The CoastWise Approach for Tidal Road Crossings

The Challenge

Safe, dependable roads are crucial for supporting Maine's economy, access to critical services, and a way of life valued by citizens and visitors alike. Maintaining roads is a challenge for most communities in Maine, especially in coastal areas experiencing rapid change due to accelerated sea level rise. Where roads cross tidal wetlands at over 800 locations in Maine, the challenges are considerably magnified.

The services provided by tidal wetlands can include coastal storm and flood damage protection, pollutant break-down, fish and wildlife habitat, and opportunities for commercial harvesting and recreation. Some, like salt marshes, store atmospheric carbon that would otherwise contribute to sea level rise and other climate shifts. To deliver these services, tidal wetlands must remain healthy and resilient to sea level rise. That requires unimpaired tidal flow, but about 90% of Maine's tidal road crossings are tidal restrictions. These crossings put Maine's tidal wetlands at risk, but are also more apt to experience flooding, higher maintenance costs, and interrupted access to emergency services.

The CoastWise Response

Traditional practices for designing tidal road crossings haven't adequately addressed the unique complexities, uncertainties, risks, or benefits associated with tidal environments. In response, Maine Coastal Program and over 30 organizations have developing the CoastWise Approach for tidal crossing design. CoastWise provides a voluntary set of best practices, decision-making tools, and path for designing safe, cost-effective, ecologically supportive, and climate-resilient tidal crossings.

CoastWise Principles

Tidal wetlands are dynamic systems influenced by a wider range of interacting social and environmental factors than most non-tidal streams. They require a design approach that adequately addresses complexity and risk, now and in the future. Principles of the CoastWise Approach include:

- **Know your tidal crossings:** Learn which crossings are tidal now or likely to be in the coming decades; use the Maine Coastal Program's **Tidal Restriction Atlas** or other available tools.
- **Start early:** Tidal crossing design is complex and requires ample time to seek funding, collect and analyze diverse data types, establish clear objectives, and develop design alternatives.
- **Ask for advice**: Contact a CoastWise Technical Partner to help with project planning, connecting with the right resources, and providing other support.

- **Engage qualified engineering**: Expertise in data collection, analyses, sea level rise, tidal hydrodynamic modeling, and crossing design specific to tidal environments is the best fit.
- **Encourage local participation**: Crossing design requires value judgements having lasting impact. A transparent, participatory design process facilitates outcomes that serve communities best.
- **Identify risk factors**: Consider wetland condition, vulnerable species, and low-lying infrastructure and resource-uses within the crossing's influence, now and in the future.
- **Plan for coastal change**: Selection of an appropriate sea level rise scenario is essential to effectively plan for flooding, emergency access needs, and long-term cost effectiveness.
- **Establish objectives**: Clear, measurable objectives streamline the design process and save costs.
- **Size crossings for resilience**: To survive, marshes and other tidal wetlands upstream of crossings need unrestricted tidal exchange during the highest tides of the year for the life of the crossing.

Learn More

For information about the CoastWise Program, please contact Slade Moore (below). For advice on individual crossing projects, contact any of the listed providers according to their service areas.

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Organizations Contributing to Development of the CoastWise Approach