

LAKE ONTARIO

coastal resilience pilot project

Coastal Resilience Management Plan

Policy, Adaptation & Pilot Studies

PARA Framework

Protect, Avoid, Retreat, Accommodate

PARA vs. PARRAP Framework

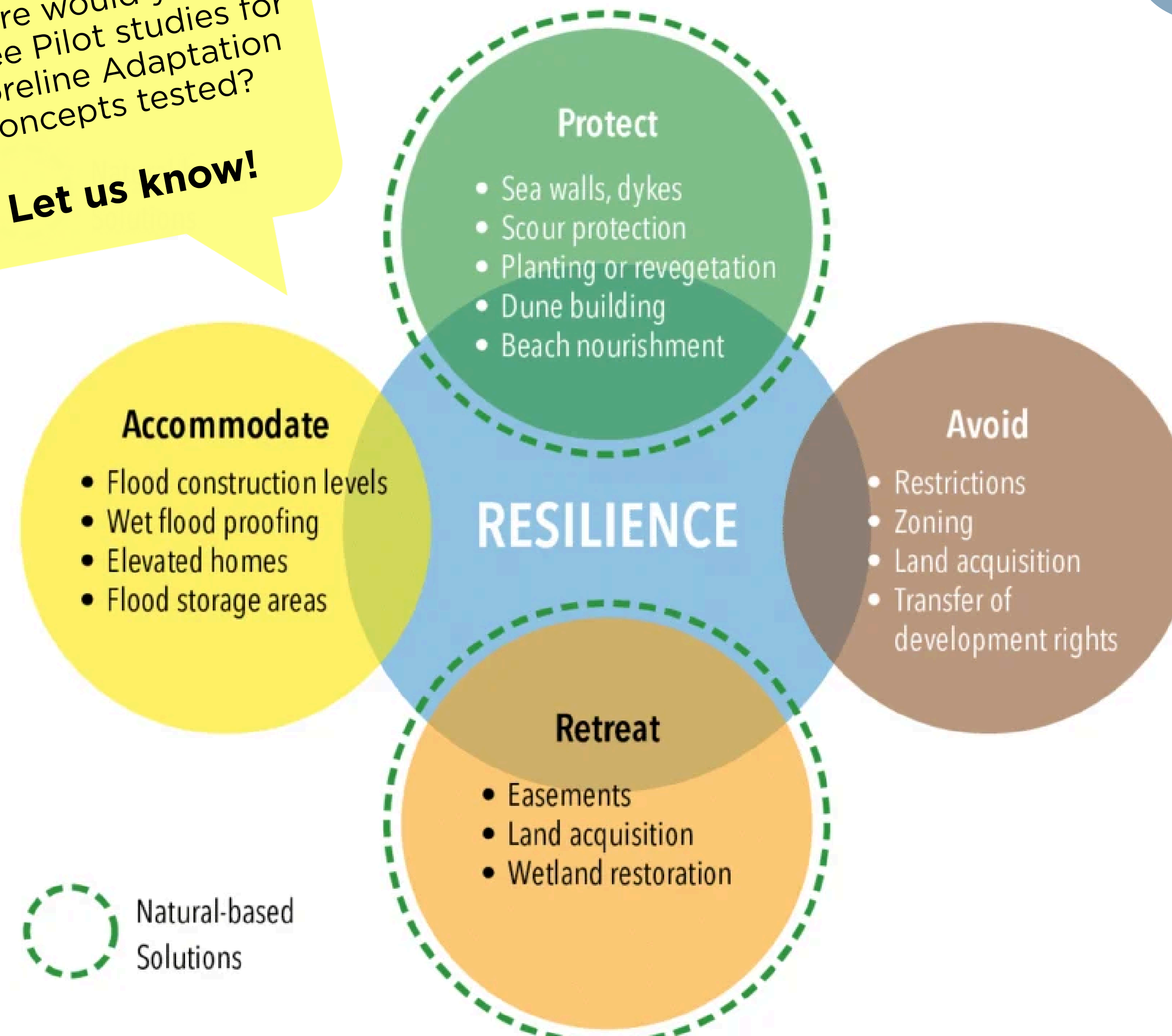
Builds on the PARA approach with an added category: "Preserve." The framework organizes options into a hierarchical sequence of preferred actions:

1. Preserve natural shorelines
2. Avoid development in hazardous areas
3. Retreat and Re-align from hazardous lands
4. Accommodate coastal hazards
5. Protect infrastructure using nature-based or engineered solutions

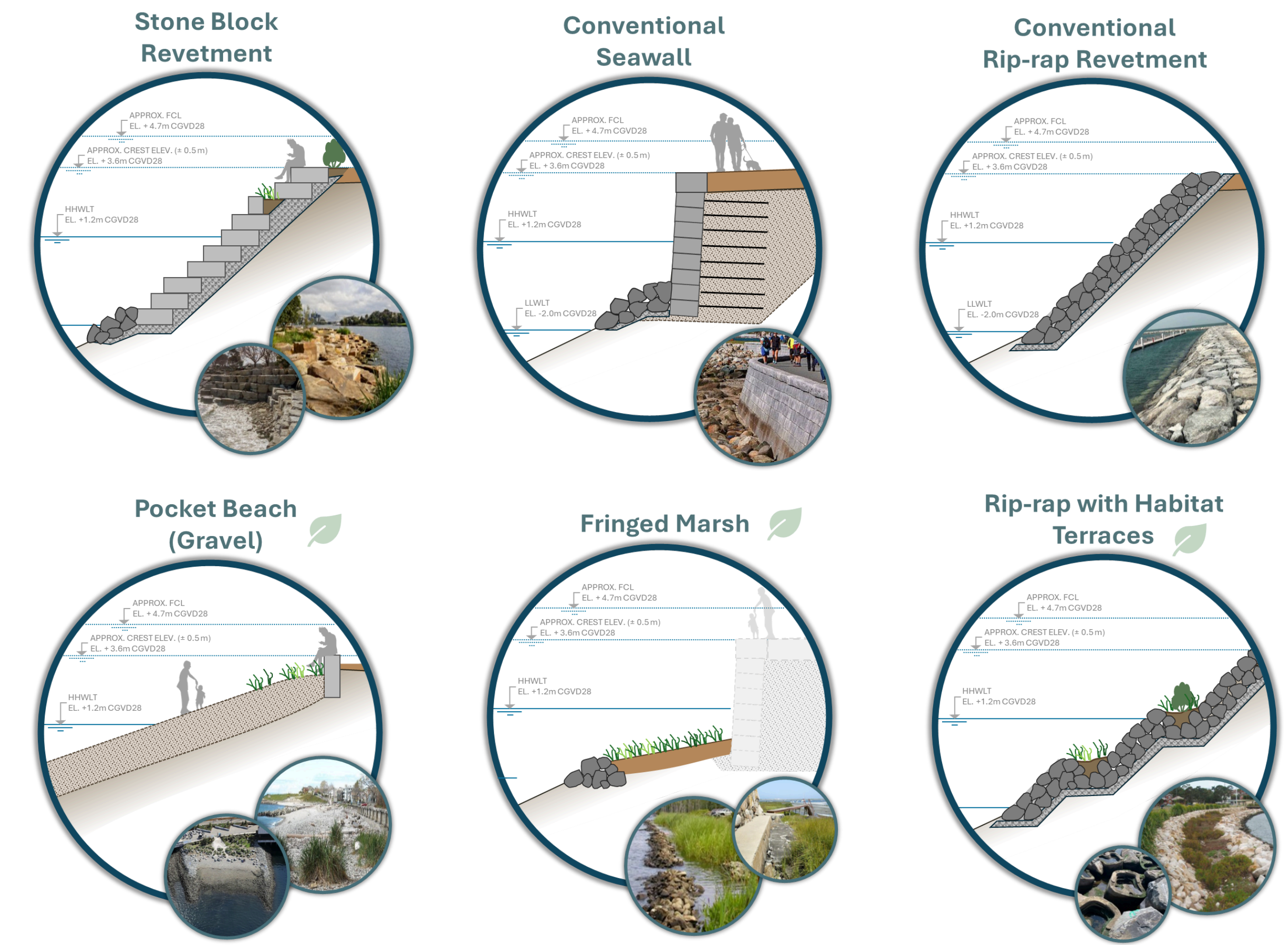
The approach emphasizes progressive decision-making, prioritizing less intrusive, more sustainable options first.

Where would you like to see Pilot studies for Shoreline Adaptation concepts tested?

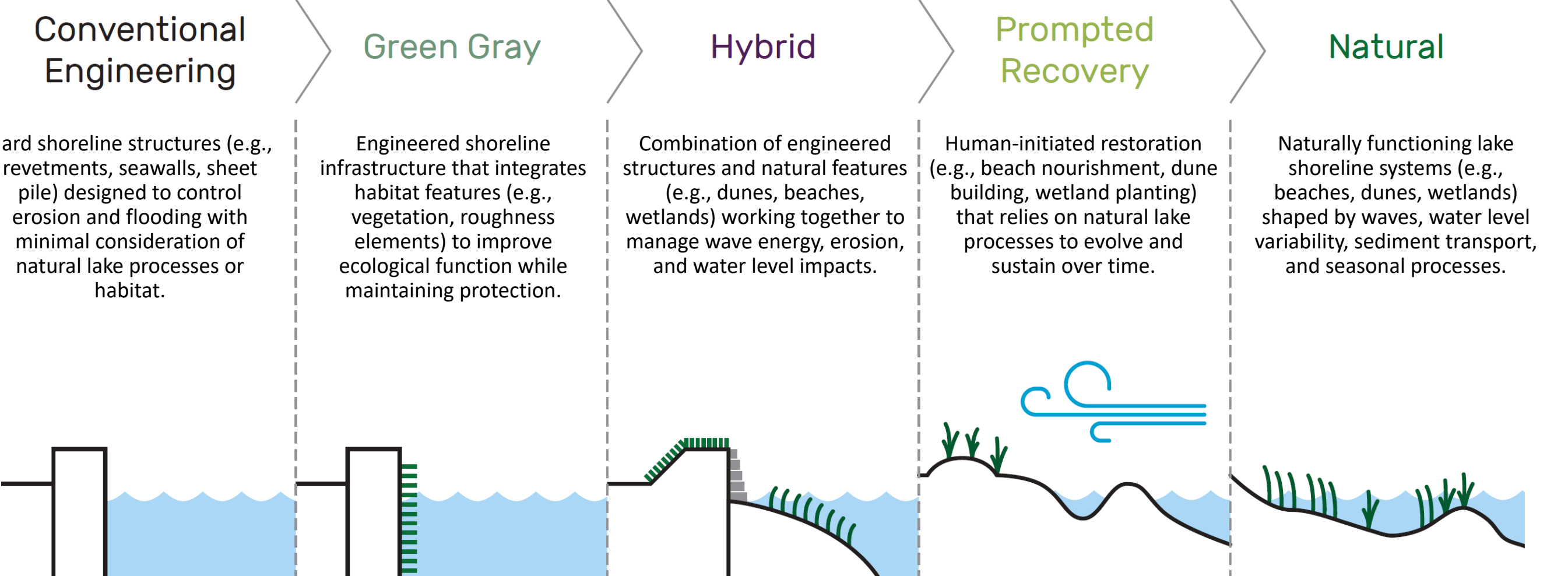
Let us know!



What resilience and adaptation measures are available for a shoreline where most of it is hardened or armored?



Gray → **Nature-Based and Green-Gray Solutions** → **Green**



Reference: Suedel, B. C., L. A. Naylor, T. Meckley, C. Cairns, J. Bernier, E. Morgereth, W. Mears, C. D. Piercy, and R. ter Hofstede. 2021. "Chapter 14: Enhancing Structural Measures for Environmental, Social, and Engineering Benefits." In International Guidelines on Natural and Nature-Based Features for Flood Risk Management. Edited by T. S. Bridges, J. K. King, J. D. Simm, M. W. Beck, G. Collins, G. Lodder, and R. K. Mohan. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

Lake Ontario Shoreline Resilience Measures

