% |
| Terrestrial Bio Resources | 20% |
| Visual Resources | 20% |
| General Recreation | 20% |
| Coastal Access | 20% |

# MULTI-CRITERIA ANALYSIS SCORING AND RESULTS

## Preferred Concept Design


**Hybrid Coastal Protection System:**

1. Deep Foundation Seawall
2. Rock Scour Apron
3. Beach Nourishment

## Preferred Concept Design Features:

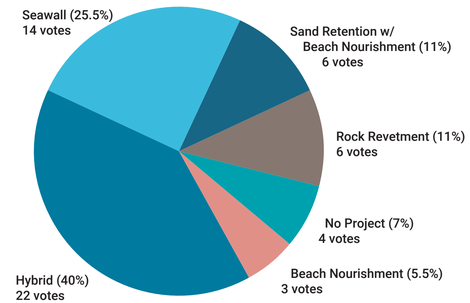
- Combines various strategies in order to gain structural, environmental, and access improvements while minimizing impacts associated from a single design approach.
- Developed to meet the design criteria without the sand in place. When sand is in place, it will provide a level of protection that is higher than the design criteria minimum.
- Rock scour protection allows structural components of the wall to be generally smaller than the standalone seawall alternative.

## MCA Results

The Hybrid Alternative scored the highest as a result of:

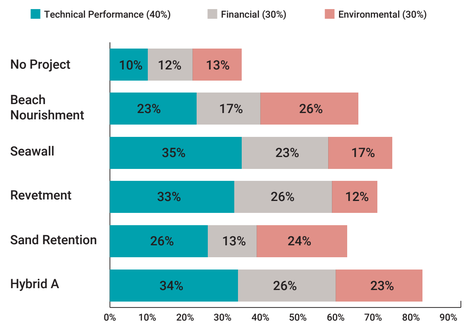
- Meeting BBIRP objectives.
- Alignment with technical performance, financial, and environmental considerations.
- Consistency with Pacifica's Draft Local Coastal Land Use Plan policies.

### 4/29/21 Public Meeting Poll (55 Votes)




This graph shows the results of a poll conducted during the March 29, 2021 Phase 1 meeting in which attendees were asked to indicate their preference for the alternatives considered in the MCA.

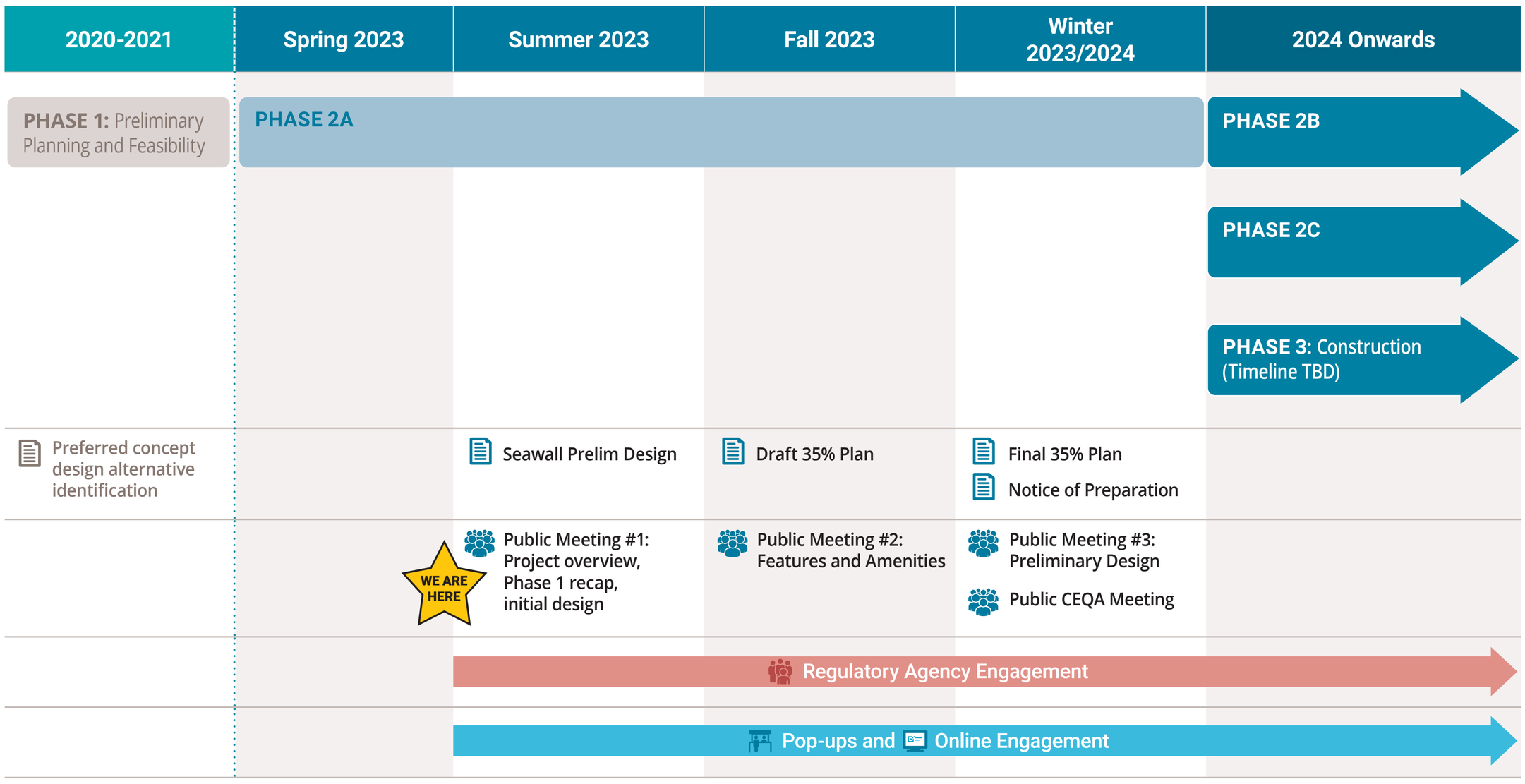
### BBIRP Multi-Criteria Analysis Scoring




This graph demonstrates how each alternative scored against the criteria considered in the MCA.

# PHASE 2A TIMELINE

The BBIRP is a multi-year process that includes input from the community and stakeholders. Phase 1 of the Project concluded in June 2021 with City Council's adoption of a preferred concept to replace the existing seawall. The Project is currently in Phase 2A, Preliminary Design, which aims to advance the shoreline protection concept as well as land-side features include landscaping, hardscaping, beach access and community amenities.




Proposed activities subject to change

## PHASE 2A: Preliminary Design

- Advance the shoreline protection concept through preliminary design development.
- Share technical design developments related to features of the shoreline protection concept, such as geometry, materials, rock revetment and natural shoreline infrastructure.
- Collect feedback on public features and amenities such as seating, access, landscaping, lighting, and signage.
- Prepare and publish a Notice of Preparation of an Environmental Impact Report to initiate scoping for environmental review.

## PHASE 2B: Environmental Document (12-18 months)

- Prepare, publish, and respond to public comments on the draft Environmental Impact Report.
- Continue community and agency engagement.

## PHASE 2C: Permitting and Final Design (12-18 months)

- Prepare and submit environmental regulatory agency permit applications.
- Update design package to address changes resulting from regulatory agency permit application review.

# NORTH WALL - PROVIDE YOUR FEEDBACK!


**North Wall – Design Considerations:**

1. Promenade features & amenities
2. Beach access
3. 72" Stormwater outfall
4. Sewer line

## Share Your Feedback!

- We are seeking your input on public features and amenities such as seating, access, landscaping, lighting, signage.
- Please use a post-it to share your concerns and goals for public features and amenities.
- Place the post-it in the location specific to your comment.

# SOUTH WALL - PROVIDE YOUR FEEDBACK!

**South Wall – Design Considerations:**

1. Potential Alternative Seawall Alignment ---------
2. Promenade features & amenities
3. Beach/trail access
4. Clarendon Road drainage
5. Stormwater outfall

## Share Your Feedback!

- We are seeking your input on public features and amenities such as seating, access, landscaping, lighting, signage.
- Please use a post-it to share your concerns and goals for public features and amenities.
- Place the post-it in the location specific to your comment.