

1 Wind Energy Plan for Dukes County

2 **DCPC Model Regulations**

3 December 29, 2010

4

Note: These model regulations for the Island Wind DCPC were prepared by MVC staff in cooperation with the Wind Energy Plan for Dukes County Work Group, which included representatives of all Island towns. They are provided to all towns in Dukes County to allow them to put regulations on the warrant for next spring town meetings. Each town may hold hearings, make modifications, or draft its own regulations, in conformance with guidelines of the the Island Wind DCPC.

These regulations assume that the MVC will extend the District dimensions down to the ground and seabed, in order to deal with all components of a wind energy facility and to permit dealing with proposals less than 150 feet high located in areas of critical regional impact identified as Areas of Special Concern.

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15 **1. PURPOSE**

16 **1.1** The purpose of this by-law is to provide for the construction and operation of wind energy
17 facilities and to provide standards for the placement, design, construction, monitoring,
18 modification, and removal of wind energy facilities that address public safety, protect the
19 unique natural, historical, ecological, scientific, cultural and other values of Martha’s
20 Vineyard, and provide adequate financial assurance for decommissioning, all in
21 conformance with the Wind Energy Plan for Dukes County, the Island Wind District of
22 Critical Planning Concern and the enabling legislation of the Martha’s Vineyard
23 Commission (Chapter 831 of the Acts of 1977 as amended).

24 **1.2 Applicability**

25 **1.2.1 Types of Facilities:** This bylaw applies to the following wind energy facilities and met
26 towers, proposed to be constructed within the Island Wind District of Critical Planning
27 Concern (Island Wind DCPC) and the Town’s municipal boundaries after the effective date
28 of the bylaw:

- 29 a) Any facility whose height is more than 150 feet;
- 30 a) Any facility located in the Ocean Zone,

- 31 b) Any facility located in the Land Zone – Exclusionary Area, and Land Zone - Area of
32 Special Concern;
33 c) Any facility located less than six (6) times the turbine height from a municipal
34 boundary;
35 d) Any facility whose turbine is located less than three (3) times the turbine height from
36 the building envelope of an adjacent property;
37 e) Any turbine normally subject to special permit review in a town, for which the town is
38 not authorized to carry out such a review.

39 **1.2.2 Modifications:** Any physical modifications to existing wind facilities, including those
40 approved before the coming into effect of this regulation, that materially alters the type or
41 increases the size of such facilities or other equipment shall require a special permit.

42 **2. DEFINITIONS**

43 **Area of Special Concern:** An area of significant resources or vulnerability within which
44 wind energy facilities are prohibited or may be allowed only if a number of criteria are met.

45 **Avoid, or Minimize and Mitigate:** For the purposes of this bylaw, the phrase “avoid, or
46 minimize and mitigate” shall have the following meaning. The proposal shall be sited and
47 designed to avoid negative impacts on the natural resources or human uses from pre-
48 construction, construction, operation, or decommissioning. However, if the applicant can
49 demonstrate that there is no practicable alternative and the proposal cannot be located or
50 designed to totally avoid these impacts, the SPGA may approve the proposal provided the
51 impacts have been minimized to the greatest extent feasible, and that the remaining
52 impacts have been offset with mitigation measures. The burden is on the applicant to prove
53 that all impacts have been avoided; and that if they cannot be avoided, they have been
54 minimized and offset. If the impacts have not been avoided and/or fully mitigated, the
55 SPGA shall deny the application.

56 **Blade:** Extensions from the hub, which are designed to catch the wind and turn the rotor to
57 generate electricity.

58 **Building Envelope:** The portion of a “buildable” lot, not included in any required yard
59 setback in the town’s zoning bylaw and not part of any regulated wetland resource area.
60 The building envelope may be further constrained by a development or building line
61 restriction of record, or a view easement or other instrument of record, which has an
62 effective life longer than the expected service life of a wind energy facility.

63 **Commercial Wind Energy Facility:** A facility whose primary use is electrical generation to
64 be sold to the wholesale electricity markets.

65 **Communal Wind Energy Facility:** A facility that is owned by, or serves the energy needs
66 of two or more residential customers who reside in a single neighborhood and are served
67 by a single distribution company; and is located within the same neighborhood as the
68 customers that own or are served by the facility. Residents may form associations or other
69 legally binding forms of cooperative ownership for the purpose of building and operating
70 wind energy facilities, and specifying the financial and other responsibilities of the owners in
71 a legally binding agreement.

72 **Community Wind Energy Facility:** A facility in which the majority ownership is held by a
73 municipality, another public entity, or a non-profit energy cooperative located in Dukes
74 County.

75 **Cumulative Impact:** The impact on the environment which results from the incremental
76 impact of the action when added to other past, present, and reasonably foreseeable future
77 actions (especially other facilities for which an application, such as Notices of Intent,
78 building permit applications, or Environmental Notification Forms, have been filed).

79 Cumulative impacts can result from individually minor but collectively significant actions
80 taking place over a period of time.

81 **Cut-out/Furling Wind Speed:** The high wind speed at which the facility will shut-down
82 and/or turn perpendicular to the wind (furled) to protect itself from being overpowered.

83 **District of Critical Planning Concern (DCPC):** A district designated by the MVC as
84 described in the Martha's Vineyard Commission Act (Chapter 831 of the Acts of 1977, as
85 amended).

86 **Endangered Species Act:** The federal Endangered Species Act of 1973.

87 **Exclusionary Area:** An area of exceptional resources or vulnerability within which wind
88 energy facilities are prohibited.

89 **Height:** The height of a wind turbine measured from mean natural grade to the tip of the
90 rotor blade at its highest point, or blade-tip height. With reference to a met tower, "height"
91 shall mean the distance from the mean natural grade of the base to the highest point on the
92 structure.

93 **Hub:** The center of the rotor to which the blades are attached.

94 **Hub Height:** The height as measured from the mean natural grade of the land below the
95 wind energy facility to the center of the rotor or hub.

96 **Island Plan:** The Martha's Vineyard Island Plan, namely, the regional comprehensive plan
97 adopted by the Martha's Vineyard Commission on December 10, 2009.

98 **Island Wind District of Critical Planning Concern (or Island Wind DCPC):** The District
99 designated by the Martha's Vineyard Commission consisting of the Ocean Zone and the
100 Land Zone.

101 **Island Wind DCPC Map:** The map identified in the Wind Energy Plan for Dukes County
102 showing the limits of the Island Wind DCPC, its zones, and its subzones.

103 **Land Zone:** The portion of the Island Wind DCPC consisting of the lands and inland waters
104 within the County of Dukes County extending from the Mean Low Water line landward,
105 except the Elizabeth Islands, the lands and inland waters within the Town of Edgartown,
106 the Indian Common Lands (generally known as the Cranberry Bogs, the Clay Cliffs and
107 Herring Creek) and the Settlement Lands, as was designated as a DCPC on December 17,
108 2009.

109 **Martha's Vineyard Commission ("Commission"):** The regional planning agency of
110 Dukes County established by the Martha's Vineyard Commission Act (Chapter 831 of the
111 Acts of 1977, as amended).

112 **Massachusetts Ocean Management Plan:** The comprehensive plan for Massachusetts
113 ocean waters developed by the Secretary of Energy and Environmental Affairs (EEA) and
114 promulgated on December 31, 2009.

115 **Meteorological Tower (Met Tower):** A tower equipped with devices to measure wind
116 speeds and direction, used for a temporary period to determine how much wind power a
117 site can be expected to generate.

118 **Mitigation:** Mitigation includes the restoration, creation, enhancement, or in exceptional
119 cases, preservation of other resources for the purpose of compensating for unavoidable
120 impacts. The possibility of mitigation shall not indicate that mitigation can necessarily
121 overcome the unsuitability of a site or design.

122 **National Landmark Viewshed:** The primary viewshed of and from the National Natural
123 Landmark of the Gay Head Cliffs as identified in the Wind Energy Plan.

124 **Normally Occupied Building:** A building in which people are generally living, working, or
125 visiting such as homes, offices, stores and schools but not including buildings such as
126 storage facilities, barns, or sheds.

127 **Ocean Zone:** The portion of the Island Wind DCPC consisting of the all ocean waters
128 within the County of Dukes County seaward to the bounds of the municipal corporation, as
129 was designated as a DCPC on November 5, 2009.

130 **On-Site Wind Energy Facility:** A wind project, which is located at a commercial, industrial,
131 agricultural, institutional, or public facility that will consume more than 50% of the electricity
132 generated by the project on site.

133 **Open Space Land:** Land acquired or used for conservation or recreation purposes and is:
134 - owned by a governmental body;
135 - owned by a non-profit organization; or
136 - privately owned and protected by a permanent conservation restriction.

137 **Participating Parcel:** Means a parcel of real estate that is not a project parcel, but is
138 subject to an agreement between the owner and applicant allowing the construction of all or
139 part of a wind energy facility closer to a participating parcel property line or structure on the
140 participating parcel than would be permitted under the by-law in the absence of such an
141 agreement. To qualify as a participating parcel, the agreement between the owner and the
142 applicant must be approved by the SPGA and a notice of that agreement must be recorded
143 in the Dukes County Registry of Deeds.

144 **Project Parcel:** Means the parcel or parcels of real estate on which all or any part of a
145 wind energy facility will be constructed including all parcels in common ownership with the
146 parcel on which the facility will be constructed.

147 **Qualified Areas:** The parts of the Island Wind DCPC that are neither Exclusionary Areas
148 nor Areas of Special Concern.

149 **Receptor:** Any point beyond or at the boundary of the project parcel at which sound levels
150 or flicker are measured or determined.

151 **Rotor:** A wind turbine's blades and the hub to which they are attached.

152 **Special Permit Granting Authority (SPGA):** The special permit granting authority shall be
153 the board of selectmen, planning board, zoning board of appeals, or other town board as
154 designated by zoning by-law for the issuance of special permits, or by this section for the
155 issuance of special permits to construct and operate wind energy facilities. *[Note: Each
156 town may specify which board is the special permit granting authority in this definition, or
157 could replace the term "SPGA" throughout the document.]*

158 **Viewshed:** All of the land, water and sky seen from a point ,or along a series of points,
159 such as a road or trail.

160 **Wind Energy Facility:** All equipment, machinery, structures, and infrastructure, whether
161 located underwater, underground, on the ground, or overhead, utilized in connection with
162 the generation, storage, and transmission of electricity from wind. This includes, but is not
163 limited to, one or more wind turbines, collection and supply equipment, substations,
164 transformers, electrical generators and other electrical equipment, anemometers, control
165 and maintenance facilities, site access, construction areas, service roads, and power lines
166 /corridors up to the point of interconnection with the existing distribution utility.

167 **Wind Energy Plan for Dukes County:** The Plan adopted by the Martha's Vineyard
168 Commission on xxxx. *[Note: The Wind Energy Plan will be adopted by the MVC well before
169 the regulations are adopted at town meetings in April and May 2011.]*

170 **Wind Turbine:** A mechanical device which converts kinetic wind energy into rotational
171 energy that drives an electrical generator. The primary components of a conventional wind
172 turbine are the tower, the nacelle (which houses the electrical generator), and the rotor.

173 **3. GENERAL SITING AND REVIEW REQUIREMENTS**

174 **3.1 Delineation of Zones and Subzones**

175 The Island Wind District of Critical Planning Concern consists of the following zone(s) and
176 subzones.

177 **3.1.1 Ocean Zone:** The Ocean Zone is made of two subzones:

- 178 a) Offshore Exclusionary Areas - Subzone OE, and
- 179 b) Offshore Areas of Special Concern – Subzone OS,

180 **3.1.2 Land Zone:** The Land Zone is made of three subzones:

- 181 a) Land Exclusionary Areas – Subzone LE,
- 182 b) Land Areas of special concern – Subzone LS, and
- 183 c) Land Qualified Areas – Subzone LQ.

184 **3.2 Determination of Exclusionary Areas and Areas of Special Concern**

185 **3.2.1 Offshore Exclusionary Areas:** The Offshore Exclusionary Areas (Subzone OE) include
186 the following areas.

- 187 a) Within two nautical miles of the coast of land other than Nomans Land, or within one
188 mile of Nomans Land.
- 189 b) Glacial moraines identified in the Wind Energy Plan.
- 190 c) Waters less than 20 meters deep (sea duck foraging habitat).
- 191 d) Critical avian habitat identified in the Massachusetts Ocean Management Plan,
192 namely: core nesting, staging and critical foraging areas for the Roseate Tern;
193 nesting, staging and core foraging areas for Special Concern tern species (Arctic,
194 Least, Common); Long-Tailed Duck (Old Squaw to Vineyarders) important habitat;
195 colonial waterbird important nesting habitat; Leach’s Storm Petrel important nesting
196 habitat.
- 197 e) Core habitat of the Fin Whale identified in the Massachusetts Ocean Management
198 Plan.
- 199 f) Areas identified as Critical Habitat under the Endangered Species Act and the
200 regulations thereunder.
- 201 g) Concentrated Boating Areas identified in the Massachusetts Ocean Management
202 Plan, areas with traffic in 2008 of more than 50 vessels of at least 300 tons in size.
203 [Are the ferry areas mapped in the Plan? They do not appear on the final plan’s
204 maps. Moved to combine with shipping lanes (which doesn’t reference MOMP). The
205 shipping lanes are in the next item.]
- 206 h) Critical navigation areas including ferry routes plus a 200-foot buffer on both sides;
207 the Nomans Prohibited Navigation Area, the Vineyard Sound shipping lane plus its
208 westward extension, and a one-mile buffer around Vineyard Sound pilot boarding
209 area as identified in the Wind Energy Plan for Dukes County.
- 210 i) Critical fishing areas identified in the Massachusetts Ocean Management Plan,
211 namely the highest category of fishing resource areas; highest effort and landing
212 value of commercial fishing areas, high activity recreational fishing and boating
213 areas.
- 214 j) National Landmark Viewshed identified in the Wind Energy Plan for Dukes County.
- 215 k) Department of Defense Prohibited Entry Zone - Coast Pilot 2 note #334.70.

216 **3.2.2 Land Exclusionary Areas:** The Land Exclusionary Areas (Subzones LE) include the
217 following areas.

- 218 a) Open space land owned by a governmental body.
- 219 b) Wetland resource areas as identified by the Massachusetts Department of
- 220 Environmental Protection or as determined by the Town's Conservation
- 221 Commission, but not the buffer zones to such resource areas.
- 222 c) Frost bottoms and vernal pools as described in the Wind Energy Plan of Dukes
- 223 County or as identified by the Conservation Commission.
- 224 d) Hazard mitigation areas made up of areas less than 2 meters above mean sea level
- 225 and areas identified on the SLOSH map prepared by the US Army Corps of
- 226 Engineers in 2002 as subject to a storm surge in a hurricane of categories 1 and 2.
- 227 e) Coastal DCPC Shore Zone.
- 228 f) National Natural and Historic Landmarks plus a buffer of 1000 feet.
- 229 g) Municipally designated historic districts.
- 230 h) Municipally designated scenic roads plus a 200-foot buffer from the centerline of the
- 231 road.
- 232 i) Main rural roadside viewsheds identified in the Island Plan, up to 500 feet from the
- 233 centerline of the road.

234 **3.2.3 Ocean Areas of Special Concern:** The Ocean Areas (Subzones OS) include the following

235 areas.

- 236 a) Important fish resource areas identified in the Massachusetts Ocean Management
- 237 Plan.
- 238 b) Hard/Complex Seafloor and Areas of High Rugosity identified in the Massachusetts
- 239 Ocean Management Plan.
- 240 c) Important Fishing Areas identified in the Wind Energy Plan for Dukes County.
- 241 d) Within the Critical Viewshed(s) identified in the Wind Energy Plan for Dukes County.

242 **3.2.4 Land Areas of Special Concern:** The Land Areas of Special Concern (Subzones LS)

243 include the following areas.

- 244 a) Open space land owned by a non-profit organization, or is privately owned.
- 245 b) A 500-foot buffer around open space land.
- 246 c) Districts of Critical Planning Concern designated for cultural or historic reasons, plus
- 247 a buffer of 300'. This does not include the Town of Aquinnah DCPC except for those
- 248 portions within other DCPCs.
- 249 d) Districts of Critical Planning Concern designated for natural reasons. This does not
- 250 include the Town of Aquinnah DCPC except for those portions within other DCPCs.
- 251 e) A buffer of 300' from designated frost bottoms, vernal pools, and wetlands.
- 252 f) A buffer of 500' from municipally designated historic districts.
- 253 g) The portion of the main rural roadside viewsheds identified in the Island Plan that is
- 254 located more than 500 feet from the centerline of the road.
- 255 h) Historic and traditional areas identified in the Island Plan
- 256 i) Tribal Special Areas identified in the Wind Energy Plan

257 **3.3 Authority to Develop Wind Energy Facilities in Different Zones**

258 **3.3.1 Exclusionary Areas:** No wind turbine shall be located in the Exclusionary Areas of the

259 Ocean Zone (subzone OE) or the Land Zone (subzone LE). Parts of a wind energy facility

260 other than the turbine should also avoid exclusionary areas; however, if the applicant can

261 demonstrate that the component cannot be placed in another location, the SPGA may

262 approve a proposal provided the impacts have been minimized to the greatest extent

263 feasible, and that the remaining impacts have been fully offset with mitigation measures.

264 **3.3.2 Areas of Special Concern:** No wind energy facilities shall be located in an Area of Special

265 Concern. However, if the applicant can demonstrate that the proposal cannot be placed in

266 a Qualified Area, the SPGA may approve a proposal provided the impacts have been

267 minimized to the greatest extent feasible, and that the remaining impacts have been offset

268 with mitigation measures. If the impacts have not been avoided or fully mitigated, the SPGA
269 shall deny the application for a wind energy facility in an Area of Special Concern.

270 f) **Qualified Areas:** An application for a wind energy facility with a turbine less than
271 150 feet high in the Land Qualified Areas (Subzone LQ) is not subject to the
272 provisions of this by-law unless:

- 273 - the facility is located less than six (6) times the turbine height from a
274 municipal boundary,
- 275 - the turbine is located less than three (3) times the turbine height from an
276 existing building used for human habitation or occupation on an adjacent
277 property or the building envelope of an adjacent property;
- 278 - the facility would normally be subject to special permit review in a town, but
279 the town is not authorized to carry out such a review .

280 *[Note: Towns may wish to insert here a reference to their other wind regulations.]*

281 **3.4 Referral to the Martha's Vineyard Commission as a Development of Regional Impact**

282 **3.4.1 MVC Referral:** No application for a permit to erect, construct, install, or modify a wind
283 energy facility or met tower in the following categories shall be approved unless it has first
284 been referred for review to and approved by the Martha's Vineyard Commission as a
285 Development of Regional Impact:

- 286 b) Any facility whose height is more than 150 feet;
- 287 c) Any facility located in the Ocean Zone,
- 288 d) Any facility located in the Land Zone - Area of Special Concern;
- 289 e) Any facility located less than six (6) times the turbine height from a municipal
290 boundary;
- 291 f) Any turbine normally subject to special permit review in a town, for which the town is
292 not authorized to carry out such a review.

293 **3.4.2 Joint Hearings:** The SPGA may hold joint hearings with the MVC in order to expedite the
294 hearing process. However, each board shall deliberate and make its decision
295 independently based on its own enabling legislation, regulations, and criteria.

296 **3.5 Special Permit Granting Authority**

297 **3.5.1 Requirement for a Special Permit:** No wind energy facility or met tower in the following
298 categories shall be erected, constructed, installed or modified without first obtaining a
299 permit from the Town's special permit granting authority (SPGA):

- 300 a) Any facility whose height is more than 150 feet;
- 301 b) Any wind energy facility located in the Ocean Zone,
- 302 c) Any facility located in the Land Zone - Area of Special Concern;
- 303 d) Any facility located less than six (6) times the turbine height from a municipal
304 boundary;
- 305 e) Any facility whose turbine is located less than three (3) times the turbine height from
306 the closer of an existing building used for human occupancy on an adjacent
307 property or the building envelope of an adjacent vacant property.

308 **3.5.2 Permissible Locations:** The construction of a wind energy facility may be permitted in any
309 zoning district other than the Ocean and Land Exclusionary Areas, provided that the wind
310 energy facility complies with all requirements set forth in sections 3, 4, 5, 6 and 7 of this
311 bylaw.

312 **3.5.3 Conformance to Wind Energy Plan:** The wind energy facility shall conform to the Wind
313 Energy Plan for Dukes County.

314 **3.5.4 Minimization of Impacts:** All such wind energy facilities shall be constructed and operated
315 in a manner that minimizes any adverse visual, safety, and environmental impacts to the
316 maximum extent reasonably practicable.

- 317 **3.5.5 Issuance of Special Permit:** No special permit shall be granted unless the SPGA finds in
 318 writing that:
- 319 a) the specific site is an appropriate location for such use;
 - 320 b) the proposed use does not derogate from the intent or purpose of the Town zoning
 321 by-laws;
 - 322 c) the use is not expected to have a significant adverse impact on the health, safety, or
 323 general welfare of the Town or of other towns with respect to traffic, noise,
 324 environmental considerations, visual character, nearby neighborhoods, or other
 325 concerns;
 - 326 d) no nuisance is expected to be created by the use; and
 - 327 e) adequate and appropriate facilities will be provided for the proper operation of the
 328 use.
- 329 **3.5.6 Conditions:** Such permits may also impose reasonable conditions, safeguards and
 330 limitations on time of use and operation of the wind energy facility and may require that the
 331 operation of the facility be modified or suspended in order to conform to the standards and
 332 the conditions specified in the special permit.
- 333 **3.5.7 Community Benefit:** In applying the standards for granting the special permit, the SPGA
 334 may consider the impacts of the proposal in relation to the anticipated public benefits
 335 including but not limited to: the amount of renewable energy produced, the amount of
 336 greenhouse gas emissions likely to be avoided by the facility's operation, the type of wind
 337 energy facility (e.g. community, commercial, private residential), and other community
 338 benefits. This may include whether a commercial wind energy facility provides a reasonable
 339 portion of the energy produced for local consumption, and whether this is provided at prices
 340 that are or are likely to become competitive.
- 341 **3.5.8 Modifications:** Any material modification to a wind energy facility made after issuance of
 342 the special permit shall require approval by the SPGA as provided in this section. This shall
 343 include any attachments to the exterior of the tower or nacelle such as a personal wireless
 344 service or radio antenna. The building inspector shall determine whether a proposed
 345 modification is material, and in case of doubt, may refer the question to the SPGA.
- 346 **3.5.9 Meteorological Towers:** Meteorological towers shall be permitted subject to issuance of a
 347 special permit for a temporary structure and provided they are located to respect the
 348 applicable minimum setbacks specified in this bylaw. The SPGA may reduce these
 349 minimum setbacks as appropriate based on site specific considerations or if the nearest
 350 property line is a public right of way, if the project satisfies all other criteria for the granting
 351 of a special permit under the provisions of this section. Due to the temporary status of
 352 these facilities and the long-term benefit of the information they provide, siting guidelines
 353 may be applied less rigorously to Met Towers. (Note that Conservation Commission
 354 regulations may impose other setback requirements).
- 355 **3.6 Compliance with Laws, Ordinances and Regulations**
 356 The construction and operation of all met towers and wind energy facilities shall comply
 357 with all applicable local, state and federal requirements, including but not limited to all
 358 applicable safety, construction, environmental, electrical, communications and aviation
 359 requirements.
- 360 **3.7 Engineering and Technical Certification**
 361 Compliance with building, electrical and safety codes applicable to the design and
 362 construction of any wind energy facility, including the tower(s), the associated equipment,
 363 and the compatibility of the tower structure with the rotors and other components shall be
 364 certified by an Engineer licensed by the Commonwealth of Massachusetts:
 365 a) as part of the application package,
 366 b) after completion of construction, and

367 c) at a reasonable schedule thereafter as determined by the SPGA.

368 **3.8 Site Control**

369 At the time of its application for a special permit, the applicant shall submit documentation
370 of actual or prospective control of the project site sufficient to allow for installation and use
371 of the proposed facility. Documentation shall be in the form of a deed, lease or other legal
372 instrument demonstrating proof of control over the site of the wind energy facility and over
373 the setback areas described herein and a right to use any private ways required for access.
374 Control shall mean the legal authority to prevent the use or construction of any structure for
375 human occupancy within all required setback areas around the wind energy facility,
376 including any which may extend onto adjacent property.

377 **4. SITING AND PERFORMANCE STANDARDS – GENERAL**

378 The following standards shall apply to wind energy facilities in both the Ocean Zone and
379 the Land Zone.

380 **4.1 Safety Requirements**

381 **4.1.1 General:** The wind energy facility shall be located, designed, and installed in a manner
382 which ensures the safety of persons and property. The wind energy facility shall eliminate
383 or mitigate risks including, but not limited to, climbing hazards, the effects of flicker, ice
384 throw, guy wires, blade separation, collapse, and unauthorized access to electrical
385 equipment and to the interior of towers.

386 **4.1.2 Unauthorized Access:** Wind turbines or other structures part of a wind energy facility shall
387 be designed to prevent unauthorized access. If towers require external climbing apparatus,
388 they shall have either tower climbing apparatus located not lower than twelve feet to the
389 ground or be un-climbable by design for the first twelve feet.

390 **4.1.3 Hazards:** The proposal shall minimize possible hazards related to the installation of
391 facilities, including collapse of facilities and spills of oil, hazardous materials and/or
392 chemicals and shall include provisions to limit and mitigate potential harms.

393 **4.1.4 Emergency Services:** The applicant shall provide a copy of the project summary and site
394 plan to the local emergency services entity, as designated by the SPGA. Upon request by
395 the local emergency services entity, the applicant shall cooperate in developing an
396 emergency response plan satisfactory to the local emergency services entity.

397 **4.2 General Impacts**

398 The wind energy facility, including cables connecting said facilities to an electrical grid
399 serving other facilities or electrical users, shall be sited and designed so that negative
400 impacts from pre-construction, construction, operation, or decommissioning shall be
401 avoided on

- 402 • Wildlife, wildlife habitat, and other natural resources,
- 403 • Cultural and historic uses and values including Tribal resources,
- 404 • Significant public vistas and viewsheds, including the impact of facilities on night
405 viewing, “dark skies”, and ambient lighting.
- 406 • Other human uses.

407 If the applicant can demonstrate that a proposal cannot be located or designed to totally
408 avoid these negative impacts, the SPGA may approve the proposal provided the impacts
409 have been minimized to the greatest extent feasible, and that the remaining impacts have
410 been fully offset with mitigation measures. If the negative impacts have not been avoided
411 and/or fully mitigated, the SPGA shall deny the application. The SPGA shall consider both
412 the individual and cumulative impacts of a proposal

413 **4.2.1 Scenic Impacts:** The wind energy facility siting and design shall avoid, or minimize and
414 mitigate negative impacts on scenic resources of national, state, or regional significance,

415 considering the existing character of the surrounding area, the expectations of the typical
416 viewer, the project purpose, the duration of potentially affected public uses, and the scope
417 and scale of the potential effect on views.

418 **4.2.2 Electromagnetic:** The wind energy facility siting and design shall create no television or
419 other electromagnetic interference extending beyond the property boundaries of the
420 project.

421 **4.2.3 Alternative Energy Reduction and Generation Measures:** For on-site or communal wind
422 energy facility projects with significant impacts on resources and human uses, the SPGA
423 may require as part of the application that the owner demonstrate that reasonable efforts
424 have been made to use efficiency and conservation measures to reduce the owner's
425 energy consumption, and that alternative means of generating renewable energy with fewer
426 impacts have been explored. Applicants for all types of wind energy facility who propose to
427 sell the majority of their output to the electrical grid shall provide a comparison with the net
428 energy savings that could be realized by an equal capital investment in energy efficiency,
429 conservation or alternative renewable energy methods.

430 **4.3 Design Standards**

431 **4.3.1 Support Towers:** Towers greater than 150' high shall be monopole type. Offshore towers
432 shall be monopole above the foundation transition platform. For towers under 150 feet high,
433 monopole towers are preferred; however the SPGA may approve another type that it
434 deems is appropriate for its setting, minimizes its noise and other impacts, and is
435 economically viable.

436 **4.3.2 Color and Finish:** Wind facilities shall be painted a neutral, non-reflective exterior color
437 designed to blend with the surrounding environment in conformance with regulations of the
438 Federal Aviation Administration.

439 **4.3.3 Lighting:** Lighting of turbines is prohibited except as required by the Federal Aviation
440 Administration or other state or federal law, and shall be the minimum necessary. Lighting
441 of other parts of the wind energy facility, such as appurtenant structures, shall be limited to
442 that required by regulation for safety and operational purposes. Lighting shall be designed
443 to minimize glare on abutting properties and except as required by the FAA, shall be
444 directed downward with full cut-off fixtures so there is no light cast beyond the property
445 lines of the project parcel. For communal wind energy facilities, the cut off shall be at the
446 property line of an owner not part of the communal facility.

447 **4.3.4 Signage:** Signage at the wind energy facility is limited to no trespassing, danger,
448 emergency contact information, reasonable identification of the manufacturer or operator,
449 and educational information. All signs shall comply with the requirements of the Town's sign
450 regulations. No signage, whether on the tower or freestanding, may be erected more than
451 ten feet above the ground. No advertising, nor any sign, writing, or picture that may be
452 construed as advertising, is permitted.

453 **4.3.5 Appurtenant Structures:** All appurtenant structures to such wind facilities shall be subject
454 to this bylaw's regulations concerning the bulk and height of structures, yard sizes, lot area,
455 setbacks, open space, parking and building coverage requirements. To the extent that the
456 SPGA finds that any of these dimensional controls are not suited to the appurtenant
457 structures proposed for this purpose, it may grant the minimal dimensional relief that it
458 deems reasonable and necessary to permit operation of the wind energy facility. All
459 equipment necessary for monitoring and operation of the wind energy facility shall be
460 contained within the tower; if this is unfeasible, ancillary equipment may be located outside
461 the tower. All such appurtenant structures, including but not limited to, equipment shelters,
462 storage facilities, transformers, and substations, shall be architecturally compatible with
463 each other and shall be contained within the turbine tower whenever technically and
464 economically feasible. Structures shall only be used for housing of equipment for this

465 particular site. Whenever reasonable, structures should be shielded from view by
466 vegetation and/or located in an underground vault and joined or clustered to avoid adverse
467 visual impacts.

468 **4.3.6 Utility Connections:** Reasonable efforts shall be made to locate utility connections from
469 the wind energy facility underground, depending on appropriate soil conditions, shape, and
470 topography of the site and any requirements of the utility provider. Electrical transformers
471 for utility interconnections may be above ground if required by the utility provider.

472 **4.4 Sound**

473 The operation of wind energy facilities shall comply with the following sound limits and
474 requirements.

475 **4.4.1 Construction and Demolition Sound:** Sound from the construction or demolition of a
476 wind energy facility shall be subject only to the Commonwealth's noise regulations for
477 construction activities (310 CMR 7.10 U), unless the SPGA specifies more restrictive
478 measures during the approval process.

479 **4.4.2 Audible Sound Limit:** Wind energy facility sound level (L_{Aeq}) from a wind energy facility at
480 a receptor shall not exceed the background sound level ($L_{A90,10 \text{ min}}$) at each integer wind
481 speed by more than 5 dB(A), but in no instance shall exceed 35 dB(A) between 6 p.m. and
482 6 a.m. or 40 dB(A) between 6 a.m. and 6 p.m.

483 **4.4.3 Low Frequency Sound Limit:** Wind energy facility low frequency sound level (L_{Ceq}) from a
484 wind energy facility at a receptor shall not exceed the background sound level ($L_{C90,10 \text{ min}}$) at
485 each integer wind speed by more than 20 dB, but in no instance shall exceed 50 dB(C).

486 **4.4.4 Tonal Sounds:** A 5 dB penalty is added to measured or predicted wind turbine sound if it is
487 characterized as tonal sound, that is sound containing one or more pure-tones. A pure-tone
488 exists when the sound pressure level in a one-third octave band at a receptor exceeds the
489 sound pressure levels in both adjacent one-third octave bands, and if the average amount
490 exceeded in both adjacent bands is greater than the following: 16 dB for the 100Hz one-
491 third octave band frequency; 14 dB for 125 Hz; 12 dB for 160 Hz; 11 dB for 200 Hz; 9 dB
492 for 250 Hz; 8 dB for 315 Hz; 7 dB for 400 Hz; 6 dB for 500 and 630 Hz; 5 dB for 800 Hz; 4
493 dB for 1000, 1250, and 1600 Hz; 3 dB for 2000, 2500, 3150, and 4000 Hz; 3 dB for 2000,
494 2500, 3150, and 4000 Hz; 4 dB for 5000 and 6300 Hz; 5 dB for 8000; and 6 dB for 10,000
495 Hz. The wind energy facility must also respect current Massachusetts Department of
496 Environmental Protection standards on tonal sounds.

497 **4.4.5 Sound Measurement:** Sound measurements shall be measured or determined at both of
498 the following receptors, if applicable.

- 499 a) The boundary line of any adjacent lot not in common ownership with the lot
500 containing the wind energy facility.
- 501 b) Residences not in common ownership with the lot containing the wind energy facility
502 Measurements at residences shall be made near the outside wall nearest to the
503 closest wind turbine, or at an alternate exterior wall as specified by the owner of the
504 residence.

505 Measurement or modeling of wind energy facility sound emissions shall be conducted
506 during conditions when the difference between wind energy facility sound (L_{Aeq}) and
507 background sound ($L_{A90, 10 \text{ min}}$) at receptors is the greatest. Wind energy facility and
508 background sound levels shall be measured or determined at receptors for hub-height
509 integer wind speeds from cut-in to rated power. If measured wind energy facility sound is
510 less than 10 dB(A) above the background sound level at a measurement location, the
511 background contribution may be removed from the measured wind energy facility sound
512 level using the method in ANSI S12.18 paragraph 7.5.4.

513 **4.4.6 Sound Waiver:** Upon request by an owner of a wind energy facility, an owner of an
514 affected residence or normally occupied building may by written contract relieve the wind

energy facility owner of the requirement to meet any of the noise limits in this section. Any such waiver shall expressly state that it shall be encumbrance on the title of the real property, and shall run with the land until the wind energy system is decommissioned. The sound waiver shall be recorded with the Registry of Deeds, noted on the certificate of occupancy for any building which shall be covered by the waiver and expressly disclosed in any lease of the property subject to the waiver. Before entering into a contract, an owner of a wind energy facility shall provide a copy of this section 4.4 to the owner of an affected nonparticipating residence or normally occupied building.

4.4.7 Compliance:

- a) The SPGA may require a wind energy facility owner to conduct pre- and post-construction sound studies to evaluate compliance with this section. Such studies shall follow measurement protocols as described herein and shall be conducted by an independent qualified acoustical expert approved by the SPGA or building inspector, and under the supervision of an INCE (International Noise Control Engineering) Board Certified Engineer.
- b) Any complaint regarding a wind energy facility's compliance with the sound limits of this section must be sent by certified mail to the town building inspector, the SPGA, and the owner of the facility. The complaint must include any substantiating information as the SPGA or building inspector may require, such as a log by the complainant detailing the sounds found objectionable and the times and weather conditions of such occurrences, so the wind energy facility owner may understand the nature of the complaint and decide upon corrective actions, if any.
- c) Upon receipt of a complaint, about a noise under section 4.4, the wind energy facility owner shall suspend or curtail operation of the wind energy facility to eliminate the excessive noise until the SPGA or building inspector has authorized reinstatement of normal operations.
- d) The owner shall obtain an on-site investigation and report from an independent qualified acoustical expert approved by the SPGA or building inspector, and file copies of said report with the SPGA, the building inspector and the complainant.
- e) Within thirty (30) days of the receipt of the report, the SPGA or building inspector shall evaluate the sound study to determine compliance with the noise standards of this bylaw. The SPGA or the building inspector may submit the report for professional peer review at the owner's expense. The SPGA or building inspector shall notify the owner and complainant by certified mail as to whether the facility complies with section 4.4.
- f) If the facility complies, the owner may resume normal operation of the facility.
- g) If the facility does not comply, the owner shall either modify the facility to the satisfaction of the SPGA or building inspector, or continue operational curtailment.
- h) If the SPGA deems the owner's sound study to be defective, erroneous or inadequate, the SPGA may commission an independent field investigation from a qualified acoustical engineer, at the owner's expense, and may modify, condition or rescind the special permit, after notice and a public hearing, as it deems necessary to cause the wind energy facility to comply with Section 4.4.

4.5 Construction, Maintenance, Decommissioning and Abandonment

- 4.5.1 **Construction Impacts:** The proposal shall minimize impacts related to project construction including impacts from shipping, site clearance, and temporary access. The applicant for a turbine more than 150 feet high shall submit a Construction Management Plan indicating:
- a) how the components of the facility will be shipped to the site,
 - b) what the impacts would be of site preparation, transportation of components, erection of the turbine, and other construction, and
 - c) how these impacts would be avoided, or minimized and mitigated.

565 The building inspector may require submission of a Construction Management Plan for
566 turbines less than 150 feet high if he determines that the shipping, transportation or
567 construction of the project present special concerns.

568 **4.5.2 Monitoring and Maintenance:** A wind energy facility shall be operated and maintained in
569 sound working order in conformance with the manufacturer’s specifications at all times. The
570 applicant shall maintain the wind energy facility site in good condition. Maintenance shall
571 include, but not be limited to, painting, structural repairs, and integrity of security measures.
572 Site access shall be maintained to a level acceptable to the local Fire Chief and Emergency
573 Medical Services. The project owner shall be responsible for the cost of maintaining the
574 wind energy facility and any access road, unless accepted as a public way, and the cost of
575 repairing any damage to a public or private way occurring as a result of operation and
576 construction. The applicant or facility owner shall maintain a current phone number and
577 identify a responsible person for the public to contact with inquiries and complaints
578 throughout the life of the project by filing a certificate containing that information with the
579 building inspector and the SPGA.

580 **4.5.3 Removal Requirements:** Any wind energy facility which has reached the end of its useful
581 life or has been abandoned shall be removed. When the wind energy facility is scheduled
582 to be decommissioned, the applicant shall notify the town building inspector and SPGA by
583 certified mail of the proposed date of discontinued operations and plans for removal. Prior
584 to any removal activities, the owner/operator shall confer with the building inspector and
585 review the proposed plan for dismantling and removing all components of the wind energy
586 facility. The owner/operator shall physically remove the wind energy facility no more than
587 150 days after the date of discontinued operations. At the time of removal, the owner shall
588 restore the wind energy facility site to the state it was in before the facility was constructed
589 or may convert the lot to another legally permitted use.
590 Decommissioning shall consist of:

- 591 a) Physical removal of all wind turbines, structures, equipment, security barriers and
592 transmission lines from the site.
- 593 b) Disposal of all solid and hazardous waste in accordance with local and state waste
594 disposal regulations.
- 595 c) Stabilization or re-vegetation of the site as necessary to minimize erosion. The
596 SPGA may allow the owner to leave landscaping or designated below-grade
597 foundations in order to minimize erosion and disruption to vegetation.
- 598 d) For offshore facilities, the SPGA may require complete removal down to the
599 seabed, or may allow the owner to leave foundations, parts of towers, or other parts
600 of the facility provided they do not disrupt habitat or interfere with boating or fishing.

601 **4.5.4 Abandonment:** Special permits for wind energy facilities shall contain the terms of this
602 section 4.5 as conditions. A wind energy facility shall be considered abandoned when the
603 facility fails to operate for more than one year without the written consent of the SPGA.
604 Upon a finding by the Building Inspector that the facility has been abandoned or has been
605 left in disrepair or has not been maintained in accordance with its approved maintenance
606 plan, the Building Inspector shall notify the owner(s) of the facility and the land on which it
607 is located, in writing by certified mail that the facility must be restored to good working order
608 or must be decommissioned. If the owner does not decommission the wind energy facility,
609 or make the required repairs or maintenance within 60 days after the date of the certified
610 letter, the special permit may be rescinded by the SPGA, at the request of the building
611 inspector. If the owner fails to remove the abandoned wind energy facility in accordance
612 with this section after rescission of the special permit, the town may enter the property and
613 physically remove the facility at the expense of the property owner and the owner of the
614 facility. At the request of the property owner or the owner of the facility, the SPGA, with the
615 concurrence of the building inspector, may allow extensions of these time periods

616 **4.5.5 Financial Security:** The SPGA shall require the applicant for commercial wind facilities to
617 provide security, through escrow account, surety bond or otherwise, to cover the cost of
618 removal in the event the town must remove the facility. The amount, type and form of the
619 financial security must be approved by the SPGA and town counsel, but in no event shall
620 exceed 150 percent of the estimated cost of removal and compliance with the requirements
621 set forth herein. The financial security mechanism shall assure that the town may draw
622 upon all of these funds, solely upon a vote of the SPGA, for the useful life of the facility plus
623 3 years. If the owner of the wind energy facility obtains an extension of the special permit
624 to operate the wind energy facility beyond its stated useful life, the financial security
625 mechanism shall also be extended for an equal term, plus three years. The applicant shall
626 submit a fully inclusive estimate of the costs associated with removal, prepared by a
627 qualified engineer. The estimate shall include a mechanism for Cost of Living Adjustment,
628 which shall be incorporated into the financial security mechanism. Such security will not be
629 required for municipally or state-owned facilities. Upon satisfactory completion of the
630 removal of the facility by the owner/operator, the SPGA shall release the financial security
631 mechanism.

632
633 **5. SITING AND PERFORMANCE STANDARDS – OCEAN ZONE**

634 **5.1 General Impacts**

635 **5.1.1** Resources and uses as to which impacts should be avoided, or minimized and mitigated
636 as described in section 4.2.1 include but are not limited to the following:

- 637 a) ocean habitat and on the sea bottom, both within the Ocean Zone and in adjacent
638 areas;
- 639 b) the commercial fishing industry as well as on recreational fishing, both within the
640 Ocean Zone and in adjacent areas, considering impacts both on the fish and their
641 habitats as well as on fishermen’s equipment and livelihood;
- 642 c) commercial and recreational boating and navigation within the Ocean Zone and in
643 adjacent areas.

644 **6. SITING AND PERFORMANCE STANDARDS – LAND ZONE**

645 **6.1 Setbacks**

646 **6.1.1 Minimum Setbacks:** Wind turbines shall be set back a distance equal to:

- 647 a) One and a half (1.5) times the height of the turbine from the nearest property line of
648 all adjacent lots, (except participating parcels), a public way, or a private way that
649 is not part of, or used solely by the facility;
- 650 b) Three (3) times the height of the turbine from any residence or residential building
651 envelope, except those on participating parcels,

652 **6.1.2 Setback Waiver:** The setbacks from property lines, private roads, and non-participating
653 residences may be reduced with the written and recorded agreement of all affected
654 property owners. However, in no case shall the setback from a residence be less than 1.1
655 times the height of the turbine. The setback waiver shall be recorded with the Registry of
656 Deeds, noted on the certificate of occupancy for any building which shall be covered by the
657 waiver and expressly disclosed in any lease of the property subject to the waiver.

658 **6.2 Shadow Flicker**

659 **6.3** Wind facilities shall be sited and operated in a manner that minimizes shadow flicker
660 impacts on receptors. There shall be no shadow flicker on normally occupied buildings
661 within 1000 feet of the turbine except those located on participating parcels. The applicant
662 has the burden of proving that this effect does not have significant adverse impact on
663 neighboring or adjacent uses, through either siting or mitigation.

- 664 **6.4 Siting, Land Clearing, Soil Erosion and Habitat**
- 665 **6.4.1 General:** The wind energy facility shall be built and operated so as to avoid, or minimize
- 666 and mitigate impacts on topography, vegetation, and habitat. The application shall include
- 667 plans or a narrative showing erosion control, restoration of vegetation and prevention of
- 668 noxious weeds, and provisions for site restoration after project dismantling, including for
- 669 disposition of foundations. The SPGA may incorporate such provisions into the special
- 670 permit.
- 671 **6.4.2 Location:** Wind energy facilities should be located in relation to existing roadways and
- 672 transmission facilities to avoid clearing of vegetation to the greatest extent possible.
- 673 **6.4.3 Land Clearing:** Clearing of natural vegetation shall be limited to that which is necessary for
- 674 the construction, operation and maintenance of the wind energy facility and is otherwise
- 675 permitted by applicable laws, regulations, and ordinances. Land clearing for the purposes
- 676 of reducing wind turbulence in the vicinity of the turbine is prohibited, unless the special
- 677 permit granting board finds it is essential to operation requirements, it does not adversely
- 678 affect the natural resources in the area and that adequate erosion controls are proposed.
- 679 **6.4.4 Buildings and Equipment:** Any ground level equipment associated with the facility shall
- 680 be camouflaged or screened. Buildings and equipment shelters for wind energy facilities
- 681 shall be designed to be consistent with the traditional architecture of the Town and shall be
- 682 surrounded by buffers of dense tree growth and understory vegetation in all directions to
- 683 create an effective year-round visual buffer. Trees and vegetation may be existing on the
- 684 property or installed as part of the proposed facility or a combination of both. The SPGA
- 685 shall approve the types of trees and plant materials and depth of the needed buffer based
- 686 on site conditions.
- 687 **6.4.5 Screening:** Site selection should maximize screening capability of existing vegetation close
- 688 to public ways. Access roadways should be winding in order to minimize visibility of ground-
- 689 based portions of the facility. If the size of the facility requires a straighter road, vegetative
- 690 or other screening of these ground-based portions must be employed.
- 691 **6.4.6 Impact on Existing Uses:** The project siting and design shall avoid, or minimize and
- 692 mitigate the impact on farm operations or on other commercial or other activities on the
- 693 property in which the turbine is located as well on other properties in the vicinity.

694 **7. APPLICATION, PERMITTING PROCESS AND REQUIREMENTS**

695 **7.1 Term of Special Permit**

696 **7.1.1 Basic Term:** A special permit issued for a wind energy facility shall be valid for 20 years,

697 unless extended or renewed. At the end of that period (including extensions and renewals),

698 the wind energy facility shall be removed as required by this bylaw.

699 **7.1.2 Extension or Renewal:** The time period may be extended or the permit renewed by the

700 SPGA for periods of five years at a time upon demonstration that the facility is still

701 operating satisfactorily. A request for renewal must be submitted at least 180 days prior to

702 expiration of the special permit. Submitting a renewal request shall allow for continued

703 operation of the facility until the SPGA acts. A renewal application shall be reviewed using

704 the same criteria as those used for new installations.

705 **7.1.3 Replacement:** A new permit is required to install a replacement system or components that

706 will materially change the design or operation of the facility, as determined by the building

707 inspector. This does not include routine replacement of individual components.

708 **7.2 Application Requirements**

709 **7.2.1 General:** The application for a wind energy facility shall be filed in accordance with the

710 rules and regulations of the SPGA concerning special permits.

711 **7.2.2 Application:** Each application for a special permit shall be filed by the applicant with the

712 town clerk pursuant to section 9 of chapter 40A of the Massachusetts General Laws.

713 **7.2.3 Liability Insurance:** The applicant or owner of the wind energy facility shall provide, as
714 part of the submissions for review by the SPGA, evidence of liability insurance in an
715 amount and for a duration sufficient to cover loss or damage to persons and structures
716 arising from the installation, use and maintenance of the wind energy facility. Recertification
717 of liability insurance coverage shall be provided to the Town on an annual basis. Failure to
718 maintain insurance coverage shall be grounds for cessation of operation on order of the
719 SPGA and, after notice and hearing, revocation of the special permit by the SPGA.

720 **7.2.4 Independent Consultants:** Upon submission of an application for a special permit, the
721 SPGA may hire outside consultants, pursuant to section 53G of chapter 44 of the
722 Massachusetts General Laws. The SPGA may require the applicant to pay the consultant's
723 fees, in which case it shall inform the applicant of the estimate of such fees and may
724 require the applicant to pay that estimate before retaining the consultant. The consultant's
725 report shall be a public document, and shall be provided to the applicant. An applicant who
726 questions the proposed consultant's qualifications and/or believes the consultant has a
727 conflict of interest may appeal the selection of the consultant to the Board of Selectmen as
728 provided by c. 44, § 53G, but such an appeal shall toll the deadlines applicable to the
729 SPGA in acting on the special permit application..

730 **7.2.5 Crane or Balloon Test:** For turbines under 150 feet high and if requested by the SPGA,
731 the applicant shall arrange for a balloon or crane test at the proposed site to illustrate the
732 height of proposed facility. The date, time and location of such test shall be advertised in a
733 newspaper of general circulation in the town at least 14 days, but not more than 21 days
734 prior to the test.

735 **7.3 Required Application Documents**

736 **7.3.1 General:** The applicant shall provide the SPGA with ten (10) copies of the application. All
737 plans and maps shall be prepared, stamped and signed by a professional engineer
738 licensed to practice in Massachusetts. Included in the application shall be:
739 a) Name, address, phone number and signature of the applicant, as well as all co-
740 applicants or property owners, if any.
741 b) The name, contact information and signature of any agents representing the
742 applicant.
743 c) Documentation of the legal property right to use the wind energy facility site.
744 d) A legal description of the property for which a special permit is sought., and a listing
745 of all lots located, in whole or in part, within a circle, the radius of which is three time
746 the height of the proposed turbine, together with the names and mailing addresses
747 of the owners of those lots.. .

748 **7.3.2 Location and Legal Maps:** The following location and legal maps shall be submitted.
749 a) A copy of a portion of the most recent USGS Quadrangle Map, at a scale of
750 1:25,000, showing the proposed facility site, including turbine sites, and the area
751 within at least two miles from the facility.
752 b) An assessor's map of the site.
753 c) Zoning district designation for the subject parcel or a copy of a zoning map with the
754 parcel identified.
755 d) A map showing the limits of all Districts of Critical Planning Concern, National
756 Natural Landmarks, National Historic Sites, historic districts, scenic roads, located
757 within 500 feet of the property.

758 **7.3.3 Site Plan:** A plan of the proposed wind energy facility site, at a scale of one inch equals
759 200 feet with contour intervals of no more than 10 feet, showing the following:
760 a) Property lines for the site parcel and adjacent parcels within 1000 feet of the
761 turbine. Indicate distances from all proposed turbines to the closest property line for
762 each property within 1000 feet.

- 763 b) Outline of all existing buildings, including purpose (e.g. residence, garage, etc.) on
- 764 site parcel and all adjacent parcels within 1000 feet of the turbine. Indicate
- 765 distances from the wind energy facility to each building shown.
- 766 c) Location of all roads, public and private on the site parcel and adjacent parcels
- 767 within 1000 feet of the turbine, and proposed roads or driveways, either temporary
- 768 or permanent.
- 769 d) Existing areas of tree cover, including average height of trees, on the site parcel
- 770 and adjacent parcels within 1000 feet of the turbine.
- 771 e) Locations of wetlands, frost bottoms, and vernal springs on the site parcel and
- 772 adjacent parcels within 200 feet of the wind energy facility.
- 773 f) Proposed location and design of wind energy facility, including all turbines, ground
- 774 equipment, accessory structures, transmission infrastructure, access, fencing,
- 775 exterior lighting, etc.
- 776 g) Location of view representations.

777 For turbines less than 150 feet high, the SPGA may adopt rules to reduce the coverage
778 area of the site plan.

779 **7.3.4 Energy Reduction and Alternative Means of Generation:** Information about the
780 anticipated renewable energy production and alternative means of generating renewable
781 energy. This includes but is not limited to:

- 782 a) Information about the anticipated electrical generation of the proposed facility
- 783 including its rated capacity and its capacity factor;
- 784 b) In the case of on-site and communal facilities, if requested by the SPGA,
- 785 information about the energy consumption of the owner or owners, their efforts to
- 786 reduce this consumption by means of energy-efficiency and conservation
- 787 measures, and the possible use of other renewable energy generation techniques
- 788 which might have less impact on the environment.

789 **7.3.5 Visualizations:** Visual simulations for wind turbines more than 150 feet high or as required
790 by the SPGA. The SPGA shall select between three and six sight lines, including from the
791 nearest building with a view of the wind energy facility, for pre- and post-construction view
792 representations. Sites for the view representations shall be selected from populated areas
793 or public ways within a 2-mile radius of the wind energy facility. View representations shall
794 have the following characteristics:

- 795 a) View representations shall be in color and shall include actual pre-construction
- 796 photographs and accurate post-construction simulations of the height and breadth
- 797 of the wind energy facility (e.g. superimpositions of the wind energy facility onto
- 798 photographs of existing views).
- 799 b) All view representations will include existing, or proposed, buildings or tree
- 800 coverage.
- 801 c) Include description of the technical procedures followed in producing the
- 802 visualization (distances, angles, lens, etc...).

803 **7.3.6 Landscape Plan:** A plan indicating existing conditions and all proposed changes to the
804 landscape of the site, including temporary or permanent roads or driveways, grading,
805 vegetation clearing and planting, exterior lighting, screening vegetation, and structures.

806 **7.3.7 Sound Modeling Report:** A report prepared by a qualified acoustical consultant, whose
807 credentials have been accepted in advance by the special permit granting authority, which
808 addresses all the noise issues set forth in Section 6.2 above.

809 **7.3.8 Shadow/Flicker Report:** A report prepared by a qualified engineering consultant, whose
810 credentials have been accepted by the special permit granting authority, which addresses
811 the shadow/flicker issues set forth in Section 6.3 above.

812 **7.3.9 Operation & Maintenance Plan:** A plan for maintenance of access roads and storm water
813 controls, as well as general procedures for operational maintenance of the wind energy
814 facility, including a copy of the manufacturer's specifications and instructions.

815 **7.3.10 Compliance Documents**

816 If required under previous sections of this by-law, the applicant will provide with the
817 application:

- 818 a) a description of financial security mechanism that satisfies section 4.5.5 of this
- 819 bylaw,
- 820 b) proof of the availability of liability insurance that satisfies section 7.2.3 of this bylaw,
- 821 c) certification of height approval from the FAA,
- 822 d) a statement that satisfies section 4.4 of this bylaw, listing existing and maximum
- 823 projected sound levels from the wind energy facility.
- 824 e) Documentation of compliance with the Commonwealth of Massachusetts' Minimum
- 825 Technical Requirements for Wind Installations if applicable.

826 **7.3.11 Proof of Notifications:** The applicant shall notify the following agencies, via certified mail
827 upon submitting an application to the Town. Copies and proof of delivery shall be provided
828 to the Town:

- 829 a) Property owners located within the greater of 1000 feet or five times the height of
- 830 the proposed facility;
- 831 b) Federal Aviation Administration;
- 832 c) Town Fire Department;
- 833 d) Town Police Department
- 834 e) Town Planning Board
- 835 f) Town Conservation Commission,
- 836 g) Town Highway Department;
- 837 h) NStar;
- 838 i) For facilities located in priority habitat of rare species and estimated habitat of rare
- 839 wildlife, the Massachusetts Department of Environmental Protection - Natural
- 840 Heritage and Endangered Species Program.
- 841 j) For turbines higher than 150 feet high, the Otis Air Force Base.