

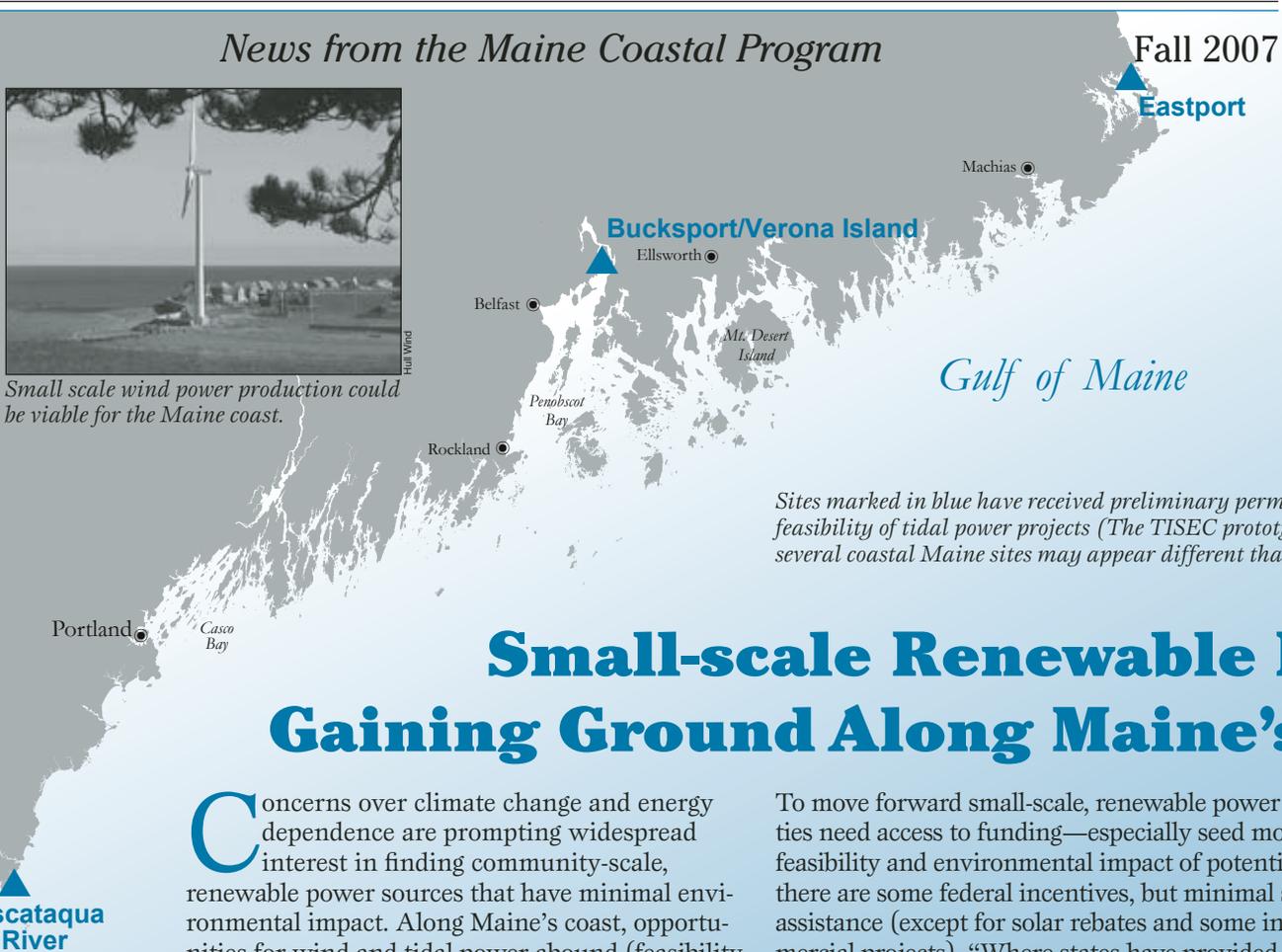
Maine Coastline

News from the Maine Coastal Program

Fall 2007



Small scale wind power production could be viable for the Maine coast.



Gulf of Maine

Sites marked in blue have received preliminary permits to assess the feasibility of tidal power projects (The TISEC prototypes being proposed at several coastal Maine sites may appear different than the model shown).

Small-scale Renewable Energy Gaining Ground Along Maine's Coast

Concerns over climate change and energy dependence are prompting widespread interest in finding community-scale, renewable power sources that have minimal environmental impact. Along Maine's coast, opportunities for wind and tidal power abound (feasibility studies have shown less promise for wave energy).

"There's a huge opportunity to have renewables be a larger part of the energy mix," observes Sue Jones, an energy specialist with Community Energy Partners in Freeport. "Local leaders should embrace this as a growth opportunity, a chance for economic development and a new form of community investment."

Historically, Maine has relied strongly on renewables: as late as the mid-1990s, up to half its energy came from biomass and hydropower. Now the state draws heavily on natural gas. "Our nation and our state have become dangerously dependent on unreliable, insecure and expensive foreign oil and natural gas," notes John Kerry, Director of the Governor's Office of Energy Independence. "These fossil fuels, which constitute more than 80 percent of Maine's heating fuels and nearly 75 percent of its electrical generation, undermine our economic vitality, pollute our environment and diminish our quality of life."

This year the State committed to increase its reliance on renewable fuels, passing LD 1920 which requires that 10 percent of the power that serves Maine customers comes from new renewable capacity resources by 2017. "How these targets will be met remains to be seen," notes Mitch Tannenbaum of the Maine Public Utilities Commission, but State policy encourages smaller projects alongside the larger, commercial ones that contribute most power.

To move forward small-scale, renewable power projects, communities need access to funding—especially seed money to study the feasibility and environmental impact of potential projects. Currently there are some federal incentives, but minimal sources of state assistance (except for solar rebates and some incentives for commercial projects). "Where states have provided incentives for energy efficiency and renewable generation," Jones notes, "the market has responded and people have embraced new sources of power."

Other obstacles—both technological and sociological—could still hamper the growth of renewable energy. In the case of wind power, for example, the strongest wind speeds recorded off Maine's coast (see http://www.eere.energy.gov/windandhydro/windpoweringamerica/maps_template.asp?stateab=ME&pga=ne_forum) are generally offshore. Constructing wind power facilities in deeper ocean waters is not economical at present due to high project costs and technological limitations. Proposals for wind farms in the shallower water off Maine's coast would likely gener-

ate significant public concern about potential effects on commercial fishing, recreational boating, and tourism (as the proposed Cape Wind project off Cape Cod encountered). "The greatest promise for coastal wind power in the short-term," notes Maine Coastal Program Director Kathleen Leyden, "may lie in small, community projects tailored to meet residents' needs for affordable power" (see page 4).

"There is nothing more critical to enhance Maine's prosperity than prudent integration of reliable and renewable energy projects," reflects John Kerry. "With coastal Maine at the end of energy pipelines and transmission lines, it's especially important to develop clean, decentralized generation projects that will enhance the economic and environmental health of coastal communities."

"There is nothing more critical to enhance Maine's prosperity than prudent integration of reliable and renewable energy products"

~ John Kerry, Director
Governor's Office of Energy Independence



Director's Column

Energy security and the ever-rising costs—both economic and ecological—of home heating oil, natural gas, gasoline and other fossil fuels are clearly among the top concerns on the minds of Americans. Questions about our country's energy future are interwoven with the issue of global climate change (*i.e.*, how we can lower energy demands and generate the power we need in ways that reduce greenhouse gas emissions?) Renewable and non-polluting power from wind, tides and sun may be part of the answer.

Maine is just beginning to explore the potential for wind and tidal projects to meet community energy needs and generate commercial power. This issue of *Maine Coastline* outlines a variety of fledgling projects, and captures some of the promise and many unknowns that characterize the renewable energy field. Over and over, in preparing these stories, we heard that “the jury is still out.” How these renewable ventures will fare is anyone's guess: there are many variables that will come into play as these and other projects take shape.

This issue of *Coastline* is not intended as an endorsement for any particular technology or project: we're interested solely in focusing attention on Maine's energy future and what options may emerge to keep power generation local and low-impact. Like any other facilities sited and operated along the coast, renewable projects can affect marine resources and conflict with existing uses such as fishing and recreation. Every proposed project will need to be evaluated carefully, ideally within the framework of a long-term energy policy.

One current policy initiative, the Governor's Wind Power Task Force, is developing recommendations to help Maine become a leader in wind power. Task Force members (myself included) are considering whether to set a goal for how much of Maine's energy can be derived from wind; assessing current regulations and guidelines; and determining whether incentives are needed. While commercial-scale wind farm proposals inland will continue to be in the spotlight, the Task Force will also discuss opportunities for community scale wind power on islands (see page 5).

This issue of *Coastline* may spark some new reflections as you spend time this autumn enjoying Maine's coast. The waters that we rely on for food, recreation, commerce and spiritual sustenance may someday become part of our region's sustainable energy future.

Kathleen Leyden
Director, Maine Coastal Program

Maine Coastline

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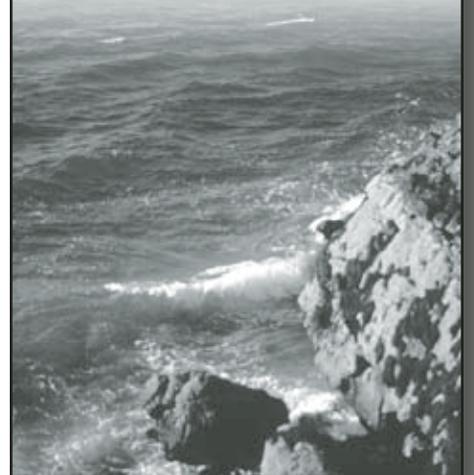
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The Next Wave? Interest in Tidal Power Grows

Maine has greater potential for tidal power than any other state in the continental U.S. due to its great tidal range (from 9 to 30 feet) and countless narrow channels. Tidal power is more predictable than either wind or solar, and does not generate the noise or aesthetic challenges that have made wind power projects so controversial. A consortium of private companies, in partnership with Maine Maritime Academy, is proposing to build a testing and evaluation center for tidal energy devices in the Bagaduce River off Castine. Only one other facility in the world (in the Orkney Islands off Scotland) can field-test new tidal technologies so Maine could become a global leader in testing these devices. “Once perfected, tidal power technology could be predictable, secure and consistent with Maine’s cultural values and environmental goals, while contributing to its economic well-being,” notes John Kerry, Director of Energy Independence at the Governor’s Office.

Tidal power is not generating any kilowatts in Maine yet, but ten applications for preliminary permits are on file with the Federal Energy Regulatory Commission (FERC). FERC has issued preliminary permits for two projects on the Piscataqua River in southernmost Maine, one at Penobscot Narrows near Bucksport, and two near Eastport. “These preliminary permits are only to study the potential feasibility of a project—including completion of an economic analysis, initial engineering plan and environmental impact study,” cautions Betsy Elder, Senior Planner and Policy Analyst with the Governor’s Office of Energy Independence. “There’s a lot we still need to know about how these facilities might coexist with fisheries, navigational needs, and other energy uses.”

One of the proposed projects would have a dam or barrage, but most involve a newer technology known as tidal in-stream energy conversion (TISEC)—in which fully submerged turbines connect to generators. TISEC is a relative newcomer to the renewable energy field, trailing wind technology by 10-20 years. A TISEC demonstration project in the East River by New York



This artist's conception shows one possible design for a tidal power generator (The TISEC prototypes being proposed at several coastal Maine sites may appear different than the model shown).

“Once perfected, tidal power technology could be predictable, secure and consistent with Maine’s cultural values and environmental goals, while contributing to its economic well-being”

**~John Kerry, Director
Governor’s Office of Energy Independence**

300 gigawatt-hours per year (enough to power roughly 250,000 homes). The City of Eastport and ORPC Maine have forged a public/private partnership designed to ensure that the proposed projects support the local community’s interests.

Sites in Washington County, due to the large tidal range there, have generated most interest from prospective tidal power developers. With funding from the U.S. Environmental Protection Agency and the Bureau of Indian Affairs, the Passamaquoddy Tribe plans to study the potential for another tidal project in the area. And a local engineering firm, Tidewater Associates, has proposed tidal power dams/barrages in Half Moon Cove off Perry and off the former Naval base in Cutler.

City only began operational testing last fall so little is known about the durability of equipment, real-world electricity output or potential environmental impacts. “Data gathered over the next few years at preliminary study sites in Maine should give us a better sense for whether commercial plants might be constructed here,” Elder notes.

Two primary hurdles face tidal power developers,” explains Roger Bedard, Ocean Energy Leader with the Electric Power Research Institute. “The regulatory process, designed half a century ago for hydropower projects, can prove cumbersome and time-consuming—even for small pilot projects.” Bedard notes that tidal start-ups also suffer from the “lack of a level playing field,” with fossil fuel prices that don’t reflect the full costs of extraction and pollution, and federal tax incentives that are only for solar and wind power projects.

Helping to overcome these handicaps, the Maine Technology Institute (MTI) recently awarded ORPC Maine, LLC (a subsidiary of Ocean Renewable Power Company) a \$300,000 development grant to support detailed engineering and testing of a 32-kilowatt demonstration project in Western Passage (off Eastport)—which will be the first TISEC installation in Maine. ORPC Maine plans to install that project this November and later test a commercial-scale (250- to 500-kilowatt) prototype. Ultimately, ORPC Maine hopes to install a 120-module project that would generate more than

Green Energy along Maine's Coast



This electric car was on display during the town of Belfast's "electric car day" in July. The demonstration cars (and other models currently available in Maine) plug into a standard outlet. Once charged for 4-6 hours, they have a range of 70 miles (or 225 minutes).

Coastal Municipalities Take Action to Reduce Greenhouse Gas Emissions

Seven cities and towns in Maine's coastal zone (Belfast, Biddeford, Kennebunk, Kennebunkport, Portland, Saco and Yarmouth) have joined a nationwide campaign to reduce the pollution that contributes to global warming. They are among 600 communities to sign on to the U.S. Mayor's Climate Protection Plan (<http://usmayors.org/climateprotection/agreement.htm>), pledging to meet or beat suggested reduction targets set in the Kyoto Protocol—reducing local carbon dioxide emissions by 2012 to at least 7 percent below 1990 emission levels.

Many coastal communities (including Kittery, Eliot, York, South Berwick, Bath and Brunswick) are getting help developing climate action plans through a grassroots effort known as Maine Partners for Cool Communities (which includes the Maine Chapters of the Sierra Club, Physicians for Social Responsibility and American Lung Association; the Maine Council of Churches; and the Maine Energy Investment Corporation). Collectively, these groups are providing training and support to citizens or town committees interested in adopting climate protection measures.

The City of Belfast has even established an "Energy and Climate Committee" that seeks to reduce both greenhouse and air pollution emissions. Already, Belfast has installed compact fluorescent bulbs, conducted energy audits on city buildings, and adopted a no-idling policy for its vehicles. The committee plans to conduct a greenhouse gas emissions inventory, set a reduction target for greenhouse gas emissions, and create an action plan to reach that goal.

Belfast hosted an "electric car day" in July, demonstrating some current models available in Maine (see www.maineev.com) that reach speeds up to 35 mph—making them good candidates for municipal use or coastal island residents. The cars plug in to a standard outlet and once charged for 4-6 hours, they have a range of 70 miles (or 225 minutes). They have low pollution ratings and cost about a penny a mile to operate. A four-door model with airbags (that could go highway speeds) is expected on the market within a year.



An Ocean Energy Research Institute is planned in the former MBNA facility along Rockland's inner harbor.

Rockland Facility to House Ocean Energy Research Institute

Last May, a group of private investors purchased the former MBNA building along the waterfront in Rockland. One of the investors, Matthew Simmons—founder and chair of the world's largest energy investment banking company, plans to use part of the facility for an Ocean Energy Research Institute. Simmons, author of *Twilight in the Desert: The Coming Saudi Oil Shock and the World Economy* (2006), has spoken and written extensively on the rapid depletion of oil reserves and the need to accelerate alternative energy research and development. Simmons hopes that the planned institute will boost research and development of ocean-based energy sources.

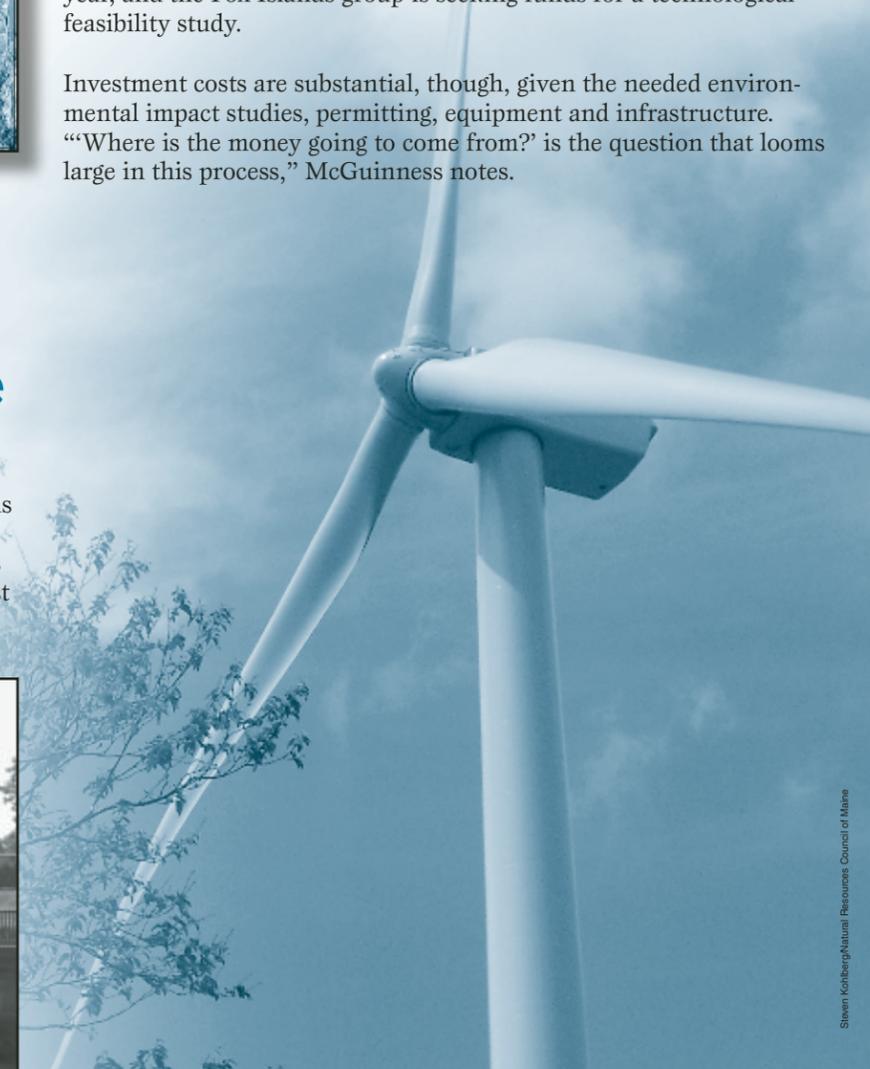


Island Communities Assess Wind Power Potential

In 2006, Vinalhaven residents found their electric bills rising by \$100-300 after the local electric coop took on substantial debt replacing a cable to the mainland. Now the Fox Islands Electric Co-op (serving North Haven and Vinalhaven) and the Swan's Island Electric Cooperative are working collaboratively with the Island Institute and consultants to explore whether wind power could help meet the islands' electrical needs. "There's a good deal of enthusiasm for wind power in both island communities," observes Bill McGuinness of the Institute. "These small-scale wind projects appear to have broad community support."

Preliminary calculations on Swans Island indicate that just two turbines would save the cooperative \$300,000 a year while providing for all the island's needs in winter and roughly half of them in summer. With wind turbines, the islands might actually export electricity to the mainland during winter (when wind power peaks). The Swans Island Cooperative is gathering site-specific wind data during the coming year, and the Fox Islands group is seeking funds for a technological feasibility study.

Investment costs are substantial, though, given the needed environmental impact studies, permitting, equipment and infrastructure. "Where is the money going to come from?" is the question that looms large in this process," McGuinness notes.



Paddling from Miami to Maine— Publicizing Marine Concerns

This summer a solo paddler ventured from Miami, Florida to Camden, Maine to raise awareness of ocean issues. Margo Pellegrino, a 40-year-old mother with two young children, took the 11-week journey to inspire others to get engaged in ocean stewardship. Having read a lot about marine degradation and spent time paddling near her New Jersey home, she wanted to see more people take action. “I’m doing this to open the minds and hearts of others,” Pellegrino notes, “and encourage them to join me in bringing about positive change.”

Pellegrino paddled more than 1,900 miles in a 20-foot outrigger canoe, staying along the way primarily with members of the Surfrider Foundation’s East Coast chapters. These chapters and the National Environmental Trust were among the primary sponsors of her low-budget trip. When asked, at the completion of her trip, how she managed to pull it off, Pellegrino says matter-of-factly “this was something I could do.” With the support of many volunteers and help from sponsors, she paddled up to 40 miles a day and made dozens of stops en route to meet with local residents and reporters.

Pellegrino was motivated not by a single issue but by the “whole general degradation” of our seas—from marine debris, nonpoint source pollution and overfishing to habitat destruction, coastal development and climate change. She is particularly concerned about pesticides, fertilizers and other compounds—such as pharmaceuticals—whose effects on marine ecosystems are hard to gauge. “A lot of compounds ending up in the ocean,” she notes, “are unregulated or contain ingredients subject to proprietary rights.”

On her journey, Pellegrino experienced first-hand the water quality problems that plague most of the Eastern Seaboard. “There were places where it was downright disgusting,” she says, most notably in North Carolina’s Pamlico Sound and near Norfolk, Virginia. Even in Maine, Pellegrino found her boat getting grimy and was conscious of fecal pollution problems in settings where storm events prompt the aging sewer system to spill overflow into coastal waters. Pellegrino was heartened, though, by the evident commitment of harbor masters and local volunteers. “Maine has a smaller population than states to the south,” she reflects, “but the level of awareness is higher.”

Resting briefly in Camden at the end of her journey, Pellegrino said “this is the beginning as far as I’m concerned. I’m going to work to get the word about ocean stewardship out to whoever and however I can.” She will maintain her trip site (<http://www.miami2maine.com>) as a means of organizing and educating people, and she plans to continue work with groups engaged in marine protection. Pellegrino urges others to join marine stewardship efforts in their communities (a comprehensive list of active groups appears on the Blue Frontier website, www.bluefront.org/bluemovement).

Pellegrino’s List of Recommended Reading

50 Ways to Save the Ocean, by David Helvarg (New World, 2006)

Blue Frontier, by David Helvarg (Sierra Club, 2006)

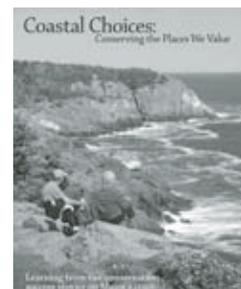
Song for the Blue Ocean, by Carl Safina (Owl, 1999)



Margo Pellegrino (shown docking in Rockport Harbor) paddled 1,900 miles in an effort to raise awareness about marine pollution.

Spread the Word about Coastal Stewardship

Coastal Choices: Conserving the Places We Value, a new coastal land conservation video (see write-up in the Spring 2007 *Maine Coastline*), was named an “official selection” in the Maine Documentary Film Competition in July. The Coastal Program urges municipalities, community groups and land trusts along the length of Maine’s coast to sponsor local showings of this informative and inspirational video. For more information, please visit www.protect-coastalmaine.org.



Taunton Bay: Creating a Place-Based Management Plan

Taunton Bay, a wildlife-rich embayment at the head of Frenchman Bay, has experienced many of the challenges that face inlets along the length of Maine's coast. While its shallow waters once supported abundant shellfish resources, divers and draggers had depleted most of its sea urchins and scallops by 2000. The next year, local eelgrass beds experienced a mysterious and precipitous decline, depleting a key food source for ducks and geese. Many local clamflats remained closed year after year due to high fecal coliform counts. "These ecological effects are not surprising," notes Steve Perrin, of the nonprofit group Friends of Taunton Bay, "given the geometric growth of shoreline development, the increased harvesting pressures and the runoff pollution we've seen over recent decades."

"It's a challenge managing the diverse uses of this shared ecosystem while protecting its health," observes John Sowles, Director of Ecology at the Department of Marine Resources (DMR). "Yet it's also a great opportunity to advance regional stewardship. Three municipalities (Hancock, Sullivan and Franklin), seven state agencies and six federal agencies all share some jurisdiction over Taunton Bay's resources, so we had to work on a coordinated response."

To lay the groundwork for a more ecosystem-based approach to management, Friends of Taunton Bay won a competitive grant to complete a pilot project in collaborative bay management. Their in-depth report (www.maine.gov/dmr/baystudy/finalrpt/appendices/AppnL--TauntonBayReport.pdf) helped DMR complete a place-based management plan that incorporates extensive local input. "An Advisory Group of local volunteers helped us refine the plan's goals and objectives, develop the workplan, identify funding priorities, and review drafts," Sowles notes. "It was truly a collaborative effort." The local group will continue advising the DMR commissioner as the plan is implemented. The final plan (online at <http://www.maine.gov/dmr/baystudy/final-tauntonbayplan.pdf>) sets ecological, social, and economic targets to ensure the health and sustainability of bay resources, and suggests ways to meet those goals using scientific research, local knowledge/stewardship and adaptive management (updating approaches as new information is gathered).

A recent change adopted by the Maine Legislature will make it easier for DMR to practice flexible rulemaking that incorporates greater local input, which could benefit other place-based management efforts in the future.



A new management plan prepared with local input will help protect the diverse species in Taunton Bay, including horseshoe crabs and semipalmated plovers.



The Holbrook's Wharf project in Cundy's Harbor is among the first projects to receive funding through the new Working Waterfront Access Pilot Program

Working Waterfront News

State Access Program Awards First Grants

As part of the \$12 million Land for Maine's Future (LMF) bond that voters approved in 2006, \$2 million was dedicated to projects that protect strategically significant working waterfront properties with the facilities, capacity, and services needed to support commercial fisheries businesses. Early in 2007, the LMF Program awarded its first six grants (totaling nearly \$1.3 million) under this new pilot program. For more details, please see www.wvapp.org.

Maine Members of Congress Propose Working Waterfront Fund

Representative Tom Allen has introduced a bill in the house and Senator Susan Collins has reintroduced Senate legislation that would authorize up to \$75 million in federal grants (over a three-year ramp-up period) to preserve coastal access for commercial fishing and other water-dependent businesses. "A federal grant program, matched by state investments, would evaluate applications based on their economic significance to the fishing industry, degree of community support, threat of property conversion and consistency with local land use plans," explains Jim Connors, who heads the Maine Coastal Program's Working Waterfronts Initiative. "Thanks to the steadfast efforts of Representative Allen and Senator Collins, these bills—if passed—could give a significant boost to the efforts underway to protect Maine's prime working waterfront sites."

Working Waterways and Waterfronts 2007

Maine was well represented at the nation's first-ever symposium on working waterfronts and water access, held in Virginia last May. The Coastal Program's Jim Connors and Natalie Springuel of Maine Sea Grant served on the steering committee and several Maine leaders presented at the conference (including State Senator Dennis Damon—a staunch advocate of fisheries access). Maine Sea Grant staff members presented results of a national survey they had helped organize involving more than 140 coastal managers and extension agents from around the country. Their report "Access to the Waterfront: Issues and Solutions across the Nation" (online at <http://www.seagrants.unmaine.edu/>) confirms that access to and from the ocean is a growing challenge in many American communities. Conference proceedings are available online at <http://www.wateraccess2007.com/presentations.htm>.

Renewable Energy Resources

To learn more about renewable power, energy efficiency, and ways to reduce greenhouse gas emissions, please refer to the following sites and publications:

- ✿ <http://www.maine.gov/msep/>
The Maine State Energy Program, at the Maine Public Utilities Commission, has resource information on electricity from clean renewable sources, solar rebates, and other renewable efforts underway.
- ✿ <http://www.maine.greenpower.org/resources/links.shtml>
A web page listing green power providers, web-based sources for technical information and relevant energy agencies
- ✿ <http://www.efficiencymaine.com>
This program of the Maine PUC offers energy-saving tips, rebates and cash incentives for residences and businesses to reduce energy consumption.
- ✿ <http://www.eere.energy.gov/>
The U.S. Department of Energy's "Energy Efficiency and Renewable Energy" site has a wealth of topics to explore with supporting studies and data, including a "New England wind forum with a section for Maine.
- ✿ <http://www.coolcities.us>
The Sierra Club maintains this site to help communities take action to curb global warming.
- ✿ *Climate Change Roadmap for New England and Eastern Canada*
A comprehensive guide to reaching regional greenhouse gas reduction goals. Available online at http://www.env-ne.org/ENE_Climate_Change_Roadmap_New_England_Canada.htm
- ✿ <http://www.nationalwind.org/>
The National Wind Coordinating Committee has useful informational resources and links.



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The Maine Coastal Program represents a partnership of local, regional and state agencies that work collaboratively to enhance management of the state's diverse coastal resources. Housed at the State Planning Office, Coastal Program staff work extensively with governmental agencies and community organizations such as local land trusts and regional economic development groups. Planning and outreach focus on such issues as watershed management, development issues, fisheries management, water quality monitoring, marine education, citizen stewardship, coastal hazards, marine infrastructure and habitat protection.

For more information on the Maine Coastal Program, please visit our website at www.maine.coastalprogram.org.