OCS Study
BOEM 2013-0114

Energy Market and Infrastructure Information for Evaluating Renewable Energy Projects for the Atlantic and Pacific OCS Regions

Volume II: Appendices

U.S. Department of the Interior
Bureau of Ocean Energy Management
Gulf of Mexico OCS Region

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ABOUT THE COVER

Cover photos courtesy of (clockwise): Ocean Power Technologies, Power Buoy® PB-150, GE Energy©, Bureau of Ocean Energy Management

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Appendix A
NERC Regional Reliability Entities

NERC Regional Reliable Entities

The following sections describe the regional reliability entities with significant opportunities for alternative energy resources on the OCS, including the Northeast Power Coordinating Council, ReliabilityFirst Corporation, and the Western Electricity Coordinating Council. The Florida Reliability Coordinating Council and SERC Reliability Corporation also border the OCS, but they generally have less potential for offshore wind and other alternative resource development.

A.1 NORTHEAST POWER COORDINATING COUNCIL, INC. (NPCC)

The NPCC is the regional reliability entity for New York State, the six New England states (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont), and the Canadian provinces of Ontario, Quebec, New Brunswick, and Nova Scotia. Within NPCC, approximately 45% of the net energy to serve load is generated in the United States and approximately 55% is generated in Canada. Twenty percent of the Eastern Interconnection electric load and 70% of Canadian electric load is served within the NPCC region. The New England states and New York have been very active in identifying potential sites for offshore wind: see the description of proposed projects for each state in Chapter 5.

The NPCC is composed of five areas with resource adequacy and transmission assessment responsibility:

- Maritimes (the New Brunswick System Operator, Nova Scotia Power Inc., the Maritime Electric Company Ltd., and the Northern Maine Independent System Administrator Inc).
- New England (ISO New England Inc.).
- New York (New York ISO).
- Ontario (Independent Electricity System Operator).
- Québec (Hydro-Québec TransÉnergie).

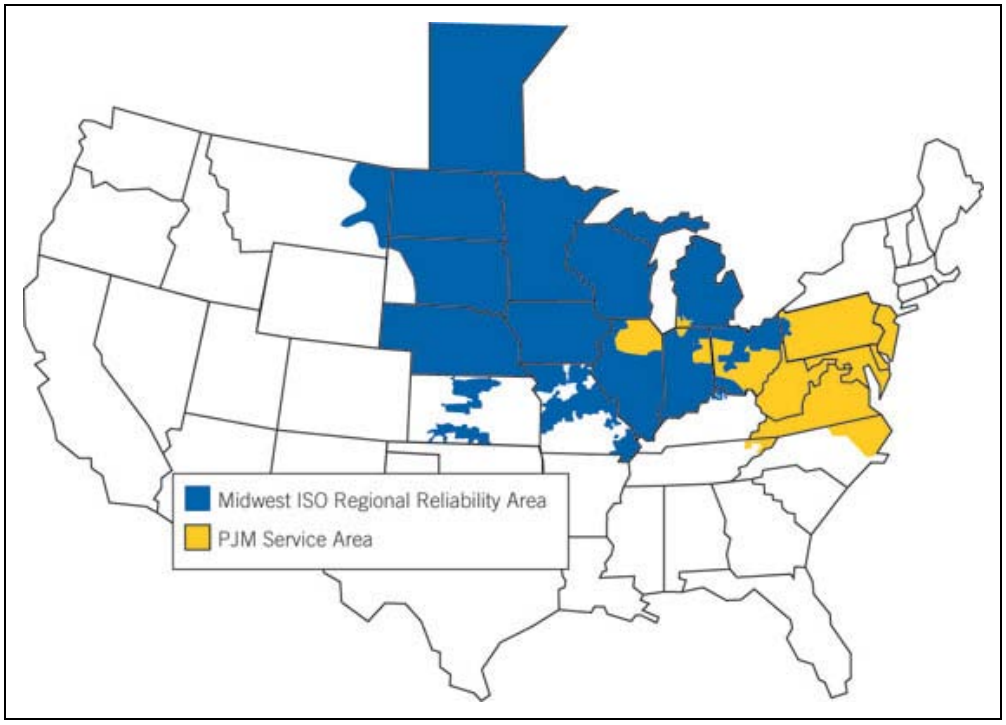
To supplement the NERC standards, the NPCC has regional criteria, guides, and procedures, including a resource adequacy design criterion requiring that each area's probability of disconnecting firm load not exceed 0.1 day per year on average. Areas must conduct comprehensive resource adequacy assessment every three years, as well as annual interim reviews in other years.

Areas are also required to conduct and present a comprehensive, intermediate, or interim transmission review based on the extent of the expected changes to the system on an annual basis, with comprehensive reviews occurring at least every five years (NERC 2008). NERC's 2008 Long-Term Reliability Assessment states that the NPCC's transmission system, as currently planned, is expected to perform reliably for a range of contingencies and conditions over the next 10 years. Resource planning is discussed in more detail under the sections on ISO New England and New York ISO, the NPCC areas in the United States.

NPCC areas also serve as reliability coordinators with the authority and responsibility to redispatch generation, reconfigure transmission, or shed firm load if necessary to stabilize the system. The NPCC reliability coordinators in the United States are ISO New England and New York ISO, both of which are summer peaking systems (NERC 2008). ISO New England and New York ISO also oversee and administer wholesale electricity markets.

A.2 RELIABILITYFIRST CORPORATION (RFC)

The ReliabilityFirst area covers the states of Delaware, Indiana, Maryland, New Jersey, Ohio, Pennsylvania, West Virginia, the District of Columbia, and parts of Illinois, Kentucky, Michigan, and Virginia. Although RFC does not have officially designated subregions, almost all RFC members are affiliated with two regional transmission organizations (RTO) for operations and reliability coordination: the Midwest ISO (MISO) and PJM. Approximately one-third of the RFC load is within MISO and nearly all of the remaining load is within PJM.[1] PJM's footprint mostly lies in the RFC area, which accounts for about 85% of PJM load; the remaining PJM load is in a small part of the SERC region. MISO also spans into multiple reliability regions, with approximately 60% of its load in RFC (NERC 2008). Figure A-1 shows the PJM and MISO territories.



Source: MISO-PJM (n.d.).

Figure A-1. MISO and PJM areas.

[1] About 100 MW of load is within the Ohio Valley Electric Corporation, which is not affiliated with MISO or PJM but uses PJM's reliability coordinator services.

PJM and MISO operate as single balancing authority areas, and both oversee and administer wholesale electricity markets. Such broad operation allows the RTO to more efficiently balance supply and demand, and in particular take account of the spatial and temporal diversity exhibited by wind resources such as would be seen with increased development of both onshore (MISO and PJM) and OCS offshore resources (PJM). For this project, PJM is the entity of interest. All five offshore wind areas leased by BOEMRE on June 23, 2009, are in the PJM service area (i.e., New Jersey and Delaware) (USDOI BOEMRE 2009).

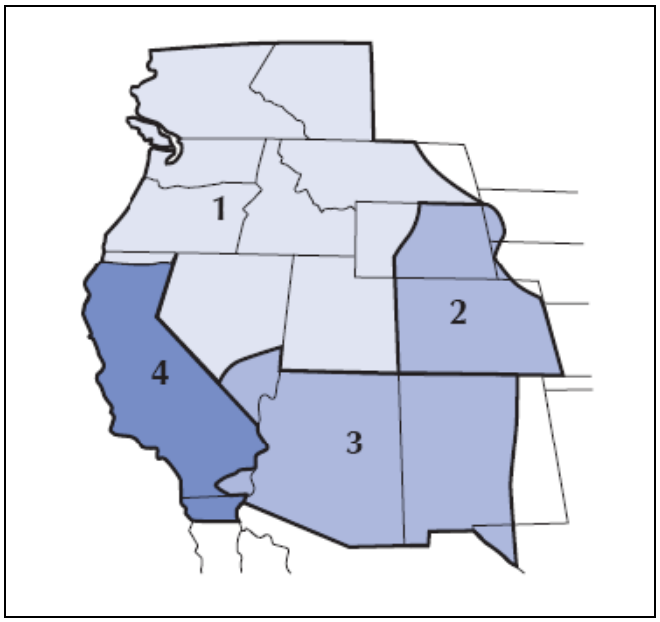
Planned reserve sharing groups (PRSGs), including the PJM and Midwest PRSGs, are required to identify the minimum acceptable reserves to maintain resource adequacy for their respective areas pursuant to the RFC's Resource Adequacy Standard.[2] In its Long-Term Resource Assessment, NERC states an expectation that PJM, MISO and ReliabilityFirst will have adequate reserves through 2017 (NERC 2008).

RFC has a procedure for the development of standards that will ensure the reliable regional and subregional planning and operation of the bulk power system in the RFC footprint. RFC's standards include a loss of load expectation (LOLE) criterion of not exceeding a day in 10 years (RFC 2008).

A.3 WESTERN ELECTRICITY COORDINATING COUNCIL (WECC)

WECC serves 71 million people and an area of nearly 1.8 million square miles, distinguishing it as the largest of the eight NERC regional reliability organizations. Its geographic footprint includes the provinces of Alberta and British Columbia, the northernmost piece of Baja California, Mexico, the states of Arizona, California, Idaho, Nevada, Oregon, Utah, Washington, and Wyoming, and parts of Montana, Nebraska, New Mexico, South Dakota, and Texas. WECC is divided into four subregions: the Arizona–New Mexico–Southern Nevada Power Area (AZ/NM/SNV), the Rocky Mountain Power Area (RMPA), the California-Mexico Power Area (CA/MX), and the Northwest Power Pool Area (NWPP), each of which has a number of balancing authorities. NERC also individually considers the U.S. and Mexico portions of the California-Mexico Power Area, and the U.S. and Canada portions of the Northwest Power Pool Area. Figure A-2, below, shows the WECC subregions.

[2] The Midwest PRSG consists of a consortium of MISO members that includes about 95% of the MISO load in the RFC regional area.



1. Northwest Power Pool Area
2. Rocky Mountain Power Area
3. Arizona–New Mexico–Southern Nevada Power Area
4. California-Mexico Power Area

Source: WECC (2006).

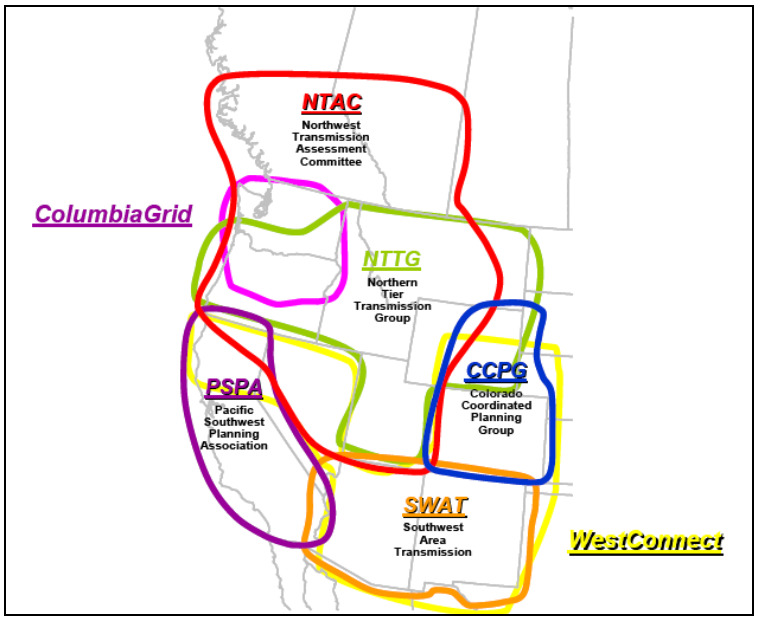
Figure A-2. WECC subregions.

For this project, NWPP and CA/MX (WECC subregions 1 and 4) are relevant to the development of offshore ocean energy. In contrast to the East Coast, alternative energy efforts for the ocean areas off the West Coast focus on wave energy. As of February 2010, FERC has issued 10 preliminary licenses for hydrokinetic projects (one off Washington, two off Oregon, and seven off California) and a final license is pending for an Oregon project (see Chapter 5 for details by state) (FERC 2010a, 2010b).

WECC is responsible for coordinating and promoting electric system reliability within its footprint. WECC also supports efficient competitive power markets, assures open transmission access, and provides an environment for coordinating the operating and planning activities of its members (WECC 2009a). For example, WECC has initiated the development of generic wind turbine models to facilitate the development and implementation of solutions to regional reliability and market challenges posed by renewable energy integration. WECC does not prioritize, justify, develop, permit, or implement specific expansion projects; analyze distribution of benefits and costs; develop cost allocation methodologies; or operate and maintain transmission facilities (WECC 2009b).

Taking an interconnection-wide perspective, the WECC Transmission Expansion Planning Policy Committee (TEPPC) has three primary functions: overseeing the management of an economic transmission expansion planning database, providing policy and management of the planning process, and guiding the analyses and modeling for Western Interconnection economic transmission expansion planning. Subgroups of the TEPPC include the California Independent

System Operator (CAISO), the Colorado Coordinated Planning Group (CCPG), ColumbiaGrid, the Northern Tier Transmission Group (NTTG), the Northwest Transmission Assessment Committee (NTAC), the Pacific Southwest Planning Association (PSPA), Southwest Area Transmission (SWAT), and WestConnect (WECC 2009c).[3] Figure A-3 shows the areas covered by the subregional planning groups. TEPPC's functions supplement rather than supersede the activities and responsibilities of WECC members and stakeholders to conduct detailed planning for specific transmission expansion projects.



Source: GTMWG (2008).

Figure A-3. WECC transmission planning groups.

Major transmission lines currently under consideration in WECC include:

- NorthernLights, a 500-kilovolt, 970-mile high-voltage DC line that would connect Alberta, Canada, with the U.S. Pacific Northwest.
- The Canada/Pacific Northwest to Northern California Project, which would bring up to 3,000 megawatts of power from new renewable resources in British Columbia, Canada, to the Pacific Northwest and northern California, over a 1,000-mile-long transmission line.

Energy projects in the ocean waters off the West Coast would ease the need for transmission lines as well as reduce energy imports from Canada.

[3] In 2008 NTTG, ColumbiaGrid and WestConnect began a Joint Initiative program to pursue projects that would benefit from a broader reach of expertise and geography. (See http://columbiagrid.org/planning-expansion-overview.cfm.)

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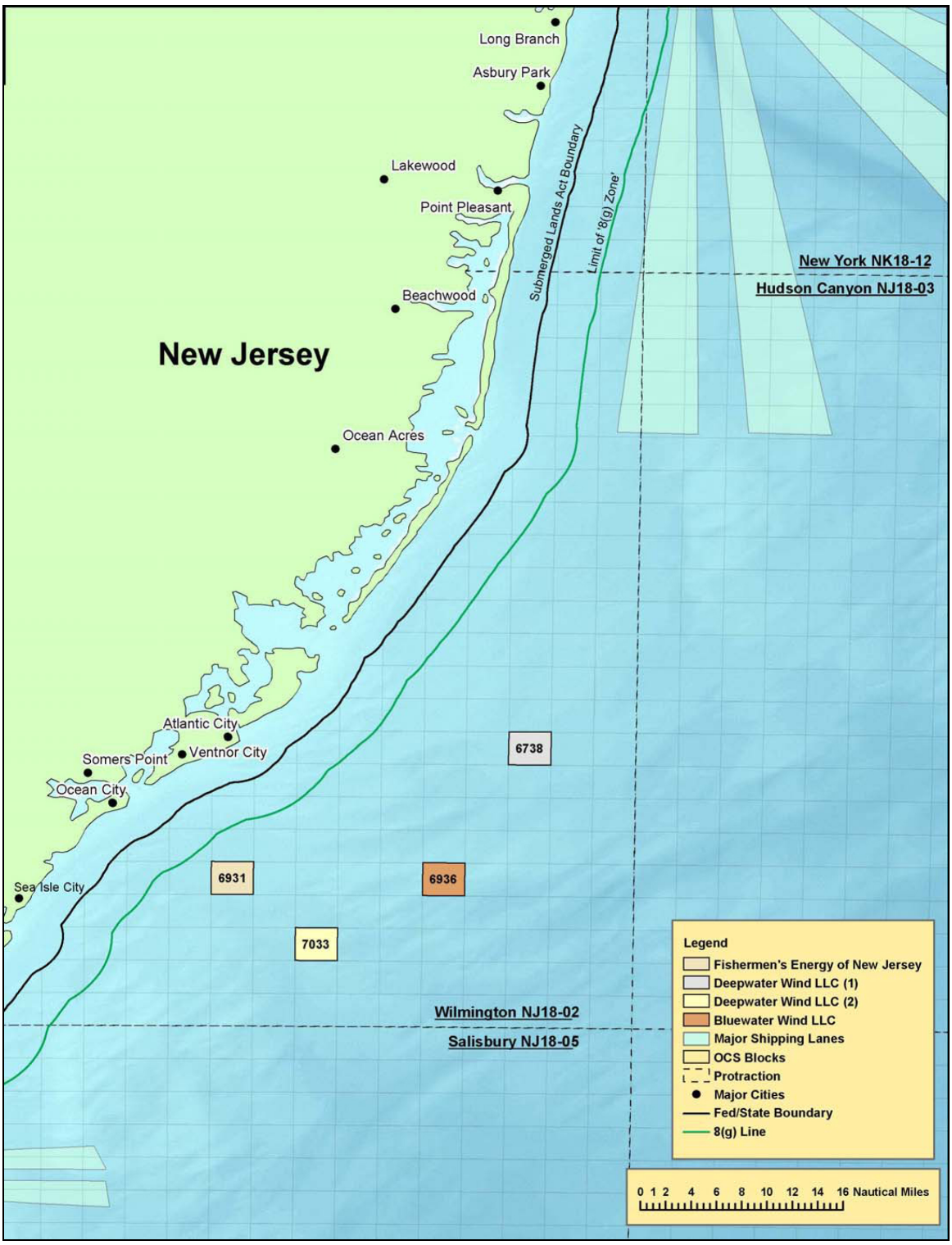
Appendix B
State Coastal and Offshore Areas

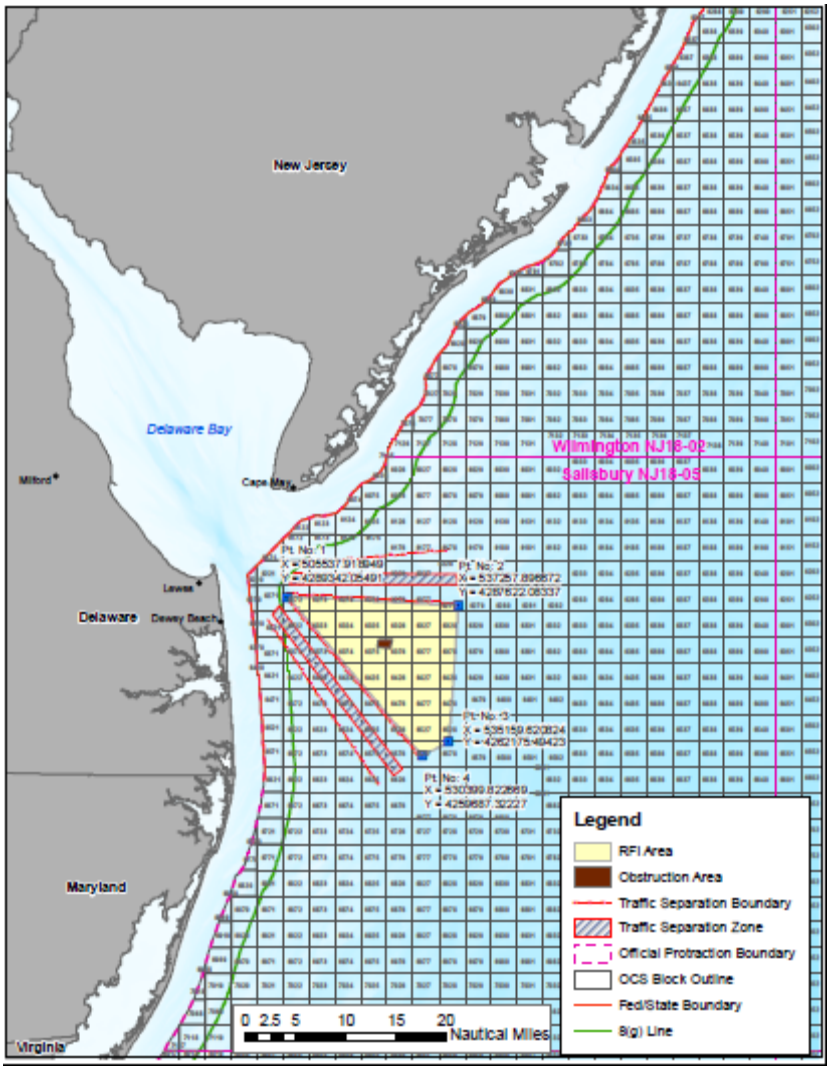
B.1 FIGURES

All figures in Appendix B are current as of December 2010.



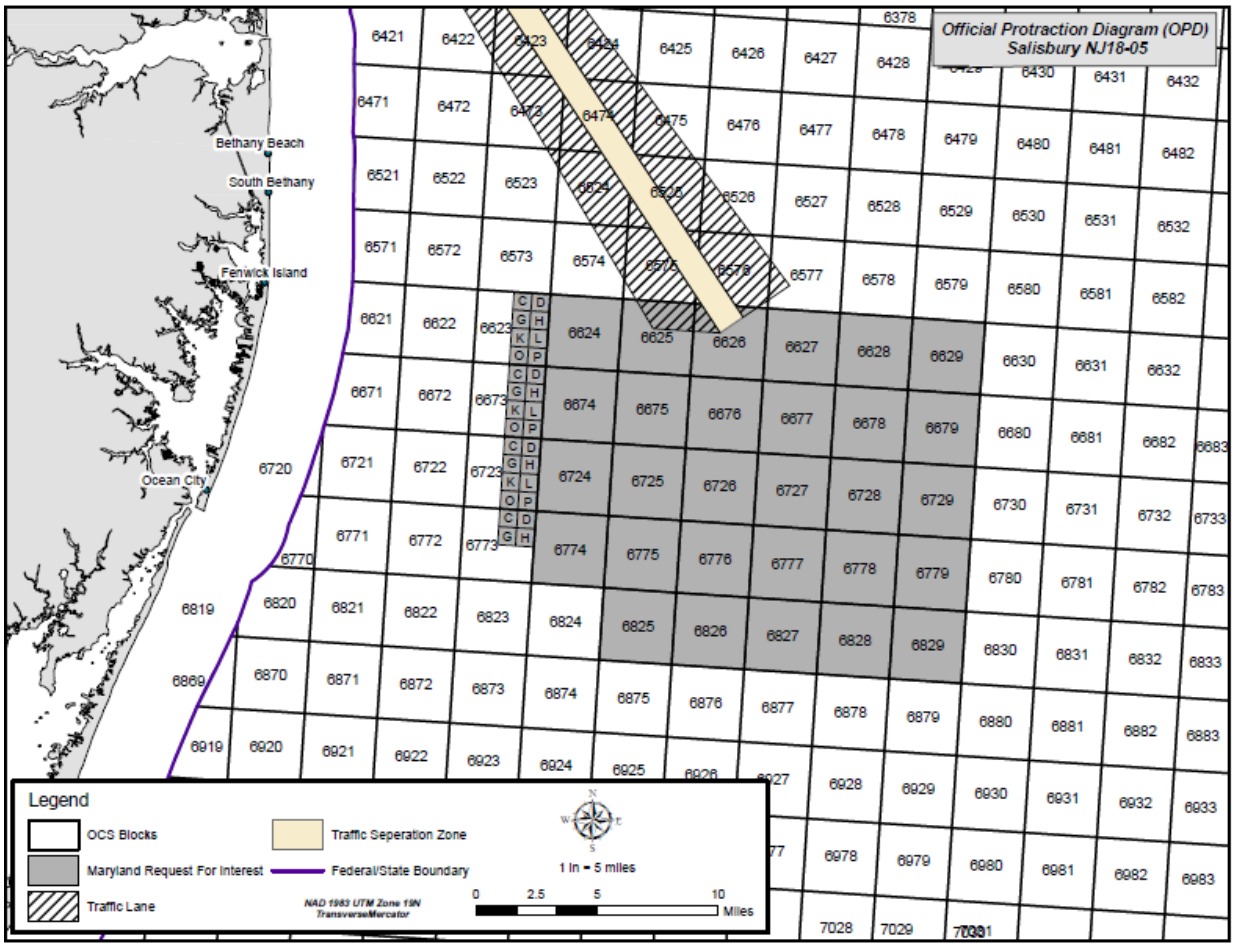
Source: USDOI BOEMRE (2009).

Figure B-1. BOEMRE exploratory leases off New Jersey announced June 23, 2009.



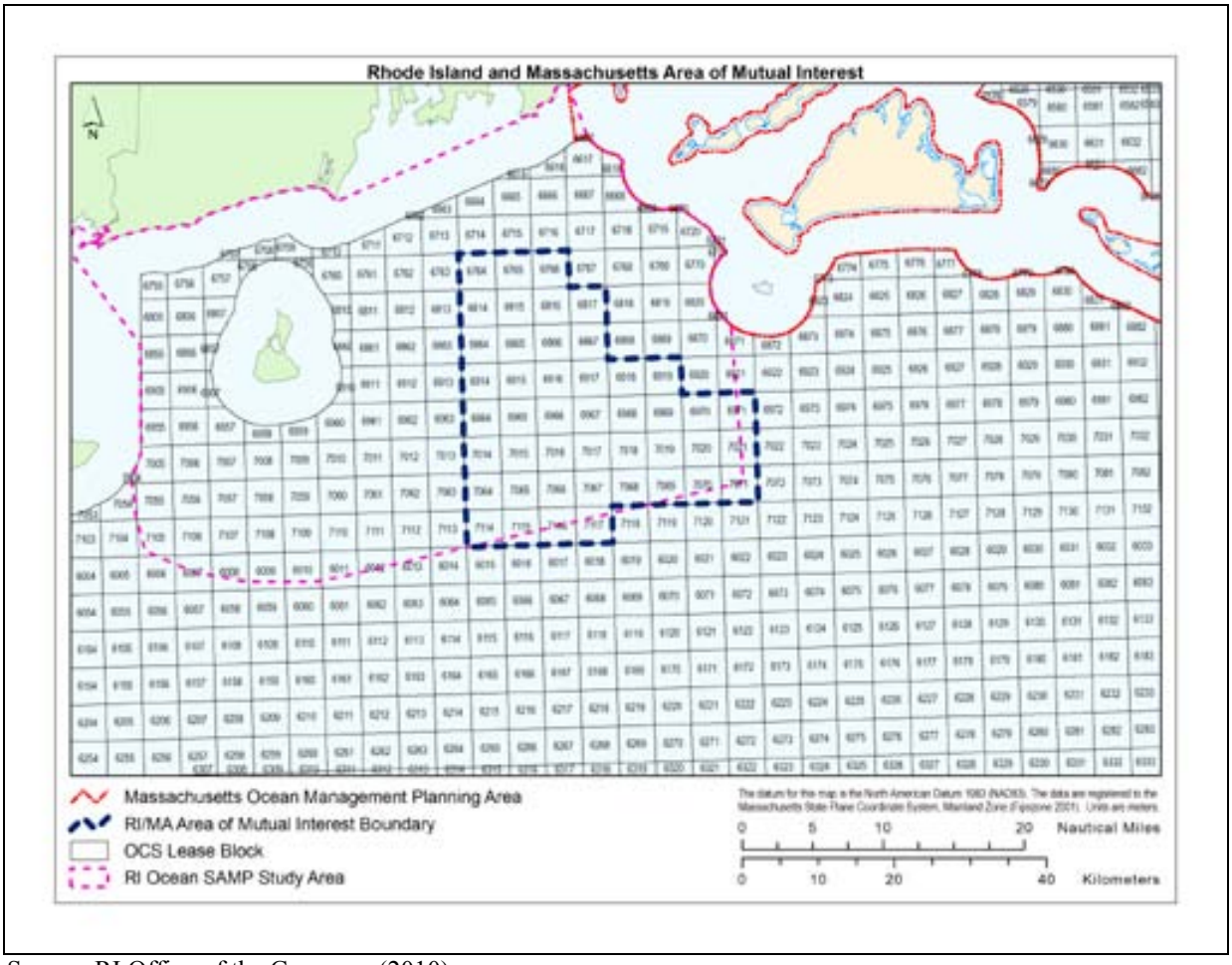
Source: USDOI BOEMRE (2010a).

Figure B-2. BOEMRE April 2010 region of interest off Delaware coast.



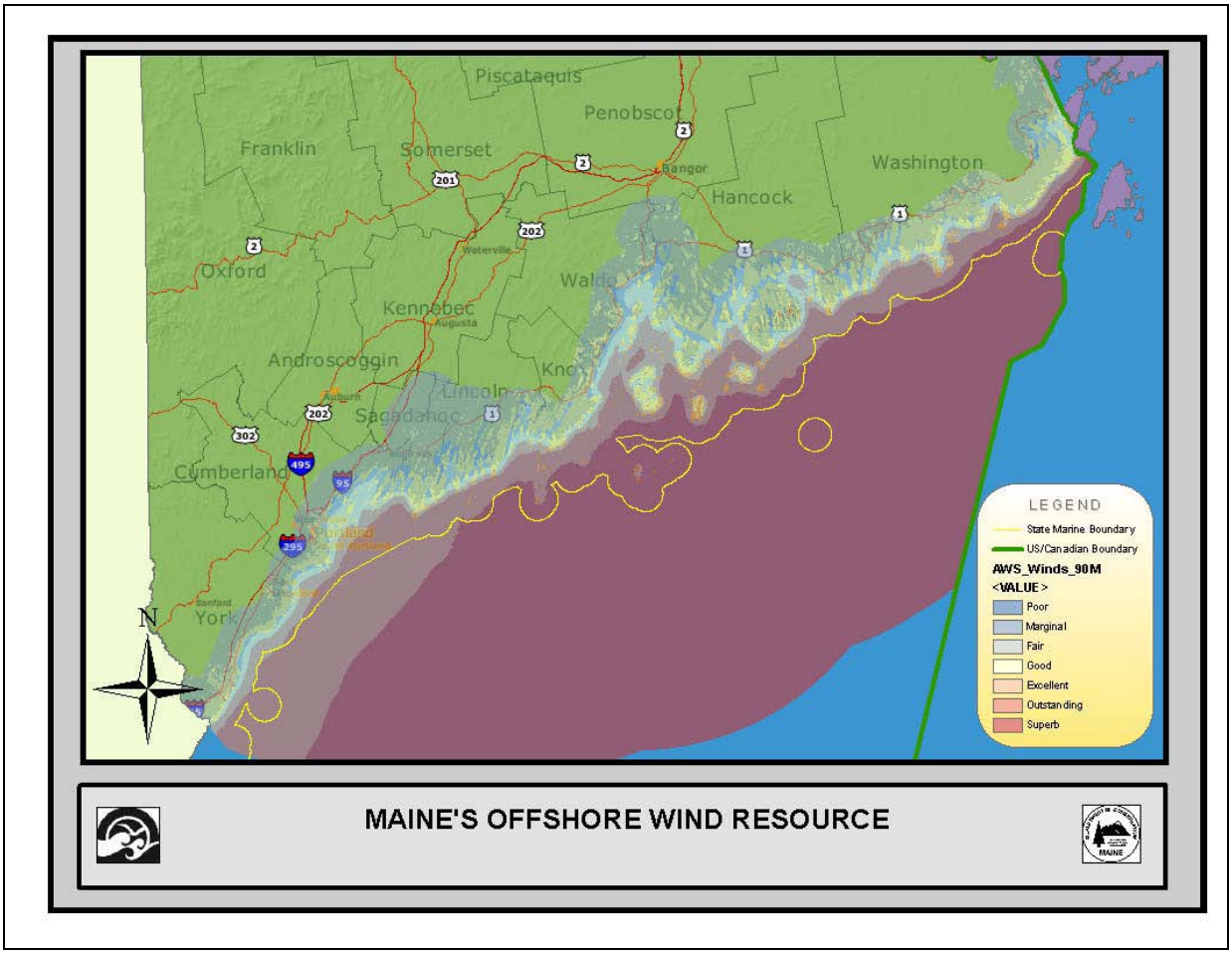
Source: USDOI BOEMRE (2010b).

Figure B-3. BOEMRE November 2010 region of interest off Maryland coast.



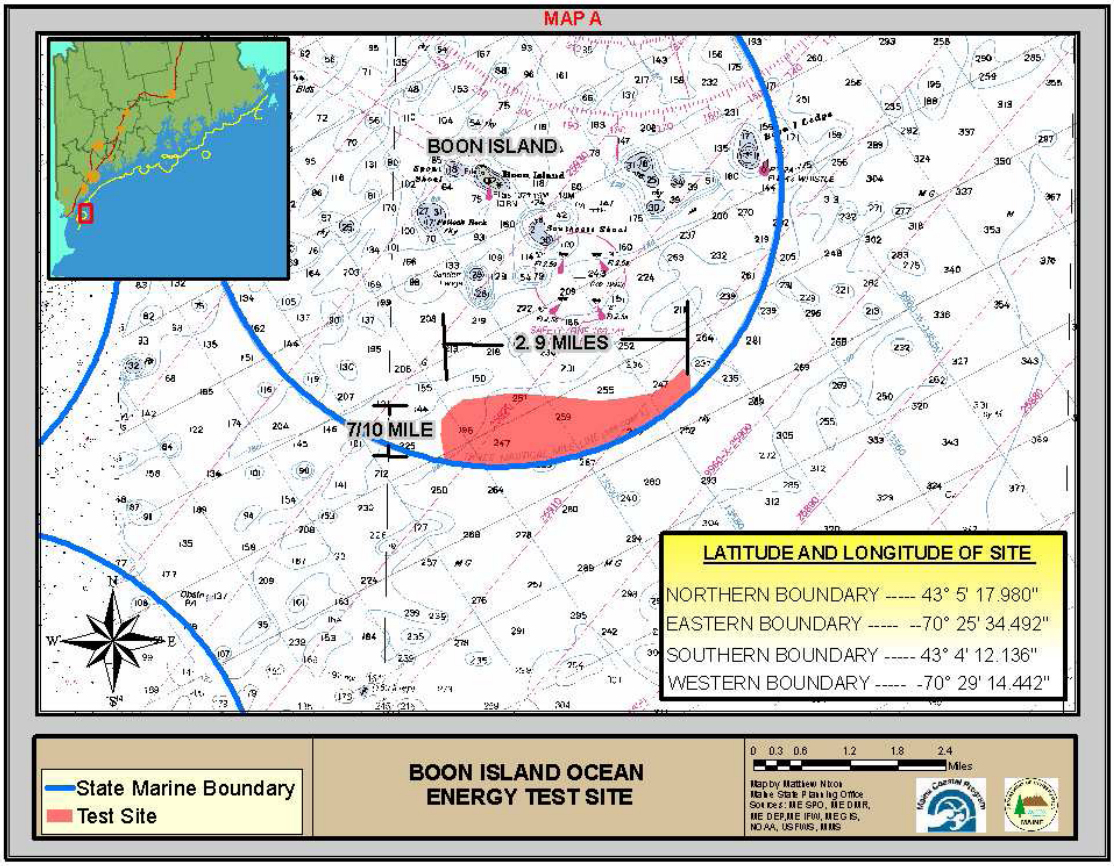
Source: RI Office of the Governor (2010).

Figure B-4. Rhode Island and Massachusetts area of mutual interest.



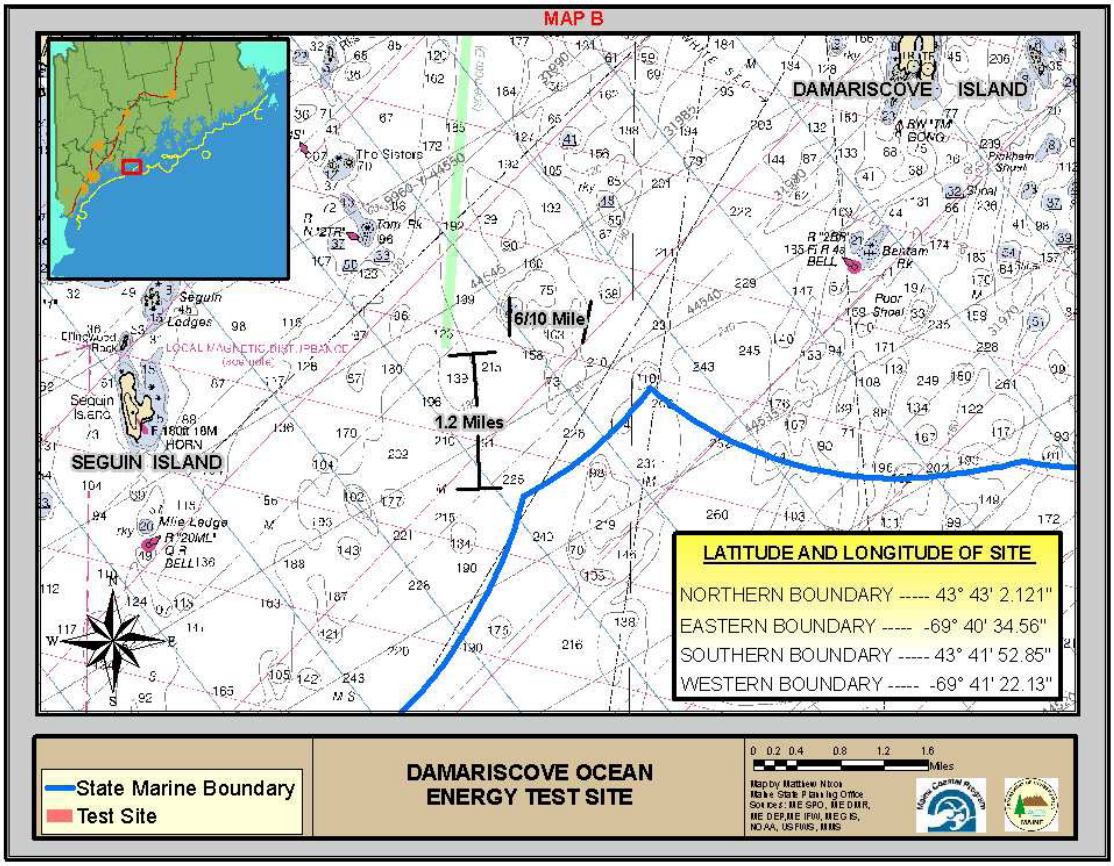
Source: ME OETF (2009).

Figure B-5. Maine's offshore wind resource.



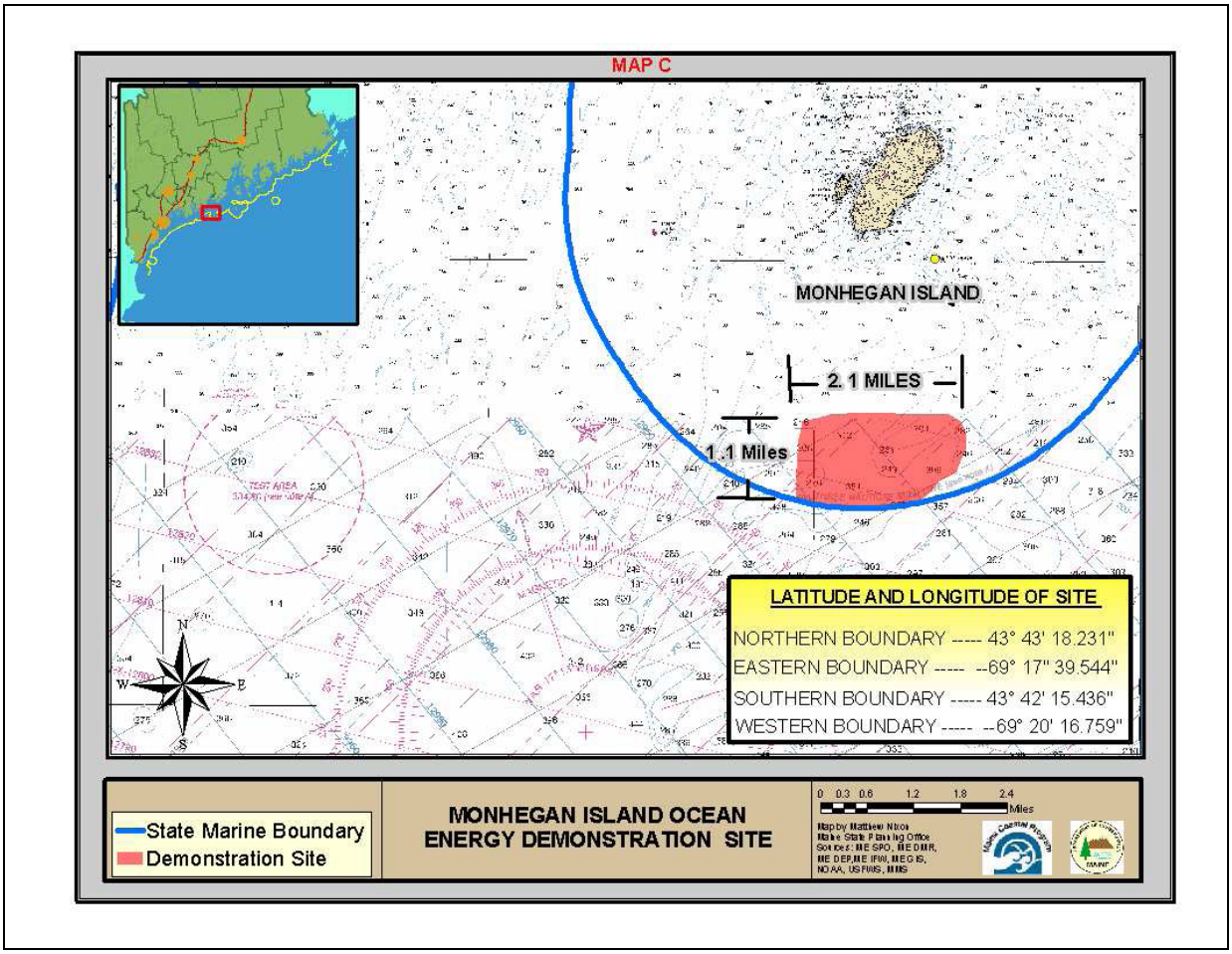
Source: ME DOC (2009).

Figure B-6. Maine Boon Island ocean energy test site.



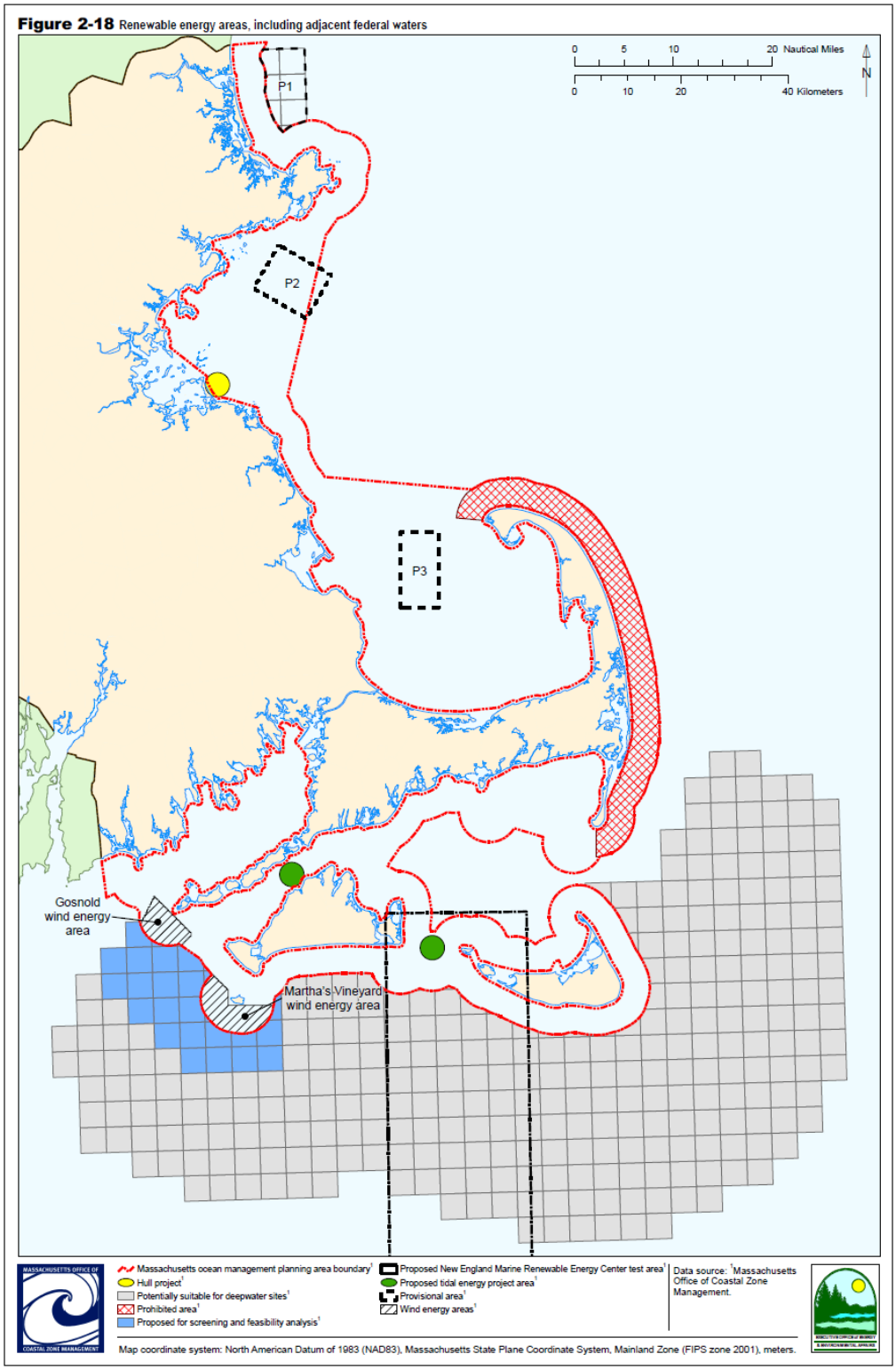
Source: ME DOC (2009).

Figure B-7. Maine Damariscove ocean energy test site.



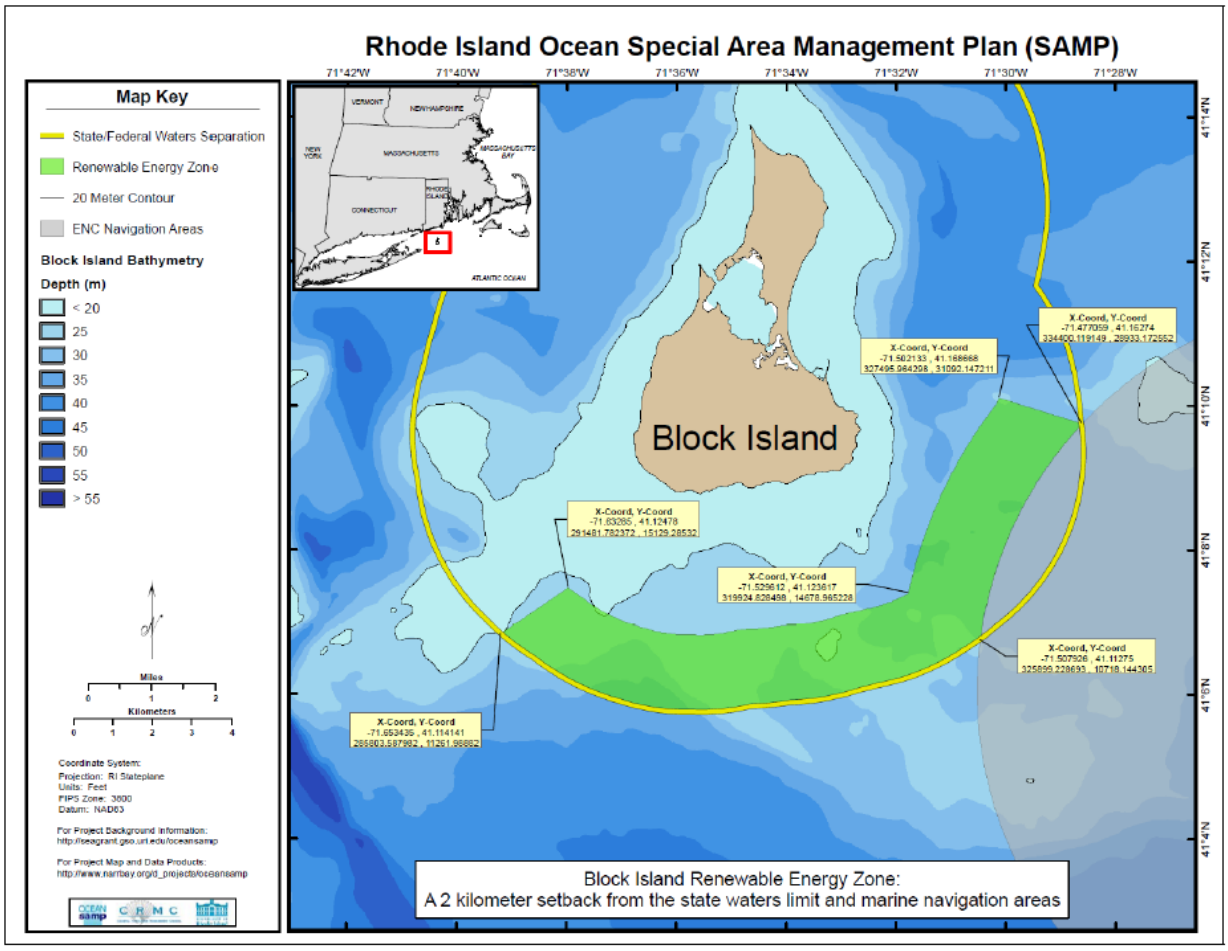
Source: ME DOC (2009).

Figure B-8. Maine Monhegan Island ocean energy test site.



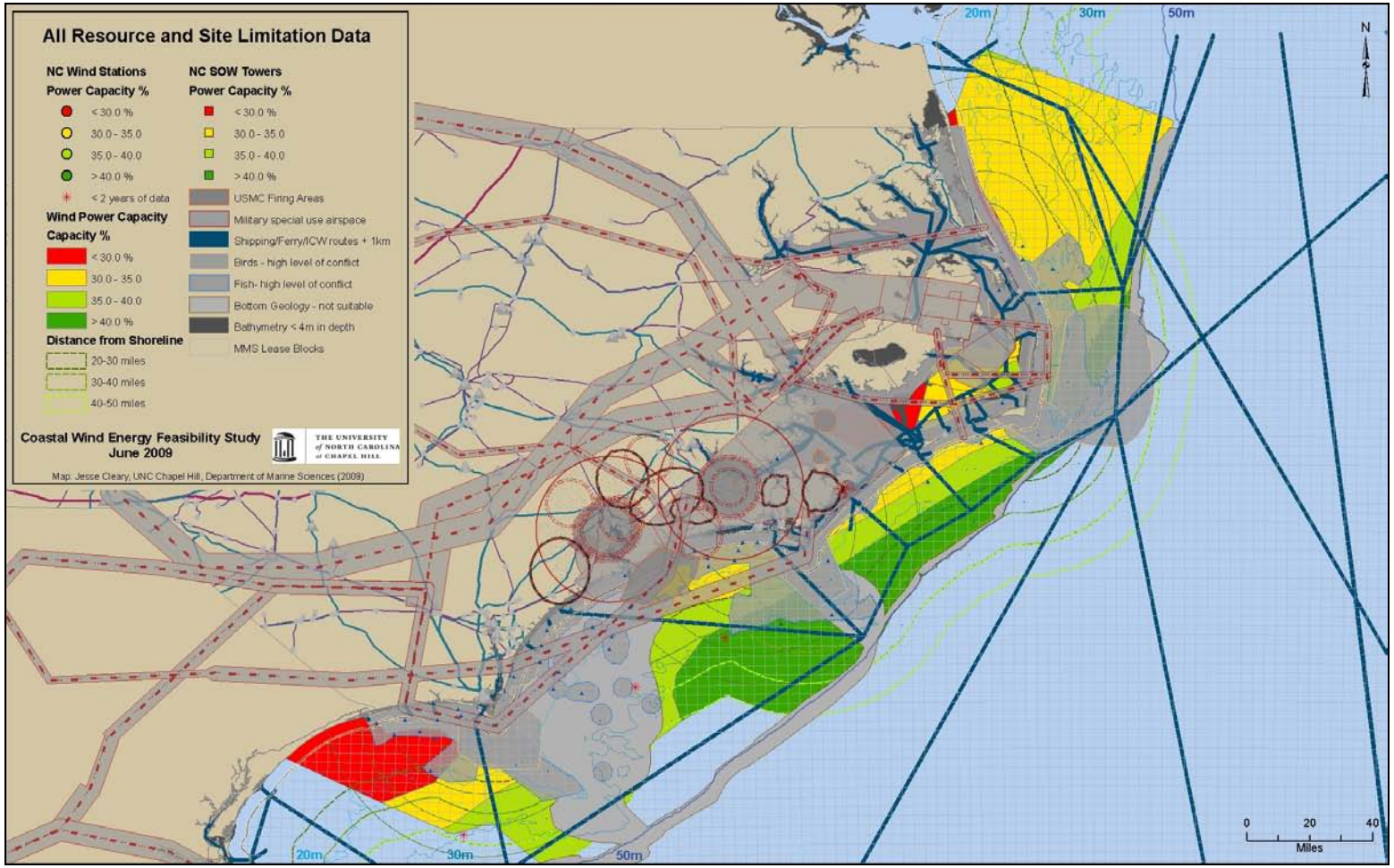
Source: MA EEA (2009), Volume 1, Figure 2-18.

Figure B-9. Massachusetts designated areas for offshore wind development.



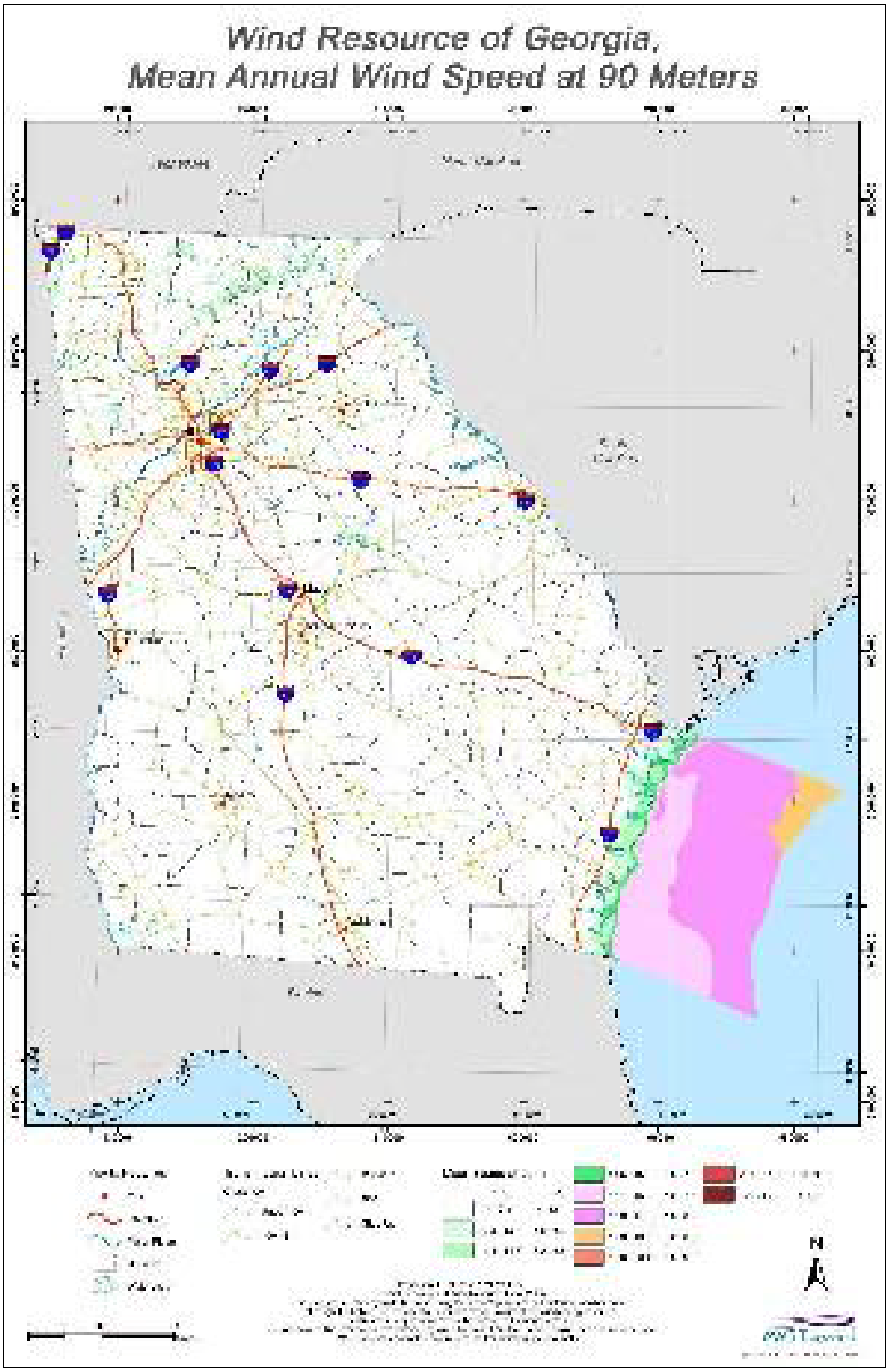
Source: RI CRMC (2010).

Figure B-10. Rhode Island Special Area Management Plan (SAMP) renewable energy zone.



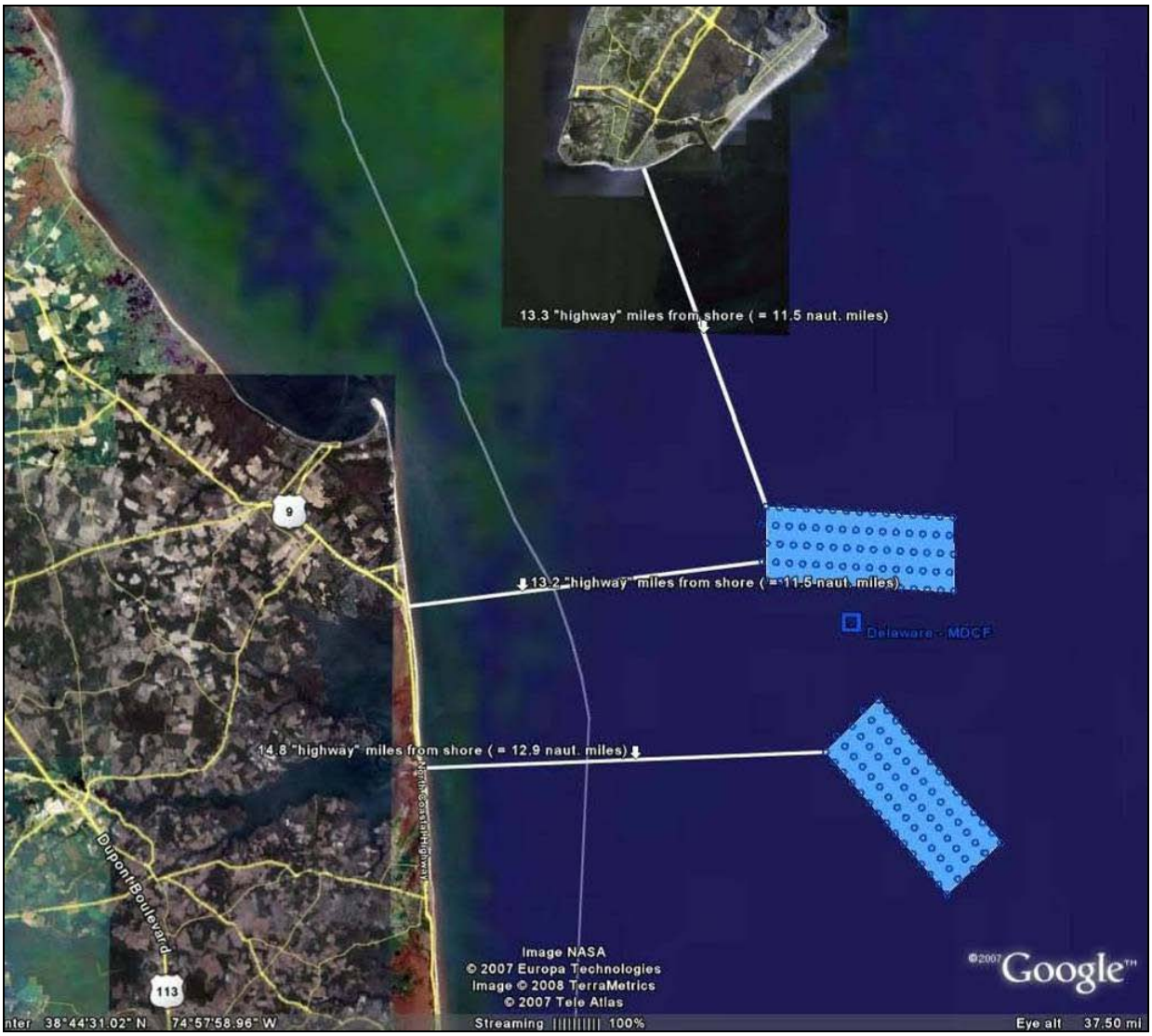
Source: UNC (2009).

Figure B-11. North Carolina wind power areas and constraint areas, Albemarle and Pamlico Sounds.



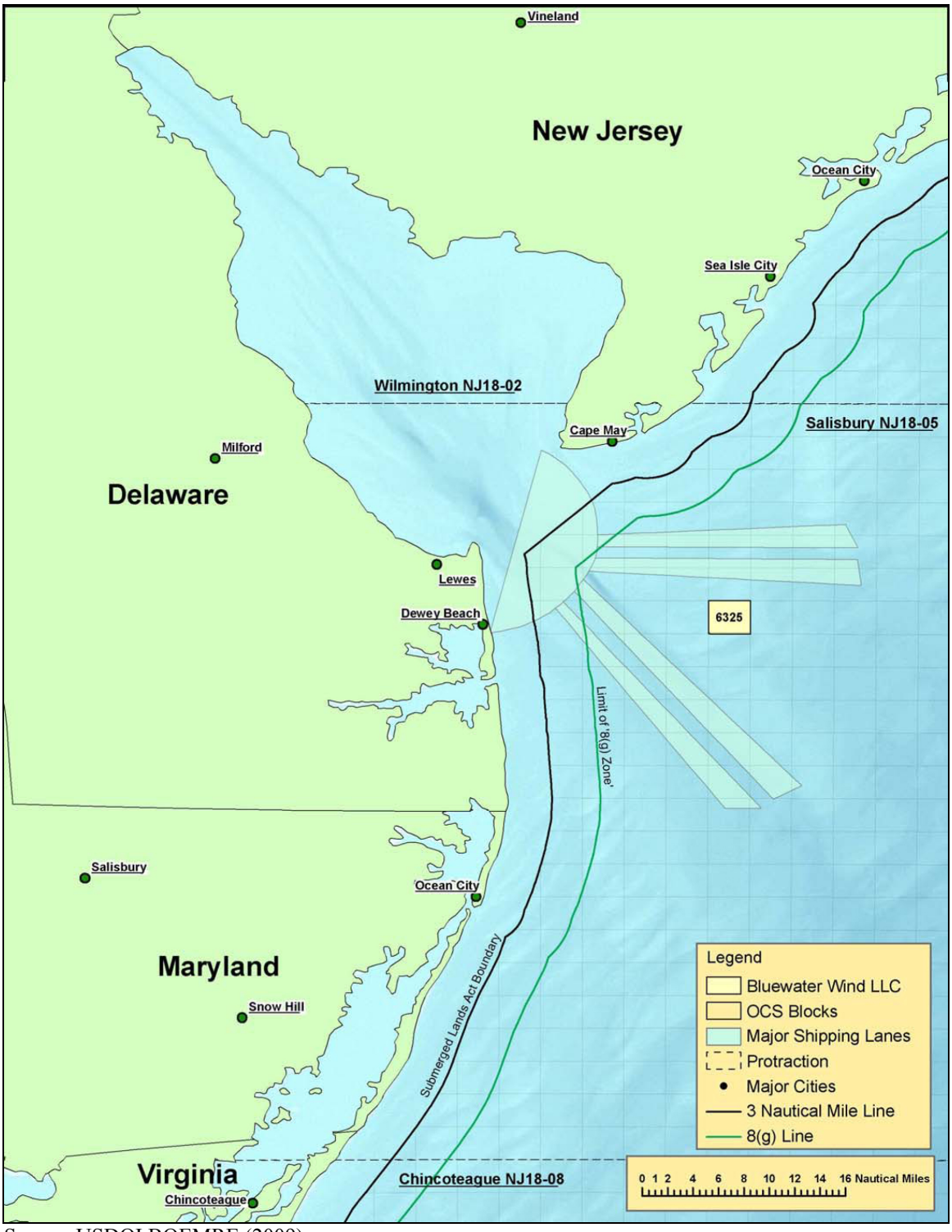
Source: GAWWG (2010).

Figure B-12. Georgia wind resources map.



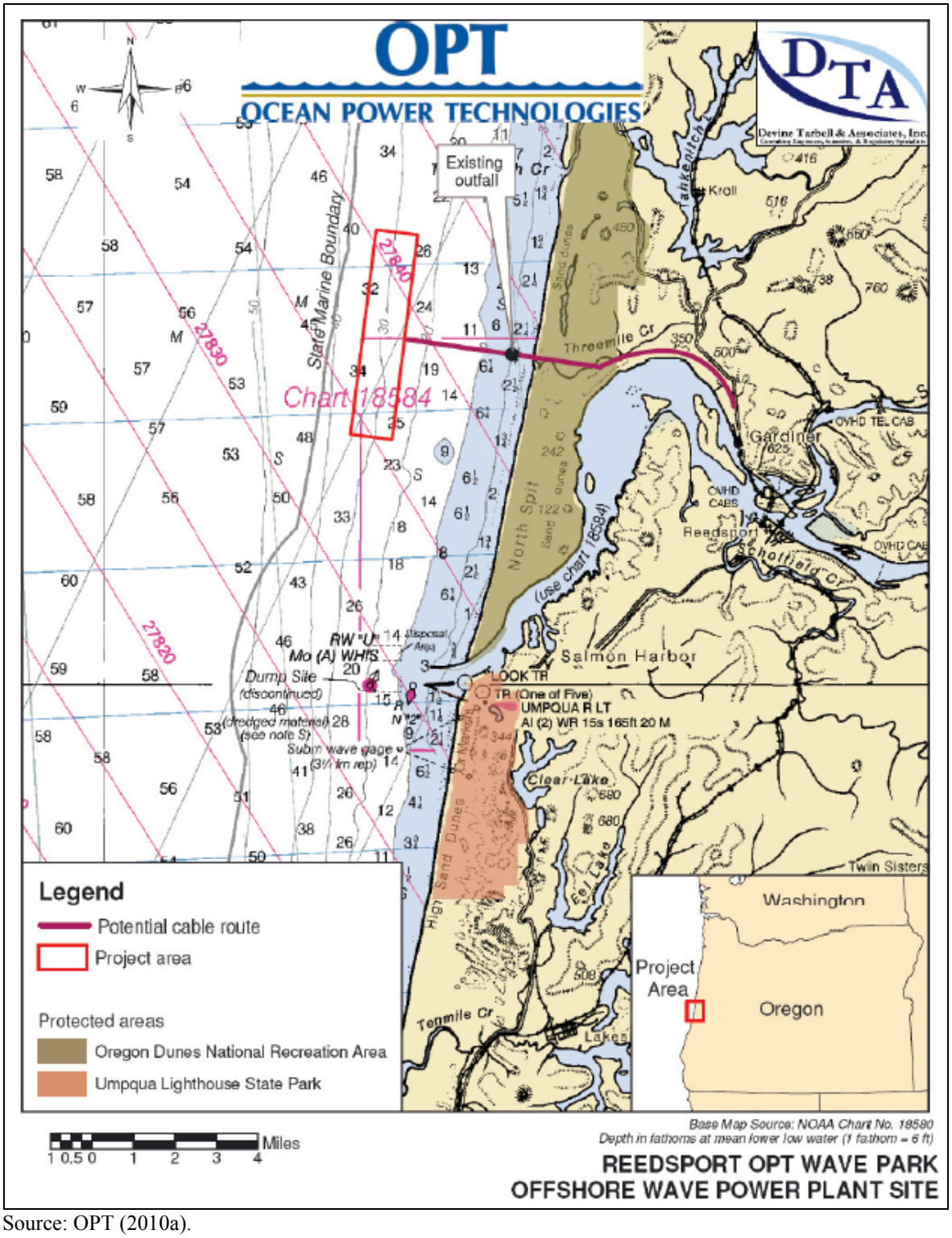
Source: Bluewater Wind (n.d.).

Figure B-13. Delaware Bluewater Wind areas of interest.



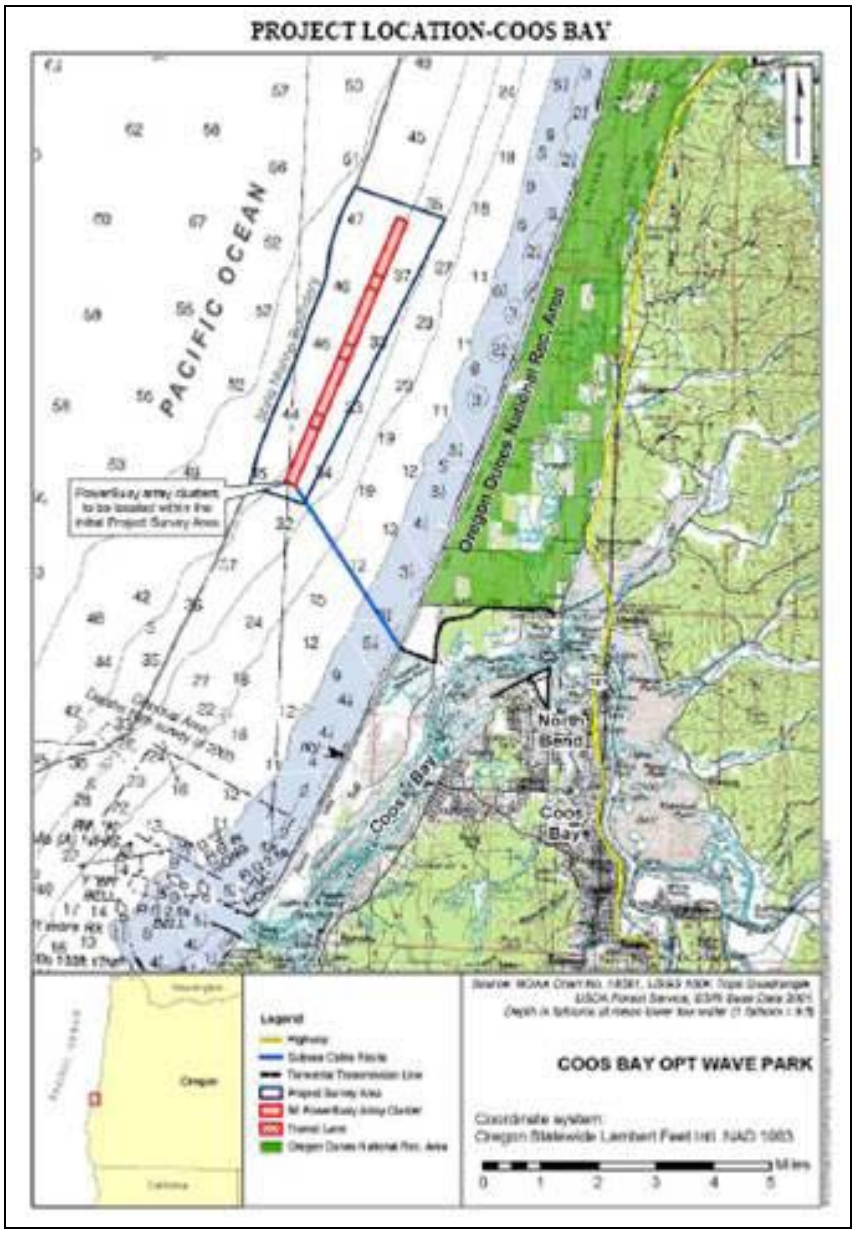
Source: USDOI BOEMRE (2009).

Figure B-14. BOEMRE exploratory lease off Delaware announced June 23, 2009.



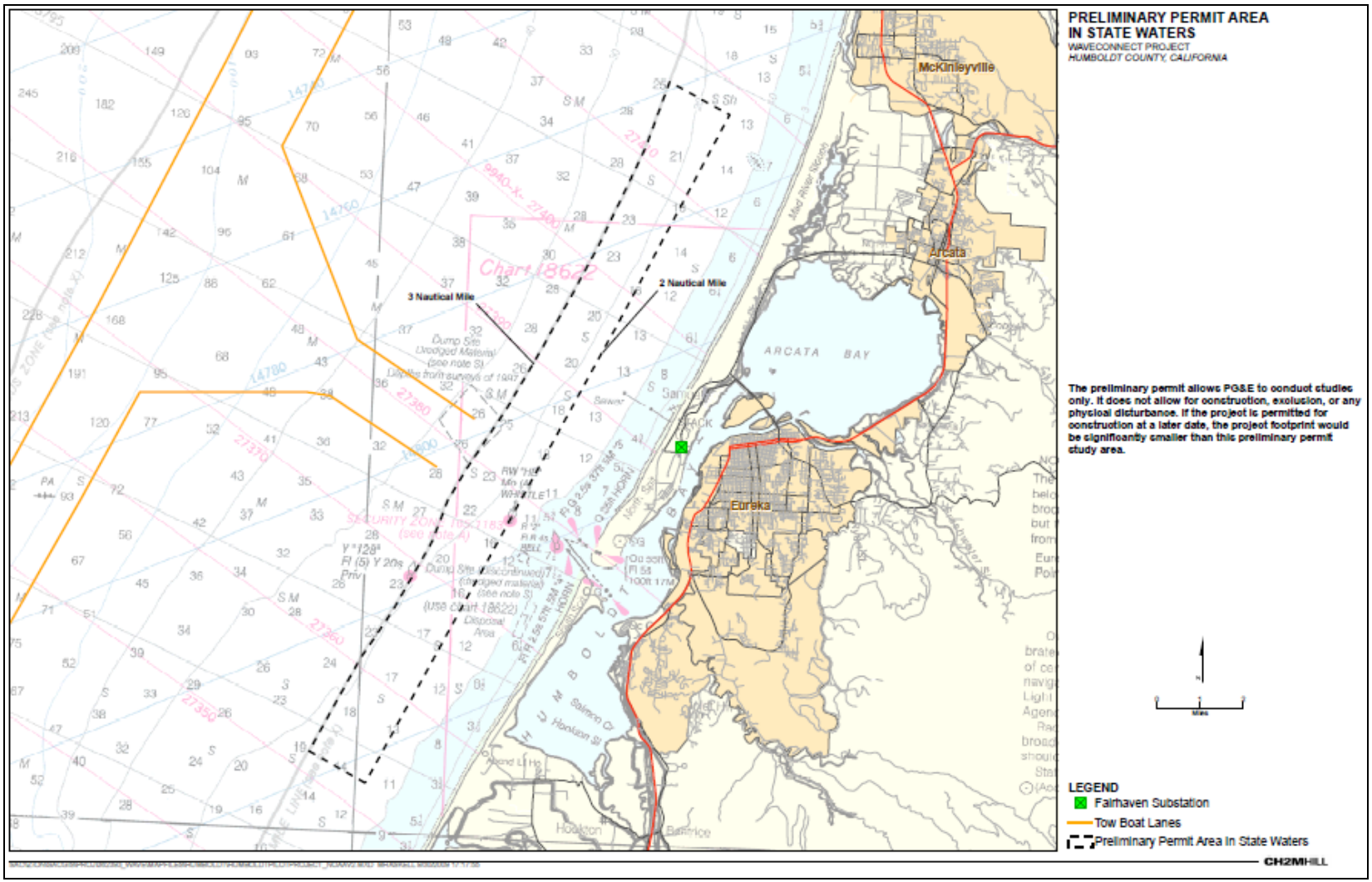
Source: OPT (2010a).

Figure B-15. Ocean Power Technologies, Inc., Reedsport OPT Wave Park, Oregon.



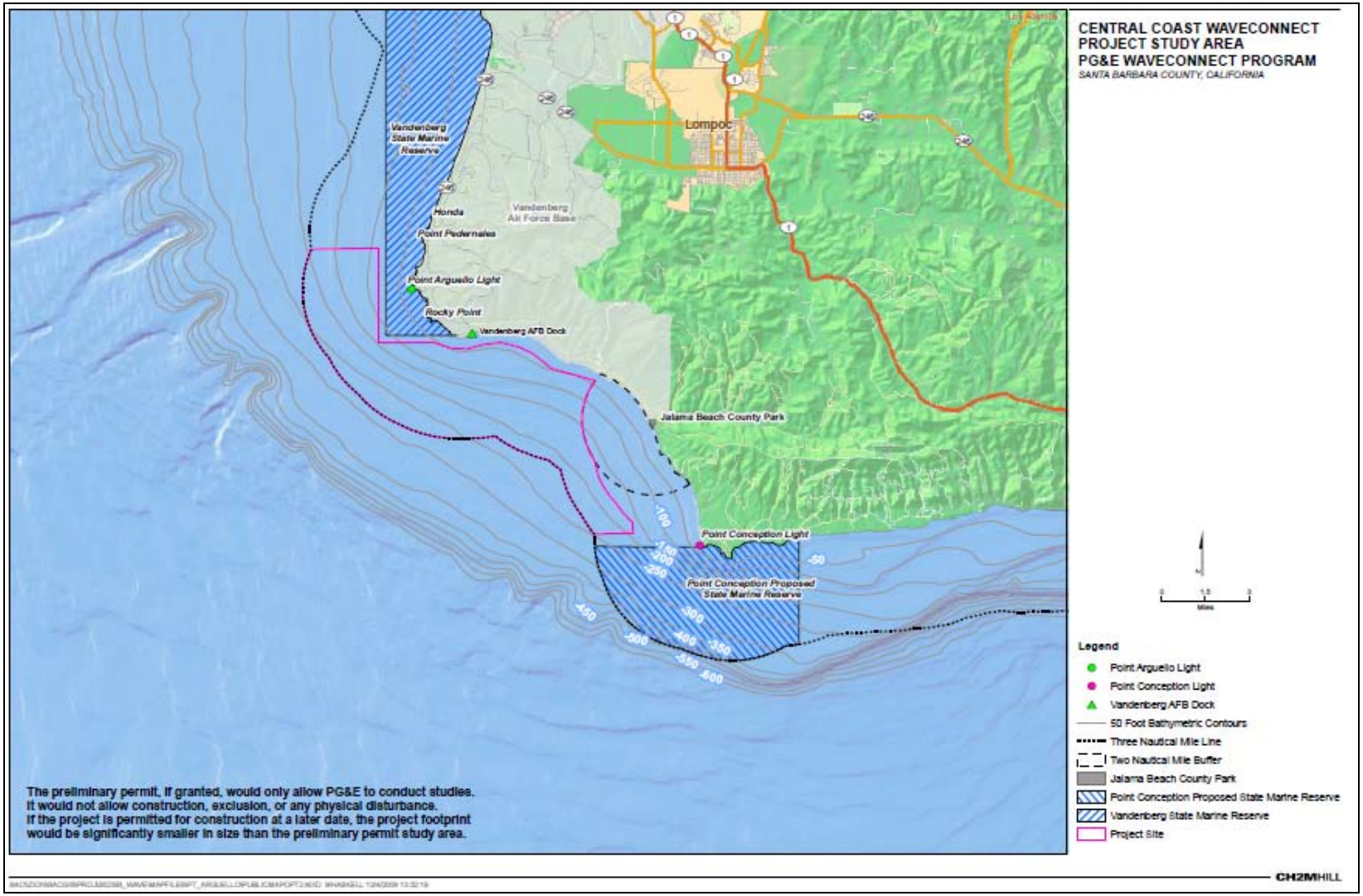
Source: OPT (2010b).

Figure B-16. Ocean Power Technologies, Inc., Coos Bay OPT Wave Park, Oregon.



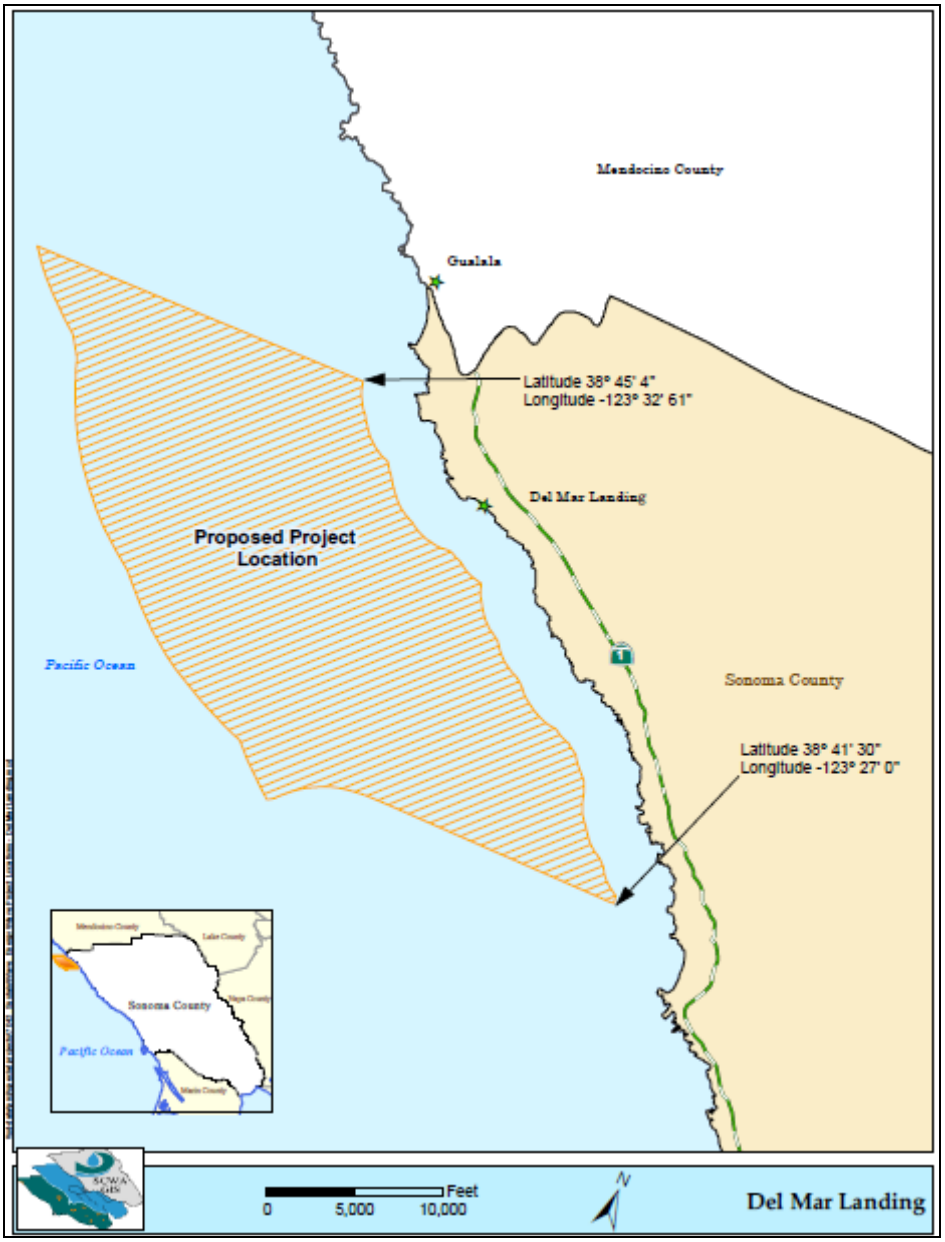
Source: PG&E (2010a).

Figure B-17. PG&E Humboldt County Wave Project, California.



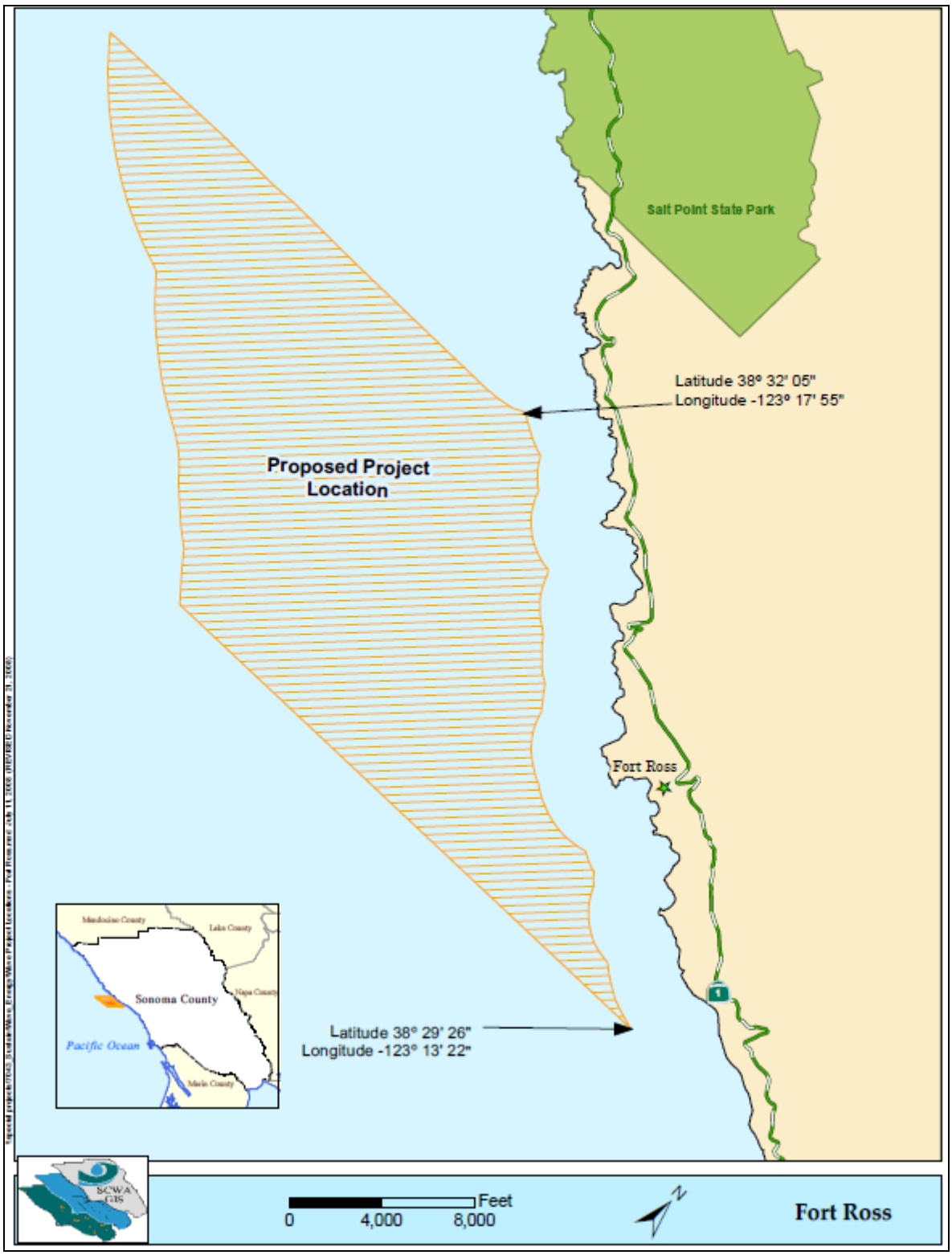
Source: PG&E (2010b).

Figure B-18. PG&E Central Coast Wave Project, California.



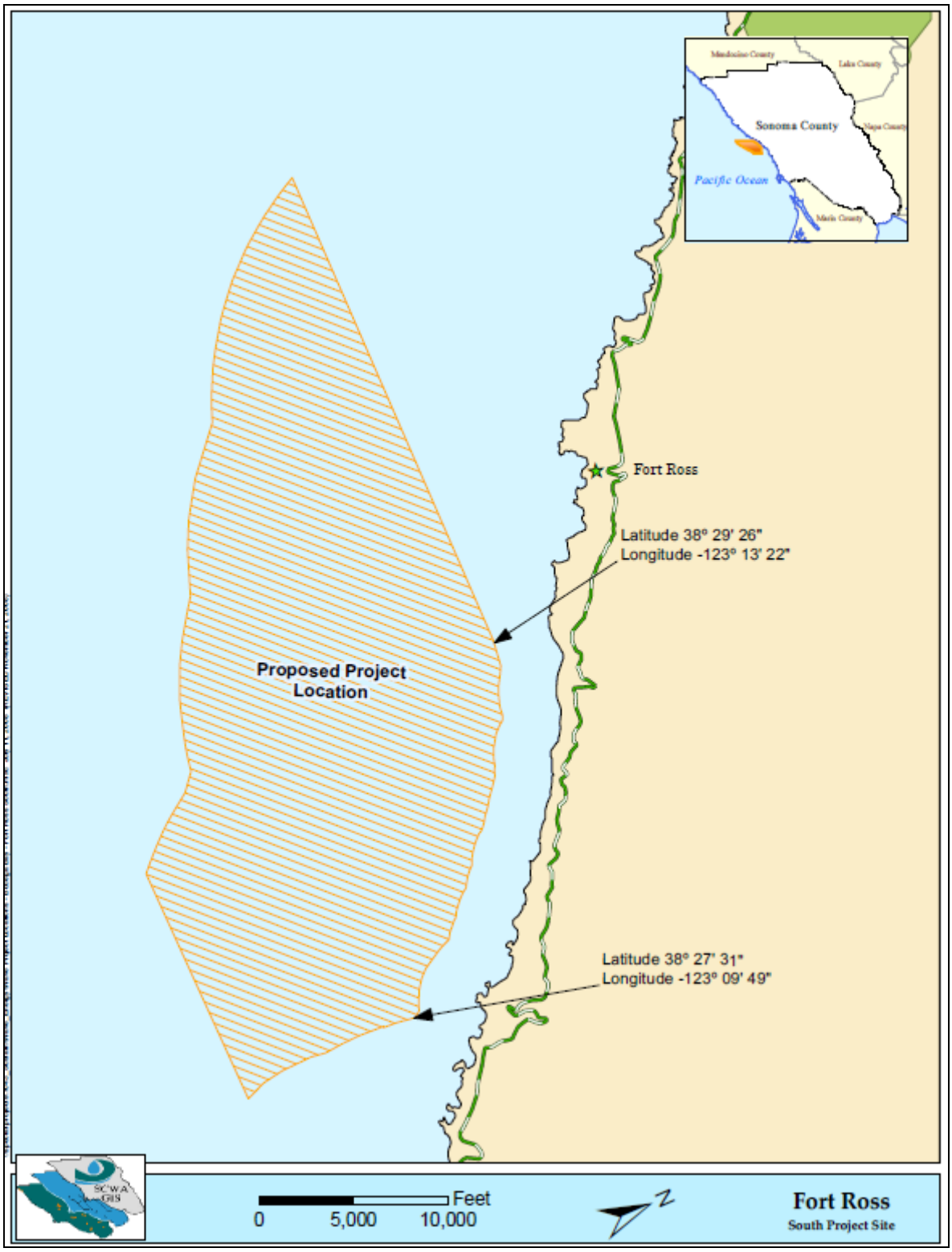
Source: SCWA (2009).

Figure B-19. Sonoma County Water Agency Sonoma County/Del Mar Landing Wave Project, California.



Source: SCWA (2009).

Figure B-20. Sonoma County Water Agency Fort Ross North Wave Project, California.

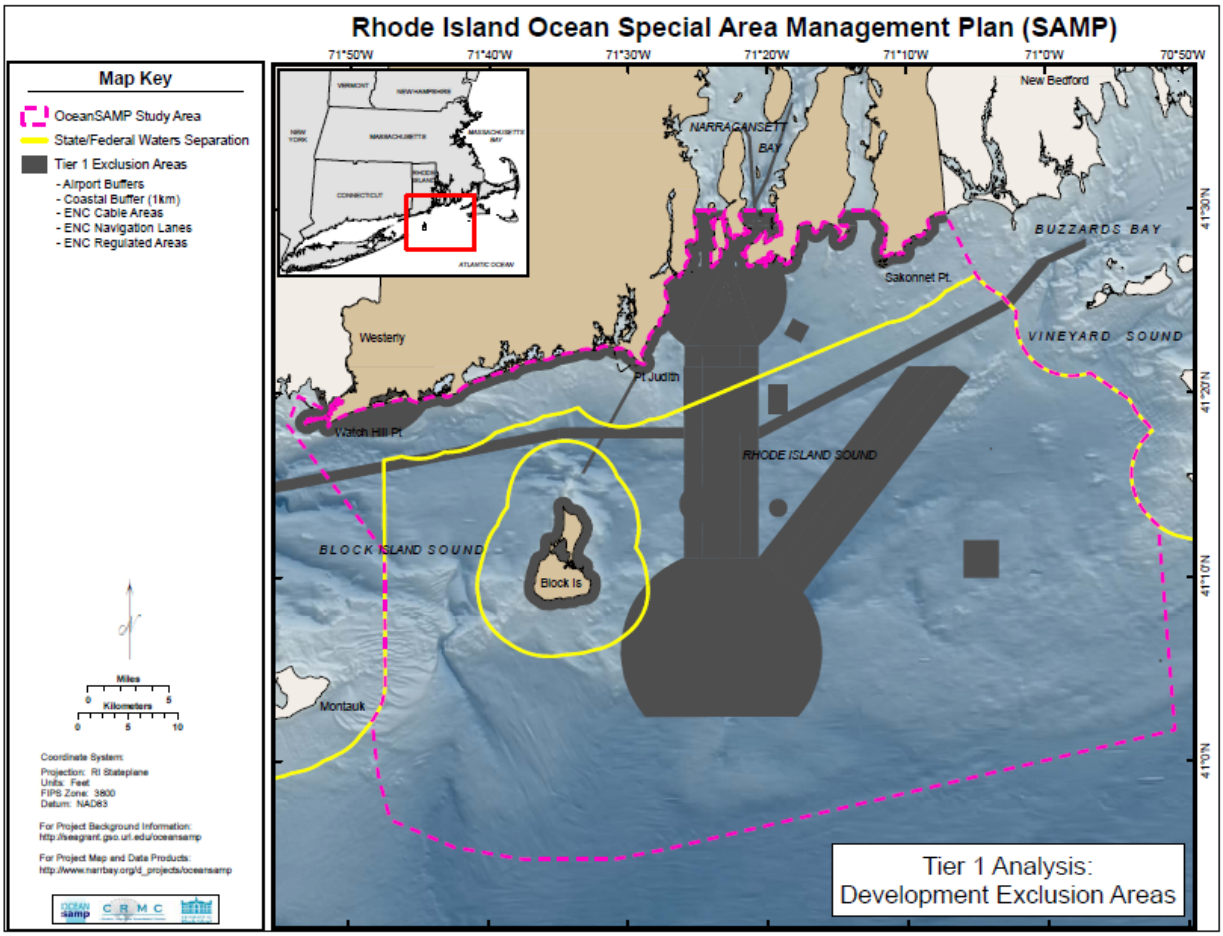


Source: SCWA (2009).

Figure B-21. Sonoma County Water Agency Fort Ross South Wave Project, California.

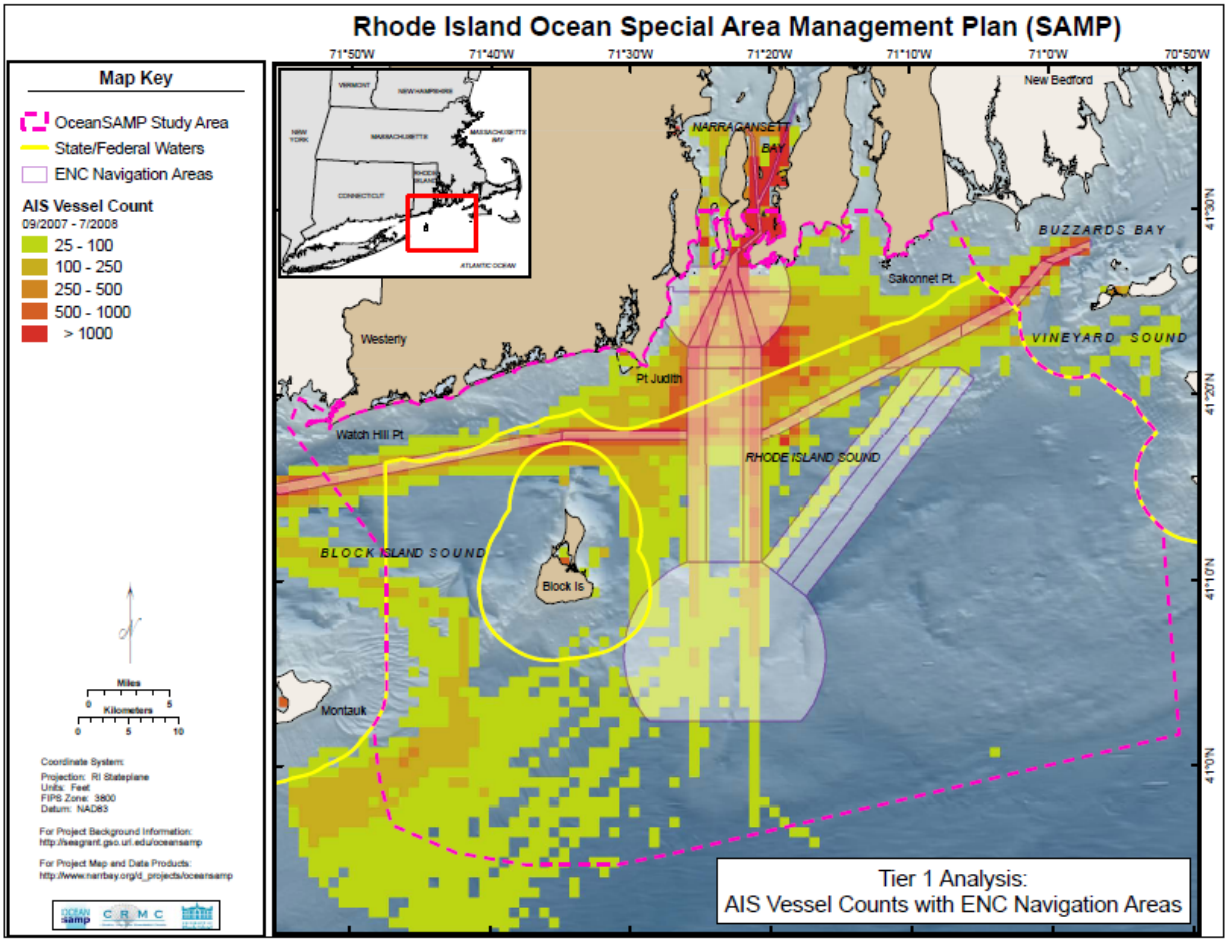
Source: MA EEA (2002).

Figure B-22. Massachusetts Areas of Critical Environmental Concern.



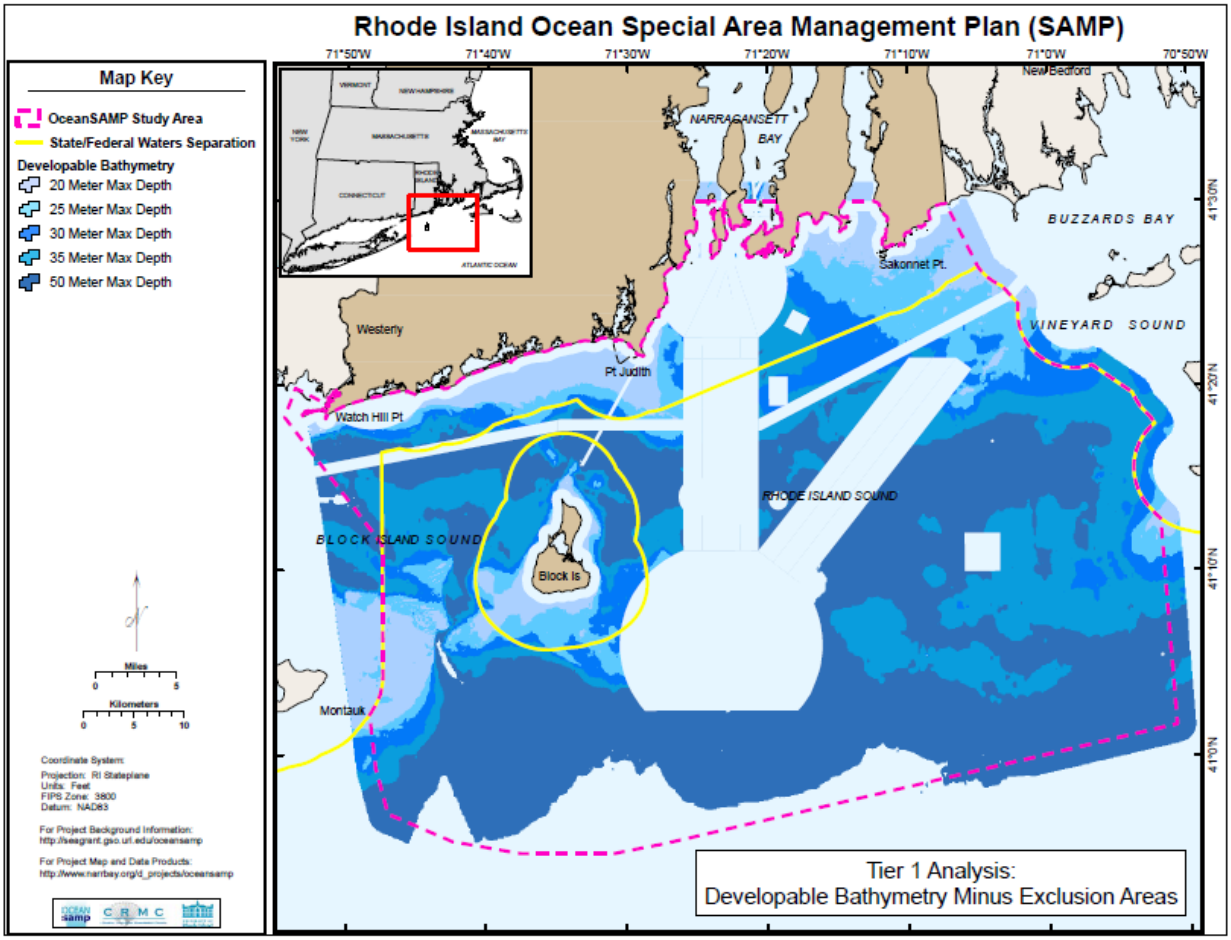
Source: NarrBay.org (2009).

Figure B-23. Rhode Island Special Area Management Plan (SAMP) Tier 1 analysis: development exclusion areas.



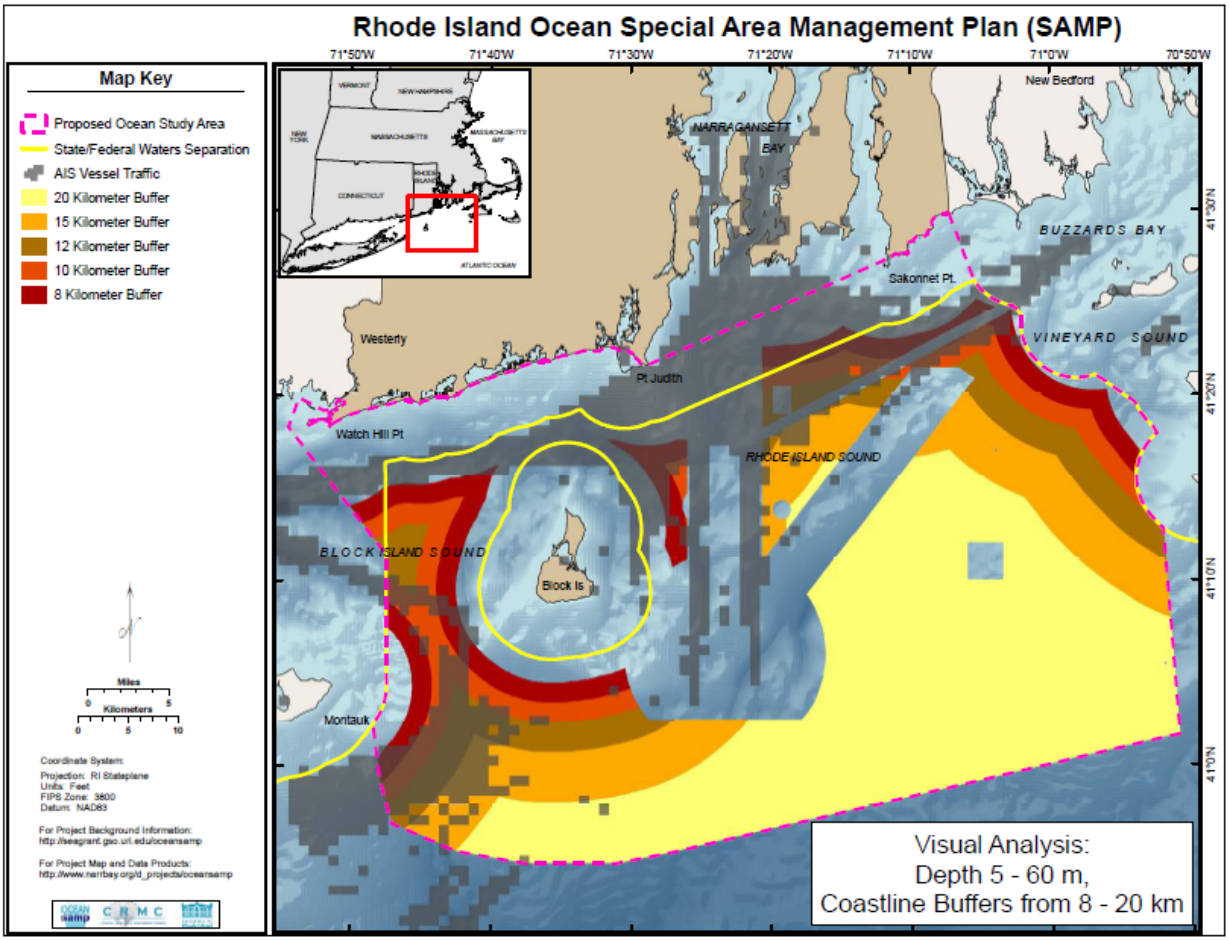
Source: NarrBay.org (2009).

Figure B-24. Rhode Island Special Area Management Plan (SAMP) Tier 1 analysis: vessel counts and navigation areas.



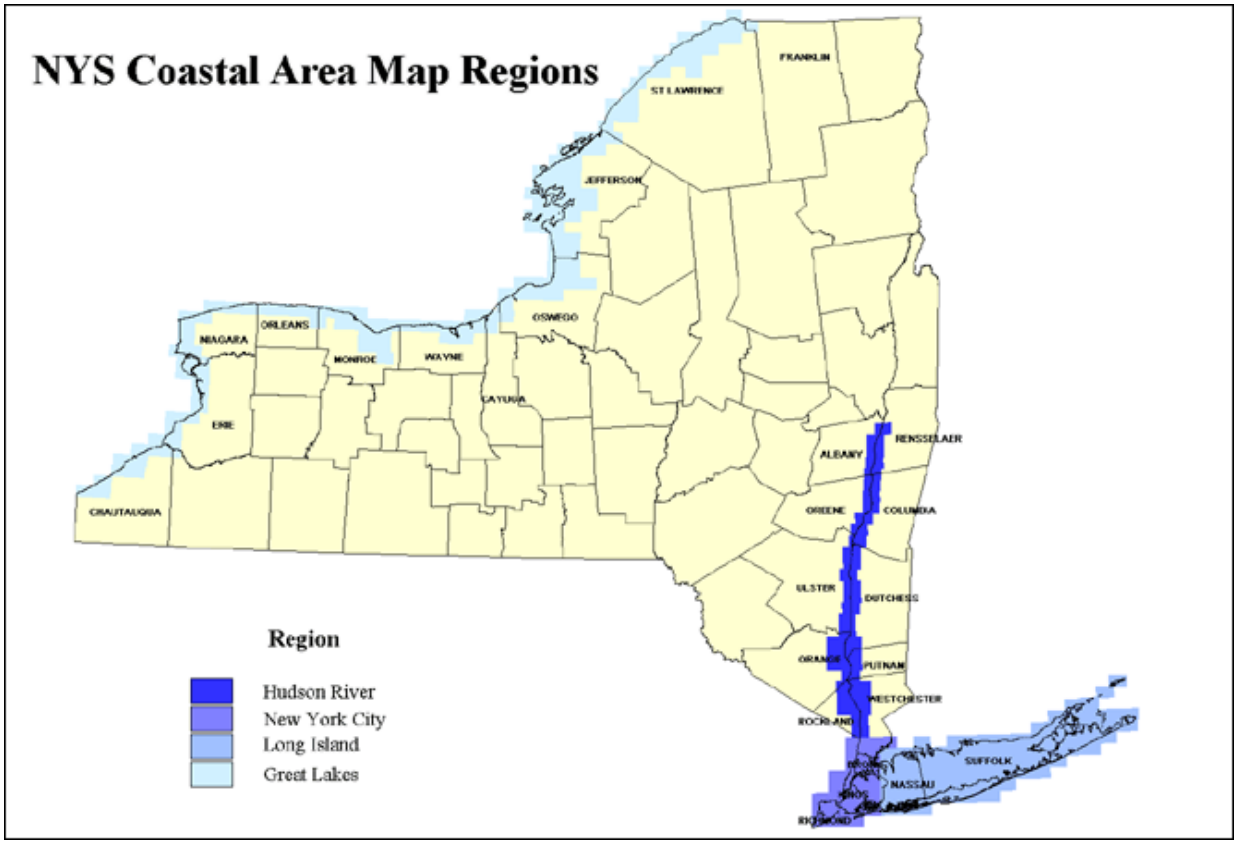
Source: NarrBay.org (2009).

Figure B-25. Rhode Island Special Area Management Plan (SAMP) Tier 1 analysis: developable bathymetry minus exclusion areas.



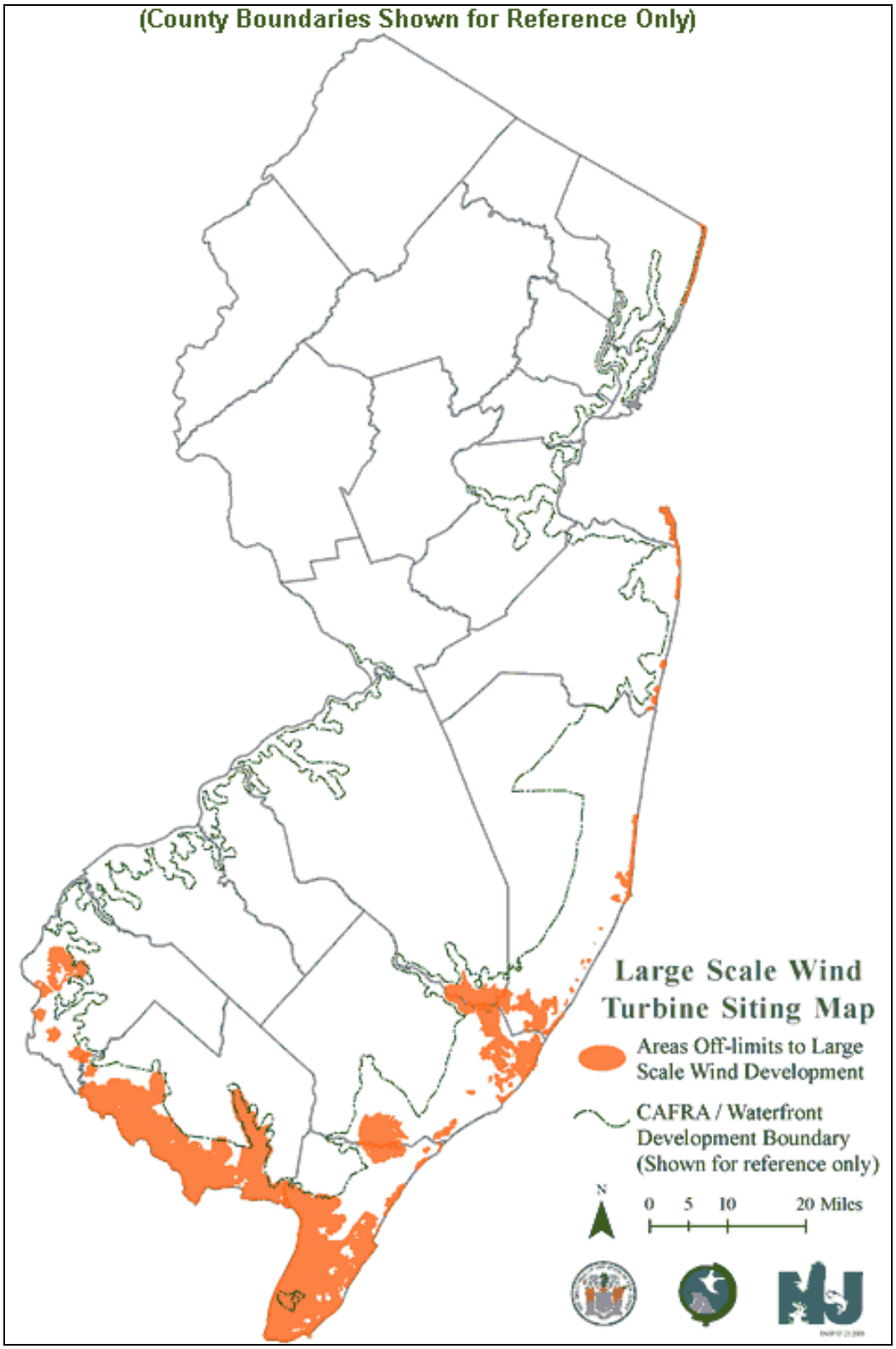
Source: NarrBay.org (2009).

Figure B-26. Rhode Island Special Area Management Plan (SAMP) Tier 1 analysis: visual analysis and vessel traffic.



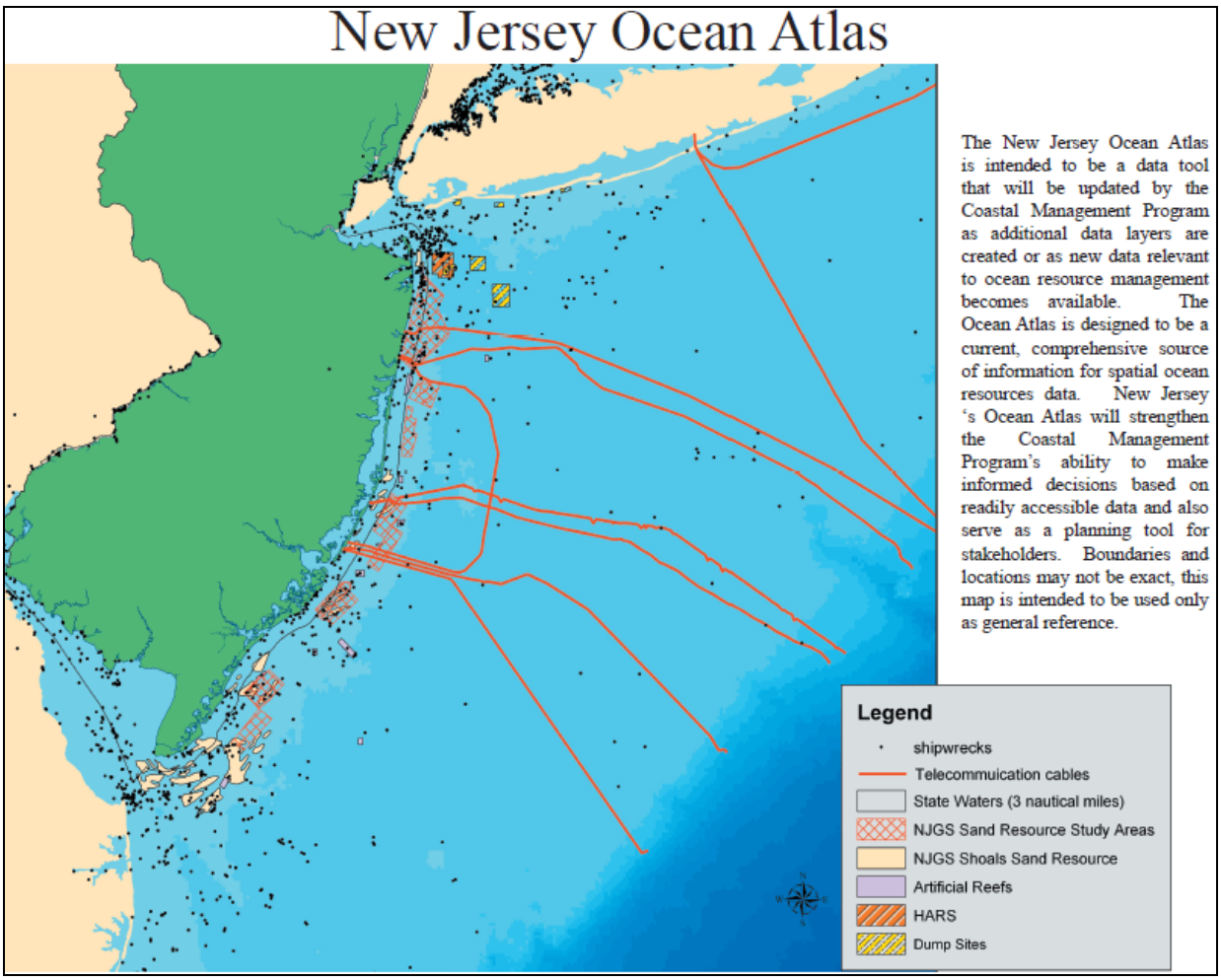
Source: Division of Coastal Resources (2010).

Figure B-27. New York state coastal regions.



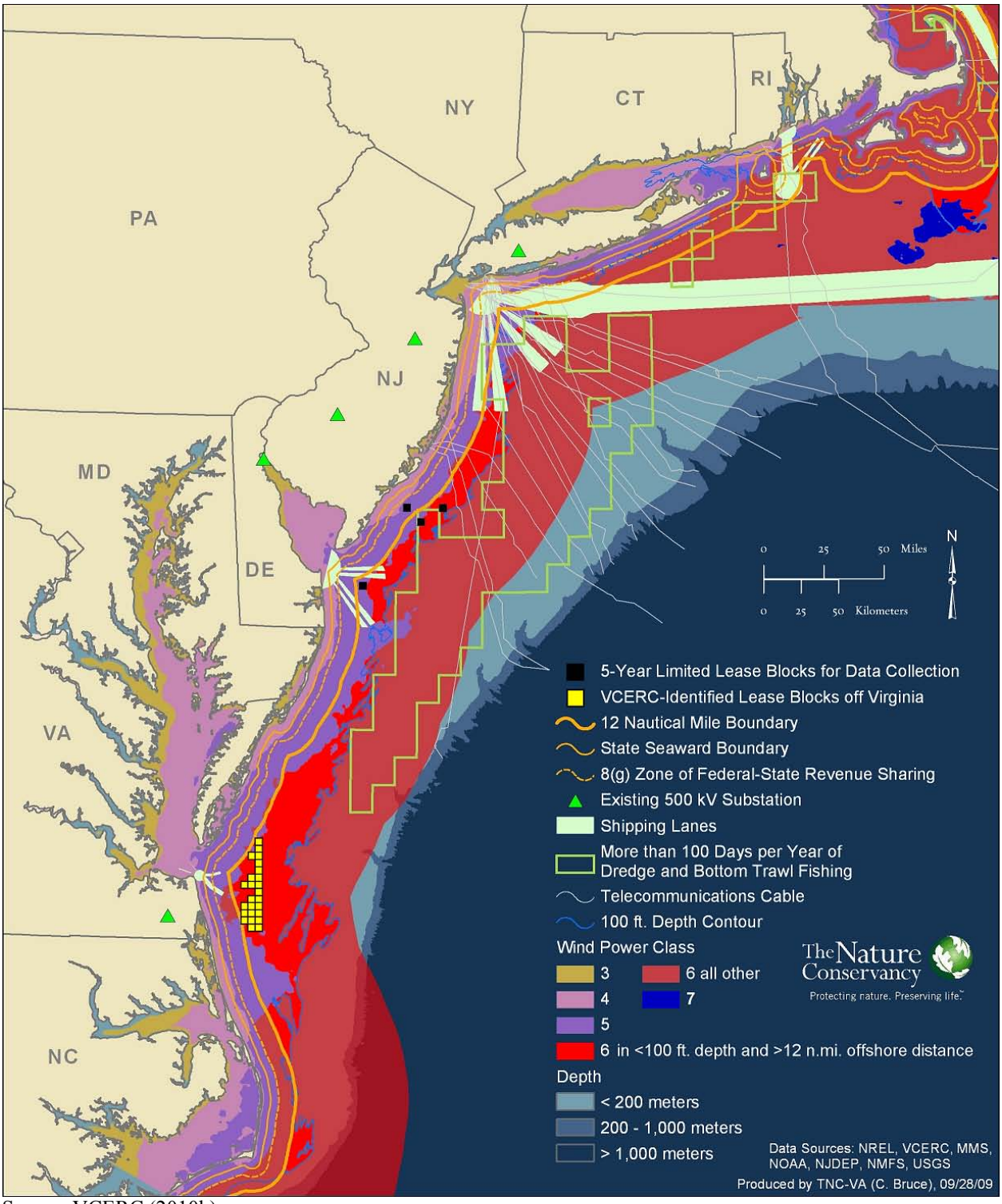
Source: NJ DEP (2009).

Figure B-28. New Jersey areas off limits to large-scale wind turbines.



Source: NJ DEP (n.d.).

Figure B-29. New Jersey Ocean Atlas.



Source: VCERC (2010b).

Figure B-30. OCS lease blocks off Virginia Coast suitable for commercial wind power development.

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Appendix C
State Coastal Zone Management Contacts

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New Jersey	Mr. Kevin Hassell Kevin.Hassell@dep.state.nj.us 609-633-2201 Coastal Management Office Department of Environment Protection 401 East State Street, 7th Floor/PO Box 418 Trenton, NJ 08625-0418

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Virginia	Ms. Laura McKay, Program Manager lbmckay@deq.virginia.gov 804-698-4323 Virginia Coastal Program Department of Environmental Quality 629 East Main St. – 6th Floor Richmond, VA 23219
Pacific	

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California *California Coastal Commission*	Mr. Tom Luster tluster@coastal.ca.gov 415- 904-5248 California Coastal Commission 45 Fremont St., Suite 2000 San Francisco, CA 94105
California *San Francisco Bay Conservation and Development Commission*	Mr. Tim Eichenberg teichenberg@bcdc.ca.gov 415-352-3655. Chief Counsel San Francisco Bay Conservation and Development Commission 50 California Street, Suite 2600 San Francisco, California 94111
Oregon	Mr. Greg McMurray 503-373-0050, Ex. 248 Gregory.mcmurray@state.or.us Ocean and Coastal Program Dept. of Land Conservation & Development 635 Capitol St., NE, Room 150 Salem, OR 97301
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Appendix D
Energy Infrastructure Maps

Figures D-1 through D-19 are maps showing the locations of power plants, substations, and transmission lines within a state. Power plants with no transmission lines indicate facilities that generate electricity for their own consumption, e.g., a manufacturing plant. Substations with no transmission lines indicate sites, such as a wind turbine that requires an inverter or voltage change, where the power is consumed onsite (e.g., Jiminy Peak Mountain Resort in Hancock, Massachusetts). The maps are arranged in alphabetical order by full state name (not the two-letter abbreviation).

Figures D-20 through D-38 show the numbers and locations of substations that can handle 115-kilovolt or higher transmission lines within 20 miles of the coast. The maps are arranged in alphabetical order by full state name (not the two-letter abbreviation).

The last two maps, Figures D-39 and D-40, show the congested power lines for the East and West Coasts, respectively.

The data source for all maps in Appendix D is Platts.

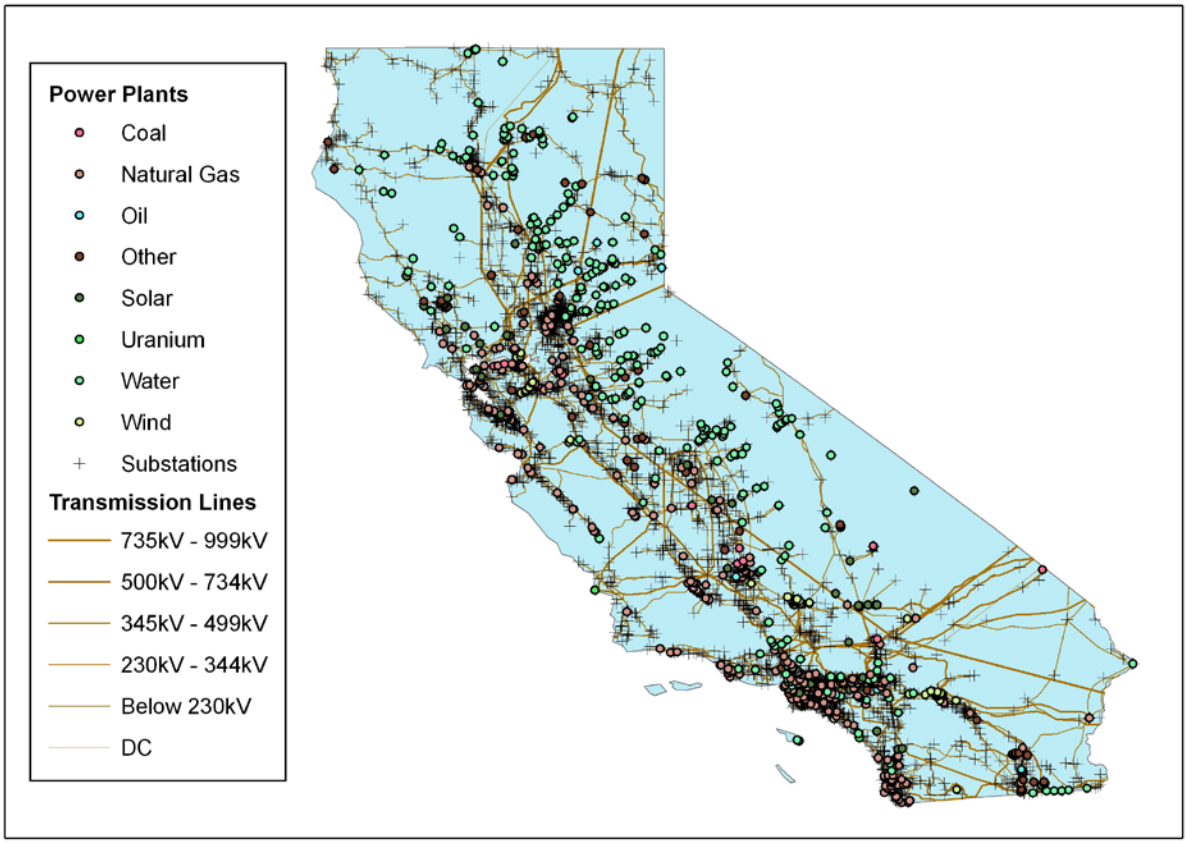


Figure D-1. California power plants, substations, and transmission lines.

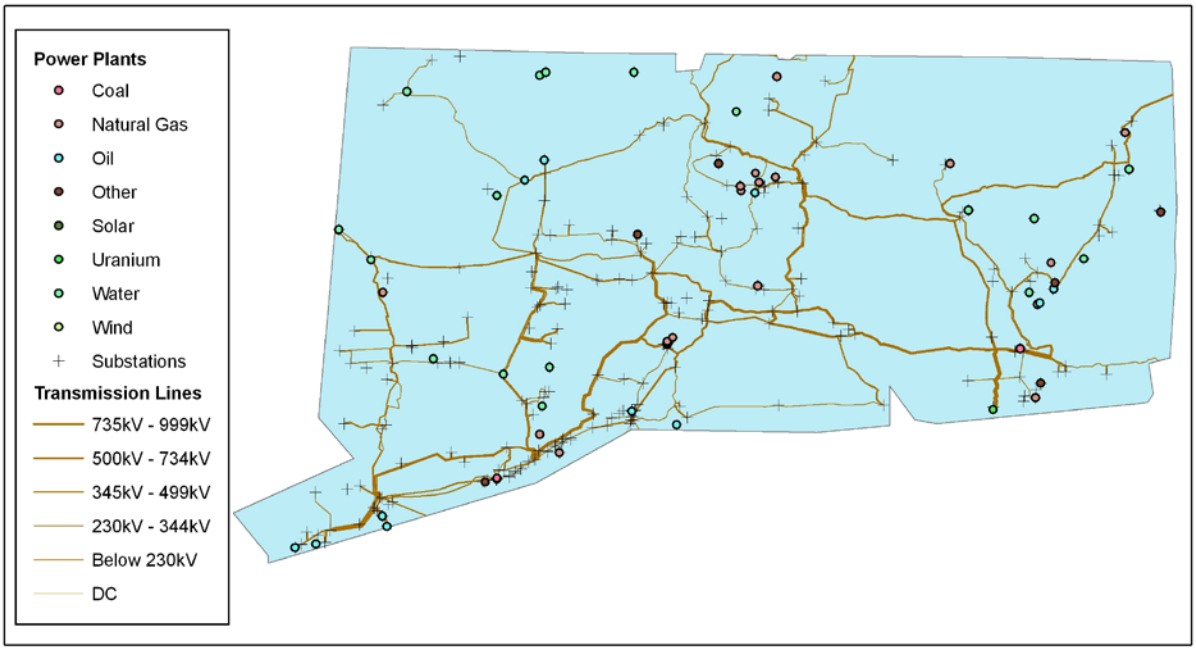


Figure D-2. Connecticut power plants, substations, and transmission lines.

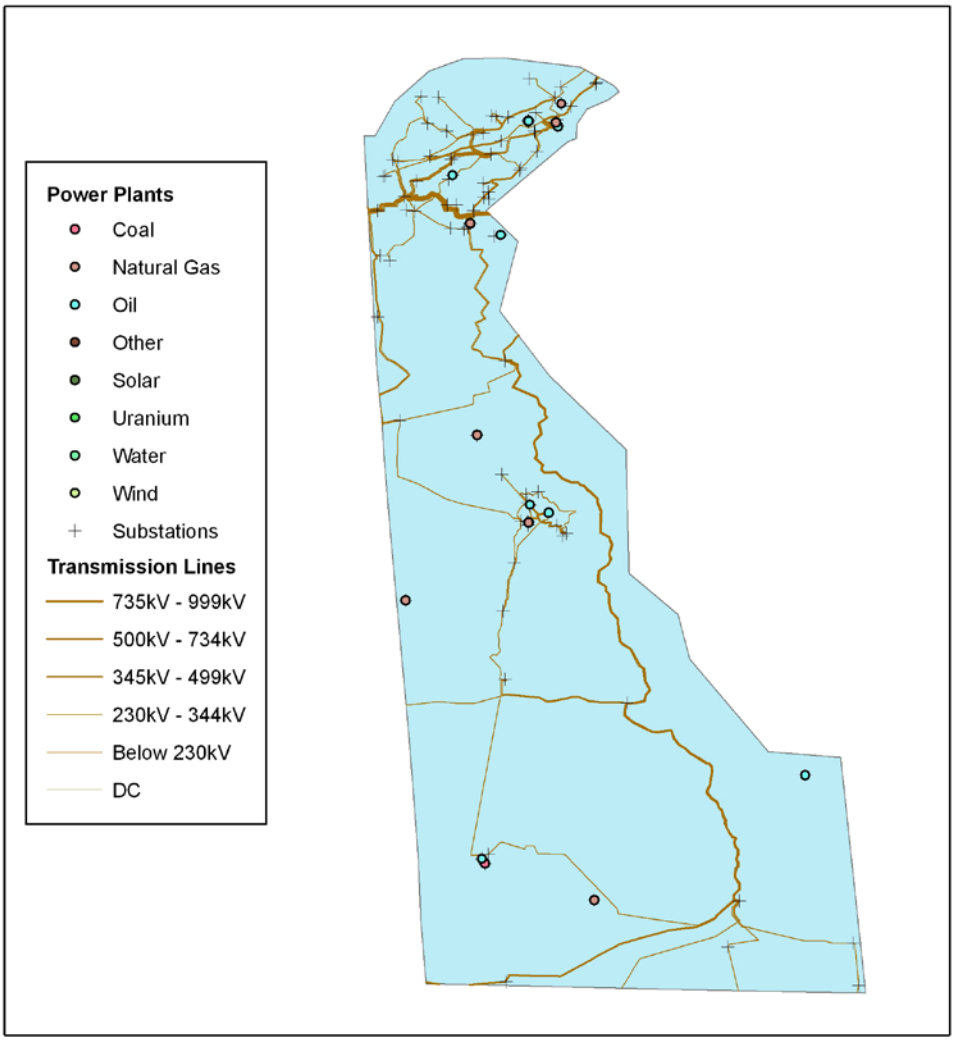


Figure D-3. Delaware power plants, substations, and transmission lines.

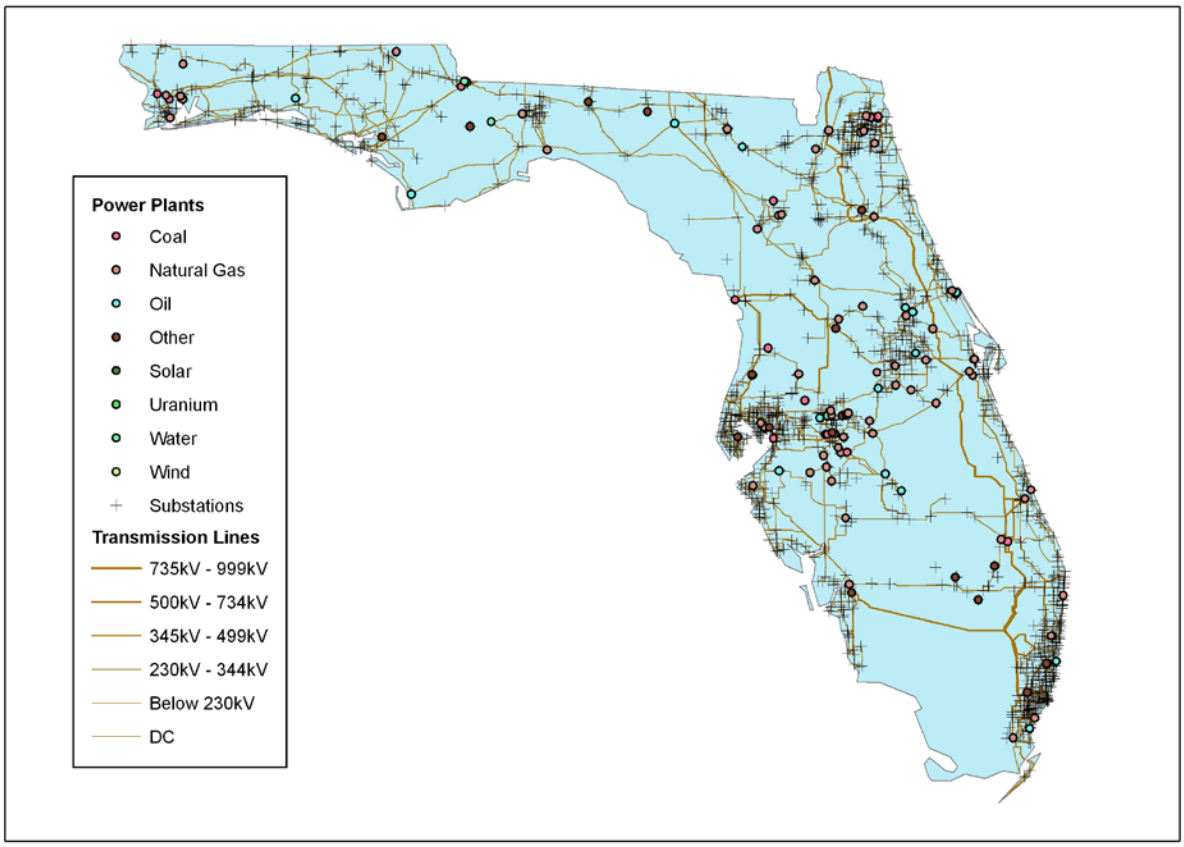


Figure D-4. Florida power plants, substations, and transmission lines.

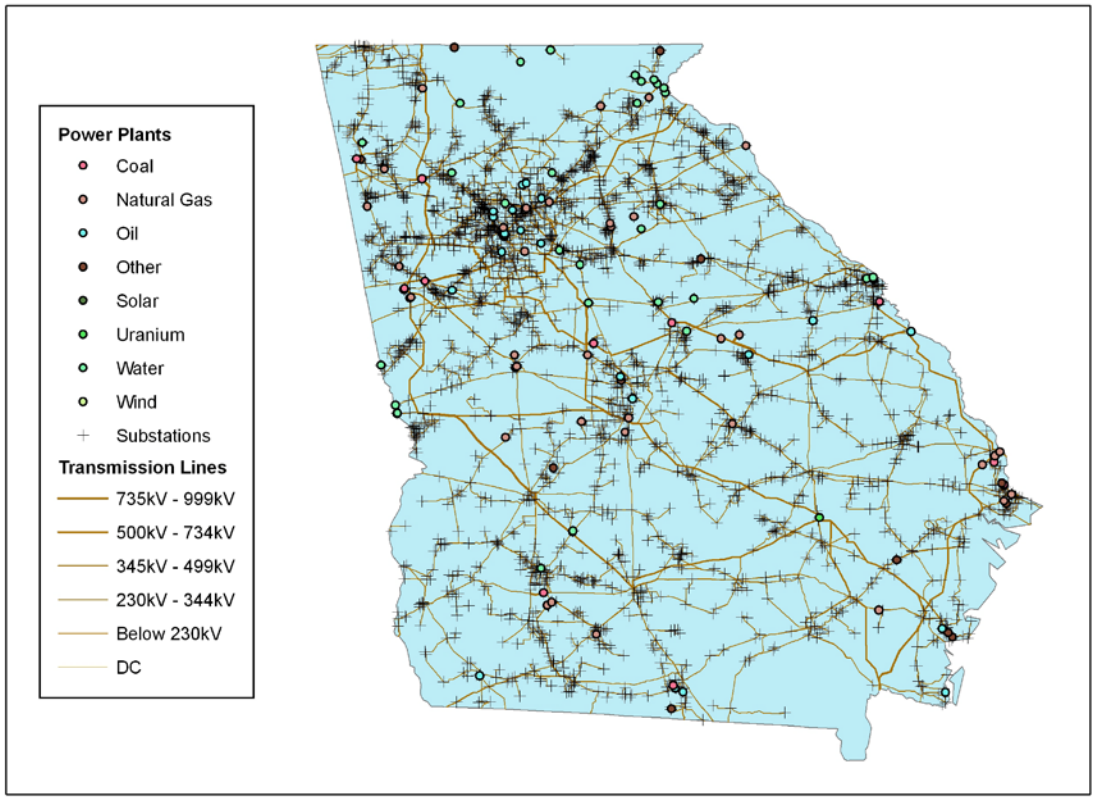


Figure D-5. Georgia power plants, substations, and transmission lines.

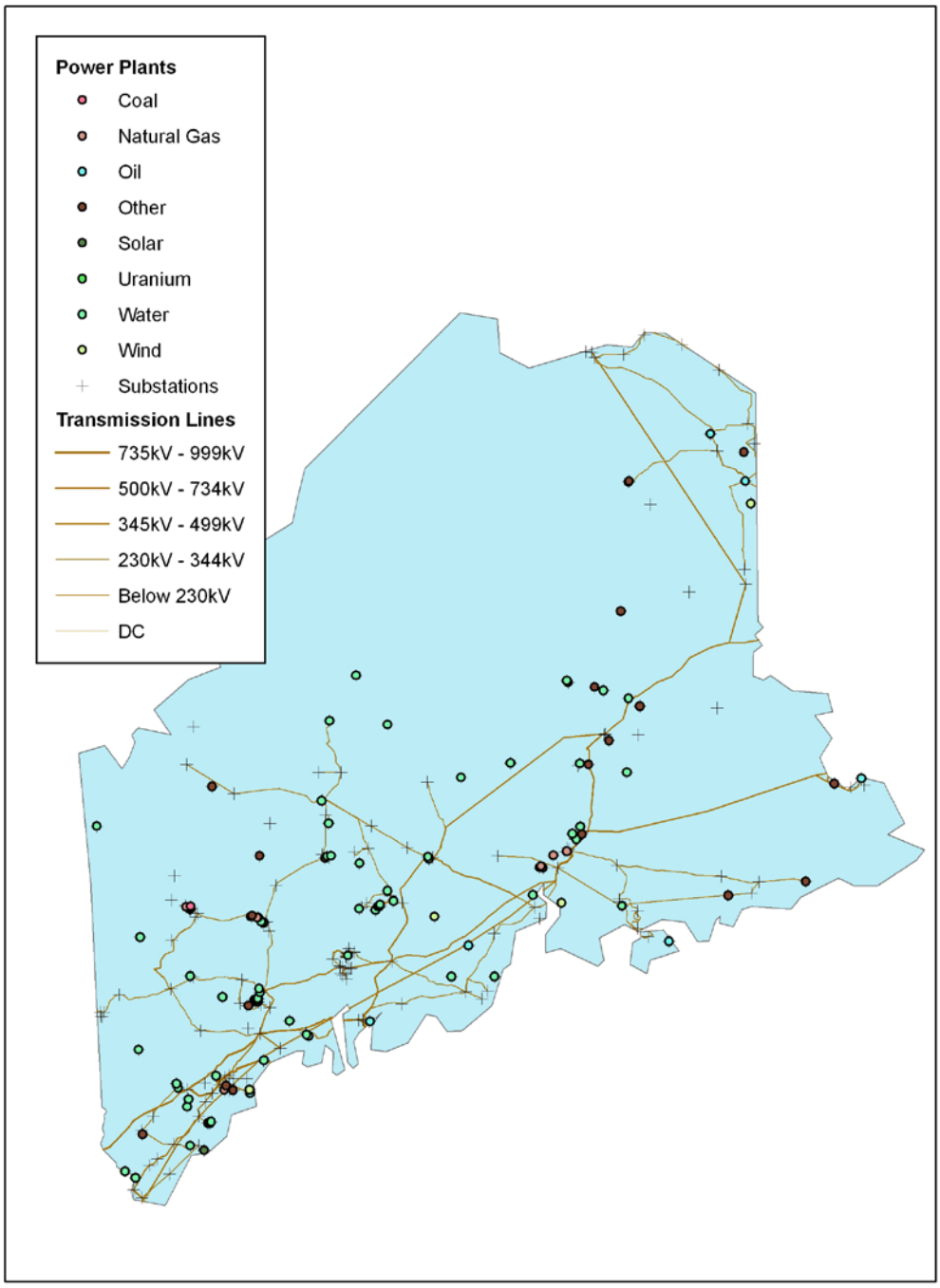


Figure D-6. Maine power plants, substations, and transmission lines.

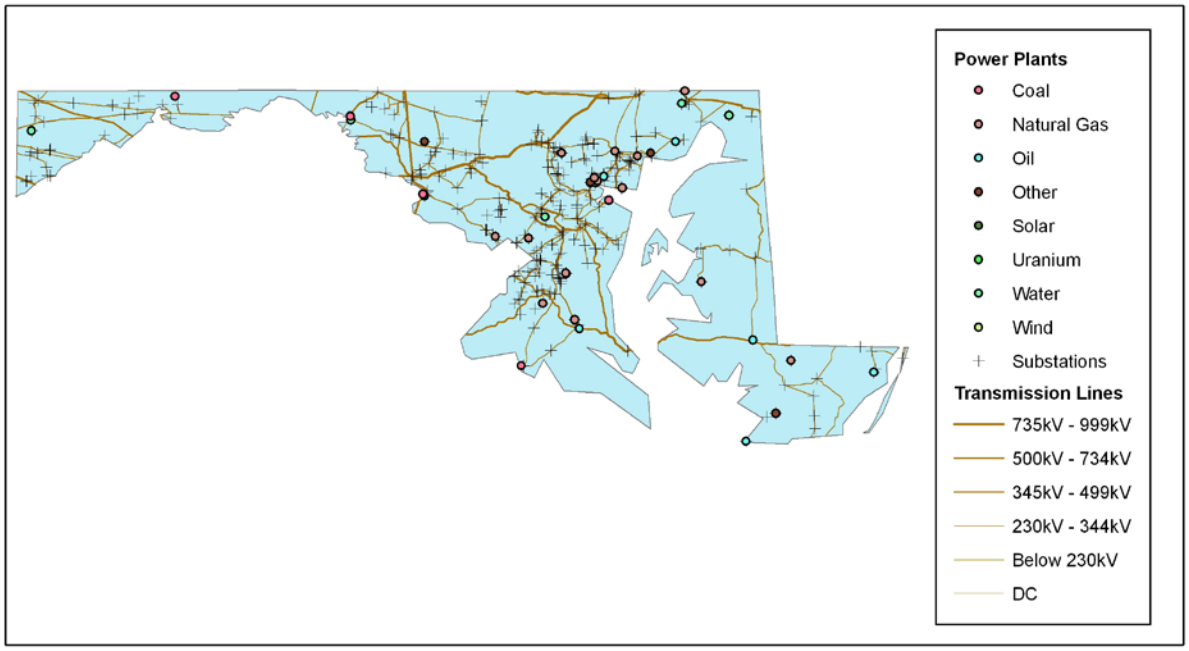
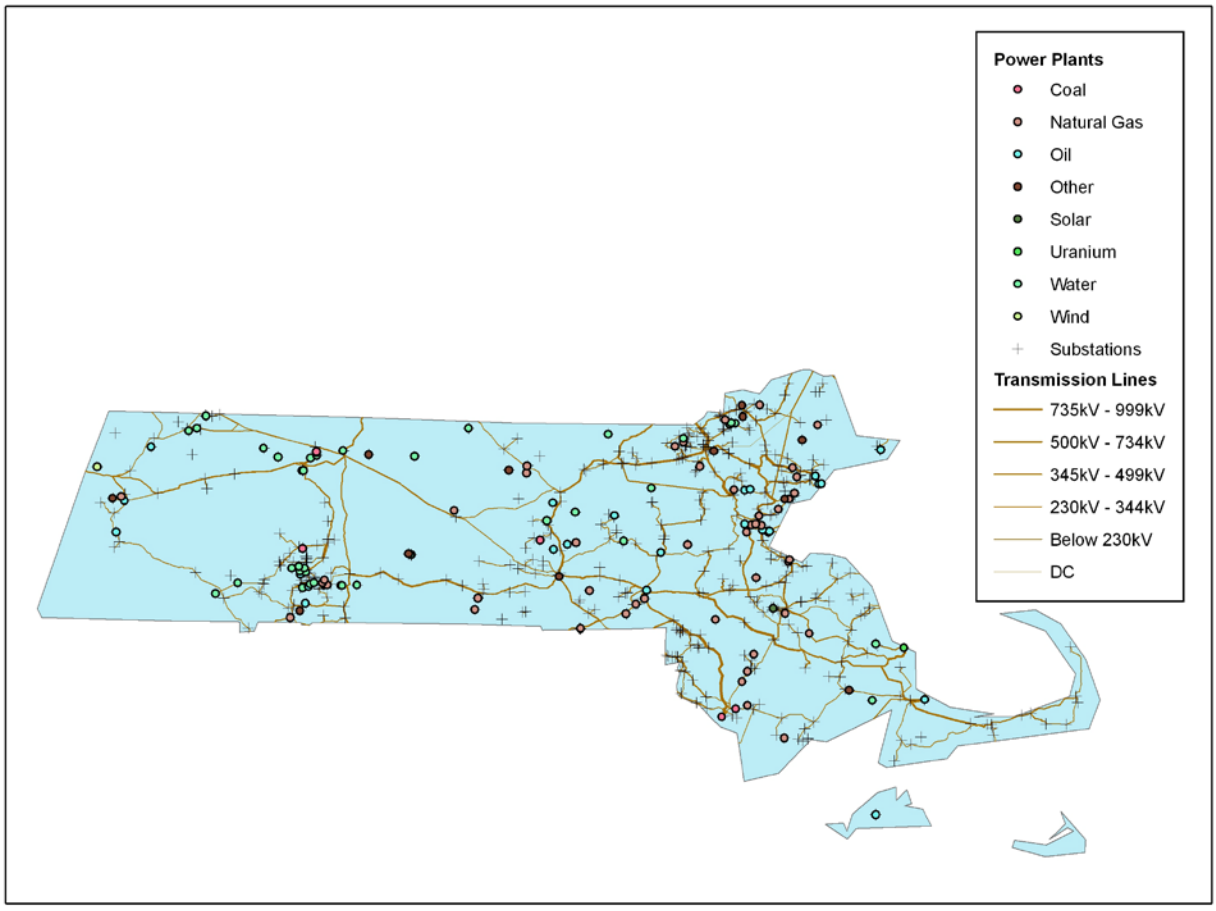


Figure D-7. Maryland power plants, substations, and transmission lines.



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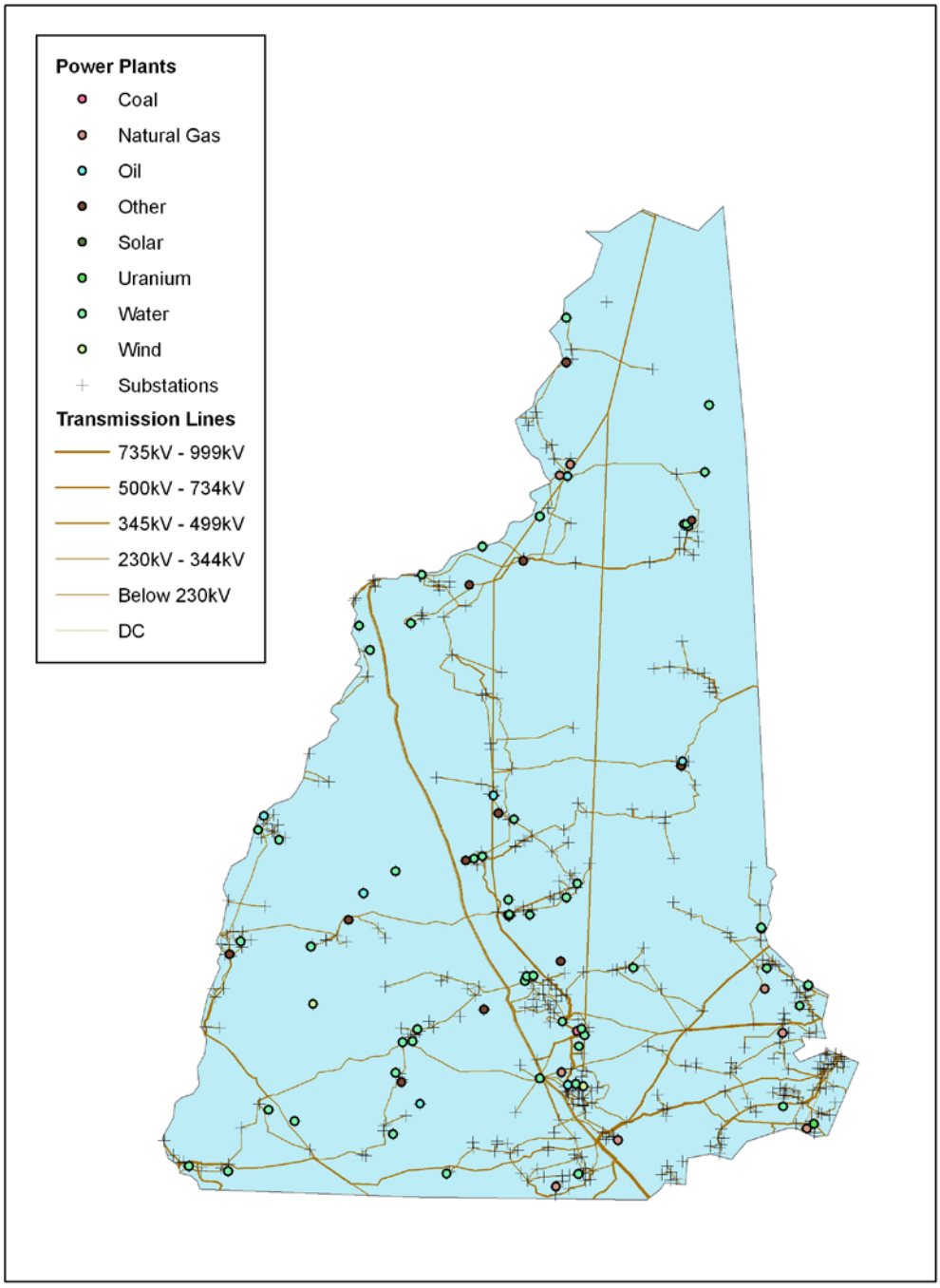


Figure D-9. New Hampshire power plants, substations, and transmission lines.

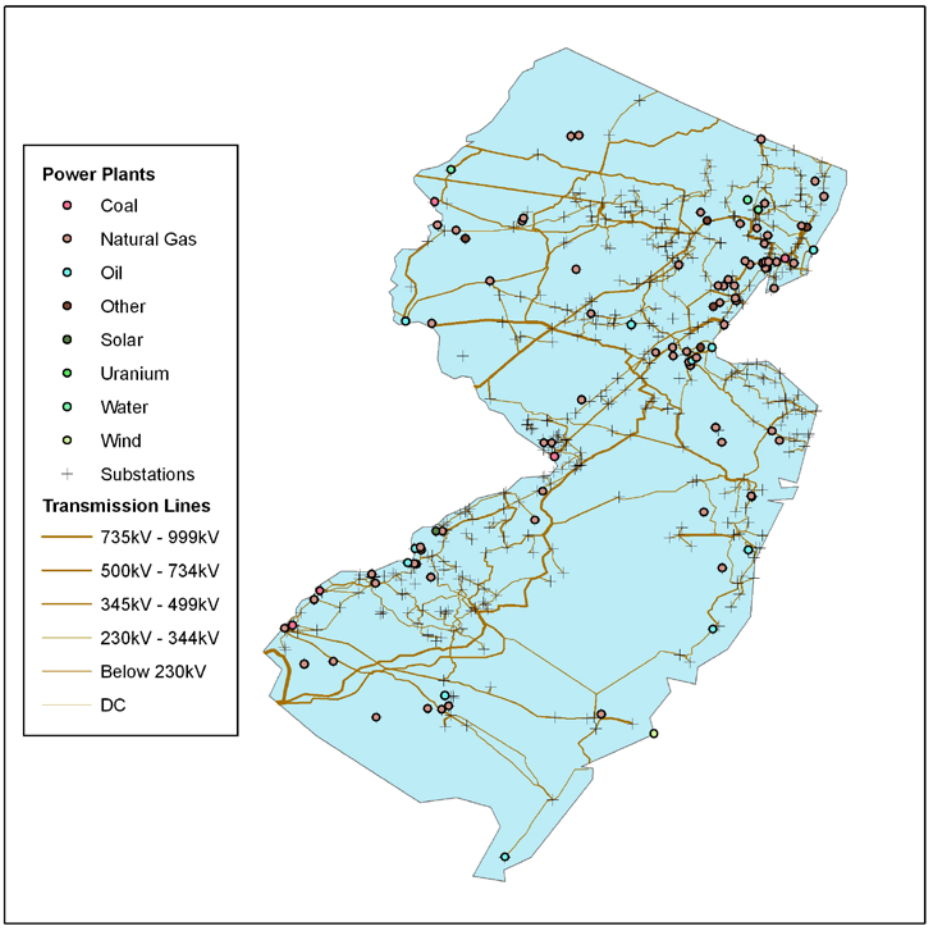


Figure D-10. New Jersey power plants, substations, and transmission lines.

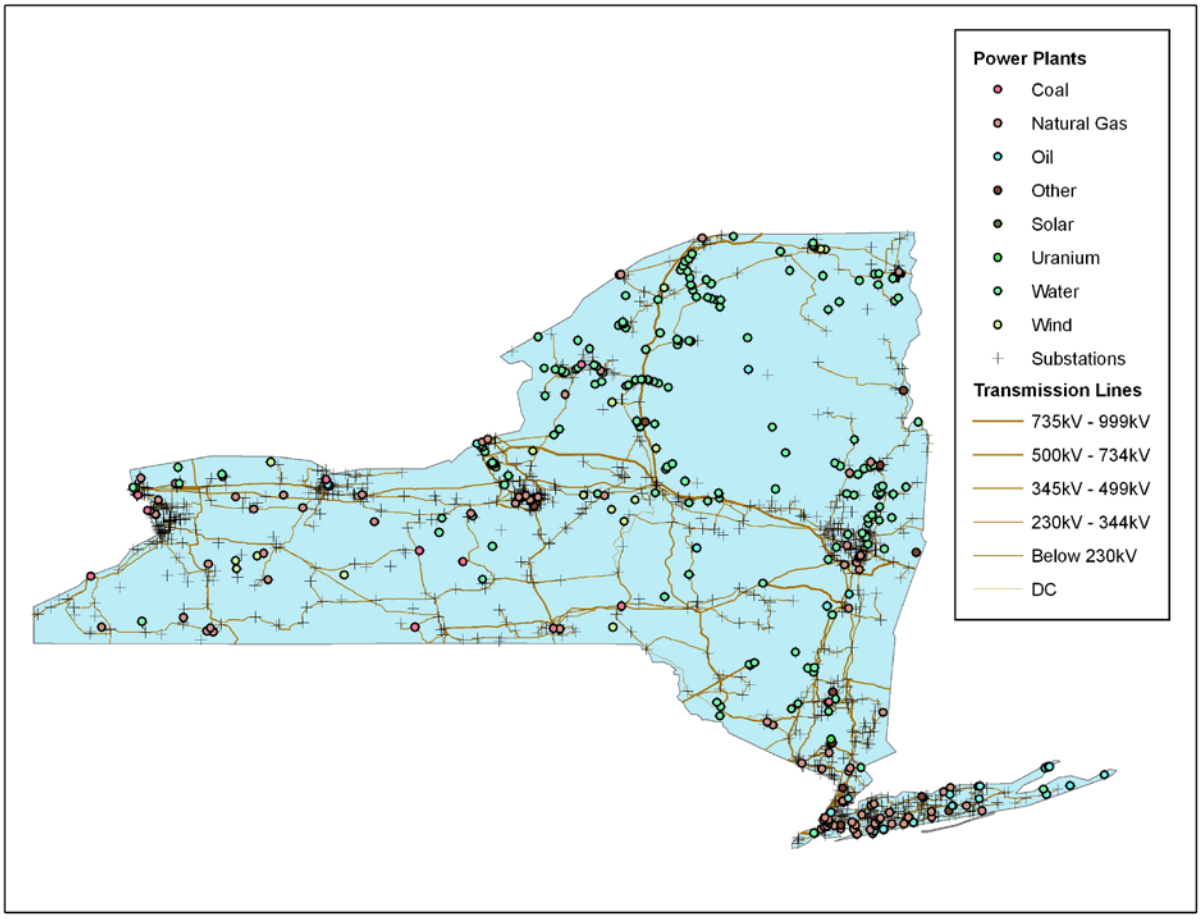


Figure D-11. New York power plants, substations, and transmission lines.

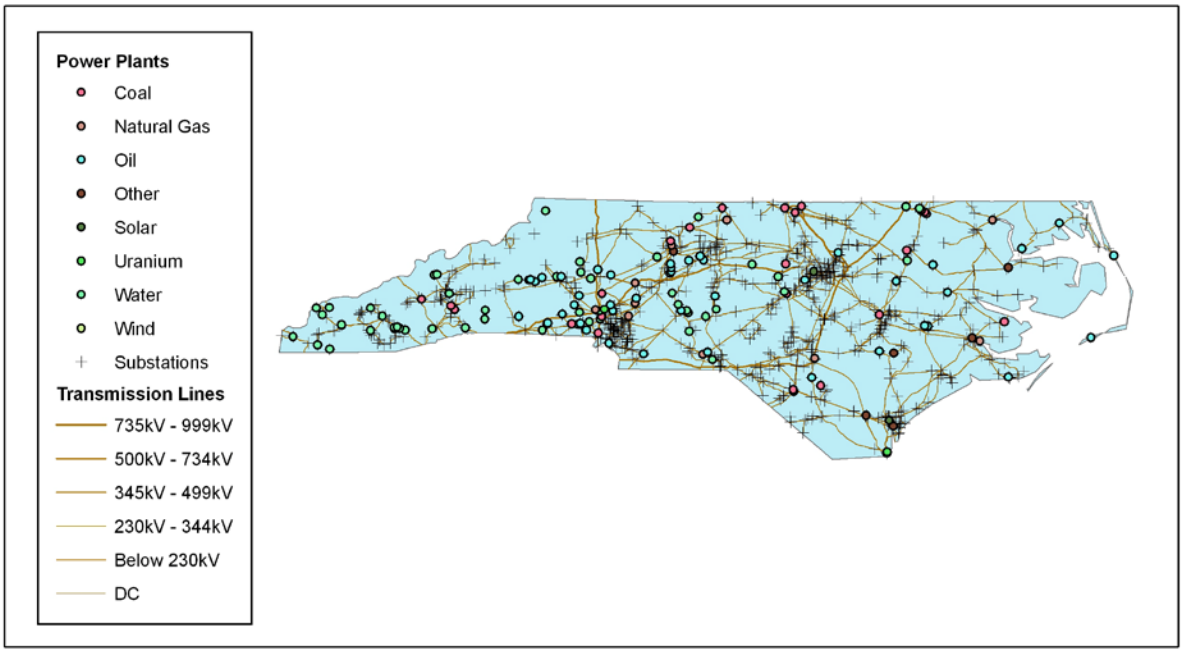


Figure D-12. North Carolina power plants, substations, and transmission lines.

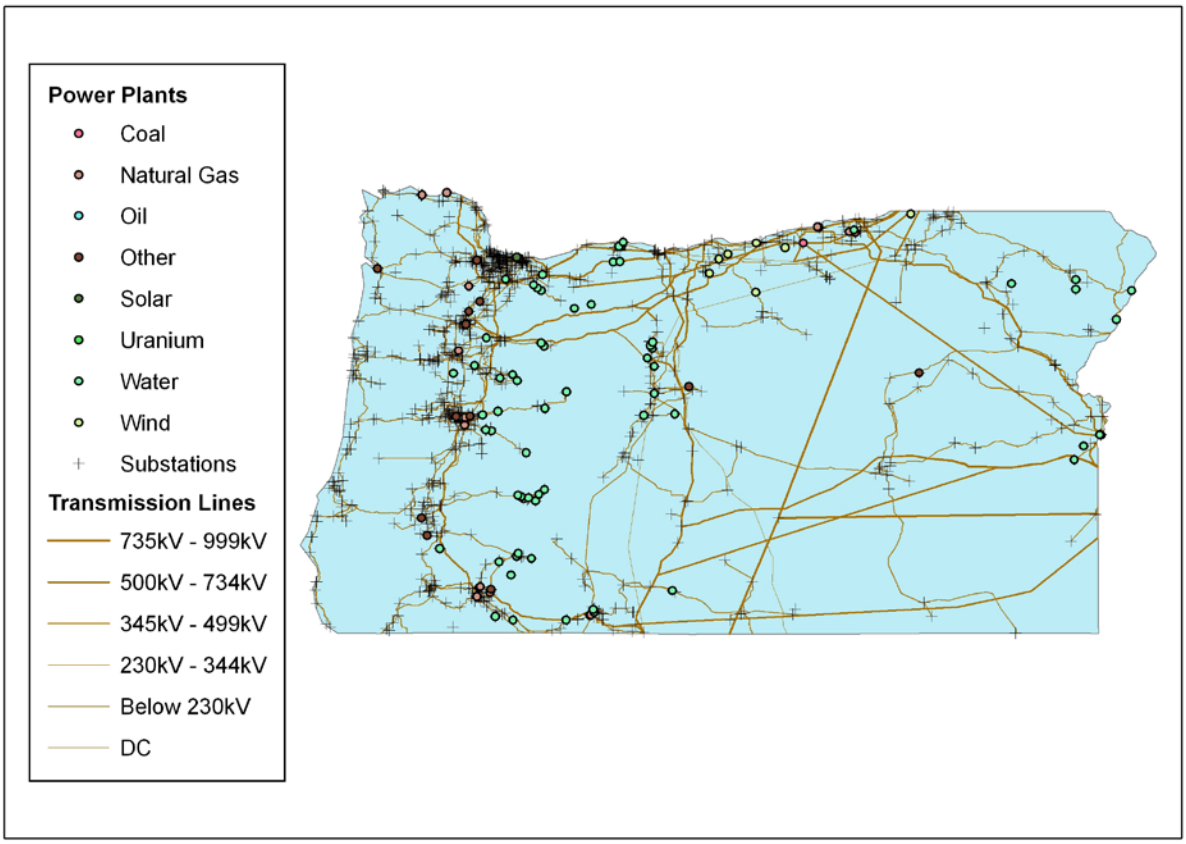


Figure D-13. Oregon power plants, substations, and transmission lines.

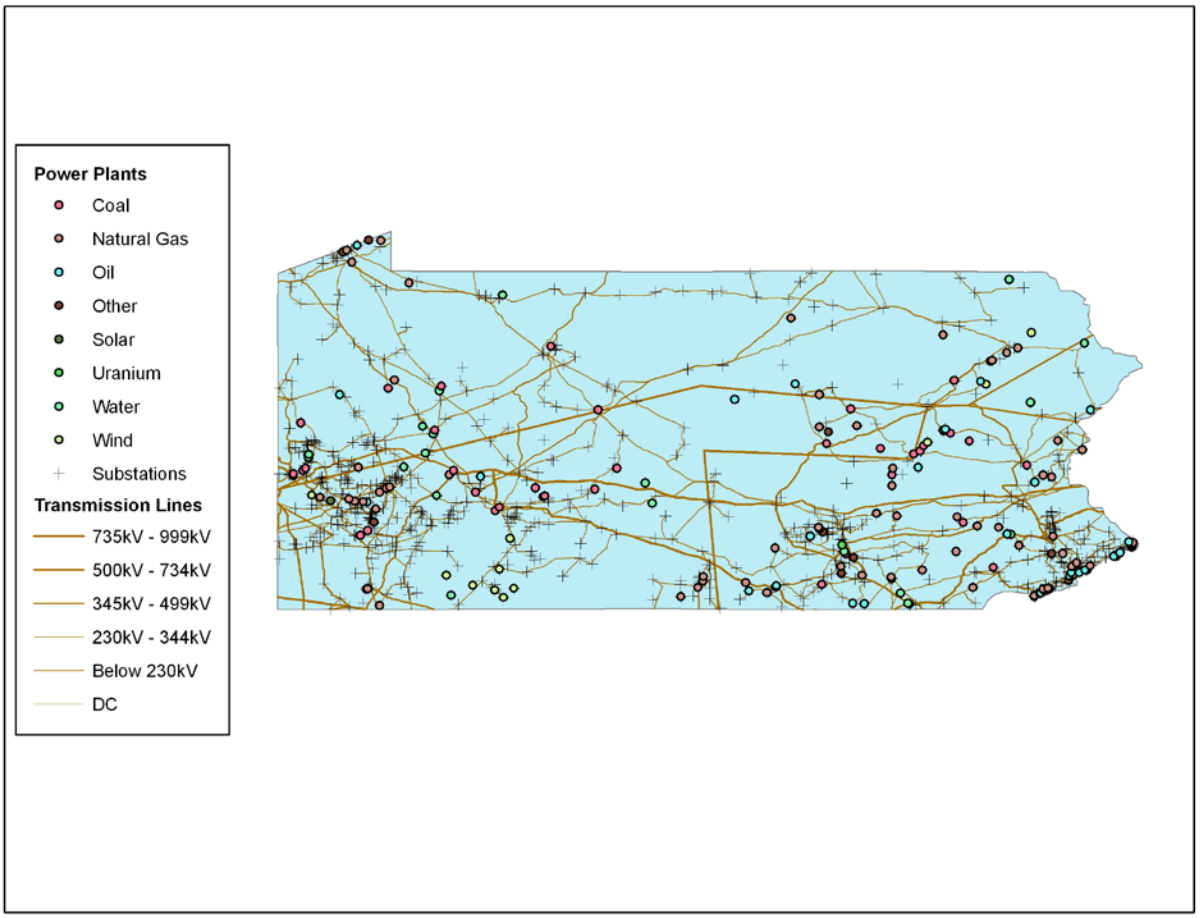


Figure D-14. Pennsylvania power plants, substations, and transmission lines.

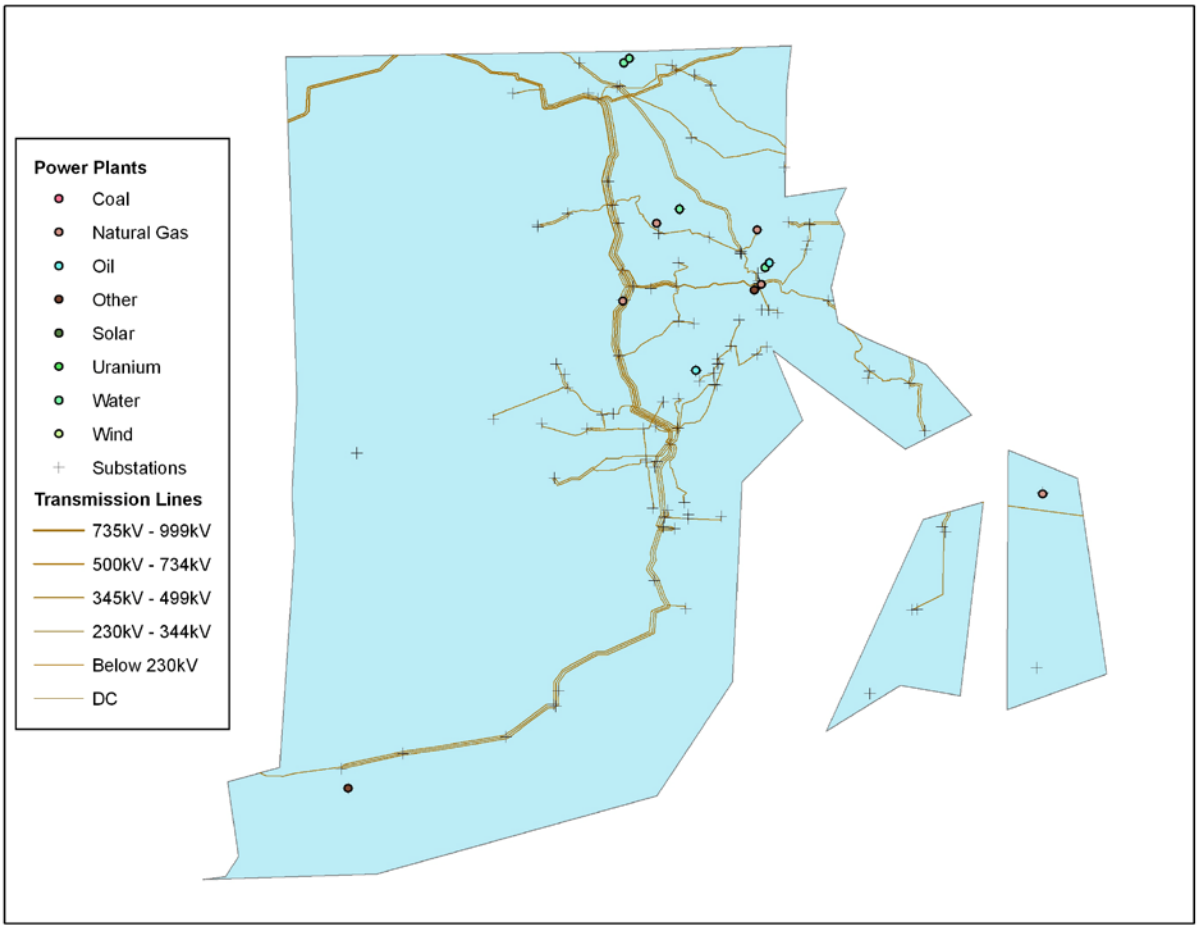


Figure D-15. Rhode Island power plants, substations, and transmission lines.

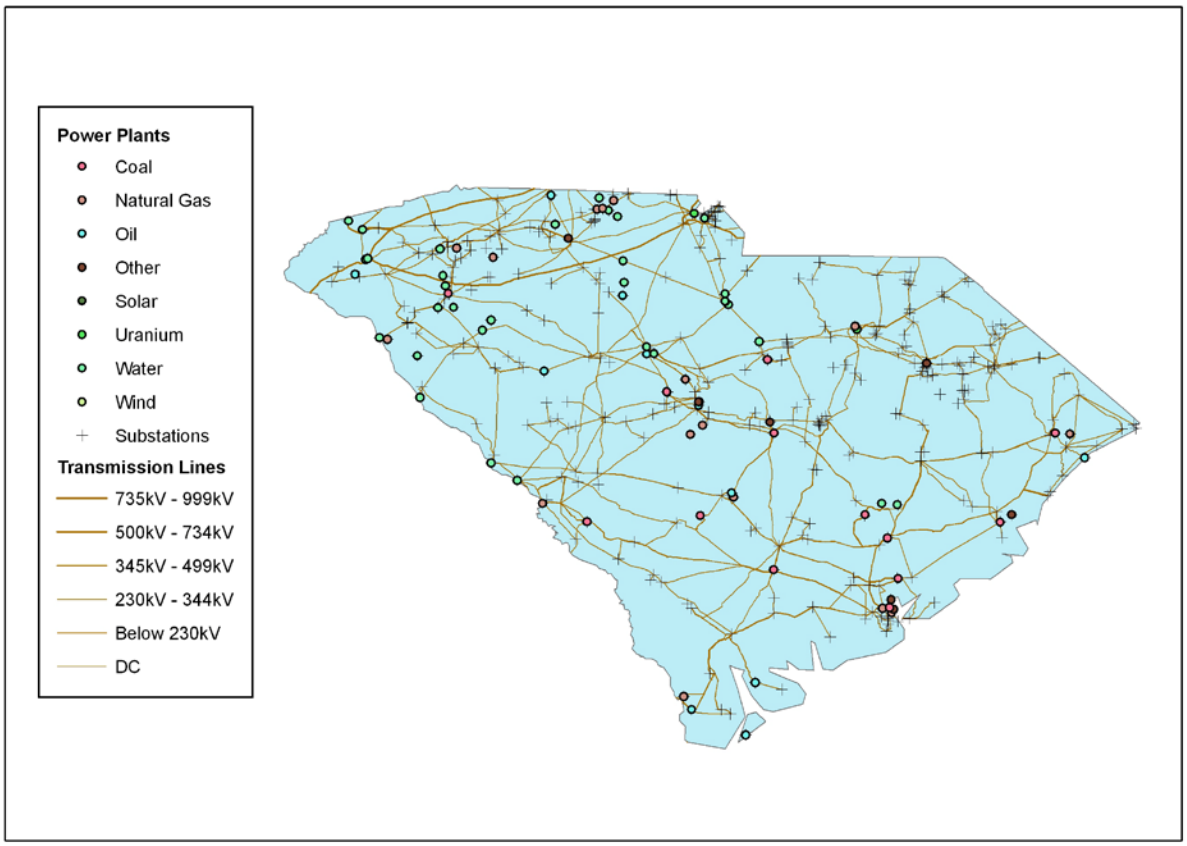


Figure D-16. South Carolina power plants, substations, and transmission lines.

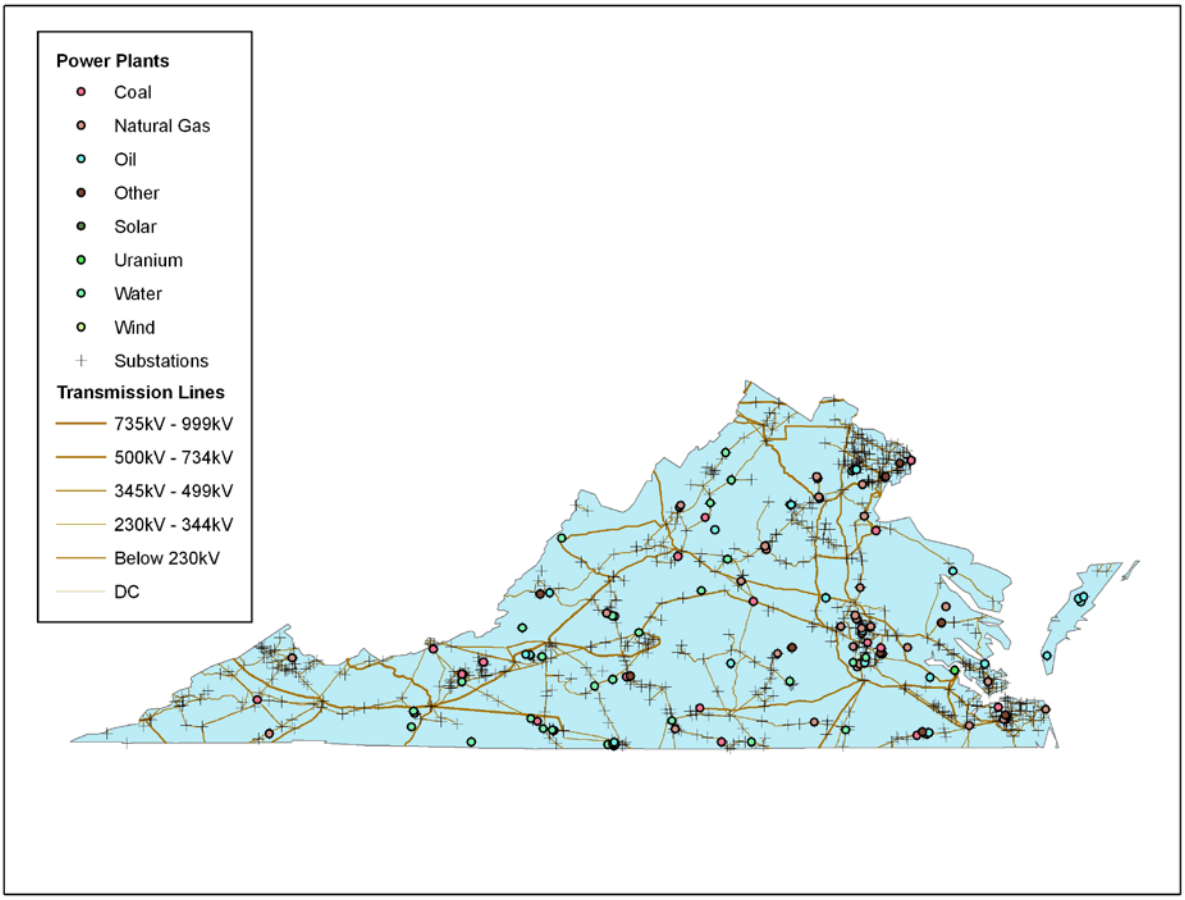


Figure D-17. Virginia power plants, substations, and transmission lines.

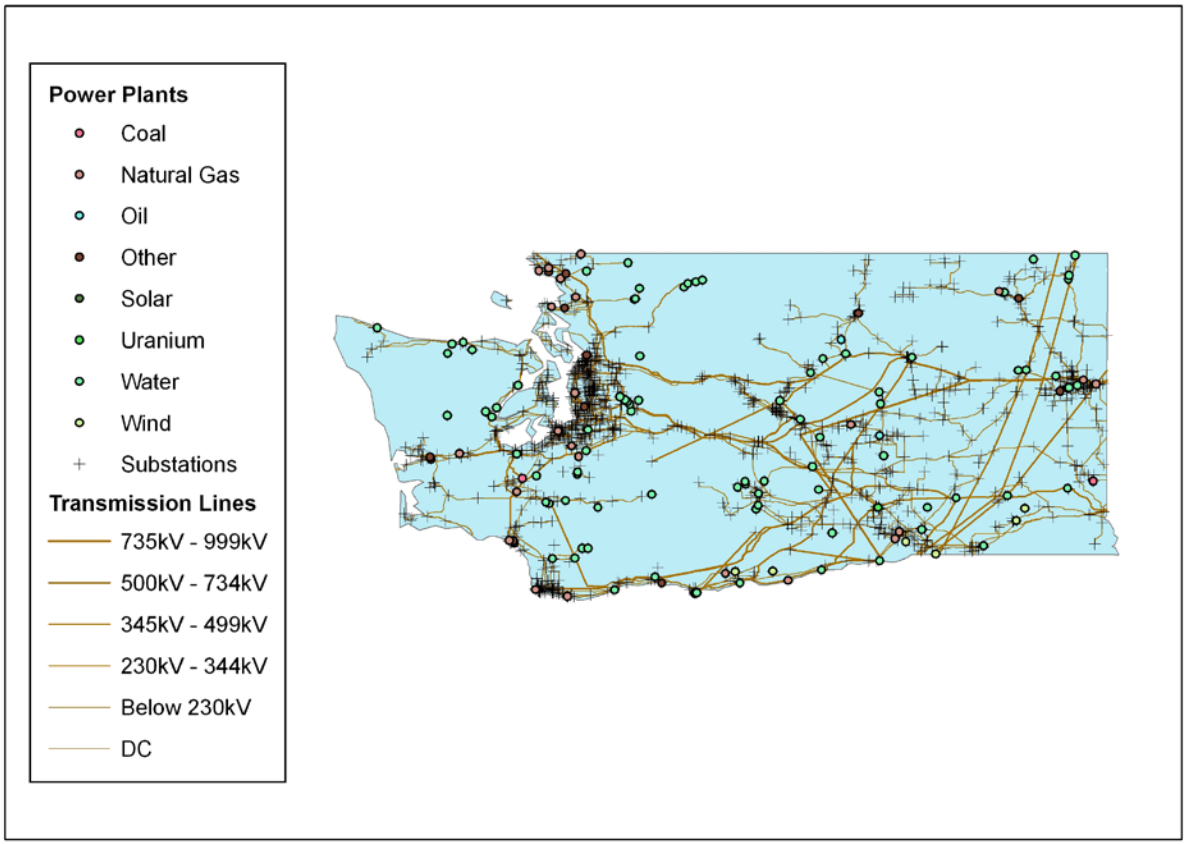


Figure D-18. Washington power plants, substations, and transmission lines.

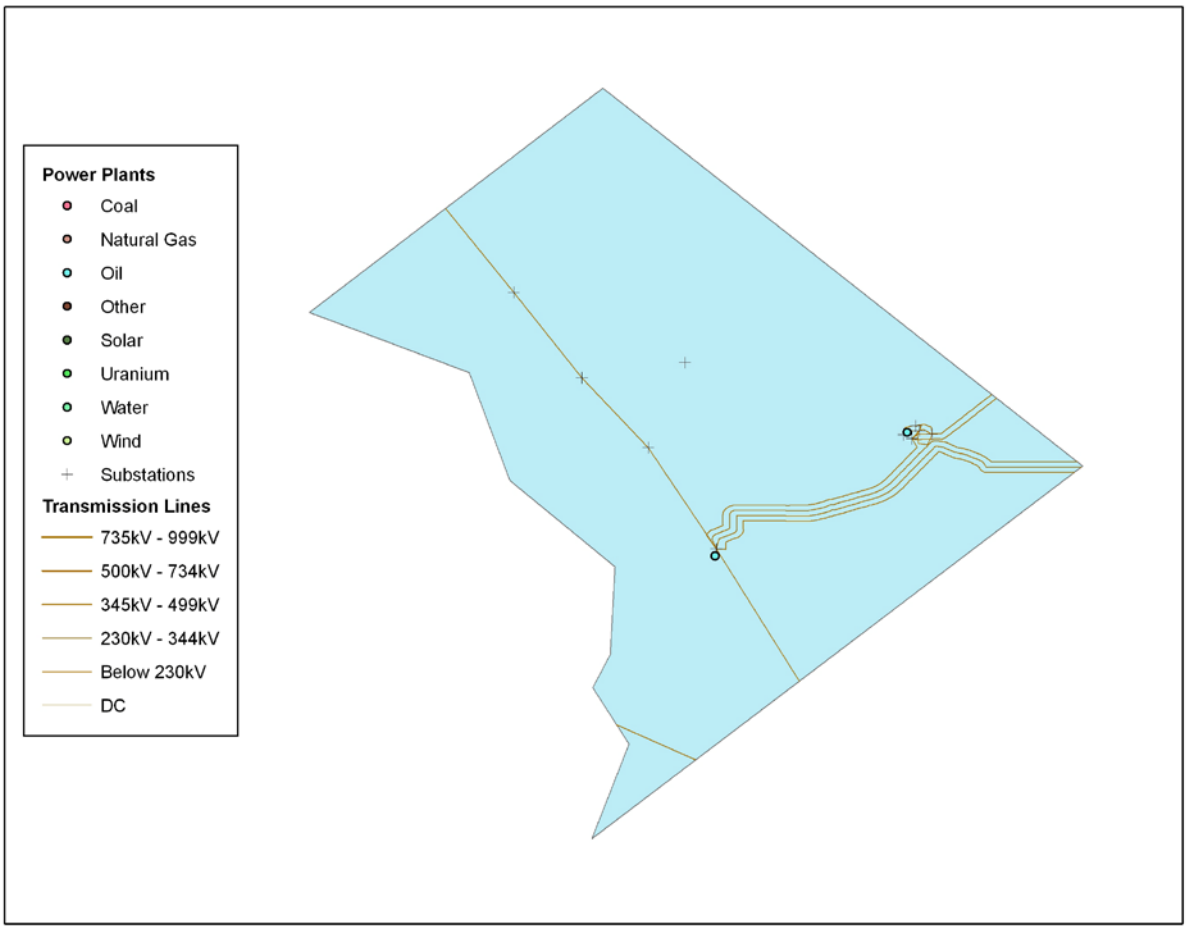


Figure D-19. Washington, District of Columbia, power plants, substations, and transmission lines.

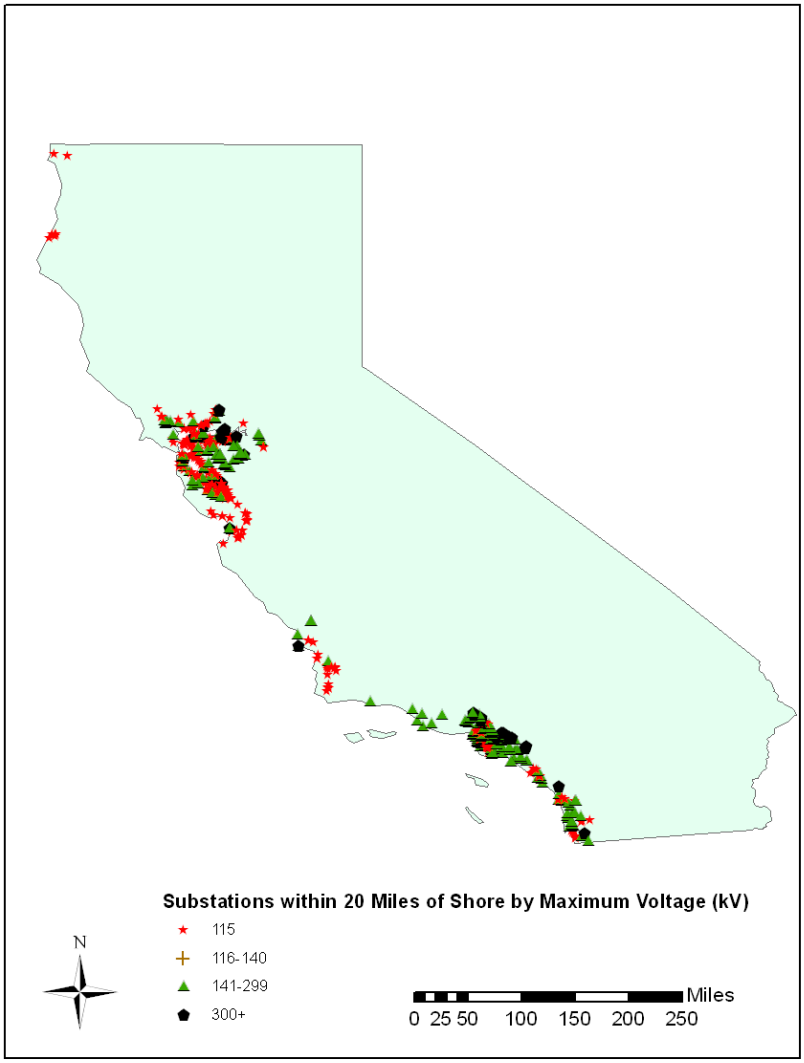


Figure D-20. California—115 kV+ substations within 20 miles of the coast.

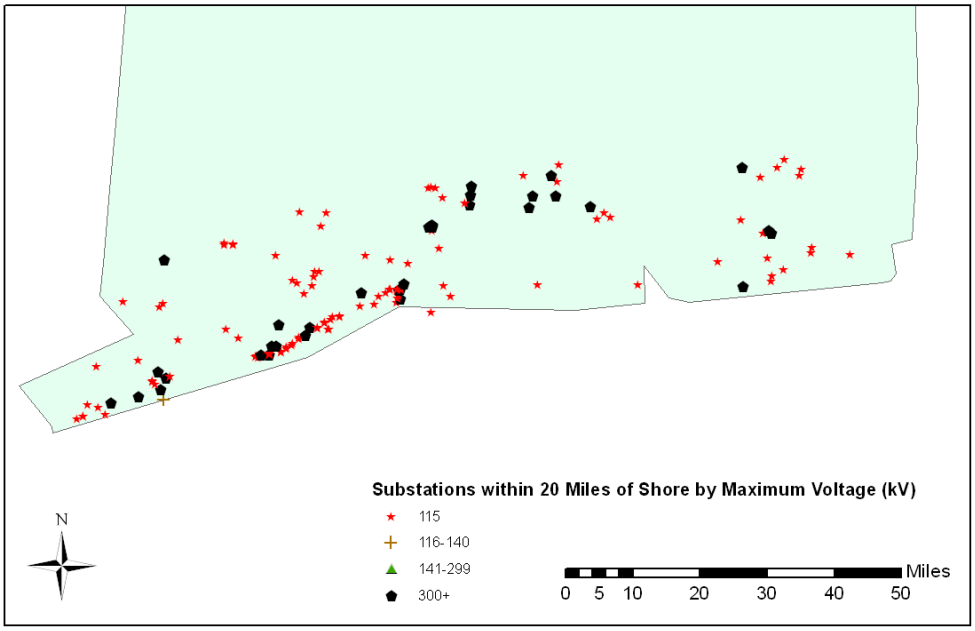


Figure D-21. Connecticut—115 kV+ substations within 20 miles of the coast.

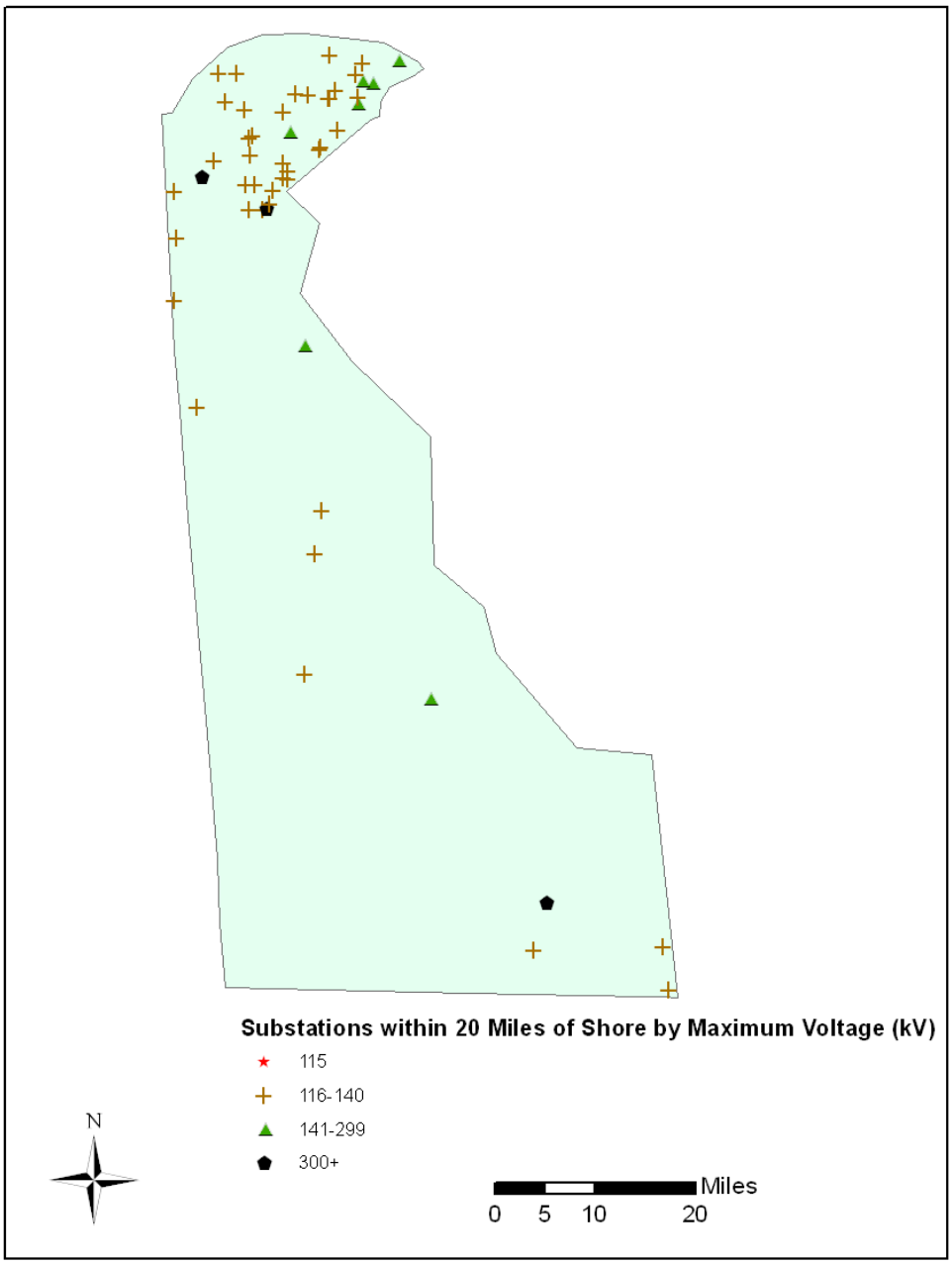
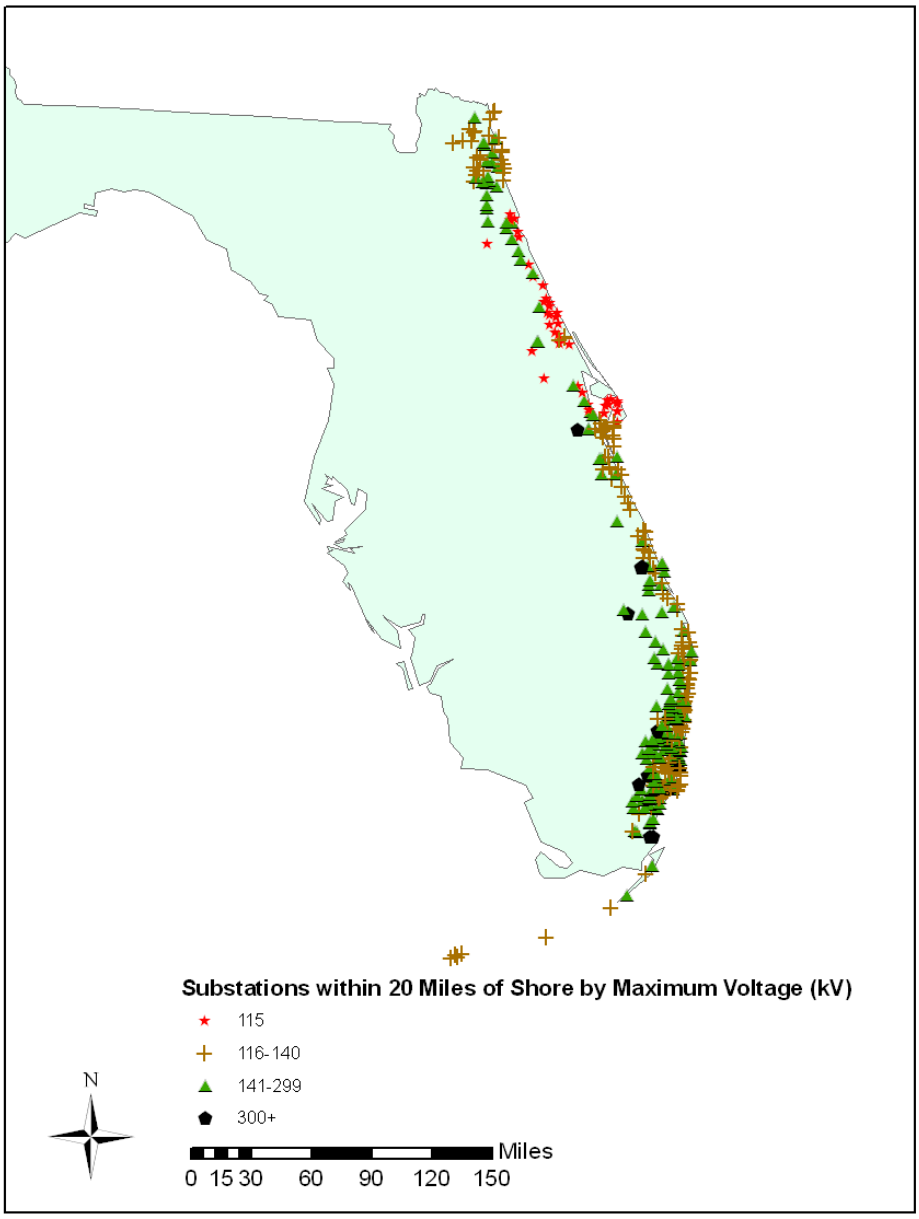


Figure D-22. Delaware—115 kV substations within 20 miles of the coast.



Note: Substations in the Florida Keys are shown.

Figure D-23. Florida—115 kV+ substations within 20 miles of the coast.

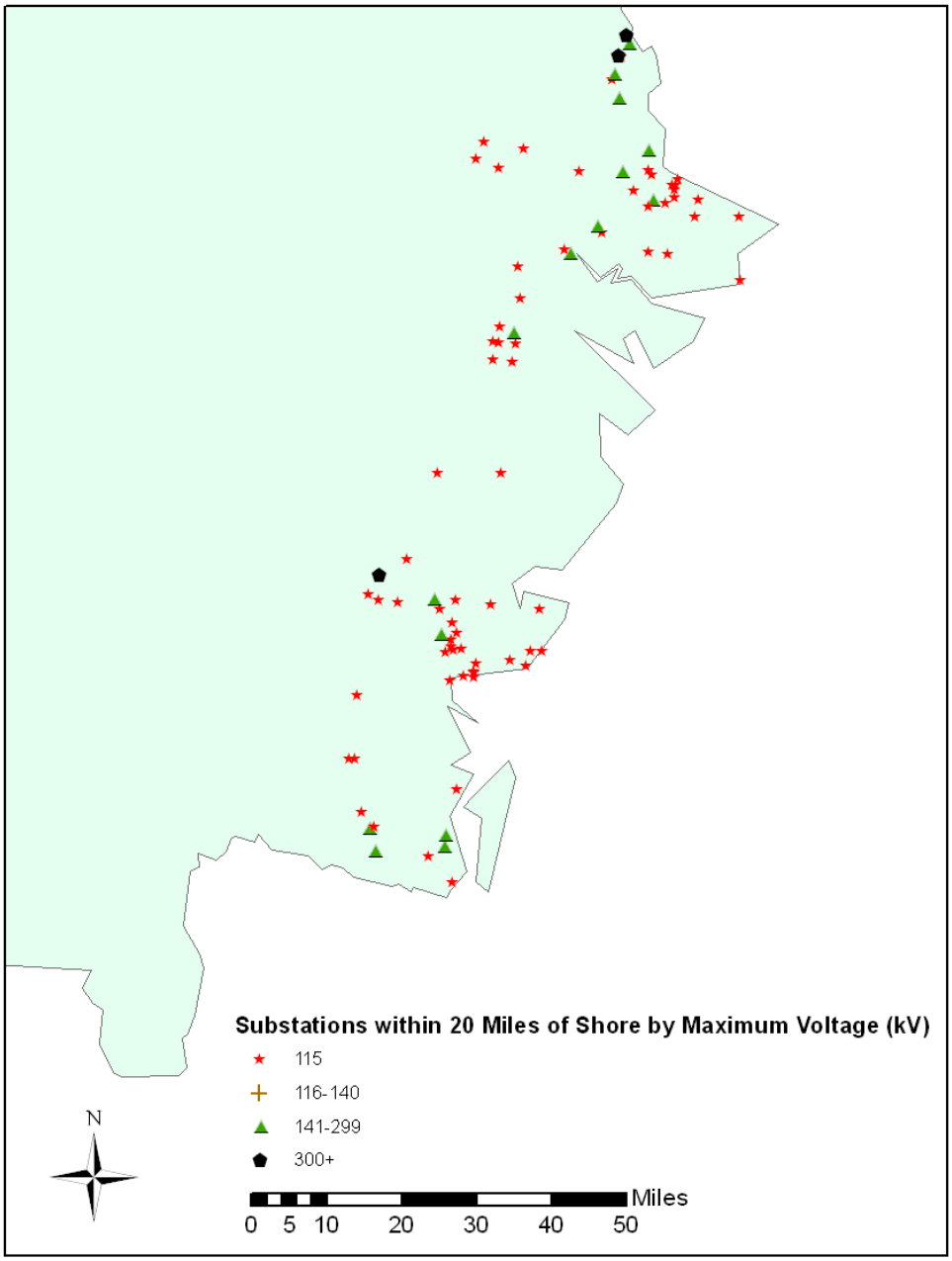


Figure D-24. Georgia—115 kV+ substations within 20 miles of the coast.

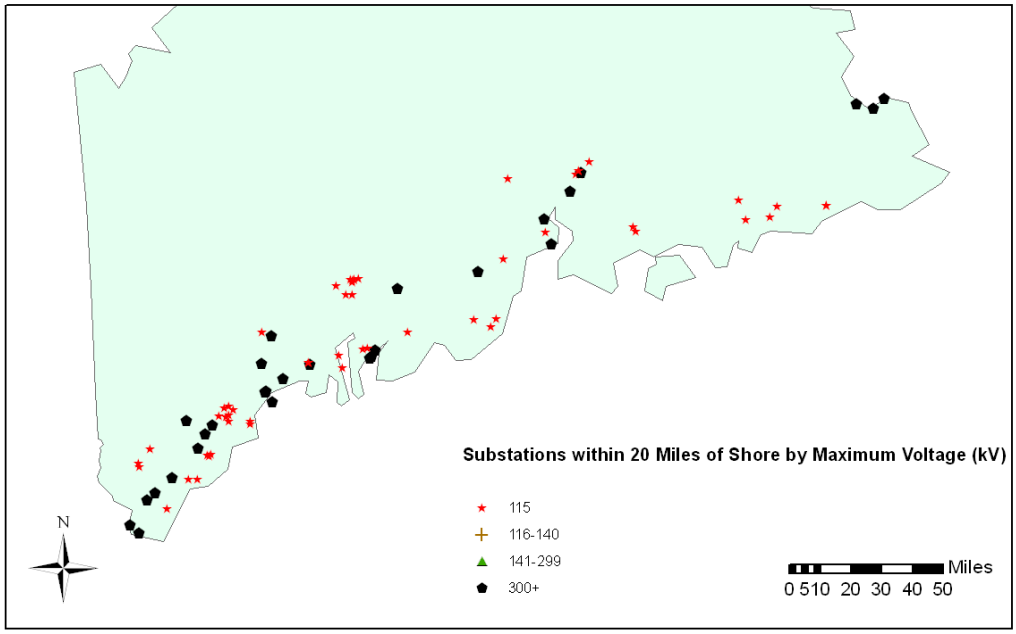


Figure D-25. Maine—115 kV+ substations within 20 miles of the coast.

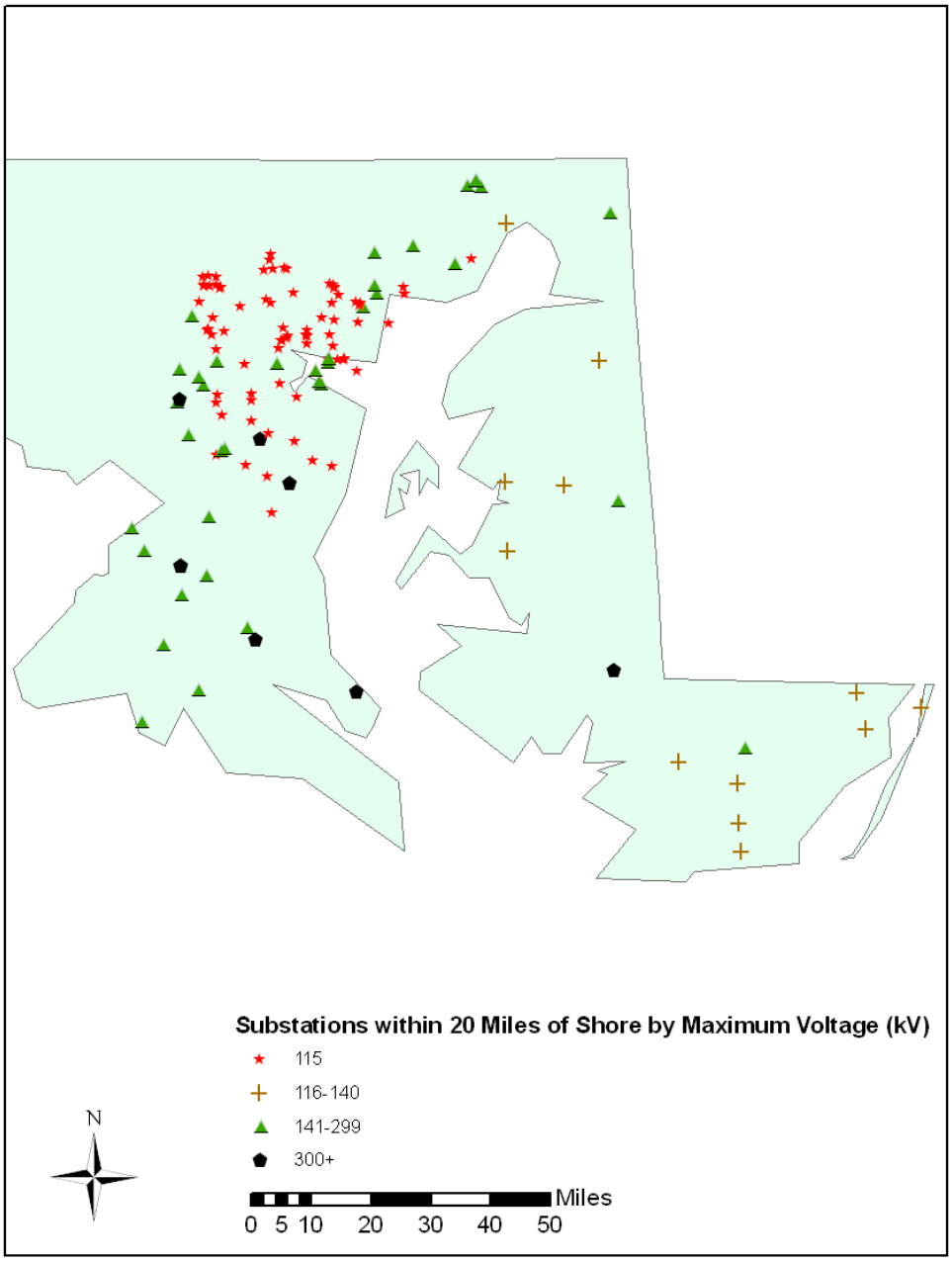


Figure D-26. Maryland—115 kV+ substations within 20 miles of the coast.

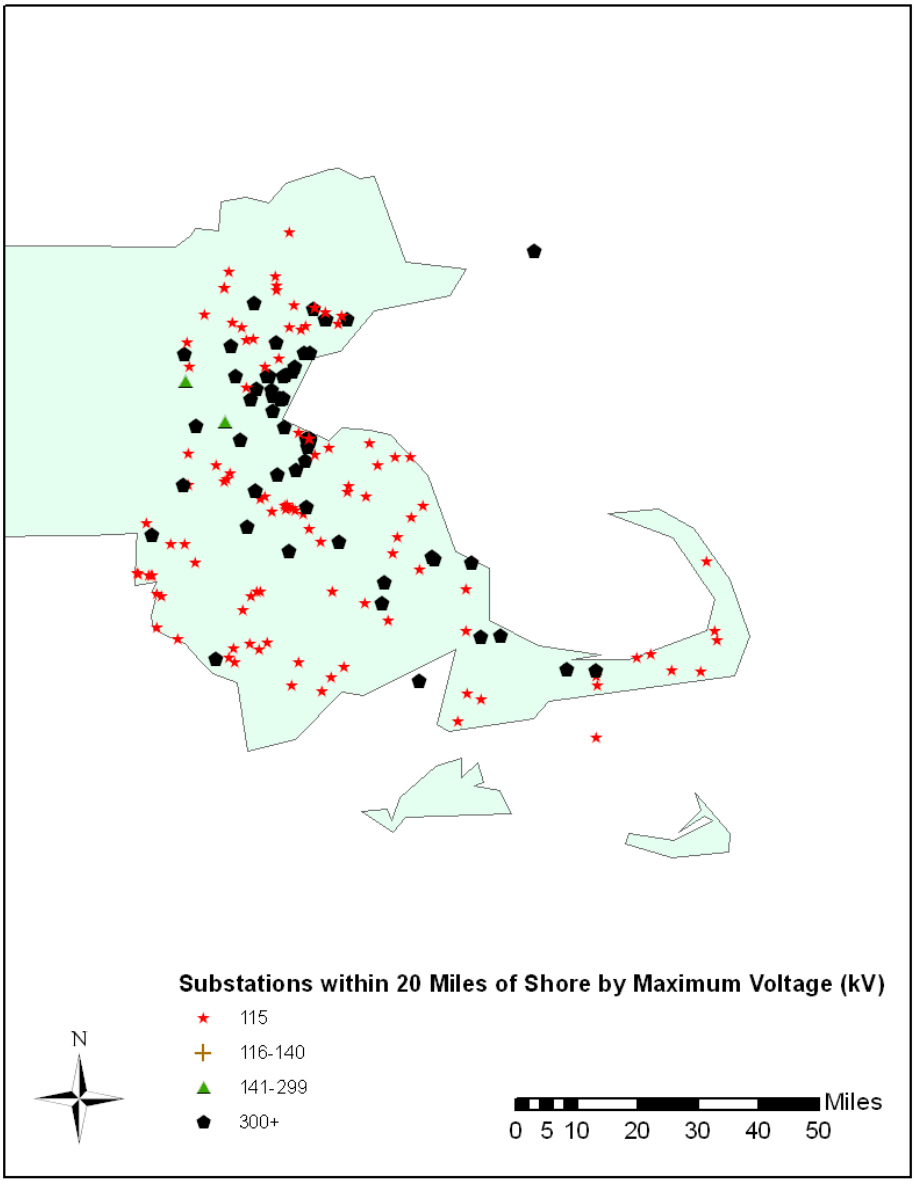


Figure D-27. Massachusetts—115 kV+ substations within 20 miles of the coast.

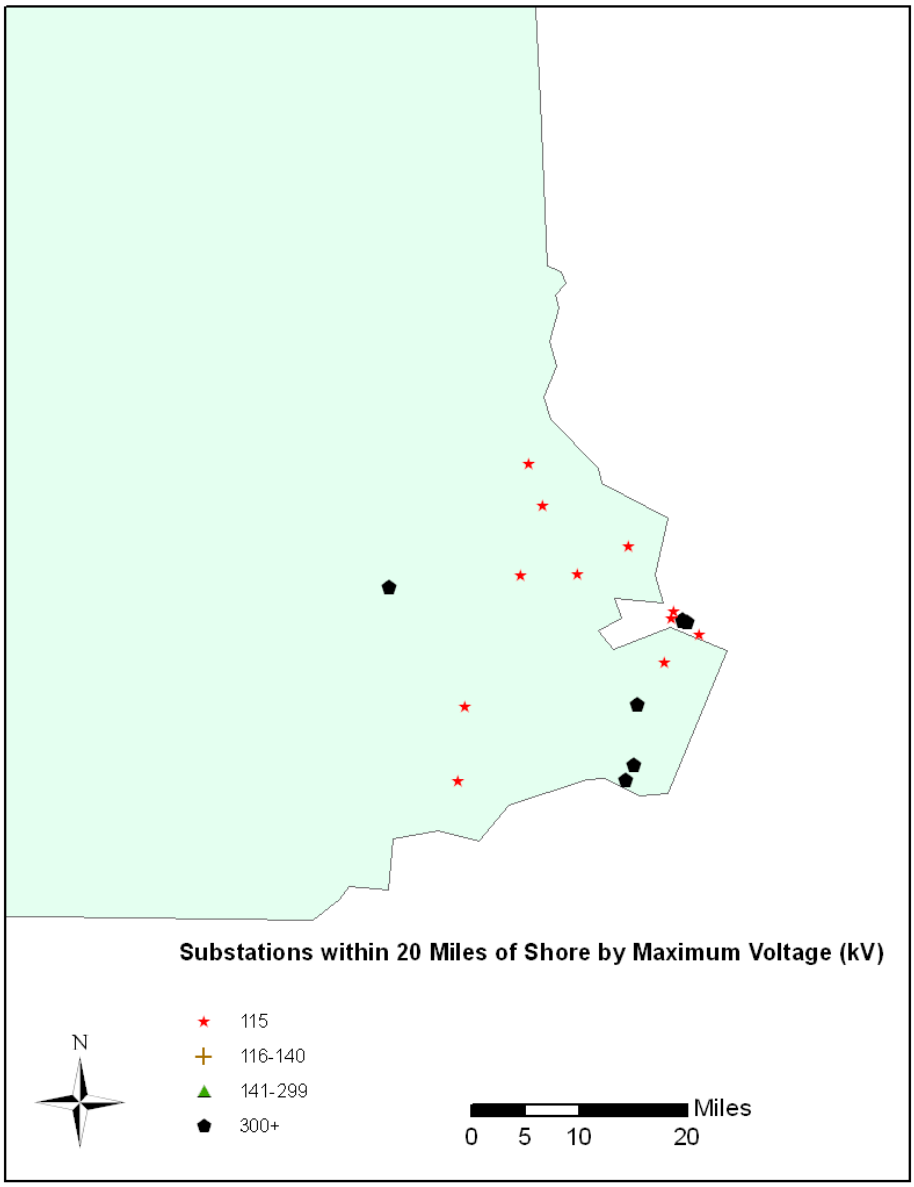
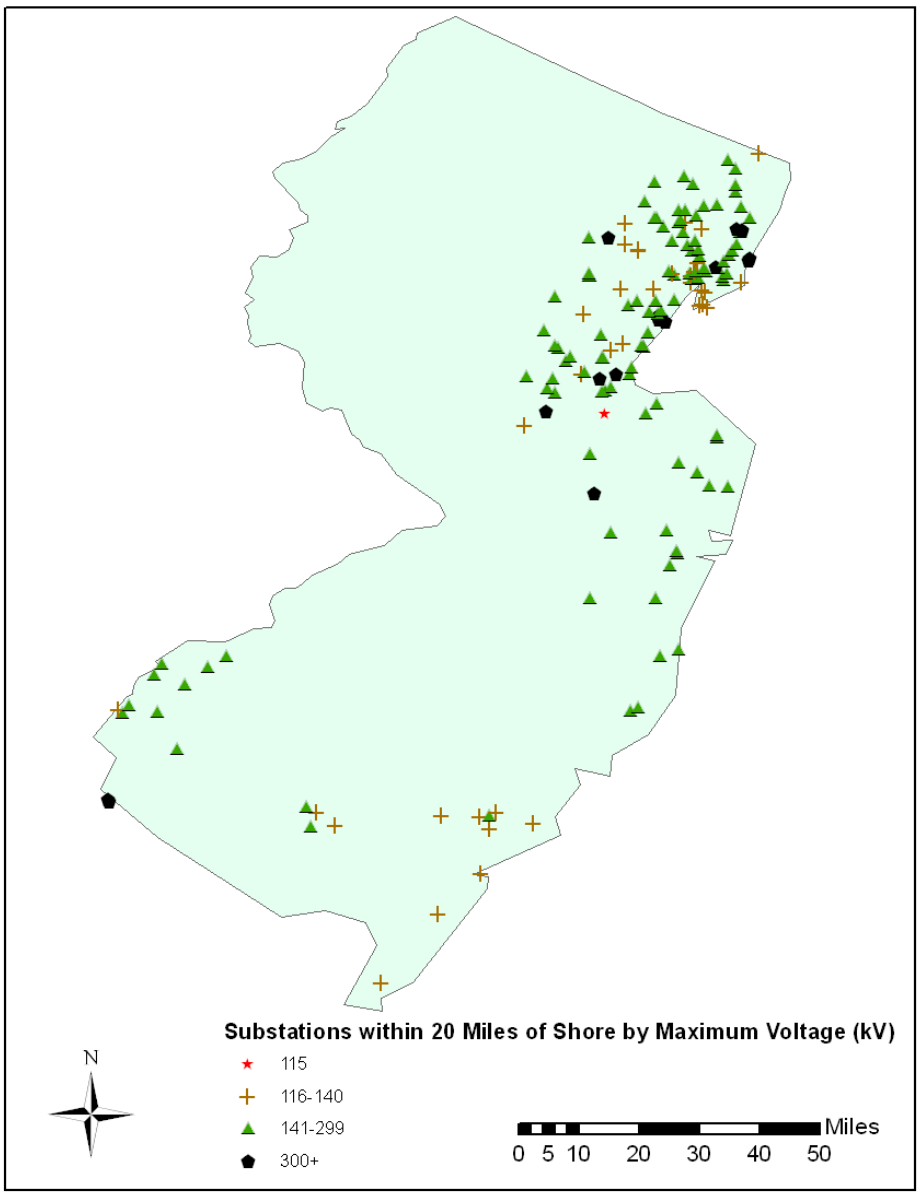
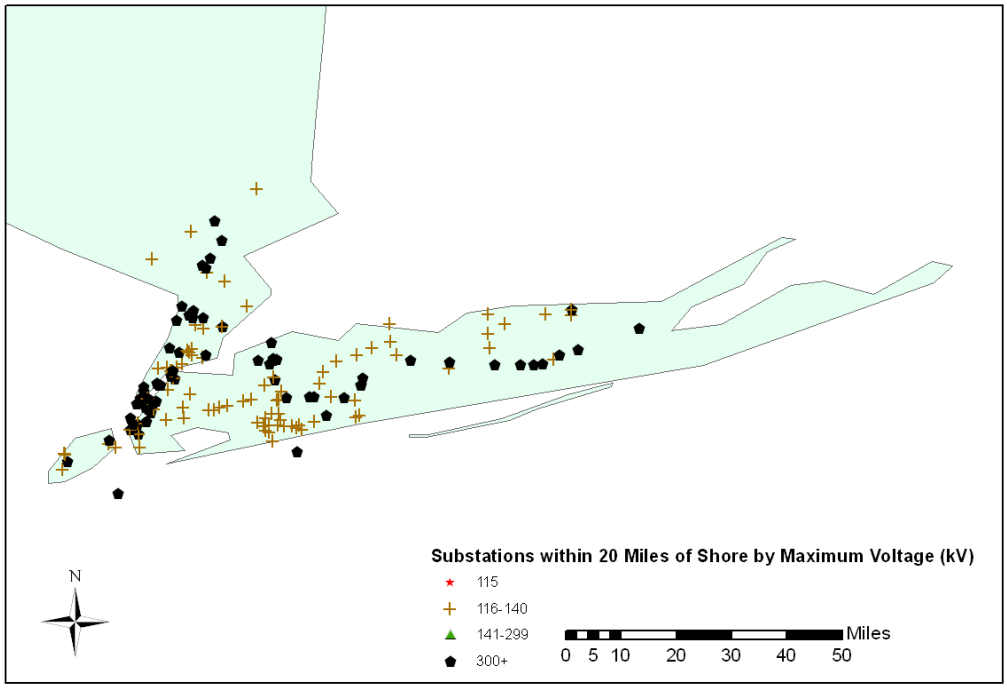


Figure D-28. New Hampshire—115 kV+ substations within 20 miles of the coast.



Note: "Coast" extends up the Delaware Bay toward Philadelphia.

Figure D-29. New Jersey—115 kV+ substations within 20 miles of the coast.



Note: Substations along the Neptune Regional Transmission System are shown.

Figure D-30. New York—115 kV+ substations within 20 miles of the coast.

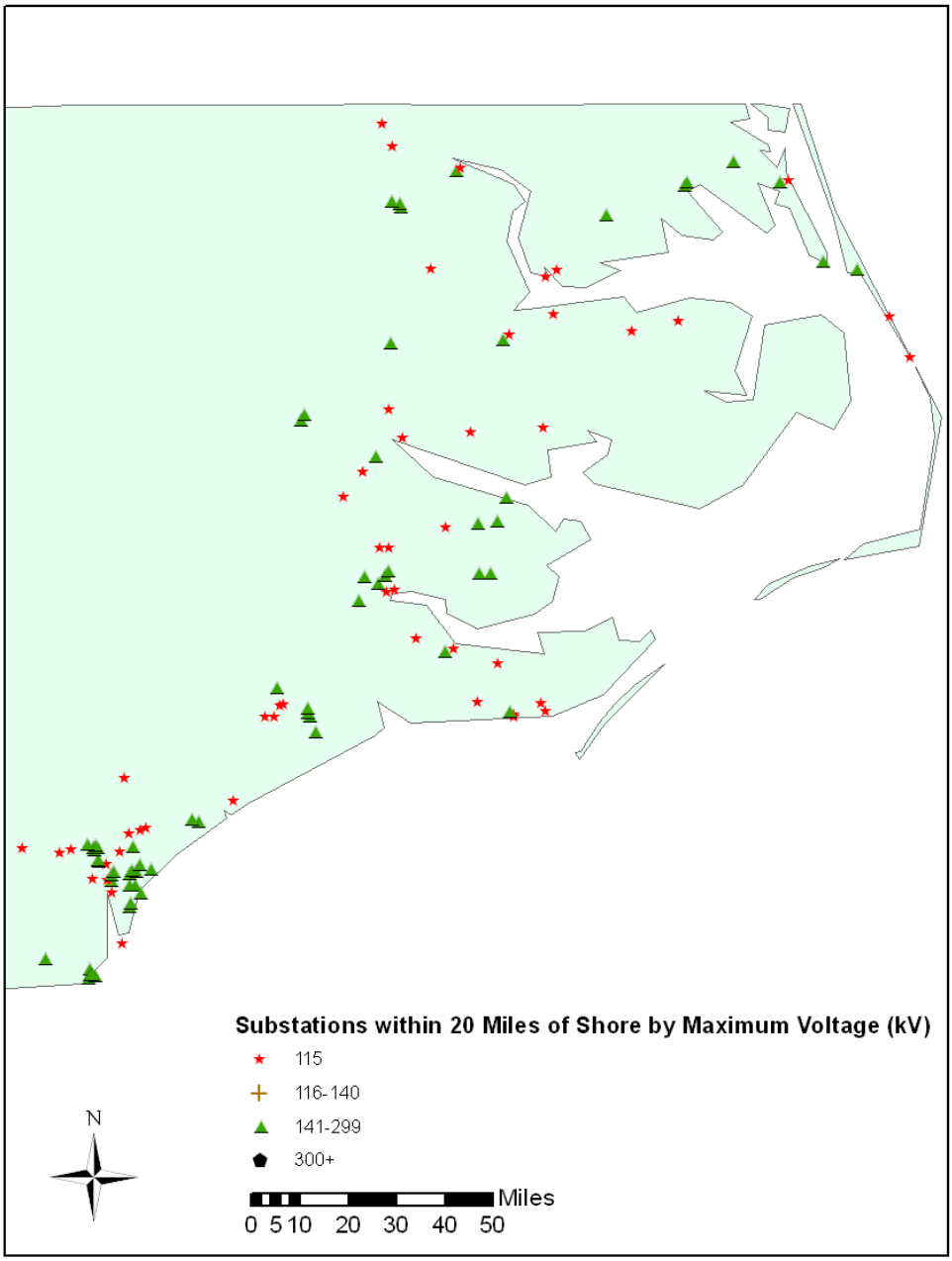


Figure D-31. North Carolina—115 kV+ substations within 20 miles of the coast.

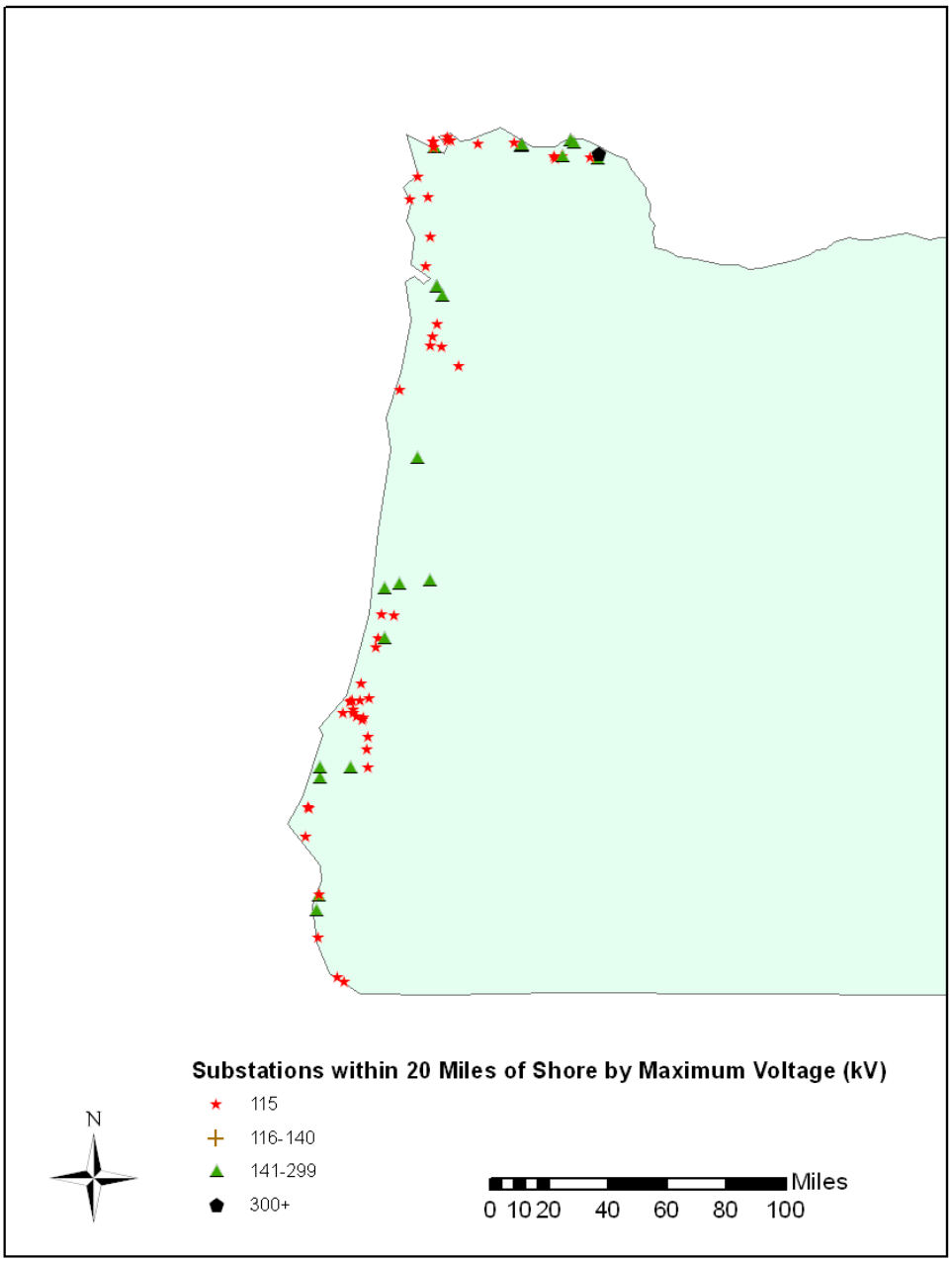
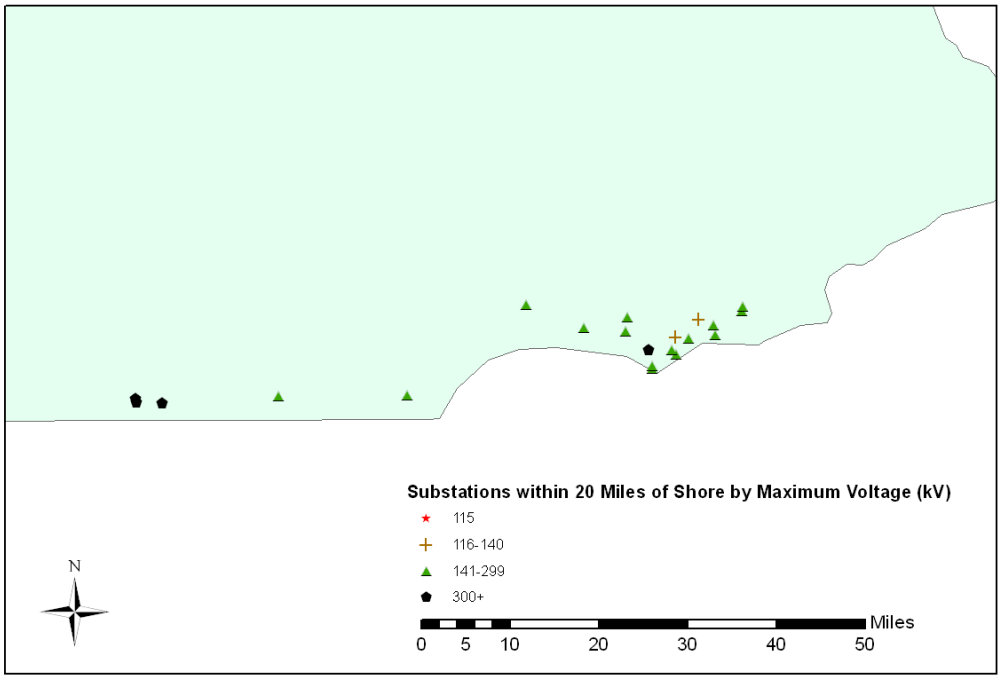


Figure D-32. Oregon—115 kV+ substations within 20 miles of the coast.



Note: Shape dominated by border with Delaware, the Delaware Bay, and the Chesapeake Bay.

Figure D-33. Pennsylvania—115 kV+ substations within 20 miles of the coast.

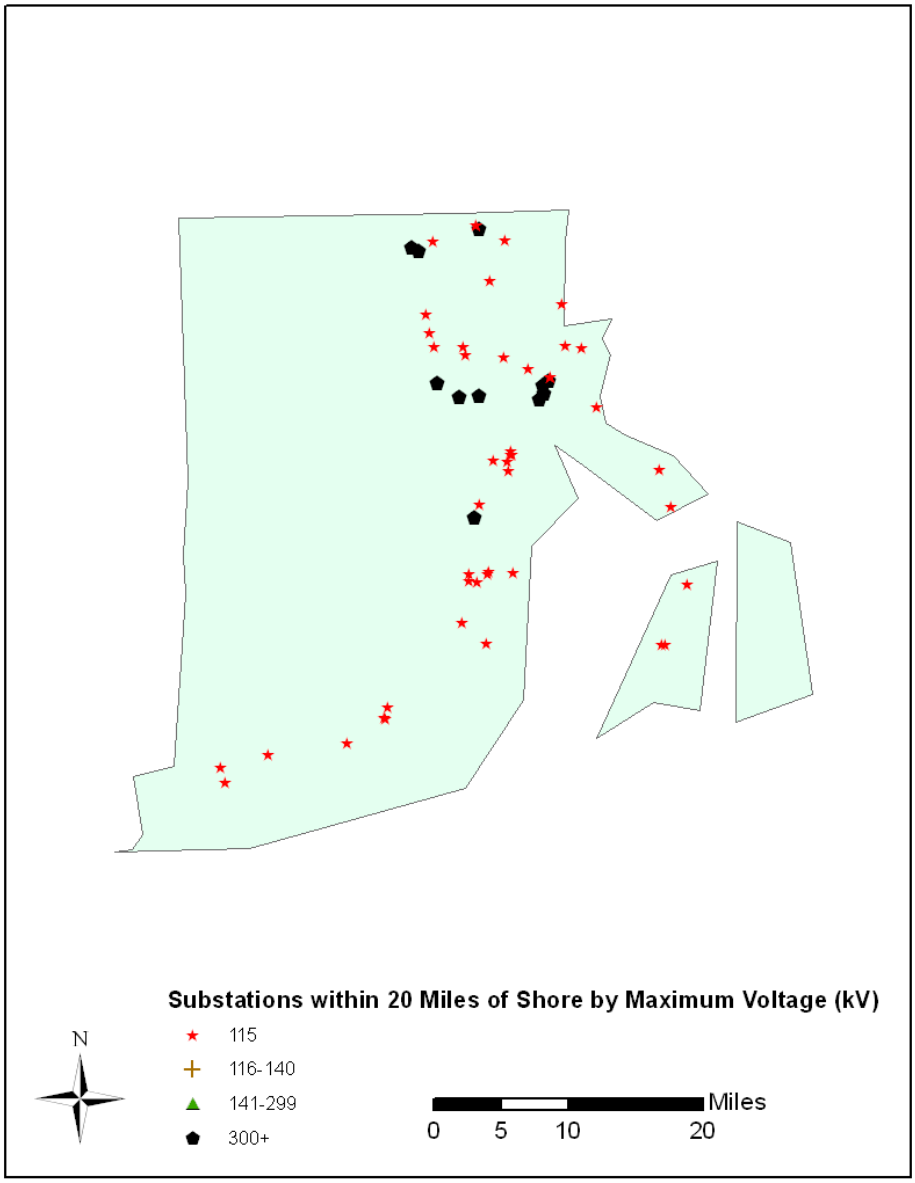


Figure D-34. Rhode Island—115 kV+ substations within 20 miles of the coast.

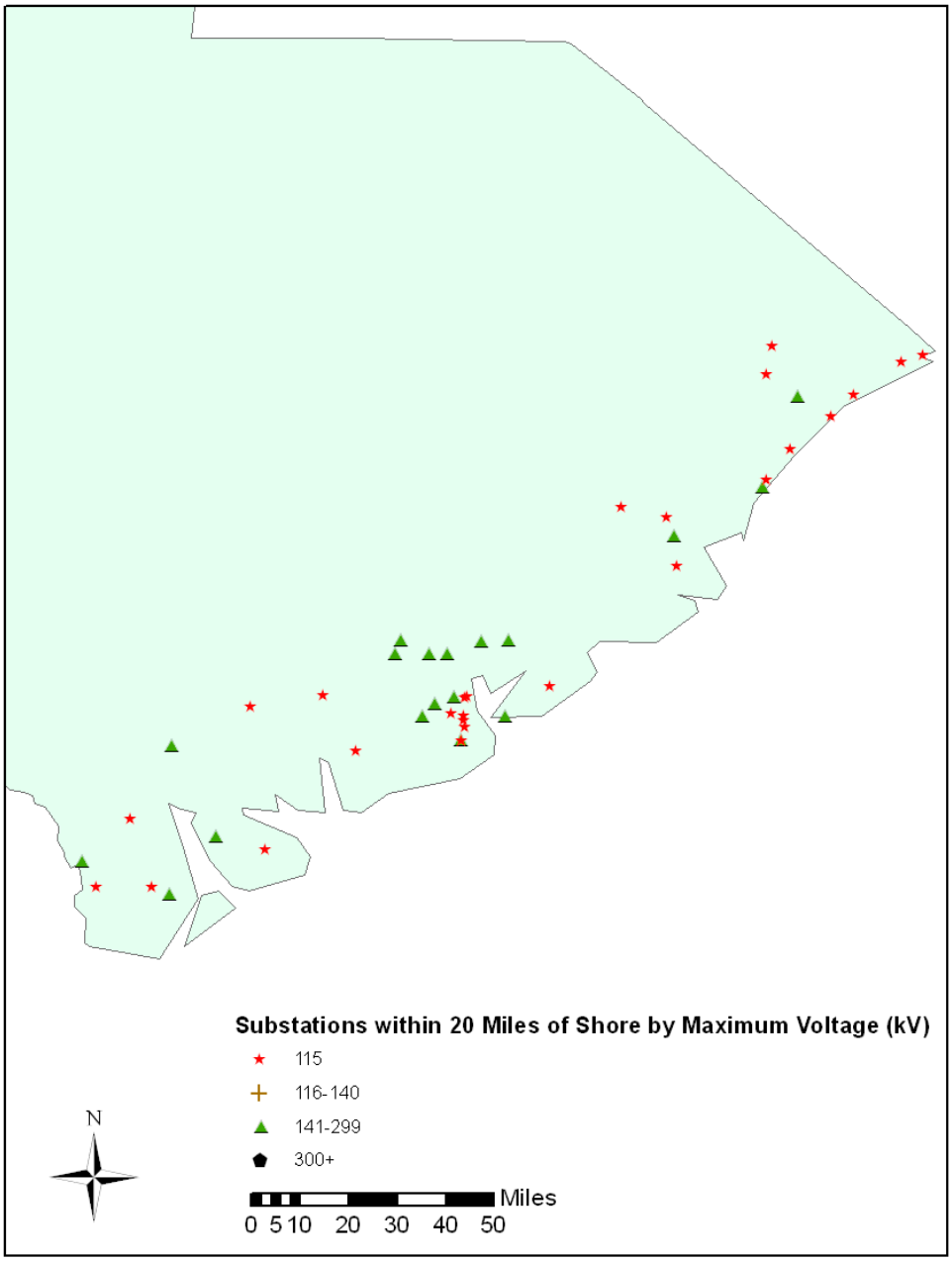


Figure D-35. South Carolina—115 kV+ substations within 20 miles of the coast.

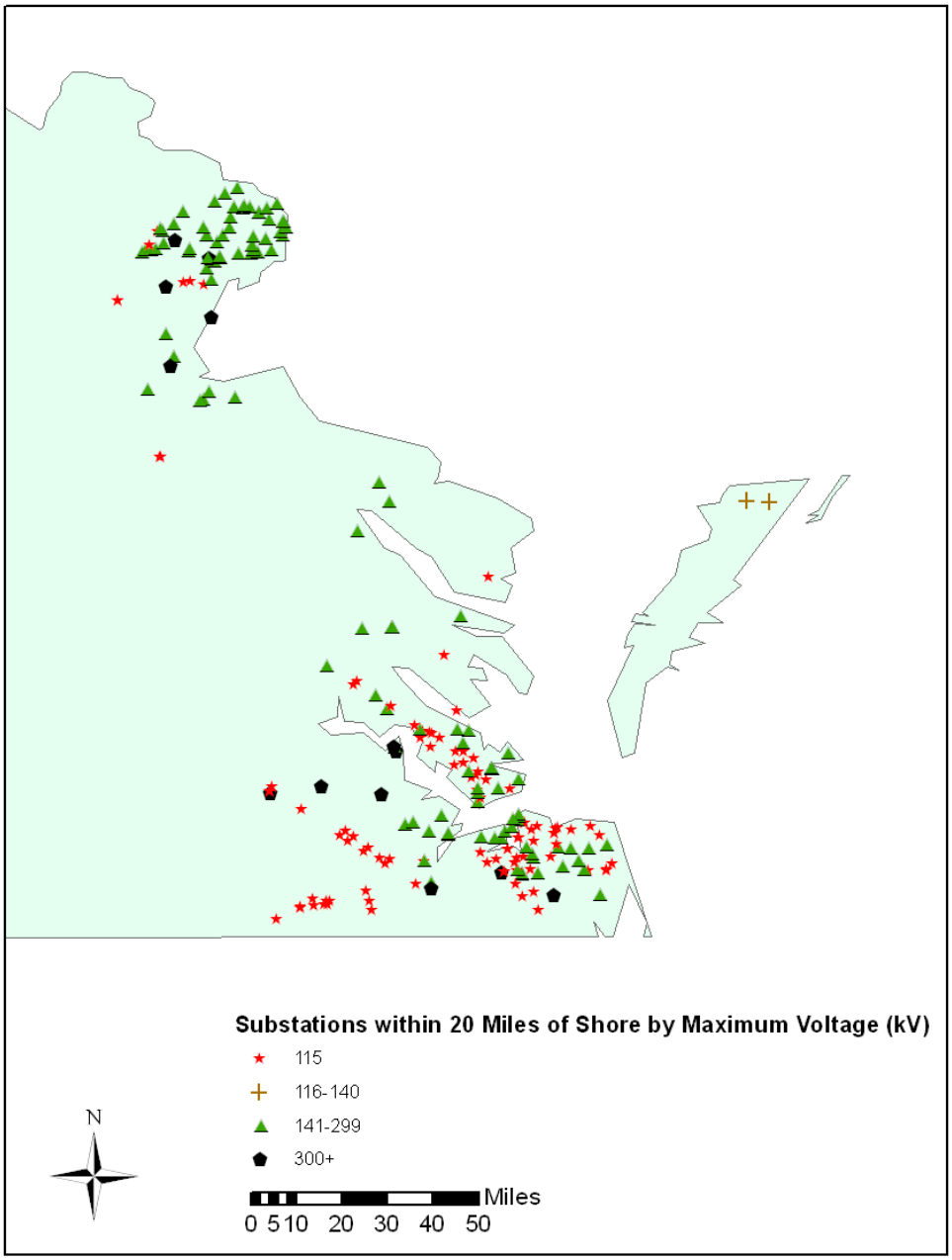


Figure D-36. Virginia—115 kV+ substations within 20 miles of the coast.

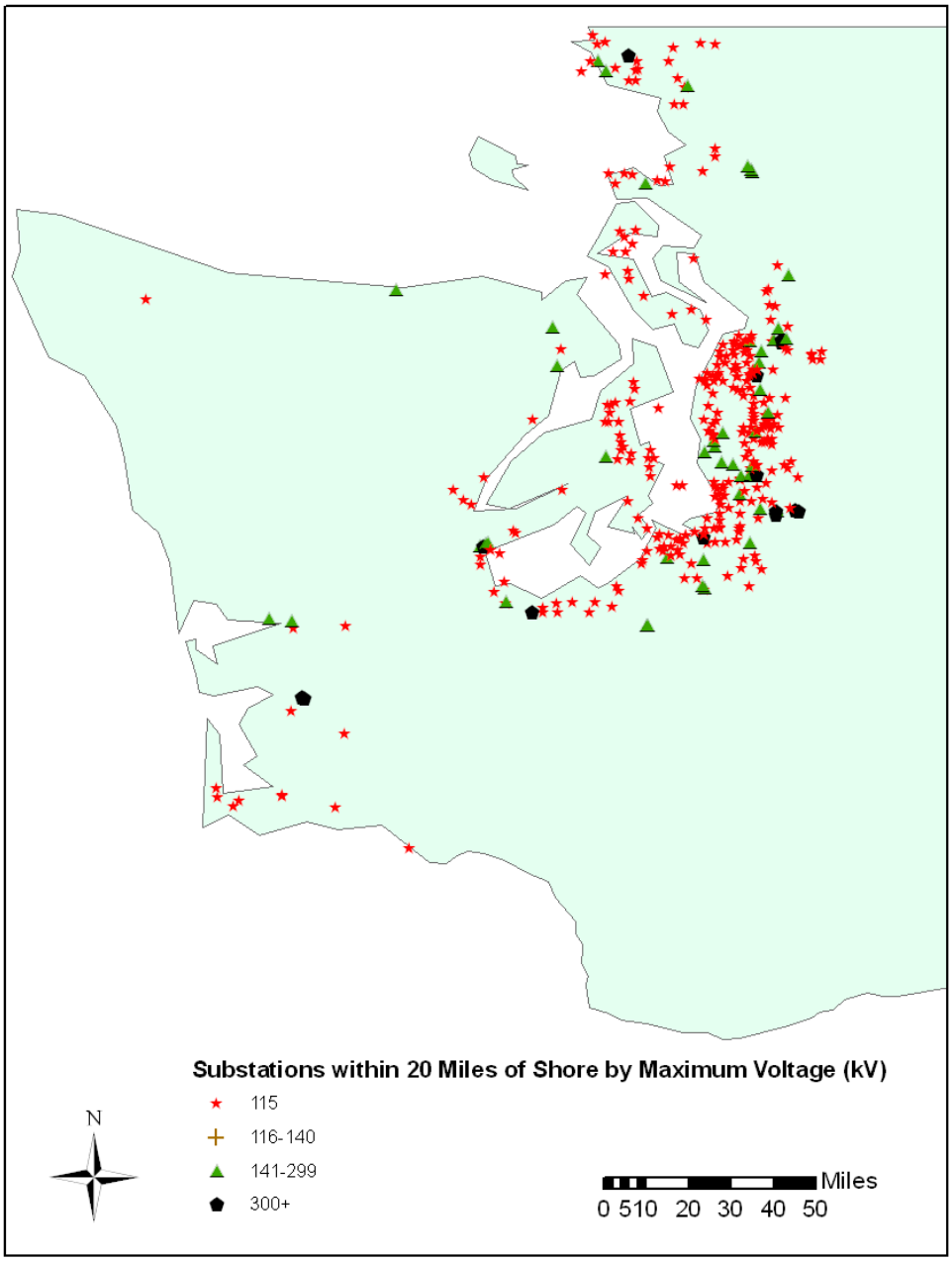


Figure D-37. Washington—115 kV+ substations within 20 miles of the coast.

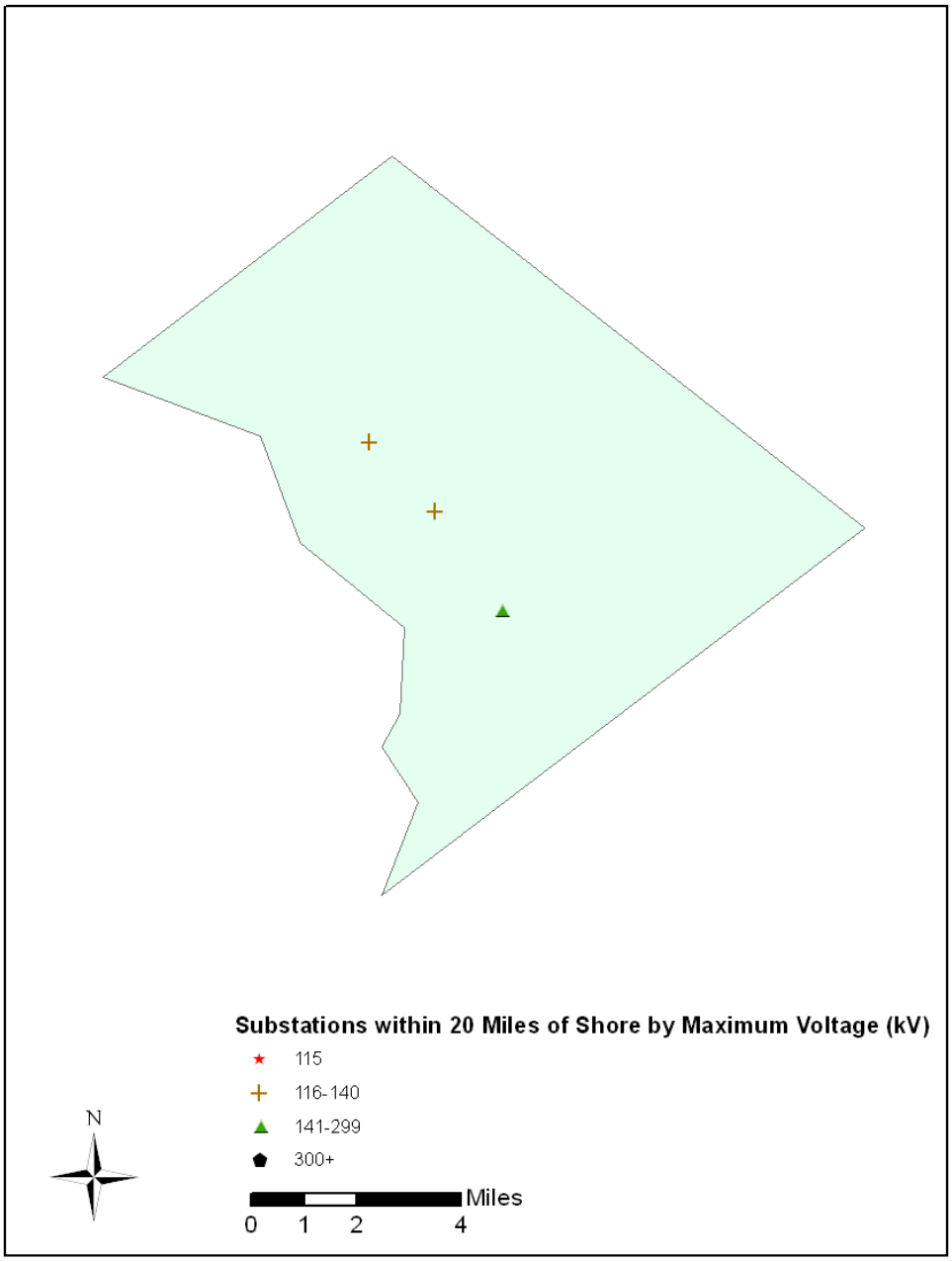


Figure D-38. District of Columbia—115 kV+ substations within 20 miles of the coast.

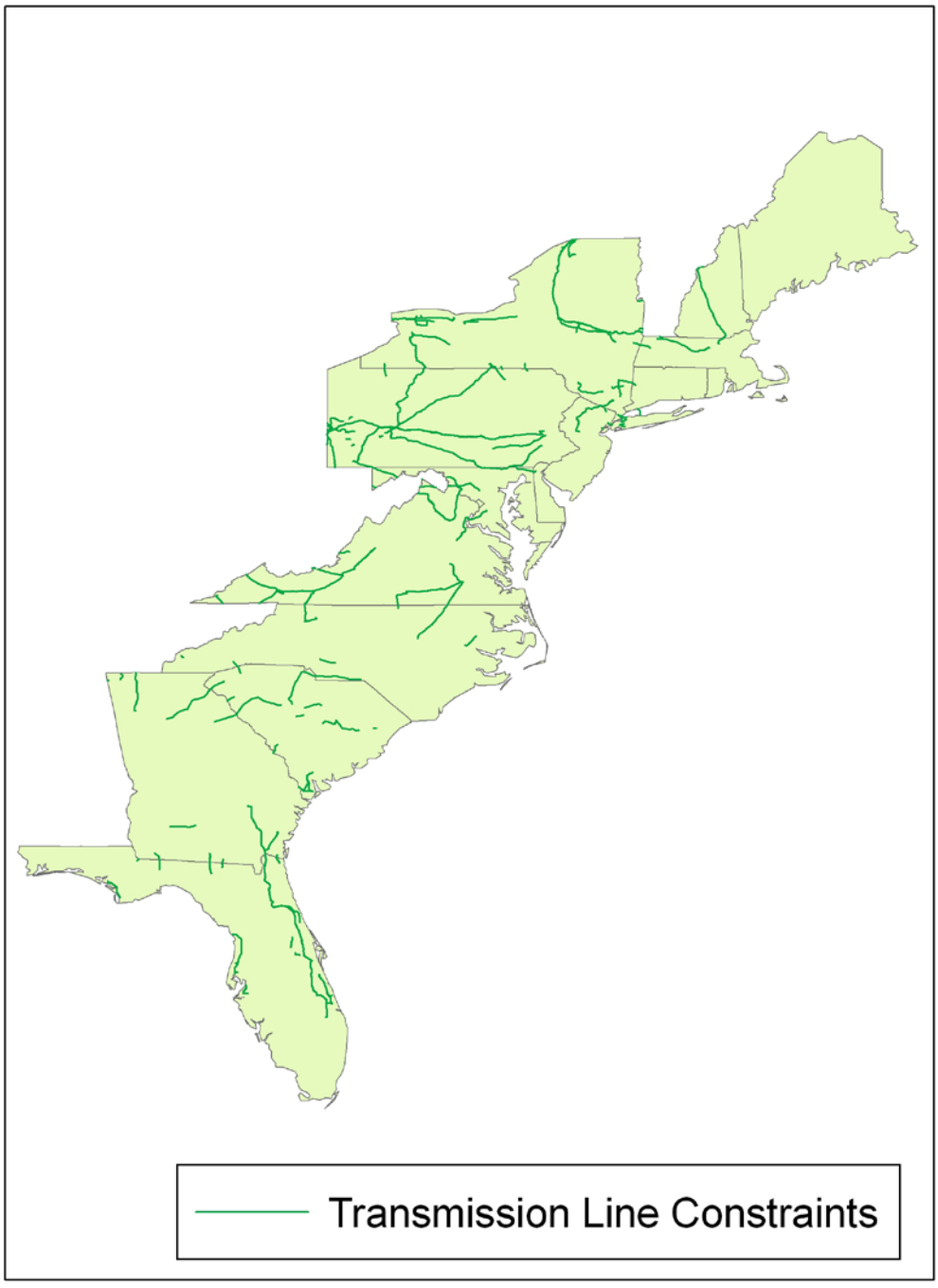


Figure D-39. East Coast transmission line constraints.

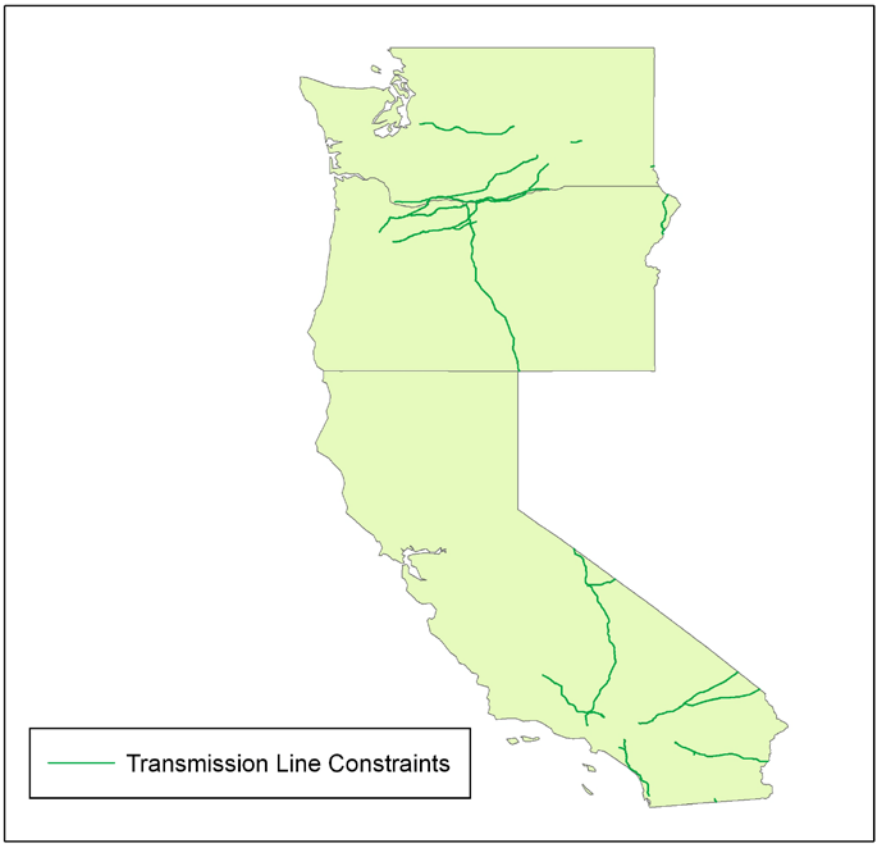


Figure D-40. West Coast transmission line constraints.

Appendix E
U.S. Shipyard Directory

This shipyard directory was developed by Tim Colton of Shipbuilding History. The table does not include 1) establishments that only build or repair pleasure craft (other than megayachts) and/or non-commercial fishing vessels, 2) establishments that are essentially manufacturers with no waterfront operations, or 3) establishments that are essentially maintenance departments for their parent companies.

"Builder or Repairer" and "Size Category" Key

Builder or Repairer Variable		Size Category Variable	
Symbol	Meaning	Symbol	Meaning
B	Builder	L	Large oceangoing naval and commercial ships, fully facilitized, with in-house design capabilities
R	Repairer	M	Mid-sized oceangoing commercial ships, rigs, barges, etc., fully facilitized, with in-house design capabilities
BR	Builder and repairer	S	Small ships, boats, and barges for coastal or inland service, with limited facilities and capabilities
		A	Aluminum boats for commercial and/or governmental use
		Y	Yachts, i.e., custom-designed and built yachts that are at least 100 feet in length
		T	Topside capability only, i.e., without any dry-docking capability

Table E-1

U.S. Shipyard Directory

Shipyard	Builder or Repairer	Size Category	Street Address	City	State	Zip	Phone	Fax	Point of Contact	Link to Web Site	Link to Past Record and Current Workload
BAE Systems San Diego SR	R	L	Foot of Sampson Street	San Diego	CA	92170	(619) 238-1000	(619) 239-1751	Pete Henning	www.baesystems-sandiegoshiprepair.com	
BAE Systems San Francisco SR	R	L	Foot of 20th Street	San Francisco	CA	94120	(415) 861-7447	(415) 558-8466	Dennis Deisinger	www.baesystems-sanfranciscoshiprepair.com	
Bay Ship & Yacht	R	S	2900 Main Street	Alameda	CA	94501	(510)-337-9122	(510) 337-0154	Mike Anderson	www.bay-ship.com	
Bay Ship & Yacht	R	S	310 West Cutting Blvd.	Richmond	CA	94804	(510) 237-0140	(510) 237-2253	Steve Taft	www.bay-ship.com	
Continental Maritime	R	T	1995 Bay Front Street.	San Diego	CA	92113	(619) 234-8851	(691) 696-7358	Dan Flood	www.continentalmaritime.com	
Fashion Blacksmith	R	S	121 Starfish Way	Crescent City	CA	95531	(707) 464-9219		Dale Long		
GD/NASSCO	BR	L	Harbor Drive & 28th Street	San Diego	CA	92113	(619) 544-3400	(619) 544-3541	Fred Harris	www.nassco.com	NASSCO
Larson Boat Shop, Al	BR	S	1046 S. Seaside Drive	San Pedro	CA	90731	(310) 514-4150	(310) 832-7310	Jack Wall	www.larsonboat.com	
San Pedro Boat Works, Inc.	R	S	Berth 44	San Pedro	CA	90731	(310) 832-7203	(310) 514-0686			
Stone Boat Yard	R	S	2517 Blanding Avenue	Alameda	CA	94501	(510) 523-3030		Richard Maguire		
SWATH Ocean Systems	B	A	997 G Street	Chula Vista	CA	91910	(619) 409-7888	(619) 409-7891	Greg Smith	www.swathocean.com	
Van Peer Boat Works	B	S	32600 Highway 20	Fort Bragg	CA	95437	(707) 964-6712				Van Peer
Ventura Harbor Boatyard	R	S	1415 Spinnaker Drive	Ventura	CA	93001	(805) 654-1433	(805) 654-8066	Steve James	www.vhby.com	
Wilmington Marine Service, Inc.	R	S	801 South Fries Avenue.	Wilmington	CA	90744	(310) 834-1186	(310) 834-1816	Dinko Bilicich		
Buchanan Marine	R	S	39 Ferry Street	New Haven	CT	6513	(203) 466-0484	(203) 466-3802	Stephen Mitchell	www.buchananmarinelp.com	
Derecktor Shipyard Connecticut	B	S	837 Seaview Avenue	Bridgeport	CT	6607	(203) 336-0108	(203) 362-1464	Gavin Higgins	www.derecktor.com	Derecktor
GD/Electric Boat	B	L	75 Eastern Point Rd	Groton	CT	6340	(860) 433-3000	(860) 433-1566	John Casey	www.gdeb.com	Electric Boat
Thames Shipyard & Repair Co.	R	S	2 Ferry Street	New London	CT	6320	(860) 442-7394	860/440-3492	Adam Wronowski		
Atlantic Marine Florida	B	M	8500 Heckscher Drive	Jacksonville	FL	32226	(904) 251-1545	(904) 251-3500	Kevin Wilson	www.atlanticmarine.com	Atlantic
Atlantic Marine Florida	R	S	8500 Heckscher Drive	Jacksonville	FL	32226	(904) 251-1545	(904) 251-3500		www.atlanticmarine.com	
Broward Marine	B	Y	750 N.E. 7th Avenue	Dania Beach	FL	33004	(954) 925-8118	(954) 927-4200		www.browardmarine.com	Broward
Derecktor Shipyard Florida	BR	S	775 Taylor Lane	Dania	FL	33004	(954) 920-5756	(954) 925-1146	Paul Derecktor	www.derecktor.com	Derecktor
Detyens Shipyards	R	S	9852 Heckscher Drive.	Jacksonville	FL	32226	(904) 251-3707	(904) 251-0040	Bill Hirsch	www.detyens.com	
Duckworth Steel Boats	B	S	1051 Island Avenue	Tarpon Springs	FL	34689	(727) 934-2550	(727) 937-7252	Junior Duckworth	www.duckworthboats.com	Duckworth

Shipyard	Builder or Repairer	Size Category	Street Address	City	State	Zip	Phone	Fax	Point of Contact	Link to Web Site	Link to Past Record and Current Workload
Eastern Shipbuilding	BR	S	2200 Nelson Street	Panama City	FL	32401	(850) 763-1900	(850) 763-7904	Kenneth Munroe	www.easternshipbuilding.com	Eastern
Eastern Shipbuilding	BR	S	13300 Allanton Road	Panama City	FL	32404	(850) 522-7400	(850) 871-4350	Kenneth Munroe	www.easternshipbuilding.com	Eastern
Freeport Shipbuilding	B	A	P.O.Box 49	Freeport	FL	32439	(850) 835-4125	(850) 835-4873	Jim Murray	www.freeportshipbuilding.com	Freeport
Gulf County Shipbuilding	B	S	1550 Old Dynamite Dock Rd	Port St. Joe	FL	32456	(850) 229-9300	(850) 229-9422	John Dixon	www.gcship.com	
Gulf Marine Repair	R	S	1800 Grant Street	Tampa	FL	33605	(813) 247-3153	(813) 247-6017	C. R. (Rick) Watts, Jr.	www.gulfmarinerepair.com	
Harley Shipbuilding	B	A	300 South First Avenue	Bartow	FL	33830	(863) 533-2800	(863) 533-0787	Howard Harley	www.harleyboats.com	
Int'l. Ship Repair & Marine	R	S	1616 Penny St.	Tampa	FL	33605	(813) 247-1118	(813) 247-6553	Dave Sessums	www.internationalship.com	
Keith Marine	B	S	195 Comfort Road	Palatka	FL	32178	(904) 312-0000	(904) 312-9811	Dick Keith	www.keithmarine.com	Keith
Lazzara Yachts	B	Y	5300 W. Tyson Avenue	Tampa	FL	33611	(813) 835-5300			www.lazzarayachts.com	Lazzara
Marine Inland Fabricators	B	S	1725 Buchanan Street	Panama City	FL	32409	(850) 265-1383	(850) 265-0487	Stewart Sumpton	www.marineinland.com	Marine Inland
Mobro Marine	BR	S	606 State Road 16 East	Green Cove Springs	FL	32043	(904) 284-9670	(904) 358-8706	John Rowland	www.mobromarine.com	Mobro Marine
Newcastle Yachts	B	Y	5658 North Oceanshore Blvd.	Palm Coast	FL	32137	(386) 447-0999	(386) 447-7810	Kevin Keith	www.newcastleyacht.com	Newcastle Yachts
North Florida Shipyards	R	S	Foot of East Adams St.	Jacksonville	FL	32202	(904) 354-3278	(904) 353-2665	Joe Shiffert	www.northfloridashipyard.com	
Patti Shipyard	B	S	306 South Pinewood Lane.	Pensacola	FL	32592	(904) 453-1282	(904) 453-8835	Frank Patti, Sr.	www.pattibuilt.com	Patti
Progressive Industrial	B	S	1412 18th Avenue Drive	Palmetto	FL	34221	(941) 723-0201	(941) 723-9422	Brian Degulis	www.pushboats-barges.com	Progressive
Sisco Marine	B	S	1725 Buchanan Street	Panama City	FL	32409	(850) 265-1383	(850) 265-0487		www.siscomarine.com	Sisco
St. Johns Shipbuilding	B	S	560 Stokes Landing Road	Palatka	FL	32177	(386) 328-6054	(386) 328-6046	Amanda Barfield	www.stjohnsshipbuilding.com	St. Johns
Tampa Ship	B	M	1130 McClosky Blvd.	Tampa	FL	33605	(813) 248-9310	(813) 241-4011		www.tampabayship.com	Tampa
Tampa Ship	R	L	1130 McClosky Blvd.	Tampa	FL	33605	(813) 248-9310	(813) 241-4011		www.tampabayship.com	
Westport Yachts	B	Y		Tampa	FL					www.westportyachts.com	Westport Yachts
Savannah Marine Services	R	T	Hutchison Island	Savannah	GA	31401	(912) 232-3943	(912) 232-2717	Edwin Erskine		
Thunderbolt Marine	R	S	3124 River Drive	Thunderbolt	GA	31410	(912) 352-4931	(912) 352-4958	Tom Wright	www.thunderboltmarine.us	
Atlantic Marine Boston	R	L	32A Drydock Avenue	Boston	MA	2210	(617) 330-5045	(617) 330-5044	Steve DiLeo	www.bostonship.com	
Fairhaven Shipyard	R	S	50 Fort Street	Fairhaven	MA	2719	(508) 996-8591	(508) 992-1326		www.fairhavenshipyard.com	
Gladding-Hearn Shipbuilding	B	A	1 Riverside Ave.	Somerset	MA	2726	(508) 676-8596	(508) 672-1873	Bernard Giroux	www.gladding-hearn.com	Gladding
Kelley Shipyard, D. N.	R	S	32 Water Street	Fairhaven	MA	2719	(508) 999-6266	(508) 999-2513	David Kelley	www.dnkelley.com	
Seaboats	BR	S	1338 Davol Street	Fall River	MA	2720	(508) 677-2700	(508) 677-2702		www.seaboatsinc.com	Seaboats
Chesapeake Sbldg.	B	S	710 Fitzwater Street	Salisbury	MD	21801	(410) 742-4900	(410) 742-3689	Tony Severn	www.chesapeakeshipbuilding.com	Chesapeake
General Ship Repair Corp.	R	S	1449 Key Highway.	Baltimore	MD	21230	(410) 752-7620	(410) 752-4850		www.generalshiprepair,com	

Shipyard	Builder or Repairer	Size Category	Street Address	City	State	Zip	Phone	Fax	Point of Contact	Link to Web Site	Link to Past Record and Current Workload
Yacht Maintenance	R	S	101 Hayward Street	Cambridge	MD	21613	(410) 228-8878	(410) 228-4216		www.yachtmaintenanceco.com	
Cianbro	R	S	60 Cassidy Point Drive	Portland	ME	4102	(207) 773-5852	(207) 773-7617	Pete Vigue	www.cianbro.com	
GD/Bath Iron Works	B	L	700 Washington Street	Bath	ME	4530	(207) 443-3311	(207) 432-1567	Jeff Geiger	www.biw.com	Bath
Hinckley & Co.	B	Y	130 Shore Road	Southwest Harbor	ME	4679	(207) 204-5531	(207) 244-9833			
Hodgdon Yachts	B	Y	P. O. Box 505	East Boothbay	ME	4544	(207) 633-4194	(207) 633-4568	Tim Hodgdon	www.hodgdonyachts.com	Hodgdon Yachts
Washburn & Doughty	B	S	7 Enterprise Street	East Boothbay	ME	4544	(207) 633-6517	(207) 633-7007	Bruce Doughty	www.washburndoughty.com	Washburn
Custom Steel Boats	B	S	102 Yacht Drive	Merritt	NC	28556	(252) 745-7447	(252) 745-7066	Teresa Flowers	www.customsteelboats.com	
Hatteras Yachts	B	Y	110 North Glenburnie Road	New Bern	NC	28560	(252) 633-3101	(252) 634-4813		www.hatterasyachts.com	Hatteras Yachts
Bayonne Drydock	R	L	P. O. Box 240	Bayonne	NJ	7002	(201) 823-9295	(201) 823-9298	Kevin Sullivan	www.bayonnedrydock.com	
Union Dry Dock & Repair	R	S	901 Sinatra Drive	Hoboken	NJ	7030	(201) 792-9090	(201) 792-4977	Bob Burke		
Yank Marine	B	S	Mosquito Landing Road	Tuckahoe	NJ	8250	(609) 628-2928	(609) 628-2628	John C. Yank, Jr.	www.yankmarine.com	Yank
Caddell Dry Dock	R	S	Foot of Broadway	Staten Island	NY	10310	(718) 442-2112	(718) 981-7493	Steve Kalil	www.caddelldrydock.com	
Derecktor Shipyard New York	BR	Y	311 East Boston Post Road	Mamaroneck	NY	10543	(914) 698-5020	(914) 698-6596	Paul Derecktor	www.derecktor.com	Derecktor
G.M.D. Shipyard	R	L	Brooklyn Navy Yard	Brooklyn	NY	11205	(718) 260-9200	(718) 260-9284	Michael Cranston	www.bayonnedrydock.com	
May Ship Repair Contracting	R	S	3075 Richmond Terrace.	Staten Island	NY	10303	(718) 442-9700	(718) 273-7255		www.mayship.com	
Muller Boat Works	R	S	2214 E. 69th Street	Brooklyn	NY	11234	(718) 444-4343	(718) 763-8836			
Reynolds Shipyard	R	T	200 Edgewater Street	Staten Island	NY	10305					
Scarano Boat Building	B	S	Port of Albany	Albany	NY	12202	(518) 463-3401	(518) 463-3403		www.scaranoboat.com	Scarano
Cascade General	R	L	5555 N. Channel Ave.	Portland	OR	97217	(503) 285-1111	(503) 285-0361	Terry Deskins	www.casgen.com	
Charleston Shipyard	R	S	5319 Troller Road	Portland	OR	97420	(541) 888-3703	(541) 888-6111	Don Yost	www.charlestonmarina.com	
Diversified Marine	B	S	1801 N. Marine Drive	Portland	OR	97217	(503) 289-2669	(503) 289-2825	Kurt Redd	www.diversifiedmarineinc.com	Diversified
Foss Shipyard	R	S	611 A Street	Rainier	OR	97048	(503) 556-8332	(503) 556-2396	Bob Sold	www.foss.com	
Giddings Boat Works	R	T	63130 Troller Road.	Charleston	OR	97420	(541) 888-4712	(541) 888-6011	Phyllis Scheitzer		
Gunderson Marine	B	S	4350 N.W. Front Avenue	Portland	OR	97210	(503) 228-9281	(503) 242-0682	Charles Garman	www.gbrx.com	Gunderson
Int'l. Marine Contractors	R	T	4201 Trans Pacific Parkway	North Bend	OR	97459	(541) 756-3783	(541) 751-8619	John Binford	www.imcico.com	
Reedsport Machine & Fab.	R	T	170 Bay Front Loop.	Winchester Bay	OR	97468	(541) 271-5414			www.reedsportmachine.com	
Southern Oregon Marine	R	S	155 East Market Avenue	Coos Bay	OR	97420	(541) 269-2116	(541) 267-7848		www.sause.com/somar.htm	
Sundial Marine	BR	S	5605 NE Sundial Rd	Troutdale	OR	97060	(503) 667-1974	(503) 666-7872	Don Nugent	www.sundial-marine.com	Sundial
U.S. Barge	B	S	5555 N. Channel Ave.	Portland	OR	97217	(503) 247-1930	(503) 247-1931	Frank Foti	www.usbarge.com	US Barge
Wahl Marine	B	S	100 Port Dock Road	Reedsport	OR	97467	(541) 271-5720	(541) 271-4349		www.fredwahlmarine.com	Fred Wahl

Shipyard	Builder or Repairer	Size Category	Street Address	City	State	Zip	Phone	Fax	Point of Contact	Link to Web Site	Link to Past Record and Current Workload
Construction, Fred Zidell Marine	B	S	3121 S.W. Moody Ave.	Portland	OR	97201	(503) 228-8691	(503) 228-6750	Jay Zidell	www.zidell.com	Zidell
Aker Philadelphia	B	M	Philadelphia Nav. Bus. Ctr.	Philadelphia	PA	19112	(215) 875-2600	(215) 875-2700	Jim Miller	www.akerphiladelphia.com	Aker
Atlantic Marine Philadelphia	R	L	Philadelphia Nav. Bus. Cr.	Philadelphia	PA	19112	(215) 218-0101			www.bostonship.com	
Brownsville Marine Products	B	S	1800 Paul Thomas Boulevard	Brownsville	PA	15417	(724) 785-2575	(724) 785-2577		www.brownsvillemarine.com	Brownsville
C. & C. Marine Maintenance	R	S	1500 State Street North	Clairton	PA	15025	(412) 233-4124	(412) 233-4137		www.barges.us	
Donjon Shipbuilding & Repair	BR	S	220 East Bayfront Parkway	Erie	PA	16507	(814) 455-6442	(814) 455-8121	Ken Boothe, Sr.	www.donjonshipbuilding.com	Donjon
Susquehanna Santee	B	A	384 Millwood Rd.	Willow Street	PA	17584	(717) 464-3668	(717) 464-1935	Jeff Smith	www.ssboatworks.com	
Blount Boats	B	S	461 Water Street	Warren	RI	2885	(401) 245-8300	(401) 245-8303	Marcia Blount	www.accl-smallships.com	Blount Boats
Newport Shipyard Company	R	S	1 Washington Street	Newport	RI	2840	(401) 846-6000	(401) 846-6001	Charlie Dana	www.newportshipyard.com	
Promet Marine	R	S	242 Allens Avenue	Providence	RI	2905	(401) 467-3730	(401) 467-5370	Chris Braga	www.prometmarineservices.com	
SENESCO	B	S	10 MacNaught St.	North Kingstown	RI	2852	(401) 295-0373	(401) 294-4140	Frederick Frost	www.senescomarine.com	SENESCO
Detyens Shipyards	R	L	1670 Drydock Ave.	N. Charleston	SC	29405	(843) 308-8033	(843) 308-8059	Dave Enman	www.detyens.com	
Metal Trades Inc.	BR	S	4194 Highway 165	Hollywood	SC	29449	(843) 889-6441	(843) 889-5242	Randy Brown	www.metaltrades.com	Metal Trades
Stevens Marine Services	R	S	4170 Hwy 165	Yonges Island	SC	29448	(843) 889-2254	(843) 889-6119	Robert Hope	www.stevens-towing.com	
BAE Systems Norfolk SR	R	L	750 Berkley Avenue	Norfolk	VA	23501	(757) 494-4000	(757) 545-0604	Dick Camacho	www.baesystems-norfolkshiprepair.com	
Colonna's Shipyard	R	S	400 E. Indian River Rd.	Norfolk	VA	23523	(757) 545-2414	(757) 543-2480	Tom Godfrey	www.colonnaship.com	
Davis Boat Works, Inc.	R	S	99 Jefferson Avenue	Newport News	VA	23607	(757) 247-0101	(757) 244-7866	Susan Wagner	www.davisboat.com	
Earl Industries	R	S	2 Harper Avenue.	Portsmouth	VA	23707	(757) 397-1039	(757) 397-8535		www.earl-ind.com	
Lyon Shipyard	R	S	Foot of Brown Avenue.	Norfolk	VA	23501	(757) 622-4661	(757) 625-7137	George Lyon	www.lyonshipyard.com	
Marine Hydraulics	R	T	543 East Indian River Rd.	Norfolk	VA	23523	(757) 545-6400	(757) 545-8169	Gary Brandt	www.mhi-shiprepair.com	
Metro Machine of VA	R	L	200 Ligon Street.	Norfolk	VA	23501	(757) 543-6801	(757) 494-0430	Rich Goldbach	www.memach.com	
NGSB Newport News Operations	BR	L	4101 Washington Avenue	Newport News	VA	23607	(757) 380-2000	(757) 380-4980	Mike Petters	www.nn.northropgrumman.com	Newport News
Tecnico	R	T	831 Industrial Avenue	Chesapeake	VA	23324	(757) 545-4013	(757) 543-5402	Michael Torrech	www.tecnicocorp.com	
TEC-Skanska, Inc.	R	S	809 S. Military Hwy.	Virginia Beach	VA	23464	(757) 578-4100	(757) 420-3551		www.tidewater-skanska.com	
All American Marine	B	A	200 Harris Avenue	Bellingham	WA	98225	(360) 647-7602	(360) 647-7607	Matt Mullett	www.allamericanmarine.com	All American
Christensen Yachts	B	Y	4400 S.E. Columbia Way	Vancouver	WA	98661	(360) 695-3238	(360) 695-3252	Dave Christensen	www.christensenyachts.com	Christensen
Dakota Creek Industries	B	S	820 4th Street	Anacortes	WA	98221	(360) 293-9575	(360) 293-6432	Dick Nelson	www.dakotacreek.com	Dakota Creek
Delta Marine Industries	B	Y	1608 S. 96th Street	Seattle	WA	98108	(206) 763-2383	(206) 762-2627		www.deltamarine.com	Delta Marine

Shipyard	Builder or Repairer	Size Category	Street Address	City	State	Zip	Phone	Fax	Point of Contact	Link to Web Site	Link to Past Record and Current Workload
Everett Shipyard	R	S	1016 14th Street	Everett	WA	98201	(425) 259-0137	(425) 258-2298	Kevin Quigley	www.everettship.com	
Fairhaven Shipyard	R	S	201 Harris Avenue	Bellingham	WA	98225	(360) 647-0080	(360) 738-0367			
Fishing Vessel Owners	R	S	1511 W. Thurman	Seattle	WA	98119	(206) 282-6421	(206) 284-9094	Don Lindblad		
Foss Shipyard	B	S	660 West Ewing Street	Seattle	WA	98119	(206) 270-4888	(206) 281-4732	Jim Stewart	www.foss.com	Foss
Kvichak Marine Industries	B	A	469 NW Bowdoin Place	Seattle	WA	98107	(206) 545-8485	(206) 545-3504	Keith Whittemore	www.kvichak.com	Kvichak
Lake Union Drydock	R	S	1515 Fairview Ave., E.	Seattle	WA	98102	(206) 323-6400	(206) 324-0124	Hobie Stebbins	www.ludd.com	
Marine Ind. Northwest	R	S	313 East F St.	Tacoma	WA	98421	(206) 627-9136	(206) 627-1094	Don Slater	www.mininw.com	
Martinac Shipbuilding	BR	S	401 East 15th Street	Tacoma	WA	98421	(253) 572-4005	(253) 627-2816	Joe Martinac	www.martinacship.com	Martinac
Nichols Bros. Boatbuilders	B	S	P.O. Box 580	Freeland	WA	98249	(360) 331-5500	(360) 331-7484	Scott Murphy	www.nicholsboats.com	Nichols Bros
Nordlund Boats	B	Y	1626 Marine View Drive	Tacoma	WA	98422	(253) 627-0605	(253) 627-0785		www.nordlundboat.com	Nordlund
North Star Yachts	B	Y	1265 N.W. 3rd Street	Kalama	WA	98625	(360) 673-1364			www.northstaryachts.com	North Star
Northern Marine	B	Y	3116 V Place	Anacortes	WA	98221	(360) 299-8400	(360) 299-2600	Dave Mahalko	www.northernmarine.com	Northern Marine
Northlake Shipyard	R	S	1441 N. Northlake	Seattle	WA	98103	(206) 632-1441	(206) 632-8628	John Coleman	www.northlakeshipyard.com	
Pacific Fishermen	R	S	5351 24th Avenue N.W.	Seattle	WA	98107	(206) 784-2562	(206) 784-1986	Doug Dixon	www.pacificfishermen.com	
Pacific Rim Industrial	R	T	535 Marine Drive	Port Angeles	WA	98362	(360) 452-2825	(360) 452-2725	Jim Mattix	www.primeshiprepair.com	
Rozema Boat Works	B	A	11130 Bayview-Edison Road	Mount Vernon	WA	98273	(360) 757-6004	(360) 757-6005	Dirk Rozema	www.rozemaboatworks.com	Rozema
Thompson Metal Fabricators	B	S	3000 S.E. Hidden Way	Vancouver	WA	98661	(360) 696-0811	(360) 693-1017		www.tmfab.com	
Todd Pacific Shipyards	B	M	1801 16th Ave. S.W.	Seattle	WA	98134	(206) 623-1635	(206) 442-8505	Steve Welch	www.toddpacific.com	Todd
Todd Pacific Shipyards	R	L	1801 16th Ave. S.W.	Seattle	WA	98134	(206) 623-1635	(206) 442-8505	Steve Welch	www.toddpacific.com	
Union Bay Fabrication	R	S	2151-2171 N. Northlake Way	Seattle	WA	98103	(206) 545-0654	(206) 545-0655		www.unionbayfab.com	
Vic Franck's Boat Co., Inc.	R	S	1109 N. Northlake Way.	Seattle	WA	98103	(206) 632-7000			www.viboco.com	
Western Towboat	B	S	617 NW 40th Street	Seattle	WA	98107	(206) 789-9000	(206) 789-9755	Ric Shrewsbury	www.westerntowboat.com	Western
Westport Yachts	B	Y	1807 N. Nyhus Street	Westport	WA	98595	(360) 268-0117	(360) 268-1800		www.westportyachts.com	Westport Yachts
Westport Yachts	B	Y		Port Angeles	WA					www.westportyachts.com	Westport Yachts
Westport Yachts	B	Y		Hoquiam	WA					www.westportyachts.com	Westport Yachts
Workskiff	B	A	18204 Bothell Hwy.	Bothell	WA	98012	(425) 481-2628	(425) 481-7688	George Lundgren	www.workskiff.com	

Source: Colton, T. **2010**. ShipbuildingHistory.com. Available from: http://shipbuildinghistory.com/. Used with permission.

The Department of the Interior Mission

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the sound use of our land and water resources, protecting our fish, wildlife and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island communities.

The Bureau of Ocean Energy Management

The Bureau of Ocean Energy Management (BOEM) works to manage the exploration and development of the nation's offshore resources in a way that appropriately balances economic development, energy independence, and environmental protection through oil and gas leases, renewable energy development and environmental reviews and studies.