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**Table 3-1: Natural Gas Fired Power Plant Emissions Estimated Emissions for a 454 MW Facility**

Pollutant Tons per Year(TPY)	Single Unit <sup>(1)</sup>	Equivalent Plant <sup>(2)</sup>
	<b>(290 MW)</b>	<b>(454 MW)</b>
NO <sub>x</sub>	64.4	101
CO	48.2	75.5
VOC	15.8	24.7
PM	104.7	164
SO <sub>2</sub>	20.1	31.5
NH <sub>3</sub>	23.7	37.1

(1) Based on the ANP Blackstone Facility permit recently issued by the Massachusetts Department of Environmental Protection (Tr# 118969). The same limits were imposed for ANP Bellingham.

(2) Emissions are ratios based on MW output from a 290 MW facility to a 454 MW facility.

**Table 3-2: Summary of The State Of Photovoltaics Research**

Technology	Advantages	Disadvantages
Single crystal Silicon, polycrystalline and ribbon/wafer Silicon	<ul style="list-style-type: none"> <li>• 15-17% efficiency by 2005</li> <li>• Proven field performance</li> <li>• No major environmental concerns</li> </ul>	<ul style="list-style-type: none"> <li>• Less cost reduction than thin films</li> <li>• Yellowing/delamination reduce performance &amp; aesthetics</li> </ul>
Silicon film on low cost substrate	<ul style="list-style-type: none"> <li>• 12-13% efficiency by 2005</li> <li>• No major environmental concerns</li> </ul>	<ul style="list-style-type: none"> <li>• Little field performance and reliability needs to be proven at production levels</li> </ul>
Amorphous Silicon	<ul style="list-style-type: none"> <li>• Lower cost potential than crystalline technologies</li> <li>• No major environmental concerns</li> </ul>	<ul style="list-style-type: none"> <li>• 8-9% efficiency by 2005</li> <li>• Degradation (20%)</li> </ul>
Copper Indium Diselenide	<ul style="list-style-type: none"> <li>• Lower cost potential than crystalline technologies</li> <li>• No major environmental concerns</li> </ul>	<ul style="list-style-type: none"> <li>• 8-9% efficiency by 2005</li> <li>• Degradation (25%)</li> <li>• Reproducibility/manufacturability of large modules needs to be proven</li> </ul>
Cadmium Telluride	<ul style="list-style-type: none"> <li>• Lower cost potential than crystalline technologies</li> <li>• No degradation problems</li> </ul>	<ul style="list-style-type: none"> <li>• 8-9% efficiency by 2005</li> <li>• Long term stability needs to be determined</li> <li>• Cadmium may be an environmental issue</li> </ul>

**Table 3-3: Summary of Renewable Technologies**

Renewable Technology	Photovoltaic/ Solar	Tidal	Biomass	Hydroelectric	Wave	Wind
Reliability	Intermittent	Intermittent	Baseload	Baseload	Intermittent	Intermittent
Status of Technology	3	2	3	3	1	3
Capable of Producing 200-1,500 MW in NE Region	N	N	Y	N	N	Y
Produces No Air Emissions and/or Greenhouse Gases <sup>1</sup>	Y	Y	N	Y	Y	Y
Produces No Impacts to Water Resources	Y	N	N	N	N	Y
Produces No Adverse Terrestrial/Land Area Impacts	N	N	N	N	Y	Y <sup>2</sup>

Status of Technology; 1. Early Developmental Stages/Limited Data; 2. Limited Number of Commercially Installed Facilities; 3. Established Electrical Generation Technology

<sup>1</sup> Air emissions may include nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), particulate matter (PM), and carbon dioxide (CO<sub>2</sub>). CO<sub>2</sub> is a greenhouse gas and its emissions result in global warming.

<sup>2</sup> Terrestrial impacts only associated with land based applications.

**Table 3-4: Summary of Upland Alternatives Analysis**

Upland Sites	Wind Power Class	Surplus Transmission Capacity (200-1,500 MW)	Capacity based on: Available open space or ridgeline <sup>1</sup>	Engineering Design	Legal/Regulatory Constraints
				Physical Environment, access, distance to grid	Federal/state land or exclusions, protected areas
MMR - Mashpee, MA	3	Y	>200 MW 15,000 acres	NPL listed site, unexploded ordnances, military airspace restrictions	adjacent to state forest & wildlife management area, priority habitats of rare species, active military use
Searsburg, VT (Expansion)	4	Y	25-50 MW 3-4 miles		Green Mountain National Forest
Princeton, MA (Expansion)	2-3	Y	<10 MW <1 mile		State Reservation, Wildlife Sanctuary
Skinner/Kibby, ME (Expansion)	5	N	100-200 MW 10-20 miles	north-south transmission constraint, needs 50 miles of access road	
Redington/Black Nubble, ME	5	N	50-100 MW 5-10 miles	north-south transmission constraint	Currently under development by others
Naugatuck and Housatonic Rivers, CT (Brownfield)	2	N	<10 MW 18 acres	transmission restricted	
Greenfield, MA (Brownfield)	3	Y	<10 MW 18 acres		wetland/floodplain
Florida, MA - Hoosac Site	4	Y	25-50 MW 3-4 miles	significant amount of transmission line easement clearing, in addition to WTG sites and access roads impacting habitat loss and fragmentation	Two State Forests, Currently under development by others

1. based upon preliminary estimation of gross available area

**Table 3-5: Summary of Offshore Alternatives Analysis**

Offshore Sites	Wind Power Class	Surplus Transmission Capacity (200-1,500 MW)	Capacity based on: Available Watersheet (28 mi <sup>2</sup> )	Engineering Design	Legal/Regulatory Constraints
				Physical Environment, offshore depth/wave heights, access, AC line	Federal/state land or exclusions, protected areas
Nantucket Sound, MA - Horseshoe Shoal	5	Y	>200 MW >28 mi <sup>2</sup>	depths <50 ft, sheltered from open ocean exposure, ESW heights of max 17 ft	
Nantucket Sound, MA - Monomoy-Handkerchief Shoal	5	Y	>200 MW >20 mi <sup>2</sup>	depths <50 ft, sheltered from open ocean exposure, ESW heights of max 17 ft	proximity to Monomoy Wildlife Refuge
Nantucket Sound, MA - North Tuckernuck Shoal	5	Y	>200 MW >28 mi <sup>2</sup>	depths <50 ft, sheltered from open ocean exposure, ESW heights of max 17 ft	
Nantucket Shoal, MA	6	Y	>200 MW >28 mi <sup>2</sup>	depths <50 ft, open ocean exposure from south and east, ESW heights of appr. 65 ft, interconnection would likely require use of DC cable	whale sightings immediately south of Nantucket, high concentration of humpback whale sightings east and northeast
Martha's Vineyard, MA (south)	5	Y	>200 MW >28 mi <sup>2</sup>	depths >50 ft (reaching depths of over 100 ft relatively quickly), open	Harbor seals and/or grey seal winter haul out location (Nomans Land)

Offshore Sites	Wind Power Class	Surplus Transmission Capacity (200-1,500 MW)	Capacity based on: Available Watersheet (28 mi <sup>2</sup> )	Engineering Design	Legal/Regulatory Constraints
				Physical Environment, offshore depth/wave heights, access, AC line	Federal/state land or exclusions, protected areas
				ocean exposure to south, ESW heights of 50.2 ft, interconnection could require use of DC transmission system, unexploded ordnance near Nomans Land, entrance to Muskeget Channel	
Block Island, RI (south)	3-4	N	>200 MW >28 mi <sup>2</sup>	depths >50 ft (reaching depths of over 100 ft relatively quickly), open ocean exposure to south, ESW heights of 50 ft, major shipping channels, seabed geology indicates abundance of boulders and rock outcroppings	High concentration of humpback whale sightings, harbor seal and/or grey seal winter haul out location
Cape Ann, MA	4	Y	>200 MW >28 mi <sup>2</sup>	depths >100 ft, open ocean exposure from the east, ESW heights of 62 ft	Concentration of right and humpback whale sightings, harbor seal and grey seal winter haul out location
Vinalhaven Island, ME	4	N	>200 MW >28 mi <sup>2</sup>	depths >100 ft, open ocean exposure to the east, ESW heights of 64 ft, shipping channels, seabed geology indicated shallow bedrock and outcroppings, N-S electrical transmission system constraint	Several humpback whale and fin whale sightings offshore of Maine, Harbor seal and/or grey seal winter haul out location on Isles of Shoals, ME
Inner Boston Harbor, MA	2-3	Y	<10 MW <28 mi <sup>2</sup>	Congested area with marine vessel traffic	
Outer Boston Harbor, MA	4	Y	>200 MW >28 mi <sup>2</sup>	depths >50 ft, open ocean exposure to east, ESW heights of 75 ft, congested area with marine vessel traffic	
Outside New Bedford Harbor (Buzzards Bay), MA	4	Y	>200 MW >28 mi <sup>2</sup>	depths <50 ft, sheltered from open ocean exposure, navigational hazard	Buzzard's Bay is part of the Cape and Island's Ocean Sanctuary
Portland, ME - Inner Harbor	2-3	N	<10 MW <28 mi <sup>2</sup>	North-south electrical transmission system constraint	
Portland, ME - Outer Harbor	4	N	>200 MW >28 mi <sup>2</sup>	North-south electrical transmission system constraint, water depths >100 ft, open ocean exposure to the east, ESW heights of approx. 90 ft	
South of Tuckernuck Island, MA	6	Y	>200 MW >28 mi <sup>2</sup>	depths >50 ft, open to southerly open-ocean fetch but would receive sheltering effects, crossing of the main navigational channel, ESW 51.1 ft	

1. based upon preliminary estimation of gross available area

Table 3-6: State and Federally Protected Vertebrate Species

Species	Applicable Alternative Sites <sup>3</sup>	Federal Endangered Species Act status	Massachusetts Endangered Species Act Status	Marine Mammal Protection Act status	Migratory Bird Treaty Act Status
<b>Marine Species</b>					
Fin whale ( <i>Balaenoptera physalus</i> )	NS, STI, NB	Endangered	Endangered	Protected	N/A
Humpback whale ( <i>Megaptera novaeangliae</i> )	NS, STI, NB	Endangered	Endangered	Protected	N/A
Northern right whale ( <i>Eubalaena glacialis</i> )	NS, STI, NB	Endangered	Endangered	Protected	N/A
Long-Finned Pilot whale ( <i>Globicephala melas</i> )	NS, STI, NB	Not listed	No special status	Protected	N/A
Minke whale ( <i>Balaenoptera acutorostrata</i> )	NS, STI, NB	Not listed	No special status	Protected	N/A
Common dolphin ( <i>Delphinus delphis</i> )	NS, STI, NB	Not listed	No special status	Protected	N/A
Harbor porpoise ( <i>Phocoena phocoena</i> )	NS, STI, NB	Not listed <sup>4</sup>	No special status	Protected	N/A
Striped dolphin ( <i>Stenella coeruleoalba</i> )	NS, STI, NB	Not listed	No special status	Protected	N/A
White-sided dolphin ( <i>Lagenorhynchus acutus</i> )	NS, STI, NB	Not listed	No special status	Protected	N/A
Gray seal ( <i>Halichoerus grypus</i> )	NS, STI, NB	Not listed	Special Concern	Protected	N/A
Harbor seal ( <i>Phoca vitulina concolor</i> )	NS, STI, NB	Not listed	No special status	Protected	N/A
Harp seal ( <i>Phoca groenlandica</i> )	NS, STI, NB	Not listed	No special status	Protected	N/A
Hooded seal ( <i>Cystophora cristata</i> )	NS, STI, NB	Not listed	No special status	Protected	N/A
Kemp's Ridley sea turtle ( <i>Lepidochelys kempii</i> )	NS, STI, NB	Endangered	Endangered	N/A	N/A
Leatherback sea turtle ( <i>Dermochelys coriacea</i> )	NS, STI, NB	Endangered	Endangered	N/A	N/A
Loggerhead sea turtle ( <i>Caretta caretta</i> )	NS, STI, NB	Threatened	Threatened	N/A	N/A
<b>Birds</b>					
Roseate Tern ( <i>Sterna dougallii</i> )	NS, STI, NB	Endangered	Endangered	N/A	Protected
Piping Plover ( <i>Charadrius melodus</i> )	NS, STI, NB	Threatened	Threatened	N/A	Protected
Common Loon ( <i>Gavia immer</i> )	MMR, NS, STI, NB	N/A	Special Concern	N/A	Protected
Northern Harrier ( <i>Circus cyaneus</i> )	MMR	N/A	Threatened	N/A	Protected
Sharp-shinned Hawk ( <i>Accipiter striatus</i> )	MMR	N/A	Special Concern	N/A	Protected
Upland Sandpiper ( <i>Bartramia longicauda</i> )	MMR	N/A	Endangered	N/A	Protected
Barn Owl ( <i>Tyto alba</i> )	MMR	N/A	Special Concern	N/A	Protected
Northern Parula ( <i>Parula americana</i> )	MMR	N/A	Threatened	N/A	Protected
Vesper Sparrow ( <i>Pooecetes gramineus</i> )	MMR	N/A	Threatened	N/A	Protected
Grasshopper Sparrow ( <i>Ammodramus savannarum</i> )	MMR	N/A	Threatened	N/A	Protected
Leach's Storm-petrel ( <i>Oceanodroma leucorhoa</i> )	NB		Threatened	N/A	Protected
Arctic Tern ( <i>Sterna paradisaea</i> )	NB	N/A	Special Concern	N/A	Protected
Common Tern ( <i>Sterna hirundo</i> )	NS, NB, STI	N/A	Special Concern	N/A	Protected
Least Tern ( <i>Sterna antillarum</i> )	NS, NB, STI	N/A	Special Concern	N/A	Protected
Migratory Birds <sup>5</sup>	MMR, NS, STI, NB	Various	Various	N/A	Protected

<sup>3</sup> MMR = Massachusetts Military Reservation Alternative Site; NS = Nantucket Sound Alternative Sites; STI = South of Tuckernuck Alternative Site; NB = New Bedford/Horseshoe Shoal Combination Alternative Site

<sup>4</sup> Gulf of Maine population of harbor porpoise is on the candidate species list

<sup>5</sup> All birds that may occur at the four alternative wind farm sites are protected under the Migratory Bird Treaty Act. See Section 3.4.3.2.1 for a list of common birds that occur at the alternative wind farm sites.

Species	Applicable Alternative Sites <sup>3</sup>	Federal Endangered Species Act status	Massachusetts Endangered Species Act Status	Marine Mammal Protection Act status	Migratory Bird Treaty Act Status
<b>Amphibians and Reptiles</b>					
Eastern Box Turtle ( <i>Terrapene carolina</i> )	MMR	N/A	Special Concern	N/A	N/A
Four-toed Salamander ( <i>Hemidactylum scutatum</i> )	MMR	N/A	Special Concern	N/A	N/A
Spotted Turtle ( <i>Clemmys guttata</i> )	MMR	N/A	Special Concern	N/A	N/A

**Table 3-7: Common Bird Species of Camp Edwards, Massachusetts Military Reservation<sup>6</sup>**

Common Name	Scientific Name	Status**
Canada goose*	<i>Branta canadensis</i>	B,M,W
Wood duck	<i>Aix sponsa</i>	M,R
Mallard	<i>Anas platyrhynchos</i>	M,R
Sharp-shinned hawk	<i>Accipiter striatus</i>	B,M,W
Cooper's hawk	<i>Accipiter cooperi</i>	B,M,W
Broad-winged hawk	<i>Buteo platypterus</i>	B,M
Red-tailed hawk	<i>Buteo jamaicensis</i>	R
American kestrel	<i>Falco sparverius</i>	M,R
Wild turkey	<i>Meleagris gallopavo</i>	R
Ring-necked pheasant	<i>Phasianus colchicus</i>	R
Ruffed grouse	<i>Bonasa umbellus</i>	R
Northern bobwhite	<i>Colinus virginianus</i>	R
Upland Sandpiper	<i>Bartramia longicauda</i>	B,M
Spotted sandpiper	<i>Actitis macularia</i>	B,M
American woodcock	<i>Scolopax minor</i>	B,M
Mourning dove	<i>Zenaida macroura</i>	B,M
Black-billed cuckoo	<i>Coccyzus erythrophthalmus</i>	B,M
Barn Owl	<i>Tyto alba</i>	B,W
Great horned owl	<i>Bubo virginianus</i>	R
Common nighthawk	<i>Chordeiles minor</i>	B,M
Whip-poor-will	<i>Caprimulgus vociferus</i>	B,M
Chimney swift	<i>Chaetura pelagica</i>	B,M
Ruby-throated hummingbird	<i>Archilochus colubris</i>	B,M
Belted kingfisher	<i>Megasceryle alcion</i>	B,M
Downy woodpecker	<i>Picoides pubescens</i>	R,M
Hairy woodpecker	<i>Picoides villosus</i>	R,M
Northern flicker	<i>Colaptes auratus</i>	B,M,W
Eastern wood-pewee	<i>Contopus virens</i>	B,M
Empidonax flycatchers	<i>Empidonax spp.</i>	B,M
Eastern phoebe	<i>Sayornis phoebe</i>	B,M
Great crested flycatcher	<i>Myiarchus crinitus</i>	B,M
Eastern kingbird	<i>Tyrannus tyrannus</i>	B,M
Blue jay	<i>Cyanocitta cristata</i>	B,M,W
American crow	<i>Corvus brachyrhynchos</i>	M,R
Barn swallow	<i>Hirundo rustica</i>	B,M
Rough-winged swallow	<i>Stelgidopteryx serripennis</i>	B,M
Tree swallow	<i>Tachycineta bicolor</i>	B,M
Black-capped chickadee	<i>Parus atricapillus</i>	M,R
Brown creeper	<i>Certhia familiaris</i>	M,R
Tufted titmouse	<i>Parus bicolor</i>	R
White-breasted nuthatch	<i>Sitta carolinensis</i>	R
House wren	<i>Troglodytes aedon</i>	B,M
Eastern bluebird	<i>Sialia sialis</i>	B,M
Hermit thrush	<i>Catharus guttatus</i>	B,M,W
American robin	<i>Turdus migratorius</i>	B,M,W
Gray catbird	<i>Dumetella carolinensis</i>	B,M,W
Northern mockingbird	<i>Mimus polyglottos</i>	M,R
Brown thrasher	<i>Toxostoma rufum</i>	B,M,W
Cedar waxwing	<i>Bombycilla cedrorum</i>	B,M,W
European starling	<i>Sturnus vulgaris</i>	B,M,W

<sup>6</sup> Appendix 13 of the Massachusetts Army National Guard (MAARNG, 2001).

Common Name	Scientific Name	Status**
Northern Parula	<i>Parula americana</i>	B,M
Chestnut-sided warbler	<i>Dendroica pensylvanica</i>	B,M
Pine warbler	<i>Dendroica pinus</i>	B
Prairie warbler	<i>Dendroica discolor</i>	B,M
Black-and-white warbler	<i>Mniotilta varia</i>	B,M
American redstart	<i>Setophaga ruticilla</i>	B,M
Common yellowthroat	<i>Geothlypis trichas</i>	B,M
Northern waterthrush	<i>Seiurus noveboracensis</i>	B,M
Ovenbird	<i>Seiurus aurocapillus</i>	B,M
Scarlet tanager	<i>Piranga olivacea</i>	B,M
Northern cardinal	<i>Cardinalis cardinalis</i>	R
Rufous-sided towhee	<i>Pipilo erythrophthalmus</i>	B,M,W
Chipping sparrow	<i>Spizella passerina</i>	B,M
Field sparrow	<i>Spizella pusilla</i>	B,M,W
Vesper sparrow	<i>Pooecetes gramineus</i>	B,M,W
Grasshopper sparrow	<i>Ammodramus savannarum</i>	B,M
Savannah sparrow	<i>Passerculus sandwichensis</i>	B,M,W
Song sparrow	<i>Melospiza melodia</i>	B,M,W
Swamp sparrow	<i>Melospiza georgiana</i>	B,M,W
Northern oriole	<i>Icterus galbula</i>	B,M
Orchard oriole	<i>Icterus spurius</i>	B,M
Eastern meadowlark	<i>Sturnella magna</i>	B,M
Red-winged blackbird	<i>Agelaius phoeniceus</i>	B,M
Common grackle	<i>Quiscalus quiscula</i>	B,M
Brown-headed cowbird	<i>Molothrus ater</i>	B,M,W
American goldfinch	<i>Carduelis tristis</i>	B,M,W
House finch	<i>Carpodacus mexicanus</i>	R,M
Purple finch	<i>Carpodacus purpureus</i>	R,M

\* Non-breeder

\*\* Status derived from Veit and Petersen, 1993. B=Breeding, M=Migrant, R=Resident, W=Winter

**Table 3-8: Bird Species Observed in Nantucket Sound During 2002-2003<sup>7</sup>**

Common Name	Scientific Name	Status*
Red-throated Loon	<i>Gavia stellata</i>	M,W
Common Loon	<i>Gavia immer</i>	M,W
Loon species <sup>††</sup>	<i>Gavia sp.</i>	M,W
Grebe	<i>Podiceps sp.</i>	M,W
Sooty Shearwater	<i>Puffinus griseus</i>	S
Wilson's Storm-Petrel <sup>††</sup>	<i>Oceanites oceanicus</i>	S
Northern Gannet <sup>††</sup>	<i>Morus bassanus</i>	M,W
Great Cormorant	<i>Phalacrocorax carbo</i>	M,W
Double-crested Cormorant <sup>††</sup>	<i>Phalacrocorax auritus</i>	B,M,
Canada Goose	<i>Branta canadensis</i>	B,M,W
Common Eider <sup>††</sup>	<i>Somateria mollissima</i>	B,M,W
Long-tailed Duck	<i>Clangula hyemalis</i>	M,W
Black Scoter	<i>Melanitta nigra</i>	M,W
Surf Scoter	<i>Melanitta perspicillata</i>	M,W
White-winged Scoter <sup>††</sup>	<i>Melanitta fusca</i>	M,W
Goldeneye	<i>Bucephala sp</i>	M,W
Red-breasted Merganser	<i>Mergus serrator</i>	M,W
Osprey	<i>Pandion haliaetus</i>	B,M
American Oystercatcher <sup>†</sup>	<i>Haematopus palliatus</i>	M

<sup>7</sup> Observed during surveys led by Hatch (Appendix 5.7-F and Appendix 5.7-K) and Perkins et al. (2003), unless otherwise noted.



Common Name	Scientific Name	Status*
Redknot	<i>Calidris canutus</i>	M
Sandpiper	<i>Calidris spp.</i>	M
Dunlin	<i>Calidris alpina</i>	M,W
Shorebird species <sup>†</sup>	Not identified to species	M,S
Jaeger species <sup>†</sup>	<i>Stercorarius sp.</i>	M
Laughing Gull <sup>††</sup>	<i>Larus atricilla</i>	B,M
Bonaparte's Gull <sup>††</sup>	<i>Larus philadelphia</i>	M,W,S
Ring-billed Gull	<i>Larus delawarensis</i>	M,W
Herring Gull <sup>††</sup>	<i>Larus argentatus</i>	B,M,W
Great Black-backed Gull <sup>††</sup>	<i>Larus marinus</i>	B,W
Gull species <sup>†</sup>	<i>Larus sp.</i>	--
Black-legged Kittiwake	<i>Rissa tridactyla</i>	M,W
Black Tern <sup>†</sup>	<i>Chlidonias niger</i>	B,M
Roseate Tern <sup>††</sup>	<i>Sterna dougallii</i>	B,M
Common Tern <sup>††</sup>	<i>Sterna hirundo</i>	B,M
Least Tern	<i>Sterna antillarum</i>	B,M
Dovekie	<i>Alle alle</i>	M,W
Razorbill	<i>Alca torda</i>	M,W
Atlantic Puffin	<i>Fratercula arctica</i>	W
Swallow	<i>Hirundinidae sp.</i>	B,M
American Goldfinch	<i>Carduelis tristis</i>	B,M,W

\*Status derived from Veit and Petersen, 1993. B=Breeding, M=Migrant, S=Summer, W=Winter

<sup>†</sup> Identified by Perkins et al. (2003), not Hatch and Kerlinger (Appendix 5.7-F and Appendix 5.7-K).

<sup>††</sup> Identified by Hatch and Kerlinger (Appendix 5.7-F and Appendix 5.7-K) and Perkins et al. (2003).

**Table 3-9: Species Observed South of Tuckernuck Island April 14, 2003<sup>8</sup>**

Species	Scientific Name	Status*
Red-throated Loon	<i>Gavia stellata</i>	M,W
Common Loon	<i>Gavia immer</i>	M,W
Grebe	<i>Podiceps sp.</i>	M,W
Northern Gannet	<i>Morus bassanus</i>	M,W
Double-crested Cormorant	<i>Phalacrocorax carbo</i>	M,W
Common Eider	<i>Somateria mollissima</i>	B,M,W
Long-tailed Duck	<i>Clangula hyemalis</i>	M,W
Black Scoter	<i>Melanitta nigra</i>	M,W
Surf Scoter	<i>Melanitta perspicillata</i>	M,W
White-winged Scoter	<i>Melanitta fusca</i>	M,W
Red-breasted Merganser	<i>Mergus serrator</i>	M,W
Bonapartes Gull	<i>Larus philadelphia</i>	M,W,S
Herring Gull	<i>Larus argentatus</i>	B,M,W
Great Black-backed Gull	<i>Larus marinus</i>	B,W
Common Tern	<i>Sterna hirundo</i>	B,M
Dovekie	<i>Alle alle</i>	M,W
Razorbill	<i>Alca torda</i>	M,W

\* Status derived from Veit and Petersen, 1993. B=Breeding, M=Migrant, S=Summer, W=Winter

**Table 3-10: Birds of Buzzards Bay<sup>9</sup>**

Common Name	Scientific Name	Status*
<b>Open Water</b>		
Common loon	<i>Gavia immer</i>	C/W
Red-throated loon	<i>Gavia stellata</i>	U/W
Double-crested cormorant	<i>Phalacrocorax auritus</i>	N/C
Great cormorant	<i>Phalacrocorax carbo</i>	U/W

<sup>8</sup> Observed during field surveys of South of Tuckernuck and Natucket Islands led by Hatch (Hatch and Kerlinger, 2004).

<sup>9</sup> Derived from Table 4.4 of the Ecology of Buzzards Bay: An Estuarine Profile (Office of Coastal Zone Management, 2002).

Common Name	Scientific Name	Status*
American bittern	<i>Botarus lentiginosus</i>	U
Great blue heron	<i>Ardea herodias</i>	N/C/W
American (Great) egret	<i>Casmerodius albus</i>	N/C
Snowy egret	<i>Egretta thula</i>	N/C
Black-crowned night heron	<i>Nycticorax nycticorax</i>	N/U
Striated heron	<i>Butorides striatus</i>	N/C
Mute swan	<i>Cygnus olor</i>	N/C/W
Canada goose	<i>Branta canadensis</i>	N/C/W
Brant	<i>Branta bernicla</i>	C/W
Mallard	<i>Anas platyrhynchos</i>	N/C/W
American black duck	<i>Anas rubripes</i>	N/C/W
American wigeon	<i>Anas americana</i>	C/W
Canvasback	<i>Aythya valisineria</i>	C/W
Greater scaup	<i>Aythya marila</i>	C/W
Common eider	<i>Somateria mollissima</i>	C/W
King eider	<i>Somateria spectabilis</i>	U/W
Oldsquaw	<i>Clangula hyemalis</i>	C/W
White-winged scoter	<i>Melanitta fusca</i>	C/W
Surf scoter	<i>Melanitta perspicillata</i>	C/W
Black scoter	<i>Melanitta nigra</i>	C/W
Common goldeneye	<i>Bucephala clangula</i>	C/W
Bufflehead	<i>Bucephala albeola</i>	C/W
<b>Intertidal</b>		
Red-breasted merganser	<i>Mergus serrator</i>	C/W
Osprey	<i>Pandion haliaetus</i>	N/C
Northern harrier	<i>Circus cyaneus</i>	N/C/W
American kestrel	<i>Falco sparverius</i>	C/W
Clapper rail	<i>Rallus longirostris</i>	N/U/W
King rail	<i>Rallus elegans</i>	U
Black rail	<i>Laterallus jamacensis</i>	U
Black-bellied plover	<i>Pluvialis squatarola</i>	N/C
Killdeer	<i>Charadrius vociferus</i>	U
Semipalmated plover	<i>Charadrius semipalmatus</i>	N/C
Piping plover	<i>Charadrius melodus</i>	N/U
American oystercatcher	<i>Haematopus palliatus</i>	N/U
Dunlin	<i>Calidris alpina</i>	U
Spotted sandpiper	<i>Actitis macularia</i>	N/C
Willet	<i>Catoptrophorus semipalmatus</i>	N/C
Sanderling	<i>Calidris alba</i>	C
Semipalmated sandpiper	<i>Calidris pusilla</i>	C
Least sandpiper	<i>Calidris minutilla</i>	C
Common black-headed gull	<i>Larus ridibundus</i>	C
Herring gull	<i>Larus argentatus</i>	N/C/W
Great black-backed gull	<i>Larus marinus</i>	N/C/W
Common tern	<i>Sterna hirundo</i>	N/C
Least tern	<i>Sterna antillarum</i>	N/U
Roseate tern	<i>Sterna dougallii</i>	N/U
Belted kingfisher	<i>Ceryle alcyon</i>	C
Sharp-tailed sparrow	<i>Ammodramus caudacutus</i>	N/U

\*N=nester in Buzzards Bay, C=common, U=uncommon, W=winters in Buzzards Bay<sup>10</sup>

Sources: B. Blodgett, H. Hausmann. Massachusetts Division of Fisheries and Wildlife, Massachusetts Natural Heritage Program, Camp, Dresser, and McKee (1990); Peterson (1980); Massachusetts Audubon Society (1989); unpublished species lists.

<sup>10</sup> Many wintering birds are found year round.

**Table 3-11: Summary of Soil, Surficial and Bedrock Geologic Conditions at The Four Alternative Sites**

Alternative Site	Sediment/Soil Conditions	Surficial Geology	Bedrock Geology	Information Sources	Comments
MMR (Upland Site)	Plymouth-Barnstable soils, rolling and extremely bouldery; P-B soils, hilly and extremely bouldery; P-B complex, hilly, very bouldery; Agawam fine sandy loam; Enfield silt loam	Unconsolidated, unsorted glacial sediments containing sand, gravel, silt & clay; glacial till and stratified outwash; within of Buzzards Bay and Sandwich Moraines	Proterozoic-age undivided granite, gneiss and schist overlain by thick (several hundred feet) deposits of glacial sediments	USDA, 1993 Oldale, 2001 USGS, 1986 Zen, 1983	Upland site; significant groundwater recharge area; contains contaminated soils and groundwater in some areas
Nantucket Sound	Unconsolidated marine sediments predominated by sands, shell fragments, gravel, cobbles and boulders	Inter-morainal glacial outwash sediments transported by marine, tidal and eolian forces	Bedrock not mapped in Nantucket Sound (no exposed bedrock; assumed to be hundreds of feet below sediment overburden)	Poppe et al, 1989 Theroux & Wigley, 1998 O'Hara & Oldale, 1987 Zen, 1983	Thick glacial sediment deposits overlying bedrock
South of Tuckernuck Island	Unconsolidated marine sediments containing sand, silt and clay	Unsorted till, morainal and stratified glacial sediments	Triassic basalt located deep (hundreds to over 1,000 feet) beneath sediment deposits	Oldale and Barlow, 1986 Poppe et al, 1989 Theroux & Wigley, 1998 Uchupi, et al 1996 Zen, 1983	Thick glacial sediment deposits overlying bedrock
New Bedford/Horseshoe Shoal	Sediments ranging from silts and clays in deeper areas to sands, gravels and boulders in nearshore and shallower areas; Harbor sediments generally silts and clays.	Glacial till over bedrock, overlain by fluvial gravels and sands	Proterozoic metamorphic biotite gneiss overlain by undivided granite, gneiss and schist within an east-west oriented structural fold; bedrock may outcrop within site boundary	Summerhayes et al, 1977 Theroux & Wigley, 1998 SAIC, 2000 Zen, 1983	Bedrock outcrops possible in several locations; contaminated sediments within New Bedford Harbor contain metals and PCB's

**Table 3-12: Extremal Analysis for Horseshoe Shoal**

Nantucket Sound			
	Wave Height (Feet/Meters)		
Locally Generated	2-Yr. Return	10-Yr. Return	50-Yr. Return
Significant Wave Height (H <sub>s</sub> )	6.7/1.8	8.6/2.6	10.4/3.2
Extreme Storm Wave Height (H <sub>1</sub> )	11.2/3.4	14.4/4.4	17.4/5.3

Source: adapted from Appendix 5.2-A.

**Table 3-13: Extremal Analysis for Site Alternative South of Tuckernuck Island**

	Latitude	Longitude	Wave Height (Feet/Meters)		
			2- Yr Return	10- Yr Return	50- Yr Return
<b>WIS Sta. 87</b>	41.25N	70.25W			
Significant Wave Height (H <sub>s</sub> )			20.3/6.2	25.4/7.8	30.2/9.2
Extreme Storm Wave Height (H <sub>1</sub> )			34.0/10.4	42.5/13.0	50.5/15.4
<b>WIS Sta. 86</b>	41.25N	70.50W			
Significant Wave Height (H <sub>s</sub> )			21.0/6.4	26.4/8.0	31.5/9.6
Extreme Storm Wave Height (H <sub>1</sub> )			35.1/10.7	44.1/13.4	52.5/16.0

**Table 3-14: Extremal Analysis for New Bedford/Horseshoe Shoal Site Alternative**

	Latitude	Longitude	Water Depth	Wave Height (Feet/Meters)		
				2-Yr. Return	10-Yr. Return	50-Yr. Return
NOAA Buoy "BUZM3"	41.40 N	71.03 W	~70			
Significant Wave Height (H <sub>s</sub> )				15.0/4.6	17.9/5.5	20.2/6.2
Extreme Storm Wave Height (H <sub>1</sub> )				25.1/7.7	29.9/9.1	33.8/10.3

**Table 3-15a: Finfish and Shellfish Resources within the Offshore Alternatives**

Common Name	Scientific Name
Albacore tuna	<i>Thunnus alalunga</i>
Alewife	<i>Alosa pseudoharengus</i>
Amberjack	<i>Seriola sp.</i>
American lobster	<i>Homarus americanus</i>
Atlantic menhaden	<i>Brevoortia tyrannus</i>
Bay anchovy	<i>Anchoa mitchilli</i>
Bay scallop	<i>Aequipecten irradians</i>
Blueback herring	<i>Alosa aestivalis</i>
Bonito	<i>Sarda sarda</i>
Channeled whelk	<i>Busycotypus canaliculatus</i>
Cunner	<i>Tautoglabrus adspersus</i>
Cusk	<i>Brosme brosme</i>
Knobbed whelk	<i>Busycon caria</i>
Lightning whelk	<i>Busycon sinistrum</i>
Longhorn sculpin	<i>Myoxocephalus octodecimspinosus</i>
Menhaden	<i>Brevoortia sp.</i>
Northern Quahog	<i>Mercenaria mercenaria</i>
Northern sand lance	<i>Ammodytes clubius</i>
Northern sea robin	<i>Prionotus carolinus</i>
Round herring	<i>Etrumeus teres</i>
Sea scallop	<i>Placopecten magellanicus</i>
Silver hake	<i>Merucius bilinearis</i>
Smooth dogfish	<i>Mustelus canis</i>
Soft shell clam	<i>Mya arenaria</i>
Striped anchovy	<i>Anchoa hepsetus</i>
Striped Bass	<i>Morone saxatilis</i>
Tautog	<i>Tautoga onitis</i>
Weakfish	<i>Cynoscion regalis</i>

**Table 3-15b. Summary of specific life stage EFH designations for species in the NMFS designated 10 x 10 minute squares encompassing the Offshore Alternatives**

Common Name	Scientific Name	EGGS	LARVAE	JUVENILES	ADULTS
American plaice	<i>Hippoglossoides platessoides</i>			NB*	NB*
Atlantic butterfish	<i>Peprilus triacanthus</i>	X	X	X	X
Atlantic cod	<i>Gadus morhua</i>	NB, STI	NB, STI	NB, STI	X
Atlantic mackerel	<i>Scomber scombrus</i>	X	X	X	X
Atlantic sea herring	<i>Clupea harengus</i>		STI	X	NB, STI
Black sea bass	<i>Centropristis stria</i>		X	X	X
Bluefin tuna	<i>Thunnus thynnus</i>			X	X**
Bluefish	<i>Pomatomus saltatrix</i>			NB	NB
Blue shark	<i>Prionace glauca</i>			STI	X**
Cobia	<i>Rachycentron canadum</i>	X	X	X	X
Common thresher shark	<i>Alopias vulpinus</i>		STI	STI	STI
Dusky shark	<i>Carcharhinus obscurus</i>			STI	
Haddock	<i>Melanogrammus aeglefinus</i>	NB	NB		STI
King mackerel	<i>Scomberomorus cavalla</i>	X	X	X	X
Little skate	<i>Leucoraja erinacea</i>			X	X
Long-finned squid	<i>Loligo pealei</i>			X	X
Monkfish	<i>Lophius americanus</i>	STI	STI		

Common Name	Scientific Name	EGGS	LARVAE	JUVENILES	ADULTS
Ocean pout	<i>Macrozoarces americanus</i>	STI	STI		STI
Ocean quahog	<i>Artica islandica</i>			STI	STI
Pollock	<i>Pollachius virens</i>			NS	
Red hake	<i>Urophycis chus</i>	STI	NB, STI	NB, STI	NB
Sandbar shark	<i>Carcharhinus plumbeus</i>			STI	NB, STI
Scup	<i>Stenotomus chrysops</i>	NB	NB	X	X
Shortfin mako shark	<i>Isurus oxyrinchus</i>			X**	
Short-finned squid	<i>Illex illecebrosus</i>			X**	X**
Spanish mackerel	<i>Scomberomorus maculatus</i>	X	X	X	X
Spiny dogfish	<i>Squalus cubensis</i>			STI	STI
Summer flounder	<i>Paralichthys dentatus</i>	X	X	X	X
Surf clam	<i>Spisula solidissima</i>			X	X
Whiting	<i>Merluccius bilinearis</i>	STI	STI		STI
Windowpane	<i>Scophthalmus aquosus</i>	NB, STI	NB, STI	NB, STI	X
Winter flounder	<i>Pseudopleuronectes americanus</i>	X	X	X	X
Winter skate	<i>Leucoraja ocellata</i>			X	X
Witch flounder	<i>Glyptocephalus cynoglossus</i>		STI		
Yellowtail flounder	<i>Limanda ferruginea</i>	STI	STI	NS*, STI, NB**	STI

X = designations apply to all offshore alternative areas  
 NS = designation applies to Nantucket Sound offshore alternatives  
 STI = designation applies to South of Tuckernuck Island alternative  
 NB = designation applies to New Bedford/Horseshoe Shoal combination alternative  
 \* - Although this life stage is listed in the EFH grid, there is no designated EFH for this life stage according to the figures in the EFH description document [<http://www.nero.noaa.gov/ro/doc/list.htm>] at this site.  
 \*\* - Listed for NB alternative because this life stage is listed on the grid that encompasses Horseshoe Shoal in Nantucket Sound, part of the NB combination alternative. This life stage is not listed within the grid that encompasses New Bedford or Buzzards Bay.

**TOTALS:**  
 NS = 22 species and 52 life stages  
 STI = 32 species and 86 life stages  
 NB = 26 species and 70 life stages

**Table 3-16: Dominant Benthic Invertebrate Taxonomic Groups of Nantucket Sound**

Organism	Individuals/m <sup>2</sup>	Relative Dominance (%)
Nemertea	1-9	0.08
Nematodes	1-3	0.02
Annelids (mainly Polychaeta)	100-1,000	8.4
Mollusca	50-9,500	-
Gastropoda	50-900	7.5
Bivalvia	1-500	4.2
Crustacea	100-10,000	-
Amphipoda	100-9,000	75.2
Cumacea	<1	0.01
Isopoda	1-9	0.08
Decapoda	50-250	2.1
Echinoidea (sea urchins)	1-9	0.08
Ophiuroidea (basketstars and brittlestars)	1-50	0.4
Asteroidea (starfish)	<1	0.01
Other taxa	1-10	0.08
Total	NA	~100%

**Table 3-17: Dominant Benthic Invertebrate Taxonomic Groups of the Area South of Tuckernuck Island**

Organism	Individuals/m <sup>2</sup>	Relative Dominance (%)
Nemertea	1-49	0.4
Nematodes	1-9	0.08
Annelids (mainly Polychaeta)	100-1,000	8.4
Mollusca	50-500	-
Gastropoda	1-100	0.8
Bivalvia	1-500	4.2
Crustacea	1,000-10,000	-
Amphipoda	1,000-9,000	75.4
Cumacea	50-600	5.0
Isopoda	50-500	4.2
Decapoda	1-50	0.4

Organism	Individuals/m <sup>2</sup>	Relative Dominance (%)
Echinoidea (sea urchins)	1-99	0.8
Ophiuroidea (basketstars and brittlestars)	<1	0.01
Asteroidea (starfish)	<1	0.01
Other taxa	1-20	0.17
<b>Total</b>	<b>NA</b>	<b>~100%</b>

Table 3-18: Dominant Benthic Invertebrate Taxonomic Groups of New Bedford Harbor/Buzzards Bay

Organism	Individuals/m <sup>2</sup>	Relative Dominance (%)
Nemertea	1-9	0.3
Nematodes	<1	0.03
Annelids (mainly Polychaeta)	100-1,000	31.9
Mollusca	50-500	-
Gastropoda	100-900	28.7
Bivalvia	1-50	1.6
Crustacea	1,000-10,000	-
Amphipoda	100-1,000	31.9
Cumacea	1-50	1.6
Isopoda	1-9	0.3
Decapoda	1-50	1.6
Echinoidea (sea urchins)	<1	0.03
Ophiuroidea (basketstars and brittlestars)	1-50	1.6
Asteroidea (starfish)	1-9	0.3
Other taxa	1-10	0.3
<b>Total</b>		<b>~100%</b>

Table 3-19: Reptile and Amphibian Species Observed at MMR

Common Name	Scientific Name	Habitat Utilization
<b>Reptiles</b>		
Eastern Box Turtle	<i>Terrapene carolina carolina</i>	Dry and wet thickets, deciduous forests and, pine-barrens and oak thicket
Spotted Turtle	<i>Clemmys guttata</i>	Swamps, bogs, fens, wet pastures, marshes
Snapping Turtle	<i>Chelydra serpentina</i>	Ponds, lakes and rivers
Musk Turtle	<i>Sternotherus odoratus</i>	Permanent bodies of water
Eastern painted Turtle	<i>Chrysemys p. picta</i>	Ponds, lakes and rivers
Black Racer	<i>Coluber constrictor</i>	Utilizes grasslands, woodland borders, swamp, and marshlands.
Smooth Green Snake	<i>Opheodrys vernalis</i>	Fields, wet meadows, bogs, marsh edges and open woodlands
Garter Snake	<i>Thamnophis sirtalis sirtalis</i>	Pond and stream edges, wetlands, forests, fields, rocky hillsides and residential areas
Eastern Ribbon Snake	<i>Thamnophis sauritus sauritus</i>	Wetlands and the edges of ponds and streams
Northern ring-necked snake	<i>Diadophis punctatus edwardsii</i>	Preferred habitat consists of rocky ledges near rivers in shady or heavily wooded damp areas.
Milk snake	<i>Lampropeltis triangulum</i>	Woodlands, fields, rocky hillsides and borders of wetlands
Eastern hog-nosed Snake	<i>Heterodon platirhinos</i>	Sandy woodlands, fields, farmland and coastal areas
<b>Amphibians</b>		
Wood Frogs	<i>Rana sylvatica</i>	Obligate vernal pool species
Spring Peepers	<i>Pseudacris crucifer</i>	Marshy woods, non-wooded lowlands, and near ponds and swamps
Bullfrog	<i>Rana catesbeiana</i>	Permanent waterbodies
Gray Tree Frog	<i>Hyla versicolor</i>	Primarily arboreal in trees and shrubs in both coniferous and deciduous habitats
American toad	<i>Bufo americanus</i>	Breeds in wetlands, spend adult life in upland woodlands
Spotted salamander	<i>Ambystoma maculatum</i>	Obligate vernal pool species
Eastern newt	<i>Notophthalmus viridescens</i>	Primarily aquatic habitats
Red back salamander	<i>Plethodon cinereus</i>	Moist, cool mixed, deciduous or evergreen forests
Pickerel frog	<i>Rana palustris</i>	Small ponds or wetlands
Green frog	<i>Rana clamitans</i>	Permanent waterbodies such as ponds, lakes, permanent marshes

**Table 3-20: Rare, Threatened and Endangered Moths and Dragonflies**

Rare, Threatened and Endangered Moths			
Scientific name	Common Name	Status in MA	Assoc. Habitat
<i>Acronicta albarufa</i>	Barrens Daggermoth	T	Scrub Oak Barrens
<i>Hemileuca maia ssp.</i>	Coastal Barrens Buckmoth	T	Scrub Oak Barrens
<i>Catocala herodias gerhardi</i>	Gerards Underwing	T	Scrub Oak Barrens
<i>Cicinnius melsheimeri</i>	Melsheimers Sack Bearer	T	Scrub Oak Barrens
<i>Faronta rubripennis</i>	Pink Streak	T	Grassland/Wet Meadow
<i>Papaipema sulphurata</i>	Water-willow stem borer	T	Wetlands
<i>Apharetra dentate</i>	Blueberry sawfly	SC	Pine Barrens/Bogs
<i>Cingilia catenaria</i>	Chain-dotted Geometer	SC	Scrub oak barrens
<i>Abagrotis nefascia benjamini</i>	Coastal Heathland Cutworm	SC	Sandy plains, oak and pine forests
<i>Metarranthis pilosaria</i>	Coastal Swamp Metarranthis	SC	Pine/Oak barrens swamps
<i>Papaipema sp.</i>	Ostrich Fern Borer	SC	Wetlands containing significant amounts of swamp loosestrife ( <i>Decodon verticillatus</i> )
<i>Euchlaena madusaria</i>	Geometrid Moth	SC	Not listed
Rare, Threatened and Endangered Odonates (dragonflies and damselflies)			
<i>Enallagma recurvatum</i>	Pine barrens Bluet	T	Coastal plain ponds
<i>Enallagma carunculatum</i>	Tule Bluet	SC	Freshwater ponds/lakes
<i>Enallagma laterale</i>	New England Bluet	SC	Coastal plain ponds
<i>Anax longipes</i>	Comet Darner	SC	Emergent Ponds
<i>Aeshna mutata</i>	Spatterdock Darner	E	Ponds

T=Threatened; SC=Special Concern; E=Endangered

**Table 3-21: List of Properties Listed, Determined Eligible, or Evaluated Eligible for the National Register of Historic Places within the viewshed of the Massachusetts Military Reservation Alternative Site. (Includes properties that are within 300 feet of the project boundary and upland areas within view of the project area). Locations are shown on Figure 3-30.**

Town	Resource	Address	Designation(s)
Bourne	Bourne Bridge	State Road 28 over Cape Cod Canal	Evaluated eligible for the National Register
	Camp Edwards Ammunition Supply Point	corner of Pocasset/Forestdale and Pew roads on the Massachusetts Military Reservation	Evaluated Eligible for the National Register
	Camp Edwards Range Control	intersection of Wheelock and Burgoyne roads on the Massachusetts Military Reservation	Evaluated Eligible for the National Register
	Sagamore Bridge	U.S. Highway 6 over Cape Cod Canal	Evaluated eligible for the National Register
Bourne, Sandwich	Cape Cod Canal	between Cape Cod Bay and Buzzard's Bay	National Historic Civil Engineering Landmark
Sandwich	U.S. Coast Guard Station Cape Cod Canal	Coast Guard Road	Evaluated eligible for the National Register

**Table 3-22: List of Properties Listed, Determined Eligible, or Evaluated Eligible for the National Register of Historic Places within the proposed Cape Wind—Nantucket Sound Alternatives Project Area. Includes properties that are within 300 feet of the shoreline and within view of the four Nantucket Sound project alternatives. Locations are shown on Figure 3-32.**

Town	Name	Address/Location	Designation(s)
Falmouth	Nobska Point Light Station	Nobska Road	Individually listed in the National Register
Barnstable	Cotuit Historic District	Main Street, Lowell and Ocean View Avenues, bounded by Osterville Harbor, Nantucket Sound and Popponesset	National Register District
	Col. Charles Codman Estate	43 Ocean View Avenue	Individually listed in the National Register
	Wianno Historic District	Roughly bounded by East Bay Road, Wianno and Sea View Avenues, between Nantucket Sound and Crystal Lake	National Register District

	Wianno Club	107 Sea View Avenue	Individually listed in the National Register
	Hyannis Port Historic District	Roughly bounded by Massachusetts Avenue and Edgehill Road, Hyannis Avenue, Hyannis Harbor and Scudder Avenue	National Register District
	Kennedy Compound	Erving and Merchant Avenue	Individually listed in the National Register and National Historic Landmark
Chatham	Monomoy Point Lighthouse	Monomoy National Wildlife Refuge	National Register District
Tisbury	West Chop Station	West Chop Road	Individually listed in the National Register
Oak Bluffs	East Chop Light	At the northern tip of Cape Poge	Individually listed in the National Register
	Martha's Vineyard Campground Historic District	Roughly bound by Lake, Siloam, Central, Circuit and Clinton Streets and Dukes County Court House	National Register District
	Flying Horses Carousel	33 Oak Bluffs Avenue	Individually listed in National Register and National Historic Landmark
	The Arcade	134 Circuit Avenue	Individually listed in the National Register
	Dr. Harrison A. Tucker Cottage	42 Ocean Avenue	Individually listed in the National Register
	Oak Bluffs Christian Union Chapel	Bordered by Circuit, Kennebec Avenue, Narragansett Avenue and Grove Street	Individually listed in the National Register
Edgartown	Edgartown Village Historic District	Bounded by Water Street (north and south) and Pease's Point Way (north and south)	National Register District
	Edgartown Harbor Lighthouse	North Water Street	Individually listed in the National Register
	Cape Poge Light	Chappaquiddick Island	Individually listed in the National Register
Nantucket	Nantucket Historic District	all of Nantucket Island	National Historic Landmark District

**Table 3-23: List of Properties Listed, Determined Eligible, or Evaluated Eligible for the National Register of Historic Places within the proposed Cape Wind—South of Tuckernuck Island Project Area. Includes properties that are within 300 feet of the shoreline and within view of the project alternative. Locations are shown on Figure 3-33.**

Town	Name	Address/Location	Designation(s)
Edgartown	Cape Poge Light	Chappaquiddick Island	Individually listed in the National Register
Nantucket	Nantucket Historic District	all of Nantucket Island	National Historic Landmark District

**Table 3-24: List of Properties Listed, Determined Eligible, or Evaluated Eligible for the National Register of Historic Places within the proposed Cape Wind—New Bedford Alternative Project Area. Including properties within 300 feet of the shoreline and within view of the proposed wind park alternative. Locations are shown in Figure 3-34. (See Table 3-22 for properties within the reduced Horseshoe Shoal Combo area)**

Town	Resource	Address/Location	Designation(s)
Dartmouth	Padanaram Village Historic District	Elm, Water Middle, High, Pleasant, Prospect, Hill, School, Fremont, and Bridge Streets	National Register District
New Bedford	Fort Taber District	Within Fort Rodman Military Reservation	National Register District
	Fort Rodman	Rodney French Boulevard	Evaluated eligible for the National Register



Town	Resource	Address/Location	Designation(s)
	Clark's Point Light	Within Fort Rodman Military Reservation (also contributing property in Fort Taber District)	Individually listed in the National Register
	Butler Flats Light Station	In Buzzard's Bay, east of Fort Rodman Military Reservation	Individually listed in the National Register
	New Bedford-Fairhaven Bridge	U.S. Highway 6 over Acushnet River	Evaluated eligible for the National Register
Fair Haven	Fort Phoenix	South of Route 6 in Fort Phoenix Park	Individually listed in the National Register
Mattapoissett	Ned Point Light	Ned Point Road	Individually listed in the National Register
Marion	Bird Island Light Station	Sippican Harbor	Individually listed in the National Register
Bourne	Wing's Neck Light	Wing's Neck Road	Individually listed in the National Register
Falmouth	Cleveland Ledge Light Station	Cleveland Ledge Channel in Buzzard's Bay	Individually listed in the National Register
	West Falmouth Village Historic District	West Falmouth Highway (Rt 28A) from Great Sippewisset Marsh to Crocker Pond, including portions of Blacksmith Shop, Chase, and Old Dock roads; Bowman Lane; and Friends Way	National Register District
	Quisset Harbor Area	Carey Lane, Quisset Harbor Road, and Quisset Harbor	Evaluated eligible for the National Register

Table 3-25: Recreational Resources Within Viewshed of the MMR Alternative Site

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
1	KEITH FIELD	Bourne	M	2.88	R	0.8
2		Bourne	P	0.50	C	0.8
3		Bourne	P	0.31	C	0.8
4		Bourne	P	0.17	C	0.8
5	SHAWME-CROWELL STATE FOREST	Bourne	S	46.98	B	0.4
6	SHAWME-CROWELL STATE FOREST	Bourne	S	95.49	B	0.3
7	SHAWME-CROWELL STATE FOREST	Sandwich	S	306.99	B	0.4
8	SHAWME-CROWELL STATE FOREST	Sandwich	S	98.66	B	0.5
9	SHAWME-CROWELL STATE FOREST	Sandwich	S	55.00	B	0.7
10	FISK FORESTDALE LOT	Sandwich	S	100.85	C	1.9
11		Sandwich	M	45.77	C	2.6
12	AUDUBON LAND	Mashpee	N	0.31	C	3.3
13	WAKEBY POND	Sandwich	S	16.85	C	3.2
14	ST VINCENT DEPAUL CAMP	Mashpee	N	41.75	R	3
15	LOWELL HOLLY RESERVATION	Mashpee	N	64.48	C	3.9
16	CAMP FARLEY	Mashpee	N	31.40	R	3.8
17	OTIS AFB	Mashpee	F	990.24	B	3
18	MASHPEE RECREATION CENTER	Mashpee	M	26.26	R	3.9
19	MAKEPEACE SANCTUARY	Mashpee	N	21.37	C	4.4
20	MAKEPEACE SANCTUARY	Mashpee	N	13.37	C	4.3
21	MAKEPEACE SANCTUARY	Mashpee	N	18.31	C	4.2
22	MAKEPEACE SANCTUARY	Mashpee	N	11.67	C	4.2
23	MAKEPEACE SANCTUARY	Mashpee	N	28.56	C	4.2
24	MAKEPEACE SANCTUARY	Mashpee	M	14.62	C	4.2
25	JOHNS POND PARK	Mashpee	M	99.22	C	4
26	QUASHNET WOODS STATE RES	Mashpee	S	30.38	C	4.5
27	JOHNS POND PARK	Mashpee	M	119.93	C	4.2
28	CONSERVATION LAND	Mashpee	M	0.08	C	3.3
29	ALPER LAND	Mashpee	N	14.68	C	4.2
30	ALPER CONSERVATION	Mashpee	M	34.04	C	4.3
31	FRANCES A. CRANE WMA	Falmouth	S	1.54	C	3.6
32	B Z REALTY TRUST LAND	Mashpee	N	3.13	C	4.9
33	ASHUMET HOLLY RESERVATION	Falmouth	N	45.79	C	4.4

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
34	PAUL HARNEY GOLF COURSE	Falmouth	P	68.32	R	4
35	ALLIETTA SOFTBALL FIELD	Falmouth	M	6.97	R	3.5
36	FRANCES A. CRANE WMA	Falmouth	S	1039.78	C	3.3
37	FRANCES A. CRANE WMA	Falmouth	S	92.46	C	2.7
38	SCHOOL AT OTIS AIR FORCE BASE	Bourne	M	10.04	R	2.2
39	SCHOOL AT OTIS AIR FORCE BASE	Bourne	M	23.06	R	2.1
40	FRANCES A. CRANE WMA	Falmouth	S	5.70	C	2.9
41	FRANCES A. CRANE WMA	Falmouth	S	3.90	C	3
42	FRANCES A. CRANE WMA	Falmouth	S	3.79	C	3
43	FRANCES A. CRANE WMA	Falmouth	S	11.11	C	3
44	FRANCES A. CRANE WMA	Falmouth	S	4.50	C	3.1
45	FRANCES A. CRANE WMA	Falmouth	S	4.95	C	3.1
46	FRANCES CRANE WMA	Falmouth	S	6.94	C	3.2
47	FRANCES A. CRANE WMA	Falmouth	S	66.66	C	2.6
48	FRANCES A. CRANE WMA	Falmouth	S	30.48	C	2.7
49	FRANCES A. CRANE WMA	Falmouth	S	24.75	C	2.7
50	FRANCES A. CRANE WMA	Falmouth	S	25.08	C	2.8
51	FRANCES A. CRANE WMA	Falmouth	S	41.23	C	2.9
52	FRANCES A. CRANE WMA	Falmouth	S	26.69	C	2.8
53	FRANCES A. CRANE WMA	Falmouth	S	19.58	C	2.9
54	FRANCES A. CRANE WMA	Falmouth	S	14.25	C	2.9
55	FRANCES A. CRANE WMA	Falmouth	S	31.71	C	3
56	FRANCES A. CRANE WMA	Falmouth	S	11.75	C	3.1
57	FRANCES A. CRANE WMA	Falmouth	S	17.08	C	3.1
58	FRANCES A. CRANE WMA	Falmouth	S	9.55	C	3
59	FRANCES A. CRANE WMA	Falmouth	S	10.63	C	3.2
60	FRANCES A. CRANE WMA	Falmouth	S	0.59	C	3.2
61	FRANCES A. CRANE WMA	Falmouth	S	10.01	C	3
62	FRANCES A. CRANE WMA	Falmouth	S	9.51	C	2.8
63	FRANCES A. CRANE WMA	Falmouth	S	46.70	C	2.6
64		Falmouth	M	20.24	C	2.6
65		Bourne	M	75.03	C	2.3
66		Bourne	M	65.97	C	2.1
67		Bourne	M	57.08	C	1.8
68		Bourne	M	20.02	C	1.6
69	FLAX POND ACCESS	Bourne	M	0.24	R	0.7
70	PICTURE LAKE ACCESS	Bourne	M	1.10	R	0.6
71	PICTURE LAKE ACCESS	Bourne	M	0.15	R	0.6
72	PICTURE LAKE PARK	Bourne	M	1.18	C	0.6
73	LILY POND ACCESS	Bourne	M	0.18	R	0.7
74	LILY POND ACCESS	Bourne	M	0.49	C	0.7
75	FOUR PONDS CONS AREA	Bourne	M	124.71	C	0.9
76	BAYVIEW CAMPGROUND	Bourne	P	43.92	R	0.7
77	MONUMENT BEACH SPORTSMANS CLUB	Bourne	P	14.00	R	0.5
78	MONUMENT BEACH SPORTSMANS CLUB	Bourne	P	9.46	R	0.5
79	MONUMENT BEACH SPORTSMANS CLUB	Bourne	P	4.14	R	0.5
80	MONUMENT BEACH SPORTSMANS CLUB	Bourne	P	16.59	R	0.6
81	MONUMENT BEACH SPORTSMANS CLUB	Bourne	P	8.76	R	0.6
82	MONUMENT BEACH SPORTSMANS CLUB	Bourne	P	8.41	R	0.6
83	WALSH CONSERVATION LAND	Bourne	N	7.92	C	0.5
84	KORFF LAND	Bourne	N	6.60	C	0.6
85	BOURNE HIGH SCHOOL	Bourne	M	10.66	R	1
86	BOURNE HIGH SCHOOL	Bourne	M	2.13	R	1
87	BOURNE HIGH SCHOOL	Bourne	M	19.44	R	1.1
88	BOURNE HIGH SCHOOL	Bourne	M	42.67	R	1
89	BOURNE HIGH SCHOOL	Bourne	M	4.11	R	0.9
90	LABRETTO PROPERTY	Bourne	M	14.67	C	0.8

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
91	GALLO ICE RINK	Bourne	F	0.51	R	0.7
92	REGIONAL VOCATIONAL TECHNICAL	Bourne	M	74.34	R	0.4
93	CAPE COD CANAL ACCESS	Bourne	F	128.07	R	0.3
94	CAPE COD CANAL ACCESS	Bourne	F	38.71	R	0.5
95	CAPE COD CANAL ACCESS	Bourne	F	38.71	R	0.4
96	BOURNE SETTLEMENT OPEN SPACE	Bourne	P	7.47	C	0.5

## Notes:

Status: B=Public Nonprofit; F=Federal; M=Municipal; N=Private Nonprofit; P=Private for profit; S=State

Resource type: B= Recreation and Conservation; C= Conservation; H=Historical/Cultural; R= Recreation; S= Scenic

Source: MassGIS Protected and Recreational Open Space, 2003.

**Table 3-26: Recreational Resources Within Viewshed of Horseshoe Shoal Offshore Alternative Site**

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
1	NOBSKA PT. LIGHT HOUSE	Falmouth	F	1.33	H	14.1
2	NOBSKA POINT	Falmouth	M	3.74	S	14.1
3	SHINING SEA BIKEWAY	Falmouth	M	15.99	R	14.0
4	TRUNK RIVER BEACH	Falmouth	M	2.83	R	13.6
5	SALT POND/SURF DR FRONTAGE	Falmouth	M	5.54	C	13.2
6	SALT POND ACRES WILDLIFE AREA	Falmouth	N	41.68	C	13.2
7	SHINING SEA BIKEWAY	Falmouth	M	11.86	R	13.3
8	WELSH PARCEL	Falmouth	M	0.81	C	13.0
9	SALT POND RESERVATION	Falmouth	N	3.46	C	13.0
10	CORCORAN PARCEL	Falmouth	M	0.44	R	12.9
11	SURF DRIVE BEACH	Falmouth	M	11.58	R	12.7
12	MARINA PARK	Falmouth	M	6.08	R	12.0
13	DEACON'S POND PARK	Falmouth	M	2.65	R	11.9
14	HOTEL PARK	Falmouth	M	1.71	R	12.0
15	HOTEL PARK	Falmouth	M	3.76	R	11.9
16	CENTRAL PARK	Falmouth	M	4.12	R	11.6
17	FALMOUTH HEIGHTS TOWN BEACH	Falmouth	M	4.48	R	11.5
18	BRISTOL BEACH	Falmouth	M	3.25	R	11.2
19	GREAT POND ACCESS	Falmouth	M	8.45	C	10.8
20	GREEN POND TOWN LANDING	Falmouth	M	0.82	R	10.4
21	MENAUHANT BEACH	Falmouth	M	14.69	R	9.7
22	MENANHANT YACHT CLUB	Falmouth	P	9.53	R	9.4
23	WASHBURN ISLAND	Falmouth	S	286.18	B	8.8
24	SOUTH CAPE BEACH STATE PARK	Mashpee	S	402.94	B	6.9
25	POPPONESSET BEACH (PRIVATE)	Mashpee	P	1.76	R	5.4
26	POPPONESSET BEACH	Mashpee	S	7.66	C	5.4
27	LITTLE THATCH ISLAND	Mashpee	N	1.57	C	5.5
28	POPPONESSET BEACH	Mashpee	N	6.23	C	5.5
29		Barnstable	N	27.83	C	5.8
30		Barnstable	P	2.72	C	5.6
31	SAMPSONS ISLAND	Barnstable	N	38.12	C	5.9
32	ROKEBY FARMS	Barnstable	P	90.78	C	5.6
33		Barnstable	M	3.54	C	6.8
34		Barnstable	M	0.32	C	7.1
35		Barnstable	M	0.68	C	7.1
36	HYANNISPORT CLUB	Barnstable	P	0.64	R	6.1
37	HYANNISPORT CLUB	Barnstable	P	35.76	R	6.4
38		Barnstable	M	8.55	C	6.7
39		Barnstable	M	0.19	C	7.0
40		Barnstable	M	0.04	C	7.0
41	BAYVIEW BEACH	Yarmouth	M	1.82	R	7.3
42	LEWIS BAY	Yarmouth	N	0.39	R	7.2
43	COLONIAL ACRES BEACH	Yarmouth	M	5.59	R	7.3

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
44	ENGLEWOOD BEACH	Yarmouth	M	1.42	R	7.0
45	PINE ISLAND	Yarmouth	P	24.04	C	6.4
46	POINT GAMMON	Yarmouth	P	15.27	C	4.8
47	GREAT ISLAND	Yarmouth	P	32.53	C	5.4
48	GREAT ISLAND	Yarmouth	P	180.15	C	6.0
49	LEWIS POND MARSH	Yarmouth	P	23.12	C	6.9
50	SEAGULL BEACH	Yarmouth	M	17.96	R	7.1
51	LEWIS POND MARSH	Yarmouth	P	16.15	C	7.2
52	LEWIS POND MARSH	Yarmouth	P	96.57	C	7.3
53	FORMER DRIVE-IN THEATRE	Yarmouth	M	21.72	R	7.8
54	THACHERS BEACH	Yarmouth	M	0.92	R	7.4
55	SEAVIEW BEACH	Yarmouth	M	2.18	R	7.5
56	PARKER RIVER BEACH	Yarmouth	M	9.65	R	7.7
57	BEACHWOOD BEACH	Yarmouth	M	1.00	R	7.8
58	SOUTH MIDDLE BEACH	Yarmouth	M	8.35	R	8.0
59	BASS RIVER BEACH & BOAT ACCESS	Yarmouth	M	10.76	C	8.2
60	DAVIS/WEST DENNIS BEACH	Dennis	M	149.79	R	9.0
61	CONSERV LAND/LORING AVE	Dennis	M	13.99	C	9.5
62	TROTting PARK ROAD LNDG	Dennis	M	0.73	R	9.6
63	SOUTH VILLAGE ROAD BEACH	Dennis	M	3.39	R	9.8
64	BAKERS WAY LNDG	Dennis	M	0.55	R	9.8
65	LOWER SWAN RIVER MARSH	Dennis	M	8.23	C	9.9
66	SWAN RIVER MARSH	Dennis	M	7.60	C	10.0
67	HAIGIS BEACH	Dennis	M	4.42	R	10.0
68	GLENDON ROAD BEACH	Dennis	M	2.00	R	10.2
69	GLENDON ROAD LNDG	Dennis	M	2.02	R	10.2
70	SEA STREET BEACH	Dennis	M	2.87	C	10.6
71	RAYCROFT BEACH	Dennis	M	1.97	R	10.9
72	DEPOT STREET BEACH	Dennis	M	1.17	R	11.1
73	INMAN ROAD BEACH	Dennis	M	2.10	R	11.2
74	BELMONT ROAD BEACH	Harwich	M	0.70	R	11.4
75	WIXON PIER	Harwich	M	0.11	R	11.6
76	PLEASNT ROAD BEACH	Harwich	M	1.90	B	12.0
77	GREYS NECK BEACH	Harwich	M	0.47	B	12.3
78	EARLE ROAD BEACH	Harwich	M	5.82	B	12.5
79	BROOKS ROAD	Harwich	P	0.83	B	12.5
80	ALLEN HARBOR BULKHEAD	Harwich	M	0.22	R	13.0
81	WAH WAH TAYSEE BEACH	Harwich	M	0.24	B	12.9
82	WYNDERMERE BLUFFS BEACH	Harwich	M	0.78	B	13.1
83	ZYLPHA ROAD BEACH	Harwich	M	0.40	B	13.1
84	ATLANTIC AVENUE BEACH	Harwich	M	0.44	R	13.2
85	SEA STREET BEACH	Harwich	M	0.52	B	13.4
86	BANK STREET BEACH	Harwich	M	1.64	B	13.5
87	MERKEL BEACH	Harwich	M	3.66	B	13.7
88	LARSEN PARK	Harwich	M	0.95	R	13.9
89	WYCHMERE HARBOR DOCK	Harwich	M	0.61	R	14.0
90	SAQUATUCKET HARBOR LNDG	Harwich	M	15.28	R	14.3
91	NEEL ROAD BEACH	Harwich	M	0.40	B	14.4
92	WALTHER ROAD	Harwich	M	1.01	C	14.4
93	OLD WHARF ROAD LNDG	Harwich	M	5.68	R	14.7
94	RED RIVER BEACH	Chatham	M	0.98	R	15.1
95	RED RIVER BEACH	Harwich	M	37.04	R	15.1
96	RED RIVER	Harwich	M	1.03	R	15.3
97	RED RIVER	Chatham	N	22.83	C	15.3
98	FOREST BEACH & LANDING	Chatham	M	7.50	R	15.7
99	COCKLE COVE BEACH LANDING	Chatham	M	1.32	R	16.4
100	RIDGEVALE BEACH	Chatham	M	20.04	R	16.8

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
101	HARDING BEACH	Chatham	M	210.96	R	17.1
102	HARDING BEACH POINT	Chatham	M	38.20	C	17.4
103	MORRIS ISLAND PARCEL	Chatham	N	6.33	C	17.6
104	MONOMOY NATL WILDLIFE REFUGE	Chatham	F	163.16	C	16.9
105	MONOMOY NATL WILDLIFE REFUGE	Chatham	F	1265.32	C	14.4
106	MONOMOY NATL WILDLIFE REFUGE	Chatham	F	130.97	C	13.2
107	GREAT PT.	Nantucket	N	27.32	C	11.2
108	GREAT PT.	Nantucket	N	80.55	C	11.4
109	GREAT PT.	Nantucket	N	0.14	C	11.5
110	GREAT PT.	Nantucket	N	0.37	C	11.6
111	GREAT PT.	Nantucket	N	849.95	C	13.3
112	THE HAULOVER	Nantucket	N	93.23	C	14.7
113		Nantucket	P	18.95	C	15.2
114	FISHER LAND	Nantucket	P	2.68	C	15.3
115	COATUE	Nantucket	N	37.75	C	14.1
116	COATUE	Nantucket	N	6.61	C	14.0
117		Nantucket	N	3.45	C	14.0
118	COATUE	Nantucket	N	6.63	C	14.0
119	COATUE	Nantucket	N	2.24	C	14.0
120	COATUE	Nantucket	N	6.63	C	14.0
121	COATUE	Nantucket	N	3.94	C	14.1
122	COATUE	Nantucket	N	27.41	C	14.1
123	COATUE	Nantucket	N	19.62	C	14.1
124	SOUTH PASTURE	Nantucket	N	10.42	C	14.1
125	COATUE	Nantucket	N	96.15	C	14.1
126	COATUE	Nantucket	N	2.64	C	14.0
127	COATUE	Nantucket	N	1.12	C	14.0
128	COATUE	Nantucket	N	41.84	C	14.0
129	COATUE	Nantucket	N	7.27	C	13.9
130	COATUE	Nantucket	N	9.54	C	13.8
131	COATUE	Nantucket	N	30.67	C	14.1
132	COATUE	Nantucket	N	16.11	C	14.1
133	POCOMO RD	Nantucket	N	12.47	C	15.6
134	POCOMO RD	Nantucket	N	9.83	C	15.5
135	POCOMO RD	Nantucket	N	3.16	C	15.3
136	MEDOUIE MARSH	Nantucket	P	106.52	C	15.5
137		Nantucket	M	8.27	C	15.6
138	QUAISE PT. TRUST	Nantucket	P	24.06	C	15.6
139	JAY PROPERTY	Nantucket	P	20.49	C	15.8
140	QUAISE	Nantucket	N	10.28	C	15.6
141	UMASS FIELD STATION	Nantucket	S	104.92	C	15.6
142	SHAWKEMO	Nantucket	P	5.96	C	15.0
143	SHAWKEMO	Nantucket	N	15.78	C	15.0
144	SHAWKEMO	Nantucket	P	5.91	C	14.9
145	PESTHOUSE POND	Nantucket	N	4.67	C	15.0
146	TOWN DOCK	Nantucket	M	0.71	C	14.5
147	CHILDRENS HOSPITAL	Nantucket	M	0.99	R	14.1
148	BRANT PT.	Nantucket	N	0.65	C	14.1
149	BRANT PT.	Nantucket	N	5.71	C	14.1
150	JETTIES BEACH	Nantucket	M	21.03	R	13.5
151	CR #74	Nantucket	P	2.36	C	13.4
152	CLIFF RD.	Nantucket	N	7.81	C	13.0
153	CAPAUM POND	Nantucket	N	33.39	C	12.9
154	DIANTS BEACH	Nantucket	M	11.98	R	12.5
155	FISHERS LANDING	Nantucket	B	14.61	C	12.1
156	EEL POINT	Nantucket	N	1.82	C	11.8
157	EEL POINT	Nantucket	N	7.42	C	11.9

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
158	EEL POINT	Nantucket	N	111.47	C	11.9
159		Nantucket	M	33.13	R	12.4
160	LAFARGE TRUST	Nantucket	P	70.19	C	11.4
161	CR #73	Nantucket	P	7.69	C	11.2
162	HOPKINS LAND	Nantucket	P	39.86	C	11.3
163	TAYLOR LAND	Nantucket	P	39.97	C	11.3
164	LAFARGE TRUST	Nantucket	P	52.88	C	10.8
165	CARLISLE PROPERTY	Nantucket	P	20.07	C	10.7
166	PHINNEY PROPERTY	Nantucket	P	10.51	C	10.5
167	STEVENS PROPERTY	Nantucket	P	10.01	C	10.5
168	NORTH POND	Nantucket	P	13.11	C	10.7
169	NORTH HEAD PROPERTY	Nantucket	P	14.67	C	10.5
170	BIGELOW POINT	Nantucket	P	58.66	C	10.7
171	SALT BOX PROPERTY	Nantucket	P	87.11	C	11.1
172	SOUTH BARRIER BEACH	Edgartown	S	120.45	C	8.8
173		Edgartown	N	2.79	C	8.2
174	DIKE BRIDGE	Edgartown	M	0.98	R	8.1
175	CAPE POGUE RESERV/EAST BEACH	Edgartown	N	208.57	B	7.2
176		Edgartown	N	97.53	C	5.8
177	CAPE POGUE LIGHTHOUSE	Edgartown	F	1.58	R	5.5
178	CAPE POGUE	Edgartown	P	2.77	C	5.7
179	CAPE POGUE ELBOW	Edgartown	N	11.17	B	5.7
180	CAPE POGUE ELBOW	Edgartown	N	7.54	B	5.8
181	LIGHTHOUSE BEACH	Edgartown	M	2.03	B	9.0
182	LIGHTHOUSE BEACH	Edgartown	M	1.27	B	8.9
183	EDGARTOWN POND LOT	Edgartown	N	15.49	C	8.8
184	EEL POND	Edgartown	N	7.17	C	8.7
185	EEL POND	Edgartown	N	2.94	C	8.8
186	EEL POND	Edgartown	N	8.71	C	8.9
187	SHERRIF'S POND	Edgartown	N	24.46	C	9.2
188		Edgartown	N	6.90	C	9.1
189	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.03	B	9.7
190	JOSEPH SYLVIA STATE BEACH	Edgartown	S	4.09	B	9.7
191	JOSEPH SYLVIA STATE BEACH	Edgartown	S	5.42	B	9.7
192	JOSEPH SYLVIA STATE BEACH	Edgartown	S	11.44	B	9.8
193	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.78	B	9.7
194	JOSEPH SYLVIA STATE BEACH	Edgartown	S	3.14	B	9.8
195	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.30	B	9.8
196	JOSEPH SYLVIA STATE BEACH	Edgartown	S	2.51	B	9.9
197	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.09	B	9.8
198	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.03	B	9.8
199	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.87	B	9.9
200	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.81	B	9.8
201	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.16	B	9.8
202	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.01	B	9.8
203	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.85	B	9.9
204	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.75	B	9.9
205	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.22	B	9.9
206	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.22	B	9.9
207	JOSEPH SYLVIA STATE BEACH	Edgartown	S	2.62	B	9.9
208	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.69	B	9.9
209	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.34	B	9.9
210	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.73	B	9.9
211	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.91	B	10.0
212	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.53	B	9.9
213	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.29	B	9.9
214	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.60	B	9.9

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
215	JOSEPH SYLVIA STATE BEACH	Edgartown	S	4.02	B	10.0
216	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.46	B	10.0
217	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.86	B	9.9
218	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.43	B	9.9
219	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.61	B	10.0
220	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.32	B	10.0
221	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.21	B	10.0
222	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.31	B	10.0
223	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.22	B	10.0
224	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.11	B	10.0
225	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.07	B	10.0
226	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.12	B	10.0
227	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.39	B	10.0
228	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.75	B	10.0
229	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.49	B	10.0
230	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.33	B	10.0
231	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.05	B	10.0
232	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.21	B	10.0
233	JOSEPH SYLVIA STATE BEACH	Oak Bluffs	S	28.92	B	10.0
234	JOSEPH SYLVIA STATE BEACH	Oak Bluffs	S	27.45	B	10.1
235	JOSEPH SYLVIA STATE BEACH	Oak Bluffs	S	0.48	B	9.9
236	JOSEPH SYLVIA STATE BEACH	Oak Bluffs	S	0.71	B	9.9
237	HARTHAVEN BEACH & HARBOR	Oak Bluffs	P	7.88	R	9.5
238	FARM POND	Oak Bluffs	B	7.40	B	9.5
239	JOSEPH SYLVIA STATE BEACH	Oak Bluffs	S	3.75	B	9.4
240	WABAN PARK	Oak Bluffs	M	9.43	B	9.4
241	SEAVIEW BEACH	Oak Bluffs	M	3.61	B	9.3
242	OCEAN PARK	Oak Bluffs	M	8.57	B	9.3
243	TOWN BEACH	Oak Bluffs	M	2.42	B	9.3
244	LAKE ANTHONY WALK	Oak Bluffs	M	0.96	R	9.5
245	LAKESIDE PARK	Oak Bluffs	M	3.66	B	9.6
246	HARBOR WALK	Oak Bluffs	M	0.87	R	9.6
247	WASHINGTON PARK	Oak Bluffs	M	5.73	B	9.6
248	CARBARN LOT	Oak Bluffs	M	0.06	R	9.5
249	EAST CHOP BEACH & YTC	Oak Bluffs	N	3.50	R	9.4
250	ARLINGTON PARK	Oak Bluffs	N	1.22	B	9.4
251	ARLINGTON PARK	Oak Bluffs	N	2.09	B	9.5
252	LINCOLN PARK	Oak Bluffs	N	0.57	B	9.4
253	PROSPECT PARK	Oak Bluffs	M	1.25	B	9.4
254	EAST CHOP CLIFFS	Oak Bluffs	N	10.04	B	9.4
255	HUDSON PARK	Oak Bluffs	N	0.24	B	9.5
256	TELEGRAPH LIGHTHOUSE LAND	Oak Bluffs	M	1.79	S	9.6
257	WEST CHOP TRUST	Tisbury	P	5.18	B	11.1
258	WEST CHOP LIGHTHOUSE	Tisbury	F	2.93	H	11.2
259	WEST CHOP TRUST	Tisbury	P	0.43	B	11.3

## Notes:

Status: B=Public Nonprofit; F=Federal; M=Municipal; N=Private Nonprofit; P=Private for profit; S=State

Resource type: B= Recreation and Conservation; C= Conservation; H=Historical/Cultural; R= Recreation; S= Scenic

Source: MassGIS Protected and Recreational Open Space, 2003.

**Table 3-27: Recreational Resources Within Viewshed of Monomoy and Handkerchief Shoals Offshore Alternative Site**

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
1	NOBSKA PT. LIGHT HOUSE	Falmouth	F	1.33	H	23.2
2	NOBSKA POINT	Falmouth	M	3.74	S	23.2
3	SHINING SEA BIKEWAY	Falmouth	M	15.99	R	22.8

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
4	TRUNK RIVER BEACH	Falmouth	M	2.83	R	22.3
5	SALT POND/SURF DR FRONTAGE	Falmouth	M	5.54	C	21.8
6	SALT POND ACRES WILDLIFE AREA	Falmouth	N	41.68	C	21.7
7	SHINING SEA BIKEWAY	Falmouth	M	11.86	R	21.8
8	WELSH PARCEL	Falmouth	M	0.81	C	21.6
9	SALT POND RESERVATION	Falmouth	N	3.46	C	21.5
10	CORCORAN PARCEL	Falmouth	M	0.44	R	21.5
11	SURF DRIVE BEACH	Falmouth	M	11.58	R	21.2
12	MARINA PARK	Falmouth	M	6.08	R	20.3
13	DEACON'S POND PARK	Falmouth	M	2.65	R	20.3
14	HOTEL PARK	Falmouth	M	1.71	R	20.5
15	HOTEL PARK	Falmouth	M	3.76	R	20.3
16	CENTRAL PARK	Falmouth	M	4.12	R	20.0
17	FALMOUTH HEIGHTS TOWN BEACH	Falmouth	M	4.48	R	19.9
18	BRISTOL BEACH	Falmouth	M	3.25	R	19.6
19	GREAT POND ACCESS	Falmouth	M	8.45	C	19.1
20	GREEN POND TOWN LANDING	Falmouth	M	0.82	R	18.5
21	MENAUHANT BEACH	Falmouth	M	14.69	R	17.9
22	MENANHANT YACHT CLUB	Falmouth	P	9.53	R	17.5
23	WASHBURN ISLAND	Falmouth	S	286.18	B	16.8
24	SOUTH CAPE BEACH STATE PARK	Mashpee	S	402.94	B	14.9
25	POPPONESSET BEACH (PRIVATE)	Mashpee	P	1.76	R	12.8
26	POPPONESSET BEACH	Mashpee	S	7.66	C	12.7
27	LITTLE THATCH ISLAND	Mashpee	N	1.57	C	12.5
28	POPPONESSET BEACH	Mashpee	N	6.23	C	12.5
29		Barnstable	N	27.83	C	12.6
30		Barnstable	P	2.72	C	12.2
31	SAMPSONS ISLAND	Barnstable	N	38.12	C	11.6
32	ROKEBY FARMS	Barnstable	P	90.78	C	10.9
33		Barnstable	M	3.54	C	8.8
34		Barnstable	M	0.32	C	8.7
35		Barnstable	M	0.68	C	8.6
36	HYANNISPORT CLUB	Barnstable	P	0.64	R	6.6
37	HYANNISPORT CLUB	Barnstable	P	35.76	R	6.8
38		Barnstable	M	8.55	C	6.1
39		Barnstable	M	0.19	C	6.3
40		Barnstable	M	0.04	C	6.3
41	BAYVIEW BEACH	Yarmouth	M	1.82	R	6.4
42	LEWIS BAY	Yarmouth	N	0.39	R	6.0
43	COLONIAL ACRES BEACH	Yarmouth	M	5.59	R	5.9
44	ENGLEWOOD BEACH	Yarmouth	M	1.42	R	5.3
45	PINE ISLAND	Yarmouth	P	24.04	C	4.8
46	POINT GAMMON	Yarmouth	P	15.27	C	4.2
47	GREAT ISLAND	Yarmouth	P	32.53	C	4.3
48	GREAT ISLAND	Yarmouth	P	180.15	C	4.5
49	LEWIS POND MARSH	Yarmouth	P	23.12	C	4.7
50	SEAGULL BEACH	Yarmouth	M	17.96	R	4.5
51	LEWIS POND MARSH	Yarmouth	P	16.15	C	4.6
52	LEWIS POND MARSH	Yarmouth	P	96.57	C	4.9
53	FORMER DRIVE-IN THEATRE	Yarmouth	M	21.72	R	5.2
54	THACHERS BEACH	Yarmouth	M	0.92	R	4.5
55	SEAVIEW BEACH	Yarmouth	M	2.18	R	4.6
56	PARKER RIVER BEACH	Yarmouth	M	9.65	R	4.7
57	BEACHWOOD BEACH	Yarmouth	M	1.00	R	4.6
58	SOUTH MIDDLE BEACH	Yarmouth	M	8.35	R	4.7
59	BASS RIVER BEACH & BOAT ACCESS	Yarmouth	M	10.76	C	4.7
60	DAVIS/WEST DENNIS BEACH	Dennis	M	149.79	R	4.8



MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
61	CONSERV LAND/LORING AVE	Dennis	M	13.99	C	4.9
62	TROTting PARK ROAD LNDG	Dennis	M	0.73	R	4.5
63	SOUTH VILLAGE ROAD BEACH	Dennis	M	3.39	R	4.4
64	BAKERS WAY LNDG	Dennis	M	0.55	R	4.4
65	LOWER SWAN RIVER MARSH	Dennis	M	8.23	C	4.5
66	SWAN RIVER MARSH	Dennis	M	7.60	C	4.4
67	HAIGIS BEACH	Dennis	M	4.42	R	4.1
68	GLENDON ROAD BEACH	Dennis	M	2.00	R	4.1
69	GLENDON ROAD LNDG	Dennis	M	2.02	R	4.1
70	SEA STREET BEACH	Dennis	M	2.87	C	4.1
71	RAYCROFT BEACH	Dennis	M	1.97	R	4.2
72	DEPOT STREET BEACH	Dennis	M	1.17	R	4.2
73	INMAN ROAD BEACH	Dennis	M	2.10	R	4.3
74	BELMONT ROAD BEACH	Harwich	M	0.70	R	4.3
75	WIXON PIER	Harwich	M	0.11	R	4.4
76	PLEASNT ROAD BEACH	Harwich	M	1.90	B	4.6
77	GREYS NECK BEACH	Harwich	M	0.47	B	4.7
78	EARLE ROAD BEACH	Harwich	M	5.82	B	4.9
79	BROOKS ROAD	Harwich	P	0.83	B	4.8
80	ALLEN HARBOR BULKHEAD	Harwich	M	0.22	R	5.3
81	WAH WAH TAYSEE BEACH	Harwich	M	0.24	B	5.0
82	WYNDERMERE BLUFFS BEACH	Harwich	M	0.78	B	5.1
83	ZYLPHA ROAD BEACH	Harwich	M	0.40	B	5.1
84	ATLANTIC AVENUE BEACH	Harwich	M	0.44	R	5.2
85	SEA STREET BEACH	Harwich	M	0.52	B	5.3
86	BANK STREET BEACH	Harwich	M	1.64	B	5.4
87	MERKEL BEACH	Harwich	M	3.66	B	5.4
88	LARSEN PARK	Harwich	M	0.95	R	5.7
89	WYCHMERE HARBOR DOCK	Harwich	M	0.61	R	5.7
90	SAQUATUCKET HARBOR LNDG	Harwich	M	15.28	R	6.0
91	NEEL ROAD BEACH	Harwich	M	0.40	B	5.9
92	WALTHER ROAD	Harwich	M	1.01	C	6.0
93	OLD WHARF ROAD LNDG	Harwich	M	5.68	R	6.2
94	RED RIVER BEACH	Chatham	M	0.98	R	6.5
95	RED RIVER BEACH	Harwich	M	37.04	R	6.6
96	RED RIVER	Harwich	M	1.03	R	6.7
97	RED RIVER	Chatham	N	22.83	C	6.7
98	FOREST BEACH & LANDING	Chatham	M	7.50	R	7.1
99	COCKLE COVE BEACH LANDING	Chatham	M	1.32	R	7.7
100	RIDGEVALE BEACH	Chatham	M	20.04	R	8.0
101	HARDING BEACH	Chatham	M	210.96	R	8.2
102	HARDING BEACH POINT	Chatham	M	38.20	C	8.4
103	MORRIS ISLAND PARCEL	Chatham	N	6.33	C	8.6
104	MONOMOY NATL WILDLIFE REFUGE	Chatham	F	163.16	C	7.9
105	MONOMOY NATL WILDLIFE REFUGE	Chatham	F	1265.32	C	6.4
106	MONOMOY NATL WILDLIFE REFUGE	Chatham	F	130.97	C	6.1
107	GREAT PT.	Nantucket	N	27.32	C	9.1
108	GREAT PT.	Nantucket	N	80.55	C	9.4
109	GREAT PT.	Nantucket	N	0.14	C	9.4
110	GREAT PT.	Nantucket	N	0.37	C	9.5
111	GREAT PT.	Nantucket	N	849.95	C	11.6
112	THE HAULOVER	Nantucket	N	93.23	C	13.0
113		Nantucket	P	18.95	C	13.5
114	FISHER LAND	Nantucket	P	2.68	C	13.6
115	COATUE	Nantucket	N	37.75	C	12.9
116	COATUE	Nantucket	N	6.61	C	12.9
117		Nantucket	N	3.45	C	13.0

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
118	COATUE	Nantucket	N	6.63	C	13.0
119	COATUE	Nantucket	N	2.24	C	13.1
120	COATUE	Nantucket	N	6.63	C	13.1
121	COATUE	Nantucket	N	3.94	C	13.1
122	COATUE	Nantucket	N	27.41	C	13.2
123	COATUE	Nantucket	N	19.62	C	13.3
124	SOUTH PASTURE	Nantucket	N	10.42	C	13.4
125	COATUE	Nantucket	N	96.15	C	13.5
126	COATUE	Nantucket	N	2.64	C	13.6
127	COATUE	Nantucket	N	1.12	C	13.7
128	COATUE	Nantucket	N	41.84	C	13.7
129	COATUE	Nantucket	N	7.27	C	13.7
130	COATUE	Nantucket	N	9.54	C	13.7
131	COATUE	Nantucket	N	30.67	C	13.9
132	COATUE	Nantucket	N	16.11	C	13.9
133	POCOMO RD	Nantucket	N	12.47	C	14.2
134	POCOMO RD	Nantucket	N	9.83	C	14.2
135	POCOMO RD	Nantucket	N	3.16	C	14.0
136	MEDOUIE MARSH	Nantucket	P	106.52	C	14.3
137		Nantucket	M	8.27	C	14.6
138	QUAISE PT. TRUST	Nantucket	P	24.06	C	14.7
139	JAY PROPERTY	Nantucket	P	20.49	C	14.9
140	QUAISE	Nantucket	N	10.28	C	14.8
141	UMASS FIELD STATION	Nantucket	S	104.92	C	14.8
142	SHAWKEMO	Nantucket	P	5.96	C	14.5
143	SHAWKEMO	Nantucket	N	15.78	C	14.5
144	SHAWKEMO	Nantucket	P	5.91	C	14.5
145	PESTHOUSE POND	Nantucket	N	4.67	C	14.8
146	TOWN DOCK	Nantucket	M	0.71	C	14.6
147	CHILDRENS HOSPITAL	Nantucket	M	0.99	R	14.2
148	BRANT PT.	Nantucket	N	0.65	C	14.1
149	BRANT PT.	Nantucket	N	5.71	C	14.1
150	JETTIES BEACH	Nantucket	M	21.03	R	13.6
151	CR #74	Nantucket	P	2.36	C	13.6
152	CLIFF RD.	Nantucket	N	7.81	C	13.5
153	CAPAUM POND	Nantucket	N	33.39	C	13.6
154	DIANTS BEACH	Nantucket	M	11.98	R	13.4
155	FISHERS LANDING	Nantucket	B	14.61	C	13.4
156	EEL POINT	Nantucket	N	1.82	C	13.3
157	EEL POINT	Nantucket	N	7.42	C	13.4
158	EEL POINT	Nantucket	N	111.47	C	13.6
159		Nantucket	M	33.13	R	14.5
160	LAFARGE TRUST	Nantucket	P	70.19	C	13.8
161	CR #73	Nantucket	P	7.69	C	13.6
162	HOPKINS LAND	Nantucket	P	39.86	C	13.8
163	TAYLOR LAND	Nantucket	P	39.97	C	13.8
164	LAFARGE TRUST	Nantucket	P	52.88	C	13.4
165	CARLISLE PROPERTY	Nantucket	P	20.07	C	13.3
166	PHINNEY PROPERTY	Nantucket	P	10.51	C	13.2
167	STEVENS PROPERTY	Nantucket	P	10.01	C	13.2
168	NORTH POND	Nantucket	P	13.11	C	13.4
169	NORTH HEAD PROPERTY	Nantucket	P	14.67	C	13.4
170	BIGELOW POINT	Nantucket	P	58.66	C	13.6
171	SALT BOX PROPERTY	Nantucket	P	87.11	C	13.9
172	SOUTH BARRIER BEACH	Edgartown	S	120.45	C	17.2
173		Edgartown	N	2.79	C	17.0
174	DIKE BRIDGE	Edgartown	M	0.98	R	16.9

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
175	CAPE POGUE RESERV/EAST BEACH	Edgartown	N	208.57	B	16.2
176		Edgartown	N	97.53	C	15.5
177	CAPE POGUE LIGHTHOUSE	Edgartown	F	1.58	R	15.4
178	CAPE POGUE	Edgartown	P	2.77	C	15.6
179	CAPE POGUE ELBOW	Edgartown	N	11.17	B	15.6
180	CAPE POGUE ELBOW	Edgartown	N	7.54	B	15.7
181	LIGHTHOUSE BEACH	Edgartown	M	2.03	B	18.8
182	LIGHTHOUSE BEACH	Edgartown	M	1.27	B	18.8
183	EDGARTOWN POND LOT	Edgartown	N	15.49	C	18.7
184	EEL POND	Edgartown	N	7.17	C	18.6
185	EEL POND	Edgartown	N	2.94	C	18.7
186	EEL POND	Edgartown	N	8.71	C	18.8
187	SHERRIF'S POND	Edgartown	N	24.46	C	19.1
188		Edgartown	N	6.90	C	19.1
189	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.03	B	19.8
190	JOSEPH SYLVIA STATE BEACH	Edgartown	S	4.09	B	19.8
191	JOSEPH SYLVIA STATE BEACH	Edgartown	S	5.42	B	19.8
192	JOSEPH SYLVIA STATE BEACH	Edgartown	S	11.44	B	19.9
193	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.78	B	19.8
194	JOSEPH SYLVIA STATE BEACH	Edgartown	S	3.14	B	19.9
195	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.30	B	19.9
196	JOSEPH SYLVIA STATE BEACH	Edgartown	S	2.51	B	20.0
197	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.09	B	19.9
198	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.03	B	19.9
199	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.87	B	20.0
200	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.81	B	20.0
201	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.16	B	19.9
202	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.01	B	20.0
203	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.85	B	20.0
204	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.75	B	20.0
205	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.22	B	20.0
206	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.22	B	20.0
207	JOSEPH SYLVIA STATE BEACH	Edgartown	S	2.62	B	20.1
208	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.69	B	20.0
209	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.34	B	20.0
210	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.73	B	20.0
211	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.91	B	20.1
212	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.53	B	20.0
213	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.29	B	20.0
214	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.60	B	20.0
215	JOSEPH SYLVIA STATE BEACH	Edgartown	S	4.02	B	20.1
216	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.46	B	20.1
217	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.86	B	20.1
218	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.43	B	20.0
219	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.61	B	20.1
220	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.32	B	20.1
221	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.21	B	20.1
222	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.31	B	20.1
223	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.22	B	20.1
224	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.11	B	20.1
225	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.07	B	20.1
226	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.12	B	20.1
227	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.39	B	20.1
228	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.75	B	20.1
229	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.49	B	20.1
230	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.33	B	20.1
231	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.05	B	20.2

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
232	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.21	B	20.1
233	JOSEPH SYLVIA STATE BEACH	Oak Bluffs	S	28.92	B	20.1
234	JOSEPH SYLVIA STATE BEACH	Oak Bluffs	S	27.45	B	20.2
235	JOSEPH SYLVIA STATE BEACH	Oak Bluffs	S	0.48	B	20.0
236	JOSEPH SYLVIA STATE BEACH	Oak Bluffs	S	0.71	B	20.1
237	HARTHAVEN BEACH & HARBOR	Oak Bluffs	P	7.88	R	19.6
238	FARM POND	Oak Bluffs	B	7.40	B	19.6
239	JOSEPH SYLVIA STATE BEACH	Oak Bluffs	S	3.75	B	19.5
240	WABAN PARK	Oak Bluffs	M	9.43	B	19.4
241	SEAVIEW BEACH	Oak Bluffs	M	3.61	B	19.3
242	OCEAN PARK	Oak Bluffs	M	8.57	B	19.3
243	TOWN BEACH	Oak Bluffs	M	2.42	B	19.3
244	LAKE ANTHONY WALK	Oak Bluffs	M	0.96	R	19.5
245	LAKESIDE PARK	Oak Bluffs	M	3.66	B	19.6
246	HARBOR WALK	Oak Bluffs	M	0.87	R	19.6
247	WASHINGTON PARK	Oak Bluffs	M	5.73	B	19.6
248	CARBARN LOT	Oak Bluffs	M	0.06	R	19.5
249	EAST CHOP BEACH & YTC	Oak Bluffs	N	3.50	R	19.3
250	ARLINGTON PARK	Oak Bluffs	N	1.22	B	19.4
251	ARLINGTON PARK	Oak Bluffs	N	2.09	B	19.4
252	LINCOLN PARK	Oak Bluffs	N	0.57	B	19.3
253	PROSPECT PARK	Oak Bluffs	M	1.25	B	19.4
254	EAST CHOP CLIFFS	Oak Bluffs	N	10.04	B	19.3
255	HUDSON PARK	Oak Bluffs	N	0.24	B	19.4
256	TELEGRAPH LIGHTHOUSE LAND	Oak Bluffs	M	1.79	S	19.5
257	WEST CHOP TRUST	Tisbury	P	5.18	B	20.8
258	WEST CHOP LIGHTHOUSE	Tisbury	F	2.93	H	20.9
259	WEST CHOP TRUST	Tisbury	P	0.43	B	21.0

## Notes:

Status: B=Public Nonprofit; F=Federal; M=Municipal; N=Private Nonprofit; P=Private for profit; S=State

Resource type: B= Recreation and Conservation; C= Conservation; H=Historical/Cultural; R= Recreation; S= Scenic

Source: MassGIS Protected and Recreational Open Space, 2003.

**Table 3-28: Recreational Resources Within Viewshed of Tuckernuck Shoal, Offshore Nantucket Sound**

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
1	NOBSKA PT. LIGHT HOUSE	Falmouth	F	1.33	H	15.3
2	NOBSKA POINT	Falmouth	M	3.74	S	15.3
3	SHINING SEA BIKEWAY	Falmouth	M	15.99	R	15.4
4	TRUNK RIVER BEACH	Falmouth	M	2.83	R	15.2
5	SALT POND/SURF DR FRONTAGE	Falmouth	M	5.54	C	14.8
6	SALT POND ACRES WILDLIFE AREA	Falmouth	N	41.68	C	14.9
7	SHINING SEA BIKEWAY	Falmouth	M	11.86	R	15.0
8	WELSH PARCEL	Falmouth	M	0.81	C	14.7
9	SALT POND RESERVATION	Falmouth	N	3.46	C	14.7
10	CORCORAN PARCEL	Falmouth	M	0.44	R	14.6
11	SURF DRIVE BEACH	Falmouth	M	11.58	R	14.5
12	MARINA PARK	Falmouth	M	6.08	R	14.0
13	DEACON'S POND PARK	Falmouth	M	2.65	R	13.8
14	HOTEL PARK	Falmouth	M	1.71	R	13.9
15	HOTEL PARK	Falmouth	M	3.76	R	13.7
16	CENTRAL PARK	Falmouth	M	4.12	R	13.6
17	FALMOUTH HEIGHTS TOWN BEACH	Falmouth	M	4.48	R	13.4
18	BRISTOL BEACH	Falmouth	M	3.25	R	13.2
19	GREAT POND ACCESS	Falmouth	M	8.45	C	13.0
20	GREEN POND TOWN LANDING	Falmouth	M	0.82	R	12.6
21	MENAUHANT BEACH	Falmouth	M	14.69	R	12.0

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
22	MENANHANT YACHT CLUB	Falmouth	P	9.53	R	11.8
23	WASHBURN ISLAND	Falmouth	S	286.18	B	11.8
24	SOUTH CAPE BEACH STATE PARK	Mashpee	S	402.94	B	10.2
25	POPPONESSET BEACH (PRIVATE)	Mashpee	P	1.76	R	10.4
26	POPPONESSET BEACH	Mashpee	S	7.66	C	10.6
27	LITTLE THATCH ISLAND	Mashpee	N	1.57	C	10.9
28	POPPONESSET BEACH	Mashpee	N	6.23	C	10.9
29		Barnstable	N	27.83	C	11.2
30		Barnstable	P	2.72	C	11.3
31	SAMPSONS ISLAND	Barnstable	N	38.12	C	12.0
32	ROKEBY FARMS	Barnstable	P	90.78	C	11.9
33		Barnstable	M	3.54	C	13.4
34		Barnstable	M	0.32	C	13.7
35		Barnstable	M	0.68	C	13.6
36	HYANNISPORT CLUB	Barnstable	P	0.64	R	12.7
37	HYANNISPORT CLUB	Barnstable	P	35.76	R	13.0
38		Barnstable	M	8.55	C	13.4
39		Barnstable	M	0.19	C	13.7
40		Barnstable	M	0.04	C	13.8
41	BAYVIEW BEACH	Yarmouth	M	1.82	R	14.1
42	LEWIS BAY	Yarmouth	N	0.39	R	14.0
43	COLONIAL ACRES BEACH	Yarmouth	M	5.59	R	14.1
44	ENGLEWOOD BEACH	Yarmouth	M	1.42	R	13.8
45	PINE ISLAND	Yarmouth	P	24.04	C	13.2
46	POINT GAMMON	Yarmouth	P	15.27	C	11.6
47	GREAT ISLAND	Yarmouth	P	32.53	C	12.2
48	GREAT ISLAND	Yarmouth	P	180.15	C	12.8
49	LEWIS POND MARSH	Yarmouth	P	23.12	C	13.7
50	SEAGULL BEACH	Yarmouth	M	17.96	R	13.8
51	LEWIS POND MARSH	Yarmouth	P	16.15	C	13.9
52	LEWIS POND MARSH	Yarmouth	P	96.57	C	14.1
53	FORMER DRIVE-IN THEATRE	Yarmouth	M	21.72	R	14.5
54	THACHERS BEACH	Yarmouth	M	0.92	R	14.1
55	SEAVIEW BEACH	Yarmouth	M	2.18	R	14.2
56	PARKER RIVER BEACH	Yarmouth	M	9.65	R	14.4
57	BEACHWOOD BEACH	Yarmouth	M	1.00	R	14.4
58	SOUTH MIDDLE BEACH	Yarmouth	M	8.35	R	14.6
59	BASS RIVER BEACH & BOAT ACCESS	Yarmouth	M	10.76	C	14.7
60	DAVIS/WEST DENNIS BEACH	Dennis	M	149.79	R	15.5
61	CONSERV LAND/LORING AVE	Dennis	M	13.99	C	15.9
62	TROTting PARK ROAD LNDG	Dennis	M	0.73	R	15.9
63	SOUTH VILLAGE ROAD BEACH	Dennis	M	3.39	R	16.0
64	BAKERS WAY LNDG	Dennis	M	0.55	R	16.0
65	LOWER SWAN RIVER MARSH	Dennis	M	8.23	C	16.1
66	SWAN RIVER MARSH	Dennis	M	7.60	C	16.2
67	HAIGIS BEACH	Dennis	M	4.42	R	16.1
68	GLENDON ROAD BEACH	Dennis	M	2.00	R	16.2
69	GLENDON ROAD LNDG	Dennis	M	2.02	R	16.2
70	SEA STREET BEACH	Dennis	M	2.87	C	16.5
71	RAYCROFT BEACH	Dennis	M	1.97	R	16.8
72	DEPOT STREET BEACH	Dennis	M	1.17	R	16.9
73	INMAN ROAD BEACH	Dennis	M	2.10	R	17.0
74	BELMONT ROAD BEACH	Harwich	M	0.70	R	17.2
75	WIXON PIER	Harwich	M	0.11	R	17.3
76	PLEASNT ROAD BEACH	Harwich	M	1.90	B	17.7
77	GREYS NECK BEACH	Harwich	M	0.47	B	17.9
78	EARLE ROAD BEACH	Harwich	M	5.82	B	18.1

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
79	BROOKS ROAD	Harwich	P	0.83	B	18.1
80	ALLEN HARBOR BULKHEAD	Harwich	M	0.22	R	18.6
81	WAH WAH TAYSEE BEACH	Harwich	M	0.24	B	18.4
82	WYNDERMERE BLUFFS BEACH	Harwich	M	0.78	B	18.5
83	ZYLPHA ROAD BEACH	Harwich	M	0.40	B	18.5
84	ATLANTIC AVENUE BEACH	Harwich	M	0.44	R	18.6
85	SEA STREET BEACH	Harwich	M	0.52	B	18.7
86	BANK STREET BEACH	Harwich	M	1.64	B	18.8
87	MERKEL BEACH	Harwich	M	3.66	B	18.9
88	LARSEN PARK	Harwich	M	0.95	R	19.2
89	WYCHMERE HARBOR DOCK	Harwich	M	0.61	R	19.2
90	SAQUATUCKET HARBOR LNDG	Harwich	M	15.28	R	19.5
91	NEEL ROAD BEACH	Harwich	M	0.40	B	19.4
92	WALTHER ROAD	Harwich	M	1.01	C	19.4
93	OLD WHARF ROAD LNDG	Harwich	M	5.68	R	19.6
94	RED RIVER BEACH	Chatham	M	0.98	R	19.9
95	RED RIVER BEACH	Harwich	M	37.04	R	20.0
96	RED RIVER	Harwich	M	1.03	R	20.1
97	RED RIVER	Chatham	N	22.83	C	20.1
98	FOREST BEACH & LANDING	Chatham	M	7.50	R	20.3
99	COCKLE COVE BEACH LANDING	Chatham	M	1.32	R	20.9
100	RIDGEVALE BEACH	Chatham	M	20.04	R	21.0
101	HARDING BEACH	Chatham	M	210.96	R	20.9
102	HARDING BEACH POINT	Chatham	M	38.20	C	20.7
103	MORRIS ISLAND PARCEL	Chatham	N	6.33	C	20.8
104	MONOMOY NATL WILDLIFE REFUGE	Chatham	F	163.16	C	19.5
105	MONOMOY NATL WILDLIFE REFUGE	Chatham	F	1265.32	C	15.7
106	MONOMOY NATL WILDLIFE REFUGE	Chatham	F	130.97	C	14.2
107	GREAT PT.	Nantucket	N	27.32	C	6.3
108	GREAT PT.	Nantucket	N	80.55	C	6.3
109	GREAT PT.	Nantucket	N	0.14	C	6.4
110	GREAT PT.	Nantucket	N	0.37	C	6.4
111	GREAT PT.	Nantucket	N	849.95	C	7.4
112	THE HAULOVER	Nantucket	N	93.23	C	8.5
113		Nantucket	P	18.95	C	8.9
114	FISHER LAND	Nantucket	P	2.68	C	9.1
115	COATUE	Nantucket	N	37.75	C	7.3
116	COATUE	Nantucket	N	6.61	C	7.2
117		Nantucket	N	3.45	C	7.2
118	COATUE	Nantucket	N	6.63	C	7.1
119	COATUE	Nantucket	N	2.24	C	7.1
120	COATUE	Nantucket	N	6.63	C	7.1
121	COATUE	Nantucket	N	3.94	C	7.1
122	COATUE	Nantucket	N	27.41	C	7.2
123	COATUE	Nantucket	N	19.62	C	7.1
124	SOUTH PASTURE	Nantucket	N	10.42	C	7.1
125	COATUE	Nantucket	N	96.15	C	7.0
126	COATUE	Nantucket	N	2.64	C	6.7
127	COATUE	Nantucket	N	1.12	C	6.7
128	COATUE	Nantucket	N	41.84	C	6.7
129	COATUE	Nantucket	N	7.27	C	6.6
130	COATUE	Nantucket	N	9.54	C	6.5
131	COATUE	Nantucket	N	30.67	C	6.8
132	COATUE	Nantucket	N	16.11	C	6.8
133	POCOMO RD	Nantucket	N	12.47	C	8.9
134	POCOMO RD	Nantucket	N	9.83	C	8.8
135	POCOMO RD	Nantucket	N	3.16	C	8.5

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
136	MEDOUIE MARSH	Nantucket	P	106.52	C	8.6
137		Nantucket	M	8.27	C	8.7
138	QUAISE PT. TRUST	Nantucket	P	24.06	C	8.7
139	JAY PROPERTY	Nantucket	P	20.49	C	8.8
140	QUAISE	Nantucket	N	10.28	C	8.5
141	UMASS FIELD STATION	Nantucket	S	104.92	C	8.4
142	SHAWKEMO	Nantucket	P	5.96	C	7.7
143	SHAWKEMO	Nantucket	N	15.78	C	7.7
144	SHAWKEMO	Nantucket	P	5.91	C	7.6
145	PESTHOUSE POND	Nantucket	N	4.67	C	7.7
146	TOWN DOCK	Nantucket	M	0.71	C	7.2
147	CHILDRENS HOSPITAL	Nantucket	M	0.99	R	6.8
148	BRANT PT.	Nantucket	N	0.65	C	6.8
149	BRANT PT.	Nantucket	N	5.71	C	6.7
150	JETTIES BEACH	Nantucket	M	21.03	R	6.2
151	CR #74	Nantucket	P	2.36	C	6.1
152	CLIFF RD.	Nantucket	N	7.81	C	5.8
153	CAPAUM POND	Nantucket	N	33.39	C	5.7
154	DIANTS BEACH	Nantucket	M	11.98	R	5.4
155	FISHERS LANDING	Nantucket	B	14.61	C	5.3
156	EEL POINT	Nantucket	N	1.82	C	5.1
157	EEL POINT	Nantucket	N	7.42	C	5.2
158	EEL POINT	Nantucket	N	111.47	C	5.3
159		Nantucket	M	33.13	R	6.0
160	LAFARGE TRUST	Nantucket	P	70.19	C	5.2
161	CR #73	Nantucket	P	7.69	C	5.1
162	HOPKINS LAND	Nantucket	P	39.86	C	5.2
163	TAYLOR LAND	Nantucket	P	39.97	C	5.2
164	LAFARGE TRUST	Nantucket	P	52.88	C	4.8
165	CARLISLE PROPERTY	Nantucket	P	20.07	C	4.8
166	PHINNEY PROPERTY	Nantucket	P	10.51	C	4.7
167	STEVENS PROPERTY	Nantucket	P	10.01	C	4.7
168	NORTH POND	Nantucket	P	13.11	C	5.0
169	NORTH HEAD PROPERTY	Nantucket	P	14.67	C	5.0
170	BIGELOW POINT	Nantucket	P	58.66	C	5.3
171	SALT BOX PROPERTY	Nantucket	P	87.11	C	5.4
172	SOUTH BARRIER BEACH	Edgartown	S	120.45	C	4.9
173		Edgartown	N	2.79	C	4.8
174	DIKE BRIDGE	Edgartown	M	0.98	R	4.7
175	CAPE POGUE RESERV/EAST BEACH	Edgartown	N	208.57	B	4.2
176		Edgartown	N	97.53	C	4.0
177	CAPE POGUE LIGHTHOUSE	Edgartown	F	1.58	R	3.9
178	CAPE POGUE	Edgartown	P	2.77	C	4.1
179	CAPE POGUE ELBOW	Edgartown	N	11.17	B	4.1
180	CAPE POGUE ELBOW	Edgartown	N	7.54	B	4.2
181	LIGHTHOUSE BEACH	Edgartown	M	2.03	B	7.1
182	LIGHTHOUSE BEACH	Edgartown	M	1.27	B	7.1
183	EDGARTOWN POND LOT	Edgartown	N	15.49	C	7.0
184	EEL POND	Edgartown	N	7.17	C	7.1
185	EEL POND	Edgartown	N	2.94	C	7.2
186	EEL POND	Edgartown	N	8.71	C	7.2
187	SHERRIF'S POND	Edgartown	N	24.46	C	7.5
188		Edgartown	N	6.90	C	7.6
189	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.03	B	8.4
190	JOSEPH SYLVIA STATE BEACH	Edgartown	S	4.09	B	8.4
191	JOSEPH SYLVIA STATE BEACH	Edgartown	S	5.42	B	8.5
192	JOSEPH SYLVIA STATE BEACH	Edgartown	S	11.44	B	8.6

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
193	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.78	B	8.5
194	JOSEPH SYLVIA STATE BEACH	Edgartown	S	3.14	B	8.6
195	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.30	B	8.5
196	JOSEPH SYLVIA STATE BEACH	Edgartown	S	2.51	B	8.6
197	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.09	B	8.6
198	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.03	B	8.6
199	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.87	B	8.7
200	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.81	B	8.6
201	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.16	B	8.6
202	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.01	B	8.6
203	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.85	B	8.7
204	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.75	B	8.7
205	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.22	B	8.7
206	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.22	B	8.7
207	JOSEPH SYLVIA STATE BEACH	Edgartown	S	2.62	B	8.7
208	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.69	B	8.7
209	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.34	B	8.7
210	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.73	B	8.7
211	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.91	B	8.8
212	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.53	B	8.7
213	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.29	B	8.7
214	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.60	B	8.7
215	JOSEPH SYLVIA STATE BEACH	Edgartown	S	4.02	B	8.8
216	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.46	B	8.8
217	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.86	B	8.8
218	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.43	B	8.8
219	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.61	B	8.9
220	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.32	B	8.8
221	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.21	B	8.8
222	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.31	B	8.8
223	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.22	B	8.9
224	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.11	B	8.9
225	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.07	B	8.9
226	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.12	B	8.8
227	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.39	B	8.9
228	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.75	B	8.9
229	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.49	B	8.9
230	JOSEPH SYLVIA STATE BEACH	Edgartown	S	1.33	B	8.9
231	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.05	B	9.0
232	JOSEPH SYLVIA STATE BEACH	Edgartown	S	0.21	B	8.9
233	JOSEPH SYLVIA STATE BEACH	Oak Bluffs	S	28.92	B	9.1
234	JOSEPH SYLVIA STATE BEACH	Oak Bluffs	S	27.45	B	9.1
235	JOSEPH SYLVIA STATE BEACH	Oak Bluffs	S	0.48	B	9.2
236	JOSEPH SYLVIA STATE BEACH	Oak Bluffs	S	0.71	B	9.2
237	HARTHAVEN BEACH & HARBOR	Oak Bluffs	P	7.88	R	9.0
238	FARM POND	Oak Bluffs	B	7.40	B	9.1
239	JOSEPH SYLVIA STATE BEACH	Oak Bluffs	S	3.75	B	9.1
240	WABAN PARK	Oak Bluffs	M	9.43	B	9.2
241	SEAVIEW BEACH	Oak Bluffs	M	3.61	B	9.2
242	OCEAN PARK	Oak Bluffs	M	8.57	B	9.2
243	TOWN BEACH	Oak Bluffs	M	2.42	B	9.3
244	LAKE ANTHONY WALK	Oak Bluffs	M	0.96	R	9.5
245	LAKESIDE PARK	Oak Bluffs	M	3.66	B	9.5
246	HARBOR WALK	Oak Bluffs	M	0.87	R	9.6
247	WASHINGTON PARK	Oak Bluffs	M	5.73	B	9.6
248	CARBARN LOT	Oak Bluffs	M	0.06	R	9.6
249	EAST CHOP BEACH & YTC	Oak Bluffs	N	3.50	R	9.5



MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
250	ARLINGTON PARK	Oak Bluffs	N	1.22	B	9.6
251	ARLINGTON PARK	Oak Bluffs	N	2.09	B	9.7
252	LINCOLN PARK	Oak Bluffs	N	0.57	B	9.6
253	PROSPECT PARK	Oak Bluffs	M	1.25	B	9.7
254	EAST CHOP CLIFFS	Oak Bluffs	N	10.04	B	9.7
255	HUDSON PARK	Oak Bluffs	N	0.24	B	9.8
256	TELEGRAPH LIGHTHOUSE LAND	Oak Bluffs	M	1.79	S	10.0
257	WEST CHOP TRUST	Tisbury	P	5.18	B	11.7
258	WEST CHOP LIGHTHOUSE	Tisbury	F	2.93	H	11.8
259	WEST CHOP TRUST	Tisbury	P	0.43	B	12.0

## Notes:

Status: B=Public Nonprofit; F=Federal; M=Municipal; N=Private Nonprofit; P=Private for profit; S=State

Resource type: B= Recreation and Conservation; C= Conservation; H=Historical/Cultural; R= Recreation; S= Scenic

Source: MassGIS Protected and Recreational Open Space, 2003.

**Table 3-29: Recreational Resources Within Viewshed of the Alternative Site South of Tuckernuck Island**

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
1	SQUIBNOCKET	Chilmark	P	9.80	C	19.1
2	SQUIBNOCKET FARM	Chilmark	P	190.69	C	18.5
3	SQUIBNOCKET	Chilmark	P	130.12	C	18.1
4	SQUIBNOCKET FARM	Chilmark	P	27.30	C	17.6
5	SQUIBNOCKET BEACH	Chilmark	P	2.35	R	17.6
6	PARKER STONEWALL	Chilmark	N	10.19	C	17.2
7	LUCY VINCENT BEACH	Chilmark	M	21.70	R	15.9
8	LONG POINT	West Tisbury	N	683.33	B	12.3
9	HERRING CREEK FARM	Edgartown	P	229.19	C	8.3
10	SOUTH BEACH STATE PARK	Edgartown	S	54.33	B	7.8
11	SOUTH BEACH STATE PARK	Edgartown	S	19.50	B	7.6
12	SOUTH BEACH STATE PARK	Edgartown	S	32.03	B	7.4
13	MATTAKESSETT LANDING	Edgartown	M	1.25	B	7.2
14	KATAMA POINT	Edgartown	B	1.58	B	7.3
15	NORTON POINT BEACH	Edgartown	C	198.98	B	6.7
16	WASQUE RESERVATION	Edgartown	N	0.44	C	6.5
17	WASQUE RESERVATION	Edgartown	N	272.85	B	6.2
18	SOUTH BARRIER BEACH	Edgartown	S	120.45	C	6.4
19		Edgartown	N	2.79	C	7.2
20	DIKE BRIDGE	Edgartown	M	0.98	R	7.2
21	CAPE POGUE RESERV/EAST BEACH	Edgartown	N	208.57	B	7.9
22		Edgartown	N	97.53	C	9.4
23	CAPE POGUE LIGHTHOUSE	Edgartown	F	1.58	R	10.0
24	CAPE POGUE	Edgartown	P	2.77	C	10.0
25	CAPE POGUE ELBOW	Edgartown	N	11.17	B	9.9
26	CAPE POGUE ELBOW	Edgartown	N	7.54	B	10.0
27	SALT BOX PROPERTY	Nantucket	P	87.11	C	3.8
28	BIGELOW POINT	Nantucket	P	58.66	C	3.8
29	NORTH HEAD PROPERTY	Nantucket	P	14.67	C	4.1
30	NORTH POND	Nantucket	P	13.11	C	4.3
31	STEVENS PROPERTY	Nantucket	P	10.01	C	4.5
32	PHINNEY PROPERTY	Nantucket	P	10.51	C	4.5
33	CARLISLE PROPERTY	Nantucket	P	20.07	C	4.6
34	LAFARGE TRUST	Nantucket	P	52.88	C	4.7
35	TAYLOR LAND	Nantucket	P	39.97	C	4.3
36	HOPKINS LAND	Nantucket	P	39.86	C	4.4
37	CR #73	Nantucket	P	7.69	C	4.6
38	LAFARGE TRUST	Nantucket	P	70.19	C	4.4

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
39		Nantucket	M	33.13	R	3.7
40	EEL POINT	Nantucket	N	111.47	C	5.0
41	LITTLE NECK	Nantucket	N	23.35	C	4.4
42	JACKSON PT.	Nantucket	B	5.29	C	4.1
43	MADAKET	Nantucket	N	0.46	C	3.7
44	MADAKET	Nantucket	N	0.28	C	3.7
45	MADAKET	Nantucket	N	0.81	C	3.7
46	HEAD OF THE PLAINS	Nantucket	N	70.23	C	3.8
47	HEAD OF THE PLAINS	Nantucket	N	198.94	C	4.2
48	HEAD OF THE PLAINS	Nantucket	N	46.33	C	4.1
49	RAM PASTURE	Nantucket	N	16.54	C	4.0
50	CISCO	Nantucket	N	8.20	C	4.3
51	CISCO	Nantucket	N	38.73	C	4.5
52	CISCO	Nantucket	N	3.82	C	4.6
53		Nantucket	N	3.12	C	4.7
54		Nantucket	N	2.12	C	4.6
55		Nantucket	N	1.58	C	4.6
56		Nantucket	B	29.81	C	4.9
57		Nantucket	N	3.33	C	4.9
58		Nantucket	N	1.87	C	4.9
59	SMOOTH HUMMOCKS	Nantucket	B	47.58	C	5.1
60	MIACOMET HEATH	Nantucket	S	4.36	C	5.0
61	SMOOTH HUMMOCKS	Nantucket	B	9.49	C	5.2
62		Nantucket	B	11.07	C	5.7
63	SURFSIDE BEACH	Nantucket	M	4.54	R	6.9
64	SURFSIDE	Nantucket	N	2.32	C	7.7
65		Nantucket	B	47.73	R	9.0
66	MADEQUECHAM VALLEY	Nantucket	N	102.21	C	9.5
67	TOUPCHUE VALLEY	Nantucket	N	19.74	C	9.9
68	SOUTH PASTURE	Nantucket	M	523.82	C	10.4
69	SOUTH PASTURE	Nantucket	N	393.98	C	10.8
70		Nantucket	B	15.36	C	11.8
71		Nantucket	F	196.04	C	13.0
72		Nantucket	B	2.16	R	13.6
73		Nantucket	B	1.48	C	13.9

Notes:

Status: B=Public Nonprofit; F=Federal; M=Municipal; N=Private Nonprofit; P=Private for profit; S=State

Resource type: B= Recreation and Conservation; C= Conservation; H=Historical/Cultural; R= Recreation; S= Scenic

Source: MassGIS Protected and Recreational Open Space, 2003.

**Table 3-30: Recreational Resources Within Viewshed of the New Bedford/Buzzards Bay Offshore Alternative**

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
1		Dartmouth	P	11.76	R	3.1
2	PARKER MISHAUM PARTNERSHIP LAN	Dartmouth	P	2.24	C	3
3	SALTER'S POINT	Dartmouth	P	57.99	R	2.9
4	SALTER'S POINT	Dartmouth	P	0.50	R	2.7
5	ROUND HILL BEACH	Dartmouth	M	36.52	R	2.5
6	ROUND HILL	Dartmouth	P	126.59	R	2.4
7	ROSS LAND	Dartmouth	P	16.29	C	2
8		Dartmouth	N	13.68	C	1.8
9	NONQUITT	Dartmouth	P	226.99	B	2
10	NONQUITT DOCK	Dartmouth	P	24.57	R	1.5
11	KNOWLES BEACH	Dartmouth	M	0.30	C	1.7
12		Dartmouth	N	21.21	C	1.9
13	KNOWLES BEACH	Dartmouth	M	9.77	C	1.8
14	ANTHONY'S BEACH	Dartmouth	P	4.14	R	1.1

MAP ID	RESOURCE NAME	TOWN	STATUS	ACRES	RESOURCE TYPE	WTG (MILES)
15	JONES PARK	Dartmouth	M	11.05	R	1.9
16	TOWN LANDING	Dartmouth	M	0.63	R	2.1
17	FRANCIS PLAYGROUND	New Bedford	M	1.92	R	2.5
18	CLARKS COVE	New Bedford	X	38.74	R	2.3
19	WEST BEACH	New Bedford	M	0.50	R	2.1
20	WEST BEACH	New Bedford	M	4.09	R	1.9
21	HAZELWOOD PARK	New Bedford	M	23.38	R	1.9
22	BEACH WALK	New Bedford	M	2.18	R	1.7
23	NONAME BEACH	New Bedford	M	1.71	R	1.6
24	NONAME BEACH	New Bedford	M	1.13	R	1.5
25	PUMPING STATION	New Bedford	M	4.20	R	1.4
26	NONAME BEACH	New Bedford	M	0.49	R	1.2
27	NONAME BEACH	New Bedford	M	1.19	R	1.2
28	FT.RODMAN PLAYFIELD	New Bedford	M	8.02	R	1
29	FORT RODMAN	New Bedford	M	53.45	R	1
30	EAST BEACH	New Bedford	M	11.99	R	1.4
31	FORT PHOENIX STATE RES	Fairhaven	M	1.37	R	3.1
32	FT PHOENIX BEACH STATE RES	Fairhaven	S	16.52	B	3
33	GIRLS CREEK/BOYS CREEK	Fairhaven	M	21.08	C	3.6
34	POPE'S BEACH	Fairhaven	M	2.24	C	3.5
35	POPE'S BEACH	Fairhaven	M	3.49	C	3.4
36	COVE ST. SCENIC VISTA	Fairhaven	M	0.55	C	3.4
37	AUSTRIA AVE. LANDING	Fairhaven	M	0.44	C	3.3
38	MACOMBER PIMENTAL PARK	Fairhaven	M	0.62	R	3
39	WINSEGANSETT AVE. SCENIC VISTA	Fairhaven	M	0.19	C	1.9
40	WEST ISLAND BEACH	Fairhaven	M	14.28	R	3.1
41	WILD HARBOR ACCESS	Falmouth	M	0.48	R	13.3
42		Falmouth	M	1.07	S	13.2
43	OLD SILVER BEACH	Falmouth	M	13.42	C	13
44	W.FALMOUTH HARBOR RESERVATION	Falmouth	N	10.59	R	11.9
45	CHAPAQUOIT BEACH	Falmouth	M	2.51	R	11.8
46	BLACK BEACH ACCESS	Falmouth	N	1.83	C	11.8
47	GT. SIPPWISSETT MARSH	Falmouth	N	24.31	C	12.1
48	GREAT SIPPWISSETT MARSH	Falmouth	M	3.80	C	11.8
49	GREAT SIPPWISSETT MARSH	Falmouth	N	1.70	C	11.8
50	GREAT SIPPWISSETT MARSH	Falmouth	M	2.07	C	11.8
51	GREAT SIPPWISSETT MARSH	Falmouth	N	1.56	C	11.8
52	GREAT SIPPWISSETT MARSH	Falmouth	M	5.71	C	11.8
53	GREAT SIPPWISSETT MARSH	Falmouth	N	22.89	C	12
54	LITTLE SIPPWISSETT MARSH	Falmouth	M	16.89	C	12
55	CR #10	Falmouth	P	1.09	C	12.1
56	WOOD NECK BEACH	Falmouth	M	3.47	B	11.7
57	WOOD NECK RESERV	Falmouth	M	33.49	C	11.8
58	LITTLE SIPPWISSETT MARSH	Falmouth	N	10.94	C	11.8
59	THE KNOB	Falmouth	N	16.63	B	10.5
60	WOODS HOLE GOLF CLUB	Falmouth	P	112.59	R	10.3
61	GARNDNER RD TWN LNDING	Falmouth	M	0.38	R	9.8
62	CR #30	Falmouth	P	2.23	C	9.2
63	CR #32	Falmouth	P	0.65	C	9.3
64		Falmouth	M	3.16	C	9.3
65		Falmouth	M	2.85	C	9.4
66	NASHAWENA	Gosnold	P	1820.48	C	6.7
67	PENIKESE ISLAND SANCTUARY	Gosnold	S	84.21	C	5.8
68	GOSNOLD WMA	Gosnold	S	4.54	C	8.6

## Notes:

Status: B=Public Nonprofit; F=Federal; M=Municipal; N=Private Nonprofit; P=Private for profit; S=State; X=Unknown

Resource type: B= Recreation and Conservation; C= Conservation; H=Historical/Cultural; R= Recreation; S= Scenic

Source: MassGIS Protected and Recreational Open Space, 2003.

**Table 3-31: Existing Sound Levels At Three Representative Coastal Sites (dBA)**

	Point Gammon Yarmouth	Oregon Beach Barnstable	Cape Poge Martha's Vineyard
<b>L<sub>eq</sub> Levels</b>	35-71	41-61	40-73
<b>L<sub>90</sub> Levels</b>	27-66	34-57	37-70

**Table 3-32: Summary of Palustrine Wetland Types at MMR**

Wetland Type	Acres	Km <sup>2</sup>	Percent of Total
Palustrine Emergent Marsh (PEM)	27.21	.11	54
Palustrine Scrub Shrub (PSS)	17.30	.07	33
Palustrine Unconsolidated Bottom (PUB)	2.87	.012	6
Palustrine Forested (PFO)	1.96	.008	4
Palustrine Aquatic Bed (PAB)	1.33	.005	3
<b>Total Area</b>	<b>50.67</b>	<b>.205</b>	<b>100</b>

**Table 3-33: Representative Temperature Data**

Station	Annual Average (°F/°C)	Average Maximum (°F/°C)	Average Minimum (°F/°C)
Coastal Division (average)	49.9/9.9	na	na
Nantucket	49.8/9.9	56.3/13.5	43.3/6.3
Martha's Vineyard	50.4/10.2	57.9/14.4	42.9/6.1
Provincetown	49.7/9.8	57.1/13.9	42.2/5.7
Falmouth-Otis	49.8/9.9	57.3/14.0	42.3/5.7
New Bedford	51.4/10.8	na	na
Buzzard's Bay Buoy	50.7/10.4	na	na
Nantucket Buoy	51.6/10.9	na	na

**Table 3-34: Air Quality Monitor Information**

Monitor Location	Pollutant(s) Monitored	Land Use	Location Type	Dominant Source Type	Monitoring Objective
Truro	O <sub>3</sub> , NO <sub>2</sub> , PM <sub>2.5</sub>	Forest	Rural	Area	General Background
Fairhaven	O <sub>3</sub> , NO <sub>2</sub>	Residential	Suburban	Unspecified	Unspecified
Fall River	PM <sub>2.5</sub>	Commercial	Urban & Center City	Area	Highest Concentration
Fall River	SO <sub>2</sub>	Commercial	Suburban	Area	Highest Concentration
New Bedford	PM <sub>2.5</sub>	Commercial	Urban & Center City	Area	Highest Concentration

**Table 3-35: Mean Wind Speeds within the Nantucket Sound Area**

Location	Mean Wind Speed Range
Horseshoe Shoal Alternative	17.9 – 20.1 mph (28.8 – 32.3 km/hr)
Monomoy and Handkerchief Shoal Alternative	19.0 – 20.1 mph (30.6 – 32.3 km/hr)
Tuckernuck Shoal Alternative	19.0 – 20.3 mph (30.6 – 32.7 km/hr)

**Table 3-36: Barnstable County Baseline Conditions**

Economic Parameter	1997	1998	1999	2000	2001
<b>INCOME</b>					
Personal Income <sup>a</sup>	6.6	7.5	8.4	7.2	11.0
Per Capita Income <sup>b</sup>	29.9	32.2	33.6	35.3	36.1
Average Annual Wage <sup>b</sup>	27.3	30.3	34.9	36.4	36.7
<b>EMPLOYMENT</b>					
Total Non-Agricultural <sup>c</sup>	81.2	83.2	86.6	89.4	91.9
Manufacturing <sup>c</sup>	3.3	3.5	3.7	3.6	3.5
Non-Manufacturing <sup>c</sup>	77.8	79.7	82.8	85.9	88.4
Retail Trade <sup>c</sup>	26.7	27.5	28.6	29.6	29.9
Transportation, Communications & Utilities <sup>c</sup>	3.9	3.9	4.0	4.0	4.0
Finance, Insurance and Real Estate <sup>c</sup>	4.1	3.9	4.2	4.3	4.4
Services <sup>c</sup>	27.1	27.9	28.6	29.3	30.8
Federal Government <sup>c</sup>	1.8	1.9	1.8	2.0	1.8

Economic Parameter	1997	1998	1999	2000	2001
State & Local Government <sup>c</sup>	10.6	10.9	11.2	11.7	12.1
Construction <sup>c</sup>	3.5	3.7	4.3	4.8	5.2
Mining <sup>c</sup>	0.1	0.1	0.1	0.1	0.1

<sup>a</sup> Billions of dollars; <sup>b</sup> Thousands of dollars; <sup>c</sup> Thousands of jobs; <sup>d</sup> Thousands of people; SOURCE: Bureau of Economic Analysis

**Table 3-37 Representative Property Tax Revenues**

Town	Year	Revenue
Barnstable	2003	\$69,727,770
Yarmouth	2003	\$30,598,438
Bourne	2003	\$23,260,281
Sandwich	2001	\$24,005,347

Source: Individual Town Reports or Town Officials.

**Table 3-38: Housing Occupancy in Barnstable and Yarmouth**

Housing Parameter	Number	Percent
Total Housing Units	41,623	100.0%
Occupied Housing Units	31,146	74.8%
Vacant housing units	10,477	25.2%

Source: Department of Housing and Community Development; U.S. Census Bureau, Census 2000.

**Table 3-39: Housing Occupancy in Bourne and Sandwich**

Housing Parameter	Number	Percent
Total Housing Units	18,396	100.0%
Occupied Housing Units	14,774	80.3%
Vacant housing units	3,622	19.7%

Source: Department of Housing and Community Development; U.S. Census Bureau, Census 2000.

**Table 3-40: Bristol County Baseline Conditions**

Economic Parameter	1997	1998	1999	2000	2001
<b>INCOME</b>					
Personal Income <sup>a</sup>	12.6	13.2	13.9	15.2	15.7
Per Capita Income <sup>b</sup>	24.0	25.0	26.2	28.3	29.2
Average Annual Wage <sup>b</sup>	26.7	27.9	29.1	30.4	31.7
<b>EMPLOYMENT</b>					
Total Non-Agricultural <sup>c</sup>	258.1	261.6	266.9	273.3	270.1
Manufacturing <sup>c</sup>	51.6	51.4	50.5	49.6	43.4
Non-Manufacturing <sup>c</sup>	206.5	210.2	216.4	223.7	226.7
Retail Trade <sup>c</sup>	69.2	69.2	71.2	73.4	52.7
Transportation, Communications & Utilities <sup>c</sup>	9.5	9.9	9.7	9.6	12.0
Finance, Insurance and Real Estate <sup>c</sup>	11.9	12.7	12.9	13.6	14.2
Services <sup>c</sup>	71.3	72.8	75.3	78.5	92.0
Federal Government <sup>c</sup>	3.2	3.1	3.1	3.2	3.0
State & Local Government <sup>c</sup>	23.7	24.2	25.0	25.6	26.3
Construction <sup>c</sup>	12.9	13.7	14.6	14.9	15.1
Mining <sup>c</sup>	0.1	0.1	0.1	0.1	0.1
<b>POPULATION<sup>d</sup></b>					
	523.5	527.2	531.2	535.9	538.6

<sup>a</sup> Billions of dollars; <sup>b</sup> Thousands of dollars; <sup>c</sup> Thousands of jobs; <sup>d</sup> Thousands of people; SOURCE: Bureau of Economic Analysis

**Table 3-41: Property Tax Revenues for New Bedford**

Parameter	Year	Revenue
Property Tax	2003	58,128,173

Source: Individual Town Reports or Town Officials.

**Table 3-42: Housing Occupancy in New Bedford**

Housing Parameter	Number	Percent
Total Housing Units	41,511	100.0%
Occupied Housing Units	38,178	92.0%
Vacant housing units	3,333	8.0%

Source: Department of Housing and Community Development; U.S. Census Bureau, Census 2000.

**Table 3-43: Environmental Justice Statistics**

Demographic Profile	Dukes County	Nantucket County	Barnstable County			Bristol County		Reference Areas	
			Town of Yarmouth	Town of Barnstable	Barnstable County	City of New Bedford	Bristol County	MA	US
Total Population	14,987	9,520	24,807	47,821	222,230	93,768	534,678	6,349,097	281,421,906
Percent Minority	9.3	12.2	4.8	8.1	5.8	21.1	9	15.5	24.9
Percent White Alone	90.7	87.8	95.2	91.9	94.2	78.9	91	84.5	75.1
Individuals below Poverty Level	1,083 (7.3%)	712 (7.5%)	1,842 (7.5%)	4,173 (8.8%)	15,021 (6.9%)	18,553 (20.2%)	52,236 (10.0%)	573,421 (9.3%)	33,899,812 (12.4%)

U.S. Census Bureau, Census 2000.

**Table 3-44: Comparison of Existing Conditions in 2001**

Economic Parameter	Barnstable County	Bristol County
<b>INCOME</b>		
Personal Income <sup>a</sup>	11.0	15.7
Per Capita Income <sup>b</sup>	36.1	29.2
Average Annual Wage <sup>b</sup>	36.7	31.7
<b>EMPLOYMENT</b>		
Total Non-Agricultural <sup>c</sup>	91.9	270.1
Manufacturing <sup>c</sup>	3.5	43.4
Non-Manufacturing <sup>c</sup>	88.4	226.7
Trade <sup>c</sup>	29.9	52.7
Transportation, Communications, & Utilities <sup>c</sup>	4.0	12.0
Finance, Insurance and Real Estate <sup>c</sup>	4.4	14.2
Services <sup>c</sup>	30.8	92.0
Federal Government <sup>c</sup>	1.8	3.0
State & Local Government <sup>c</sup>	12.1	26.3
Construction <sup>c</sup>	5.2	15.1
Mining <sup>c</sup>	0.1	0.1
<b>POPULATION<sup>d</sup></b>	225.9	538.6

<sup>a</sup> Billions of dollars; <sup>b</sup> Thousands of dollars; <sup>c</sup> Thousands of jobs; <sup>d</sup> Thousands of people; SOURCE: Bureau of Economic Analysis

**Table 3-45: Summary of Onshore and Offshore Costs per Installed KW**

	<b>Onshore</b>	<b>Offshore</b>	<b>Notes</b>	<b>Onshore in</b>	<b>Offshore in</b>
	<b>(/KW)</b>	<b>(/KW)</b>		<b>USD</b>	<b>USD</b>
<b>Investment<sup>1</sup></b>	850 €	1,650 €	average	\$1,084	\$2,103
<b>Investment<sup>2</sup></b>		1,650 €			\$2,103
<b>Investment<sup>3</sup></b>		£853			\$1,608
<b>Investment<sup>4</sup></b>		£1,000	For 5-10 km offshore in 5-10 m of water		\$1,885
<b>Investment<sup>5</sup></b>	\$1,100	\$1,565		\$1,100	\$1,565
<b>Investment<sup>6</sup></b>		£1,056	£190M for 180 MW		\$1,989
<b>Investment<sup>7</sup></b>		DKK 12,500	DKK 2000 for 160 MW		\$2,138
<b>Investment<sup>8</sup></b>	1,000 €	1,500 €		\$1,275	\$1,912
<b>Averages for all sources</b>				<b>\$1,153</b>	<b>\$1,913</b>

Note: Most offshore costs seem to be developed around a "typical" state of the art installation such as Horns Rev. It is assumed that the average cost represents a design using monopile foundations.

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6. Centrica acquires additional offshore windfarm sites - 23 Dec 2003. <http://www.forrelease.com/D20031223/1018846.html>
7. Elsam - Brochure for Horns Rev. [http://www.mumm.ac.be/Common/Windmills/SPE/Bijlage/1%20%20Horns\\_Rev\\_brochure.pdf](http://www.mumm.ac.be/Common/Windmills/SPE/Bijlage/1%20%20Horns_Rev_brochure.pdf)
8. CA-OWEE - Resources and Economicc 3.3. [http://www.offshorewindenergy.org/ca-owee/indexpages/Resource\\_and\\_Economics.php?file=resecon\\_p3.php](http://www.offshorewindenergy.org/ca-owee/indexpages/Resource_and_Economics.php?file=resecon_p3.php)

#### Conversions - as of 16 Feb 2004

	UK Pound	USD	DKK
UK Pound (£)	1.000	1.885	
Euro (€)		1.275	
USD (\$)	0.531	1.000	0.171
DKK		5.846	1.000

**Table 3-46: Decommissioning Cost Estimate**

	MMR	Nantucket Sound	South of Tuckernuck	New Bedford / Horseshoe Shoal
Installed Capacity (MW)	198	468	468	500
Comparative Total Cost (per installed kW) from Table 3-48	\$1,153	\$1,913	\$2,677	\$1,924
Comparative Decommissioning Cost (per installed kW) using same ratio as total cost	\$0 <sup>1</sup>	\$53	\$74	\$53

1. Land-based decommissioning costs are presumed to be covered by salvage value

Average of two sources:	
\$53	per kW of installed capacity for Shallow water alternative
\$24,873,742	Total cost for Shallow water alternative

Decommissioning cost calculated as a Net Present Value (NPV)<sup>2</sup>:

0.14 cents/kWhr.	1,500 GWHrs/yr.
10% Discount rate	20 Period of study
1.5% Inflation rate	468 Installed Capacity

Year of Operation	Decommissioning cost	Year of Operation	Decommissioning cost
1	\$2,100	11	\$2,437
2	\$2,132	12	\$2,474
3	\$2,163	13	\$2,511
4	\$2,196	14	\$2,548
5	\$2,229	15	\$2,587
6	\$2,262	16	\$2,625
7	\$2,296	17	\$2,665
8	\$2,331	18	\$2,705
9	\$2,366	19	\$2,745
10	\$2,401	20	\$2,787
NPV (in \$1000)	\$19,760		
	\$42,222	per MW of installed capacity	

2. [http://www.ieer.org/sdafiles/vol\\_8/8-1/windvpu.html](http://www.ieer.org/sdafiles/vol_8/8-1/windvpu.html)

Decommissioning cost as presented in Decommissioning Wind Turbines In The UK Offshore Zone<sup>3</sup>

8.8 m/sec wind	Stiff clay and dense sand
Up to 11 m depth	30 WTG wind park
4 to 6 m H <sub>s</sub>	

£34,000	per MW of installed capacity
\$64,076	per MW of installed capacity

3. [http://www.owen.eri.ac.uk/documents/BWEA23/BWEA23\\_Pearson\\_Decommissioning\\_paper.pdf](http://www.owen.eri.ac.uk/documents/BWEA23/BWEA23_Pearson_Decommissioning_paper.pdf)

Conversions - as of 16 Feb 2004				
	UK Pound	EURO	USD	DKK
UK Pound (£)	1.000		1.885	
Euro (€)		1.00	1.275	
USD (\$)	0.531	0.784	1.000	0.171
DKK			5.846	1.000



**Table 3-47: Installed Cost**

	MMR	Nantucket Sound <sup>1</sup>	South of Tuckernuck	New Bedford / Horseshoe Shoal <sup>3</sup>
Installed Capacity (MW)	198	468	468	500
"Base" Cost (\$1000)	\$228,253	\$895,277	\$895,277	\$957,258
Adjustments				
Foundations	N/A	Base	\$301,642	\$5,372
Cable <sup>2</sup>	N/A	Base	\$55,944	N/A
Total Cost - (\$1000)	\$228,253	\$895,277	\$1,252,863	\$962,629
Comparative cost (per kW)	\$1,153	\$1,913	\$2,677	\$1,924

	Onshore	Offshore
Average \$/kW for all sources - see Table3-36a	\$1,153	\$1,913

<b>Estimate of cost adjustment from 10 M depth to 30 M depth</b>				
Shallow Water (Nantucket Sound) - 5 to 10 M (\$/kW) <sup>4</sup>			Deep Water (South of Tuckernuck) - up to 30 M (\$/kW) <sup>5</sup>	
Foundations	16%	\$306	Foundation	38%
Turbines	51%	\$976	Turbine & Tower	39%
Internal electrical grid	5%	\$96	Sub cable & Switchgear	9%
Electrical system	2%	\$38	Seabed	1%
Grid connection	18%	\$344	Substation	2%
O&M facilities	2%	\$38	Assembly	1%
Engineering & admin	4%	\$77	Transport	1%
Miscellaneous	2%	\$38	Developer	9%
Total	100%	\$1,913		100%

**Assumptions:**

Cost for both projects is the same. Cost of WTGs is the same.

Major difference in installed price is in the foundation.

The 5 - 10 M foundation project = \$1,913 /kW to install

Therefore, the WTGs are \$976 /kW

Which is 39% of the "Deep water" breakdown. Therefore the foundations, at 38% = \$951 /kW to install

Alternative	MMR	Nantucket Sound <sup>6</sup>	South of Tuckernuck	New Bedford / Reduced Horseshoe Shoal
Length of 115kV Cable (miles)	N/A	14.3	29.4	11.6

**Footnotes/Sources:**

1. Use 130 WTG as basis

2. Cost of cable \$3,700k per mile - see Appendix 3-C

3. Assume an increase in cost of New Bedford foundations of 50% to account for geologic conditions.

4. CA-OWEE - Resources and Economic 3.3. [http://www.offshorewindenergy.org/ca-owee/indexpages/Resource\\_and\\_Economics.php?file=resecon\\_p3.php](http://www.offshorewindenergy.org/ca-owee/indexpages/Resource_and_Economics.php?file=resecon_p3.php)

5. By Energy Systems Research Unit. [http://www.esru.strath.ac.uk/EandE/Web\\_sites/98-9/offshore/wind/wintr.htm](http://www.esru.strath.ac.uk/EandE/Web_sites/98-9/offshore/wind/wintr.htm)

6. Average for three sub alternatives

**Table 3-48: Economic Comparison of Alternatives**

	MMR	Nantucket Sound	South of Tuckernuck	New Bedford / Horseshoe Shoal
Capital Cost (per installed kW) <sup>11</sup>	\$1,153	\$1,913	\$2,677	\$1,924
Installed Capacity (MW)	198	468	468	500
Wind Regime - average wind speed (m/sec) <sup>12</sup>	6.2	8.5	8.7	8.3
Approximate Net Production (GWHrs/year)	600	1,500	1,500	1,500
Operation & Maintenance (per kWhr of delivered energy) <sup>13</sup>	\$0.007	\$0.018	\$0.0275	\$0.0211
Decommissioning (per installed KW)	\$0	\$53	\$74	\$53
Annualized Capital Cost <sup>14</sup>	\$26,810,512	\$105,158,900	\$147,160,818	\$113,070,041
Annual Operation & Maintenance Cost	\$4,279,745	\$27,000,000	\$41,250,000	\$31,650,000
Annualized Decommissioning Cost <sup>15</sup>	\$0	\$2,913,469	\$4,067,862	\$3,112,680
<b>Total Annualized Cost</b>	<b>\$31,090,257</b>	<b>\$135,072,369</b>	<b>\$192,478,680</b>	<b>\$147,633,510</b>
Capital Cost (per kWhr)	\$0.0447	\$0.0701	\$0.0981	\$0.0754
Operation & Maintenance Cost (per kWhr)	\$0.0071	\$0.0180	\$0.0275	\$0.0211
Decommissioning Cost (per kWhr)	\$0.0000	\$0.0019	\$0.0027	\$0.0021
<b>Total Cost (per kWhr)</b>	<b>\$0.0518</b>	<b>\$0.0900</b>	<b>\$0.1283</b>	<b>\$0.0986</b>

**Table 3-49: Estimated Operation and Maintenance Costs**

<b>Onshore</b>	
O&M ~ 1-3% of installed cost <sup>1</sup>	
For newer machines the estimates range around 1.5 to 2 per cent per year of the original turbine investment. <sup>2</sup>	
Average =	1.88% of installed cost
Inst. Cost =	\$1,153/kW
or	\$228,253,080 for 198 MW of intalled capacity x 1.88%
O & M =	\$4,279,745 /yr. from the example of MMR
at	600 GWhrs./yr
<b>Total Estimated O&amp;M =</b>	<b>\$0.007 /kWhr.</b>

1. [http://www.offshorewindenergy.org/ca-owee/indexpages/downloads/Brussels01\\_Economics.pdf](http://www.offshorewindenergy.org/ca-owee/indexpages/downloads/Brussels01_Economics.pdf)

2. <http://www.windpower.org/en/tour/econ/oandm.htm>

<b>Offshore</b>	
National Wind Coordinating Committee <sup>3</sup>	
Offshore Wind Development Meeting 9/25/2002	
O&M estimated at 1¢/kWh	
– O&M costs for large facilities yet to be experienced	
– Actual costs may be higher	
Variable according to site but a rough estimate is an annual charge of €30/kW with 0.5 € cents/kWh variable (Hartnell and Milborrow, 2000). <sup>4</sup> Reference appears to relate to Horns Rev type project.	
Using Nantucket Sound as an example:	
Fixed charge at	468 MW installed capacity
=	\$17,898,192 using €30/kW estimate above x 468 MW installed capacity
=	1,500.0 GWhrs./yr
=	\$0.012 /kWhr.
Variable	\$0.006 using 0.5 € cents/kWh estimate above
<b>Total =</b>	<b>\$0.018 /kWhr.</b>

3. <http://www.nationalwind.org/events/offshore/020925/presentations/Smith.pdf>

4. [http://www.offshorewindenergy.org/ca-owee/indexpages/Resource\\_and\\_Economics.php?file=resecon\\_p3.php](http://www.offshorewindenergy.org/ca-owee/indexpages/Resource_and_Economics.php?file=resecon_p3.php)

<sup>11</sup> See Table 3-45 for Summary of Onshore and Offshore Costs per installed kW

<sup>12</sup> <http://truewind.teamcamelot.com/ne/>

<sup>13</sup> See Table 3-49 for Estimated Operation and Maintenance Costs

<sup>14</sup> Applying a discount rate of 10%.

<sup>15</sup> Applying a discount rate of 10%.

<b>From the above, use \$0.018/kWhr for the shallow water alternative.</b>
Broken down into: Fixed = \$0.012 /kWhr Variable = \$0.006 /kWhr <b>Total Estimated O&amp;M= \$0.018 /kWhr</b>

<b>To adjust for the deep water alternative, consider:</b>
- An additional hour each way in transit to access WTGs. This will impact fixed charge portion by ~ 50%. - Additional difficulty due to sea conditions. This will impact the variable portion by ~ 25%. - More severe conditions for the WTGs to operate in. This will impact the variable portion by ~ 25%.
<b>From the above: 0.012 x 1.5 + 0.006 x 1.5 = Total Estimated O&amp;M= \$0.0275 /kWhr.</b>

<b>To adjust for the combination alternative, consider:</b>
- Two separate areas of work. This will impact fixed charge portion by ~ 50%. - Lesser sea and weather conditions. This will impact the variable portion by ~ 50%.
<b>From the above: 0.012 x 1.5 + 0.006 x .5 = Total Estimated O&amp;M= \$0.0211 /kWhr.</b>

**Table 3-50: Plant Community/Cover Type Distributions within Potential Project Area of Disturbance (400-foot/122 m Diameter Buffer from Towers and 20-foot/6 m Offset Buffer from Cables)**

Plant Community/Cover Type	Disturbed Area (acres/km <sup>2</sup> )
Mixed Woods Forest	253.0/.93
Pitch Pine Scrub Oak Forest	153.6/.62
Unclassified	35.0/.14
Existing Powerline ROW	30.0/.12
Hardwood Forest	13.2/.05
Scrub Oak Barrens	7.9/.03
Developed	3.9/.02
Water/Wetland	1.6/.006
Grassland	1.3/.005

**Table 3-51. Area of Temporary and Permanent Impact (in Acres) Associated with Alternatives located in Nantucket Sound, South of Tuckernuck Island and New Bedford Harbor/Horseshoe Shoal**

Temporary Impacts (Acres/km <sup>2</sup> )	Nantucket Sound	South of Tuckernuck	New Bedford/Horseshoe Shoal
<b>Inner-array cables</b>			
Inner array cables	58.9/0.236	62.2/0.249	61.2/0.245
Pontoon impacts	58.9/0.236	62.2/0.249	61.2/0.245
Anchoring to install cables	13.4/0.054	14.2/0.057	14.0/0.056
Anchor line sweep for installation <sup>1</sup>	579.9/2.32	612.2/2.45	602.1/2.41
<b>Anchoring to construct WTGs, ESP, and scour control mats</b>			
Anchoring for WTGs	6.1/0.024	23.9/0.096	6.5/0.026
Anchor line sweep for WTGs <sup>1</sup>	439.4/1.76	1728.0/6.91	469.8/1.99
Anchoring for ESP	0.3/0.001	0.3/0.001	0.3/0.001
Anchor line sweep for ESP1	20.3/0.081	20.3/0.081	20.3/0.081
Jack-up barge for WTGs	12.3/0.049	48.5/0.194	13.2/0.053
Jack-up barge for ESP	0.6/0.002	0.6/0.002	0.6/0.002
<b>TOTAL TEMPORARY IMPACTS</b>	<b>1,190/4.76</b>	<b>2,572/10.29</b>	<b>1,249/5.00</b>
<b>Permanent Impacts (Acres/ km<sup>2</sup>)</b>			
WTG and ESP pilings	0.7/0.003	4.3/0.017	0.7/0.003
WTG and ESP scour control mats	2.5/0.010	7.7/0.031	2.7/0.011
<b>Total Permanent Impacts</b>	<b>3.2/0.013</b>	<b>12.0/0.048</b>	<b>3.4/0.014</b>

1. Anchor line sweep impact is assumed to be 3-6 inches (7.6 to 15.2 cm) deep

**Table 3-52: Land/Vegetation Disturbance Impacts (see Figures 3-44 and 3-51)**

Tower Layout	Number of Towers	Clearing for Wind Towers (acres/km <sup>2</sup> )	Tower Foundations (acres/km <sup>2</sup> )	Total Distance of New ROW (miles/km)	Clearing New ROW for Cables (acres/km <sup>2</sup> )	Cable Trenches (acres/km <sup>2</sup> )
<b>Total</b>	<b>132</b>	<b>380.6/1.5</b>	<b>5.5/0.022</b>	<b>14.3/22.9</b>	<b>33.4/0.134</b>	<b>24.6/0.098</b>

**Table 3-53: Historic Properties Selected for Offshore Photo Renderings**

Alternative	Historic Property
<b>Nantucket Sound</b>	
Horseshoe Shoal (130 turbines)	Wianno Historic District, Barnstable
Monomoy-Handkerchief Shoal	Monomoy Lighthouse, Chatham
Tuckernuck Shoal	Cape Poge Lighthouse, Edgartown
<b>South of Tuckernuck Island</b>	Madaket Beach, Nantucket
<b>Combined New Bedford/ Reduced Horseshoe Shoal Alternative</b>	
New Bedford	Padanaram Historic District, South Dartmouth
Reduced Horseshoe Shoal (114 turbines)	Wianno Historic District

**Table 3-54: Comparison of the Maximum Onshore Sound Level from Wind Park Operation at the Horseshoe Shoal Site and Other Alternative Locations**

Project Alternative or Sub-site	Maximum L <sub>EQ</sub> Design Wind Condition (dBA)	Sound Energy Relative To The Horseshoe Shoal Site	Sensitive Receptor
Horseshoe Shoal Sub-site	25.9	1.0	Point Gammon, Yarmouth
Tuckernuck Shoal Sub-site	27.4	1.4	Cape Poge, Martha's Vineyard
Monomoy- Handkerchief Shoal Sub-site	26.8	1.2	Point Gammon, Yarmouth
New Bedford/Horseshoe Shoal Alternative	39.4	22.4	Clark's Point, South Dartmouth
South of Tuckernuck Island Alternative	29.6	2.3	Madaket Beach, Nantucket
Massachusetts Military Reservation Alternative	47.1	131.8	Shawme-Cromwell State Forest, Sandwich

**Table 3-55: Potential Hazards and Applicable Regulations During Construction and Decommissioning**

Potential Hazard(s)	OSHA Regulations (29 CFR 1926)
Exposure to: <ul style="list-style-type: none"> <li>Hazardous chemicals</li> <li>Environment (e.g., inclement weather)</li> <li>Hot and cold surfaces due to construction processes (e.g., welding) or weather conditions</li> <li>Sharp and/or abrasive surfaces/edges</li> <li>Noise</li> <li>Optical hazards (e.g., welding)</li> </ul>	<ul style="list-style-type: none"> <li>General Safety and Health Provisions (Subpart C)</li> <li>Occupational Health &amp; Environmental Controls (Subpart D)</li> <li>Hazard Communication (Subpart D)</li> <li>Personal Protective and Life Saving Equipment (PPE) (Subparts C and E)</li> <li>Occupational noise exposure (Subpart D)</li> <li>Welding and cutting (Subpart J)</li> <li>Toxic and Hazardous Substances (Subpart Z)</li> </ul>
Working at heights	<ul style="list-style-type: none"> <li>Safety belts, lifelines, and lanyards (Subpart E)</li> <li>Scaffolding (Subpart L)</li> <li>Ladders (Subpart X)</li> <li>Fall protection (Subpart M)</li> </ul>
Excavating and Constructing Foundations	<ul style="list-style-type: none"> <li>Excavations (Subpart P)</li> <li>Underground Construction, Caissons, Cofferdams, and Compressed Air (Subpart S)</li> <li>Concrete and Masonry Construction (Subpart Q)</li> </ul>
Erecting Structures	<ul style="list-style-type: none"> <li>Rigging equipment for material handling (Subpart H)</li> <li>Cranes, Derricks, Hoists, Elevators, and Conveyors (Subpart N)</li> <li>Steel Erection (Subpart R)</li> </ul>
Electrical	<ul style="list-style-type: none"> <li>Electrical (Subpart K)</li> <li>Power Transmission and Distribution (Subpart V)</li> </ul>

Potential Hazard(s)	OSHA Regulations (29 CFR 1926)
Fires	<ul style="list-style-type: none"> <li>• Fire Protection and Prevention (Subpart F)</li> </ul>
Motor vehicles and construction equipment Hand Tools	<ul style="list-style-type: none"> <li>• Motor Vehicles, Mechanized Equipment, and Marine Operations (Subpart O)</li> <li>• Tools-Hand and Power (Subpart I)</li> </ul>
Working over or near water <ul style="list-style-type: none"> <li>• Falling in/drowning</li> <li>• Hypothermia</li> </ul>	<ul style="list-style-type: none"> <li>• Personal Protective and Life Saving Equipment (PPE) (Subpart E-1926.106)</li> <li>• General Safety and Health Provisions (Subpart C)</li> </ul>
Construction of/working in and around caissons or cofferdams, and use of compressed air	<ul style="list-style-type: none"> <li>• Underground Construction, Caissons, Cofferdams, and Compressed Air (Subpart S)</li> </ul>
Diving, air supply, decompression, etc.	<ul style="list-style-type: none"> <li>• Commercial Diving Operations (Subpart Y)</li> </ul>
Marine Equipment	<ul style="list-style-type: none"> <li>• Motor Vehicles, Mechanized Equipment, and Marine Operations (Subpart O)</li> </ul>

**Table 3-56: Potential Hazards and Applicable Regulations During Operation and Maintenance**

Potential Hazard(s)	OSHA Regulations (29 CFR 1910)
Working at heights	Walking-Working Surfaces (Subpart D)
Working over or near water <ul style="list-style-type: none"> <li>• Falling in/drowning</li> <li>• Hypothermia</li> </ul>	
Use of powered equipment to perform maintenance work at heights	<ul style="list-style-type: none"> <li>• Powered Platforms, Manlifts, and Vehicle-Mounted Work Platforms (Subpart F)</li> </ul>
Exposure to: <ul style="list-style-type: none"> <li>• Hazardous chemicals</li> <li>• Environment (i.e., inclement weather)</li> <li>• Hot and cold surfaces due to construction processes (i.e., welding) or weather conditions</li> <li>• Sharp and/or abrasive surfaces/edges</li> <li>• Noise</li> <li>• Optical hazards (i.e., welding)</li> </ul>	<ul style="list-style-type: none"> <li>• Occupational Health and Environment Control (Subpart G)</li> <li>• Hazardous Materials (Subpart H)</li> <li>• Personal Protective Equipment (Subpart I)</li> <li>• Toxic and Hazardous Substances (Subpart Z)</li> </ul>
Moving Machinery	<ul style="list-style-type: none"> <li>• Machinery and Machine Guarding (Subpart O)</li> </ul>
Use of power tools	<ul style="list-style-type: none"> <li>• Hand and Portable Powered Tools and Other Hand-Held Equipment (Subpart P)</li> </ul>
Maintenance welding, soldering and brazing operations	<ul style="list-style-type: none"> <li>• Welding, Cutting, and Brazing (Subpart Q)</li> </ul>
Electrical energy	<ul style="list-style-type: none"> <li>• Electric Power Generation, Transmission, and Distribution (Subpart R-1910.269)</li> <li>• Subpart S – Electrical (Subpart S)</li> </ul>
Underwater hazards (i.e., air supply, decompression) associated with maintenance operations	<ul style="list-style-type: none"> <li>• Commercial Diving Operations (Subpart T)</li> </ul>

Table 3-57: Summary of Characteristics of the Wind Park Alternatives

RESOURCE TOPIC	EXISTING CONDITION CHARACTERISTIC	MMR	NS	STI	NB/NS
Avian	Unique Avian Habitat Types	X			
	Priority Habitat for State Protected Rare Species and Estimated Habitat for Rare Wildlife	X	X		X
	Nesting/Breeding Sites	X			X
	Federally Listed Species		X	X	X
	High Diversity of Avian Species	X			X
Geology and Soils/Sediments	Contaminated Soils/Sediments	X			X
	Bedrock Outcropping or Shallow Bedrock				X
	Groundwater Recharge Area	X			
	Earthquake Epicenters within 10 Miles	X			X
Oceanography	Inferred Nearby Bedrock Faults	X			X
	Extreme Storm Wave Heights			X	X
Protected Marine Species	ESA Listed Species		X	X	X
	Abundant or Sensitive Marine Mammals				X
	Near to Seal Haul-Out and Breeding Sites			X	X
Fisheries	Rock Ledge				X
	Commercial Finfish Fisheries		X	X	
	Recreational Fishing		X	X	X
	Shell Fishing		X		X
	Lobster Fisheries		X	X	X
	EFH for More than One Unique Species			X	X
Benthos	Relatively High Benthic Diversity			X	X
	Relatively High Benthic Organism Density		X		X
	Rocky Substrate				X
Upland	State Listed Endangered, Threatened, and Special Concern Plant and Animal Species	X			
	Small Mammals, Game Species, and Bats Present	X			
	Located on or less than 3 Miles from Land	X			X
Aviation	Emergency Landing for the Space Shuttle	X			
	Runway Flight Path	X			
	Intensive Military Flight Training	X			
	Recreational and Commercial Use		X	X	X
	Pathway of Low Altitude IFR Routes			X	
Telecommunications	Marine Radio		X	X	X
	Military Radio and Radar	X			
	USCG Communication Center	X			
Navigation	Commercial Shipping in Vicinity		X		X
	Substantial Recreational Boating		X		X
Cultural	Relatively High Potential for Unrecorded Archaeological Resources	X	X		X
Aesthetics/Landscape/Visual	Non-Transient Viewers	X	X	X	X
Recreation	Public Access		X	X	X
	Recreational Activity		X		X
Noise and Vibration	Relatively High Ambient Noise Levels	X			X
	Freshwater Wetlands	X			
Water	"Navigable Waters" (Section 10)		X	X	X
	"Waters of the U.S." (Section 404)				X
	Existing Sources of EMF	X			
Air and Climate	Relatively Low Wind Speeds	X			X
	Proximate to Existing Emissions Sources	X			X
Safety	Nearby Marked Navigation Channels		X	X	X
	Submerged Rocky Ledge				X
	UXO/ Hazardous Materials	X			
	Nearby Aviation Facilities	X			X
Socioeconomics	Percentage of Individuals Below the Poverty Level Greater than Massachusetts Average				X
	Contained within a Single Municipality	X			

Table 3-58: Summary of Nantucket Sound Alternatives Analysis

Sites	Monomoy - Handkerchief Shoal	Tuckernuck Shoal	Horseshoe Shoal
<b>Project Design Siting Criteria</b>			
Average water depths between 12 and 50 feet below the MLLW datum	Y	Y	Y
Adequate water sheet area (approximately 25 square miles) for installation of up to 130 WTGs capable of delivering approximately 454 MW of wind-generated energy	N	Y	Y
Subsurface geological conditions suitable for installation of pile-type foundation systems for the WTGs	Y	Y	Y
Configuration that allows for optimum siting of WTGs to provide maximum wind power density and duration for efficient wind generating capacity	Y	Y	Y
Proximity to suitable landfalls and interconnection points to the NSTAR electric transmission system on Cape Cod	N	N	Y
Minimal conflict with established shipping channels and navigational fairways	N	N	Y
Minimal conflict with general aviation and established FAA –Instrument Flight Rules (IFR) flight paths	Y	N	Y
Minimal conflict with commercial fishing	N	N	Y
Minimal conflict with established commercial passenger ferry routes	Y	Y	Y
Minimal impact to the marine environment	N	N	Y
Avoidance of existing submarine cable and pipeline areas	Y	Y	Y
Archaeological Sensitivity for Cultural Resources	Moderate	High	High

Table 3-59: Summary of Alternative Routes

CRITERIA	Alternative #1 - Yarmouth - New Hampshire Avenue Landfall and Transmission Line Route	Alternative #2 - Mashpee - Mashpee Neck Road Town Landing Landfall and transmission Line Route	Alternative #3 - Bryants Cove/Willowbend Landfall and Transmission Line Route	Alternative #4 - Cotuit - Main Street Landfall and Transmission Line Route	Alternative #5 - Point Gammon - Whale Road Landfall and Transmission Line Route	Alternative #6 - Hyannis Inner Harbor - Lewis Bay Road Landfall and Transmission Line Route
<b>Upland Criteria</b>						
<b>Installation And Maintenance Criteria</b>						
<b>Utility congestion</b>	Light to Moderate	Light	None	Light	Moderate	Heavy
<b>Intersection crossings</b>	Major – 3; Minor - 1	Major – 0; Minor - 1	Major – 0; Minor - 0	Major – 0; Minor - 1	Major – 3; Minor - 1	Major – 1; Minor - 2
<b>Traffic Flow</b>	Moderate	Light to Moderate	None	Moderate to Heavy	Moderate	Heavy
<b>Street width</b>	Moderate to Wide 22-30 Feet	Narrow to Moderate 23-25 Feet	N/A	Narrow 20-22 - Feet	Moderate to Wide 22-30 Feet	Narrow to Moderate 23-25 Feet
<b>Upland transmission Line (miles)</b>	5.9	14.16	12.25	12.45	6.9	4
<b>Manholes/splicing vaults</b>	16	6	4	6	18	11
<b>Railroad Crossings</b>	1	0	0	0	1	1
<b>Access during Construction</b>	Potential temporary access detouring	Potential temporary access detouring	No Access issues	Potential temporary access detouring	Potential to block completely- no detouring possible	Potential temporary access detouring
<b>Environmental And Land Use Criteria</b>						
<b>Wetlands</b>	No Direct Impact - Buffer Zone	No Direct Impact - Buffer Zone	Temporary Impact - intermittent stream	No Direct Impact - Buffer Zone	No Direct Impact - Buffer Zone	No Direct Impact - Buffer Zone
<b>Rare and Endangered Plant &amp; Animal Species and Habitat</b>	Present -No Impact	Present - Direct Impact	Present - Direct Impact	Present - Direct Impact	Present - No Impact	Present - Direct Impact
<b>Tree/Vegetation Removal (acres)</b>	Apprx. 2.5	Approx. 10	Approx 20	Approx. 10	Aprox. 3	Approx 2
<b>Shade Tree Removal</b>	None Present	None Present	None Present	Present - Impact	None Present	None Present
<b>% New Right of Way</b>	0%	0%	100%	10%	10%	50%
<b>Water Supply - Public Wells - Zone I</b>	3 Present	4 Present	4 Present	5 Present	3 Present	2 Present
<b>Water Supply - Zone II</b>	Present	Present	Present	Present	Present	Present
<b>Potential to Disrupt Properties during Construction</b>	87% Residential 13% Commercial	100% Residential 0% Commercial	Minimal Structures - New ROW	94% Residential 6% Commercial	91% Residential 9% Commercial	26% Residential 74% Commercial
<b>Prehistoric/ Historic Archaeological Sites</b>	None Present	Present	Present	Present	None Present	Present
<b>Historic Districts</b>	Present	None Present	None Present	Present -Within	Present	None Present
<b>Community Facilities</b>	3	0	0	5	3	2



<b>CRITERIA</b>	<b>Alternative #1 - Yarmouth - New Hampshire Avenue Landfall and Transmission Line Route</b>	<b>Alternative #2 - Mashpee - Mashpee Neck Road Town Landing Landfall and transmission Line Route</b>	<b>Alternative #3 - Bryants Cove/Willowbend Landfall and Transmission Line Route</b>	<b>Alternative #4 - Cotuit - Main Street Landfall and Transmission Line Route</b>	<b>Alternative #5 - Point Gammon - Whale Road Landfall and Transmission Line Route</b>	<b>Alternative #6 - Hyannis Inner Harbor - Lewis Bay Road Landfall and Transmission Line Route</b>
(schools, hospitals, churches, nursing homes, parks)						
<b>Hazardous waste sites</b>	None Present	2 Present or adjacent	None Present	2 Present or adjacent	None Present	3 Present or adjacent
<b>Submarine Criteria</b>						
<b>Installation And Maintenance Criteria</b>						
<b>Submarine transmission Line within Massachusetts 3-mile limit (miles)</b>	6.6	5.2	6.5	4.3	5.8	6.3
<b>Submarine HDD</b>	1	2	2	1	1	1
<b>Navigational Impact - Construction Vessel Access &amp; Marine Traffic Impacts</b>	Open Access, No Channel, Minimal Potential Traffic Impact	Limited/Narrow Access, No Channel, Moderate Potential Traffic Impact	Very Limited/Narrow Access, No Channel, Moderate Potential Traffic Impact	Open Access, No Channel, No Potential Traffic Impact	Open Access, No Channel, Minimal Potential Traffic Impact	Restricted Access, Channel Present, Heavy Potential Traffic Impact
<b>Environmental And Land Use Criteria</b>						
<b>Eelgrass</b>	Nearby Route	None Present	None Present	None Present	Present	Nearby Route
<b>Cost</b>						
<b>Cost</b>	\$79,510,000.00	\$68,610,000.00	\$68,946,529.00	\$69,327,129.00	\$85,060,000.00	\$74,229,000.00
<b>Reliability</b>						
<b>Reliability</b>	Favorable	Less Favorable	Less Favorable	Less Favorable	Favorable	Favorable

**Table 3-60: Individual Ranking Score Criterion Value**

Individual Ranking Score	5	4	3	2	1	0
<b>Upland Criteria</b>						
<b>Installation And Maintenance Criteria</b>						
Utility congestion	None	Light	Light to Moderate	Moderate	Moderate to Heavy	Heavy
Intersection crossings	None	1 Minor	>1 Minor	1 Major	1 Major/ Minor	>1 Major
Traffic Flow	None	Light	Light to Moderate	Moderate	Moderate to Heavy	Heavy
Street width	Wide	Moderate to Wide	Moderate	Moderate to Narrow	Narrow	None
Upland transmission Line (miles)	3.1-5	5.1-7	7.1-9	9.1-11	11.1-13	13.1-15
Manholes/splicing vaults	0-5	6-10	11-15	16-20	21-25	>25
Railroad Crossings	None	-	-	-	Crossing	-
Access during Construction	No Access Constraints	-	Potential Access Constraints - detouring	-	Access constraints - Blocked completely	-
<b>Environmental And Land Use Criteria</b>						
Wetlands	None	-	No direct Impact	-	Temporary Impact	-
Rare and Endangered Plant & Animal Species and Habitat	None	-	Present - No Impact	-	Present - Direct Impact	-
Tree/Vegetation Removal in acres	0-4.9	5-9.9	10-14.9	15-19.9	20-24.9	25-39.9
Shade Tree Removal	None/No Impact	-	-	-	Present/Impact	-
% New Right of Way	0	0-25%	26-50%	51-75%	76-99%	100%
Water Supply - Public Wells - Zone I	None Present	1 Present	2 Present	3 Present	4 Present	5 Present
Water Supply - Zone II	None Present	-	-	-	Present	-
Potential to Disrupt Properties (Relative between Routes)	Least Disruptive - Minimal Structures on Property	Highest % Residential	2nd Highest Residential	2nd Highest Commercial	Highest % Commercial	Most Disruptive - Highest Presence of Commercial Property
Prehistoric/ Historic Archeological Sites	None within Physical disturbance area	-	-	-	Within Physical disturbance area	-
Historic Districts	Not Present	-	-	-	Present	-
Community Facilities (schools, hospitals, churches, nursing	None	1 Structure	2 Structures	3 Structures	4 Structures	5 Structures

Individual Ranking Score	5	4	3	2	1	0
homes, parks)						
Hazardous waste sites	None	1 Site	2 Sites	3 Sites	4 Sites	>5 Sites
<b>Submarine Criteria</b>						
<b>Installation And Maintenance Criteria</b>						
Submarine transmission Line within Massachusetts 3-mile limit (miles)	0-5	5-10	10-15	15-20	20-25	>25
Submarine HDD	1 HDD with <500 ft of pull	1 HDD with >500 ft of pull	2 HDD with <500 ft of pull	2 HDD with >1,000 ft of pull	Open cut trench	No Crossing
Navigational Impact - Construction Vessel Access & Marine Traffic Impacts	Open Access, No Channel, No Potential Traffic Impact	Open Access, No Channel, Limited Potential Traffic Impact	Limited/Narrow Access, No Channel, Moderate Potential Traffic Impact	Very Limited/Narrow Access, No Channel, Moderate Potential Traffic Impact	Restricted Access, Channel Present, Heavy Potential Traffic Impact	No Access
<b>Environmental And Land Use Criteria</b>						
Eelgrass	None/No Impact	-	-	-	Present/Impact	-
<b>Cost</b>						
Cost	Lowest	Second Lowest	Third Lowest	Fourth Lowest	Fifth Lowest	Highest
<b>Reliability</b>						
Reliability	Favorable	-	-	-	Less Favorable	-

**Table 3-61: Summary of Individual Scores and Weighted Scores of Alternative Transmission Line Routes**

		Alternative #1		Alternative #2		Alternative #3		Alternative #4		Alternative #5		Alternative #6	
	Weight	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
<b>Upland Transmission Cable</b>													
<b>Installation Criteria</b>													
Utility congestion	2	3	6	4	8	5	10	4	8	2	4	0	0
Intersection crossings	1	0	0	4	4	5	5	4	4	0	0	1	1
Traffic Flow	2	2	4	3	6	5	10	1	2	2	4	0	0
Street width	3	4	12	2	6	0	0	1	3	4	12	2	6
Upland transmission Line (miles)	3	4	12	0	0	1	3	1	3	4	12	5	15
Manholes/splicing vaults	2	2	4	4	8	5	10	4	8	2	4	3	6
Railroad Crossings	1	1	1	5	5	5	5	5	5	1	1	1	1
Access during Construction	2	3	6	3	6	5	10	3	6	1	2	3	6
<b>Subtotal</b>		<b>19</b>	<b>45</b>	<b>25</b>	<b>43</b>	<b>31</b>	<b>53</b>	<b>23</b>	<b>39</b>	<b>16</b>	<b>39</b>	<b>15</b>	<b>35</b>
<b>Environmental Criteria</b>													
Wetlands	1	3	3	3	3	1	1	3	3	3	3	3	3
Rare and Endangered Plant & Animal Species and Habitat	3	3	9	1	3	1	3	1	3	3	9	1	3
Tree/Vegetation Removal in acres	3	5	15	3	9	1	3	3	9	5	15	5	15
Shade Tree Removal	3	5	15	5	15	5	15	1	3	5	15	5	15
% New Right of Way	2	5	10	5	10	0	0	4	8	4	8	3	6
Water Supply - Public Wells - Zone I	1	2	2	1	1	1	1	0	0	2	2	3	3
Water Supply - Zone II	1	1	1	1	1	1	1	1	1	1	1	1	1
Potential to Disrupt Properties	3	1	3	4	12	5	15	3	9	2	6	0	0
Prehistoric/ Historic Archeological Sites	1	5	5	1	1	1	1	1	1	5	5	1	1
Historic Districts	1	1	1	5	5	5	5	1	1	1	1	5	5
Community Facilities (schools, hospitals, churches, nursing homes, parks)	2	2	4	5	10	5	10	0	0	2	4	3	6
Hazardous waste sites	1	5	5	3	3	5	5	3	3	5	5	2	2
<b>Subtotal</b>		<b>38</b>	<b>73</b>	<b>37</b>	<b>73</b>	<b>31</b>	<b>60</b>	<b>21</b>	<b>41</b>	<b>38</b>	<b>74</b>	<b>32</b>	<b>60</b>

	Alternative #1		Alternative #2		Alternative #3		Alternative #4		Alternative #5		Alternative #6		
	Weight	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
<b>Submarine Transmission Cable</b>													
<b>Installation Criteria</b>													
Submarine transmission Line within Massachusetts 3-mile limit (miles)	3	4	12	4	12	4	12	5	15	4	12	4	12
Submarine HDD	3	5	15	2.5	7.5	2	6	4	12	4	12	5	15
Navigational Impact - Construction Vessel Access & Marine Traffic Impacts	3	4	12	3	9	2	6	5	15	4	12	1	3
<b>Subtotal</b>		<b>13</b>	<b>39</b>	<b>9.5</b>	<b>28.5</b>	<b>8</b>	<b>24</b>	<b>14</b>	<b>42</b>	<b>12</b>	<b>36</b>	<b>10</b>	<b>30</b>
<b>Environmental Criteria</b>													
Eelgrass	2	5	10	5	10	5	10	5	10	1	2	5	10
<b>Subtotal</b>		<b>5</b>	<b>10</b>	<b>5</b>	<b>10</b>	<b>5</b>	<b>10</b>	<b>5</b>	<b>10</b>	<b>1</b>	<b>2</b>	<b>5</b>	<b>10</b>
<b>Cost</b>													
Cost	2	1	2	5	10	4	8	3	6	0	0	2	4
<b>Reliability</b>													
Reliability	1	5	5	1	1	1	1	1	1	5	5	5	5
<b>Total of Individual Score and Weighted Score</b>													
<b>Total</b>		<b>81</b>	<b>174</b>	<b>82.5</b>	<b>165.5</b>	<b>80</b>	<b>156</b>	<b>67</b>	<b>139</b>	<b>72</b>	<b>156</b>	<b>69</b>	<b>144</b>

Weighting  
 Very Important = 3  
 Moderate Importance=2  
 Minor Importance = 1

Table 3-62: Costs for Alternative Routes

Unit Costs			
	Material	Install	
115 kV Submarine Cable/mile	\$3,700,000.00		installation and landfall 500 ft HDD included
115 kV Upland Cable/mile	\$2,300,000.00	\$1,100,000.00	1/C 800mm <sup>2</sup> x 12 (2 ckts x 2 cond per phase x 3 phase)
115 kV Upland Cable/mile	\$1,700,000.00	\$800,000.00	1/C 630mm <sup>2</sup> x 12 (2 ckts x 2 cond per phase x 3 phase)
Upland Civil Costs/mile		\$1,500,000.00	in ducts, >4.5 ft deep, concrete encased; material costs included
Upland Civil Costs/mile		\$1,000,000.00	in ducts, min depth, concrete encased; material costs included
Upland Civil Costs/mile		\$2,500,000.00	in ducts, >4.5 ft deep, concrete encased; increased costs for degree of difficulty; material costs included
Directional drilling upland/1000ft		\$750,000.00	
Directional drilling sub/1000ft		\$1,500,000.00	

Alternative #1 -Yarmouth Route - Preferred NSTAR Electric ROW Option - Underground Double Circuit in ROW to Barnstable S/S					
	Units	Quantity	Material	Install	Total
115 kV Submarine Cable	miles	11	3,700,000	-	40,700,000
115 kV Upland Cable in streets	miles	4	2,300,000	1,100,000	13,600,000
Upland Civil Costs in streets	miles	4	-	1,500,000	6,000,000
115 kV Upland Cable in ROW	miles	1.9	1,700,000	800,000	4,750,000
115 kV Upland Cable Civil Costs in ROW	miles	1.9		1,000,000	1,900,000
Directional drilling upland	1000 ft	4	-	750,000	3,000,000
Subtotal Cape Wind portion					69,950,000
NSTAR Electric portion from worksheet1					9,560,000
					<b>\$79,510,000</b>
Alternative #2 -Mashpee Route - NSTAR Electric Option - Overhead Single Circuit in ROW to Barnstable S/S					
	Units	Quantity	Material	Install	Total
115 kV Submarine Cable	miles	10	3,700,000	-	37,000,000
115 kV Upland Cable	miles	1.9	2,300,000	1,100,000	6,460,000
Upland Civil Costs	miles	1.9	-	1,500,000	2,850,000
Directional drilling submarine	1000 ft	1	-	1,500,000	1,500,000
Subtotal Cape Wind portion					47,810,000
NSTAR Electric portion from worksheet 1					20,800,000
					<b>\$68,610,000</b>
Alternative #3 -Bryant's Cove/Willowbend Route - NSTAR Electric Option - Overhead Single Circuit in ROW to Barnstable S/S					
	Units	Quantity	Material	Install	Total
115 kV Submarine Cable	miles	11	3,700,000	-	40,700,000
115 kV Upland Cable	miles	1.25	1,700,000	800,000	3,125,000
Upland Civil Costs	miles	1.25	-	1,000,000	1,250,000
Jacking under Quinaquisset Rd.	lump sum	1		100,000	100,000
Directional drilling submarine	1000 ft	1	-	1,500,000	1,500,000
Cap. cost of pay't to Willowbend.	lump sum	1	2,119,000		2,119,000
Subtotal Cape Wind portion					48,794,000
NSTAR Electric portion from worksheet 1					20,152,529
					<b>\$68,946,529</b>

<b>Alternative #4 -Cotuit Route - NSTAR Electric Option - Overhead Single Circuit in ROW to Barnstable S/S</b>					
	<b>Units</b>	<b>Quantity</b>	<b>Material</b>	<b>Install</b>	<b>Total</b>
115 kV Submarine Cable	miles	8.4	3,700,000	-	31,080,000
115 kV Upland Cable	miles	2.2	2,300,000	1,100,000	7,480,000
Upland Civil Costs	miles	2.2	-	2,500,000	5,500,000
Directional drilling submarine	1000 ft	1	-	1,500,000	1,500,000
Purchase of ROW property	lump sum	1	1,000,000		1,000,000
Purchase of beachfront prop	lump sum	1	3,000,000		3,000,000
<b>Subtotal Cape Wind portion</b>					<b>49,560,000</b>
<b>NSTAR Electric portion from worksheet 1</b>					<b>19,767,129</b>
					<b>\$69,327,129</b>
<b>Alternative #5 -Point Gammon - Preferred NSTAR Electric ROW Option - Underground Double Circuit in ROW to Barnstable S/S</b>					
	<b>Units</b>	<b>Quantity</b>	<b>Material</b>	<b>Install</b>	<b>Total</b>
115 kV Submarine Cable	miles	10.5	3,700,000	-	38,850,000
115 kV Upland Cable in streets	miles	5	2,300,000	1,100,000	17,000,000
Upland Civil Costs in streets	miles	5	-	1,500,000	7,500,000
115 kV Upland Cable in ROW	miles	1.9	1,700,000	800,000	4,750,000
115 kV Upland Cable Civil Costs in ROW	miles	1.9		1,000,000	1,900,000
Directional drilling submarine	1000 ft	1	-	1,500,000	1,500,000
Directional drilling upland	1000 ft	4	-	750,000	3,000,000
Purchase of landfall property	lump sum	1	1,000,000		1,000,000
<b>Subtotal Cape Wind portion</b>					<b>75,500,000</b>
<b>NSTAR Electric portion from worksheet 1</b>					<b>9,560,000</b>
					<b>\$85,060,000</b>
<b>Alternative #6 -Hyannis Inner Harbor to Hyannis Junction S/S - NSTAR Electric Option - Underground Double Circuit in ROW to Barnstable S/S</b>					
	<b>Units</b>	<b>Quantity</b>	<b>Material</b>	<b>Install</b>	<b>Total</b>
115 kV Submarine Cable	miles	10.5	3,700,000	-	38,850,000
115 kV Upland Cable in streets	miles	3	2,300,000	1,100,000	10,200,000
Upland Civil Costs in streets	miles	3	-	2,500,000	7,500,000
115 kV Upland Cable in ROW	miles	1	1,700,000	800,000	2,500,000
115 kV Upland Cable Civil Costs in ROW	miles	1		1,000,000	1,000,000
Directional drilling upland	1000 ft	2	-	750,000	1,500,000
Cap. cost of pay't for waterfront	lump sum	1	2,119,000		2,119,000
Cap. cost of pay't to RR & airport	lump sum	1	1,000,000		1,000,000
<b>Subtotal Cape Wind portion</b>					<b>64,669,000</b>
<b>NSTAR Electric portion from worksheet 1</b>					<b>9,560,000</b>
					<b>\$74,229,000</b>

<b>Summary</b>	
<b>Option</b>	<b>Total</b>
Yarmouth (underground)	79,510,000
Mashpee	68,610,000
Willowbend	68,946,529
Cotuit	69,327,129
Point Gammon (underground)	85,060,000
Hyannis	74,229,000

<b>Preferred Alternative -Yarmouth Route - Underground Double Circuit in ROW to Barnstable S/S</b>					
	<b>Units</b>	<b>Quantity</b>	<b>Material</b>	<b>Install</b>	<b>Total</b>
Barnstable Substn mods					
- add a third bay	lump sum	1	4,460,000		4,460,000
- 50 MVAR shunt reactors	reactor	2	450,000	150,000	1,200,000
Protection & Fiberoptic communication	lump sum	1	3,900,000		3,900,000
					<b>\$9,560,000</b>
<b>Alternative Option - Mashpee Route- Overhead Single Circuit in ROW to Barnstable S/S</b>					
	<b>Units</b>	<b>Quantity</b>	<b>Material</b>	<b>Install</b>	<b>Total</b>
New single circuit overhead line	miles	12.26	513,866		6,300,000
New Riser Substation					
- 5 bkr ring	lump sum	1	7,500,000		7,500,000
- 50 MVAR shunt reactors	reactor	2	450,000	150,000	1,200,000
Barnstable Substn mods					
- add partial bay	lump sum	1	2,900,000		2,900,000
Protection & Fiberoptic communication	lump sum	1	2,900,000		2,900,000
					<b>\$20,800,000</b>
<b>Alternative Option -Willowbend Route- Overhead Single Circuit in ROW to Barnstable S/S</b>					
	<b>Units</b>	<b>Quantity</b>	<b>Material</b>	<b>Install</b>	<b>Total</b>
New single circuit overhead line	miles	11	513,866		5,652,529
New Riser Substation					
- 5 bkr ring	lump sum	1	7,500,000		7,500,000
- 50 MVAR shunt reactors	reactor	2	450,000	150,000	1,200,000
Barnstable Substn mods					
- add partial bay	lump sum	1	2,900,000		2,900,000
Protection & Fiberoptic communication	lump sum	1	2,900,000		2,900,000
					<b>\$20,152,529</b>
<b>Alternative Option -Cotuit Route- Overhead Single Circuit in ROW to Barnstable S/S</b>					
	<b>Units</b>	<b>Quantity</b>	<b>Material</b>	<b>Install</b>	<b>Total</b>
New single circuit overhead line	miles	10.25	513,866		5,267,129
New Riser Substation					
- 5 bkr ring	lump sum	1	7,500,000		7,500,000
- 50 MVAR shunt reactors	reactor	2	450,000	150,000	1,200,000
Barnstable Substn mods					
- add partial bay	lump sum	1	2,900,000		2,900,000
Protection & Fiberoptic communication	lump sum	1	2,900,000		2,900,000
					<b>\$19,767,129</b>
<b>Alternative Option - Hyannis - Underground Double Circuit in ROW to Barnstable S/S</b>					
	<b>Units</b>	<b>Quantity</b>	<b>Material</b>	<b>Install</b>	<b>Total</b>
Barnstable Substn mods					
- add a third bay	lump sum	1	4,460,000		4,460,000
- 50 MVAR shunt reactors	reactor	2	450,000	150,000	1,200,000
Protection & Fiberoptic communication	lump sum	1	3,900,000		3,900,000
					<b>\$9,560,000</b>

## Footnotes:

1. If required because of overvoltages in offline conditions, charging currents in 34.5 kV cable assumed offset by motoring a WTG to serve as an SVC or by separate shunt reactors on ESP.