STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
PUBLIC UTILITIES COMMISSION

IN RE: REVIEW OF PROPOSED TOWN OF	:	
NEW SHOREHAM PROJECT	:	
PURSUANT TO R.I. GEN. LAWS	:	DOCKET NO. 4111

PREFILED TESTIMONY OF INTERVENOR MICHAEL DELIA

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Q. Please state your name and address.

A. My name is Michael Delia. My current business address is 456 Rte 22 Whitehouse Station, N.J. I maintain a residence in NJ as well as Whale Swamp Road, Block Island, RI.

Q. By whom are you employed and in what capacity?
A.. I'm a managing director of BIAero, LLC, a turbine engine distribution business.

Q. Please describe your qualifications and experience.
A. I'm an experienced and successful business owner with 25 years experience in the highly regulated aviation industry. I'm the former Chairman of Space Age Aviation and was one of the chief negotiators in its sale to United Technologies Corporation (UTC). After its sale to Pratt & Whitney Canada, I served as a Division General Manager through the merger transition. In addition to my qualifications as an aviation specialist I have been active in the past as a business consultant to small and mid sized business CEO's in both the manufacturing and educational industries. I have a bachelor's degree from the Cooper Union for the Advancement of Arts and Science.

Q. Have you previously testified before State Regulatory commissions concerning matters of alternate energy plans or any other dockets?
A. No I have not.

Q. What is your relationship to Block Island?
A. My wife and I have been annual visitors to Block Island for over thirty years. For the last 20 years we have been property owners on Block Island. We raised our children there in summers; they had their first jobs there.

Q. What is your past environmental history on Block Island?
A. My wife and I placed a perpetual conservation and development easement on our property on Block Island. We also provided funding to the Southeast Lighthouse National Landmark to bury its incoming power lines.

Q. What is your role in these proceedings?
A. Along with my wife Maggie, I am an intervenor in the proceedings.

Q. What are your objectives in being an intervenor?
A. My objectives are as follows: to protect my right of due process and to make a difference in the future of our democracy; to support the process of providing net low carbon energy generation; and to have this State of Rhode Island negotiate a fair and reasonable contract with National Grid and Deepwater Wind that protects the beauty and ecology of the Rhode Island coast.

Q. Can you summarize your conclusions of the Project?

A. Yes, the power purchase agreement between Narragansett Electric Company and Deepwater Wind Block Island, LLC for the project, a 6-8 wind turbines, up to 30 MW wind farm does not represent a commercially reasonable long-term contract between a Rhode Island electric distribution company (Narragansett Electric Company) and a developer or sponsor (Deepwater Wind Block Island, LLC) for a to-be-developed renewable energy resource (the Project).

The Project will clearly not stabilize long-term energy prices. It will increase long term energy prices at an escalating rate.

The Project will not provide any net direct economic benefit to Rhode Island; it is more likely that in addition to the excessive cost electricity it will do irreparable harm to the state's marine tourism economy.

It will not produce a net enhancement of the environment.

Q. Are you an experienced power market analyst who can assess a commercially reasonable Power Purchase Agreement contract?

A. No I am not. But I can say that the power market analysts of National Grid have argued consistently that the PPA's; both the unsigned PPA's and the currently signed PPA are not commercially reasonable as defined by the statute 39-26-1[1]. I agree with Mr Gerwatowski's assessment; the point is "moot[2]"; and it should be rejected out of hand before considering any of the other benefits.

As a business man and a citizen I find it hard to reconcile National Grid's argument that the Commission should approve this agreement on behalf of the ratepayers. Even with their explanations of the supposed economic benefits to the state the state has to make up for a minimum of $400,000,000 of excessive electric charges over the term of the contract. By Bill Short's reckoning they are even higher.

I'm concerned that the lack of responsibility or moral hazard[3] on National Grid's part to reject the contract out of hand leaves the Commission to make a business

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[1] Ronald T. Gerwatowski's December 9, 2009 letter with his filing for confidential treatment says, *"It is National Grid's view that the terms and pricing in this PPA by no means represents what an experienced power market analyst would expect to see in transactions involving newly developed renewable projects generally, where the complexities associated with an off-shore wind demonstration such as this are not present."* National Grid then goes on to explain why since it is not commercially reasonable why the Commission should agree to approving the contract.

[2] Ronald T Gerwatowski NGrid Deputy General Counsel 411 Response PUC1-1 "If the Commission finds the pricing unacceptable, such a ruling would render moot all other issues because the Commission will have disapproved the agreement."; If the Commission finds the pricing unacceptable, it renders moot all other issues"

[3] Wikipedia **Moral hazard** occurs when a party insulated from risk may behave differently than it would behave if it were fully exposed to the risk. .Moral hazard is a special case of information asymmetry, a situation in which one party in a transaction has more information than another. The party that is insulated from risk generally has more information about its actions and intentions than the party paying for the negative consequences of the risk. More broadly, moral hazard occurs when the party with more information

decision that National Grid is unwilling to make on their own behalf, I can only conclude that National Grid has nothing at stake, nothing to lose, since if the Commission approves this admittedly excessive energy cost the rate payers will provide the funding not the capital structures of either National Grid or Deepwater Wind. Both of whom can both afford it and under normal capital markets in any other unregulated business would otherwise be incumbent upon them to sustain the risk not the customer.

If the Commission agrees with National Grid that the PPA is not commercially reasonable and continues the hearing and looks for the other goals of 26-1.1 in the purpose of the statute the Commission will find that the purpose as well as commercially reasonable is not fulfilled.

Q. What's your commitment regarding this aspect of the hearing?
A. I'm committed to having the Commission make a decision that accounts for the law and for the ratepayers. The State of RI is not organized to be in business. It is organized to represent its peoples' interests. National Grid and Deepwater Wind are organized to make the most money they can regardless of the impact on the State's rate payers.

I'm a business man and if you're in business and you don't produce sufficient revenues to remain viable then you are no longer in a business. At the same time if you take advantage of your customers because they are needy or you take short cuts and overcharge for your products you perform a disservice to the customer community you serve.

This process compares to making a business deal except for one thing. I'm a principal in a business. I can agree or not agree to a deal or I can walk away from the table if the deal doesn't make any sense; I just wouldn't make the deal. In this case the rate payers cannot walk away from the deal. In this case, as always the rate payer is counting on the Commission to make the best deal for them.

Q. What are some of the unnecessary negative economic risks that you see that the state is bearing?
A. 1. That if the state does not move precipitously fast that the state will lose "first mover advantage" First mover advantage will DWW's advantage not Rhode Island, not Block Island, not the RI rate payer, not the RI worker.
2. DWW has not promised jobs; they have estimated jobs if….

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about its actions or intentions has a tendency or incentive to behave inappropriately from the perspective of the party with less information.

Moral hazard arises because an individual or institution does not take the full consequences and responsibilities of its doings, and therefore has a tendency to act less carefully than it alternately would, leaving another party to hold some responsibility for the consequences of those actions. For example, a person with insurance against automobile theft may be less cautious about locking his or her car, because the negative consequences of vehicle theft are (partially) the responsibility of the insurance company.

3. The state is paying for the risk of what DWW calls an unproven technology.
4. Monopile construction is proven technology and could be financed as easily in a full scale utility farm as a high priced "demo".
5. In its haste to give DWW this "first mover advantage" RI created such a narrow time window that it precluded any real possibility for competitive bidding that could have lowered rates as a matter of free market pricing. There are other projects available that would satisfy the statute.

Q. Do you see any conflicts of interest?
A. Yes, the possibility for undue influence is rampant. DWW is paying $millions for the SAMP process, attorney and consulting fees for the Town of New Shoreham etc. DWW offered to pay for BIPCO's attorney fees and was turned down as a matter of avoiding a conflict of interest[4]. In the aviation supply industry we would lose our status as a supplier for most customers

Q. Are there other inconsistencies in this negotiation?
A. Yes, NGrid changes it arguments to fit the situation. They change their mind. In its earlier argument to deny The RIBCTC status in these hearings as an intervenor, NGrid argued strongly that they should not be allowed and that "although creating jobs is an important and laudable goal" the matter before the commission is to review the pricing and terms[5]" They now approve the contract even though by their account the price is excessive.

In the same way after rejecting the October PPA as significantly overpriced at $500 million over market they now find $400 million over market acceptable.

Q. Do you see a direct economic benefit to the state?
A. No, with an obvious dramatic over market energy cost, detailed in Bill Short's testimony; the additional economic risk to the RI tourism economy makes this contract a lose lose situation for the Rhode Island ratepayer and citizen. We will be paying too much for our energy costs and we will be permanently and irrevocably altering our Ocean State's ocean.

The Federal Government and the RI state government are on the brink of the monumental decision to place Industrial Power Generation equipment into sacred waters, historic waters, recreational waters, commercial fishing waters, the waters of extraordinary fisheries, tourist revenue producing waters, waters of great beauty. The commission should examine its charge in the light of the

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[4] PUC Docket 4135

[5] 4111 NGrid Response-RIBCTC "The Commission's review is governed by legal standards that do not contemplate consideration of job creation in making its determination to approve or disapprove the contract. This makes sense because the Commission has the role of assuring that the terms of the agreement do not saddle electric customers with unreasonable and excessive payment obligations. This is exactly the same issue that National Grid has had to consider in determining the acceptability of the proposed agreement. While job creation would help the economy in the short term, that shorter term benefit cannot provide a basis for the acceptance of an agreement that is too high priced or otherwise commercially unreasonable and, thus, not in the best interest of electric customers over the long term. The issue before the Commission is not whether jobs will be created. But rather, it is whether the pricing and terms of any proposed agreement are reasonable."

historic nature of their decision and the responsibility for the future of the waters of the USA. [6]

Q. What is the risk?
A. People will not visit Block Island to see Industrial Wind Turbines. They're 45 story tall industrial towers. I've been to Copenhagen to visit them and they are gigantic and imposing. Tales of how wonderful they are "spin"

Q. What is your calculation of the economic risk?

A. Will the Project provide any net direct economic benefit to Rhode Island?

A. According to Bill Short's testimony the economic benefit to the state is negative by roughly $350 million for the energy portion of the contract.

If we add another only a 10% loss in tourism on Block Island that's $25 million dollars in lost revenues for the Island alone. That will impact the other marine counties as well. Even if it were only 1% it would account for a negative impact of $2.5 million a year. The area most likely to be hardest hit would be Block Island, but certainly the South Counties which provide transient services to Block Island would suffer as well. A 10% loss in tourism on Block Island would be devastating to the Town of New Shoreham regardless of any potential benefits. [7]

Moving the wind farms into Federal waters no closer than 15 miles from any part of the Rhode Island coastal features or any part of the US Coastal features. This would keep them out of the striped bass fisheries and the lobster grounds, out of the view sheds, out of the recreational boating waters, out of historic and sacred Native American Waters, away from the beaches; all of which provide revenue to

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[6] **Section 650: Economic and Non-Market Value of Recreation and Tourism in the SAMP Area**
650.1 Economic Impact of Recreation and Tourism
1. Tourism and hospitality is Rhode Island's fourth largest industry based on employment, contributing $6.8 billion in spending and generating 12% of all state and local tax revenue in 2007 (Global Insight 2008). The growth of this industry has more than doubled in size in recent years from $2.7 billion in 1999 (Rhode Island State Senate Policy Office 2002).

[7] Bill Short While the Project does provide some direct economic benefits to Rhode Island, its above-market costs to the ratepayers of Rhode Island far exceed that benefit. Even using the economic benefit cited by Dave Nickerson in his answer 2-4 to the Division's second data request, the lifetime, non-discounted benefit of the Project is only $48 million. Assuming that the National Grid above-market analysis is correct, the above-market cost of the Project is nearly $400 million on a non-discounted basis and $190 million on a discounted basis. The benefit of the Project is only 1/8th of its costs. Furthermore, if my viewpoint of future above-market cost is correct, the Project's above-market the benefit may well is 1/9th of the costs. In summary, the Project produces minimal economic benefits and, when compared its above-market costs, negative net benefits to the ratepayers of Rhode Island. As such, along with all of my other comments, it is my opinion that the contract between Narragansett Electric and Deepwater Wind Block Island, LLC should not be approved by the Commission.

the State and the Island and the region[8]. 15 miles may be too close even for some deep water commercial fishing fleets.

Q. Will this project enhance the environment?
A. No, According to many experts in the field particularly Jay Apt and Bill Short whose testimony you have; the net effect on carbon emissions for wind energy negative and the impact on downstream weather will be measurable..[9][10]

Q. You mentioned freedoms earlier in your testimony. What freedoms are you referring to?
A. Primarily due process; the alarming speed with which the legislature change the statute 39-26.1; the amount of undue influence that DWW has had on the process for one. For another The Town of New Shoreham's issuance of a permit to Deepwater for a non permitted use by declaring electric rates an "emergency in health and safety" in order to bypass notice and public hearings are two examples.

We are living through a tumultuous time and because of the time we are living through our freedoms are being eroded or simply being removed by the people who have sworn to protect those freedoms. That has left me with nowhere to stand except on my own two feet with the people around me whom I trust and who trust me to act consistently with my stand for a free and democratic society. That is what has me here.

I urge the commission to reject the contract offered by DWW and NGrid. It does not satisfy the purpose of 39-26-1 and it does not satisfy the requirement of 39-26-1.2 to provide a 'commercially reasonable contract. It is within the jurisdiction of the commission to reject it on the basis of39-26-1, and whatever standard they apply that satisfies the requirement to be in the public interest.

This ends my testimony.

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[8] Extracted from November 2009 Draft of the CRMC SAMP

[9] Testimony of Dr. Jay Apt Distinguished Service Professor of Engineering & Public Policy and Associate Research Professor, Tepper School of Business Carnegie Mellon University 412-268-3003 apt@cmu.edu U.S. House of Representatives Committee on Energy and Commerce Subcommittee on Energy and Environment Hearing on The American Clean Energy Security Act of 2009 Wind farms can affect climate downwind, reducing precipitation. Massive reliance on wind energy would take energy out of the wind, changing the Earth's climate.

A National Renewable Portfolio S

[10] See Attached document—with Permission Jay Apt

CERTIFICATE OF SERVICE

In accordance with Rule 1.7D of the Rules of Practice and Procedure of the Public Utilities Commission, I hereby certify that on the 19th day of January, 2010, a copy of the within was mailed electronically to the attached service list.

Marianne Deeley

National Grid – Review of Proposed Town of New Shoreham Project
Docket No. 4111 - Service List Updated 1/14/2010

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A National Renewable Portfolio Standard? Not Practical

Legislation that mandates specified electricity production from renewable sources paves a path to costly mistakes because it excludes other sources that can meet the country's goals.

A discussion of renewable energy seems to addle the brains of many sensible people, leading them to propose policies that are bad engineering and science or have a foundation in yearning for utopia. For example, Michael Bloomberg, self-made billionaire and mayor of New York City, proposed putting wind turbines on the tops of skyscrapers and bridges. No need to ask the engineers whether the structures could bear the strain or whether there were good wind resources. Disagreeing with the mayor, the Alliance for Clean Energy New York said, "New York is really a solar city." Like Mayor Bloomberg and the Alliance, 25 governors, and more than 100 members of Congress, we love renewable energy. However, even this wonderful idea requires a hard look to see what is sensible now and why some current and proposed policies are likely to be costly, anger many people, and undermine the reliability of our electricity system. Congress needs to understand some facts before voting for a national renewable portfolio standard (RPS).

We share the goals of reducing pollution and greenhouse gas emissions, enhancing energy security, maintaining electric supply reliability, and controlling costs. The mistake is to think that a blinkered emphasis on renewable energy sources is the best way to achieve these goals. Unfortunately, this mistake has swept through 25 state legislatures.

These states have indicated their dissatisfaction with the current electricity-generation system by enacting binding RPSs, which require that wind, solar, geothermal, biomass, waste, or other renewable resources be used to generate up to 30% of the electricity sold by 2025. At the federal level, H.R. 969 was introduced in the 110th Congress to require that 20% of the nation's electric power be generated by renewable energy sources. Organizations ranging from MoveOn.org and the Union of Concerned Scientists to the American Wind Energy Association urged its passage as a way to fight global warming, promote energy independence, increase wind-lease payments to farmers, and move the country toward a clean energy economy based on solar and wind power. H.R. 969 was not enacted, but a national RPS will certainly be recon-

Renewable energy sources are a key part of the nation's future, but wishful thinking does not provide an adequate foundation for public policy.

sidered after the election.

A national RPS is a bad idea for three reasons. First, "renewable" and "low greenhouse gas emissions" are not synonyms; there are several other practical and often less expensive ways to generate electricity with low CO_2 emissions. Second, renewable sources such as wind, geothermal, and solar are located far from where most people live. This means that huge numbers of unpopular and expensive transmission lines would have to be built to get the power to where it could be used. Third, since we doubt that all the needed transmission lines would be built, a national RPS without sufficient transmission would force a city such as Atlanta to buy renewable credits, essentially bribing rural states such as North Dakota to use their wind power locally. However, the abundant renewable resources and low population in these areas mean that supply could exceed local demand. Although the grid can handle 20% of its power coming from an intermittent source such as wind, it is well beyond the state of the art to handle 50% or more in one area. At that percentage, supply disruptions become much more likely, and the highly interconnected electricity grid is subject to cascading blackouts when there is a disturbance, even in a remote area.

Renewable energy sources are a key part of the nation's future, but wishful thinking does not provide an adequate foundation for public policy. The national RPS that gathered 159 cosponsors in the last Congress would be expensive and difficult to attain; it could cause a backlash that might doom renewable energy even in the areas where it is abundant and economical.

Consider the numbers. Past mandates and subsidies have increased wind's share of generated electric energy to 0.8% of total U.S. generation and geothermal's share to 0.4%. Generation from photovoltaic cells and ocean waves and currents totals less than 0.02%. Wood and municipal waste provide 1.3%, and conventional hydroelectric 6% (but large hydroelectric power is generally excluded from RPS calculations). The near-term potential for acquiring significant additional generation from any of the renewable sources except wind is small. Thus, a renewable portfolio standard requiring 15 to 30% of electricity from renewable sources requires that wind generation be expanded at least 15-fold and perhaps more than 30-fold.

The timeframes for reaching these production goals are very short. Eighteen states require that by 2015 at least 10% of their electricity must come from renewable sources. California and New York require 25%. Satisfying the state mandates would require the production and siting of hundreds of thousands of wind turbines. Because there is little wind power near large population centers, tens of thousands of miles of new transmission lines would have to be built within the next few years. Not only can transmission costs double the cost of delivered power, but the median time to obtain permission and build long-distance transmission lines has been 7 years—when they can be built at all. A Wall Street executive responsible for financing transmission lines stated that of 35 lines he has been involved with at an advanced stage, 80% were never built.

As Massachusetts has already discovered, implementing an RPS is far more difficult than passing popular legislation. The proposed wind farm off Cape Cod is stalled, and Massachusetts is badly behind in meeting its RPS. Even beyond siting the wind farms, states and the federal government would have to expedite permitting and obtaining the land and permission to build transmission lines, as well as provide the resources to review interconnection applications quickly. Although the public supports renewable energy in the abstract, many groups object vociferously to wind farms in particular places and to transmission lines nearly everywhere.

Producing sufficient wind turbines would require a major increase in manufacturing capacity. Demand (driven by state RPSs and the federal renewable production tax credit) has already stretched supplies thin, creating an 18-month delivery delay for wind machines. It has also emboldened manufactures to reduce wind turbine warranties from five years to two.

Many current laws mandate the use of a specific technology, apparently assuming that legislators can predict the

success of future R&D. An RPS is such a law. In our judgment, laws ought to specify requirements that generation technologies must meet, such as low pollution, affordability, power quality, and domestic power sources, and leave the means of realizing the goals to technologists and the market.

Technological realities

Wind and solar generation are qualitatively different from electricity generated by fossil fuels, nuclear energy, or hydropower. Wind and solar generation are variable, do not generate power most of the time, and generally do not generate electricity when demand is highest. The cost of renewable power includes ancillary expenses such as long-distance transmission, the need to operate fossil-fueled backup facilities, and storage. Each of the renewable sources has its particular liabilities.

Wind. For the next decade or two, wind is the most practical and cost-effective renewable option and has been deployed in 27 states. Wind and geothermal are, on a percentage basis, the nation's fastest-growing electric power sources. But even at the 2008 rate of growth (a historic high), wind will supply less than 2% of U.S. electric energy in 2020. If new policies aim to increase wind's share to 13% of 2020 electric energy, it would mean increasing annual wind installations from 5,400 megawatts (MW) (in 2008) to between 40,000 and 70,000 MW per year by 2020. Total land area for wind farms would be 30,000 to 50,000 square miles, about the area of Ohio.

Among the disadvantages of wind systems are that they produce power only when the wind is strong and that they are most productive at night and during spring and fall, when electricity demand is low. The capacity factor (the percent of maximum generation potential actually generated) of the best sites for wind turbines is about 40%, and the average capacity of all the wind turbines used to generate utility power in the United States was 25% in 2007.

Electricity can be generated by wind turbines for an unsubsidized cost of 8 cents per kilowatt-hour (kWh) (at sites with a capacity factor of 40%) to 12 cents/kWh (at sites with the 2007 average capacity factor of 25%). Transmitting the power to market could add 1 to 8 cents/kWh, depending on the distance and the cost of acquiring land and installing the lines. Because the best wind sites are remote, the cost of delivered wind power to the populous Northeast or Southeast would be 12 to 20 cents/kWh. A new coal gasification plant with CO_2 capture is estimated to produce power for 10 cents/kWh and could be located much closer to where the power is consumed. New nuclear plants might produce power for 12 cents/kWh. Energy-efficient appliances and buildings reduce energy consumption at a much lower cost.

Wind power does save fossil fuel, but not as much as it might seem. For example, if wind supplied 15% of the electricity, it would save less than 15% of fuel because other generators backing up the wind must often run at idle even when the wind is blowing and because their fuel economy suffers when they have to ramp up and slow down to compensate for variability in wind.

Variability also requires constant attention, lest it threaten the reliability of the electric system. On February 26, 2008, the power system in Texas narrowly avoided a breakdown. At 3 p.m., wind power was supplying a bit more than 5% of demand. But over the course of the next 3.5 hours, an unforecast lull caused wind power to fall from 2,000 MW to 350 MW, just as evening demand was peaking. Grid operators declared an emergency and blacked out 1,100 MW of load in a successful attempt to avoid a system collapse. According to the Electric Reliability Council of Texas, "This was not the first or even the worst such incident in ERCOT's area. Of 82 alerts in 2007, 27 were 'strongly correlated to the drop in wind.'"

At night the wind blows strongly and demand for power is low. On Hawaii's Big Island, wind supplies over a third of nighttime electric energy. Oil generators that are not required are shut down. On three nights during one week in June 2007 on the Big Island, the variability of the wind overwhelmed the ability of the single oil generator that remained running to compensate. While the system operators urgently tried to get a second unit warmed up, the frequency of grid power fell from its normal 60 hertz (Hz) to 58 Hz. Emergency procedures are implemented in most grids to prevent frequency from falling below 59.8 Hz to prevent damage to customers' electronic equipment.

The largest system with significant wind energy is Spain, where wind supplies 9.5% of electric energy every year. System operators there cope well, helped by large hydroelectric plants (18% of all generation capacity) that can react quickly to drops in the wind and store excess electricity when the wind blows strongly at times of low demand. Spain's large amount of excess capacity also helps to protect system reliability; it has 86 GW of generation, including 15 GW of wind, to serve a maximum load of 45 GW. In the U.S.'s largest wind area, Texas, there is 6 GW of wind capacity but only 0.5 GW of hydroelectric capacity (with no ability to store electricity). Instead of Spain's 90% excess generation capacity, Texas has 13%.

Can the United States do as well as Spain or, as mandated by 11 state RPSs, twice as well? Yes, but probably not with-

out the $60 billion investment in new transmission lines recommended by the American Wind Energy Association. Such an interstate superhighway transmission system might allow remote generators or hydroelectric dams to pick up the slack when the wind dies down. A recent U.S. Department of Energy report relies on such a system to sketch a roadmap to 20% wind energy by 2030. Major investments in transmission lines, standby generators, and storage will be required to ensure that the lights don't flicker if 20% of the nation's electric energy comes from wind.

Finally, wind energy is a finite resource. At large scale, slowing down the wind by using its energy to turn turbines has environmental consequences. A group of researchers at Princeton University found that wind farms may change the mixing of air near the surface, drying the soil near the site. At planetary scales, David Keith (then at Carnegie Mellon) and coworkers found that if wind supplied 10% of expected global electricity demand in 2100, the resulting change in the atmosphere's energy might cause some regions of the world to experience temperature changes of approximately 1°C.

Solar. The amount of solar energy that reaches the United States each year is equivalent to an impressive 4,000 times the nation's electric power needs. Although using the Sun's energy has captured people's imagination, its practical near-term prospects for meeting an RPS are dim.

Electric power can be supplied by solar photovoltaic (PV) arrays and by solar thermal systems in which the Sun heats a fluid that generates steam to drive a steam turbine. PV has a nonsubsidized cost of 33 to 61 cents/kWh, almost 10 times the cost of the current electric power generation mix, and 3 to 5 times the cost of other low-carbon generators. The current cost of PV makes it more a subject for basic research than widespread deployment. Solar thermal is cheaper, but without subsidy is not competitive except in special applications.

One of the largest solar PV arrays in the United States is a 5-MW system operated by Tucson Electric Power in Arizona,. Over two years of operation, the capacity factor for that generator has averaged 19%. Even in Arizona, clouds cause rapid fluctuation in the array's power output. As with wind, large-scale solar power will require large transmission system investment to pair solar with steady power.

Solar thermal systems such as the new 64-MW Nevada Solar One installation should have smoother output power than PV systems because the thermal inertia of the oil used as a working fluid is expected to continue producing electricity despite the fluctuating thermal input. Molten-salt energy storage will be used to store energy for a few hours in order to generate power during the evening peak load. The facility is expected to have a capacity factor of 24%. The unsubsidized cost can be about 17 cents/kWh.

Solar subsidies in Japan and Germany, as well as solar set-asides in domestic state legislation, are based on legislators' assumption that the price for solar PV systems will decline to competitive levels as economies are achieved in manufacturing. At present, solar PV in states such as Pennsylvania (where the RPS requires 800 MW of solar PV) can produce wholesale power at 50 cents/kWh. Basic research might make solar PV competitive, but relying on large-scale orders to attain this goal with today's technology is fantasy.

Costs for a solar PV system (solar cells, electronics, packaging, and installation) would need to fall by a factor of 3 to 5 to produce power at rates competitive with other low-emissions sources, and that does not even include additional costs due to the variability of solar power. Cost reductions of this magnitude will not come quickly or easily. In fact, solar cell costs are now 10% higher than they were in 2004; the balance of the system components, representing half the total cost, have not become less expensive.

Geothermal. At a good site, geothermal power can generate electricity from hydrothermal sources at about 10 cents/kWh. At present, it supplies almost as much energy as does wind, and it has the advantage of providing a fairly steady supply. The median geothermal plant averaged a 63% capacity factor, comparable to that of coal-fired generators. However, the best locations are clustered in the Southwest, so long-distance transmission may be needed.

Today's geothermal power operates by pumping very hot subsurface water to the surface to produce steam to run a generator. Appropriate hydrothermal sources are limited, and large-scale geothermal power will require injecting surface water into very deep rock with techniques that are still in development and water that is scarce in the Southwest.

Run-of-the-river hydroelectric. Run-of-the-river hydro (a modern water wheel) can be attractive, but operates only when the river is flowing. To produce much energy, there would have to be a large, fast-flowing river. The potential power from this source is limited because many of the suitable rivers have already been dammed for hydroelectric power.

Biomass. At small scale, the use of waste biomass that would otherwise be left in fields is economically attractive. However, removing crop residue can make soil less productive and decrease its ability to store carbon. Biomass such as wood chips and switchgrass can be co-fired up to 10% with coal or can be burned in a specially designed furnace. The U.S. Department of Agriculture estimates that offering $60 per ton would produce 350 million tons of farm waste, tree

Rather than specifying a winning technology, Congress and state legislatures should specify the goals and provide incentives to reach them.

trimmings, municipal solid waste, and energy crops. Increasing the price to $90 per ton would pull in an additional 80 million tons. These prices are comparable to coal at $120 and $180 per ton, respectively. A generator burning biomass would raise the price of electricity by almost 4 to 7 cents/kWh, respectively. Transporting biomass is expensive, so it is likely to be used only near existing coal-fired power plants or in plants especially built for biomass. Thus, biomass might provide a few percent of generation.

Ocean. Systems to produce electricity from ocean tides, currents, waves, and thermal gradients are immature technologies whose costs and environmental effects are not fully known. The estimated global practical potential from tides and currents totals 70 GW, about 2% of current global electric power generation.

Storage. The variable nature of wind and solar generation requires demand response, other generation, or storage to fill the gaps when the wind calms or clouds obscure the Sun. At 38 sites in 18 states, water is pumped up into a reservoir by electric motors; when needed, the water flows back through the turbine to produce hydroelectric power. These pumped-storage facilities are expensive to build and have controversial environmental effects. The combined capacity of these pumped-storage facilities is 19,400 MW, or about 1.8% of the nation's generation capacity. Where they have available capacity, they are good choices for storing variable power.

In many areas of the country, electricity can be stored by using it to compress air, which is injected underground into depleted gas reservoirs, abandoned mines, or salt caverns. When electricity is needed (for example, when the wind is not blowing), the compressed air is released, heated, mixed with natural gas, and burned in a turbine to produce electricity. Many areas of the country have suitable geology. A 110-MW compressed-air energy storage facility of this type that has been operating since 1991 in Alabama can help provide power for 26 hours. At current natural gas prices, these storage facilities have capital and operating costs of approximately 8 cents/kWh of electricity produced.

Storage batteries are often used in small-scale, off-grid solar or wind systems. For large-scale application, sodium-sulfur batteries using a high-temperature chemical reaction have been deployed in several U.S. locations. These remain expensive. Plug-in electric hybrid vehicles that can be charged at night when the wind is blowing and demand is low may provide electricity storage in the future, but considerable technical and economic problems remain to be solved.

To sum up, we estimate that the states could accommodate 10% of the electricity coming from wind (or solar, if the costs were to come down) at any one time. With some attention and adjustment, we find that the electricity system could accommodate 15% or even 20%. To accomplish this, the system would require good prediction of wind speeds (or clouds for solar) several hours in advance, as well as a great deal of spinning reserve to substitute for the wind power when there are major changes in wind speed. Dealing with the minute-to-minute variability requires battery storage, fast-ramping generators, or customers who can react in minutes to raise or lower their use.

A national system must also deal with the fact that the best wind resources are in the Great Plains, about 1,000 miles from the Southeast where the electricity is likely to be needed. Policymakers must remain mindful of the difficulty of expanding transmission infrastructure. Community opposition will be widespread, the cost will be high, and the lines themselves will be vulnerable to disruption by storms or terrorists.

Thus, although a 20% national RPS might be physically possible with a very large transmission network and large amounts of spinning reserve, the logistical barriers will be high and the costs daunting. Embarking on this path without considering alternative strategies to reach the same ultimate goal would be short-sighted.

Energy efficiency

An RPS is essentially a narrowband solution to a broadband problem. By placing an inordinate focus on a limited number of renewable energy sources, legislators are neglecting numer-

Mandating rapid, massive deployment of these technologies will result in high cost, disputes over land use, and unreliable electricity, leading to a public backlash.

ous other options that can make significant contributions to the larger social goal of an adequate supply of clean, low-carbon, reliable, and affordable electricity. A prime example of a strategy that deserves more attention is energy efficiency.

In comparison with other developed nations, the United States is a profligate user of energy. For example, Americans use more than twice as much energy per capita and per dollar of gross domestic product as do Denmark and Japan. The comparison across nations or over time indicates a high potential for increased U.S. energy efficiency.

Experience in states such as California shows that aggressive policies can substantially reduce the growth of electricity demand. Aggressive efficiency standards for appliances and buildings, subsidizing efficient lighting, a five-tier electricity pricing structure with prices that start at 11.6 cents/kWh and go up to 34.9 cents/kWh for residential customers with high consumption, and incentive plans that reward utilities for lowering electricity use have led residential use per capita in California to grow only 4% from 1980 to 2005, while use in the rest of the United States grew 89%. The per capita demand in the commercial sector in California grew by 37% over that period, much less than the 228% growth in the rest of the country. California used 4% more electricity per dollar of gross state product in 2005 than in 1980, whereas the rest of the country used 40% more.

A new approach now in the early stages of implementation in California and elsewhere is changing from charging the same price for electricity at all times of the day to a system in which the price varies to reflect the actual cost of power at that time. On hot summer afternoons, inefficient and expensive generators are turned on to satisfy the additional demand; they may run for only a few dozen hours in a year, but the cost of building and maintaining them means that the cost of that peak electricity is very high. If customers were forced to pay the actual price at the time they use electricity, they would be motivated to shift some of their usage to lower-price hours, which would reduce the need for some expensive peaking capacity.

An economic model designed to predict consumer response to real-time pricing found that in the mid-Atlantic states, peak load would be reduced by 10 to 15%. But the model also found that total demand would increase by 1 to 2% as consumers took advantage of lower rates at off-peak hours. The shift to increased nighttime electric use would be a good match for wind's production profile but would not be a good fit for solar power. One potential downside of real-time pricing is that it may increase pollution emissions in certain regions of the country if customers switch their use from daytime, when natural gas is the predominant generation source for meeting peak demand, to the night, when coal dominates.

Policies to promote energy efficiency could clearly make a large contribution to reducing CO_2 emissions from electricity generation. However, the experience of California and other energy-conserving states indicates that implementing energy efficiency takes time and resources. An effective program requires actions that take years, such as replacing appliances and installing better insulation and windows. Although aggressive energy efficiency measures might lower electricity demand in states where the population is not growing, for most of the nation population is likely to grow faster than efficiency can be improved, so that total energy demand will continue to grow.

An inclusive strategy

Electricity is essential to modern life and commerce, from computers to natural gas furnaces to telecommunications to elevators and traffic signals. The critical importance of the electric system was made painfully clear by the 2003 Northeast blackout, which stopped all economic activity and endangered the lives and well-being of 50 million people.

The United States is increasing its reliance on electric power and will have to generate 40% more electricity by 2030 if demand keeps growing as it has during the past 35 years. The North America Electricity Reliability Council is warning that reserve generation capacity is becoming so low in the country (except for the Southeast) that unless generation is added or demand reduced, within a decade there will

be brownouts or blackouts.

We face the additional challenge of quickly reducing CO_2 and other pollutants such as mercury and soot. At the same time, the price of power has risen 25% nationally since the last presidential election and has risen much faster in cities such as Baltimore.

The recent doubling of oil prices reduced imports appreciably. High oil, natural gas, and coal prices encourage energy efficiency, conservation, and a more sustainable fuel supply. Higher electricity prices, real-time pricing, and new efficiency standards can reduce growth in electricity demand. But even if the country can reduce the growth in electricity demand substantially, it will still need new generation capacity, much of it to replace old, inefficient plants.

Rather than specifying a winning technology, Congress and state legislatures should specify the goals—reduce pollution and greenhouse gas emissions, enhance energy security, maintain electric supply reliability, and control costs—and provide incentives to reach them. Since no current technology meets all goals, legislators must allow for tradeoffs. Specifying the goals rather than the technologies will lead to a technology race that will serve society.

Instead of enacting a national RPS, Congress should:

- Handle conventional pollution discharges through legislation and the Environmental Protection Agency.
- Handle greenhouse gas emissions through legislation such as a carbon tax or a cap-and-trade system that addresses such emissions explicitly.
- Handle energy security through energy efficiency programs such as equipment performance standards and consumer incentives and through maintenance of a high petroleum price.
- Maintain reliability through close monitoring of the new Electric Reliability Organization and of generating capacity and demand.
- Control costs through efficiency standards and encouraging a diverse portfolio of generating fuels, but avoid mandates to deploy expensive technologies. Rather, it should allow the market to determine the least-cost generation options.

Impatience to solve current problems has resulted in aggressive RPSs with strict deadlines. Although we agree that renewable technologies will help attain social goals, mandating rapid, massive deployment of these technologies will result in high cost, disputes over land use, and unreliable electricity, leading to a public backlash against these policies. The United States needs to focus on the goals, provide substantial incentives to meet them, and avoid polices that exclude economical ways to meet them.

Recommended reading

Scientific American, "Special Issue: Energy's Future Beyond Carbon," September 2006.

K. Dobesova, J. Apt, and L. B. Lave, "Are Renewable Portfolio Standards Cost-Effective Emission Abatement Policy?" *Environmental Science & Technology* 39, no. 22 (2005): 8578–8583.

S. Pacala and R. Socolow, "Stabilization Wedges: Solving the Climate Problem for the Next 50 Years with Current Technologies," *Science* 305, no. 5686 (2004): 968–972.

E. A. Parson and D. W. Keith. "Fossil fuels Without CO_2 Emissions," *Science* 282, no. 5391 (1998): 1053–1054.

J. Apt, D. W. Keith, and M. G. Morgan, "Promoting Low-Carbon Electricity Production," *Issues in Science & Technology* 24, no. 3 (Spring 2007): 37–44.

J.C.S. Long, "A Blind Man's Guide to Energy Policy," *Issues in Science & Technology* 24, no. 2 (Winter 2008): 51–56.

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STATE OF RHODE ISLAND
COASTAL RESOURCES MANAGEMENT COUNCIL
Oliver Stedman Government Center
4808 Tower Hill Road; Suite 3, Wakefield, RI 02879-1900

In accordance with and pursuant to the provisions of the "Administrative Procedures Act" (Section 42-35-3 of the General Laws of Rhode Island) and the Rule and Regulations of the Coastal Resources Management Council, notice is hereby given of the intention of the Coastal Resources Management Council to change the management plans, policies, procedures and regulations of the agency regarding planning and management of the coastal resources of the State relative to Chapter 46-23 of the State of Rhode Island.

The following change is proposed:

RI Coastal Resources Management Program

Ocean Special Area Management Plan: Chapter 6: Recreation & Tourism

The Rhode Island Ocean SAMP, or Ocean Special Area Management Plan, is working to define use zones for Rhode Island's ocean waters through a research and planning process that integrates the best available science with open public input and involvement.

As the state's coastal zone management agency, the Coastal Resources Management Council (CRMC) is leading this project and is cooperatively managing research projects undertaken by URI scientists to provide the essential scientific basis for Ocean SAMP policy development.

The first installment of the Ocean SAMP – the Recreation & Tourism Chapter – has as its objective to provide information on the types, locations, and value of marine recreational and coastal tourism activities within the Ocean SAMP area.

As with other chapters in development, the Ocean SAMP document and policies are focused on the offshore environment, not adjacent upland areas. This offshore focus is due to the fact that the CRMC already has a regulatory program, including a zoning program, in place for coastal lands and waters out to the 3-nautical mile boundary. Accordingly, this chapter focuses on offshore, waterbased recreation and tourism activities. Discussion of upland areas is focused on the facilities that make these water-based uses possible, as well as the economic impact of these water-based uses on coastal communities.

Please go to the CRMC's website www.crmc.ri.gov to download the entire chapter for review. Also see the Ocean SAMP websites at www.crmc.ri.gov/samp_ocean.html and http://seagrant.gso.uri.edu/oceansamp/ for detailed information regarding the SAMP's development.

The Council has complied with the requirements of R.I. Gen. Laws Section 42-35-3 by considering alternative approaches to the proposed regulation(s) and has determined that there is/are no alternative approach(es) that would be as effective and less burdensome. The Council has also determined that the proposed regulation(s) do(es) not overlap or duplicate any other state regulation. The Council has complied with the requirements of R.I. Gen. Laws Section 42-35-3.3 by submitting copies of the proposed regulation(s) to the Governor's Office and the Economic Development Corporation (EDC).

A public workshop on these proposed changes is scheduled for Thursday December 17, 2009 at 2:30 pm at the University of Rhode Island's Bay Campus, OSEC Building Room 115, South Ferry Road, Narragansett, RI.

Parties interested in or concerned with the above proposed changes are invited to **submit written comments** by December 31, 2009. All such comments should be directed to Grover J. Fugate, Executive Director, at the above agency address.

A public hearing has been scheduled for these proposed changes to be held in the Conference Room A, Administration Building, One Capitol Hill, Providence, RI, on Tuesday, January 12, 2010, at 6:00 p.m.

Copies of the proposed regulations are also available from the Coastal Resources Management Council offices and its website – www.crmc.ri.gov.

Individuals requesting interpreter services for the hearing impaired must notify the Council office at 783-3370, 72 hours in advance of the hearing date.

Further information may be obtained by contacting the Coastal Resources Management Council offices at 783-3370.

NOTICE

These changes are considered to be routine program changes to the federally approved Coastal Resources Management Program of Rhode Island. The CRMC will be requesting that the federal Office of Ocean and Coastal Resources Management concur with this determination when it seeks inclusion of such in the federally approved program. Persons who disagree that these are routine modifications to the federally approved program may submit such written comments within three weeks of the date of the issuance of this notice to:

Allison Castellan
Coastal Management Specialist
NOAA/NOS/OCRM
Coastal Programs Division
1305 East-West Highway, SSMC4
Silver Spring, MD 20910

Signed this 25th day of November, 2009.

Jeffrey M. Willis, Deputy Director
Coastal Resources Management Council

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Chapter 6: Recreation and Tourism

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Section 600: Introduction

1. As the Ocean State, one of Rhode Island's greatest economic, environmental, and cultural assets is its connection to the water. Whether through boating, sailing, diving, wildlife viewing, or shore-based activities such as surfing or beach going, Rhode Island residents and tourists alike enjoy the natural beauty of the state and the SAMP area. Recreational fishing is also a very important recreational use of the SAMP area and is discussed separately in *Chapter 4: Fisheries Resources and Uses*. These recreational uses not only provide enjoyment but also generate significant economic benefits for the state of Rhode Island. The objective of this chapter is to provide information on the types, locations, and value of marine recreational and coastal tourism activities within the Ocean SAMP area. In addition, this chapter outlines policies for managing these uses.

2. While there are many different definitions for recreation and tourism, for the purposes of this chapter recreation is defined as any type of leisure activity carried out for enjoyment, by either Rhode Island residents or visitors to the SAMP area. By contrast, tourism refers only to the activities of visitors to the SAMP area. Of course, not all marine recreational users are tourists, and conversely not all tourists engage in marine recreation. These two categories are presented jointly within this chapter because of their close relationship, especially in Rhode Island, and not because they are viewed as synonymous.

3. As is illustrated by the Ocean SAMP boundary (see *Chapter 1: Introduction*), the Ocean SAMP document and policies are focused on the offshore environment, not adjacent upland areas. This offshore focus is due to the fact that the CRMC already has a regulatory program, including a zoning program, in place for coastal lands and waters out to the 3-nautical mile boundary. Accordingly, this chapter focuses on offshore, water-based recreation and tourism activities. Discussion of upland areas is focused on the facilities that make these water-based uses possible, as well as the economic impact of these water-based uses on coastal communities.

Section 610: History of Recreation and Tourism in the SAMP Area

1. The Ocean SAMP area and adjacent coastal communities have a long history as centers of marine recreational activity and as seaside tourism destinations. Since the mid-19th century, tourists have traveled to Rhode Island to enjoy the natural beauty of the South County beaches and to enjoy widely popular seaside resorts such as Newport, Block Island, Narragansett, and Watch Hill. Rhode Islanders and visitors alike have engaged in shore-based and marine recreational activities including boating, fishing diving, yacht racing, and sight-seeing. Many of these recreational activities that take place on or adjacent to Rhode Island's offshore waters have contributed greatly to the economic growth and culture of coastal communities like Newport, Point Judith and Block Island.

2. Both recreation and tourism in New England, and throughout the U.S., did not exist in their current forms until the mid to late 19th century, when increased leisure time and disposable income enabled wealthier urban residents to travel to tourist locations and engage in recreational pursuits. Throughout the latter part of the 19th century, coastal areas were increasingly viewed as desirable destinations for vacation and recreation, and new forms of transportation enabled access to such locations. Coastal transport was flourishing at this time, and much of this trade was in the transport of passengers via steamboat between urban centers and seaside resort locations (Labaree et al. 1998). Companies such as the Fall River Line provided overnight steamboat service from New York, via the protected waters of Long Island, Block Island, and Rhode Island Sounds, to resort towns such as Newport, or to Fall River to connect with a Boston-bound train (Labaree et al. 1998). Passenger steamships also provided transport to Block Island, and to Narragansett Bay coastal camps and amusement parks such as Rocky Point in Warwick and Bullock's Point in Riverside (Albion et al. 1970).

3. Newport, dubbed the "City by the Sea," is considered by some sources to be the oldest summer resort in the nation. This coastal city was a destination as early as the 1720s (Kellner et al. 2004) and grew dramatically in popularity in the late 19th century through the establishment of steamboat companies like the Fall River Line, as well as the increased popularity of yachting (Albion et al. 1970). Wealthy New Yorkers, such as Cornelius Vanderbilt, traveled by steamboat to Newport, where they entertained at their seaside mansions and sailed aboard their yachts (Labaree et al. 1998). Others cruised to Newport by yacht to enjoy what were considered the ideal sailing waters of Block Island Sound and Narragansett Bay. The New York Yacht Club began to hold its annual regatta in Newport waters, which laid the groundwork for the later relocation of the club to Newport (Albion et al. 1970). As such, Newport's rise as a resort community was due to its location adjacent to the SAMP area waters.

4. Much of Newport's late-19th-century rise in popularity was tied to the rise of yachting. Yachting and recreational boating had expanded dramatically in popularity in the late-19th and early-20th centuries throughout the U.S. due to the increase in discretionary income and leisure time amongst the upper classes. Narragansett Bay and the adjacent ocean waters have been popular locations for yacht racing activities and regattas since 1860. One historian describes the waters directly south of Narragansett Bay as "the most

favored spot on the coast for yacht racing" because "the winds off Newport are usually fresh and constant, and the tidal currents are moderate" (Albion et al. 1970, 215).

5. Newport's reputation as a center of yacht racing was solidified in 1930 when the America's Cup, a perpetual international sailing trophy begun in 1851, was brought to Newport by its defender, the New York Yacht Club. The New York Yacht Club successfully defended the America's Cup 24 times between 1870 and 1980, which is widely considered one of the greatest winning streaks in sports history (Levitt 2008). From 1930 to 1983, America's Cup racing was based out of Newport and the races were held just outside of Narragansett Bay off Brenton Point. In the 1930s, defender and challenger raced in large, iconic "J-Boats"; in 1957, when racing resumed after World War II, racers competed in 12-meter sloops that were roughly half the size of the original J Boats (Labaree et al. 1998). By the 1970s and 1980s, America's Cup racing had attained significant, widespread popularity among sailors and non-sailors alike, and attracted large numbers of spectators. Increasingly large crowds of visitors came to Newport and the adjacent waters; by one count, 100,000 people converged on Newport for the 1983 race (Kellner et al. 2004). The America's Cup was lost to Australia in 1983. In 1987 the New York Yacht Club established a permanent base in Newport and continues its prominent role in yacht racing, both in Rhode Island and throughout the world. The Club also continues to run yacht racing events in the same waters historically used by America's Cup competitors (Levitt 2008).

6. The America's Cup was only one of many historic and internationally renowned yacht races based out of Newport and located in SAMP area waters. Many are long-distance races which saw their beginning in the 1920s; the Bermuda Race, or Newport-Bermuda Race, is one such race (Albion et al. 1970). The modern history of the Newport-Bermuda race dates back to 1923, and in 1936 the race start was moved to Newport from New London, CT. The race is organized by the Cruising Club of America, one of the more prominent national organizations of yacht racing sailors (Connett, ed., 1948). Other long-running races based out of Newport include the New York Yacht Club Annual Regatta and Sail Newport's annual regatta.

7. Though Newport is best-known throughout recent history as a nationally known center of coastal tourism and recreation, other Rhode Island communities adjacent to the SAMP area have historically been popular destinations and centers of recreational activity. Narragansett flourished as a coastal resort in the mid- to late-19th century. The Narragansett Pier and Casino (of which the Towers are the only remaining structure) were the center of this popular seaside resort that drew wealthy tourists from throughout the country (Conley 1986). In Westerly, Watch Hill was another coastal resort that attained prominence in the late 19th century, and Block Island also became a popular tourist destination by this time (Conley 1986). Little Compton and Jamestown were also seaside resort destinations (Kellner et al. 2004). In these and other locations, tourists stayed in large, Victorian-style hotels and enjoyed swimming and recreating on Rhode Island's expansive beaches (Conley 1986).

8. In addition to seaside tourism, Block Island has historically been a popular destination for recreational boaters and sailors. A 1948 cruising guide, *Yachting in North America*, identifies Block Island as a recommended destination and directs boats to anchor in the Great Salt Pond, rather than Old Harbor on the east side of the island. It identifies Block Island as "a place where you'll meet every cruising yacht and yachtsman between Cape Cod and New York. It's the goal of many a small boat's cruise from both the western end of Long Island Sound and the ports to the eastward, the place where bigger yachts almost always stop in when bound either east or west, and the scene of many a yacht club rendezvous and cruising-race finish" (Connett, ed., 1948, 82).

9. Though modern seaside recreation and tourism, both in Rhode Island and throughout the nation, originated as an activity for the wealthier classes, coastal recreation and tourism activities became increasingly popular activities for the emergent middle class during the early- to mid-20th century. The rise of the automobile coupled with the development of roads made coastal destinations accessible by car, which drew middle class tourists and residents to Rhode Island's seaside resorts (Thompson 2006). Similarly, throughout the 20th century recreational boating and sailboat racing became an activity available to Americans of all classes (Labaree et al. 1998). Today, the SAMP area waters and adjacent seaside resorts are actively utilized by a wide range of residents and tourists.

Section 620: Marine Recreation in the SAMP Area

1. Rhode Island's close association with the ocean has made marine recreation a large part of the state's culture and appeal. Rhode Island has approximately 420 miles of shoreline and because of the state's geography and small size, all Rhode Islanders live within 25 miles of the shore. The bay, ocean and shoreline are, consequently, Rhode Island's most cherished natural features, and offer opportunities for swimming, boating, fishing, diving, wildlife observation and other recreational pursuits enjoyed by both residents and tourists (Rhode Island Department of Administration Statewide Planning Program and Rhode Island Department of Environmental Management 2003).

620.1 Recreational Boating

1. Recreational boating is one of the most popular uses of the SAMP area, attracting Rhode Island residents and tourists to the water for sailing, power boating, and fishing and diving activities. Sailors and power boaters use the SAMP area to cruise between recreational harbors and other destinations, sightsee, race, fish, or participate in other recreational activities. Recreational fishing (which includes recreational fishing aboard private boats and party and charter boats) is one of the most popular recreational boating activities in the SAMP area and is discussed in detail in *Chapter 4, Fisheries Resources and Uses*. Organized sailboat racing is another popular recreational uses of the SAMP area and is discussed in detail below in section 620.3. Recreational boating activity within the SAMP area varies seasonally, with the peak times occurring during warmer months (approximately May through October). According to the U.S. Coast Guard, the majority of recreational boating takes place within three miles of shore (U.S. Coast Guard 2006).

2. As of September 2009, there were 41,985 boats registered in the State of Rhode Island, a portion of which are owned by non-residents (Department of Environmental Management Office of Boat Registration and Licensing 2009). In 2006, out-of-state boat owners represented 14% of the total registered boats in Rhode Island (Rhode Island Economic Monitoring Collaborative 2008). In addition, boats registered in other states use Rhode Island waters; the Department of Environmental Management has estimated that 10,000 boats registered out-of-state visit Rhode Island each year (Rhode Island Department of Environmental Management 2004).

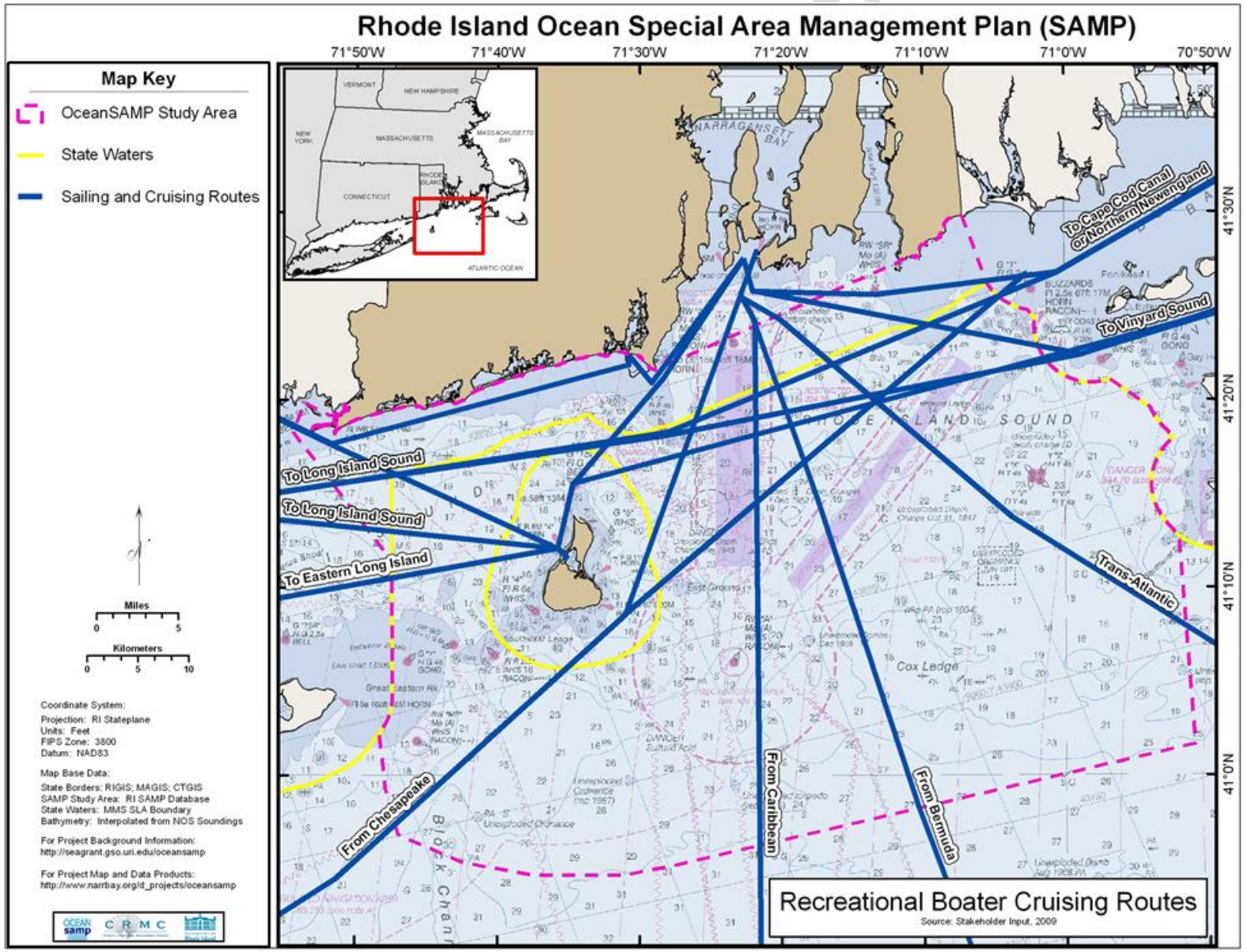
3. Much recreational boating within the SAMP area originates in and/or is supported by Rhode Island's recreational port and harbor facilities and marine trades businesses. These include marinas, boatyards, and boat ramps in Point Judith, Newport, Portsmouth, and in New Harbor on Block Island. See section 640 below for further discussion of Rhode Island marinas, boat ramps, and recreational ports and harbors.

4. Local economies benefit from the influx of out-of-state recreational boaters through the use of marina services, fuel expenditures, and revenue generated from dining, entertainment and accommodations. See section 650 below for further discussion.

5. This chapter is focused on recreational activities in the SAMP area, which excludes Narragansett Bay. However it should be noted that recreational activities or events that take place outside the SAMP area, within Narragansett Bay, may sometimes generate increased recreational boating activity outside of the Bay in or adjacent to the SAMP area. Such activities include organized sailboat races and sailing school activities run by organizations like Sail Newport, or events that draw boat-based spectators such as the Quonset Air Show or Tall Ships parades.

6. Recreational boating activity in the SAMP area, excluding organized sailboat races and recreational fishing, largely constitutes cruising between recreational harbors and other destinations. Both sail and power boats, ranging widely in size, cruise between such destinations. Cruising activity within the SAMP area typically follows a number of general routes connecting destinations and bodies of water. Block Island and Newport are particularly popular destinations for cruising sailors and boaters. Most cruising occurs through the protected waters of Long Island, Block Island, and Rhode Island Sounds and is less common further offshore, though some cruisers travel between Newport and the Chesapeake, the Canadian Maritimes, Bermuda, the Caribbean, and Europe. See Figure 1 for a map of typical cruising routes within the SAMP area. This map was created through the input of recreational boating stakeholders. Many cruising routes follow similar preferred traffic routes used by commercial vessels; see *Chapter 7, Marine Transportation, Navigation, and Infrastructure*, for further discussion. It should be noted that this map represents typical recreational cruising routes only, and does not represent the entirety of recreational boating traffic patterns in the SAMP area.

Figure 1. Map of Recreational Boater Cruising Routes



7. Some recreational power boaters may occasionally take part in official or informal power boat racing events, or poker runs, in waters in or adjacent to the SAMP area. The U.S. Coast Guard has indicated that poker runs take place very infrequently within the SAMP area, and are generally problematic due to safety concerns (LeBlanc, pers. comm., October 23, 2009).

620.2 Recreational Fishing

1. Recreational fishing (which includes recreational fishing aboard both private boats and party and charter boats), is one of the most popular activities among recreational boaters within the SAMP area. A 2002 U.S. Coast Guard Boaters Survey found that fishing was the most prevalent activity when boating. Approximately 182,000 anglers fish in Rhode Island's waters each year, making 1.2 million trips; fifty percent of these anglers come from out of state (Ninigret Partners 2007). Recreational fishing is addressed separately in extensive detail in *Chapter 4, Fisheries Resources and Uses*. Recreational fishing is discussed within the context of fisheries because commercial and recreational fishermen target many of the same species. Additionally, activities such as charter boat fishing make it difficult to distinguish between commercial and recreational fishing because charter boat clients are recreational anglers, while charter boat captains are licensed professionals who manage fishing businesses.

620.3 Offshore Sailboat Racing

1. Much of the recreational sailing that takes place within the SAMP area is within the context of offshore sailboat races, or regattas. While it is likely that the majority of Rhode Island-based sailboat racing takes place within Narragansett Bay, many such races, primarily those involving larger vessels, ranging in length from 30 to 90 feet, occur offshore within the SAMP area each year.

2. Sailboat racing is a time-honored tradition in the SAMP area and a significant part of Rhode Island's history and culture. Some of the world's most famous and most competitive sailboat races, including the America's Cup and the Newport-Bermuda Race, have been held in the SAMP area since the early 20th century. From 1930 to 1983, America's Cup races were held in the waters south of Brenton Point, and the Newport-Bermuda Race has been held in Newport on a biennial basis since 1936. See section 610 for further discussion.

3. Sailboat racing in the SAMP area may be categorized as either buoy racing or distance racing. Many races occur on a regular basis as annual or biennial events, and some have been taking place since the early 20th century. Tables 1 and 2, below, together list races that occur wholly or partly within the SAMP area and that were identified and mapped through the Ocean SAMP stakeholder process. It is important to note that this is only a selection of regularly-occurring races in the area, and is not intended to be all-inclusive. Descriptions and course information for each of these races were obtained from race

organizers, official race documents such as Notices of Race or Sailing Instructions, or U.S. Coast Guard marine event permit applications.[1]

4. Buoy races typically take place in inshore, protected areas and involve racing one or more laps around a small linear or triangular course marked by special racing buoys. Examples in the SAMP area include the many races comprising Block Island Race Week, as well as the many different races hosted by Newport-based clubs that take place in the waters south of Brenton Point. See Table 1 below. Detailed descriptions of these races are included below.

[1] The Coast Guard requires marine event permit applications per 33 C.F.R. 100.15: "an individual or organization planning to hold a regatta or marine parade which, by its nature, circumstances or location, will introduce extra or unusual hazards to the safety of life on the navigable waters of the United States, shall submit an application to the Coast Guard District Commander having cognizance of the area where it is intended to hold such regatta or marine parade. Examples of conditions which are deemed to introduce extra or unusual hazards to the safety of life include but are not limited to: an inherently hazardous competition, the customary presence of commercial or pleasure craft in the area, any obstruction of navigable channel which may reasonably be expected to result, and the expected accumulation of spectator craft."

Table 1. Select Buoy Sailboat Races Occurring Within the Ocean SAMP Area

Event	Organizer	Month	Frequency	Course Description	Avg. No. of Vessels	Avg. Vessel Length (ft)
Block Island Race Week	Storm Trysail Club (odd years); Ted Zuse (even years)	June	Annual	Week of buoy races west of Block Island*	100+	30 - 90
New York Yacht Club Annual Regatta	New York Yacht Club	June	Annual	Buoy races south of Brenton Point	110	30 - 90
New York Yacht Club Invitational Cup	New York Yacht Club	Sept	Biennial	Buoy races south of Brenton Point	20	42
New York Yacht Club Race Week	New York Yacht Club	Sept	Biennial	Buoy races south of Brenton Point	150	30 - 90
Swan 42 National Championship	New York Yacht Club	July	Annual	Buoy races south of Brenton Point	20	42
Sail Newport Coastal Living Newport Regatta	Sail Newport	July	Annual	Buoy races south of Brenton Point		
world championship regattas (vary)**	various	Sept	Annual	Buoy races south of Brenton Point	varies	varies

**Event may also include one around-the-island race.*
***The Newport sailing community hosts at least one "world championship" regatta each September. In 2009 it was both the Six Meter World Cup and the Twelve Meter World Championships.*

5. Distance races may take place inshore or offshore and range in duration from part of a day to several weeks. A distance race may start and end in the same location, such as the Ida Lewis Distance Race, which starts and ends in Newport and covers up to 177 nautical miles (Ida Lewis Yacht Club 2009). Other distance races may start and end in different locations; one example is the Newport – Bermuda Race, which starts in Newport, ends in Bermuda, and covers approximately 635 nautical miles (McCurdy 2009). See Table 2 below. It should be noted that other long-distance transoceanic races periodically start or end in Newport and pass through the SAMP area. A recent example is the 2007 HSH Nordbank Blue Race (Dellenbaugh, pers. comm., June 16, 2009).

Table 2. Select Distance Sailboat Races Occurring Within the Ocean SAMP Area
Races start and/or end in Newport unless otherwise noted

Event	Organizer	Month	Frequency	Course Description	Avg. No. of Vessels	Vessel Length (ft)
Annapolis to Newport Race	Annapolis Yacht Club	June	Biennial	Annapolis, MD to Newport	61	34+
Bermuda One-Two	Goat Island Yacht Club and Newport Yacht Club	June	Biennial	Singlehanded: Newport to Bermuda; Doublehanded: Bermuda to Newport	38	28-60
Block Island Race	Storm Trysail Club	May	Annual	Stamford, CT around Block Island and back to Stamford	60	30-75
Corinthians Stonington to Boothbay Harbor Race	Corinthians Association, Stonington Harbor Yacht Club, and Boothbay Harbor Yacht Club	July	Biennial	Stonington, CT to Boothbay, ME	14	
Earl Mitchell Regatta	Newport Yacht Club	Oct	Annual	Newport to Block Island	15	30-50
Ida Lewis Yacht Club Distance Race	Ida Lewis Yacht Club	August	Annual	Multi-legged course through Rhode Island Sound and adjacent offshore waters	40	30-90
Marion to Bermuda Cruising Yacht Race	Marion-Bermuda Cruising Yacht Race Association	June	Biennial	Marion, MA to Bermuda	48	32-80
New England Solo-Twin Championships	Newport Yacht Club and Goat Island Yacht Club	July	Annual	Multi-legged course through Rhode Island Sound and adjacent offshore waters; starts/ends in Newport	35	24-60
Newport Bucket Regatta	Bucket Regattas/ Newport Shipyard	July	Annual	Three multi-legged courses off Brenton Point	19	68-147
Newport to Bermuda Race	Cruising Club of America	June	Biennial	Newport to Bermuda	265	30 - 90
New York Yacht Club Annual Cruise	New York Yacht Club	August	Annual*	Varies	100	30-90
Offshore 160 Single-Handed Challenge	Newport Yacht Club and Goat Island Yacht Club	July	Biennial	Multi-legged course through Rhode Island Sound and adjacent offshore waters; starts/ends in Newport	15	28-60

Off Soundings Club Spring Race Series	Off Soundings Club	June	Annual	Day 1: Watch Hill to Block Island; Day 2: Around Block Island	120-150	23-62
Owen Mitchell Regatta	Newport Yacht Club	May	Annual	Newport to Block Island	31	24-44
Vineyard Race	Stamford Yacht Club	Aug/Sept	Annual	Stamford, CT to entrance of Vineyard Sound and back to Stamford	77	30-90
Whaler's Race	New Bedford Yacht Club	Sept	Annual	New Bedford, MA around Block Island, to Noman's Island, and back to New Bedford	22	25+

**Course varies widely; event is held within the SAMP area waters approximately 3 out of every 5 years (Dellenbaugh, pers. comm., September 29, 2009). Because of this variability, this race is not included in Figure 3, Map of Sailboat Race Courses*

6. Buoy races in the SAMP area typically take place within the same areas each year and are best represented on a map as circles encompassing the areas where the race courses are traditionally set. It should be noted that the New York Yacht Club, Sail Newport, and other race organizers run multiple buoy racing events and use the same standard areas for all of their events. See Figure 2, Map of Sailboat Racing Areas.

7. Long-distance races are best represented on a map as linear race courses; see Figure 3, Map of Distance Sailing Race Courses. However it is important to note that racers typically do not race in a straight line, but change course significantly depending on winds, currents, and other factors. It should also be noted that some race courses change from year to year based on the discretion of the race organizer.

Figure 2. Map of Sailboat Racing Areas

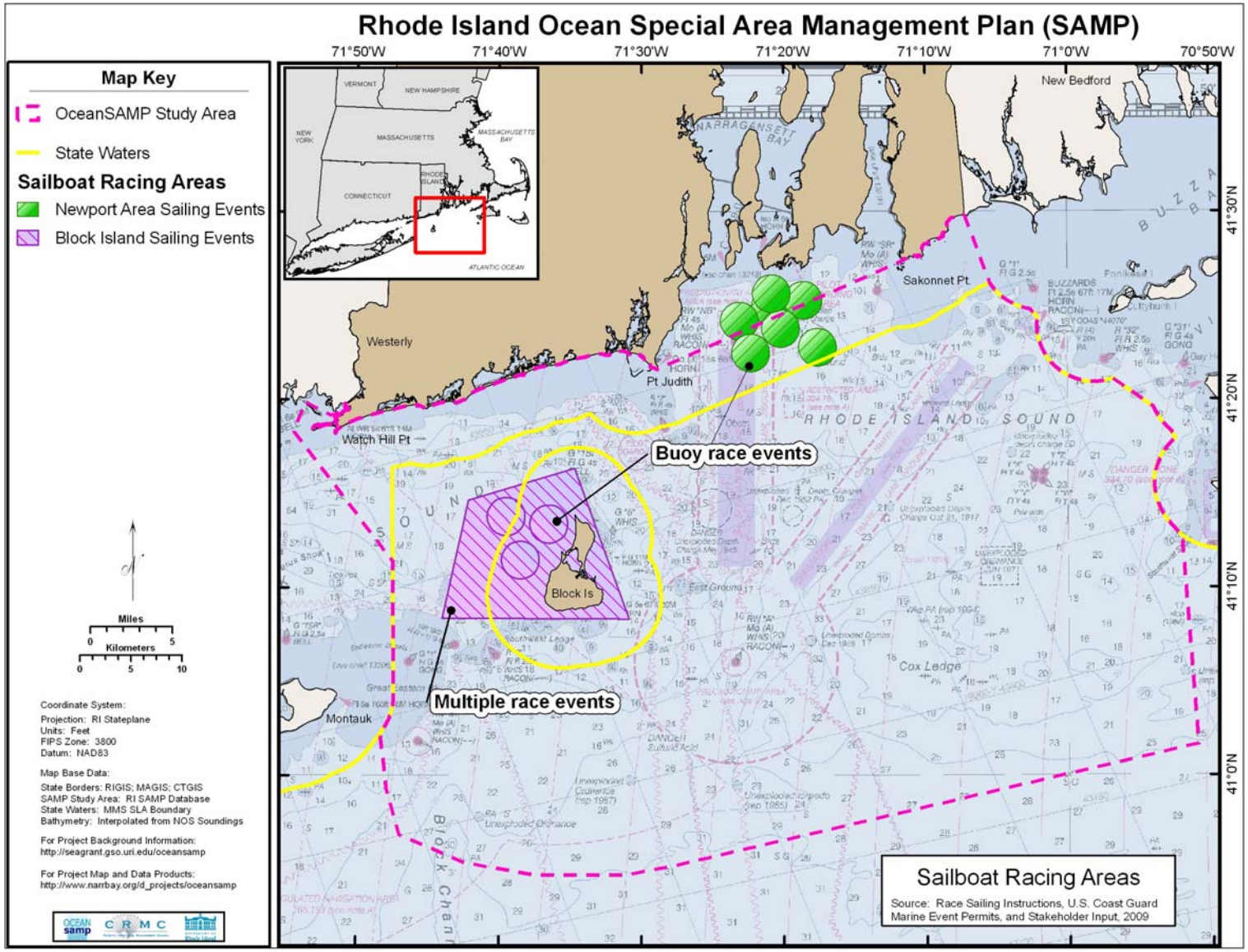
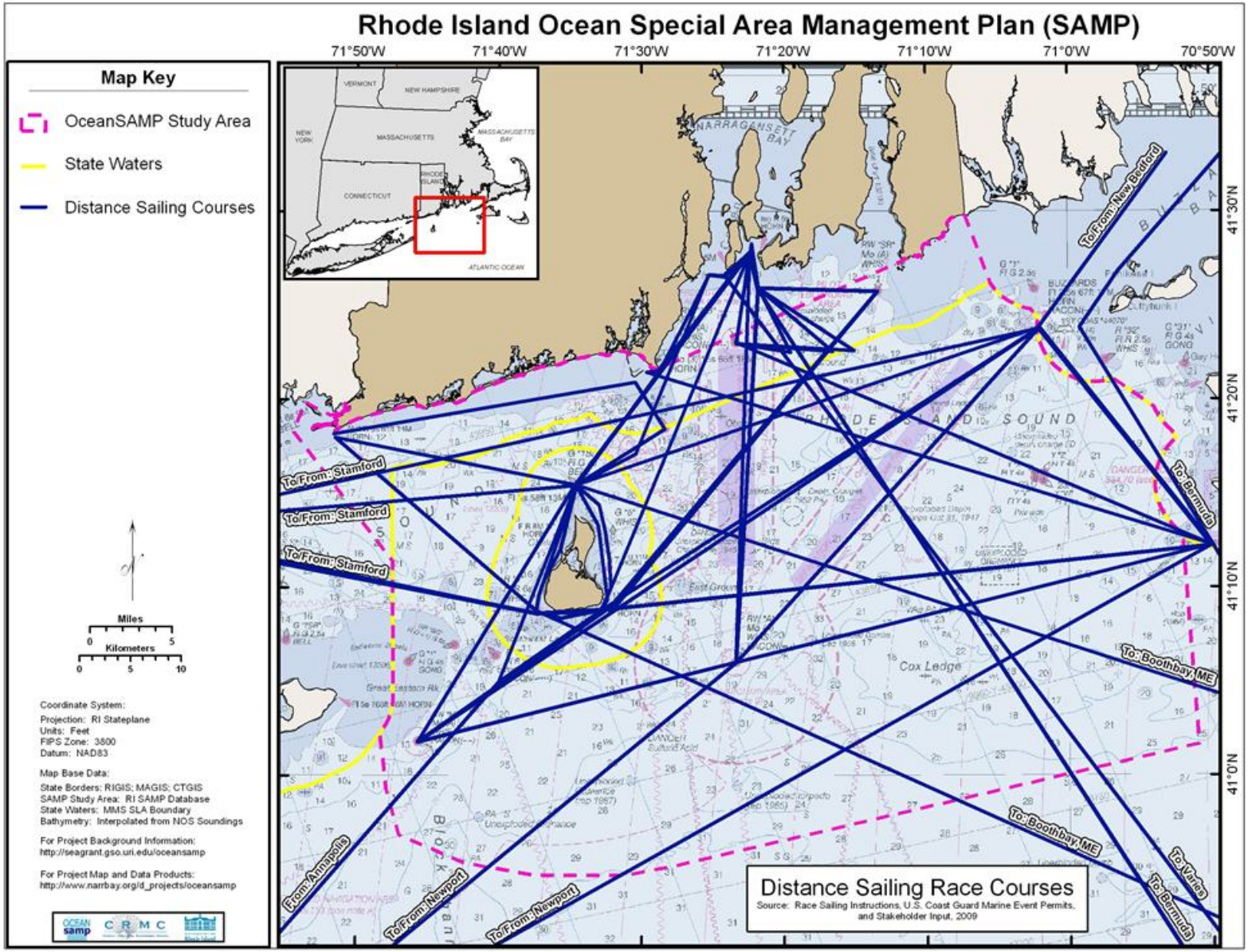


Figure 3. Map of Distance Sailing Race Courses



8. As figures 2 and 3 illustrate, sailboat racing within the SAMP area is widespread, but is also concentrated in two different areas: south of Brenton Point and around Block Island. The waters south of Brenton Point are used for the majority of buoy racing that takes place within the SAMP area. Many races also start or end in these waters, or just north of them inside Narragansett Bay. It is also important to note that this area is where America's Cup races took place for over 50 years, from 1930 to 1983. Block Island is also a popular destination or waypoint for many of the races that take place within the SAMP area. In addition to Block Island Race Week, eight other races listed above use Block Island as either a destination or a waypoint. In many cases, Block Island is integral to the challenge of a race in that sailors make strategic decisions about whether to pass to the north or south of the island, or how close to pass near it, in order to gain advantage over competitors. See Figure 4, Map of High-Intensity Boating Areas.

9. Figure 5, Sailing Events by Month, illustrates that sailboat racing in the SAMP area is concentrated in just a few months of the year. June, July, August, and September are particularly active months for sailboat racing.

Figure 4. Map of High Intensity Boating Areas

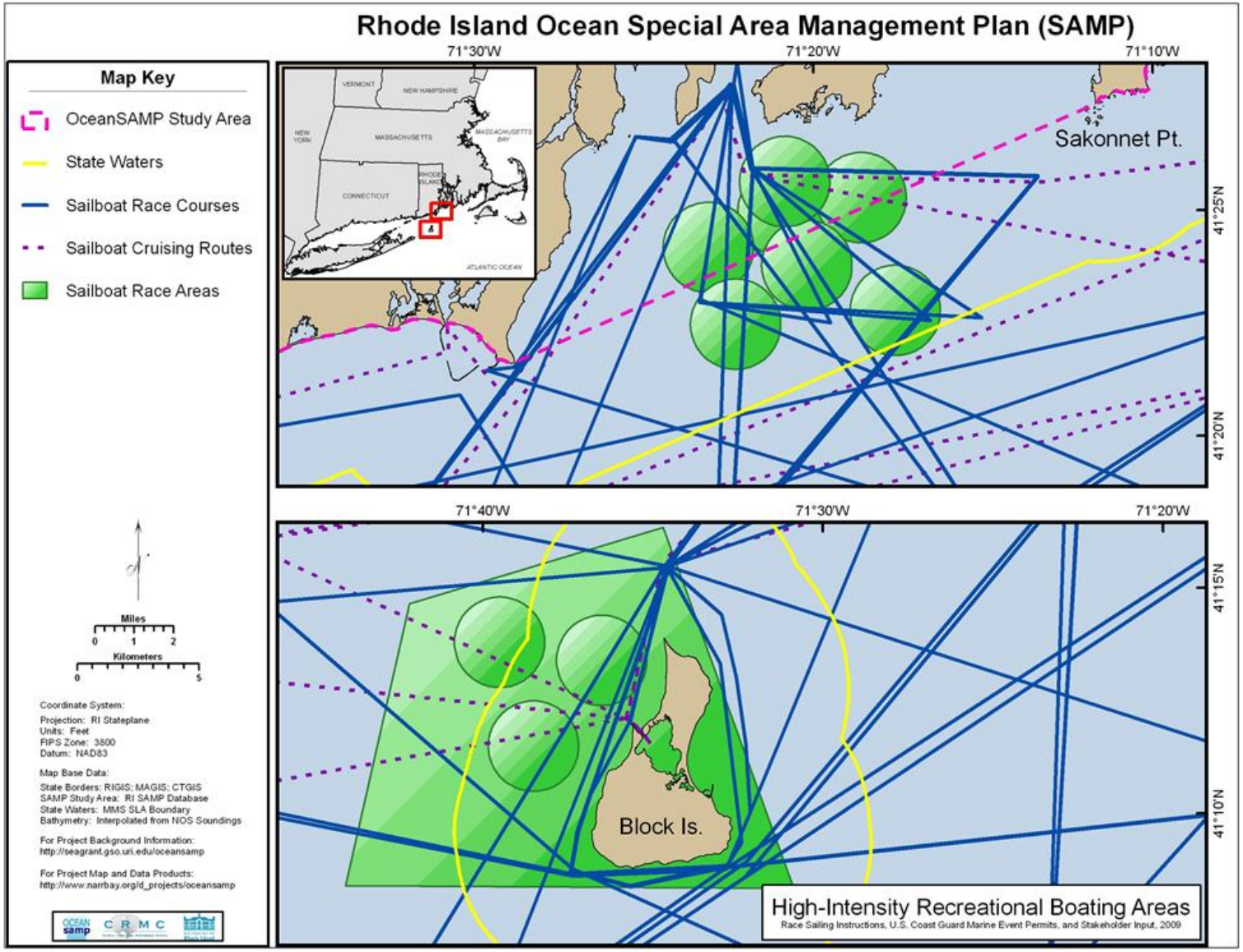


Figure 5. Map of Sailing Events by Month

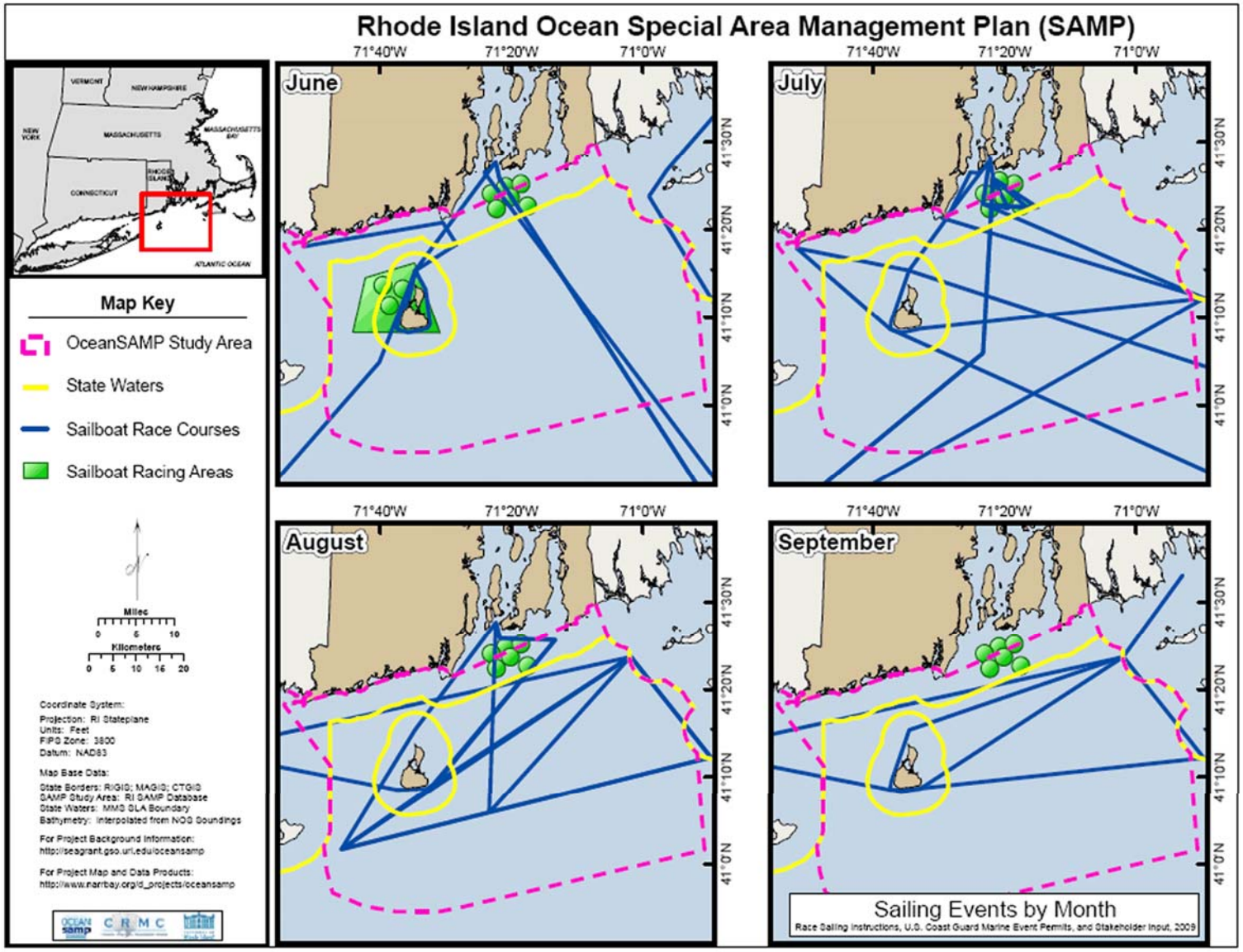


Table 3. Descriptions of Select Sailboat Races

BUOY RACES	
1. Block Island Race Week ***(Storm Trysail Club, Ted Zuse)***	Block Island Race Week: Week-long racing event that takes place annually in approximately the 3rd week of June. In even years a smaller-scale race week is hosted by Ted Zuse; in odd years a larger-scale event is hosted by the Storm Trysail Club. The event comprises five days of races, most of which are buoy races. Race weeks usually also include an around-the-island race. Buoy races are generally held in one of three predetermined areas west and northwest of the island (Storm Trysail Club 2009a). Event size varies from year to year; in 2009, 153 boats ranging in size from 24 to 65 feet entered the race (Storm Trysail Club 2009b).
2. New York Yacht Club Annual Regatta **3. New York Yacht Club Invitational Cup** **4. New York Yacht Club Race Week** **5. Swan 42 National Championships** ***(New York Yacht Club)***	*New York Yacht Club Events*: The New York Yacht Club (NYYC) hosts a number of highly competitive buoy races each year. Those that take place within the SAMP area include the *New York Yacht Club Annual Regatta*, the *New York Yacht Club Invitational*, the *New York Yacht Club Race Week (biennial)*, and the *Swan 42 National Championships*. These events typically last between two and five days and all comprise a series of buoy races south of Brenton Point in Rhode Island Sound within one of several areas traditionally used by the New York Yacht Club (see Figure 2) (Dellenbaugh pers. comm., September 29, 2009). Average size and number of participating vessels varies; see Table 2 above (Dellenbaugh pers. comm., September 29, 2009). Actual race courses are set each day by the race organizers in order to take advantage of the current weather conditions.
6. Sail Newport Coastal Living Newport Regatta ***(Sail Newport)***	Sail Newport hosts a few buoy races within the SAMP area each year; one is the Sail Newport Coastal Living Newport Regatta in July. This race is a three-day event including multiple buoy-racing events for multiple types of vessels (Sail Newport 2009a). Races take place south of Brenton Point in Rhode Island Sound within one of several areas traditionally used by Sail Newport (see Figure 2). Actual race courses are set each day by the race organizers in order to take advantage of the current weather conditions.
7. world championship regattas (TBD) ***(organizer varies)***	The Newport sailing community hosts at least one "world championship" regatta each year in September. In 2009 two events were held. The International Six Meter World Cup was a six-day event hosted by Sail Newport comprising five days of racing for an international group of competitors (Sail Newport 2009b). The Twelve Meter World Championships was a five-day event hosted by the New York Yacht Club (New York Yacht Club 2009). World championship regattas typically take place south of Brenton Point in Rhode Island Sound within one of several areas traditionally used by Newport-based race organizers (see Figure 2). The average size and number of participating vessels varies widely depending on the event.

DISTANCE RACES	
8. Annapolis to Newport Race ***(Annapolis Yacht Club)***	One of the popular, longer distance races passing through the SAMP area is the biennial Annapolis to Newport race organized by the Annapolis Yacht Club in Annapolis, MD. Sailing Instructions for this event do not specify what route racers need to take on their approach to Newport, and as a result, racers may choose to pass north and south of Block Island at their own discretion (Annapolis Yacht Club 2009a). In either case, racers will try to sail as close to the island as possible to minimize the distance to the finish line. Sixty-one boats entered the 2009 race, all of which were at least 34 feet in length (Annapolis Yacht Club 2009b).
9. Bermuda One-Two ***(Goat Island Yacht Club and Newport Yacht Club)***	The Bermuda One-Two Regatta is held in odd-numbered years and is co-sponsored by the Goat Island Yacht Club and Newport Yacht Club. The race has two legs, the first of which is sailed singlehanded by any course from Newport to St. George's, Bermuda. The second leg is sailed doublehanded from Bermuda, by any course, to Newport (Goat Island Yacht Club and Newport Yacht Club 2009a). In 2009, there were 38 entrants in the singlehanded race and 30 in the doublehanded race, and included vessels ranging from 28 to 60 feet in length (Goat Island Yacht Club and Newport Yacht Club 2009b). Entrants into this race qualify by competing in the Offshore 160 Single-Handed Challenge (below) (Newport Yacht Club 2009a).
10. Block Island Race ***(Storm Trysail Club)***	The annual Block Island Race, sometimes called the Around Block Island Race, starts from Stamford, CT on the Friday of Memorial Day Weekend. Participating boats race east out of Long Island Sound, round Block Island in a clockwise pattern, and then race back to Stamford. This is a 185 mile race which has a 60-year history. Approximately 60 boats ranging in length from 30 to 75 feet participated in the 2009 race (Storm Trysail Club 2009c).
11. Corinthians Stonington to Boothbay Harbor Race ***(Corinthians Association, Stonington Yacht Club, and Boothbay Harbor Yacht Club)***	The Stonington to Boothbay Harbor Race is a biennial race organized by the Corinthians Association, Stonington Harbor Yacht Club, and Boothbay Harbor Yacht Club. The race starts off Stonington, CT and crosses through the SAMP area en route to Boothbay Harbor, Maine. Racers may pass either north or south of Block Island during the first leg of the race, heading for Nantucket Shoals before turning northward for Maine (Corinthians Association 2008). In 2008, fourteen vessels participated in this race.
12. Ida Lewis Distance Race ***(Ida Lewis Yacht Club)***	The annual Ida Lewis Distance Race features two multi-legged race courses of between 150 and 177 miles in length that start and end in Newport and travel throughout the SAMP area (Ida Lewis Yacht Club 2009a, Ida Lewis Yacht Club 2009b). Approximately 40 yachts, ranging in length from 30 to 90 feet, registered for the 2009 event (Ida Lewis Yacht Club 2009c).

13. Marion to Bermuda Cruising Yacht Race ***(Marion-Bermuda Cruising Yacht Race Association)***	The biennial cruising yacht race from Marion, MA to Bermuda is organized by the Marion-Bermuda Cruising Yacht Race Association. This 645 nautical mile race does not start or finish in Rhode Island, though many racers pass through the SAMP area when exiting Buzzards Bay (Marion Bermuda Cruising Yacht Race Association 2009a). Yachts participating in this race must be between 32 and 80 feet in length (Marion Bermuda Cruising Yacht Race Association 2009b). In 2009, 48 vessels entered the race (Marion-Bermuda Cruising Yacht Race Association 2009c).
14. Owen L. Mitchell Memorial Day Regatta **15. Earl Mitchell Columbus Day Regatta** ***(Newport Yacht Club)***	The Newport Yacht Club organizes both the Owen and Earl Mitchell Regattas every year on Memorial Day and Columbus Day, respectively. Both day-long distance races begin in Newport and finish in New Harbor on Block Island along a course set just off the coast of Point Judith (see Figure 3). The Mitchell Regattas emphasize fun over competition as participants who have not finished by 6:00 PM are advised to motor to the finish line to join the awards ceremony (Newport Yacht Club 2009b and 2009c). Thirty-one vessels competed in the 2009 Owen Mitchell Regatta, and fifteen competed in the Earl Mitchell Regatta. Vessels in these regattas were between 24 and 50 feet in length (Newport Yacht Club 2009d).
16. New England Solo – Twin Championships ***(Goat Island Yacht Club and Newport Yacht Club)***	The annual New England Solo-Twin Championships are a series of single- and double-handed races. Vessels between 24 and 60 feet in length compete on long-legged courses, from 65 to 125 miles in length, that start and end in Newport and travel through the SAMP area (Newport Yacht Club and Goat Island Yacht Club 2009a). 35 vessels competed in the 2009 Championships (Newport Yacht Club and Goat Island Yacht Club 2009b).
17. Newport Bucket Regatta ***(Bucket Regattas/ Newport Shipyard)***	The Newport Bucket Regatta is an annual invitational regatta open to megayachts, largely those over 90 feet in length. The regatta is popular with classic sailing yachts, and event organizers emphasize fun and safety over competition. Vessels race a series of long-legged triangular courses south of Brenton Point (Bucket Regattas 2009a). In 2009, 19 yachts ranging in length from 68 to 147 feet participated in this event (Bucket Regattas 2009b).
18. Newport to Bermuda Race ***(Cruising Club of America)***	The biennial Newport to Bermuda Race, organized by the Cruising Club of America, takes place in even-numbered years. This 635-mile race lasts from three to six days and takes racers from the waters off of Newport, south through the SAMP area, to Bermuda (McCurdy 2009). The race was founded in 1906 and has been based out of Newport since 1936. In 2006, a record 265 vessels entered this race (Rousmaniere 2007).

19. New York Yacht Club Annual Cruise ***(New York Yacht Club)***	The New York Yacht Club Annual Cruise is a week-long event hosted each August that comprises a series of day-long distance races between different northeastern ports. The average cruise involves 100 vessels ranging from 30 to 90 feet in length. Race course and port destinations vary each year and takes place wholly or partly within the SAMP area approximately 3 out of every 5 years (Dellenbaugh, pers. comm., September 29, 2009). Because of the significant variation in this event's race course, it is not included in Figure 3, Map of Sailboat Race Courses.
20. Offshore 160 Single-Handed Challenge ***(Newport Yacht Club and Goat Island Yacht Club)***	The biennial Offshore 160 Single-Handed Challenge is held during even-numbered years and is sponsored by the Goat Island Yacht Club and the Newport Yacht Club. The 160-mile Offshore 160 is held in the off-years from the biennial Bermuda One-Two Race (above) and is a qualifier for the One-Two (Newport Yacht Club 2009e). This multi-legged course starts and ends in Newport and extends throughout the SAMP area. Participating vessels must be 28 to 60 feet in length (Newport Yacht Club 2008). In 2008, fifteen vessels participated in this race.
21. Off Soundings Club Spring Race Series ***(Offsoundings Club)***	The Off Soundings Club Spring Race Series is sponsored by the Off Soundings Club of Madison, CT and takes place annually during the second weekend of June. Day 1 of the series comprises a race from Watch Hill, RI to Block Island. Day 2 comprises a race around Block Island. Approximately 120 to 150 vessels ranging in length from 23 to 62 feet participate in this race (Off Soundings Club 2009).
22. Vineyard Race ***(Stamford Yacht Club)***	The Vineyard Race is a 283-mile race that takes place each year on Labor Day weekend. Racers start in Stamford, CT and race eastward through Long Island and Rhode Island Sounds to Buzzard's Bay Tower, near the mouth of Vineyard Sound. Racers then pass to the south of Block Island, re-enter Long Island Sound, and return to Stamford (Stamford Yacht Club 2009a). In 2009, 77 vessels ranging in length from 30 to 90 feet entered this race (Stamford Yacht Club 2009b).
23. Whaler's Race ***(New Bedford Yacht Club)***	The Whaler's Race is an annual event sponsored by the New Bedford Yacht Club each September. The 105-mile race is open to vessels greater than 25 feet in length. The race course begins and ends in New Bedford and comprises a multi-legged course throughout the SAMP area (New Bedford Yacht Club 2009a). Twenty-two vessels competed in the 2007 race (New Bedford Yacht Club 2009b).

620.4 Offshore Diving

1. Boat-based scuba diving occurs at a number of sites throughout the SAMP area, primarily focused around historical ship wrecks or interesting benthic communities. Shark cage diving is another popular activity which is discussed separately, below, under section 620.5 Offshore Wildlife Viewing. While diving can occur anytime from May through December, visibility underwater is a major factor in selecting the time and location of a dive. In offshore diving areas, visibility improves steadily from May to through September or October, whereas in diving areas further inshore, good visibility may extend into November (Donilon, pers. comm., June 5, 2009). Because visibility within Narragansett Bay is usually poor throughout the year, almost all diving within Rhode Island occurs within the SAMP area. Many diving excursions are facilitated through professional dive boats that can be chartered by groups of approximately 6 people, for 8 hour trips. Approximately ten licensed dive boats operate within the SAMP area; however, divers may also dive from private boats as well (Bellavance, pers. comm., June 25, 2009). The depth of the diving site determines its level of difficulty, with the shallowest sites being used by both beginners and experts, compared to the deepest sites which are used only by the more experienced divers.

2. The most important wrecks for diving were identified by dive boat captains operating within the area. Twelve sites were identified as those most commonly used by dive charter operators within the SAMP area (Bellavance, pers. comm., June 25, 2009), and are listed in Table 4 and shown in Figure 6. In identifying the most popular dive sites within the SAMP area, only offshore sites were considered. For a full discussion of historic ship wrecks in the SAMP area, see *Chapter 3, Cultural and Historic Resources*.

3. By definition, offshore diving relies on access to shipwrecks and other site-specific ocean features. For further information on ocean features see Chapter 12, *New Policies, Procedures, Zoning, and Regulations*.

Figure 6. Map of Offshore Dive Sites within the SAMP Area

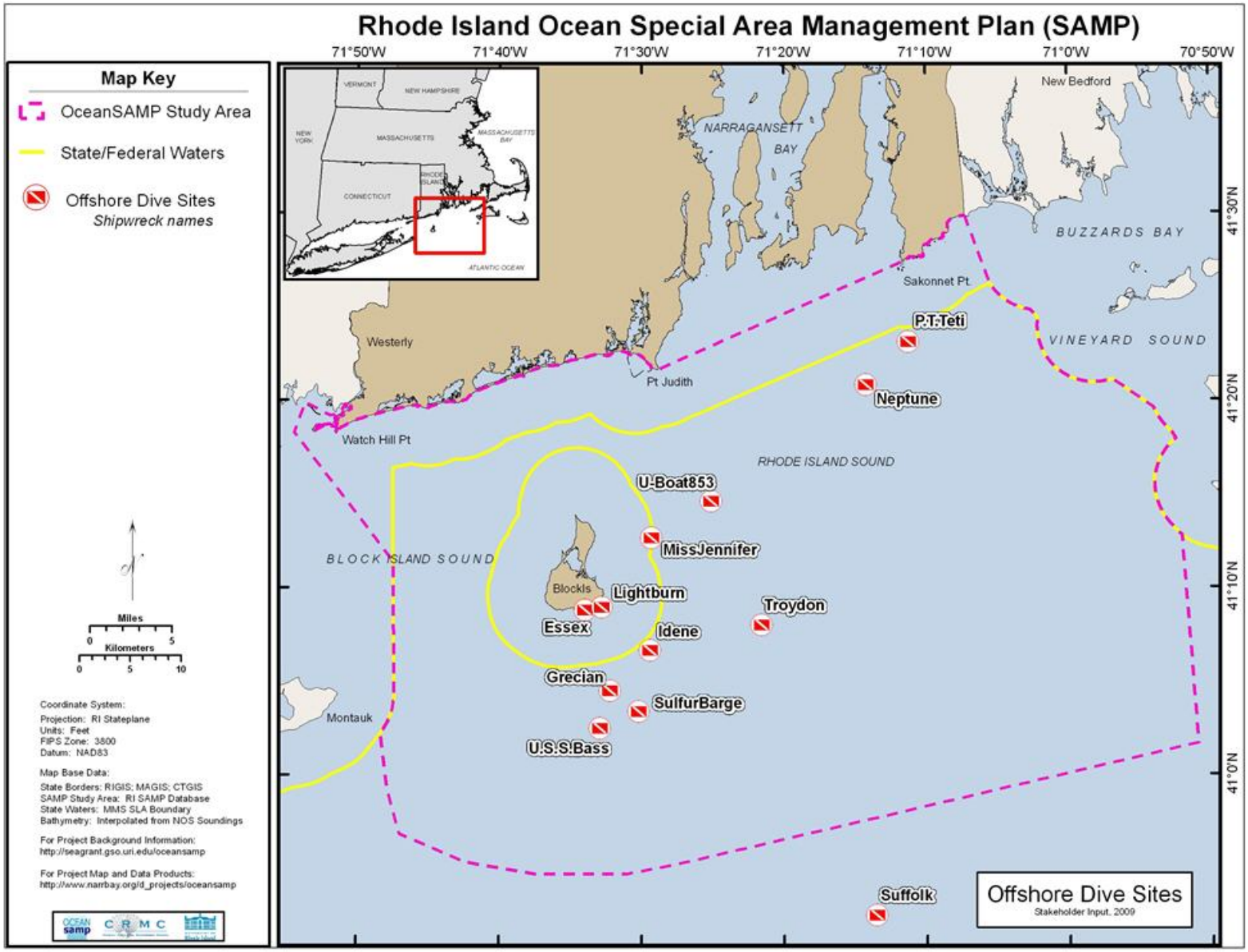


Table 4. Dive Sites Within the SAMP Area

Dive Site	Approximate Position
Suffolk	40° 52.5 N/ 071°13.5 W
U.S.S. Bass	41°02.5 N / 071° 32.9 W
Idene	41°06.65 N/ 071°29.4 W
Sulfur Barge	41°03.4 N/ 071°30.2 W
Grecian	41°04.5 N/ 071°32.2 W
P. T. Teti	41°23.1 N/ 071°11.2 W
Neptune	41°20.8 N / 071° 14.2 W
Troydon	41°08.0 N / 071° 21.55 W
Miss Jennifer	41°12.65 N/ 071°29.3 W
U-Boat 853	41°14.6 N/ 071°25.1 W
Essex	41°08.8 N/ 071°34.0 W
Lightburn	41°08.9 N/ 071°32.9 W

620.5 Offshore wildlife viewing

1. Offshore wildlife viewing within the SAMP area consists mainly of whale, bird and shark viewing aboard charter vessels of various sizes. Whale watching occurs primarily during July and August when the demand is highest and the whales are most active within the area. During the season, whale watching trips occur most days during the week. Whale watching trips in the SAMP area are offered by only a couple of Rhode Island-based businesses. The vessels used most frequently for whale watching can carry approximately 100-150 people per trip. Assuming roughly 40 trips per season, one whale watching vessel can serve anywhere from 4,000 to 6,000 people per year. A typical whale watching trip lasts for approximately four and a half hours, though there are some overnight charters as well (Blount, pers. comm., June 15, 2009). The whale species observed most frequently on whale watching trips within the SAMP area are finback, minke, and humpback whales. In the early season, right whales are occasionally observed, as well as sperm whales which chase squid up through the area between Block Island and Long Island (see Figure 7). Due to their unpredictable nature, the number of whales observed on these trips can vary greatly from season to season. Areas within the SAMP that produce the most frequent whale sighting include the Deep Hole region and an area south of Block Island, both of which are characterized by deeper water (see Figure 7).

2. Offshore bird watching charters occur throughout the year, by private charter or in conjunction with whale watching charters. Avian migration patterns dictate what types of species are most prevalent on the bird watching trips. Most trips are day trips, though there are some overnight charters available. Popular times for offshore bird watching are after storms because strong winds can blow rare offshore species closer to shore. Because pelagic bird watching represents a niche market, only a handful of charter boats offer the service. The largest charter vessels involved serve an estimated 400 people per year (Blount, pers. comm., June 15, 2009). Areas within the SAMP area that are used most heavily for bird watching include the waters off the southeast corner of Block Island and

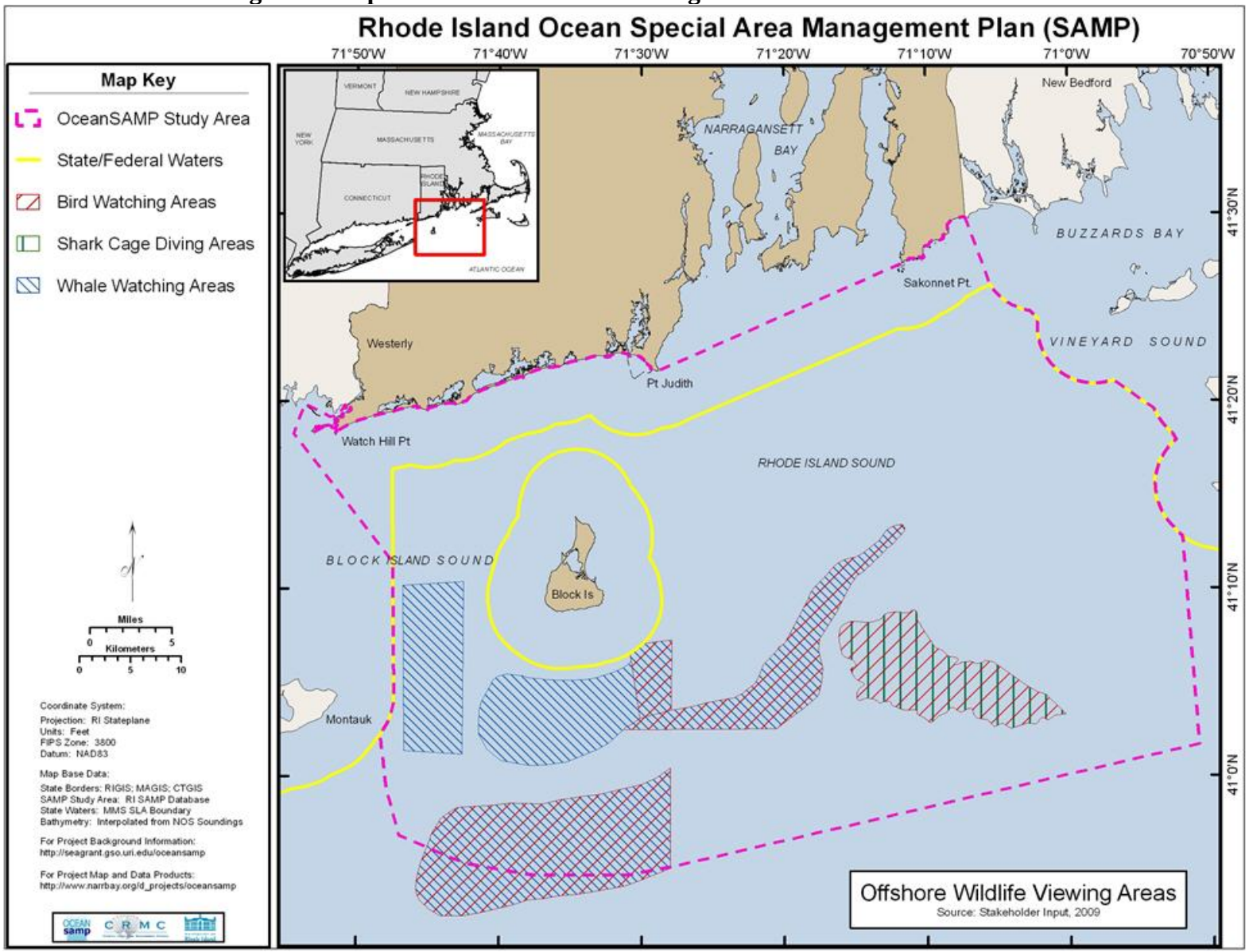
the Deep Hole region. However, some trips extend out to the submarine canyons south of the SAMP area (see Figure 7). The areas used for offshore bird watching are often the same areas used by mobile gear commercial fishermen, as their fishing activity attracts birds.

3. Shark cage diving is another popular offshore wildlife viewing activity. Currently there is one Rhode Island-based charter company running shark cage diving trips within the SAMP area. Trips are typically eight hours in length, though trips further offshore run from ten to twelve hours. Divers can choose between using a submersible cage that is lowered approximately seven feet below the surface, or a floating cage platform for those less experienced or who prefer to snorkel rather scuba dive (Snappa Charters 2008). While shark diving trips can occur between June and October, most occur within August and September when visibility is best. The area used for these shark charters can be large (see Figure 7) as the boat will usually drift or relocate multiple times to find the best location for the customers (Donilon, pers. comm., June 5, 2009).

4. Offshore wildlife viewing areas were identified and mapped through the Ocean SAMP stakeholder process and with particular input from key charter boat operators; see Figure 7.

5. It should be noted that offshore wildlife viewing activities rely on the presence and visibility of marine and avian species including fish, whales, sharks, and birds. The site-specific nature of offshore wildlife viewing, as depicted in Figure 7, may be due in part to site-specific benthic habitat or other environmental factors. For further discussion of benthic habitat and other natural and physical features, see *Chapter 2, Ecology of the SAMP Area*.

Figure 7. Map of Offshore Wildlife Viewing Areas within the SAMP Area



620.6 Other Boat-Based Activities

1. Other boat-based activities which may occur within the SAMP area include parasailing, canoeing, kayaking, sea duck hunting, and other charter boat operations. Parasailing, which requires a specially rigged boat, occurs mainly off the coast of Block Island during the summer months. Canoeing and ocean kayaking activities take place primarily close to shore, in sheltered waters along Rhode Island's south shore and the Block Island coast. Sea duck hunting in Rhode Island is predominately a boat-based activity that takes place in nearshore waters within a mile of the coastline. Hunting is concentrated in waters off of Sachuest Point, Brenton Point, Sakonnet Point, the Point Judith Harbor of Refuge, Green Hill Beach, and Block Island; target species include scoter, eider, and long-tailed ducks (Osenkowski, pers. comm., November 20, 2009). Other charter boat activities which may occasionally take place within the SAMP area include Newport-based sailing charters, and lighthouse viewing tours. Such trips typically take place closer to shore in sheltered waters.

Section 630: Cruise Ship Tourism

1. There are eleven cruise line companies that currently visit Rhode Island coastal communities between April and November (see Table 5). These cruise ships pass through the Ocean SAMP area en route to and from Block Island, Newport, Bristol and Providence. Newport has the largest amount of cruise ship activity. Typically, Newport-bound cruise ships will anchor out in Newport Harbor for 8-10 hours, allowing passengers to disembark for day trips in the Newport area. Once anchored, passengers are then ferried over to Newport's Perrotti Park in smaller vessels. American Cruise Lines operates smaller ships that dock at Newport's Fort Adams pier. For more information on the routes and anchorages used by cruise ships through the SAMP area, see *Chapter 7 Marine Transportation, Navigation and Infrastructure.*

2. Fifty-eight cruise ships were scheduled to visit Newport in 2009 (see Table 5), up from 35 ships in 2008 (see Table 6). Newport saw the largest amount of cruise ship traffic in 2004, when 76 ships visited between the months of April and November (see Figure 8). However, while 2004 had the largest number of ships, 2008 showed the greatest number of cruise ship passengers to Newport, when 68,183 visitors were recorded (see Figure 9) (Newport Convention and Visitor's Bureau 2009a).

Table 5. Cruise Ship Visits Scheduled for Newport in 2009
(Newport Convention and Visitors Bureau 2009b)

Cruise Line	# of Scheduled Visits
Carnival	1
Holland America	5
American Cruise Lines	23
Princess	14
P&O	1
Norwegian Cruise Lines	4
Celebrity	1
Cunard	3
Saga	1
Costa	2
Crystal	3
Total	**58**

Figure 8. Annual Cruise Ship Visits to Newport Between 1994 and 2008 (Newport Convention and Visitor's Bureau 2009a)

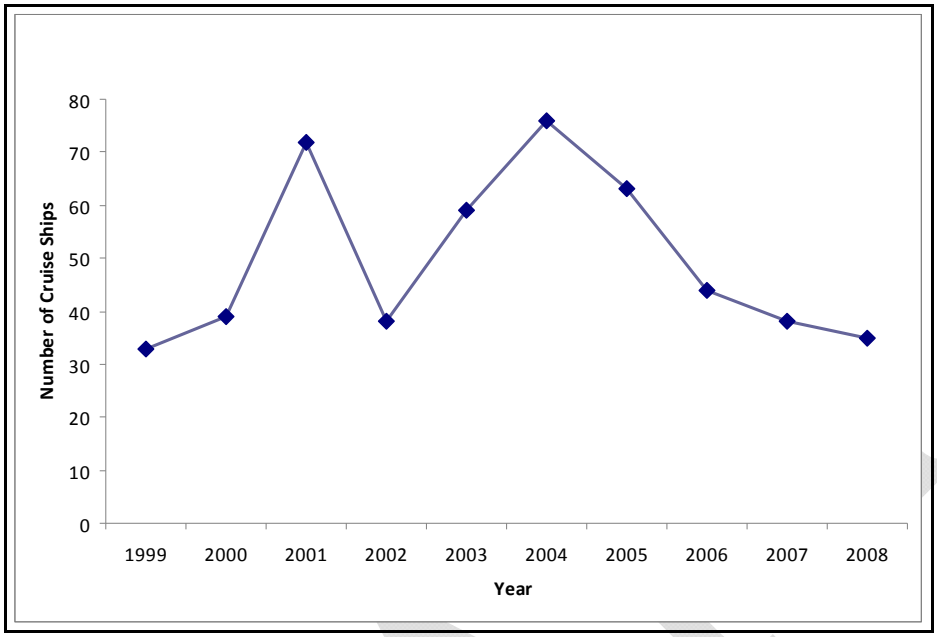


Table 6. Number of Cruise Ships Visiting Newport, 1994 – 2008 (Newport Convention and Visitor's Bureau 2009a)

	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
April	0	0	1	0	0	4	0	2	2	1
May	0	0	4	3	8	2	1	2	1	2
June	4	0	9	2	4	4	3	0	1	0
July	4	10	11	2	5	6	10	2	2	1
August	6	9	15	4	10	9	10	5	5	1
September	10	10	17	12	18	23	21	16	11	16
October	9	10	15	15	14	27	15	14	16	14
November	0	0	0	0	0	1	3	3	0	0
Total	**33**	**39**	**72**	**38**	**59**	**76**	**63**	**44**	**38**	**35**

Figure 9. Annual Number of Cruise Ship Passengers to Newport Between 1994 and 2008 (Newport Convention and Visitor's Bureau 2009a)

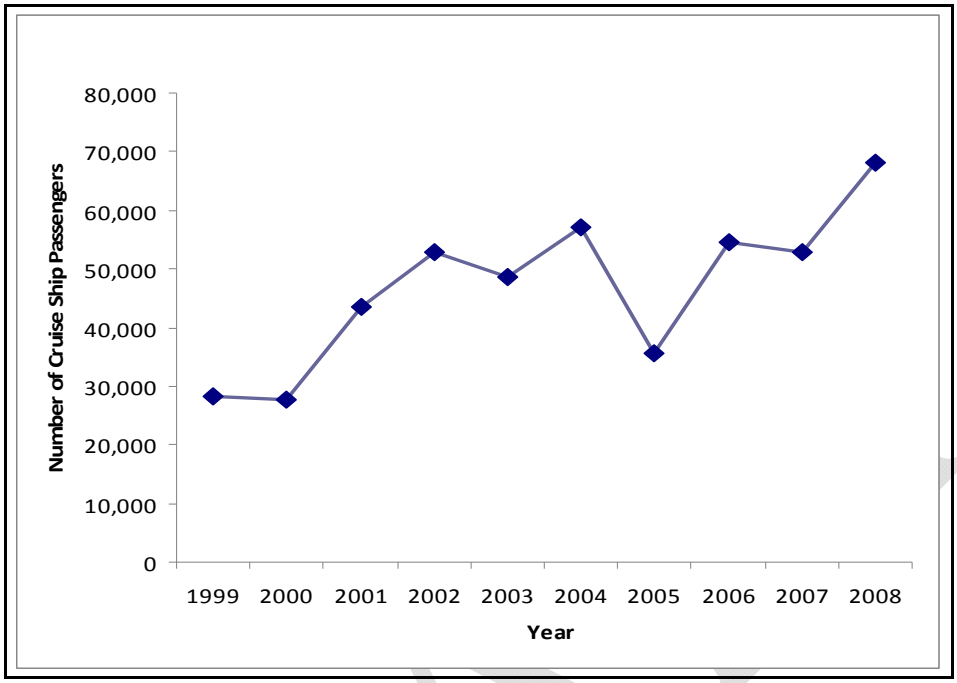


Table 7. Number of Cruise Ship Passengers Visiting Newport, 1994 – 2008 (Newport Convention and Visitor's Bureau 2009a)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
April	0	0	607	0	0	4,650	0	2,333	2,754	2,496
May	0	0	349	3,798	11,088	105	74	588	1,196	1,325
June	2,959	0	7,106	3,080	1,644	186	0	0	1,336	0
July	3,607	6,877	9,471	3,201	205	299	1,468	48	1,422	2,264
August	6,417	7,124	11,386	6,585	2,872	973	268	349	1,561	3,373
September	7,655	4,774	10,641	14,299	15,182	21,519	15,963	21,351	19,000	35,066
October	7,540	8,882	4,085	21,794	17,689	28,986	17,069	25,358	25,733	23,659
November	0	0	0	0	0	333	709	4,492	0	0
Total	**28,178**	**27,657**	**43,645**	**52,757**	**48,680**	**57,051**	**35,551**	**54,519**	**53,002**	**68,183**

Section 640: Shore-Based Recreational Activities Adjacent to the SAMP Area

1. The shores that surround the SAMP area attract millions of visitors to the state each year, while also providing invaluable recreational opportunities to residents (Rhode Island Department of Administration Statewide Planning Program and Rhode Island Department of Environmental Management 2003). Beaches, parks, open spaces, marinas and boat ramps all facilitate the direct interaction of people with the SAMP area. The pristine beaches, parks and recreational open spaces provide areas for the public to swim, wade, surf, fish from shore, view wildlife, enjoy the scenery or participate in a number of other recreational activities. In addition, marinas and boat ramps in recreational ports and harbors provide boaters with access to the SAMP area. Activities taking place in connection with these facilities provide significant economic benefits for Rhode Island that are discussed below in Section 650. The location of these types of shore-based facilities shapes access to the SAMP area by tourists and marine recreational users.

2. The coastal communities of Block Island, Charlestown, Little Compton, Narragansett, and Westerly are directly adjacent to the SAMP area boundary and are important centers of recreation and tourism activity. Other coastal communities, such as Newport, do not directly adjoin the SAMP area but are popular recreation and tourism destinations and facilitate SAMP area recreation and tourism. These communities provide Rhode Island residents and visitors with access to SAMP area waters through their beaches, parks, open space, marinas, yacht clubs, boat ramps, and other features. These communities rely on SAMP-area recreation and tourism opportunities as a means of attracting seasonal visitors who, in turn, contribute to these communities' local economies. See below for further information on shore-based recreational facilities and associated activities, and see section 650 for further information on the economic impact of such activities.

3. Shore-based facilities shown on the following maps are all based on the most current datasets available from Rhode Island Geographic Information Systems (RIGIS). See Table 9 for a complete list of datasets used in this section.

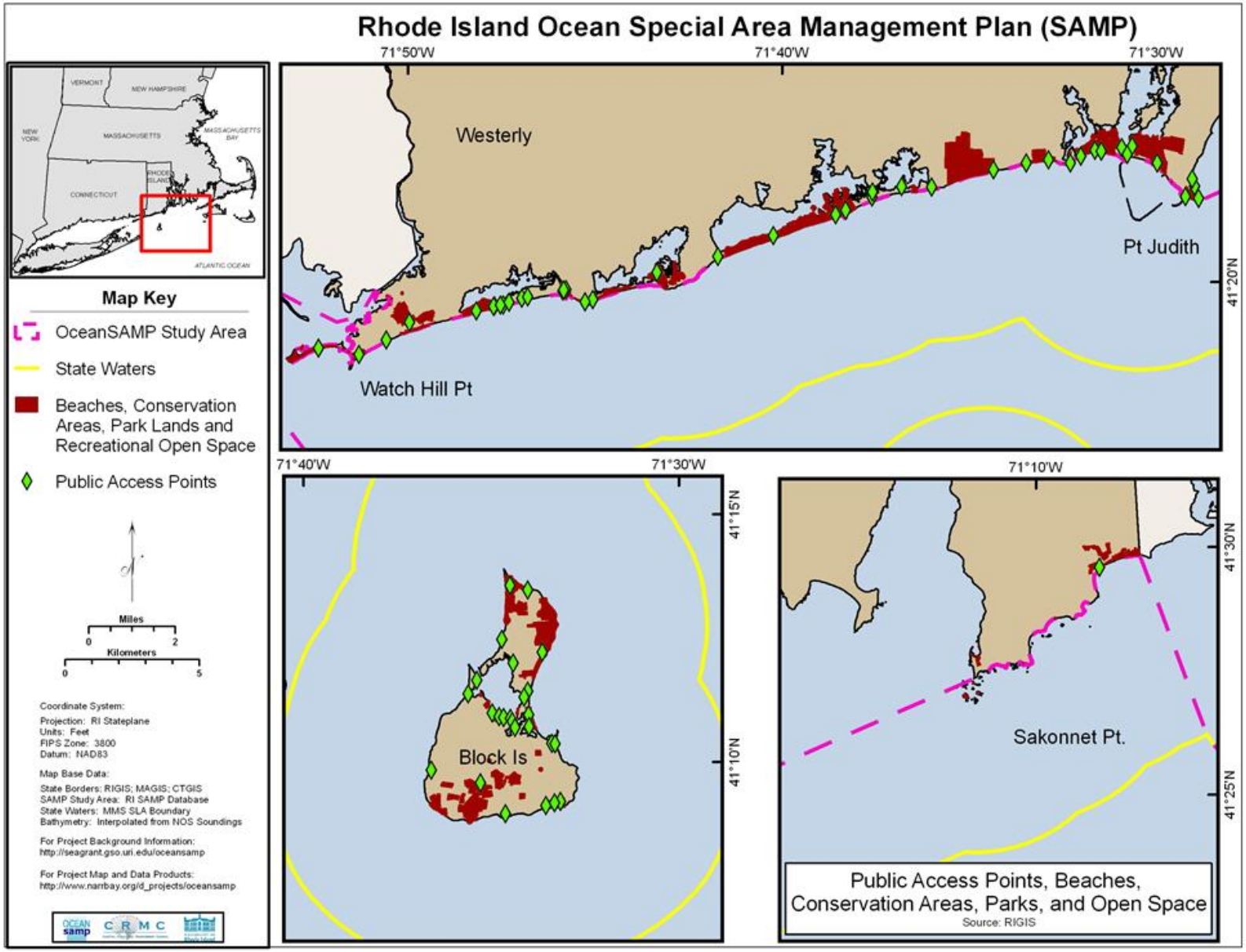
640.1 Beaches, parks, and open space

1. Rhode Island's beaches, parks and open spaces are some of the state's most appealing features. In the summer of 2004, more than six million people visited Rhode Island's state parks and beaches, including close to three million visitors to Rhode Island state beaches alone (Rhode Island Department of Environmental Management 2004). Rhode Island parks and beaches currently have the highest park visit per acre ratio in the country, with approximately 750 visitors per acre. (Rhode Island Department of Environmental Management 2001). There are fourteen public beaches along the southern shore of the state and around Block Island that abut the SAMP area (see Table 8 below). The long, sandy ocean beaches of the southern shore draw over 1.9 million visitors each year, including many from out-of-state (Rhode Island Department of Administration Statewide Planning Program and Rhode Island Department of Environmental Management 2003). See Figure 10 for a map of beaches, parks, and open spaces adjacent to the SAMP area.

Table 8. Public Beaches Adjoining the SAMP Area
(RIGIS 2003; Rhode Island Department of Environmental Management 2009)

Beach	Town
Frederick Benson Town Beach	New Shoreham
Ballard's Beach	New Shoreham
Misquamicut State Beach	Westerly
Westerly Town Beach	Westerly
Blue Shutters Town Beach	Charlestown
East Beach	Charlestown
Charlestown Breachway	Charlestown
Charlestown Town Beach	Charlestown
Roy Carpenter's Beach	South Kingstown
South Kingstown Town Beach	South Kingstown
East Matunuck State Beach	South Kingstown
Salty Brine State Beach	Narragansett
Roger Wheeler State Beach	Narragansett
South Shore Beach	Little Compton

Figure 10. Map of Public Access Points, Beaches, Conservation Areas, Parks and Open Space Adjoining the SAMP Area



2. According to the Rhode Island Department of Environmental Management's Office of Strategic Planning and Policy (2001), attendance to beaches along the southern shore is split between approximately 40% residents to 60% out-of-state visitors (Rhode Island Department of Environmental Management 2001). In Fiscal Year 1999, 58 % of cars that paid fees at the entrance gate at state beaches were from out-of-state (Rhode Island Department of Environmental Management 2001).

3. Beach-based activities which occur within or adjacent to the SAMP area include surfing, wind surfing, kite-boarding, and swimming. Other shore-based activities include fishing, bird-watching, and sight-seeing.

4. Surfing is a popular recreational activity in Rhode Island for both residents and visitors. Rhode Island's coast includes over 30 surfing locations, some of which adjoin the SAMP area. These include Weekapaug Point and Misquamicut State Beach, both in Westerly. The most avid surfers will surf year-round, taking advantage of storm swells or surf in the winter months (Allard Cox, ed., 2004).

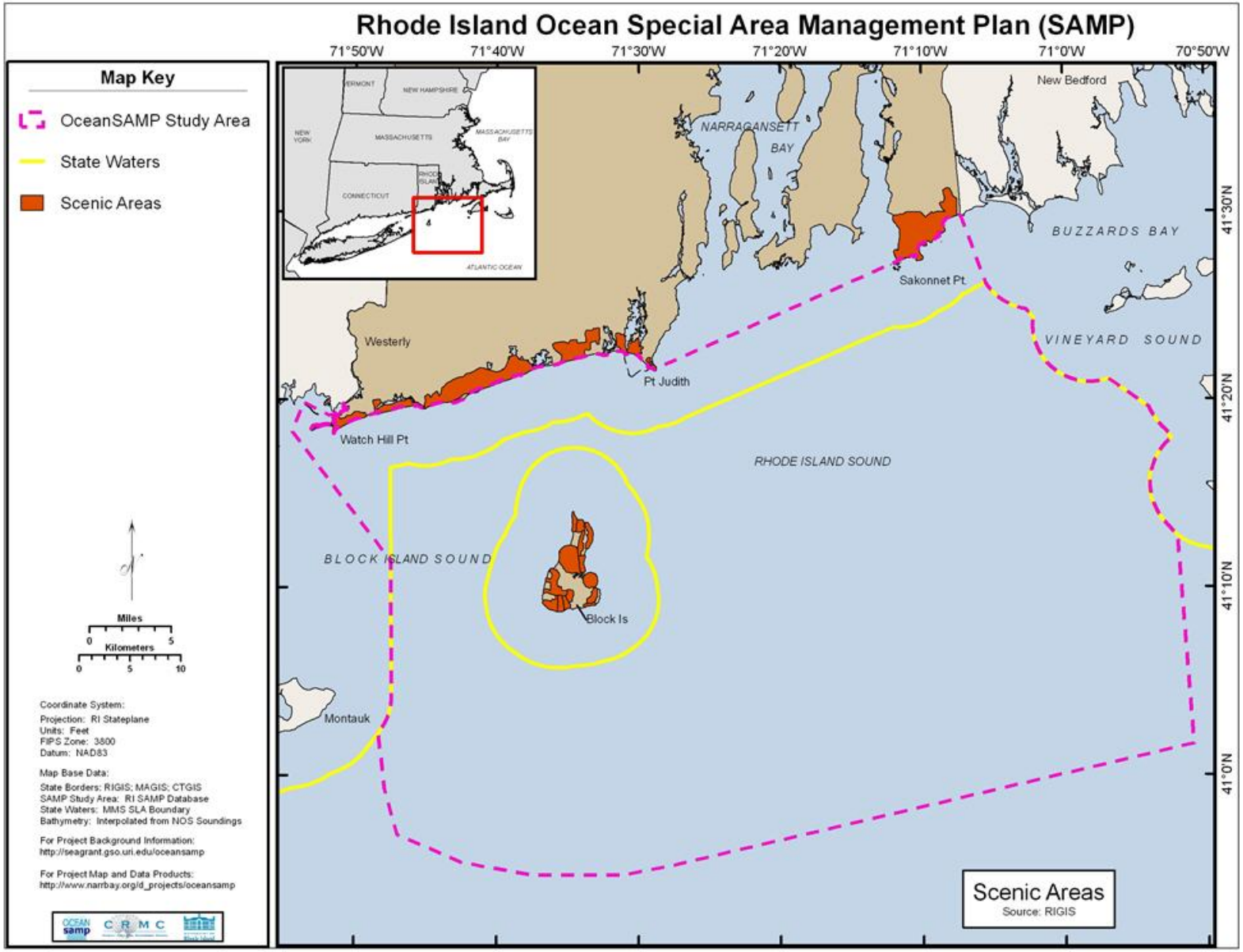
5. Bird-watching is another popular shore-based recreational activity adjacent to the SAMP area and brings many visitors to coastal communities such as Block Island. New England's Audubon Societies and other conservation organizations travel to Block Island each fall to observe the fall migration of various avian species, often staying for multiple days (Marks, pers. comm., November 20, 2009).

6. Residents and visitors can gain access to the SAMP area through conservation areas, fishing sites, birding sites, coastal parks and recreation areas, and scenic views and overlooks. Figure 10 displays the location of the 67 public access sites along the coast adjacent to the SAMP area (within 200 feet of the SAMP area border).[2] From these sites individuals can reach coastal waterways, fish from shore, view wildlife, enjoy a scenic view or participate in a number of other recreational activities. In addition to the public access sites located directly adjacent to the SAMP area border, the public can also gain access to the SAMP area from surrounding access points within Narragansett Bay (Allard Cox 2004).

7. An analysis of coastal recreational areas recorded in Rhode Island Geographic Information System (RIGIS) datasets that are within 200 feet of the SAMP border shows that in addition to the 67 designated public access sites, there are 52 areas designated by the state as conservation or park lands, 22 scenic areas and 141 sites classified as open space areas (see Figures 10 and 11, and Table 9 below). This analysis was performed with the most current data available from RIGIS; see Table 9 below. It should be noted that these datasets often classify the same coastal area multiple times with different designations and thus when summarized may overstate the number of adjacent facilities.

[2] Two hundred feet was used as the cut off for measuring shore-based facilities adjacent to the SAMP area as it corresponds with the coastal zone under the jurisdiction of Rhode Island's Coastal Resources Management Council.

Figure 11. Map of Scenic Areas Adjoining the SAMP Area

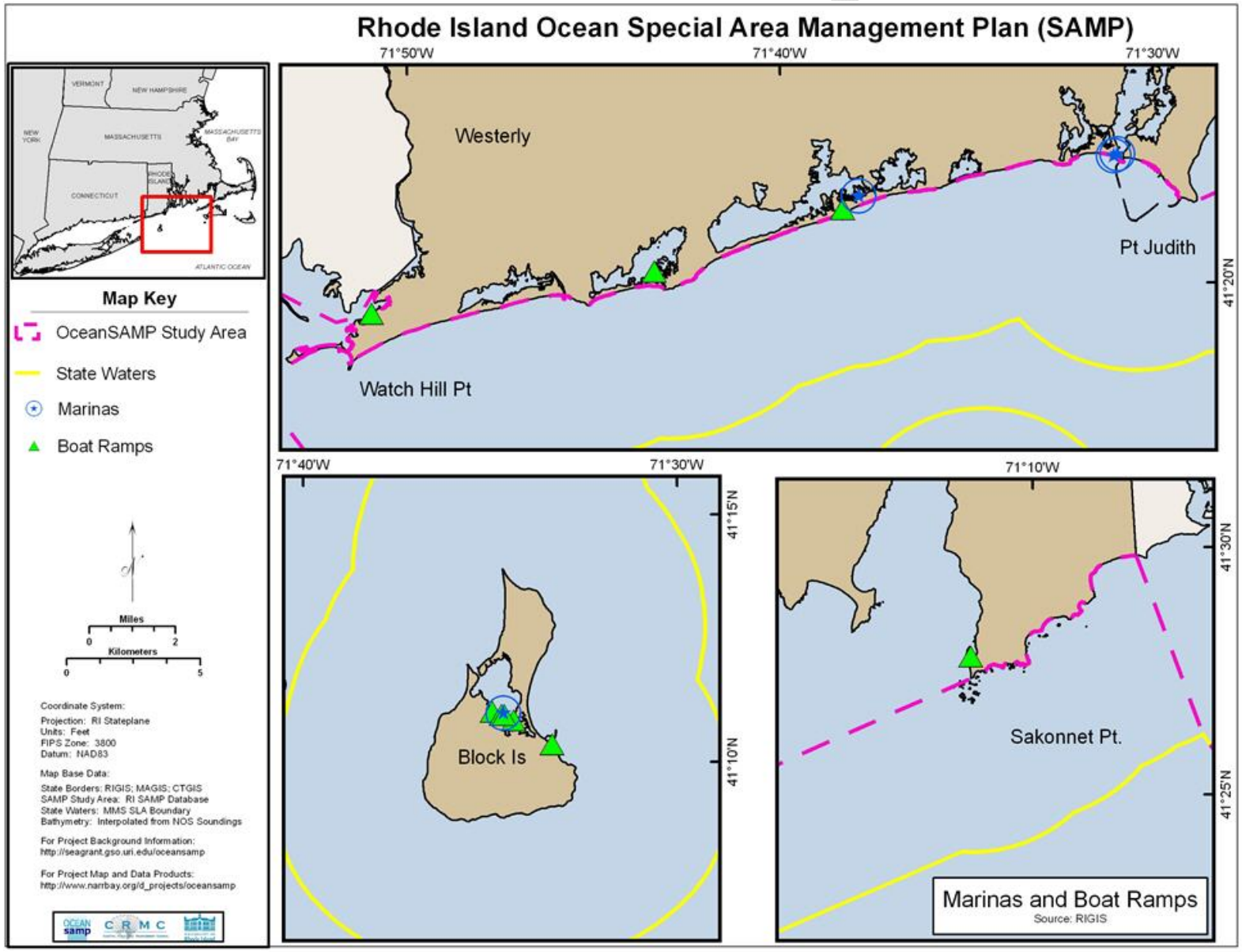


640.2 Marinas and Boat Ramps

1. Marinas and boat ramps provide boaters access to the SAMP area waters. According to the most current RIGIS data available, Rhode Island has a total of four marinas directly adjacent to the SAMP area (see Figure 12 and Table 9 below) and many others throughout the state. According to the most current RIGIS data available, there are nine boat ramps directly adjacent to the SAMP area available for public use (see Figure 12 and Table 9 below). Boat ramps throughout Narragansett Bay may also facilitate recreational use of the SAMP area by providing access to connecting waterways. In addition to marinas and boat ramps, boaters can also gain access to the SAMP area via private yacht clubs, though a current count of all yacht clubs adjacent to the SAMP boundary is not available.

2. Marinas, boat ramps and yacht clubs are instrumental in the use of the SAMP area, especially by tourists or out-of-state visitors. Non-resident boats represent a key market for marinas, especially for marinas located along Rhode Island's south shore. Nearly all (96%) of all out-of-state boats in Rhode Island are kept at marinas, and nearly 50% of those are kept along the State's southern coast, providing direct access to the SAMP area (Rhode Island Economic Monitoring Collaborative 2008).

Figure 12. Map of Marinas and Boat Ramps Adjoining SAMP Area



640.3 Recreational Ports and Harbors

1. Recreational activities in the SAMP area, and recreational boating in particular, are supported by boating-related infrastructure throughout the state of Rhode Island. Most recreational sail and power boats that use the SAMP area for recreation are either based in or will pass through one of the state's many harbors - either those providing direct access to the SAMP area, such as Newport Harbor, Galilee/Point Judith in Narragansett, and Block Island's two harbors, or any of the numerous harbors and marinas located further up Narragansett Bay. These harbors and their shore-side services, including marinas, boat repairs, boat storage, fuel, and supplies, support Rhode Island's recreational boating industry. See section 620.1 for more discussion on recreational boating in Rhode Island, and section 650.2 about the economic impact of recreational boating on the state.

Table 9. Inventory of Shore-based Facilities and Access Points Adjoining the SAMP Area Based on Data from the Rhode Island Geographic Information System

Note: these datasets are the most current versions available from RIGIS.

Data Source	Description of Data Set	Adjoining SAMP Area
Public Access to the Rhode Island Coast (RIGIS, 2003)	Public access points to the shoreline of Narragansett Bay and Rhode Island coastal waters to parks, beaches, refuge areas, boat ramps, marinas and other areas open to the pubic managed by federal, state, and municipal government, private organizations with interests in land preservation and protection, and rights-of-way that have been designated by the RI Coastal Resource Management Council.	67 Access Points Adjacent to SAMP Area
State Conservation and Park Lands (RIGIS 2006)	Approximate edges of Conservation Lands protected by the State of Rhode Island through Fee Title Ownership, Conservation Easement, or Deed Restriction. Includes: Wildlife Management Areas, Drinking Water Supply Watersheds, State Parks, Beaches, Bike Paths, Fishing Access Areas, Local Parks and Recreation Facilities that have been developed with State Grant Funds.	52 Sites Adjacent to the SAMP Area
Scenic Areas of Rhode Island (RIGIS 1989)	Areas designated as noteworthy or distinctive scenic landscapes or views by Rhode Island's Department of Environmental Management.	22 Sites Adjacent to the SAMP Area
State Conservation and Recreational Open Space 1990 (RIGIS 2002)	Land in Rhode Island considered as open space for recreational, conservation purposes including those owned or managed by federal, state of municipal agencies and private sector organizations and individuals.	141 Sites Adjacent to SAMP Area
Marinas of Rhode Island (RIGIS 1996a)	Public and private yacht clubs marinas and recreational boating facilities in Narragansett Bay and Southern Coastal Rhode Island.	4 Marinas Adjacent to SAMP Area
Boat Ramps in Rhode Island (RIGIS 1996b)	Recreational boat launching ramp and marine pump out facilities for fresh and salt water bodies accessible to the public within Rhode Island.	9 Boat Ramps Adjacent to SAMP Area

Section 650: Economic and Non-Market Value of Recreation and Tourism in the SAMP Area

650.1 Economic Impact of Recreation and Tourism

1. Tourism and hospitality is Rhode Island's fourth largest industry based on employment, contributing $6.8 billion in spending and generating 12% of all state and local tax revenue in 2007 (Global Insight 2008). The growth of this industry has more than doubled in size in recent years from $2.7 billion in 1999 (Rhode Island State Senate Policy Office 2002). While it is difficult to segregate marine-related recreation and tourism from general tourism statistics, these figures provide a general sense of the economic importance of the larger tourism industry to the state. Ocean-based recreational activities and coastal tourist attractions have been described as likely contributing "directly or indirectly to a significant portion of the overall tourism revenues, not to mention the marine image of the state that is a crucial element of Rhode Island's unique 'brand'" (Rhode Island State Senate Policy Office 2002, 15).

2. Although marine recreation and tourism are valuable uses of the SAMP area, the economic value of these uses is difficult to describe due to a lack of research. In many cases, the economic value of both land and water-based tourism and recreation are presented jointly, making the value of each impossible to distinguish. Furthermore, much of the most relevant research – which constitutes the best available data – is decades old. For these reasons, it is difficult to describe the current value of marine recreation and tourism directly associated with the SAMP area. Figures cited in this section are based on the best available data and represent data from different years and data sources. All dollar values presented here are expressed in the dollar value of the year in which the data was collected, and have not been converted to present dollar values.

3. In 2007, over 5.7 million visitors were determined to have visited the region adjoining the SAMP area, with a large portion of visitors coming from out of state (see Table 10 below). Based on a 2008 survey, approximately two-thirds of visitors to the state's south coast were from out-of-state. The majority visited from MA, CT, NY and NJ, while others visited from other east coast U.S. and international locations (Rhode Island Economic Monitoring Collaborative 2008, 5).[3] These visitors support local economies through spending on entertainment, accommodations, transportation, food and shopping (Global Insight 2008).

[3] Survey included 315 participants, sampled during July 5th and August 18th. Locations surveyed on the southern coast included Watch Hill; Misquamicut Boardwalk and Beach area; East Matunuck & Charlestown Breachway state parks; Newport – Thames Street and America's Cup Boulevard, Bellevue Ave. Cliff Walk, Bannister's Wharf, Visitor Center; Little Compton / Tiverton Four Corners; Narragansett – Roger Wheeler, Scarborough, Seawall, Point Judith Ferry area; Wickford.

Table 10. Number of Visitors to Coastal Destinations in 2007 (Global Insight 2008)

Block Island	616,300
Newport County	2,901,400
South County[4]	2,251,000

4. Rhode Island's coastal tourism is very seasonal, with coastal communities doubling and tripling in population during the summer months (Narragansett Bay Summit 2000). For example, New Shoreham (Block Island) has a year-round population of approximately 1,000 people, though during the summer months residents increase to approximately 10,000 people. A peak summer day could add an additional 10,000 visitors to the island, doubling its summer population level (U.S. Coast Guard, 2006). This influx of people during the summer season is vital to local economies, as an average visitor to Rhode Island spent approximately $384 per visit in 2007 (Global Insight 2008). Total tourism expenditures on Block Island in 2007 totaled over $259 million (see Table 11 below). The South County region of the state generated over $751 million tourism expenditures in 2007, and Newport tourism expenditures totaled over $790 million in the same year. (Global Insight 2008) Collectively, coastal tourism in areas adjacent to the SAMP area generated over $1.8 billion in spending in 2007.

Table 11. Coastal Areas' Share of State Tourism Expenditures (Global Insight 2008)

Area	Expenditures ($ millions)
South County	$751.83
Newport County	$790.79
Block Island	$259.41

5. Rhode Island's marine recreation and tourism industry supports a number of jobs within the state. The National Ocean Economics Program compiles data on coastal recreation and tourism industries from state labor agencies, as well as the federal Bureau of Labor Statistics and the Bureau of Economic Analysis. According to this data set, in 2004 the recreation and tourism industry in both coastal counties adjacent to the SAMP (Washington County and Newport County) included 779 different establishments and 10,086 employees (see Table 12). The industry was also calculated to have paid over $161 million in wages and produced $393 million in gross domestic product (GDP) in 2004 (National Ocean Economics Program, 2009). Measurable growth has been seen in this industry between 1997 and 2004, as the number of establishments involved in recreation and tourism (as defined by the National Ocean Economics Program) within the coastal counties surrounding the SAMP area grew by 128 facilities, 1,964 jobs, over $36 million in wages, and $86 million in GDP (see Table 12).[5]

[4] Global Insight included the following municipalities in South County: Charlestown, Coventry, East Greenwich, Exeter, Hopkinton, Narragansett, North Kingstown, Richmond, South Kingstown, Westerly and West Greenwich.
[5] According to the National Ocean Economics Program, the tourism and recreation sector includes: amusement and recreational services, boat dealers, eating and drinking establishments, hotel and lodging, marinas, recreational vehicle parks and campgrounds, scenic water tours, sporting good retailers, zoos and aquaria. Wage and GDP growth, as calculated by the National Ocean Economics Program is expressed in year 2000 dollar values.

Table 12. Recreation and Tourism Employment Numbers, Wages and GDP Value Within All Coastal Counties Adjacent to the SAMP Area, 1997-2004 (National Ocean Economics Program 2009)

Year	Number of Establishments Counted	Number of Individuals Employed	Total Wages Paid	GDP
2004	779	10,086	$161,448,672	$393,372,000
2003	746	9,819	$156,908,694	$380,894,000
2002	721	9,815	$163,418,234	$367,731,000
2001	726	9,654	$158,222,225	$372,150,000
2000	725	9,510	$151,382,834	$369,254,000
1999	737	9,414	$148,640,308	$357,012,000
1999	737	9,414	$148,640,308	$357,012,000
1998	720	8,742	$134,918,102	$324,660,000
1997	651	8,122	$122,058,249	$306,648,000
Note: the National Ocean Economics Program converts all dollar values to year 2000 equivalents.				

6. Current estimates for 2007 rank the travel and tourism sector in Rhode Island as the state's fourth largest employer, representing 40,635 jobs (Global Insight 2008). While this figure includes all tourism within the state, regional employment data for areas adjoining the SAMP area attribute 2,159 jobs on Block Island, 8,127 jobs in Newport, and 5,725 jobs in the South County region directly and indirectly to the tourism industry (Global Insight, 2008).

650.2 Economic Impact of Water-Based Recreational Activities

1. Local economies benefit financially from recreational boating within the SAMP area through boaters' expenditures on marina services and fuel, as well as dining and entertainment. Exact estimates of the current economic impact of recreational boating in the SAMP area are unknown. However, a state-wide study conducted by Ninigret Partners in 2006 found that the 43,000 boats registered in Rhode Island at that time generated approximately $182 million worth of spending each year (Rhode Island Economic Monitoring Collaborative 2008). It should be noted that this figure excludes transients, megayachts, and regatta participants and therefore likely underestimates the economic impact of this industry. Of the $182 million spent in 2006 by recreational boaters in the state, approximately a third (or $63 million each year) was spent on trip-related expenses, such as dining, fuel, groceries and marina services. In contrast, this study calculated that in 2006 $118 million annually was spent annually on boat ownership, including repairs, dockage fees, insurance and equipment (Rhode Island Economic Monitoring Collaborative 2008). These findings illustrate how spending by recreational boaters supports a variety of businesses adjacent to the SAMP area and throughout the state.

2. In 2007 the Rhode Island Marine Trades Association estimated that there are over 2,300 businesses within the state involved in marine-related industries, providing over 6,600

jobs and $260 million in wages (Rhode Island Marine Trades Association 2007). A 2005 NOAA study examined the recreational boating sector, focusing only on boat dealers, businesses in boat building and repair, marinas, scenic and sightseeing transportation, and found that there were 176 establishments in the State of Rhode Island, up 20% from the number of establishments in 1998 (see Table 13 below) (NOAA 2008).

Table 13. Marine Recreational Boating Industry in Rhode Island, 1998-2005 (NOAA 2008)

Year	Number of Establishments	Number of Employees	Share of State Employment
1998	138	1,702	7.1%
1999	128	1,595	6.4%
2000	127	1,731	6.6%
2001	137	1,981	7.3%
2002	145	1,872	7.1%
2003	159	1,698	5.8%
2004	164	1,934	6.4%
2005	176	2,071	6.9%

3. While it is difficult to estimate the precise economic impact of recreational fishing in Rhode Island, the industry is highly important for the state. An estimated 468,000 saltwater anglers fished more than one million trips in Rhode Island in 2006, more than half of whom were from out of state. These anglers spent an estimated $182 million on fishing, producing a value-added economic impact to the state of $82 million (National Marine Fisheries Service, Fisheries Statistics Division 2009). For more information on the value of recreational fishing to the state, please see *Chapter 4 Fisheries Resources and Uses.*

4. The impacts of marine events such as sailboat races have long been recognized for the associated benefits they provide to the economies of host cities and towns (Rhode Island State Senate Policy Office 2002). Participants and spectators of marine events in the SAMP area support local economies throughout the state through their spending before, during and after a race or other marine event. Past studies on sailing races and other marine events in Rhode Island have suggested that day or weekend-long events can have considerable economic impacts on the local economy. For example, the 1992 Newport-Bermuda Race was estimated to have approximately $6.5 million gross economic impact and $1.15 million worth of direct sales impact on Rhode Island (see Table 14 below) (Tyrrell and Johnston 2001).

Table 14. Economic Impact of Multiple Marine Events Between 1986-1995
(Tyrrell and Johnston 2001)

Event	Gross Impact	Net Direct Sales Impact on Rhode Island
1986 Block Island Race Week	$839,000	$667,000
1989 Newport International Sailboat Show	$9,315,000	$2,928,000
1989 Newport International Powerboat Show	$4,178,000	$1,523,000
1990 Volvo Newport Regatta	$770,000	$513,000
1992 Newport-Bermuda Regatta	$6,472,000	$1,150,000
1995 Newport International Boat Show	$21,338,000	$8,054,000
Note: all dollar values presented here are expressed in the dollar value in which the event was held.		

Table 15. Average Sailboat Racing Event Expenditures Per Entry
(Values in 1992 Dollars)
(Tyrrell 1993 as referenced in Colt et al. 2000)

Expenditure Category	1985 Admirals Cup	1985 Swarovski Maxi Boat Regatta	1986 Block Island Race Week	1990 Volvo Newport Regatta	1992 Newport Bermuda Race
Lodging	2,609	12,314	1,271	251	1,010
Food	3,326	21,132	1,059	407	1,204
Entertainment	1,826	10,097	294	152	263
Transportation	978	3,653	224	45	839
Entry Fees			510	142	
Gifts and Miscellaneous	1,826	3,913	210	136	616
Marina and Docking		2,635	286	185	430
Cleaning and Repair		5,870	82	101	846
Equipment and Supplies		1,174	193	156	5,162
Total Expenditure per Entrant	**10,565**	**60,788**	**4,129**	**1,575**	**10,370**
Number of Entries	***38***	***5***	***227***	***327***	***119***
Total Expenditures per Event	**401,470**	**303,940**	**937,283**	**515,025**	**1,234,030**

5. In 2007, Allianz Global Investors sponsored an economic impact study of the relative impacts of holding the America's Cup in a variety of communities around the world, and included Newport in the analysis. It was estimated that holding the 2010 America's Cup in Newport would generate total economic activity of $886 million (expressed in 2007 dollar values) in pre-event and event spending (Allianz Global Investors 2007).

6. A study conducted by Ninigret Partners in 2008 for the Rhode Island Economic Monitoring Collaborative concluded that the vast majority of marine event spending is tied to race expenditures, through the purchase of sails, vessel repairs, gear and other boat

equipment. The next largest spending category is for food and lodging. See Table 16 below (Rhode Island Economic Monitoring Collaborative 2008).

Table 16. Distribution of Expenditures Associated with Competitive Sailboat Racing Events (Rhode Island Economic Monitoring Collaborative 2008)

Expenditures	Average Range of Total Spending Per Event
Race-related costs	60-70%
Lodging	10-15%
Food	10-15%
Transportation	10%
Shopping	3-5%
Entertainment	2%

7. A 2006 national analysis found that on average, a cruise passenger will spend approximately $123.39 per visit in a port of call such as Newport (expressed in 2006 dollar values, Business Research and Economic Advisors 2007). Based on this estimate, in 2008 the 68,183 cruise ship passengers that disembarked in Newport for the day generated over $8.4 million in spending in local establishments (see Figure 13). In addition to direct spending, for every cruise ship passenger that disembarks from a vessel in Newport, the City of Newport collects a $4 port tax (Smith, pers. comm., July 16, 2009). As a result, the 2008 cruise ship season produced approximately $272,000 in city revenue (see Figure 14). Overall, the cumulative impact of cruise ship passengers on Newport's local economy in 2008 totaled over $8.6 million.[6]

8. States also benefit from purchases of goods and services for the ship itself. For example, cruise operations within a state may purchase air transportation, food and beverage goods for the ship, maintenance or refurbishment services, or engineering and travel agent services (Cruise Lines International Association 2007). Past research by Cruise Lines International Association in 2007 showed that, including all purchases described above, Rhode Island received approximately $25 million from cruise lines operating in the state. This study also found that in 2007 cruise lines support 377 jobs and $13 million in wages within the State of Rhode Island (Cruise Lines International Association 2007).

[6] Based on the national study and additional port tax charged by the City of Newport, 68,183 passengers*($123.39+$4.00)= $8,685,832 in revenue.

Figure 13. Total Estimated Spending By Cruise Ship Passengers in Newport Between 1999 and 2008
(Based on national daily average spending of $123.39 per passenger and passenger counts provided by Newport Convention and Visitors Bureau 2009a)

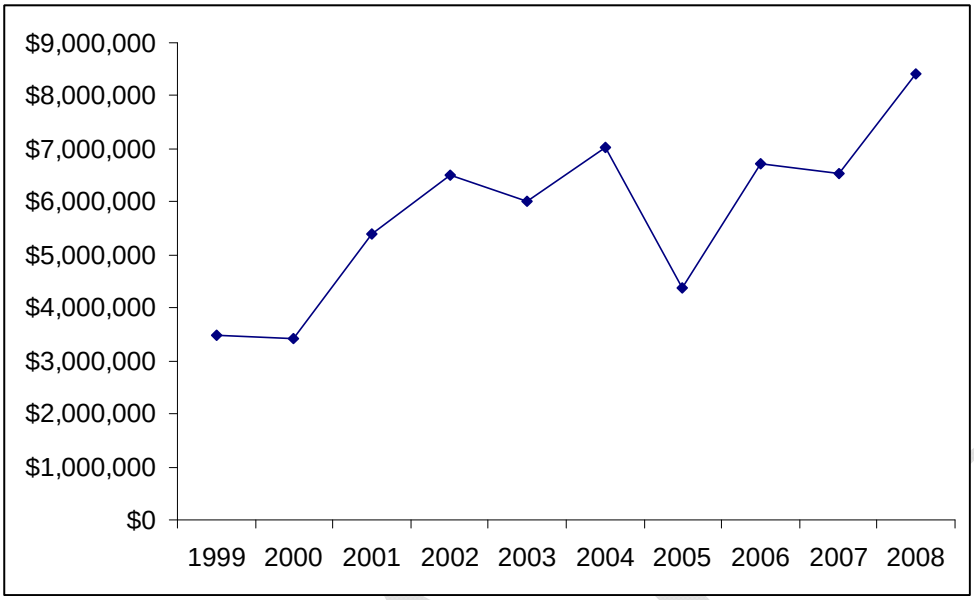
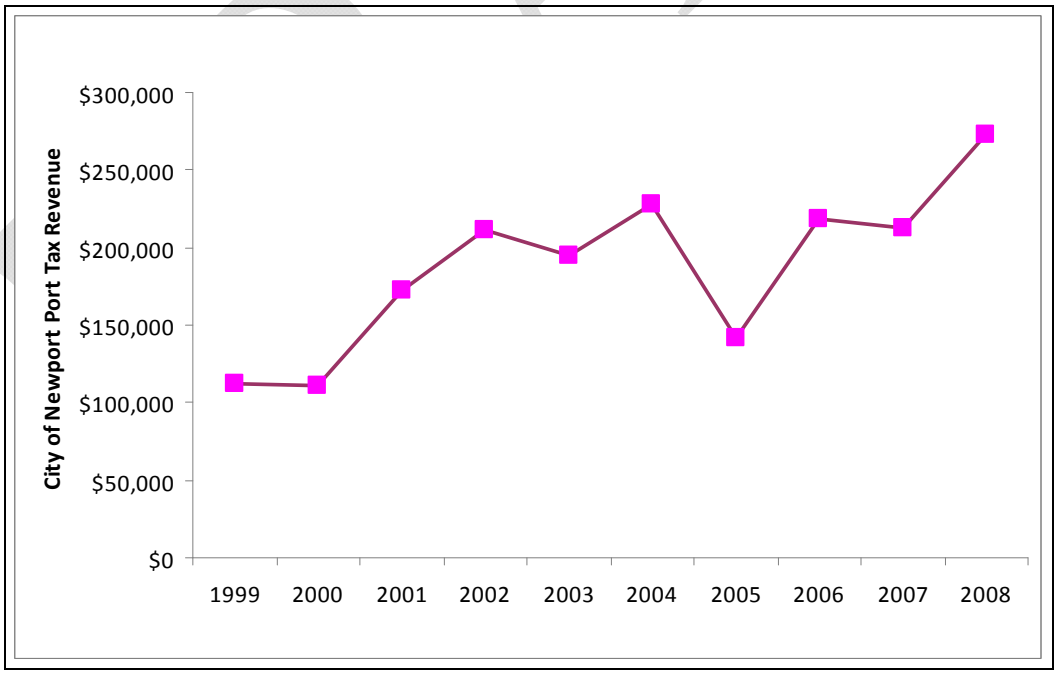


Figure 14. Total Port Tax Revenue Received From Cruise Ship Passengers Visiting Newport, RI Between 1999 and 2008 (City of Newport 2009)



650.3 Economic Impact of Shore-Based Recreational Activities

1. Statistics gathered from Rhode Island's state parks and beaches are one indicator of coastal tourism in the state. Rhode Island parks and beaches currently have the highest park visit per acre ratio in the country, with approximately 750 visitors per acre (Rhode Island Department of Environmental Management 2001).

2. The summer of 2004 brought more than six million visitors to Rhode Island's state parks and beaches, including close to three million visitors to Rhode Island state beaches (Rhode Island Department of Environmental Management 2004). More than $4 million in revenue was generated by beach and campground attendance in 2004 (Rhode Island Department of Environmental Management 2004), up from $3,126,037 in 2000 (Rhode Island State Senate Policy Office 2002). Tourists frequent coastal hotels, rent summer lodging, visit restaurants and local stores where they spend money, and also contribute revenues from camp and beach fees directly to the state general fund. In Fiscal Year 1999, non-resident beach fees contributed $875,277 to the general fund.

3. An analysis performed by the Rhode Island Department of Environmental Management in 2006 found that Rhode Island's state beaches and coastal campgrounds are vital to the continued operation of the State's entire park system, representing nearly 82% of the State's entire park system revenue. Nearly 79% of that revenue is generated during the three peak summer months – June, July and August. This analysis also demonstrated that while in-state residents represented approximately 57% of beach admissions, non-residents generate most of the revenues (64% of revenues). In fact, more than half (51%) of the non-resident revenue stream generated within the state is produced at one beach – Misquamicut Beach (Rhode Island Economic Monitoring Collaborative 2008).[7]

650.4 Non-Market Value of Recreation and Tourism

1. The SAMP area also provides social, cultural and historic value to users, visitors and residents. The natural beauty of the SAMP area, along with its rich historic and cultural heritage provide aesthetic, artistic, educational, and spiritual value to tourists and residents alike. While the non-market value of the SAMP area is difficult to quantify, it is part of the appeal that draws visitors and residents to Rhode Island and adds to the quality of life within the area. Table 17 lists some examples of the non-market values of the SAMP area, though it should not be considered a comprehensive list.

Table 17. Examples of the Economic and Non-Market Value of the SAMP Area.

Examples of the Economic Value of Recreational and Tourism Uses of the SAMP Area	1. Total annual value of $4.3 billion for all outdoor recreational activities associated with the marine aquatic and shoreline environments (Colt et al. 2000) 2. Collectively, coastal tourism in areas adjacent to the SAMP area generated over $1.8 billion in spending (Global Insight 2008) 3. The recreation and tourism industries in coastal counties adjoining the SAMP area supported over $161 million in wages and produced $393 million in gross domestic product (GDP) in 2004 (National Ocean Economics Program 2009) 4. It was estimated that holding the 2010 America's Cup in the SAMP area would generate total economic activity of $886 million in pre-event and event spending in Newport (Allianz Global Investors 2007) 5. The cumulative impact of cruise ship passengers on Newport's local economy in 2008 totaled over $8.6 million (see Section 650.2)
Non-market Value of Recreational and Tourism Uses of the SAMP Area	6. Relaxation benefits provided by SAMP area and adjacent coastal areas 7. Aesthetic value of the natural landscape 8. Spiritual benefits achieved from recreational uses of SAMP area 9. Educational value of SAMP area and surrounding coastal zone 10. SAMP areas role in the state and region's maritime history and cultural heritage 11. Historic and cultural value of marine recreation and tourism 12. Contribution of recreation and tourism to state's quality of life 13. Role of the SAMP area in attracting visitors to the state

2. One study conducted by Tyrrell and Harrison (2000) attempted to approximate the net benefit of recreation to users after all expenses were accounted for through measuring consumer "total willingness to pay" for various recreational activities (see Table 18). Considering only marine-based recreational uses, this study calculated that consumers were willing to pay a total of $4.3 billion annually for all outdoor recreational activities associated with the marine aquatic and shoreline environments (Tyrrell and Harrison 2000, as reported in Colt et al. 2000). This study attempts to demonstrate the enormous value produced by recreational activities in Rhode Island not easily measured in economic impact. It should be noted that this table does not represent the actual economic impact of these uses to Rhode Island, but rather the additional value provided to consumers not expressed actual expenditures.

Table 18. Net Willingness to Pay for Marine-Based Outdoor Recreation
(All dollars expressed in 1997 dollar value) (Tyrrell and Harrison 2000)

Activity	**Net Economic Value Total (in thousands of dollars)**
Walking for Pleasure	$1,330,917
Salt-Water Swimming	$439,986
Pleasure Driving/Sightseeing	$396,463
Bicycling	$725,966
Picnicking	$130,311
Jogging or Running	$364,814
Nature Observing/ Photography	$412,587
Motor boating/ Waterskiing	$177,134
Salt-Water Fishing	$323,030
Camping	$22,823
Sailing/Wind Surfing	$165,541
Off-Roading	$186,940
Canoeing/Kayaking	$20,105
Scuba diving/ Snorkeling	$25,803
Hunting	$69,280
Total	**$4,393,291**

3. All data presented here demonstrate the importance of recreational and tourism uses of the SAMP area to coastal economies and to Rhode Island as a whole. Coastal communities, in particular, rely upon the economic activity generated from recreational and tourism uses of the SAMP area, as well as the jobs produced from these industries.

Section 660: Recreation and Tourism Policies

660.1 Policies

1. The Coastal Resources Management Council ("Council") recognizes the economic, historic, and cultural value of marine recreation and tourism activities in the Ocean SAMP area to the state of Rhode Island. The Council's goal is to promote uses of the Ocean SAMP area that do not significantly interfere with marine recreation and tourism activities or values.

2. When evaluating proposed future projects, the Council will carefully consider the potential impacts of such activities on marine recreation and tourism uses. Where it is determined that there is a significant impact, the Council may suitably modify or deny activities that significantly detract from these uses.

3. The Council will encourage and support uses of the SAMP area that enhance marine recreation and tourism activities.

4. The Council recognizes that the waters south of Brenton Point (see Figure 4) are higher intensity recreational use areas than adjacent waters and are commonly used for organized sailboat races and other marine events. The Council encourages and supports the ongoing coordination of race and marine event organizers with the U.S. Coast Guard, the U.S. Navy, and the commercial shipping community to facilitate safe recreational boating in and adjacent to charted shipping lanes and Navy restricted areas (*see Chapter 7, Marine Transportation, Navigation, and Infrastructure*). The Council shall consider these high-intensity recreational uses when evaluating proposed future projects in this area. Where it is determined that there is a significant impact, the Council may suitably modify or deny activities that significantly detract from these uses.

5. The Council recognizes that the waters within the 3-nautical mile boundary surrounding Block Island (see Figure 4) are higher intensity recreational use areas than adjacent waters and are commonly used for organized sailboat races and other marine events. The Council shall consider these high-intensity recreational uses when evaluating proposed future projects in this area. Where it is determined that there is a significant impact, the Council may suitably modify or deny activities that significantly detract from these uses.

6. The Council recognizes that offshore dive sites, most of which are shipwrecks (see Figure 6), are valuable recreational and cultural ocean features. The Council shall consider these ocean features when evaluating proposed future projects in these areas. Where it is determined that there is a significant impact, the Council may suitably modify or deny activities that significantly detract from these uses. See Chapter 12, *New Policies, Procedures, Zoning, and Regulations*.

7. The Council recognizes that offshore wildlife viewing activities are reliant on the presence and visibility of marine and avian species which rely on benthic habitat, the availability of food, and other environmental factors. The Council shall consider these environmental factors when evaluating proposed future projects in these areas. Where it

is determined that there is a significant impact, the Council may suitably modify or deny activities that significantly detract from these uses. See *Chapter 2, Ecology of the SAMP Area.*

8. The Council shall work together with the U.S. Coast Guard, recreational boating organizations, and other marine safety organizations to promote safe navigation around offshore structures during both the construction and operation phases of such projects. The Council will promote and support the education of recreational boaters regarding safe boating around offshore structures.

9. Preliminary consultations with the U.S. Coast Guard, the U.S. Minerals Management Service, and the U.S. Army Corps of Engineers have indicated that no boating access restrictions are planned for the waters around offshore structures except for those necessary for navigational safety. The Council endorses this approach and will work to ensure that the waters surrounding offshore structures remain open to boaters, except for navigational safety restrictions.

10. The Council will consult with marine recreation and tourism organizations and stakeholders, such as the Rhode Island Marine Trades Association, the Rhode Island State Yachting Committee, and the Rhode Island Party and Charter Boat Association, when scheduling offshore marine construction or dredging activities. Where it is determined that there is a significant conflict with scheduled recreational events or season-limited recreational uses, the Council may suitably modify or deny activities to minimize conflict with recreational uses.

11. The Council will provide for communication with marine recreation and tourism users regarding offshore marine construction or dredging activities. Communication will be facilitated through a project website and will complement standard U.S. Coast Guard procedures such as Notices to Mariners for notifying boaters of obstructions to navigation.

660.2 Standards

1. The potential impacts of a proposed project on recreation and tourism may be evaluated in accordance with the National Environmental Policy Act, 42 U.S.C. § 4321 et. seq. Depending on the project and the lead agency, NEPA review may include assessment of visual resources associated with recreational resources, assessment of boating intensity in the project area, or other requirements (e.g. Minerals Management Service 2009a, Federal Energy Regulatory Commission 2008). See the MMS Renewable Energy Framework for further information on NEPA requirements for renewable energy projects in federal waters (Minerals Management Service 2009b).

2. Visual impacts of proposed offshore projects may also be evaluated in accordance with Section 106 of the National Historic Preservation Act, 16 U.S.C. § 470 et. seq. For further information see *Chapter 3, Cultural and Historic Resources* and Section 330 of the Rhode Island Coastal Resources Management Program.

3. Prior to project development, the Council recommends that project developers perform systematic observations of recreational boating intensity at the project area. Observations may be made while conducting other field work or aerial surveys and may include either visual surveys or analysis of aerial photography or video photography. The Council recommends that observations capture both weekdays and weekends and reflect high-activity periods including the July 4th holiday weekend and the week in June when Block Island Race Week takes place. The quantitative results of such observations, including raw boat counts and average number of vessels per day, will be provided to the Council.

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